



MARKET OF MARKETS AT RANGANATHAN STREET, CHENNAI, INDIA:

Assessing the livelihood, economy and Urban Planning of the Market

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Abstract:

Clustered Markets sprouting out of the pedestrian walkways is a very common sighting in populous developing Countries. With the pedestrian space being occupied for commercial operations, there is loss of pedestrian walkways which in turn forces pedestrians to walk on the road causing congestion on road. The Markets have evolved and established themselves so well that they have formed an inseparable section of the society. These street hawkers contribute to a notable portion of the economy occupying a relatively much smaller places compared to the Multi Storied retail outlets. Hence, they make very effective use of resources to create a huge informal market. In this paper, we will try to understand the functioning of the informal market taking a case of Ranganathan Street, a neighborhood in Chennai. We will analyze both quantitatively and qualitatively the livelihood, economy, planning and resource utilization in the market.

Introduction:

Chennai, a metropolitan area in the southern part of India is a home for diverse cultures. The Shopping spree at Chennai is nothing short to the SOHOs and Prague. Ranganathan Street, located in the Neighborhood of Thyagaraya Nagar in Chennai is named as the most crowded street in the world. (Huffington Post) The major attraction, which is also the major problem of the locality is the street Hawkers selling variety of products on the pedestrian walkways. In this paper,

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Ranganathan Street is located at a distance of 10 kilometers from the airport and 8 kilometers from the central train station, came into existence in 1925. Ranganathan Street was named after Mr. Tupil Rangaswamy Iyengar, a retired civil servant who settled in this place in early 1920's. (madrasi.info) This street has never fallen silent and when the electric rail services stop and consumers go to sleep, it is the time for trucks and Shop assistants to unload goods and setup the shop for the next day sale. (htt1). Ranganathan Street has always been a busy market in the region however the scale of Commerce and Trade has increased tremendously over the past few decades.

This street offers a wide array of items from safety pins to gold jewelry, Ranganathan Street is one of the busiest shopping areas in Chennai. It is estimated that the street alone generates a revenue of over a hundred thousand Official estimates annual revenue of over 1.5 Billion USD which is much higher than the similar likes of streets in Mumbai or Delhi. Ranganathan Street is full of popular, large retail outlets alongside small makeshift pavement stalls, selling everything from household goods to garments. At one end, lies Usman Road, one of the most expensive commercial stretches in the city, and at the other, Mambalam train station. In between, is a hue of brightly colored saris and dress materials on display and food stalls selling delectable fried roadside food, the street is a hue of smells and colors, sounds and voices. A movie has been based on this street. (Triphobo)

Ranganathan Street, Thyagaraya Nagar Perceived as a Smart City:

It is estimated that 1,717 acres of T-Nagar has been selected to be developed under the area-based development and make it a component of smart city, at as estimated cost of Rs. 1000 crore. But the question lies in whether the region is ready for the shift and what would be required to be done to ensure that basic needs of the region are being satisfied. When it comes to a India one of the major issue is the population and in Ranganathan Street, considered as the most populous street in the world, heavy pedestrian flow is one of the major concern for the congestion. Especially during the festive seasons and the holidays the region experiences heavy flow of traffic. One other concern is the sanitation issue where due to hawker shops in the region there is huge waste is dumped in the streets. So before actually converting T.Nagar to a smart city it is essential to provide basic infrastructure facilities to streamline the region such as providing a dedicated Multi Level Car Parking and proper water, transport, housing & solid waste facilities. It is very important to bring about new regulations governing the ideology of smart

neighborhood without affecting the livelihood of the street hawkers in the region who occupy a major part of the community. (Ghosh, 2016)



Figure 1 A View of Ranganathan Street in early 1960's (The Hindu)

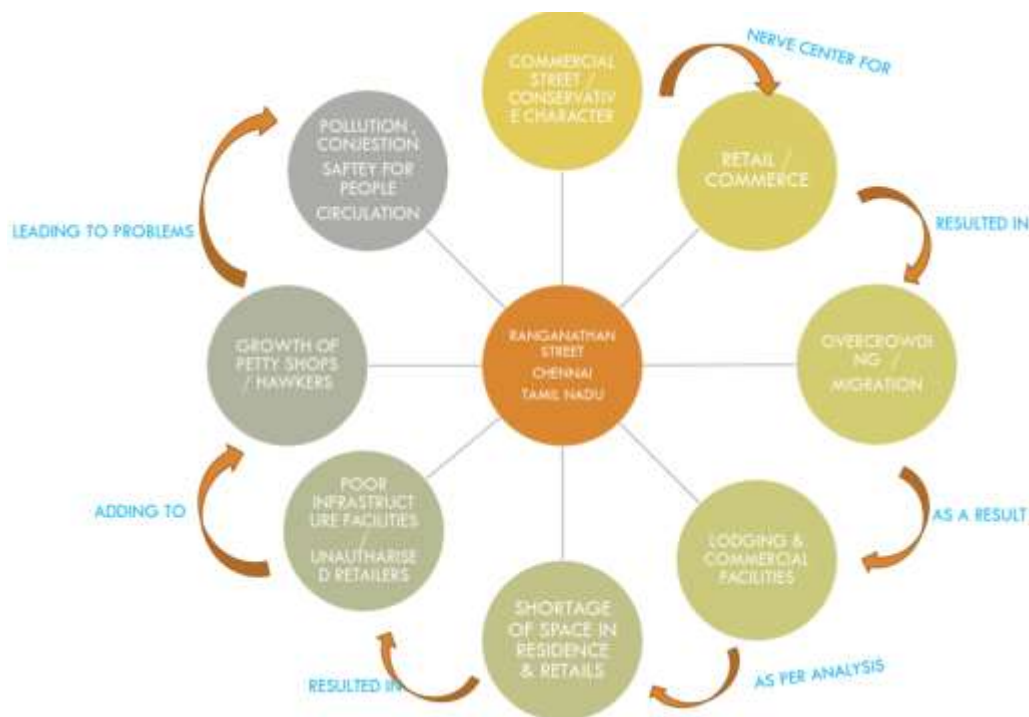


Figure 2 Analysis of the Street Vendor Market at Ranganathan Street

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Informal Markets:

Life Style of Pedestrians in Ranganathan Street:

The living conditions of the pedestrians is one factor that is never given importance by the government of India. The Street Vendors Act that assures protection of livelihood and regulation of Street Vending was passed by the Indian Legislature in 2014. But this has ever been put forth to realization and has not been able to regulate the working conditions and living standards of the street dwellers. To understand the livelihood and awareness of the Street dwellers in Chennai a survey was conducted. The following data was collected from a sample region in Chennai that has a similar Street vendor market to that of Ranganathan Street. For this survey data was collected from 63 Street vendors and the questions were based on their standard of life such as their age, sex, education, residence and area of work and the infrastructure facilities available and sought by them. Survey activity was also carried out to pedestrians to identify the factors causing congestion in the region and their viewpoints on livelihood of street vendors and their relationship with them were questioned.

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This data was then utilized to perform a quantitative study by classifying it into 5 Sub Categories that were used for the analysis for the data:

Legal Working Age Group:

Considering that there is a lot of child labor in the Indian Subcontinent, it was examined to see the ratio of people who are in the legal work age group of 18-60 years. It was found that over 95% of them were in the legal age group and most of them have remained in the informal market from the beginning of their career. It was also observed that the ratio of men to women was also equally distributed and most of the vendors have been established over a decade and it is a family trade.



Figure 3 Classification of Street Vendors based on Age Group

Commodity Types sold in the market:

A wide variety of products sold in the markets across the region ranging from eatables to fashion apparels. There is a market for all the goods sold here, if the vendor observes that the market is down, then he changes the commodity as there is not much of a capital investment for the commodity. Also, the sale in the region is seasonal, for instance there might be a higher number of flower shops during a festival and more number of eateries during a weekend.



Figure 4 Different Commodities Sold in Market

Literacy Rate and Educational Background:

Street vendors in the region have very good communication skills as they have to deal with red hot bargainers who eye to buy the commodities at the cheapest possible rates. Most of them can read and write in the local language Tamil. However, its observed that most of them have studied only till class 8.

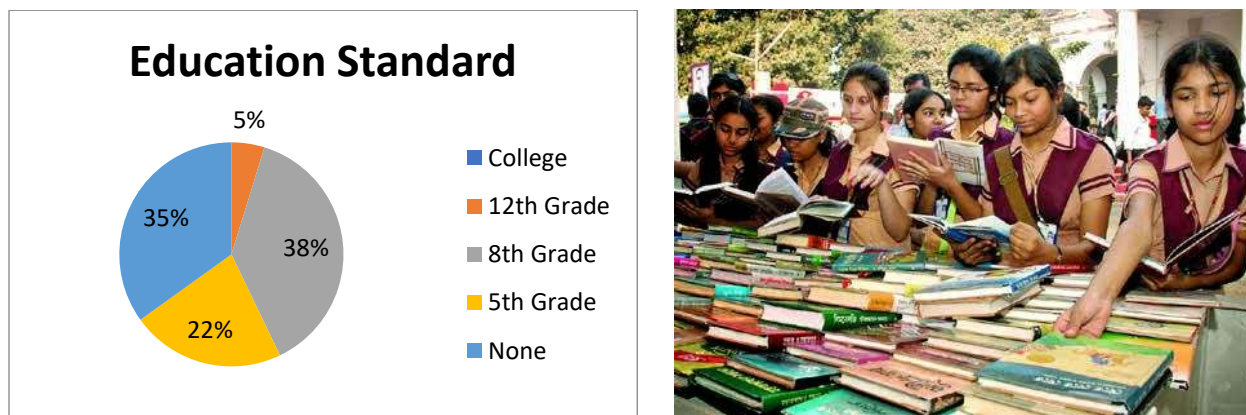


Figure 5 Literacy level in Ranganathan Street

Expectation of Basic Amenities:

The residents expect the basic amenities to be available at an accessible distance from them. Their needs were highlighted as below. One of the main requirements was the need for toilets and of clean drinking water.

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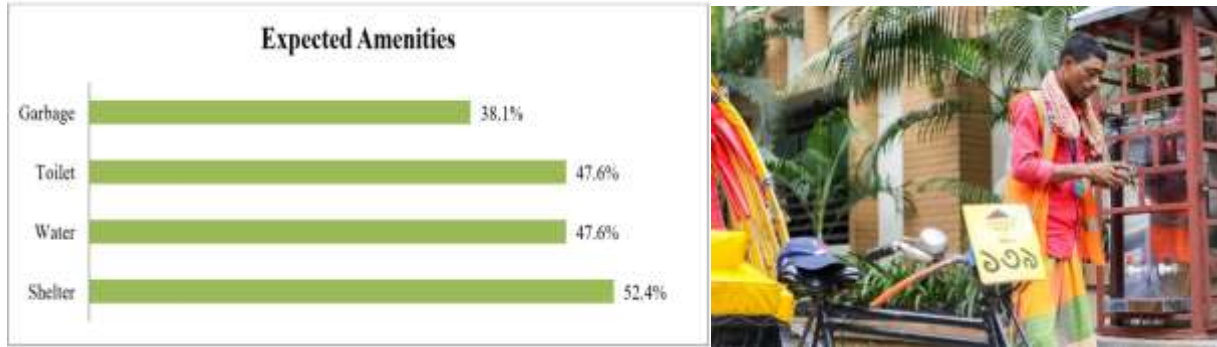
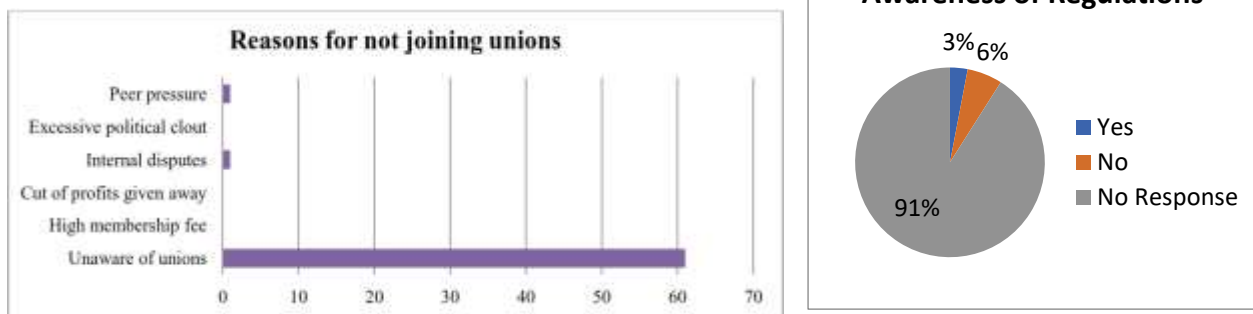


Figure 6 Plot showing Expectation of Amenities by Street Vendors

Knowledge about Regulatory Policy and Unions:

Majority of the sellers had no idea about the unions for street hawkers. They were also unaware about any regulations for the street hawkers in India. This shows that much of awareness about regulations need to be brought about.



Space Utilization:

Ranganathan Street is a very densely populated street and the land use has been maximized in the region by allocating very little space between shops and having the maximum utilization of Space per person.

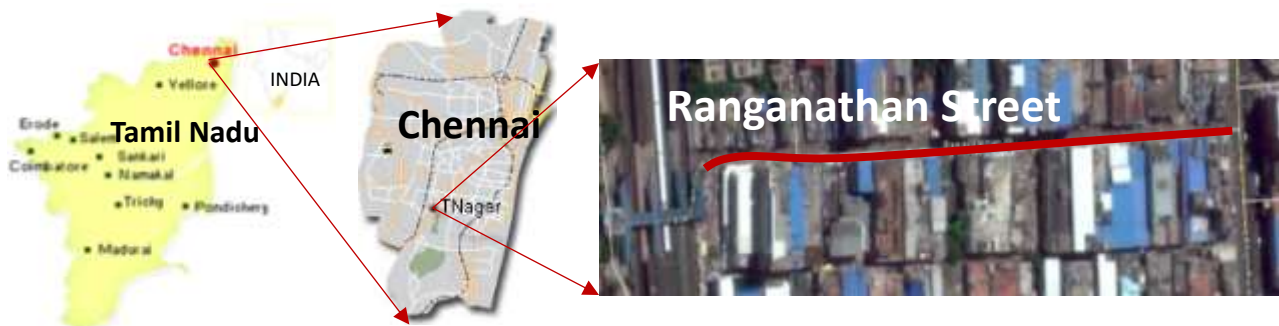


Figure 7 Location of Ranganathan Street

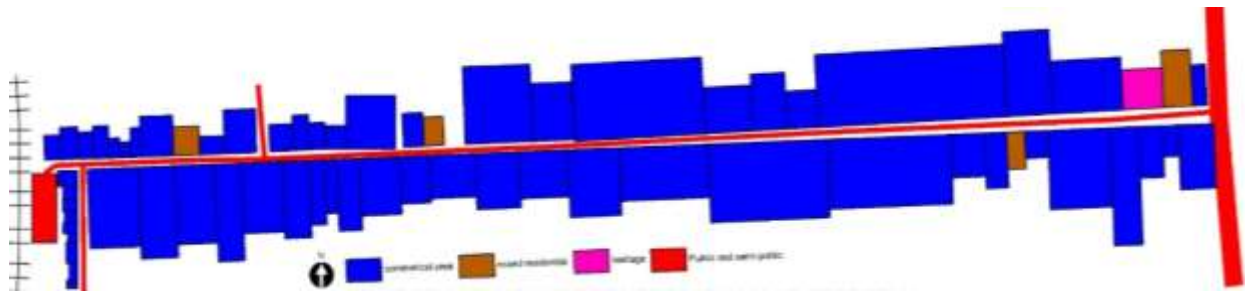
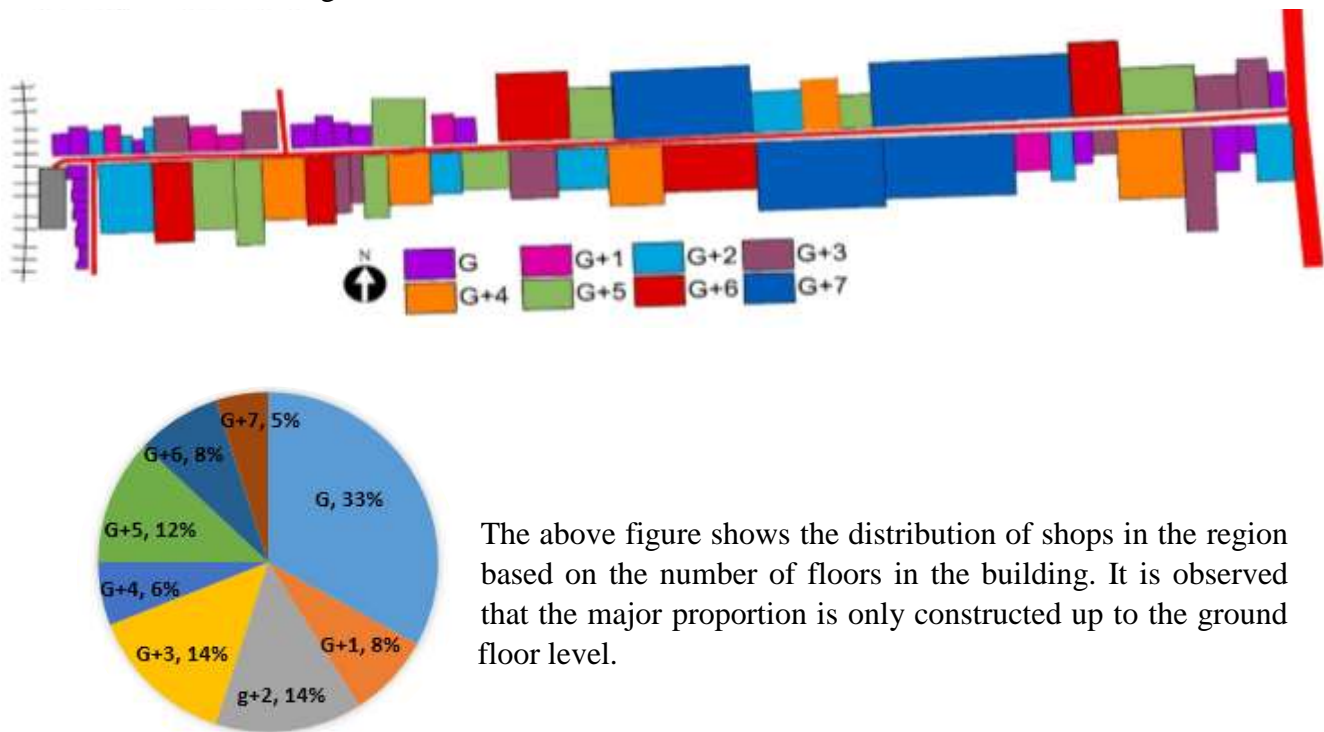


Figure 8 Building Distribution based on building type

The street is a commercial shopping hub with a lot of multi storied retail outlets. The street ranges over 0.3 Km (Google Earth) and the total area in the street is 30,204.75 Sq.m where the total built up area is 22,516.63 Sq.m.

In addition to this the street dwellers occupy the pedestrian walkways with small mobile shops that have their own segment of customers.



The above figure shows the distribution of shops in the region based on the number of floors in the building. It is observed that the major proportion is only constructed up to the ground floor level.

Figure 9 (i) Building Classification by Type, (ii) Building Type Distribution

Pedestrian Flow:

Cutler and Cutler in his book Recycling for cities classifies the crowd into 8 Sub categories. The same shall be applicable in the case of the ever-busy streets of Ranganathan Street.

- A- Typical pedestrian spacing (Desirable moving space 4'-6" long by 2'-2.5'wide)
- B- Waiting at curbs at an intersection

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- C- Gazing at the wares displayed by street vendors
- D- Listening to street musicians perform
- E- Personal Standard
- F- Personal (Close Phase)
- G- Dense Crowd - Average 6 - 8 sft./person (Crowded subway)
- H- Loose Crowd - Average 10 sft./person (Crowded sidewalk)

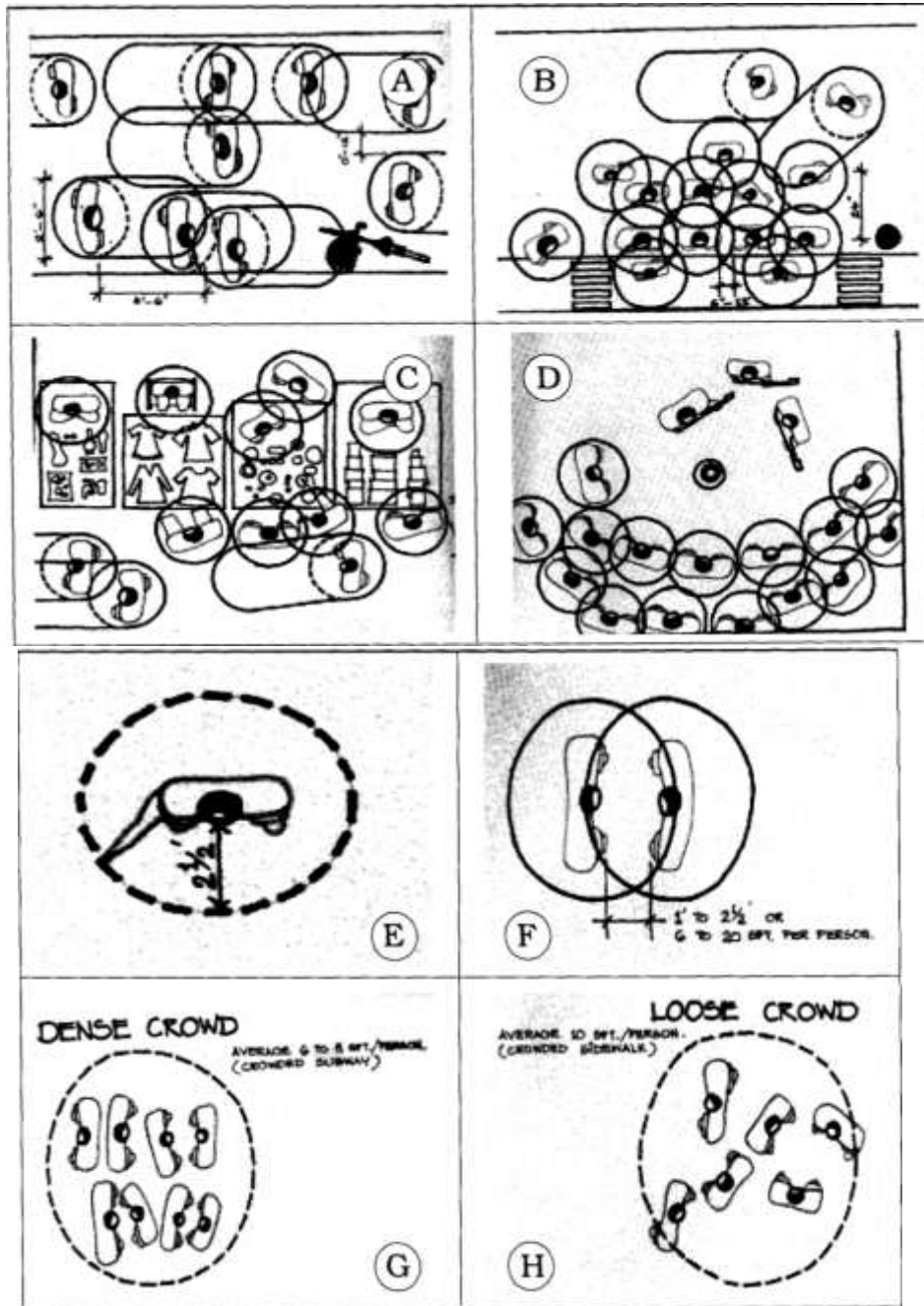


Figure 10 Types of Crowd (Src; Recycling cities for people, Cutler and Cutler (1982))

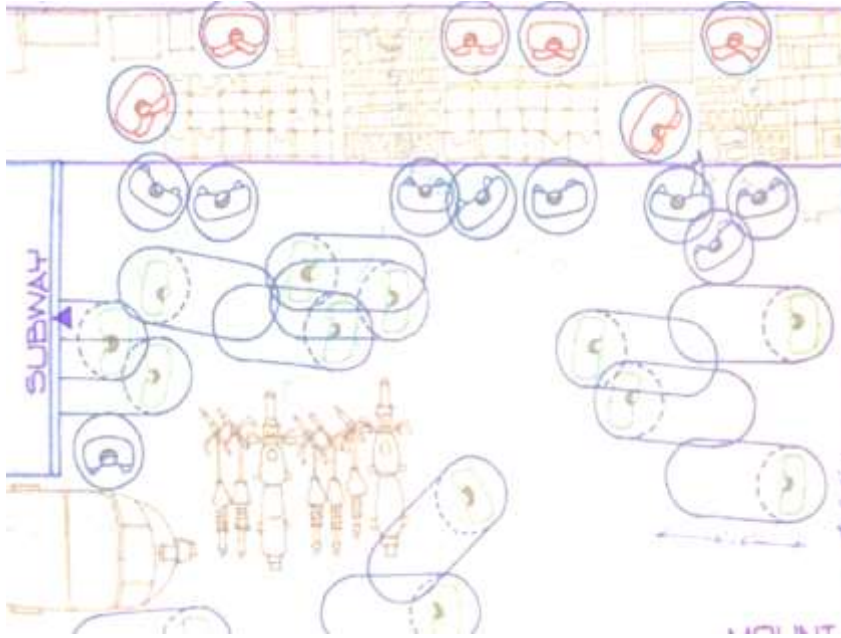


Figure 11 Pedestrian Flow at Ranganathan Street

The above drawing depicts the flow of pedestrian in Ranganathan Street. It can be observed that the streets are highly cramped and most of the pedestrian space is occupied by street hawkers and vehicles. This is a very common sighting in any developing country with informal markets as the regulations are not well framed to govern the informal markets. In this paper, we shall try to propose an alternative to the cramped market by striking a balance between the pedestrian flow and informal market.

Economy of Street Dwellers:

Over 10.6 Million street hawkers contribute towards the economy of India. They form a predominant part of the retail economy share in the market and an average metropolitan city in India like Chennai generates over Rs.1500 Crores (Equivalent to over \$200 Millions) turnover in a year. Also, the NSSO estimates that in an urban environment 0.89% of population constitute street vendors. (National Association of Street Vendors in India).

It is always misunderstood that the street vendors avoid costs of doing a business. In reality, they have to tackle a lot of unregulated issues such as paying rent to the landowner for placing shop on the platform or by paying bribe to police. It is observed that many of them who work here are self-employed and are not wage employees or employees who work on a commission basis. This informal sector provides employment to over 10 Million people, but the fact is that this also has many risks similar to that of formal sector. The Commercial risk factors include inflation, poor demand and supply and unregulated economic framework.

The Space utilization factor is one other important parameter to consider while studying the economy of Street Hawkers. Street Hawkers consume really a very small place to pursue their business, while considering the person to space ratio, street hawkers occupy very less space compared to 225 Sq. ft. of office Space per person at an average level. So, this means that in a

small place multiple businesses could be carried out generating revenue and feeding a greater population.

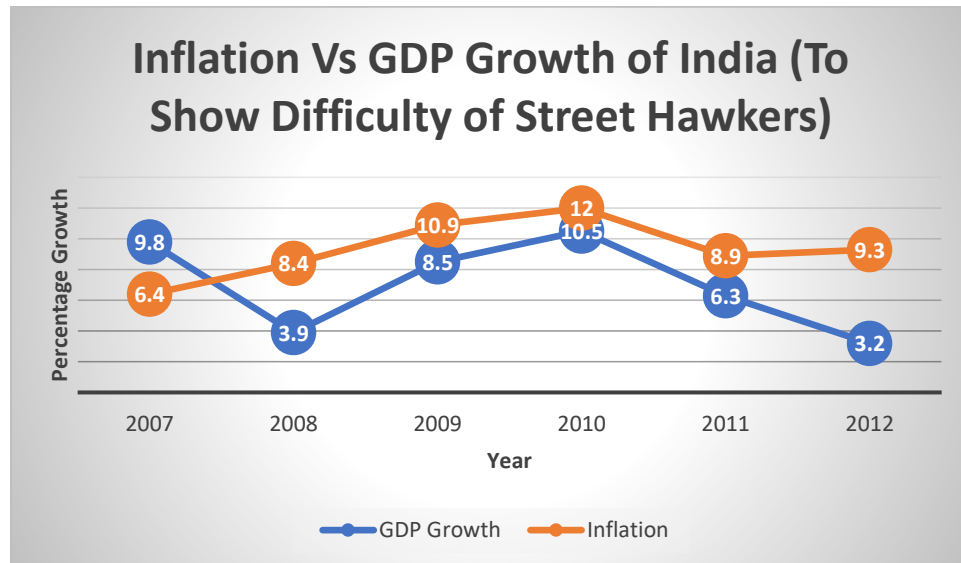


Figure 12 Inflation Vs GDP growth in India

It is to be noted that the inflation is one of the major factor that majorly affects the livelihood and economy of Street Hawkers. It can be observed from the above graph that the inflation rate has been above the GDP and this is when the business of Street hawkers become really difficult. This is because the increase in inflation directly hits the low and middle income group who are the main customers for the street hawkers. Also, the increase in prices of commodity makes it difficult for the street vendors as they have to invest more capital to procure the goods.

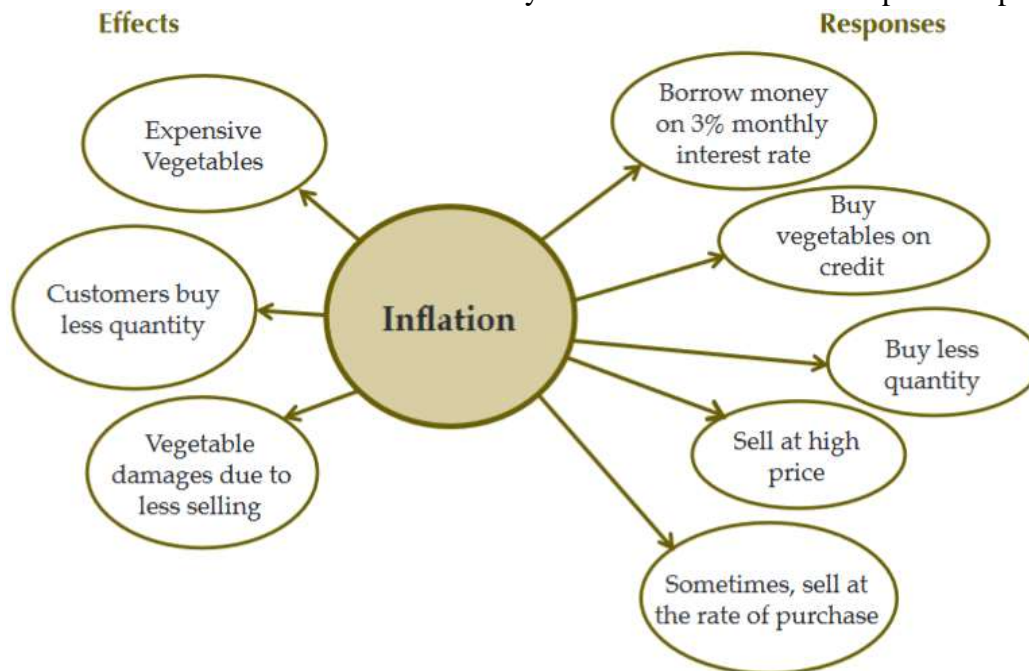


Figure 13 Effects and Responses of Inflation

The Informal market is able to provide goods at an affordable price because of the fact that they need not employ paid workforce and need not invest much on the infrastructure. But, due to very small and irregular quantity they procure from the supplier they do not have bargaining power to procure resources at a low price by the likes of big scale retailers like Walmart.

So, this is where I feel there could be a market considering the economic aspect where a Liasoning role could be played by a union or a Street Vendor Distributor where he procures the products from suppliers and distributes to the street vendors at a low price than the regular price they purchase. This role could also assure these informal markets could be insured and formalized at a boundary level. This would be a new B2B Concept which is currently not in existence.

Effect of Real Estate prices on Market:

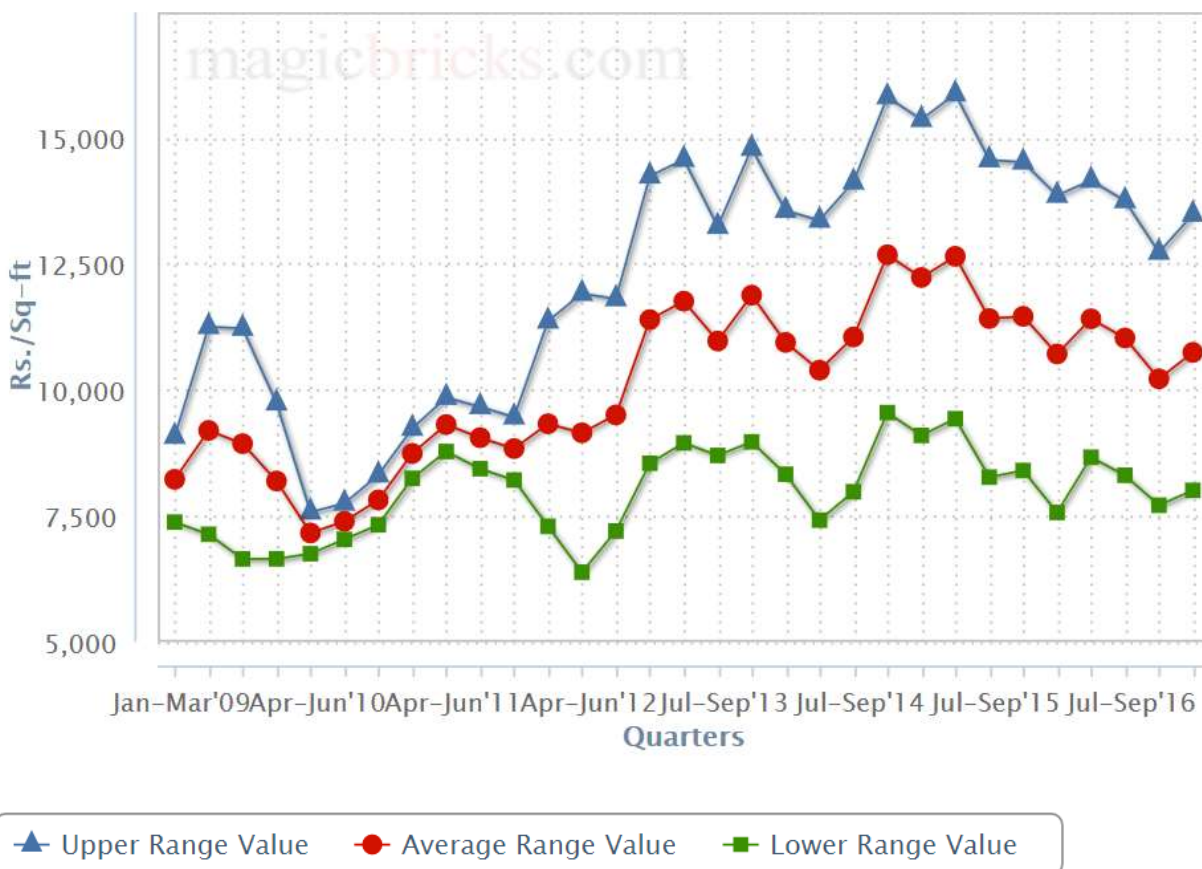


Figure 14 Trends of the Price of property in T. Nagar region (Src. Magicbricks.com)

It can be observed from the graph that the price of property in the region has been fluctuating but grown considerably over the past seven years. We could derive two contrasting conclusions on this trend in comparison to the street vendor market. On the negative side increasing real estate prices mean increasing rent in the area and this would induce increase in the commission or rent paid by street vendors (either to the landlord of the place in front of which the shop is located or

to the local authorities who informally collect money from vendors). The positive impact could be that because of the high rental prices the retail outlets may levy additional charge on the products they sell which can be leveraged by the street vendors.

Societal Issues:

Chennai Corporation states that Street vending not only plays a crucial role in the economy of the city but also helps in increasing the security in the region. But, the sad part is that the street vendors are not well protected and suffer humiliations from different sections of the society.

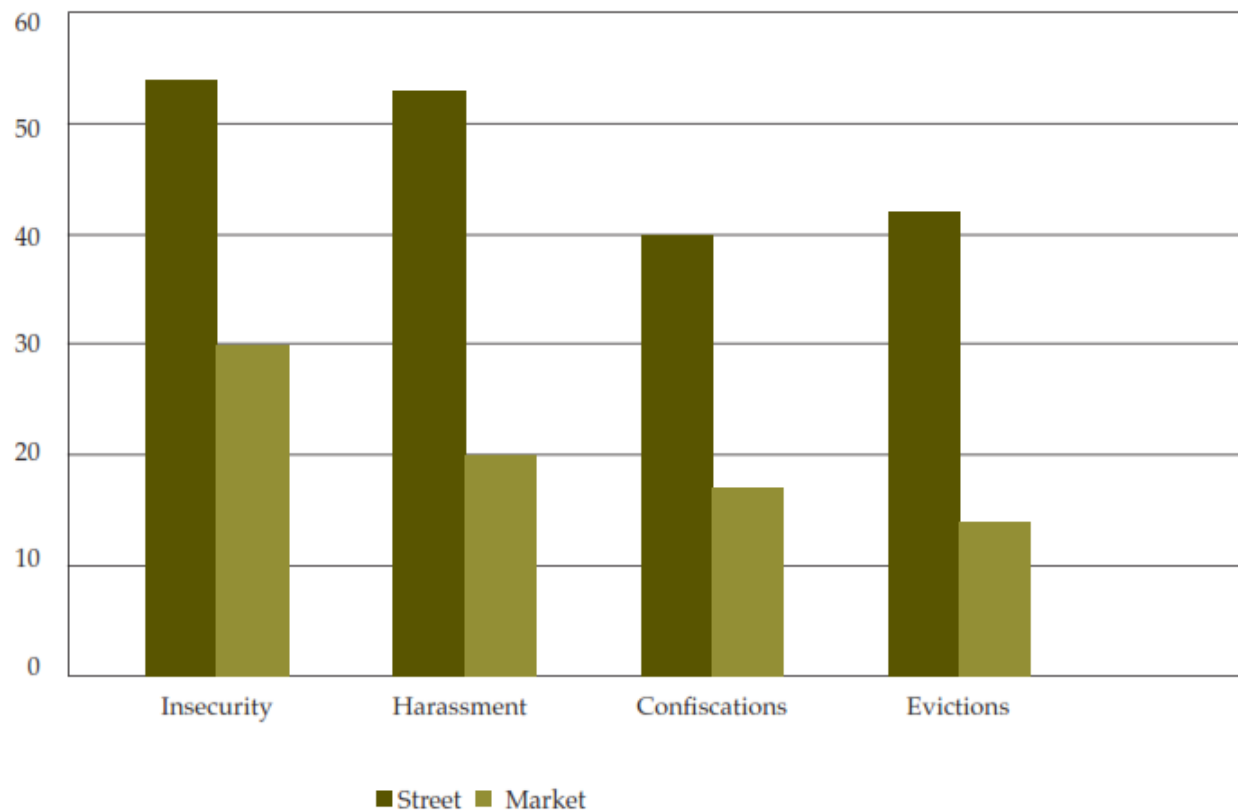


Figure 15 Comparison of Social issues in Street compared to Markets

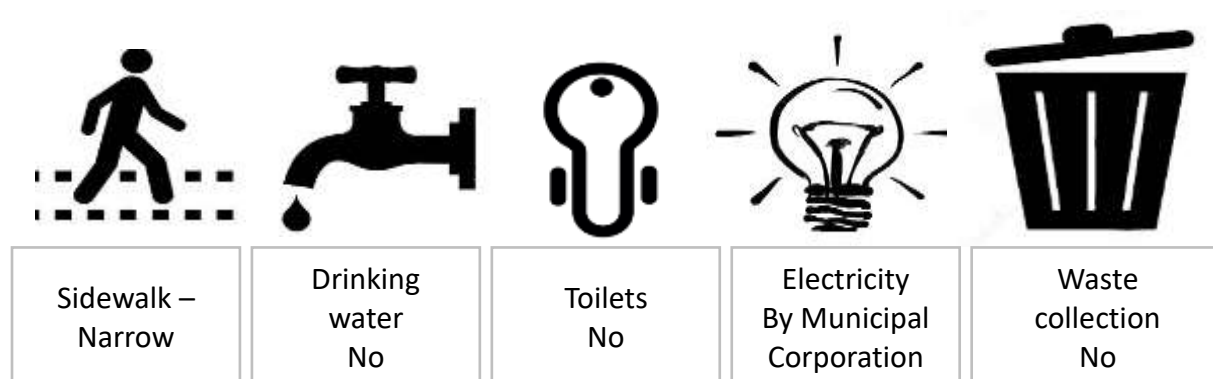
The workplace that Street vendors operate from, that is the streets is highly insecure as there is absolutely no protection of goods. Most of the times the shops are just covered up with plastic sheets and the street vendors sleep alongside the shops. The street vendors face severe harassment in different forms. Most of them complain of bribe they pay to the police and highly insecure work environment. (Roever, April 2014)



Figure 16 Societal Issues of Street Vendors

Since they do not have any legal documents to support their claim of land they are forced eviction and they have to immediately vacate their premises of work. The government has never been just to street vendors and most of the times there have been sudden demolition of shops causing highly unstable and insecure living conditions to the street vendors.

Illegal activities are carried out in the region where street vending takes place. Since there is huge flow of people in the region it is easily susceptible to illegal trade of drugs and other commodities. Especially during the night time when the activity reduces in the region the place turns into a dark market where several forms of illegal activities take place. Police have taken several measures to control such activity, however the level of activities have not come down in the region.



Lack of Shelter have been one other major issue for the street vendors. In the recent flood that hit the Chennai in 2015 December, majority of the shops and commodities that were stocked up

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were all damaged and the street vendors were all hit by major loss. Most of the street hawkers live in the slums nearby and have very poor infrastructure facilities. The place where they have their shops have bad roads, lack of toilets, water, electricity and waste removal.



Figure 17 Street Hawkers Protesting against Eviction

Connectivity & Usage of Infrastructure:

Ranganathan Street is a well-connected sector in the city, this being the reason for large crowd flow from all segments of the society. Below is the map showing the position of the street very close to major bus terminus and railway stations. It was not planned to have a street for informal market, in fact this is an example of how a market could evolve adapting to the needs of the society. It is well connected to the Mambalam railway station that connects the central railway station of the city which helps in the flow of goods from different regions across the country. It is also connected in the south to Guindy which is the southern hub of city where there is a major bus terminus that connects to the southern parts of the state. The Bus terminus at T. Nagar very close to Ranganathan Street is well connected to Coymbedu, the state's biggest wholesale vegetable, fruit and flower market. Hence, this well-connected neighborhood is easily accessible by consumers and is also easy for the vendors to transport the goods from wholesale market to their shops.



Figure 18 Connectivity to the nearest Transportation Hub

As per the plan laid out by the city corporation, Ranganathan street should be 30.6 ft. wide. However, due to the encroachments of the Multi Storied buildings, street vending shops and parking in the road space the actual road width is reduced drastically. This has forced the corporation to restrict vehicle movement in the streets during peak hours.

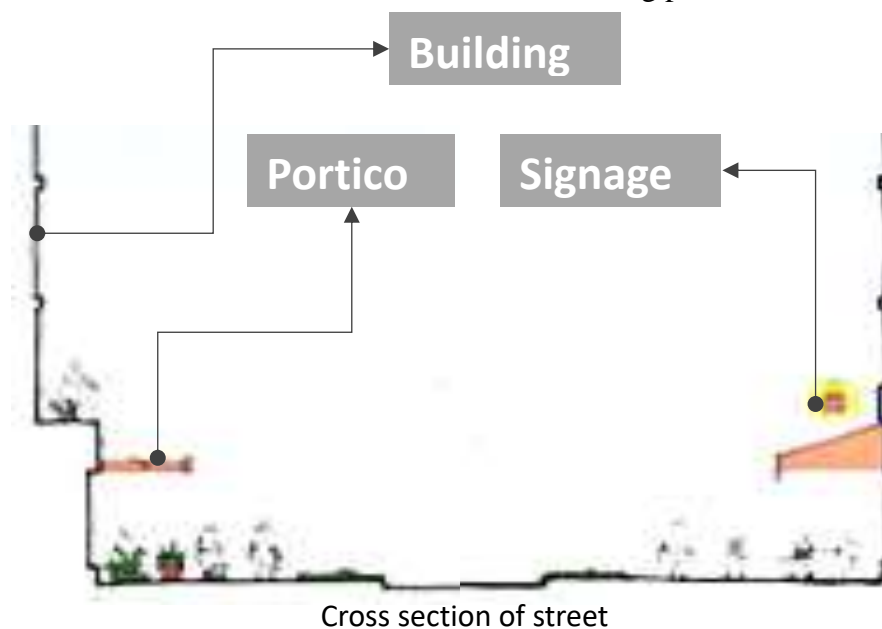


Figure 19 How Encroachments Occupy the streets

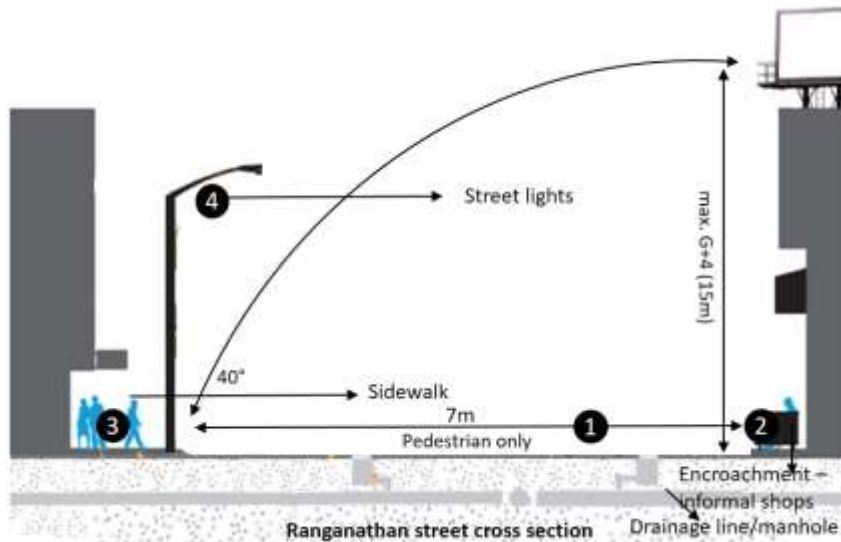


Figure 20 Cross Sectional View of Ranganathan Street

The approach road to Ranganathan street is through Usman road that is laid out quite well planned. So, when the traffic tries to enter to the Ranganathan street there is a heavy jam in the region as the road size contracts and the flow restricts.

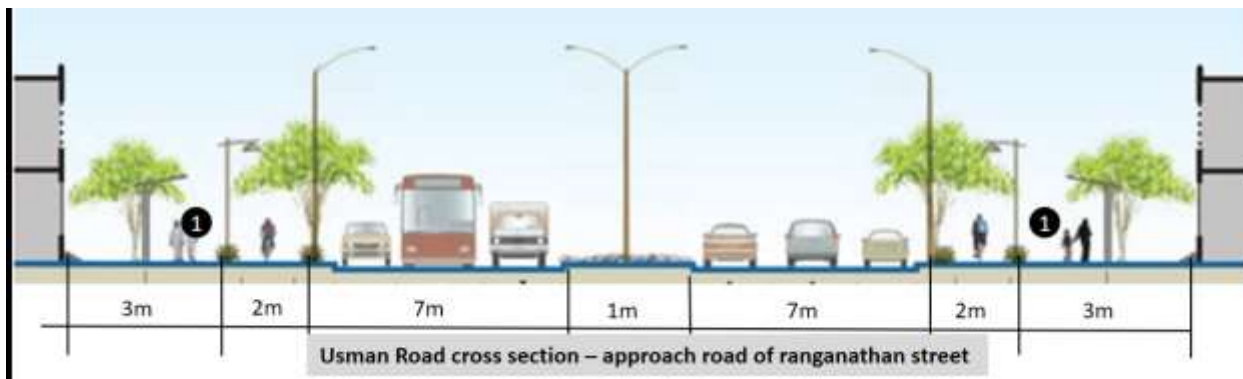


Figure 21 Cross Section of Usman Road.



Figure 22 Shops on Roads and Pedestrian Walkways

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Ranganathan Street is busy at most times of the day. It is during the festive seasons and holidays that the region is densely populated and there is very little space to move around. The Peak timings of the street varies, But the peak timings vary during the day:



Morning peak = 10.30 to 12 pm



Afternoon Peak =
2 to 4 pm



Evening peak = 6 to 8.30 pm

The Street is filled with shops on the either sides of the road. At a few locations, there are even two rows of shops where one seller sets up his stall on the pedestrian platform and another seller uses the road to sell his products. Generally, in this type of arrangement pedestrian could walk on one side of the pavement and purchase items from the shop on top which is mostly a fancy apparel shop and the pedestrians could walk on the roads to stop and purchase items on road shop, which in most cases would be a flower shop where the seller would sit on the road and sell the commodity. (The Institute for Transportation and Development Policy (ITDP) , 2011)



Figure 23 Restricted road usage at Ranganathan Street

Parking is one other major issue that has to be tackled at Ranganathan Street. In India, the middle and lower income groups mostly drive a two-wheeler, and when they go for shopping on the streets they mostly try to park the vehicles close to the shop and eventually end up parking the vehicles on the roads occupying a major portion of the road for parking. It is also a common sighting where people remain in the cars or leave the cars on to purchase items from the street vendor causing a traffic jam in the region.

Design:

The street design in the Ranganathan street has adapted itself well to the surrounding environment and has created its own style of market operation. The Space constraint in the region has helped evolve different store settings and the design of the shops have varied based on mobility, size, shape and area. There are shops as small as 10 Sq.ft which caters to a reasonably large crowd. The majority of the shops in the region. It is also to be observed that the sellers have started using the two wheelers as a medium to display and sell goods. One other innovative idea is where a street vendor sells bangles hung on a stick. This stick serves as a small mobile store for him, so if he is forced to move, he would move out of the location and place the store at another location. This is an example of how mobile and small a shop could be.



Figure 24 A view of different shop settings in the region

There is a very effective utilization of space as we have seen in the above case. Typically, the region is so densely positioned that the average crowd density is around 8 persons per Sq.m.

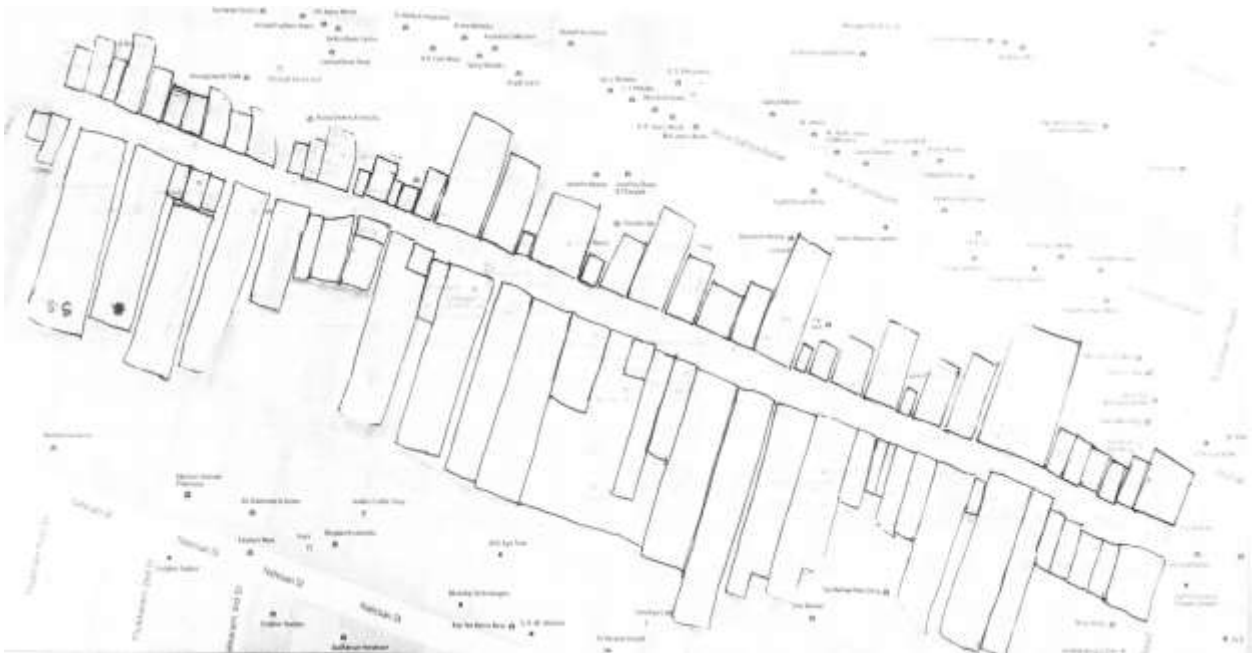


Figure 25 A Sketch showing the Buildings in Ranganathan Street

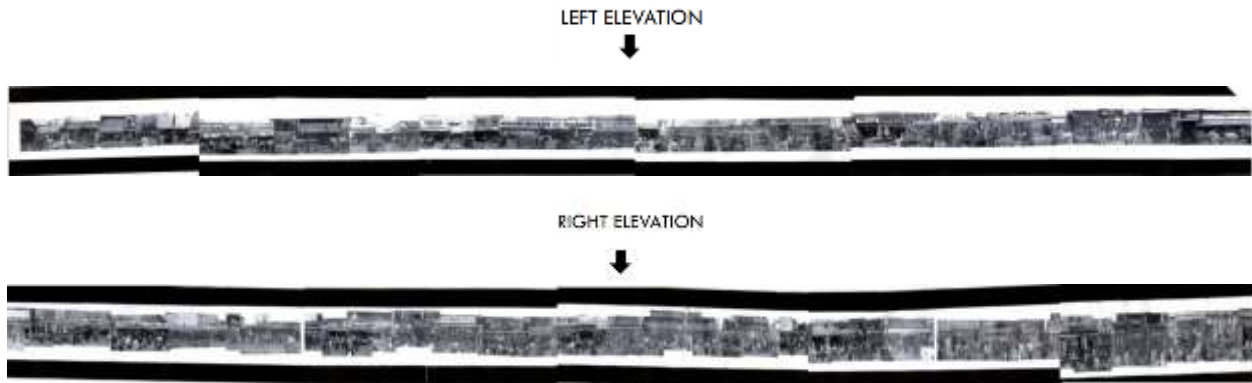


Figure 26 Elevation Views of the Street showing the Shops in street

Ranganathan street is a mixed market where the shops of different profile are distributed in a heterogeneous manner. The setting has evolved over a period of time and this distribution looks to be a change that was brought about based on the needs of the customers.

For instance, it can be observed how the restaurants are distributed at the ends of the street and in the center so that customers could finish off their shopping and have a lunch or a dinner immediately after shopping.



Figure 27 Mix of Shops in Ranganathan Street based on Service type

Proposed Innovation & Design:

To expand the size of the road at Ranganathan street is highly difficult as there are shops on both the sides of the road. Hence the viable solutions would be to construct a complex that houses all the shops in street in a building, but past experiences on converting the street vendors to complex have not paid off well the street vendors return to the streets to sell the commodities. So, the alternative solution that I propose herewith is to organize the placement of the shops in the pedestrian walkways, terming it as service areas of pedestrian walkways and connect the multi-storied buildings by skywalks so that the crowd in the street could be reduced.

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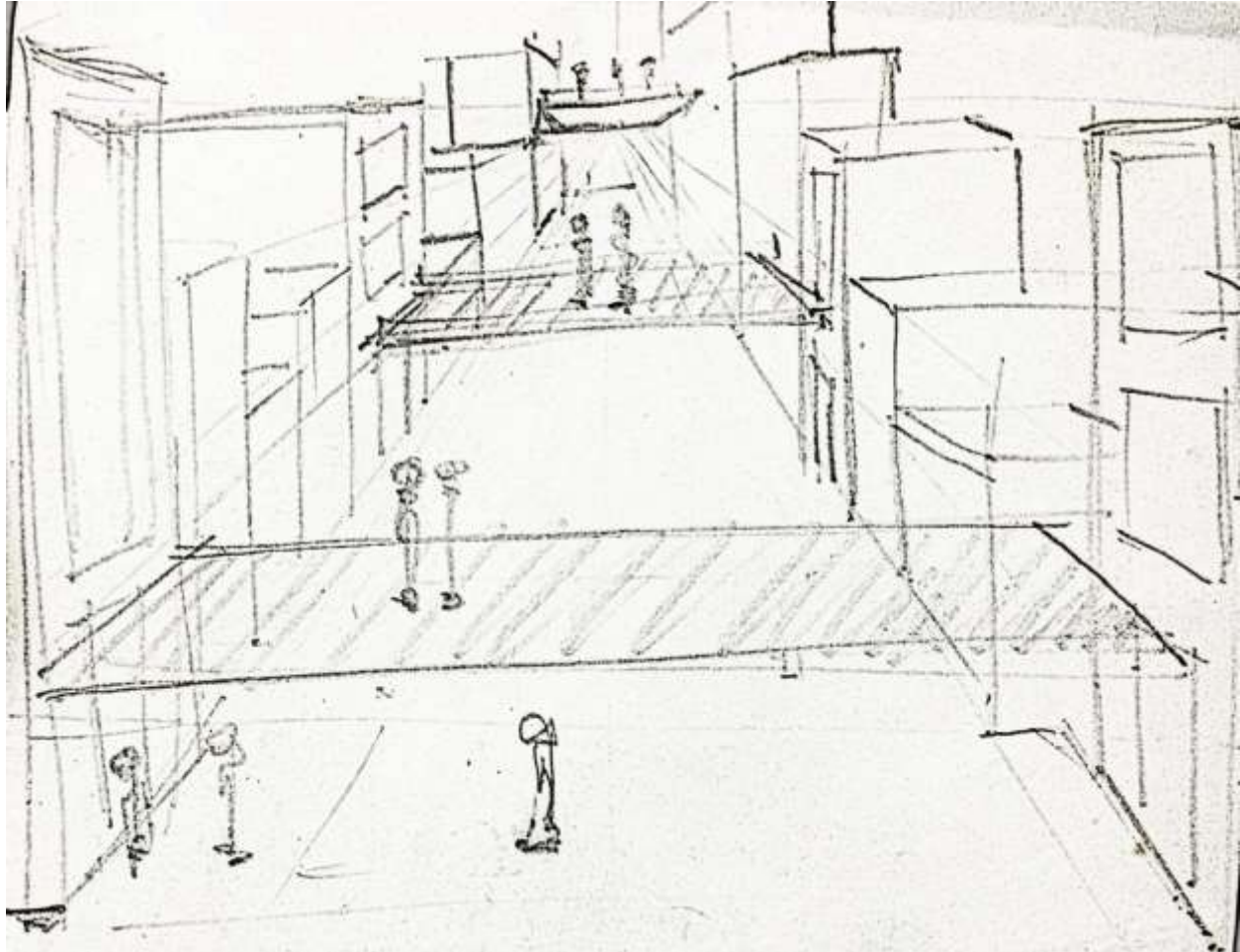


Figure 28 Cross Walks for Multi-Storied Buildings in Ranganathan Street

A design solution for spacing of markets would be to space well between the shops and to locate them alternatively so that they could provide sufficient space for the pedestrians to move between the shops. An ideal spacing between the shops would be a minimum of 2m Spacing between the shops and segregating the shops into clusters and spacing clusters at a distance of 15m from each other.

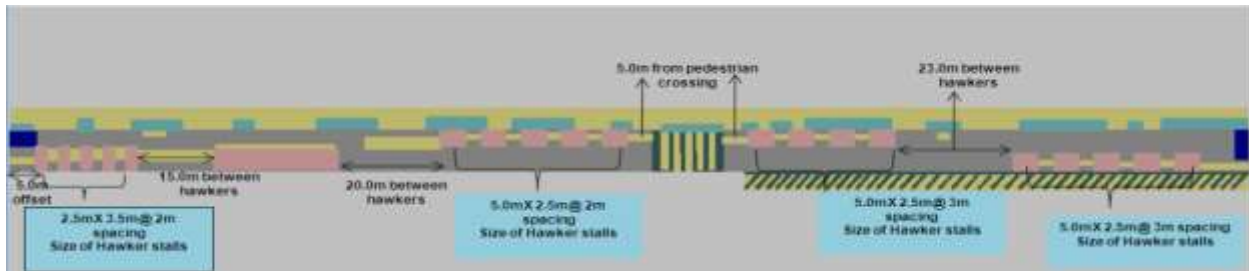


Figure 29 Plan Showing placements of Shops on one side of the street

The other big concern is the parking availability. It is suggested that Multi-Storied parking stations be constructed which would be a very efficient way to save space. In an attempt to do so, a new Multi-Storied fully automatic car parking system, first in South India has been launched last year that has been a success in the region. So, it would be a feasible move to install a few more near the Ranganathan street region which would reduce the congestion in the street and provide parking spaces to the people who come in to shop in the streets.



Figure 30 Newly opened Multi-Storied car parking at T. Nagar

One other solution could be to distribute the market and to spread out the market to the nearby locations wherein the crowd can be distributed and the congestion in the region can be reduced. Another alternative could be to setup seasonal markets. The statistics show that the crowd inflow in the streets of T. Nagar is the maximum during the festive seasons. So, it would be a nice idea to create a seasonal festival market with the engagement of community where the streets nearby are engaged in the activity and the street vendors sell their products at an even set up.

The major cause of Congestion in the Ranganathan street is the traffic converging from different regions into a very narrow street. This could be evaded by trying out the below alternatives. This might be an alternative to convert the whole region to a pedestrian only region thereby increasing the space for street vendors to sell and establish their market.

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Alternative-1:

There is a very heavy movement of pedestrian between corridors 4000 and 6000. Also, the high number of pedestrians crossing the road at Ranganathan Street & Duraisamy Road Jn. to reach the bus stand causes sever congestion. So it is proposed to convert the zone to a pedestrian zone and facilitate Pedestrian Subway across Madley road and Duraisamy road.

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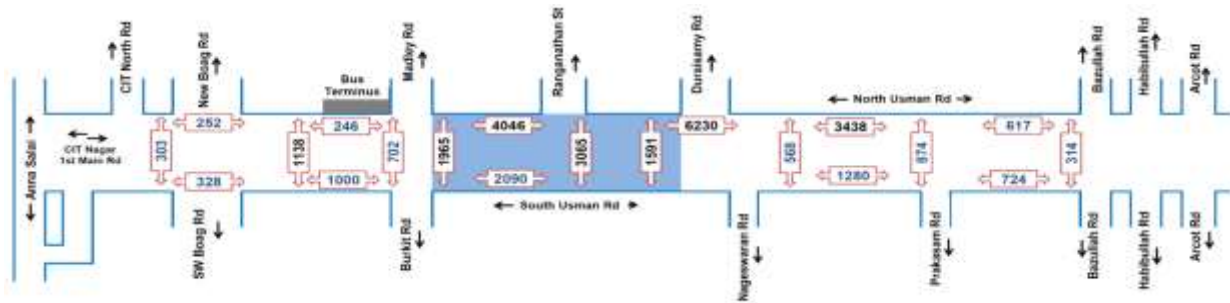


Figure 31 Conversion of Highlighted Region to a Pedestrian-Only Zone

Alternative-2:



Figure 32 Extension of Usman Road Flyover Covering Burkit Road Junction

This alternative proposes extension of Usman Road Flyover to Cover the Burkit road junction. This would reduce the congestion at the region where the traffic merges at Ranganathan Street and the Bus Terminus. This would facilitate flow of over four thousand pedestrians during the peak hours between the Railway Station and Bus-Stand.

This construction would reduce the flow of traffic in the region by over fifty percent.

Item	Details
Length & Width	1.5 km & 10m
Total Project Cost	INR 260 Crores
EIRR (base case)	19%

Alternative-3:



This alternative proposes Elevated continuous 2 Lane Corridor of 10m carriageway between Boag Road junction and beyond Bazullah Road. This extension of Usman Road Flyover on both approaches with 5.5m clearance would be very helpful to create hassle free shopping environment at Ranganathan Street. This would also reduce the congestion at the region where the traffic merges at Ranganathan Street and the Bus Terminus. This would facilitate flow of over four thousand pedestrians during the peak hours between the Railway Station and Bus-Stand. (CDM Smith)

Item	Details
Length & Width	2.2 km & 10m
Total Project Cost	INR 384 Crores
EIRR (base case)	12%

Figure 33 Elevated continuous 2 Lane Corridor between Boag Road junction and Bazullah Road

Conclusion

It is clearly evident from the study that the living conditions of the street vendors are much lower than the average standards of the city and the street vendors expect the government to something about this. It is the duty of the government to support the market and the vendors and regulate the service of street vendors. Considering the space, they occupy and the economic backing they provide to the country's economy it is important to support the vendors financially to setup the market. Street vendors provide service to a particular section of the society that is not addressed by any other level of retailing and are able to provide the same quality of goods at a lower price.

Street vending also reduces the unemployment as the vendors turn into entrepreneurs with a low capital investment and with very low dependability on external jobs. Ranganathan street is a

well-connected neighborhood and to address the issue of congestion in the region it would be best suited to try out the strategies suggested in this paper based on a feasibility study.

Several design strategies have been discussed in this paper that could be implemented at Ranganathan street. However, organic growth of the markets is the best way to allow a market to expand. Even though we try and regulate the structuring and regulatory policies, the market expands based on the needs and the spatial expansion of the market is not as always as predicted by the urban planners.



Bibliography

[Book Section] // New Architecture and Urbanism: Development of Indian Traditions / book auth. Deependra Prashad Saswati Chetia. - [s.l.] : Cambridge Scholars Publishing, Jan 8, 2010.

CDM Smith Feasibility Report and Detailed Project Report for Planning and Construction of a Grade Separator Connecting Anna Salai and Mahalingapuram through Usman Road suitably integrating existing Flyovers in the [Report]. - Chennai : CDM Smith.

Market of Markets at Ranganathan Street, India – Praveen Ashok Kumar, Urban Engineer, New York University, New York.

CEPT University Inclusive Design for Street Vendors in India [Report]. - Ahmedabad : Centre for Urban Equity (CUE), 2014.

Dr. G. M. Bhat Aasif Hussain Nengroo Urban Informal Sector: A Case Study of Street Vendors in Kashmir [Report]. - Kashmir : IJMBS, 2013.

Ghosh Saptak Is T-Nagar ready to be a smart city? [Online] // NewsKAPI. - March 4, 2016. - <https://acjnewskapi.wordpress.com/2016/03/04/is-t-nagar-ready-to-be-a-smart-city/>.

<http://www.indianmirror.com/tourism/indian-bazaars/Ranganathan-Street.html> [Online].

Huffington Post World's most crowded places [Online] // AOL. - <http://www.aol.co.uk/travel/photos/world-most-crowded-places/331958/>.

madrasi.info Ranganathan Street [Online] // [madrasi.info](http://www.madrasi.info/ranganathan-street.html). - <http://www.madrasi.info/ranganathan-street.html>.

Manoj Panwar Vikas Garg Issues and Challenges Faced by Vendors on Urban Streets: A Case of Sonipat City, India [Report]. - Sonipat : ijetmas, 2015.

MIT Urban Planning Designing Indian Streets as Social Public Spaces - Contextual design and planning in Bangalore [Report]. - Boston : MIT, 2014.

National Association of Street Vendors in India Statistics & the Street Vendors [Online] // NASVI. - <http://nasvinet.org/newsite/statistics-the-street-vendors-2/>.

Roever Sally Informal Economy Monitoring Study Sector Report: Street Vendors [Report]. - Cambridge, MA : Informal Economy Monitoring Study, April 2014.

The Hindu The Hindu [Online] // Once upon a time in Thyagaraya Nagar. - <http://www.thehindu.com/features/downtown/once-upon-a-time-in-thyagaraya-nagar/article3436296.ece/>.

The Institute for Transportation and Development Policy (ITDP) Better streets, better cities: A guide to street design in urban India [Journal]. - Ahmedabad : The Institute for Transportation and Development Policy (ITDP) , 2011.

Triphobo Ranganathan Street Tours [Online] // [Triphobo](https://www.triphobo.com/places/chennai-india/t-nagar-and-ranganathan-street). - <https://www.triphobo.com/places/chennai-india/t-nagar-and-ranganathan-street>.