

Telecommuting and Its Effects in Urban Planning

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Abstract— The change in technology is increasing day by day nowadays the technology has been widened a lot everywhere the technology and computers has used for all type of works in every part of the world is connected with the modern technology and mobiles and internet people are becoming more smart by earning money by sitting in home time is one of the precious to every human being use of time is one of the major problem spending time with family due to work tension and busy schedules the social life of humans has been changed day-to-day people are hardly interacting with their family and there are lots of pressure to move from work place to the home area most of the time was spent on journey where this also leads a major problem for the people for all the problems the many MNC (Multi National Company) has been introduced a new technology for the employees to save time and money and placing a new company in core city will cost a lot for land value where affordable for the starter company will be so difficult for the new companies and buying assets and maintain of building and sub charges to the company will need to take lot many problems so most of them are introducing telecommuting as a tool for employees.

Telecommuting is one of the emerging topics and main motive is work from home the research paper shows the detail introduction history of the telecommuting, scenario of the telecommuting factors influencing in telecommuting and driving forces and advantages and disadvantages of telecommuting both companies and the workers and major scenario happening after implementing the policy.

Keywords— *Telecommuting, Transportation, Technology.*

1. BACKGROUND:

Now a day most of the developing country were using telecommunications advances in recent years, This development has led toward a service economy, more work flexibility, empowerment of employees, and from the irritation and rising frustration and time loss from work.

Global urbanization is increased to 50% in (2011) where almost 30% are in tertiary sector due to increasing of population which leads to growth of cities and urban areas and also generating of employment a lot which leads to major problems such as congestion, Transportation, Pollution, Availability of space, etc.,

Not only was the Global scenario the same situation was happening in India the Urban population increased to 30% in 2011, almost all metro cities was developing It hubs in their cities were the IT has more future in India.

Nowadays the modernization of technology has been improved we are in the 21st century where telephone, computers, internet the world is becoming very smart where telecommuting has been a new type of work most of the cities and most of the companies were adopting this type of technology this also helps a lot in the transportation

sector. Work from home is main motive of the "telecommuting."

Telecommuting is very important in the transportation sector, especially with respect to air quality and congestion relief. During the trip generation from one place to another people the cost of trip and time taking and delaying and peak hour congestion, are major sources of air pollutants. Telecommuting can also expand opportunities for people who are in pregnancy time period they can work from home.

Basically, many of the reports show that when compared to daily working from office will work less when compared to telecommuting workers they work in suitable work and more work than normal workers they save the travel time. To maintain a clear distinction between workplace and home life will be difficult for some persons, leading to serious stress and burnout. The land availability near the workplace is very expensive so people move to urban sprawl where the land is cheap but the travel time increases when we go from far from the city. There are a dramatically land use changes were to establish an office will cost so more companies are opting for Telecommuting

This telecommuting is a simple concept, where directly benefit to the public actually obtained depends largely on attitudes of people toward their work and workplace, the adaptability of corporate culture, the type of the work performed, and the effect of changes in their travel behavior. Not surprisingly, there is wide difference among predictions of the future of telecommuting technology and its impacts on transportation.

2. HISTORY:

This telecommuting has first come from Norbert Wiener in his book *The Human Use of Human Beings: Cybernetics and Society* published in 1950 described "telework" (as it was termed in Europe) [1]

This telework was not spread widely till the 1970s, before that there was no computer more used in 1980 and 1990 where there is a lot of change in technology and a widespread of telecommunication in worldwide and there are a single platform and code languages all over world and modernization of technology has leads to introduction of "WWW"(World wide web) where all data and talk from all parts of the world through emails and through phones and in 2000 [1] technology has widened where new mobile phones smartphones have come and internet speed was increased and more privatization was increased and it was increasing the boom and in the meanwhile the work from home concepts was developing in some of the countries in America .

Also, one of the most reason in the increase of vehicle cost and fuel cost is one of the reasons where the ideology of telework has been taken place in the scenario.

In 1980, Alvin Toffler has introduced the idea of telework or telecommuting into three phases on the basis of emerging "the third wave".[1] That worker is work from home instead of work in factories and offices.

Many numbers of writers have speculated about the impact of telecommuting on working community. According to Hiltz, [1] the office networks can be the best thought of as a new kind of social system: In which the intimate social activity of the workplace and the organization are replaced by electronic online communities.

During 1970-80 some writers predicted that major workforce from home within century and in future but this was applicable in present days [1] only and in India it was an emerging and from 2011 we are seeing this type of work in India in some metropolitan areas still this will become more prominent in future as commuting work in scene of technology, high production, more income and more saving of time.

3. INTRODUCTION OF TELECOMMUTING

In recent years, the concept of telecommuting has got more attention, from all most all sectors in the scene of departments from the public planners and also policy makers. The policy has many parties such as personal, organizational, social, economic, transportation and environmental.

3.1. Telecommuting and Transportation

Telecommuting help a lot in the transport sector to improve road conjunction in urban areas to improve air quality from pollution level to reduce Transportation Travel Demand Management (TDM) tool -- a strategy that reduces congestion by eliminating a trip or changing it out of the peak period. Other such strategies include car, van and bus pools, public transit, compressed work weeks, and flextime.

Telecommuting alone is not a solution for congestion and pollution problems, it is one of the tools used in the transport sector, nowadays this is important research and growing more interest in policy makers, planner, and researchers to reduce travel demand and control pollution level by using telecommuting as a tool.

Policy makers, telecommuting is the very interesting trend for policy makers such as Transportation, conservation, independence, energy, and generating employment with less mobility (disabled, pregnancy, and low-income group) and also increases the air quality with reducing the pollution from vehicles.

For implementing telecommuting we do not require any additional plans in a master plan, design it will take very less time and very easy to implement nowadays with the help of modern technology the technology is very inexpensive to implement.

Telecommuting is more flexible in work timings and also for lifestyle. This technology was very helpful for private owners and new startup companies this telecommuting improved for saving space costs and other benefits.

3.2. Telecommuting and the Public Sector

In India, there is no any policy regarding telecommuting this is the new trending sector which was introduced in foreign countries and some of it companies were introducing in India.

In our country mostly in all cases it was not applicable in public sector recently the "National urban transport policy 2014" was released in the policy it was not mentioned about telecommuting it is very difficult to apply the policy in the public sector in India.

In Indian context the Telecommuting was not applicable at present because Indian population is huge 1.25 billion whereas the technology in India is very less when compared to other country and in India main source of income is Agriculture 70% of the people are live in Rural areas where as for 30% we need to plan this telecommuting the government employees must and should work on the respective offices where the Department has individual buildings and almost all government departments are for public sector where common man should come and address the issues so some point of view the telecommuting is not applicable in Public sector.

3.2.1. Factors influencing

Some of the factors that influence the implementation and utilization of telecommuting:

1. The growth of employment arrangements within the country may be attributed to a spread of things including:
2. The growth of work arrangements within we may be attributed to a spread of things including:
3. Declining technology and telecommunication prices
4. Increased investments in digital technology and infrastructure.
5. Greater demand for information-technology sector jobs.
6. Increased use of computers within the geographic point.
7. Organizational goals of skyrocketing productivity.
8. The need to cut back workplace commute time
9. Growing need to higher balance and manage the stress of labor and family

3.3. Driving Forces

Telecommuting is one of the leading changes have taken place in many countries the change in people's mind and the adoption of telecommuting will help in economic, environmental, social factors of human life. All these indicators both human and the technology will help the factors in vise verse .they also influenced by some many factors in the sense of development in following areas [1]

- Implementing of telecommuting in travel:
- Telecommunications and Information Technology
- Urban Congestion and Its Consequences
- Environmental planning

3.3.1. Implementing of telecommuting in travel:

3.3.1.1. Time of the day/week:

This will be given flexibility to the person itself, and trips may be shifted to off-peak hours to avoid congestion or to different days of the week [1].

3.3.1.2. Destination/length:

The trip may be made to the local center than a far place in the city. Non work trips made closer to home rather than close to workplace

3.3.1.3. Mode:

Trips all are made from home to nearest places will shifts to non-motorized shifts like bicycle and walk. [1]

3.3.1.4. Trip changing patterns:

By eliminating the work trip may leads to many changes in trip changing pattern because the user may not use more trip every day also he can convert to single trip instead of multiple trips.

3.3.2. Telecommunications and Information Technology

In India companies like Infosys and some other companies are using this type of methods to reduce stress on employee and also the people use to do more work when compared to normal person coming to office that we are providing the person an individual mind for the people to create their own free timing for their works in many offices there are biometric for the workplace where people are late there amount will be cut and also for both workers and the company benefit this was implemented and also, traffic amount should be reduced to pay for IT workers this amount was saved by the company due to this technology both the company and the worker benefit mutually nowadays.

This will help more in married women where they look over children and also they give certain time to do their work at the free time and they earn the money.

There are a separate policy and terms for this telecommuting work in Infosys for IT workers, and almost all IT companies now days are implementing the telecommuting in India.

3.3.3. Urban congestion and consequences:

In India nowadays the automobile company will raise to boom that every individual has his own vehicle either car or bike even both for the mode of transportation, and the street system was very poor where with more congestion with unmatched infrastructure.

Many of the urban areas are rising more traffic in peak hour's congestion for the people who are going for jobs will get delay and stress and poor air quality on roads and causes of accidents all this go too difficult of the public and congestion of the urban roads and also a substantial amount of petrol based energy will consume. [2]

3.3.4. Environmental Planning:

Many questions and many ideologies came into my mind when I am doing telecommuting how it relates to the

environment the impacts may or may not be as favorable as the transportation impacts. Now we will consider direct impacts: the lower the vehicles travel the lower the pollution generated.[3]Therefore, the number of trips matters because high emission from entire trip generated by turning the engine on, the number of the stop in a trip is also matters because hot start engine generates more pollution than a normal moving vehicle. Thus, a bus within 20 km trip with 10 stops will produce more pollution than the same bus with 5 stops.

3.4. Impacts of telecommuting on Career progression

Some employees may be reluctant to telecommute because of the perception that working remotely hinders promotional opportunities[4], especially for exempt employees[4].Both employees and organizations are concerned with the importance of being visible to managers and co-workers in the office (i.e. "face time")[4]. The perception that employees who put in the longest days at the office get the most work accomplished and are the most committed is deep-seated. However, repeatedly putting in extra "face time" at the office can also be an indicator that an employee is not completing his/her work in the most effective manner. Fostering a culture that assesses employee performance based on results, not the number of hours spent at the office, will alleviate the misconception those with the most "face time" are working the hardest and getting the best results [6]. In addition to the issue of "face time," organizations must also consider how, if at all, telecommuting will impact job or project assignments, salary, and movement within the organization [2]. Before an employee begins a telecommuting arrangement, it is important for that individual and his or her manager to have a candid discussion of the employee's career goals and how telecommuting might impact these, if at all. For example, the employee should understand that a promotional opportunity or high-profile project may require working in the office, and that each individual assignment must be considered in order to determine whether it can utilize a telecommuting arrangement. If the new opportunity calls for a return to a more traditional work arrangement (i.e. work in the office), employees who are unwilling to do so could limit their developmental opportunities. A final concern with regard to development is the possibility that employees who are less visible in the organization will not be considered for higher-level positions. These issues should be discussed to ensure that employees and managers understand each other's positions regarding the telecommuting and the "pros and cons" of such an arrangement.

Telecommuting, Organizational Culture, Identity, and Commitment

An organizational culture that is people-centered, task-oriented, participative, and open to change will be most conducive to the implementation of successful telecommuting arrangements. However, telecommuting can present challenges to the formation and maintenance of organizational culture. Difficulties can arise in disseminating the organizational culture to remote workers, developing a climate of trust between telecommuters and

their managers, and sustaining telecommuters' identification with the organization. To help overcome these difficulties, having telecommuters work in the office environment for an initial period of time in order to assimilate into the culture can be helpful.

Opinions differ regarding the impact of telecommuting on employees' sense of identity with and commitment to the organization. On one hand, research suggests that working remotely can adversely impact employee commitment and organizational identification due to feelings of detachment. Telecommuting cultivates a strong sense of autonomy, and daily presence in the home environment can make home issues seem more pressing in the eyes of the employee. This comes at a time when a changing employment contract (fewer long-term employment relationships) also inhibits the development of organizational identity, loyalty, and commitment. A contrasting view is that the flexibility and empowerment offered by organizations through telecommuting increase employee appreciation and loyalty toward their organization. Current research suggests that almost 80% of telecommuters feel a greater commitment to their organizations and that most plan to remain with their current employer [7]. One way to maintain corporate identity and commitment among remote employees is by having them visit the organization regularly and remain involved in office events [4]. Facilitating an environment where remote employees remain "in the loop" in terms of both formal and informal office activities helps to solidify their feelings of affiliation with the organization.

4. ADVANTAGES OF TELECOMMUTING:

4.1. Urban planning:

When we talk about telecommuting in urban planning this will help a major sector of development in transportation, land use, and the environment.

The change in land use will happen according to telecommuting policy, after this most of the land will convert into residential, and public places with more greenery spaces.

4.2. Transportation:

In transportation telecommuting helps a lot in cities like India because most of the Indian cities are old and the roads are very congested for vehicle moving, during peak hours of morning and evening there is a lot of problem with vehicles due to traffic jams [5].

After this policy was implemented the trip generating will be reduced and roads will be free from traffic.

4.3. Good Flexibility:

Telecommuting policy will have a good job and flexible time and you can manage time according to yourself and can work and give importance to family members and also take care of children's we can take equal importance to work and home, etc.[2]

4.4. Greater Fulfillment:

The fulfillment of the person and the worker will be good because there will be no supervision and no domination in the work and in such cases both you will feel free and do work more in a good manner and there is flexible in the work.

4.5. More savings:

Telecommuting does not require to spend money on transportation, parking, and other expenses so we can save more money from the income.

More saving to the company also by implementing the policy the company can save fuel charges, power charges, building rents etc., this all amount will be a benefit to the company.

4.6. For handicapped people:

Telecommuting will offer a good job for disabled persons, physically handicapped who feel difficult to go to office every day for them this policy will help a lot to earn income from home

4.7. For Environment:

Telecommuting help a lot in environmental some cities like Delhi and other metropolitan cities where nowadays we can see due to pollution level there is odd-even policy when this policy is implemented this will help a lot because the vehicle are not come on roads when this policy is implemented then pollution level is reduced because vehicles are not moving on the city roads people you to work in home so no trip will be generated so pollution will be reduced so in many countries they will add telecommuting in environmental policy . [3]

5. DISADVANTAGE OF TELECOMMUTING:

But this telecommuting can be applicable in making of policy mainly this will help to people in urban areas to reduce congestion when we look into rural context this model will be some failure the availability of network facilities there is lengthy process that we need to educate the people and get awareness and then providing them the good facility and technology for this it will cost more in countries like India.

5.1. Urban planning:

When we look deeper into land this will help in land use planning because telecommuting is new emerging topic where the changes of land use will take place in future so that the planning process in the sense of master plan will change in future.

Because if many companies were attempting this policy there was no commercial and institutional hub to keep the offices they all work from home and this land use change will be become in urban areas than the most area should be dedicated to residential and the guidelines will change according to the policy.

Mode: carpools might dissolve if telecommuters drop out and transit operators will lose income.

5.2. Environment:

Even if transportation energy is conserved, there may be increased in energy used in the house that is through lights/ventilation /air, by using low power consuming bulb can be used in a home so to reduce electricity bill and save energy. [5]

5.3. *Social change:*

There is a lot of changes that will take place after telecommuting was implemented in the case of social change because the behavior of the individual person will change after the policy was implemented that the human interaction will take less importance after the policy was implemented.

5.4. *Impacts on work-family conflict*

Work-family dispute exists when an individual performs multiple roles (i.e., worker, parent, etc.) and the pressure from these domains are incompatible or disagree [6] a dichotomy exists in the current literature with respect to the effect of telecommuting on work-family dispute. From one viewpoint, telecommuting is often considered a way of helping individuals cope with the demands of work and home. Telecommuting can help to reduce work-family dispute by providing:

- Increased work-time and work-location workability.
- Increased control over the scheduling of work and ability to integrate work and family schedules
- Mitigation of tensions associated with integrate parenting and career
- Decreased commuting time
- Opportunity for employees to manage emergency or unexpected situations in the home (e.g., sick children) without major disruption to work

Despite these benefits, research results regarding work-family conflict and telecommuting are inconclusive. While some studies focus on the opportunity that telecommuting presents to better perform both work and home roles, another research emphasizes the potential for increased stress caused by the inability to distinguish and maintain the boundaries between work and family domains. Telecommuting can increase dispute between work and family when:

- Employees who work at home spend a great, or disproportionate, percentage of their time on paid work activities.
- Flexibility gained through telecommuting benefits the work organization but not the employee's family [6].

5.5. *Indian states:*

In India, there are 29 states almost all states have their regional languages

By introducing this policy will applicable in some states not in all states for examples this was mainly applicable in metropolitan cities but not in everywhere this cannot be applicable in government sector because in India there will be very problem to apply in government sectors.

5.6. *Disaster:*

During disasters, there will be a loss of power and network this will lead to the problem to the teleworkers who use to work in personal computers.

Telecommuting as a new working:

The other perspective on telecommuting asserts that the real issue is whether quality work gets done on time, regardless of where it is done or if it is completed during the standard eight-hour workday. Viewing telecommuting

as a new way of doing work, and appropriately training potential telecommuting and non-telecommuting employees and managers on the impact of such an arrangement can present advantages to individuals and organizations in terms of employment, selections, satisfaction, and productivity. Many progressive companies who are strongly committed to work/life issues hold this perspective of telecommuting arrangements.

6. **BROADER WAY:**

Table -1: An employee's perspective:

Advantages	Challenges
Autonomy and flexibility over work schedule	Difficulty distinguishing between work and home time
Elimination/Reduction of commute time	Feeling of isolation from workplace social network
Less money spent on commuting, parking, traveling.	Inadequate equipment or lack of technical support
Higher morale and job satisfaction	Implications of limited interaction w/manager for career
Avoidance of office politics	Feelings of hostility/resentment from co-workers
An organization's perspective:	
Improved employee productivity	Difficulty in employee performance monitoring
Lower employee absenteeism	Difficulty in measuring employee productivity
Increased employee retention	Change forces organization outside comfort zone
Larger talent pool from which to recruit/select	Possible negative effects on workplace social network
Reduction in overhead facility costs	Difficulty in fostering team synergy

7. **CONCLUSION:**

Basically, there are benefits and both losses in the policy where the policy was very new in India and mostly the foreign countries are implementing this policy in their countries but when we look deep into policy there are lots of benefits in urban planning and also in the environment. Where the policy will help in managing transportation and also will improve the development in managing the transportation.

The policy will help both the company and the workers to manage the time they save the money and time both company and worker. Advances in information technology, the proliferation of a global workforce, and the increased desire to balance work and family are only three of the many factors that will serve to amplify the popularity of telecommuting work arrangements. Organizations who recognize that work is something you do, not someplace you go and who adequately prepare for the implementation of telecommuting arrangements should benefit from greater employee commitment, productivity, and job satisfaction.

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