Hello everybody, my name is Lakshmi Narayana bharathwaj and today I am going to be presenting a comprehensive research proposal on my topic of technologies impact on real estate development in rural and semi -urban areas.

Let me introduce you to what real estate actually means. What technologies can be used in the real estate sector and why is it important to utilize these technologies in the real estate sector. First of all real estate has been around the world since many ages and in today's day and age it has been popping up more and more around the world.

So when we talk about real estate what comes into mind is urban areas with not tall buildings and concrete jungles and what not. But our research proposals focus is on the development of real estate in underdeveloped areas.

It is pivotal for real estate development to happen in underdeveloped areas because these areas possess many challenges like they are not aware of what is happening in the urban world. What tech is popping up in the modern day and what sorts of investments and what sorts of opportunities lie when you know real estate development happens.

This is the main reason why leveraging these technologies can help rural and semi -urban areas benefit from real estate developments.

As I mentioned, our aim and target audience of this research proposal is to extensively conduct research on technologies that are best applicable to the railway state sector in order to get very complex tasks done easily and effortlessly.

The proposal also includes educating underdeveloped areas on the technologies so that they can reap the benefits that these technologies possess. The target audience for this proposal would be investors, stakeholders, IT professionals and especially the population in rural and semi -urban areas who can benefit from these technologies.

Coming to the significance of this research, the use of technologies for real estate in underdeveloped areas actually caters to the growth of the real estate market in those areas. It helps level the playing field for various geographies.

For example, if there is an urban geography where there is mass development happening, bringing in real estate which technology in underdeveloped areas may also bring competition to the already developed areas.

That is what we mean by playing the leveling field for various geographies. And stakeholders can effectively leverage these technologies to develop the real estate sector in these areas. Also, many barriers like improper infrastructure, the lack of proper infrastructure, lack of awareness of the technologies that are present in today's day and age, limited financial reserves that hinder the growth in underdeveloped areas, and many other barriers could be overcome with this research proposal.

The technologies and purpose of our research are very powerful and influential systems. They provide creative leadership, precise selection of market analysis and also help in analyzing the geography of the data.

Which are the empty and augmented reality. They are immersive technologies that are capable of visualizing properties and other powerful visualizations under the comfort of our bodies. They are managing data to observe trends or opportunities and try to make the properties of the most in the real estate sector.

Here is what the data analytics is capable of. Blockchain ensures there is transparency in the transactions that are happening in the real estate sector. And many other efficient features also are a part of blockchain technology.

Virtual reality and augmented reality like discussed before offer immersive experience to the stakeholders, investors or property owners for that matter to visualize the properties at their own comfort with bare minimum expenses.

This helps in attracting investors and also caters to the marketing needs of the properties in rural areas. Say there are barren lands or there is a very underdeveloped area, the use of virtual reality and augmented reality can help the investors or stakeholders to identify this area by equipping themselves with the VRAR equipment and looking at the properties, analyzing the properties at their very own comfort without any expense.

Again, this comes with some challenges like the equipment of the VRAR technology bears a high fees and it is very inaccessible to underdeveloped areas which have very less financial reserves because bringing in those technologies by paying huge amounts of money is tough.

Also, these require a very high connectivity of internet to offer a seamless experience. So without proper internet connection, one cannot fully enjoy the benefits of VR and AR and lack of digital literacy may also affect the usage of this tech in underdeveloped areas.

By digital literacy, I mean like not knowing the usage of VRAR equipment, yeah, can hinder not knowing how to use this technology can hinder development in underdeveloped areas.

Big Data and Real Estate. This tech enables real -time market analysis of trends, patterns in the data with which one can predict the behavior of the market and make optimized decisions. Big Data is also a very powerful technology that can help analyze the data very quickly, help us identify the trends and also make recommendations according to the trends observed in the data.

Big Data comes with its challenges like data collection and management which is very hard in underdeveloped areas. Data compliance, security issues and regulations are also some added challenges and technical challenges like managing the data, integrating the data into real estate and building complex analytical models in order to gather insights from the data can also be tricky.

Blockchain in real estate. Blockchain like we discussed offers transparency, security and efficiency in real estate transactions which reduce risks of fraud and improves trust indirectly. It can also facilitate for land titling property registrations by streamlining the processes and reducing other fees.

By other fees there are fees like the agent fees who are the agents who are responsible for catering to land titling property registrations. Blockchain can directly facilitate for those needs and reduce the fees that we users, we consumers end up paying to the real estate agents.

Again, blockchain comes with its own challenges like regulatory issues, uncertainty and legal blockchain frameworks adoption in real estate. There are also some legal barriers for some underdeveloped areas where adoption to these blockchain technologies is tricky.

There are also energy consumption, interoperability and sociability issues that arise due to the blockchain when trying to use this in real estate.

After looking at the technologies that could help underdeveloped areas in real estate sector, underdeveloped areas in the real estate sector, we are now going to look at the literature, the research that has been going on in the real estate sector.

So, there is obviously a vast amount of research going on in the real estate sector, where the use of tech is starting to take off. One such article in the recent times, in the times of India, discusses a dynamic growth and transformation of Indian real estate sector, focusing particularly on the residential market, due to the expansion of middle class and overall economic development.

What do we mean by this is that, in India, there is a recent uptrend in the middle class families, who are tending to move up the scale by becoming upper middle class families or rich families. For those sorts of families, an article from times of India says that these sort of families, these sort of middle class and upper middle class families are tending to focus more on home ownership, meaning they want to buy their own homes.

They want to establish themselves in a low density constructed area, low density environment, low, meaning they want to construct themselves a villa or an independent house and live there. So, these sorts of things.

Another research paper explores awareness and understanding of real estate syndication, RES, particularly focusing on the Muafakhartha or Muhartha. This concept is popular in Malaysia, where it comes with its own frozen cons.

Another blog describes the importance of governing bodies like real estate regulatory authority or short for RERA in India that cater to the growth of real estate sector. It is said that RERA ensures safety, transparency when it comes to managing property titling, transacting in the real estate sector and many other aspects also.

So apart from this another article highlighted how the pandemic had taken over the real estate sector by storm, how the stakeholders sentiments were hindered when trying to invest in the real estate sector, how increase in bankruptcy rates have shot up.

The article also suggests to tackle these problems by developing a hypothetical scenario wherein there is no pandemic and thereby analyzing the data and making recommendations to the customers, consumers.

Again, literature review but with tech this time in real estate. An article in 2021 studied the impact of real estate on economic growth in underdeveloped areas. So, the one of the key one of the key points in the article was that if tailor made recommendations were made to the population, that recommendations could help increase the economic growth.

There are many other key points for which the article is referenced. Another study had examined the policy making for prefabricated buildings in China. This article suggests that the policy making instruments in the real estate sector that ensure smooth functioning of building these prefabricated buildings is important.

So, if there are correct policies in place, if there are stringent policies in place and people abide by those policies, building life cycles, building the prefabricated buildings is much more easier.

There was something called the new market tax credit NMTC program in the USA which happens to be another example of how policy can stimulate the growth in real estate sector. People in the US underdeveloped areas and by people I mean the underdeveloped areas in the US were given tax credits due to which economic growth was seen, many real estate opportunities were also made available in the real estate sector and so on.

Yeah, now talking about the strength in the real estate filter, we have diverse perspectives like we looked at so many concepts, so many angles in which underdeveloped areas can use real estate and tech together in order to develop.

There was a fair amount of empirical research that was done in this article that highlighted on various aspects and strengths of using tech in real estate sector. Many practical recommendations were also made like tax credit, like the NMDC program as discussed previously.

We have also discussed the policy insights, making sure right policies are in place, if we can leverage technology in underdeveloped areas in the real estate sector for better development.

However, there are many, there are a few limitations also in this literature review. There is regional specificity. So all the discussions made in this research proposal were region specific. So thereby, issues like generalizability, lack of generalizability arises when trying to discuss a topic in more general sense, in a more general sense, data reliability.

So again, data reliability is in a way linked to regional specificity because the data gathered from RES, Real Estate Syndication could be different from what RERA in India is dealing with. So there is a gap between the data, between data reliability and regional specificity that seems to be not covered here.

That is one more limitation. There is time sensitivity. Of course, by time sensitivity, we mean that, by time sensitivity, we mean that the real estate market is rapidly growing due to which the data or the insights that were developed during a particular period of time might become insignificant if one were to analyze or explore the data, potential bias.

By potential bias, we mean that again, there is a lack of correct data that could be generated or that could be gathered from the underdeveloped areas or we could end up gathering data that is biased towards one problem rather than focusing on the overall development.

That is what we mean by potential bias.

Again, there are discrepancies also in this literature review which are policy implementation versus the impact. The policy implementation on one hand if implemented correctly then it could have many positive it could have any mixed impacts on the underdeveloped areas there is expectation versus reality one would expect that one would expect one's project or one's yeah when it comes to perception expectation versus reality one would perceive an objective of a project in one way and the reality of it could be different again.

Yeah regional development disparities what do we mean by this is bringing in opportunities from one region could impact the economic growth of a whole country of a whole of a whole bigger region for example let's say there is a piece of land in a county which happens to be underdeveloped for that to be developed there will be disparities rising in the whole county as opposed to only this developmental area this underdeveloped area that is how regional development disparities may arise as one of the discrepancy in this literature review technological adoption rates as entitled the ability to adopt to the technology is not always the same in all underdeveloped areas so that is one of the discrepancies in this literature review.

How can we tackle these limitations by bringing in collaborative efforts between governments, tech professionals and communities of the less developed areas. We can also tackle these limitations by educating the less developed areas, educating the population in the other developed areas to raise awareness about the technologies in the population of the underdeveloped areas as well as the stakeholders.

Again, now by incentivizing for adopting to the technologies, we can tackle those limitations. By incentivizing, we mean like giving tax breaks or giving subsidies to the underdeveloped areas for adopting to the technologies and utilizing them.

In these manners, we can basically, these are some of the ways in which we can tackle the limitations that are present in this literature.

So, in conclusion the potential of technology leverage in the real estate sector is huge with the right mindset, policies and technologies of course, underdeveloped areas can bring competition to the counterpart geographical areas.

Thank you.