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## Role Of Financial Inclusion In Agriculture Sector Through Fintech Services For The Sustainable Development Of Economy

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### ABSTRACT

Fintech sector plays a prominent role in financial inclusion that helps to attain the development of green economy which accelerates the green Finance in agricultural sector through various inclusion programmes launched by government of India and innovative Financial Services by fintech. Payment through digital apps, mobile banking, Aadhar based etc will help to promote green economy. Especially in agriculture sector different financial inclusion programs and also digital platforms launched for marketing agriculture products at fair price. Because of digitalisation accessibility, availability and profitability in agri business has been promoted as a result of increased financial literacy basically in rural areas. Card and mobile based payment system, eCommerce platforms linking agricultural Value Chain and Financial Institutions, providing credit for green business etc for green economic growth across the country. This article discusses the various financial inclusion schemes reach to rural people through fintech services so that reduce the environmental pollution, boost green economy in the country [1&2].

**Keywords:** Agricultural sector, financial inclusion, Fintech, (agritech) green economy.

### 1. INTRODUCTION:

Financial inclusion places the key role for Economic development of the country. In agricultural sector fintech services are making sound and providing more financial services. RBI,NABARD, and many Government institutions are aim to achieve financial inclusion targets through various schemes and programs. Financial inclusion seeks transforming underlying inequalities. It will impact on both vulnerable groups and service provider.

To get access financial inclusion the banking and other financial institutions should offer loans and advances to agriculturist at affordable rate of interest and increase the time duration of repayment.[3]

Financial inclusion is the important program seeks to transform underlying inequalities. Through this we can see the sustainable development and which will impact on growth of economy. Financial Inclusion Index for 2021 released by the RBI i.e. an improvement to 56.4 from 53.9 in 2021 across indices like access, usage and equality. This shows how well financial products and services can be accessed by the general population [4 -6].

### 1.1 Various agritech Startups [7-10]

**Ninja cart:** It is one of the agricultural supply chain companies aids the farmers to transport their agricultural producers to retailers without delay. About 2000 farmers are selling 80 vegetables and fruits different retailers and also Restaurants located in Bangalore.the main objective is to deliver the fresh farm produce to business in order to improve supply chain network.

**Bijak:** It is a online app that enable trading through connecting the buyers and sellers of Agricultural commodities in agricultural sector. It maintain all financial transaction records by act as a bookkeeping app. farmers can easily access loan and quick payment system with the help of this app. It is located in entire 26 cities including union territories.

**Cropin:** It helps the farmers to improve the agricultural productivity through advanced technology like artificial intelligence, big Data Analytics for farming and it improve the farmer's skills and encourage to start the business.

**Ergos:** It is a mobile based App provides cold storage facilities for farmers in order to overcome the problem of storage due to lack of space for their agricultural produce. After the invention of this app, farmers need not to sell their produce at a lower rate of return due to the deterioration of their yield. Farmers can deposit their produce in "grain Bank" and withdraw at any point of time. Initially it was located in Bihar, Patna but now it's branches spread across the country.

**Bombay hemp company:** the main objective of the company is to improve the hemp supply chain network and helps the farmers by providing high quality seeds, inculcate advance cultivation practices. This company encourage various business activities comprises cultivation, harvesting, production and processing etc not only inside the country but also beyond the borders.

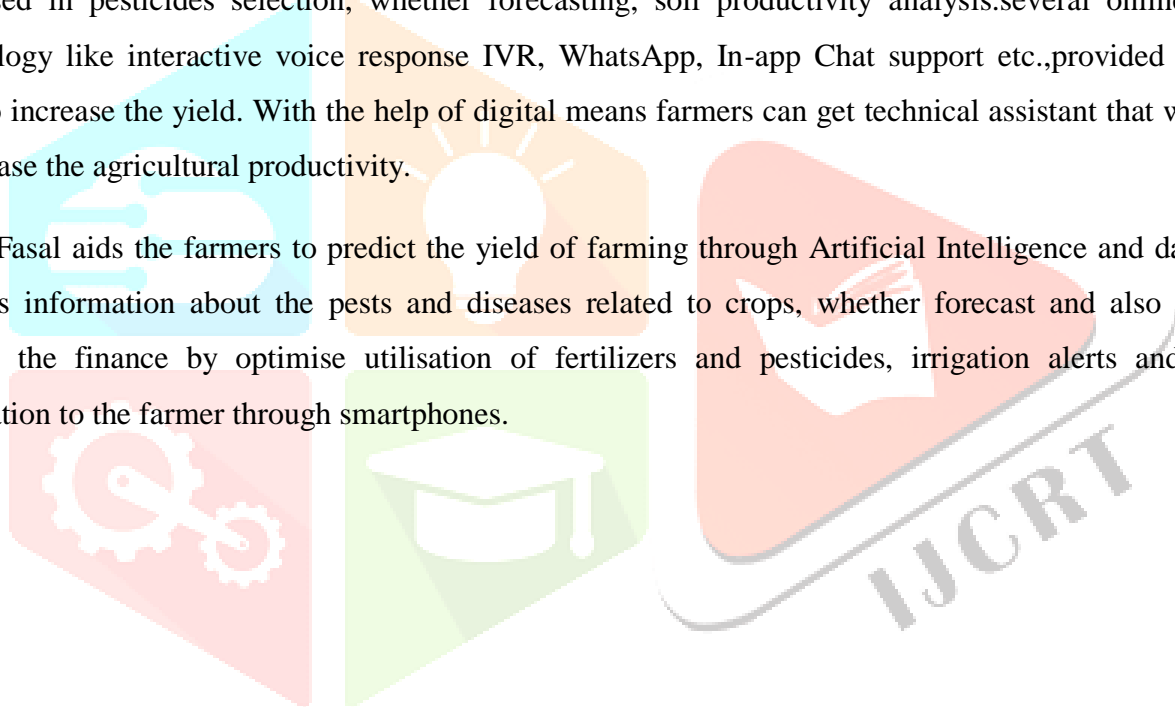
**Aibono:** It is a kind of Service Company comprising data scientists and agronomists use farming data in order to provide recommendation to farmers. Farmers can increase their yeilds by Outsourcing various activities like entire production management, farm measurement and other decision making services.

**Crofarm:** It is one of the greatest startup that reduces agricultural waste by improve agri supply chain network. Big basket, Metro foods, Jubilant food works, grofers and others are the main partners joined with crofarm. There are 10000 farmers exist in the network of crofarm which helps to build bridge between farm and business venture.

**Gold farm:** This agritech company helps the farmers to book or purchase any kind of agriculture equipments through mobile App easily. They also supply solar water facilities to those agriculturist farms where there is a scarcity of electricity. They help especially weaker section of the society to get a latest technological equipments for the purpose of enhancing the agricultural yield at a affordable rate of interest that helps to attain sustainability in the country.

**Bharat agri:** It uplift the skills of farmers about the farming of crops and also render various services such as expertised in pesticides selection, whether forecasting, soil productivity analysis.several online and offline Technology like interactive voice response IVR, WhatsApp, In-app Chat support etc.,provided to farmers in order to increase the yield. With the help of digital means farmers can get technical assistant that will contribute to increase the agricultural productivity.

**Fasal:** Fasal aids the farmers to predict the yield of farming through Artificial Intelligence and data science. It provides information about the pests and diseases related to crops, whether forecast and also helps how to manage the finance by optimise utilisation of fertilizers and pesticides, irrigation alerts and delivers all information to the farmer through smartphones.



## 2. LITERATURE REVIEW

| Sl.No | Area of Focus  | Author & Year   |
|-------|--|---|
| 1     | This research studies how banks and Financial Institutions creates financial eco system through digital platform by Linking Finance, technology and sustainability. It also recognises various challenges and opportunities in fintech revolution faced by Financial Institutions and banks both on demand side and supply side. Here author collect the data regarding digital finance as a secondary data for research from his industrial experience and he also conduct primary interview for the survey. Through this survey he found that banks can easily survive if it in corporate fintech for providing different financial products and services for the customers. | Namita Vikas,<br>Percy Venegas,<br>Sourajit Aiyer<br>2022 [11]              |
| 2     | This paper attempts to derive the advantages of digitalisation of several disruptive technology includes artificial Technology, 5G/6G, Blockchain, Metaverse, IOT. Etc.. in economic system to enhance effective customer satisfaction. It also recognises the different financial products and processes are lending, verification, fraud detection credit scoring and many more initiated from the Inception of Technology. This analyse the certain cases enabled fintech services and paved the way for future fintech research along with predicting challenges associated with it.   | Jagadeesha R<br>Bhat, Salman A<br>AlQahtani,<br>Maziar Nekovee<br>2022 [12] |
| 3     | The author analyses various risks and challenges in the industrial sector due to different a natural calamities such as changing rainfall patterns, rising sea levels, salt water incursion. It also provides solutions through innovative digital channels to attain sustainable development goals of the country. There are many financial resources like saving credit money transfer by means of digital technology are made accessible for needful during climate related risks.  | David Mhlanga<br>2022 [13]  |
| 4     | The main focus of the research is to emphasize on the development of banking sector and digital financial inclusion and it also identify the infrastructure base essential for digital banking and payment system. It also analyse the extent of digital financial inclusion would reach the unbanked people in the country. The author study extended journey from social and development banking to digital financial banking by historical and economic changes.  | Kaustav K<br>Sarkar, Rukmini<br>Thapa<br>2021 [14]                          |
| 5     | This article explains the importance of digital technology in financial inclusion. It emphasizes on accessibility of innovative digital financial  | Hakim Basim<br>Hussain,   |

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|--|--|
| <p>product and services to fintech sector for the needy people. It analysis various challenges and opportunity associated with the digital finance and also suggest the systematic regulations for the smooth functioning of the digital Finance throughout the country.</p> | <p>Mushtaq Ahmad<br/>Darzi, Suhail<br/>Ahmad Bhat,<br/>Abdul Rouf<br/>Bhat, Sankalpa<br/>2019 [15]</p> |
|--|--|

### 3. RESEARCH GAP

Various articles reviewed and emphasize on the concept of financial inclusion initiatives and also many financial products and services boost the prosperity among rural people by Digital financial ecosystem and proper systematic delivery mechanisms. This article analyse several agritech startups introduced to uplift the financial status of the rural people that will in turn to achieve the sustainable progress of financial inclusion in the country. It explains the role of latest cultivation practices by creating awareness about digital means.

### 4. OBJECTIVES OF THE STUDY:

To create awareness about agritech services in agricultural sector.

To know the financial requirement of agriculture sector.

To analyse the performance of agritech firms.

To create digital financial inclusion model that will enable to attain the sustainable development of the economy.

### 5. NEED OF THE STUDY:

- To know the accessibility and efficiency of fintech services for Agricultural Products and services.
- It is a necessary to estimate the extent of financial inclusion initiatives would be successful in the country.
- Content of the research enables to analyse digital Revolution to achieve sustainable development and growth of agricultural sector.

### 6. RM - [RESEARCH METHODOLOGY]

The Research article is based on data collected from secondary source i.e. various journals, articles, newspapers, magazines, and relevant websites. The collected data are presented in the form of a table, diagram, charts and Model.

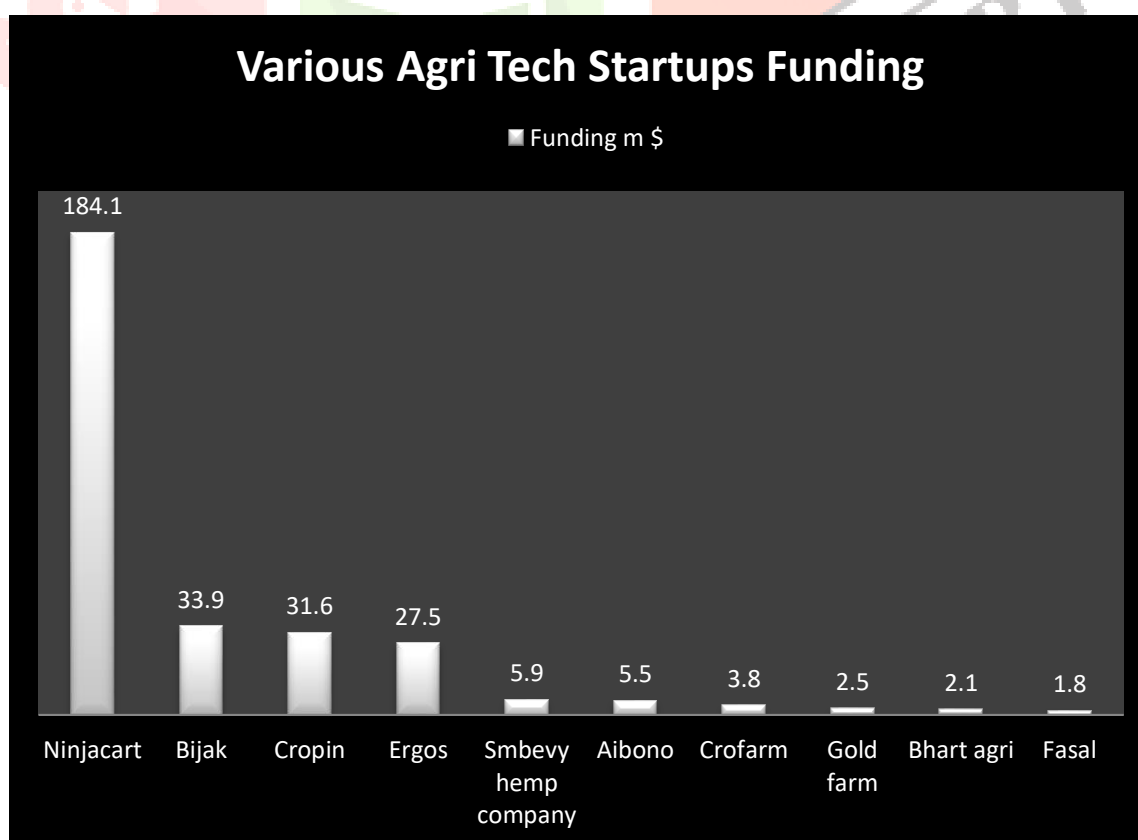
## 7. DATA ANALYSIS

**Table 1: Various Agri Tech Startups**

| Sl.No | AgriTech Startups   | Funding    |
|-------|---------------------|------------|
| 1     | Ninjacart           | 184.1 m \$ |
| 2     | Bijak               | 33.9 m\$   |
| 3     | Cropin              | 31.6 m \$  |
| 4     | Ergos               | 27.5 m \$  |
| 5     | Smbevy hemp company | 5.9 m \$   |
| 6     | Aibono              | 5.5 m \$   |
| 7     | Crofarm             | 3.8 m \$   |
| 8     | Gold farm           | 2.5 m \$   |
| 9     | Bhart agri          | 2.1 m \$   |
| 10    | Fasal               | 1.8 m \$   |

Sources: [www.leadssquared.com](http://www.leadssquared.com) [Page 1-3, 19-11-2022]

**Figure 1 Various Agri Tech Startups**



Finance is the main factor essential for each every of the agricultural sector. Therefore, every year many financial initiatives launched by government of India to increase the productivity of the agricultural sector to attain the sustainable development of the economy. Providing credit is the major financial support undertaken to reduce the financial risk includes availability, affordability at a lower rate of interest.

So commercial banks rural, co-operative banks and regional rural banks were assigned to reach the agricultural credit target by government of India every year. As per the report of RBI out of Rupees 15 lakh crore 75.1% of target achieved by banks, as on December 31st 2020, of which regional rural banks, commercial banks and rural cooperative banks achieve the target of 74.2%, 78.6% and 59.3% respectively.

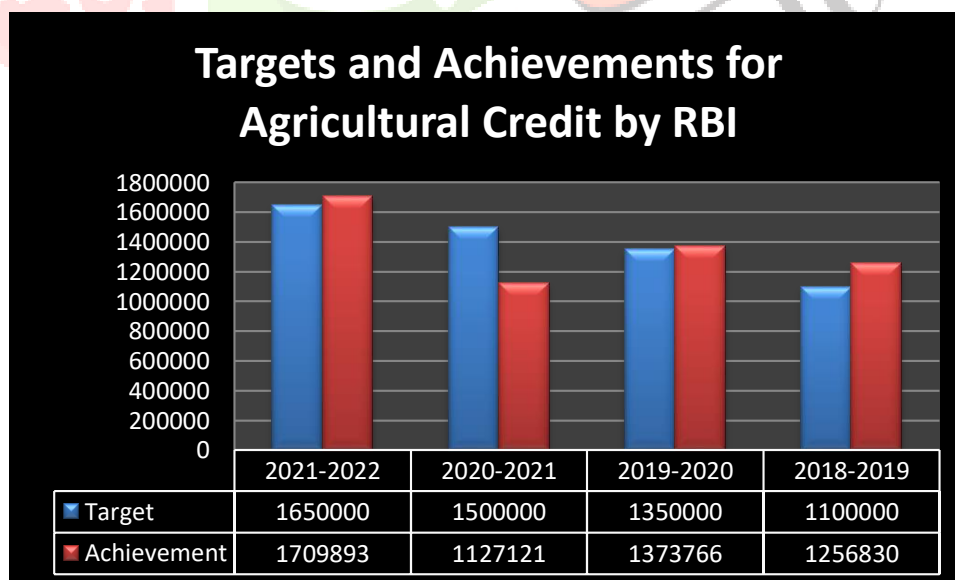
Apart from credit facilities provided to the farmers at lower rate of interest, Kisan credit card was Introduced to help the farmers for cultivation, irrigation, purchasing agriculture equipments and other needs which comprise investments, insurance services and consumption.

**Table 2: Targets and Achievements for Agricultural Credit by RBI**

| Years     | Target Amount in Rs Cr | Achievement Amount in Rs Cr |
|-----------|------------------------|-----------------------------|
| 2021-2022 | 16,50,000              | 17,09,893                   |
| 2020-2021 | 15,00,000              | 11,27,121                   |
| 2019-2020 | 13,50,000              | 13,73,766                   |
| 2018-2019 | 11,00,000              | 12,56,830                   |

Source: RBI

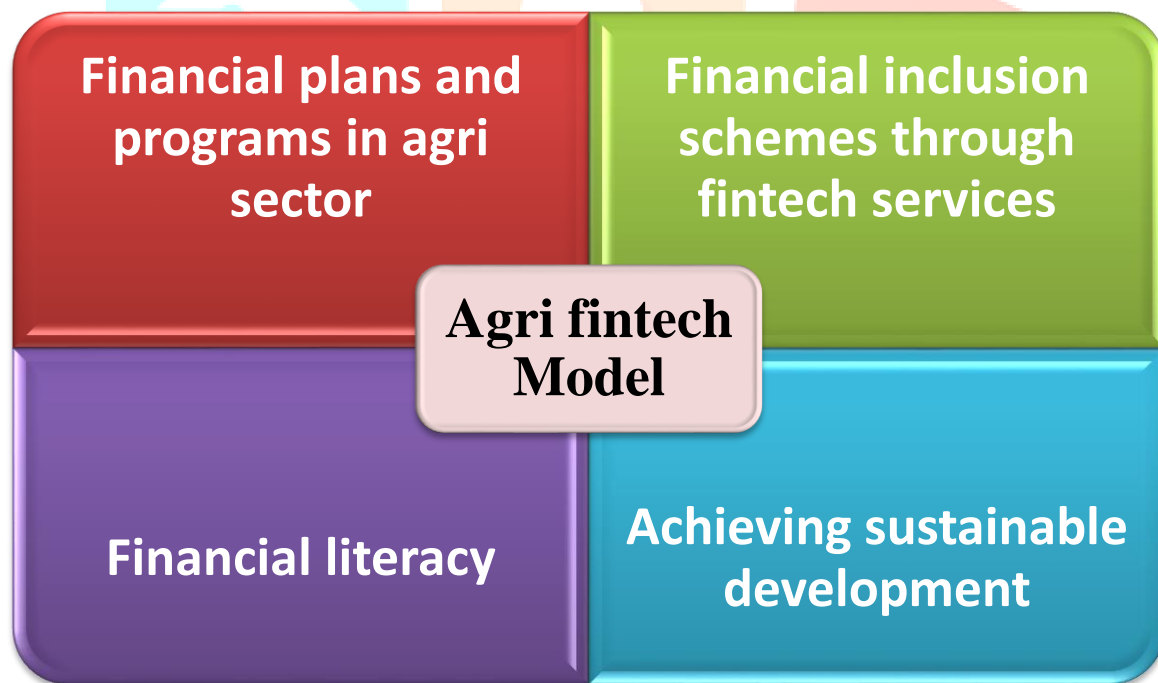
**Figure 3 Targets and Achievements for Agricultural Credit RBI**



As per the report of RBI in 2018-19 these financial banks had the fixed target amount of Rs.11,00,000crore but they achieved more of Rs.1256830.In successive two years they had target of Rs.1350000 crore and Rs.1500000 crore but their achievement is equal and less because of unawareness about the financial products and services due to covid and various economic factors. Again in 2021-22 the achievement is more than the target through the latest digital means attracts the customers and improve the standard of living in the society.

## 8. AGRI FINTECH MODEL

Agriculture sector India is one of the major food producer throughout the globe. agriculture is the primary occupation for about 58 percent of Indian people and it is the second largest country which is having largest agricultural land all over the world. Indian food and grocery market got the 6th position all over the globe and there is a drastic changes in digital technology that influence the production and sales of Agricultural Products having increasing demand across the nation. Many digital platforms and advanced techniques like blockchain drone artificial intelligence machine learning etc used as farming. [16 -18]



**Figure 3 AGRI FINTECH Model Created by Author**

**8.1 Financial plans and programs in agri sector:** Government of India introduce a several financial inclusion plans for the growth and development of agri sector that will leads to attain the well being of the people. Sometimes vulnerable section of the society that is workers may get exploited by rich landlords as well as cheated by money lenders for their financial requirements by charging higher rate of interest for their lending money full stop so through these financial inclusion schemes for workers can easily fulfill their financial requirements.



In India as per agriculture census Ministry of Agriculture and farmers welfare 86.2% minimum maximum land hold by small and marginal formers. Therefore there are many agritech services such as weather forecasting historical data related to variety of crops and their quality and also output sold assessment on soil quality agree input purchase online provided to small and marginal formers.

### **8.2 Financial inclusion schemes through fintech services:**

Pradhanmantri jandhan yojana, direct benefit transfer, atal pension Yojana, e-drone and e- rupy, e-Naam, make in India etc are the various schemes launched by government of India for the growth and development of financial system in India. Financial assistance, insurance ware house receipt financing, E-Commerce agri trade platforms etc are the fintech opportunities connects the farmers to the market in order to enhance the efficiency and transparency of Indian food supply chain. Digital Revolution fills the gap between farmers retailers wholesalers and Consumers without any involvement of any kind of intermediaries and also eliminates many risks associated with weather forecasting unavailability of latest technology lack of market network for E-Commerce and awareness regarding warehouse market price and demand for agricultural produce quality parameters etc.

**8.3 Financial literacy:** These financial inclusion initiatives with aim of involving everybody in financial management so that they can avoid dependency on any other money lenders or Financial Institutions with higher interest rates. So there is a greater require to create awareness concerning financial literacy for economically under privileged people and also small and marginal farmers in the society. Android, iOS Smartphones, and many other electronic gadgets plays an important role to reduce the constraints related to agri ecosystems includes institutional design and delivery mechanisms that helps for the sustainable development of the country.

**8.4 Achieving sustainable development:** Fintech services launched Innovative financial products and services that solve the gross root problems faced especially by small and marginal farmers by transforming the tech-led agriculture to build whole agri in rural India. Cashless online payment system, biometric identification, internet banking transactions and digital platforms through government financial inclusion schemes reach the rural farmers that will contribute to the attainment of socio- economic development of the country.

## **9. FINDINGS**

Agritech startups are funding for agricultural activities through digital technologies. RBI set the targets and achieve in the area of agricultural sectors by facilitating credits. Kisan credit program is also one of the leading credit services.

## 10. CONCLUSION

In India agriculture is the prominent occupation undertaken by most of the people for their livelihood. Therefore accessible, affordable and innovative financial products and services are essential to enhance the productivity of the agricultural sector. Analysis of this article finds feasible solution in order to have systematic financial system through agritech startups along with several financial inclusion schemes. These agritech startups not only provide financial aid but also reduce the problem related to production, whether forecasting, e-commerce, usage of Technology in agricultural sector. The agritech digital model explains the growth and development of financial inclusion through fintech services especially in agricultural sector that contribute largely to the GDP of the country. Other than the financial aid agritech firms provide many services like cold storage facilities, technical assistance etc., which will increase the productivity of the farming. [19 & 20]

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