* 1. **Research and list at least 5 benefits of cloud computing over traditional on-premises infrastructure.**

**My case study: Online Retail Management System.**

As per my research and understanding, upgrading to cloud computing from the traditional on-premises infrastructure might benefit my application in the following ways-

1. **Availability**-We would prefer having as minimum downtime as possible because it will result in a loss in business. Using cloud will enable the system to be more available, i.e., there is a high chance that the application will be available whenever the user needs, be at any time of the day.
2. **Elasticity**-In case there is a sudden surge in demand (considering it is a retail management system, there will be offers, discounts and sales, when we might expect an increase in traffic). In such cases, the feature of elasticity might come handy and we will be able to scale up or down based on the need.
3. **Capex or Opex**-Using cloud will give us a choice to either use CapEx or OpEx as per our need.

Considering the scenario of my case study, i.e., in case of a retail management system, we would extensively use the Opex approach, to buy servers for our business as it will give us the flexibility to pay only as per our usage. Since the amount of server usage is unpredictable, it is better to use the Opex model.

Also, in some cases, due to government rules and laws, we might need to store customer’s sensitive, personal information on a private server. In this case, we would be required to make an investment in servers upfront.

1. **Disaster Recovery**-Since Disaster Recovery is a feature of cloud computing, it will be helpful to keep track of data and recover data in case of any unavoidable circumstances, such as flood. In case of traditional on-premises infrastructure, the business is bound to suffer.
2. **Fault tolerance**-Since fault tolerance is a feature of cloud computing, it will be helpful to use cloud to make our application highly available since then our application will not be affected by things like power cut or network unavailability.
3. **Scalability**-We can also easily scale up our application in size and across geography, in case need be.
4. **Agility**-The market is a competitive place. If a competitor comes up with some advanced upgradations like the integration of VR in their website, using which people can virtually try out their outfits before purchasing.

Now, it is definitely possible to make these changes ourselves, but that would require a lot of money, time and other resources with no guarantee of success. Also, by the time we are done with the development, the technology might become old.

But, if we are using cloud, it has a service for VR for example, which we can easily use in our application. Also, in case, in future, we feel that we do not need it anymore then it is also possible to easily discontinue the service. So, it does not become a dead investment.

1. **Security**-Using cloud would be much secure.
   1. **Describe the CapEx and OpEx models of financing IT infrastructure, providing examples of when each model might be preferred.**

Capital expenditures (CapEx) are major purchases a company makes designed to be used over a longer period of time while on the other hand, while Operating expenses (OpEx) are the day-to-day expenses a company bears to keep its business operations.

Considering the IT infrastructure of an ecommerce application, it makes more sense to follow the OpEx approach since the server usage is unpredictable. It might be low at times and at times, especially during sales, we might face a surge in demand, when the server use might turn out to be more. Therefore, using cloud would give us the flexibility to pay as per our use only.

Also, in some cases, due to government rules and laws, we might need to store customer’s sensitive, personal information on a private server. In this case, we would be required to make an investment in servers upfront.

Part 2: Understanding Public , Private and Hybrid Clouds

2.1 create a brief report differentiating between public , private and hybrid clouds. Include a diagram that represents each cloud model.

2.2 for each cloud model, list one real-world application or scenario where that be the most appropriate choice.