

Study of Determination of Optical Delivery Turnaround
Time in Vision Centers of LV Prasad Eye Institute in
Krishna District of Andhra Pradesh

By

Ravula Sai Prashanth

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2017-2019



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TO WHOMSOEVER MAY CONCERN

This is to certify that Dr.Ravula Sai Prashanth, student of MBA Hospital and Health Management from The IIHMR University, Jaipur has undergone internship training at LV Prasad Eye Institute, Hyderabad from 2nd Feb 2019 to 3rd May 2019.

The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfilment of the course requirements.

I wish him all success in all his future endeavours.



Col (Dr). Ashok Kaushik
Dean, Academics and Student Affairs
The IIHMR University, Jaipur

16 May 2019.



Dr. Susmit Jain
Associate Professor
The IIHMR University, Jaipur

Date : 15.05.2019

The certificate is awarded to

Dr. Ravula Sai Prashanth

In recognition of having successfully completed his
Internship in the department of

Vision Center Network

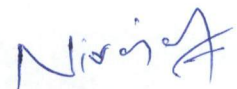
And has successfully completed his Project on

**“Study of determination of optical delivery turnaround time in vision centers of
LV Prasad Eye Institute KVC Campus, Vijayawada in Krishna District.
Andhra Pradesh”**

Date: 02/02/2019 to 03/05/2019

He comes across as a committed, sincere & diligent person who has a strong
drive and zeal for learning

We wish him all the best for future endeavors.



**Head of the Department
Vision Center Network**

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **“Study of determination of Optical Delivery Turnaround Time in vision centers of LV Prasad Eye Institute in Krishna district of Andhra Pradesh”** and submitted by Dr.Ravula Sai Prashanth Enrollment No. IIHMR-U/01/2017-19/0643 under the supervision of Dr.Susmit Jain for award of MBA in Hospital and Health Management of the University carried out during the period from 1/02/2019 to 3/05/2019 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



Dr.Ravula Sai Prashanth

Abstract:

Aim: The aim of this study is to determine the optical delivery turnaround time in vision centers.

Objectives: The objective of this study is to analyze the time taken from order booked at vision centre to order received at vision centre from optical store and to provide recommendations based on study findings

Research problem: The research problem identified was the late delivery of optical from tertiary eye care center to the vision center where optical orders are booked.

Methodology: This study is conducted at vision centers of LV Prasad eye institute located in Krishna district of Andhra Pradesh. This study utilized 1538 optical orders placed at 19 vision centers of LV Prasad eye institute located in Krishna district of Andhra Pradesh between January 1st 2019 to April 15th 2019. Optical order data of 1538 patients is retrieved from optical and screening registers maintained at the vision center. A format for data collection was prepared and the information from optical and screening registers maintained at the vision center was used to collect data accordingly

Key results: The average turnaround time for optical delivery to the vision center was around 8 days. Out of total lens order booked 23 percent of the orders were received within 1-5 days, 52 percent of orders in 6-10 days, 11 percent in 11-15 days and around 2 percent of orders received after 15 days. Center wise TAT was also calculated using this study.

Conclusion: The optical delivery time in vision center is very important to increase both the patient satisfaction and spectacle booking. This study helps to identify turnaround time for every vision center located at various regions and help to focus and improve the turnaround time and increase the patient satisfaction and screening at vision centers .

Keywords: Turnaround time (TAT), vision center, tertiary center, opticals,

ACKNOWLEDGEMENT

The success and final outcome of this project required a lot of guidance and assistance from many people and I am extremely privileged to have got this all along the completion of my project.

I respect and thank **Mr.Rajshekar** ,Director, LVPEI for providing me an opportunity to do the project work in LV Prasad eye institute and giving me all support and guidance which made me complete the project duly. I am extremely thankful to him for providing such a nice support and guidance .

I owe my deep gratitude to our project guide **Mr.Niranjan** , Vision Center Head ,LVPEI and **Dr.Srinivas marmamula**,Community Project Head ,LVPEI who took keen interest on my project work and guided me all along till the completion of my project work by providing all the necessary information.

I would not forget to remember **Dr. Ashok Kaushik, Dean** (Academic & Students Affairs), IIHMR University for his encouragement and guidance till the completion of my project work.

I heartily thank my mentor **Dr.Susmit Jain** , Associate professor and guide , IIHMR University for his guidance and suggestions during this project work.

I hope that I can build upon the experience and knowledge that I have gained and make a valuable contribution towards the industry in coming future.

Dr. Ravula Sai Prashanth.
MBA /HM -22,
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List of Symbols and Abbreviations

TAT – Turnaround time

VC – Vision center

SC- Secondary center

NGO – Non government organization

VBS – Vijayawada bustand

LVPEI – LV Prasad Eye Institute

Chapter 1

Introduction:

Eye-care requires a holistic approach among various multi-disciplinary sectors of service delivery. From efficient diagnosis and treatment planning to establish patient compliance, there are many crucial factors which determine outcomes at various levels. Many times, several input factors like longer waiting times, lack of accessibility to visit centers, unfavorable economic costs, lack of motivation or awareness etc. prevent patients from developing compliance and faith in the systems of eye-care. Hence, health-care professionals and administrators should understand these multi-factorial prerequisites to establish full-proof service delivery, hassle-free operations and improved public health indicators.

This research aims to understand the main prerequisite for establishing patient confidence- which is Turn around Time (TAT). It is usually the time taken for the order to be booked at a vision center and its subsequent delivery from the stores. It was generally observed from data gathered that, this pattern was not uniform across the network but rather it was center-specific. This results in varied levels of patient satisfaction and compliance- a trend that in the long run might obstruct public health parameters with respect to eye-care. Not only these- other patient specific factors like type of orders and place of orders also were found to be influencing TAT, thereby indirectly determining final outcomes. Procedural lapses, distance factor, operational issues and practical manpower hurdles were thus influential in TAT, which has to be mitigated. Hence a cumulative analysis was done using data obtained from various centers and a statistical pattern was thus established between TAT and other factors, comparing their outcomes. Based on these findings, some suggestions have been humbly proposed.

Aim: To determine the optical delivery turnaround time in vision centers.

Objective:

- 1) To analyze the time taken from order booked at vision centre to order received at vision centre from optical store.
- 2) To provide recommendations based on study findings.

Chapter 2

Literature Review

- The literature review related to this research topic is summarized below.

Author (year)	Study location	Sample size	Sampling technique	Salient features
<i>Binita Goswami, Bhawna Singh, Ranjna Chawla, V. K. Gupta, and V. Mallika (2010)</i>	Govind Ballabh Pant Hospital (GBPH) – DELHI Turn Around Time (TAT) as a Benchmark of Laboratory Performance	-	OPD samples	• The study revealed an average time of 4.5 to 5 hours • TAT was calculated from the time samples received to the report dispatching. • The TAT for the

				OPD samples was one day as the reports are given next day .
<i>Abhinav Dileep Wankar (2014)</i>	Study of determination of laboratory turnaround time in tertiary care hospital in India	232 samples	Convenience sampling	• The study revealed that 100 samples are with in TAT and 82 samples were not . • The average time took between sample collection and reaching lab was observed to be 15 minutes where as the ideal time is 10 minutes which implies a delay in transportation. • Each phase of the process flow was investigated to know the root causes of delay.
<i>Jafer Kedir and Abonesh Girma</i>	Prevalence of Refractive Error and Visual Impairment	570	Multistage cluster sampling	• From the study around 94 percent of the children presented a vision

	among Rural School-Age Children of Goro District, Gurage Zone, Ethiopia			of 6/9 or better in both eyes where as remaining 37 children presented a vision of 6/12 or worsen in both eyes and one eye. • Among these 37 children 20 presented a vision of 6/12 or worse in both eyes and 10 children presented a vision more than 6/18 which is worse. • Around 75 percent of the children reported refractive error of myopia in this study.
Jayasinha Y. (2016)	Decreasing Turnaround Time and Increasing Patient Satisfaction in a Safety Net Hospital	94		• This study revealed an average cycle time of 113 minutes . • The patient satisfaction measured was around 87 percent.

				• Intervention was planned to improve the discharge process and check in process. • After implementation both the cycle time and the patient satisfaction got improved.
<i>Vilas Kovai, Gullapalli N Rao, Brien Holden Krishnaiah Sannapaneni Shubhra K Bhattacharya, Rohit Khanna (2010)</i>	Comparison of patient satisfaction with services of vision centers in rural areas of Andhra Pradesh, India	136	Simple random sampling	• The study revealed that the location of the VC ,mode of transportation available ,vision technician behavior are the most common factors that determined the patient opinion and perception towards a vision

				center . • Optical delivery time would have been included in the questionnaire.
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Table 1: literature review

Chapter 3

METHODS:

Research question: what is the optical delivery turnaround time in the vision centers of LV Prasad eye institute located in Krishna district of Andhra Pradesh?

Study location:

This study is conducted at vision centers of LV Prasad eye institute located in Krishna district of Andhra Pradesh

The vision center is a free-walk in clinic, well equipped to provide basic eye screening (without pupillary dilatation) & refraction. A small optical outlet is an integral part of a vision centre, which is equipped with a good stock of frames.

Inclusion criteria:

- All the optical orders ordered and received at vision center during the study period

Exclusion criteria:

- Optical orders which are ordered at vision center and didn't received at vision center during the study period.
- Optical orders which are delivered to patient through courier.
- Optical orders which are cancelled after order are excluded from the study.

Study duration: 3 months

Sample size: 1538 samples of optical orders from January 1st 2019 to April 15th 2019 are taken for the study

Research design: - cross sectional descriptive study.

Data collection type:

Secondary data is collected from the optical and screening registers present at the vision center.

Data collection method: A format of data collection was prepared and information from the optical and screening registers present at the 19 vision centers is used to collect data fill it the format prepared.

Analysis:

- The data was analyzed using Microsoft EXCEL
- Simple tabulation of data

Ethical consideration

The data collected is handled with confidentiality; permission to carry out the project was obtained from the head of Vision center network.

Chapter 4**Methodology:**

This study utilized 1538 optical orders placed at 19 vision centers of LV Prasad eye institute located in Krishna district of Andhra Pradesh between January 1st 2019 to April 15th 2019. Out of 1538 optical orders placed at vision centers during that time period, 1501 orders are used for analysis, excluding cancelled orders, orders delivered to patient directly through courier from tertiary center and orders not yet received at vision center during the time of the study.

Optical order data of 1538 patients is retrieved from optical and screening registers maintained at the vision center. A format of data collection was prepared and the information from optical and screening registers maintained at the vision center was used to collect data accordingly. Optical orders booked at the vision centers are classified in to four types i.e. Lens, Frames, Reading glasses and Sun glasses. The frames, reading glasses and sun glasses are readily available at the vision center and are delivered on the same day. The optical order process flow of the existing system is understood and data is collected accordingly. The lens orders booked are sent to the tertiary center and the fitted frames are sent back to the vision centers. The TAT for optical delivery at vision centers in this study is calculated in days.

Chapter 5

2.2.4 Results

A total of 1538 samples of optical orders were observed. Out of 1538 samples 1501 samples were taken for analysis. Rest 37 samples were excluded.

1. SAMPLE DISTRIBUTION :

Samples	No of samples	Percentage of samples
Samples included	1501	97.5
Samples excluded	37	2.4
Total	1538	100

Table 2: sample distribution

The above table shows the sample distribution included and excluded in study.

Around 98 percent of the total optical order samples collected are used for data analysis and interpretation.

2. EXCLUDED SAMPLE DISTRIBUTION :

Reasons for exclusion	No of samples	Percentage of samples
Cancelled orders	1	2.7
Orders sent through courier	3	8.1
Orders not yet received at VC	33	89.2
Total	37	100

Table 3: Excluded sample distribution

89 percent of the excluded samples include orders not yet received at the vision center after booking at the time of study. Around 8 percent of the orders booked at the vision center are sent through courier directly to the patients from the tertiary center.

3. Center wise total optical orders :

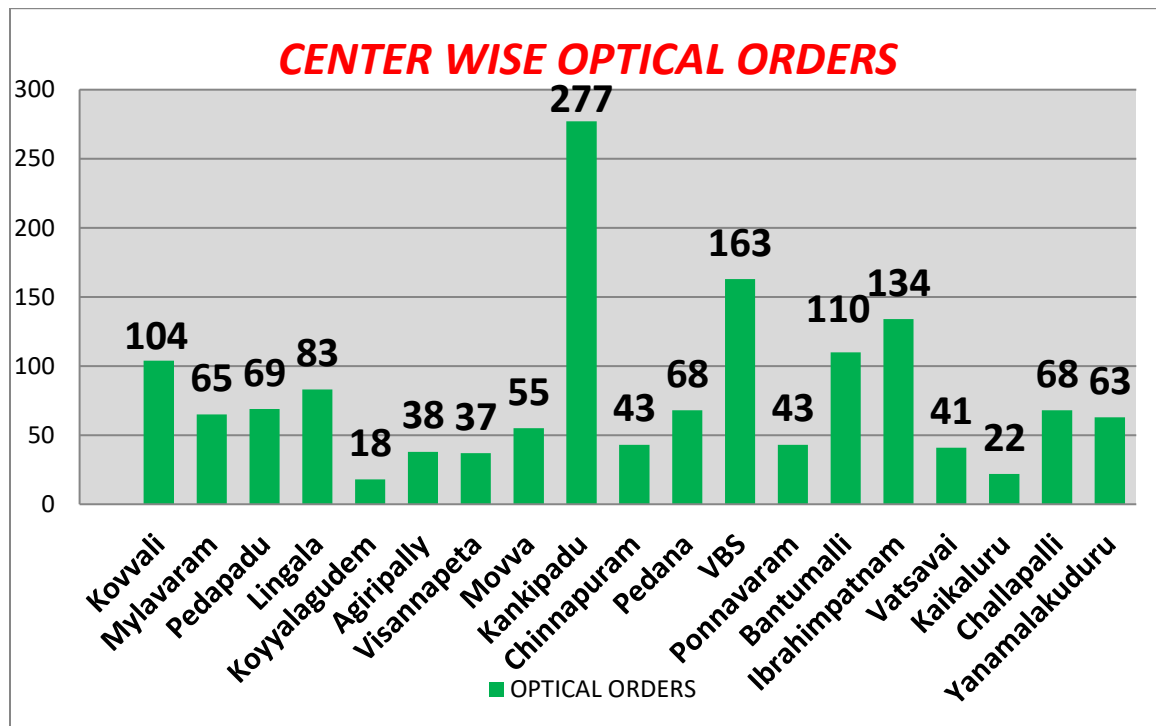


Fig1: Center wise total optical orders:

The above graph shows the optical orders booked at each vision center during the study period. The highest no of optical orders are booked at kankipadu vision center (277 optical orders) followed by VBS (163 orders) and ibrahimpattanam (134 orders).

4. Order type :

ORDER TYPE	NO OF ORDERS
LENS	1324
ONLY FRAME	47
READING GLASSES	100
SUN GLASSES	30

Table 4: Type of order

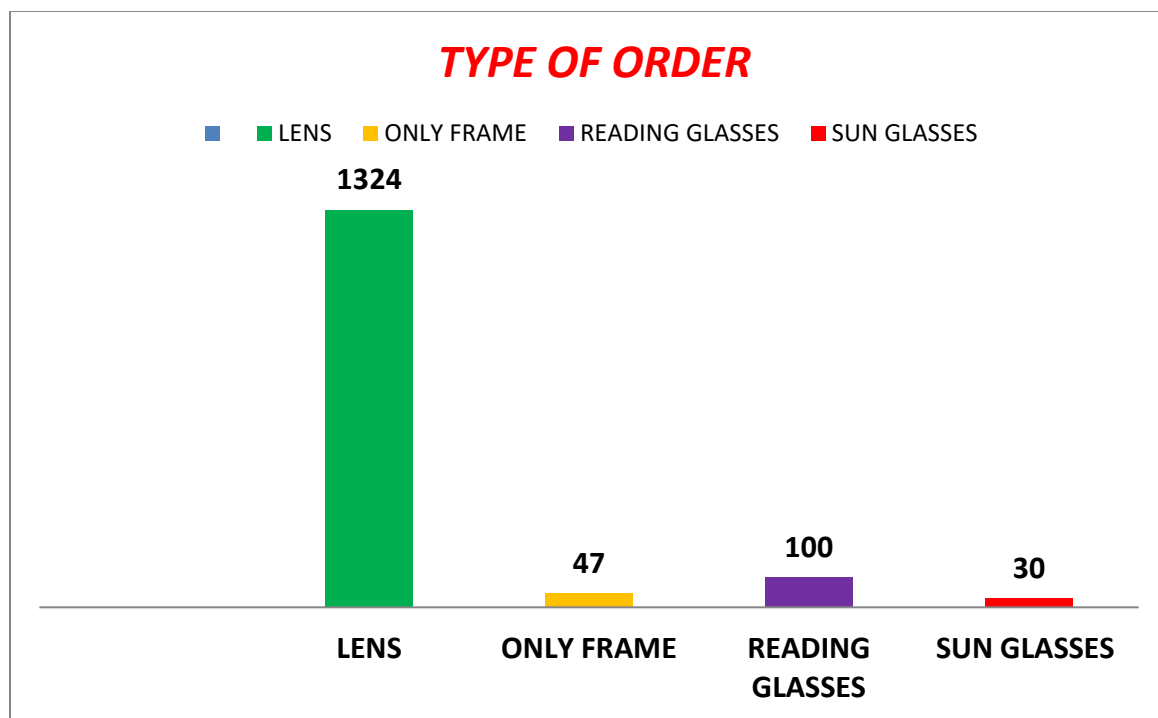


Fig 2: Type of order

The above bar graph shows the type of optical order booked at vision centers .Majority of the glasses (1324) are lens orders. Only frame orders are 47 , reading glasses are 100 and sun glasses orders are 30 in number

5. Distance from tertiary center:

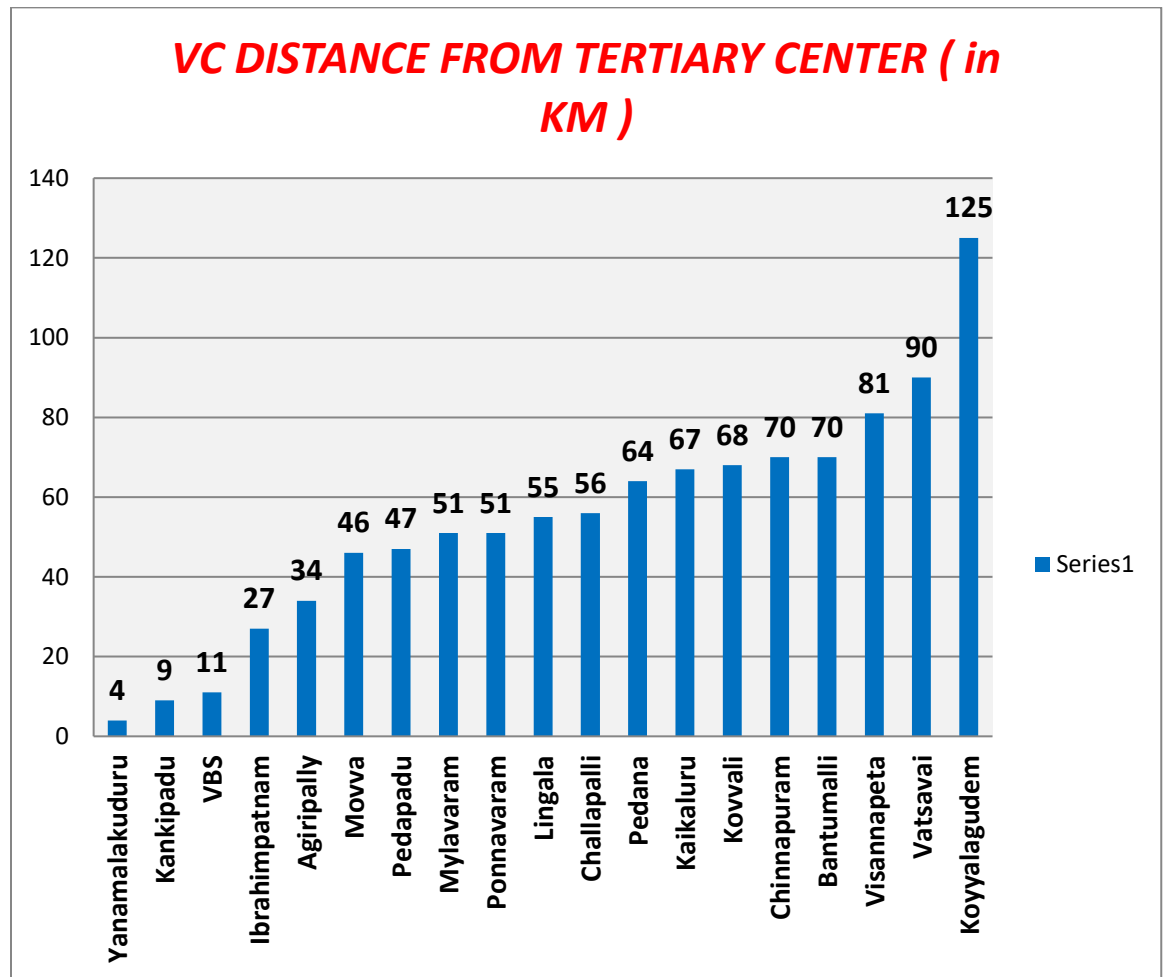


Fig 3: VC distance from tertiary center

The following graph shows the distance of vision center from the tertiary center located at Vijayawada, Andhra Pradesh.

Koyyalagudem vision center is the centre located at 125km from tertiary center ,where as the centers located within the city include VBS (11km from tertiary center), yanamalakuduru vision center (4km from tertiary center) and kankipadu vision center (9km from the tertiary center .

6. Percentage of lens ordered out of total optical orders at vision center :

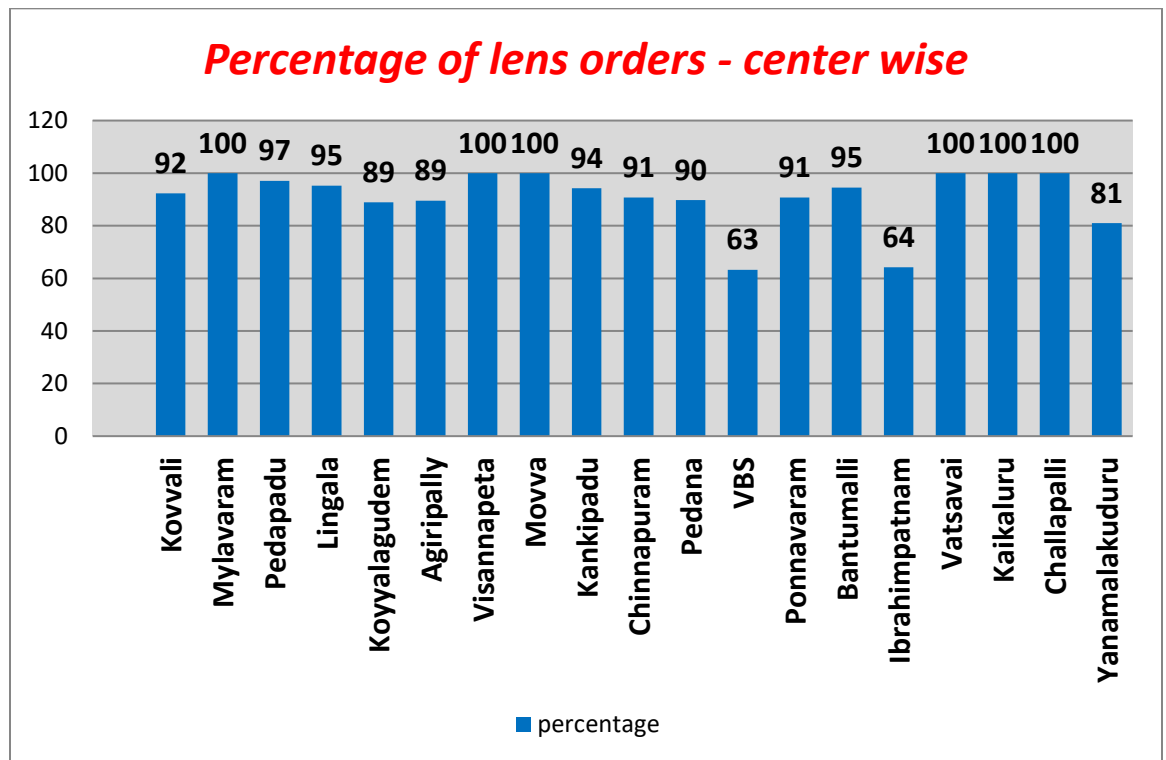


Fig4: Percentage of lens ordered out of total optical orders at vision center:

The above bar graph explains the percentage of lens (glasses) ordered in each vision center out of total orders .In 5 vision centers the optical orders include completely lens with no orders of reading glasses, sun glasses and only frames

.in VBS and ibrahimpatnam vision centers the optical lens orders are only 63 percent and 64 percent .in remaining vision center the lens order percentage range from 81 to 97 %.

7. **Percentage of sunglasses ,reading glasses and only frames ordered - center wise:**

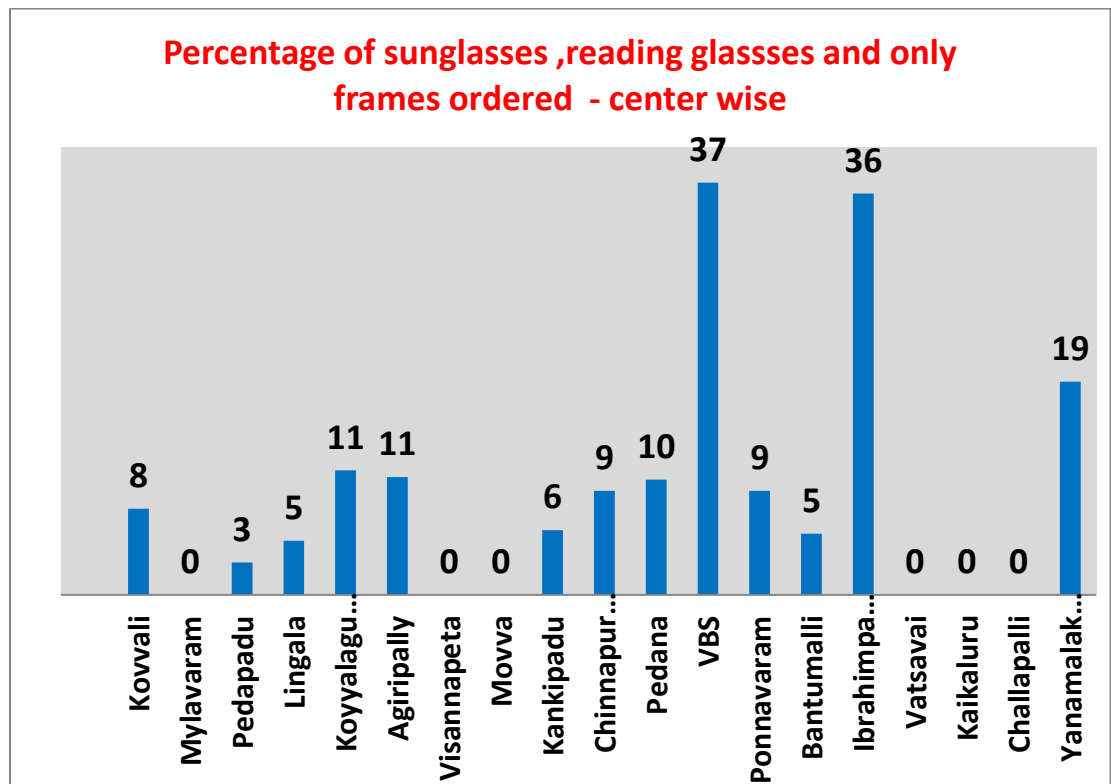


Fig5: Percentage of sunglasses, reading glasses and only frames ordered in each vision center

The above bar graph shows the percentage of sunglasses, reading glasses and only frames ordered in each vision center.

The highest number of sunglasses, reading glasses and only frames are booked in VBS and Ibrahimpatnam vision center .in five vision centers there are no bookings of sunglasses, only frames and reading glasses. Where as the other centers bookings are in a range from 3 to 19%.

8. Total average TAT:

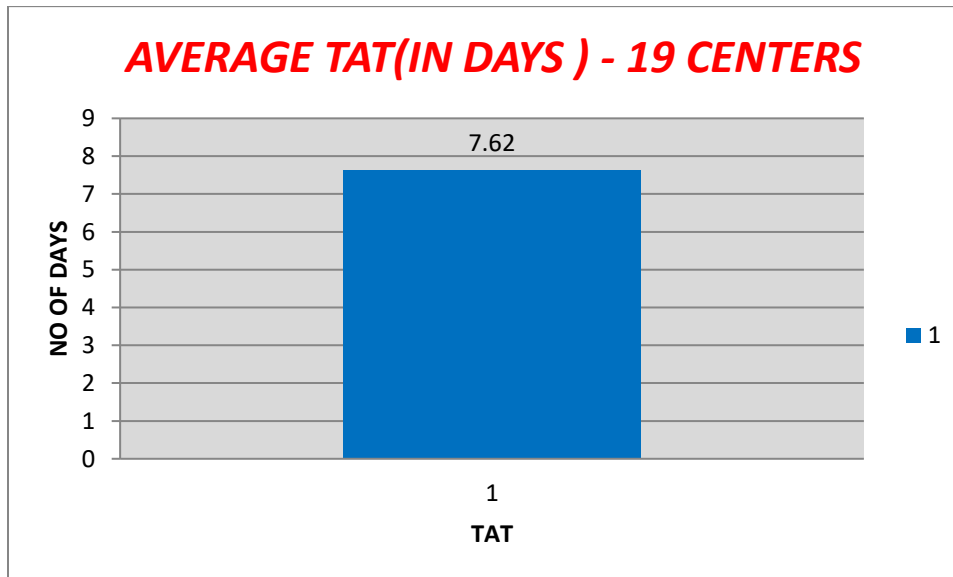


Fig 6: Average turnaround time of optical orders in all the 19 vision centers.

The above bar graph shows the average turnaround time of optical orders in all the 19 vision centers.

The average turnaround time for all the optical lens orders from 19 vision centers is around 7 and half days

10. Center wise TAT

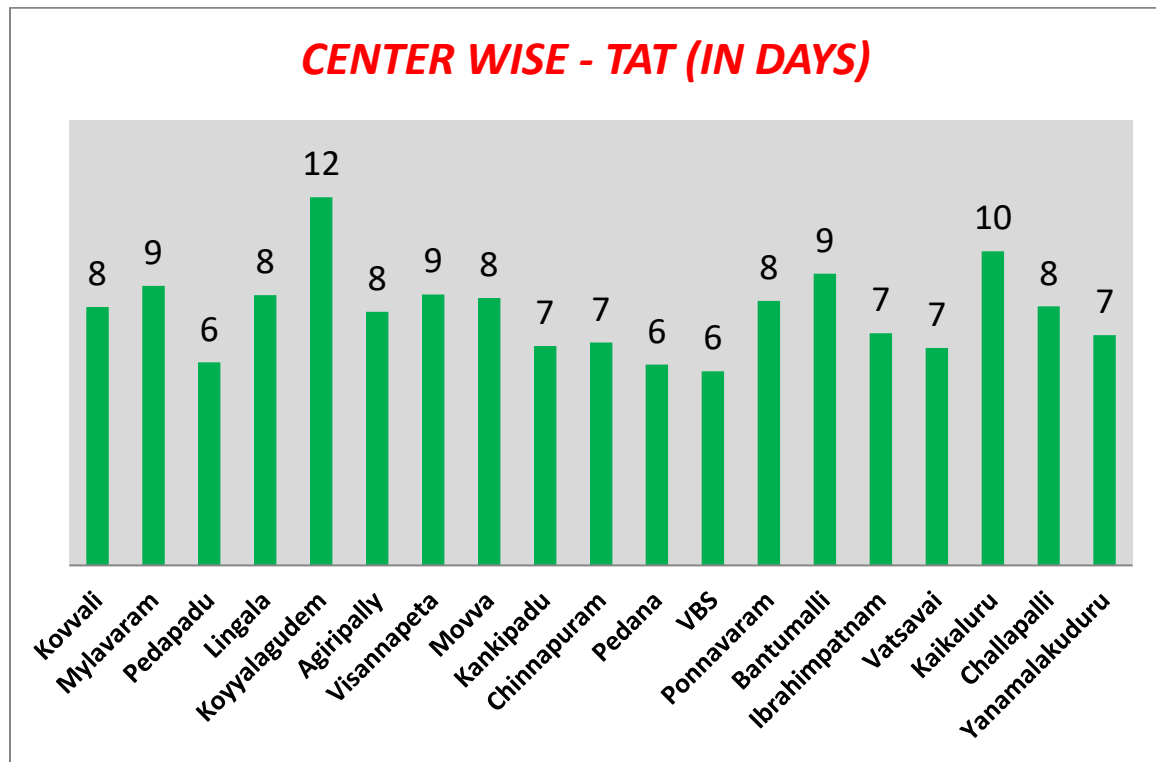


Fig7: center wise turnaround time of 19 vision centers.

The above graph shows the center wise turnaround time of 19 vision centers.

The highest turnaround time is observed in koyyalagudem vision center which is 12 days and the lowest turnaround time observed is 6 days. (Pedapadu, pedana and VBS vision centers)

11. Distance from tertiary center and TAT

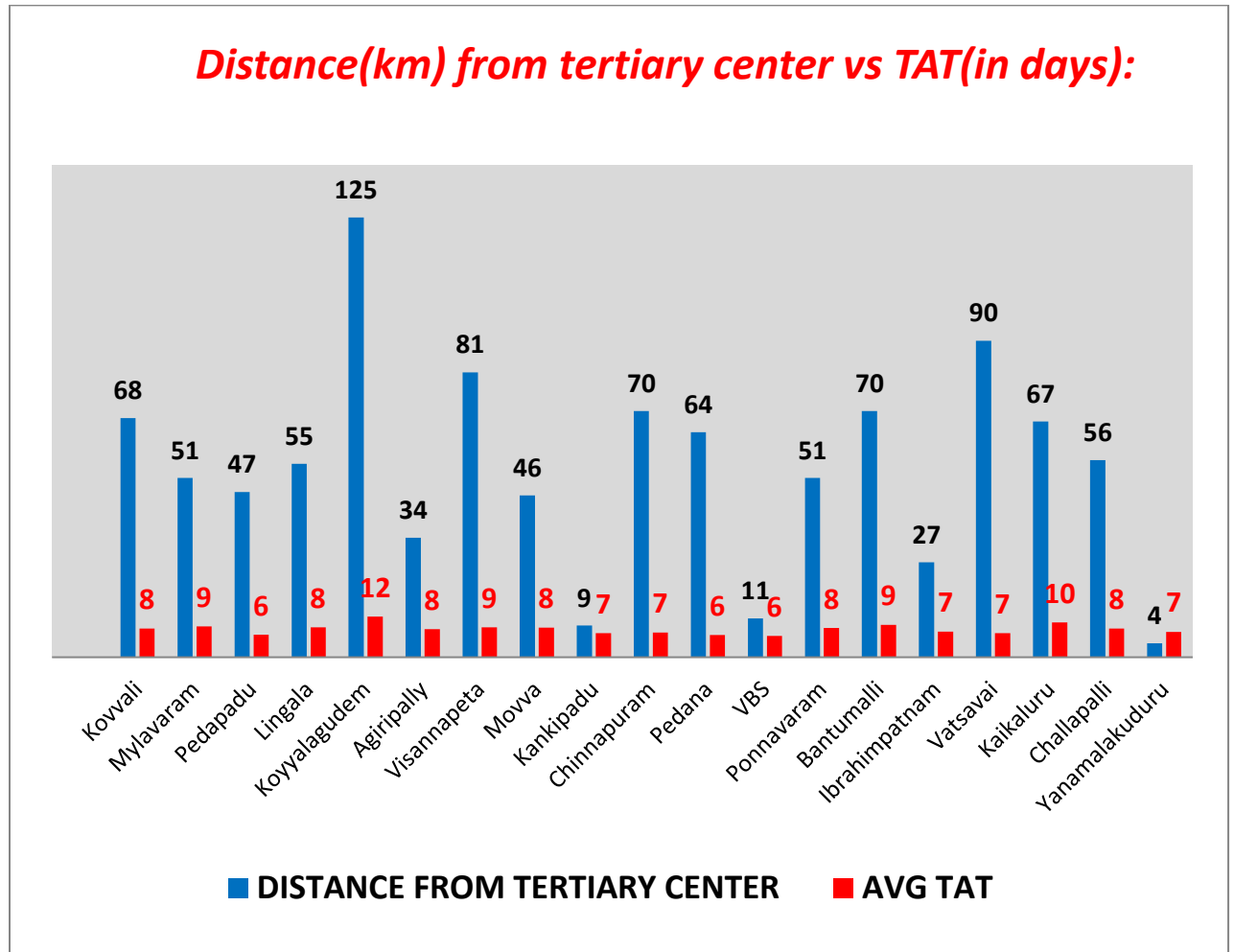


Fig8: Average turnaround time in each vision center along with the distance of vision center from the tertiary center.

The above graphs shows the average turnaround time in each vision center along with the distance of vision center from the tertiary center.

13. TAT – categorization

TAT	Frequency	percentage
0days	180	12
1-5days	342	23
6-10 days	781	52
11-15 days	163	11
>15days	36	2

Table 5: TAT categorization

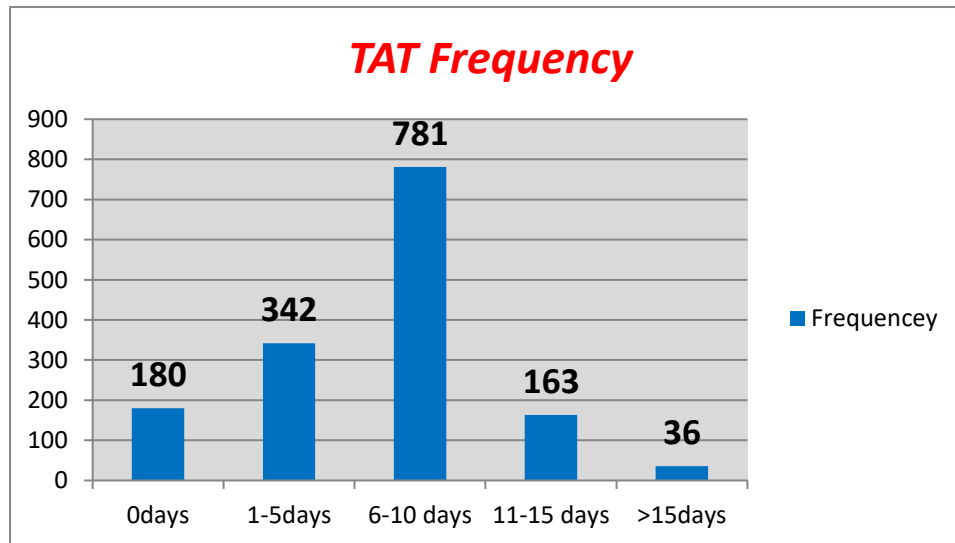


Fig9: showing TAT frequency (in number)

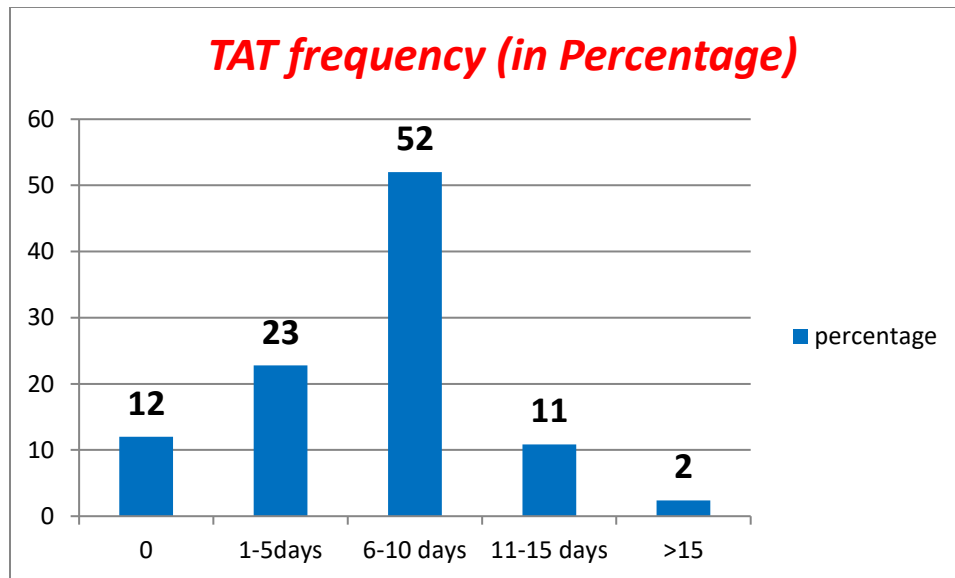


Fig10: TAT frequency in percentage

The above two bar graph shows the range of TAT of vision centers and their categorization.

Out of 1501 optical orders booked at vision center, majority of the orders 52 percent(781 orders) are received within 6 to 10 days , 23 percent (342 orders) are received within 1-5 days , 12 percent (180 orders) are received on the same day (sunglasses, only frames and reading glasses) , 11 percent (163 orders) are received within 11- 15 days and around 2 percent (36 orders)are received after 15 days .

14. TAT month wise pattern:

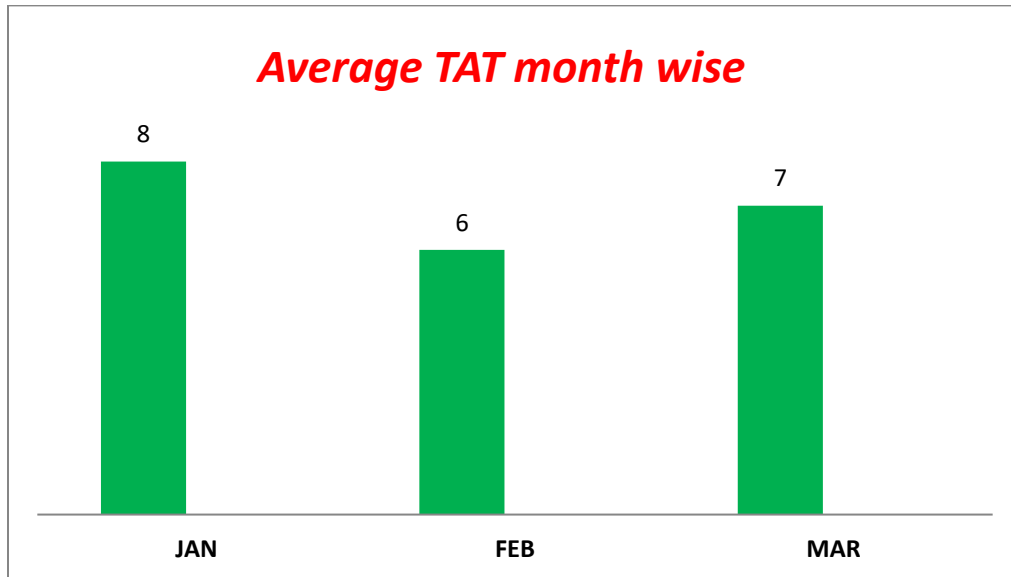


Fig 11: Month wise TAT pattern

The above graph shows the month wise TAT of optical orders in vision centers.

Chapter 6

Discussion:

From the data collected it is clear that majority of the orders are lens (1324 in number) and the rest constitute the Sunglasses, Reading glasses and only frames. The data also revealed that the sales of sunglasses, reading glasses and only frames are zero in few vision centers. The sunglasses, reading glasses and only frames are readily available at the vision center and delivered to the patient on the same day. Thus the optical orders which include lens (i.e glasses) are considered important for the calculation of the turnaround time for optical orders at vision center.

The average turnaround time for all the optical lens orders from 19 vision centers is around 7 and half days which is comparatively higher than the other profit making optical shops which might make patient prefer to buy from other optical.

Out of 1501 optical orders booked at vision center, majority of the orders 52 percent(781 orders) are received within 6 to 10 days , 23 percent (342 orders) are received within 1-5 days , 12 percent (180 orders) are received on the same day (sunglasses, only frames and reading glasses) , 11 percent (163 orders) are received within 11- 15 days and around 2 percent (36 orders)are received after 15 days .

This clearly implies that only 23 percent of the orders are received within 5 days. The longer turnaround time makes the vision technician job more difficult in managing patients. Around 13 percent of the orders are received after 10 days which is very high and may lead to patient dissatisfaction.

Chapter 7

Limitation: As the study was conducted in vision centers, optical department was not included which would have provided the reasons for late delivery of optical from tertiary center to vision center.

Chapter 8

Conclusion

The turnaround time of optical delivery in rural vision center plays a crucial role in patient satisfaction with the services of the vision center. Timely delivery of spectacles to the patient helps in improving the performance of the vision center .As the vision centers are located in different directions and at different distances from the tertiary center the optical turnaround time helps to focus vision center wise and improve the turnaround time. This study helps to identify the time taken for receiving the optical ordered at vision center and helps the administrators to understand the situation and plan accordingly to improve the services of vision centers.

Chapter 9

Suggestions:

- The optical department should be made aware regarding this issue and explain them about the turnaround time of each vision center and its impact on patients and functioning of vision center.
- Based on the finding, more focus should be made on vision centers having higher turnaround time.

- Based on the type of order, reasons for fewer sales of sunglasses, only frames and reading glasses in vision centers should be known and the stock should be mobilized if required.
- The schedules of delivery boy and performance should be assessed with supporting data.
- Utilize the data in optical registers present at secondary centers at what date they are receiving the telephonic orders and physical orders and see if there is any significant gap.

Chapter 10

1) Study Tool:

S No	MR No	Vision center location	Distance from tertiary center	Order booking date at VC	order type	Order received date at VC	TAT (Days)
1							
2							
3							
4							
5							
6							
7							

Fig12: study tool used

2) Vision center optical flow chart :

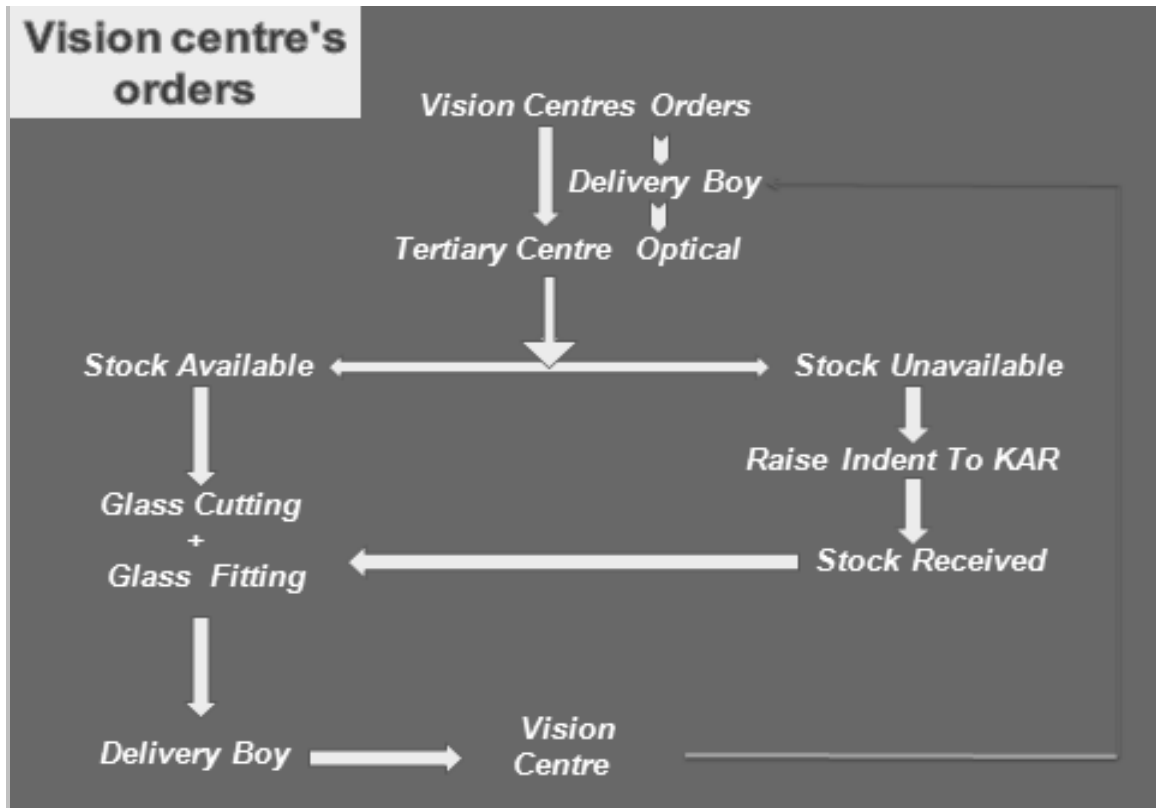


Fig13: optical flow chart in vision center

Chapter 11

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