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ALSO IN THIS ISSUE

HEMENDRA MATHUR IN CONVERSATION

WHAT 2019 HOLDS FOR AGRITECH INVESTMENT IN INDIA?

SatSure

FUTURE OF AGRITECH INVESTMENTS IN 2019

HEMENDRA MATHUR OF BHARAT INNOVATION FUND IN CONVERSATION WITH SAMUEL JOHN, COO, SATSURE

The great Indian story of 2019 will indisputably be the story of elections. The nation is at a cross roads unlike any other seen in the not too distant past. Borrowing the term “Hyper Normalisation” from Alexei Yurchak 2006 book “Everything was forever normal, until it was no more”, India is entering a phase in its history where an alternative system cannot be imagined or there is a credible lack of alternatives or total lack thereof. This permeats every sector and including that of Agriculture, the consequences of which will be felt by multiple generations in India.

So is Hypernormalisation here to stay in Agriculture? To know more, SatSure’s Samuel John sat with Hemendra Mathur, Venture Partner at Bharat Innovation Fund. Hemedra, over the 22 years of experience in venture capital, private capital, private equity, management consulting and investment banking, has invested in several early stage agritech companies and SMEs in food processing and agricultural supply chain.

QN) There are ominous signs of global down turn in the financial markets for 2019. In your assessment, what will be main drivers for VCs to invest in Agri tech, when funds are in the pull back phase for the coming year?

ANS) Agriculture is a defensive sector which has enough tenacity for growth even in economic downturns. I continue to be bullish on VC interest in agritech investments in India in 2019. Infact, agritech portfolio complements the consumer-centric or front-end focused portfolio for many VCs in India. Investment into the agritech sector can be the balancing factor in their portfolio mix.

I see existing funds increasing their exposure and half a dozen new investors making their first agritech investment in India.

The diversification in investor base, particularly the ones who can write larger and multiple cheques is a good sign for the sector. First time investors into sectors include DFIs, family offices, Foundations and Corporates who have so far stayed away from investing into the sector.

QN) There are AgriTech and then there are Agri Companies. What are the key factors needed for both to stay profitable in 2019?

ANS) Both agritech and agri companies (primarily SMEs) have to be prudent in using the capital. Bottom line focus is as important as the top line focus otherwise one can be in difficult position. Both types of companies have to focus on improving gross margins particularly in marketplace and supply chain models.

Agritech companies building supply chain from farm to fork and from factory to farm have to work hard in improving single digit gross margins to double digit. Likewise, agri SMEs have to become more working capital efficient and work towards higher value addition for EBIDTA margins to be in double digit.

I will also advise both agritech and SME companies to work towards build top level of governance structures right from the beginning.

"Existing funds are increasing their exposure and new investors will make their first agritech investment in India. The diversification in investor base, particularly the ones who can write larger and multiple cheques is a good sign for the sector" - Hemendra Mathur (above)

QN) You have been a big proponent of AgriStack. Briefly, what is AgriStack and secondly can you please elaborate in which of the pillars you see Agritech companies contributing and why is that contribution significant?

ANS) Agristack is essentially an open-source digital platform with information on farmer, farm and crop. Digitally linking farms (longlat and area) with farmer who is cultivating in that farm, opens up farmers' access to agri-inputs, markets, credit and insurance. Agristack can be further expanded to have more information data sets (such as soil nutrition, cattle ownership, irrigation etc.) but I believe that a basic Agristack signature with information on farm, farmer and crop itself is a powerful tool to empower farmers.

I believe that next wave of revolution in agriculture has to be a digital one with Agristack as the founding platform. Green revolution, White revolution and Horticulture revolution in last few decades have played a pivotal role in sustaining Indian agriculture and now is the turn of digital tech revolution to improve farm economics.

In order to build Agristack; digitization of land records; linking it to farmer id (Aadhar, Mobile number or bank account number) and topping it up with crop identification is key. Technology can be used for marking farm boundaries, detecting crops and digitizing land records. A combination of satellite and drone imagery along with ground truthing work force is required to build this up.

Improving access to high resolution (10m x 10 m, 1m x 1 m) satellite images can enable in both farm and crop identification. Several start-ups are already working on algorithms to detect crops in farm fields. Drones can be used selectively for better resolution and validation. I also believe that instead of being selective, it is worth mapping entire cropped area with drones to serve as a high-resolution baseline digitized map of agriculture in India. In my estimate, cost of flying

drones once and processing images to map each and every inch of gross cropped area in India (approx. 200 mn hectares) is about Rs 3200 crores which in the context of benefits it can accrue is worth considering for the government. The challenge remains with ground-truthing particularly establishing farm ownership / cultivator detail from the local government bodies. Government needs to onboarded for the exercise of this scale first. Government will be a big beneficiary of Agristack as this platform can become the conduit for implementing various farmer welfare schemes be it crop insurance or direct income support. Banks who are mandated to lend 18% of their book as per priority sector lending norms, will also get the necessary data points for improving their reach and monitoring for the purpose of lending to farmers.

QN) Your view on loan waivers this election year, and its collateral damage on the agri ecosystem in the country?

ANS) The agricultural policy making needs to have a long-term (at least 20 years) and holistic approach. Loan waivers is like treating a patient for viral fever when he is suffering from cancer. Indian agriculture needs investments into innovations, technology, infrastructure and market linkage components where capital is most needed. Loan waivers not only distort the fiscal discipline but also constrains ability of the sector to attract productive investment. Over and above, given deep penetration of informal credit among farmers, the benefits of loan waiver accrue to only a section of farmers.

Policy making should work towards making Indian agriculture sustainable and market-driven. Innovations have the power of improving farm economics by many notches. Policy makers should work hand in hand with agritech entrepreneurs for bringing positive structural changes to agricultural economy.

QN) You have said that 2017 was the year to watch out for agriculture. With the benefit of hindsight, was 2017 the year, or will 2019 be the new 2017? If so, why?

ANS) 2017 was an inflection year on account of the sheer number of agritech start-ups that were founded in this year vis a vis previous year. We saw high quality entrepreneurial teams starting their ventures in 2017 and fortunately that momentum has sustained till date. 2019 will be different in context of investor interest in terms of both volume and quantum of capital. I guess that quantum of capital to be invested in agritech companies will cross US$ 100 million in 2019.

I also see the ecosystem coming together and maturing in 2019. We will see more incubation and acceleration support. For the first time, we are also witnessing interest from some of the global agritech start-ups (including the ones from US, UK, Australia, France) who are planning to start their Indian operations. I am also hopeful that the elected government post LS elections in 2019 will take a broader view on the policy front acknowledging and integrating innovations in policy development and implementation.

QN) You have been a big proponent for Agriculture reform in India. There has been a major change in the APMC 2003 Act which was roundly criticized as not doing enough to address the small farmers in the context of the new cash and carry, bulk purchase and new ecommerce type of players. What in your opini on should be done to cater to the small holding farmers as suppliers to this change in consumption?

ANS) There are more than 10 crore small and marginal farmers in the country whose income is about US$ 1000 per year. Clearly, this is the financially excluded segment of the farming community.

We need to have a mechanism to improve their access to institutional credit, insurance and markets. Many agritech entrepreneurs who are building supply chain linkages are trying to reach out to them. Becoming a part of integrated supply chain will definitely help small and marginal farmers, however this will take its own time. I believe that building digital records of such farmers through Agristack will be a powerful mechanism to reach out to small and marginal farmers. Building local entrepreneurial ecosystem is another way to empower small and marginal farmers. We need village level entrepreneurs who can connect these farmers with SMEs, corporates, banks and innovators.

CREDIT LENDING AND FOOD SECURITY IN INDIA

By Sarvesh Kurane, AVP Sales, (West India)

'Agriculture is the backbone of Indian Economy.' This phrase has been quoted in numerous articles, speeches and discussions historically in modern India. Perhaps, it rightly is the correct statement. Agriculture and allied activities accounted for 17.5% of GDP and employed 46% of the country's total workforce in 2012-13. For a developing country like India, where 66% of the total population still lives in rural India, these figures are significant.

However, there is another aspect to the phrase. The traditional basic needs approach has described food (including water), clothing and shelter as the immediate basic needs. Thus, in this context with some tweaks made, agriculture is not just the backbone of any economy, rather a backbone of the entire human civilization.

India To be a major force to cater to the future food security needs of the globe

The global human population in 2015 was 7.3 billion which shall rise to 9.1 billion by 2050. Indian population will rise to 1.3 billion by 2025. India has an arable land of approximately 150 million hectares which makes it second largest country in terms of arable land after the United States of America. More than 100 million hectares is used for growing principal crops in India. To meet the food supply and food security needs of the world, India will have to develop ways and means to provide good quality food, increase production and at the same time solve its problem of poverty and economic inequality. Thus, India is going to be a dominant force, and rather an important contributor to the stability and well-being of the human civilization in the immediate future.

Credit Lending in India: Priority, Problems and Opportunities

The next question that should come to our mind now is, 'Are we taking the right steps to develop our agricultural ecosystem to meet these needs?' Considering our area under agriculture is not growing to grow by a large value, we shall need to improve our farming practices, incorporate good quality agri inputs, increase irrigation, move towards mechanization and improve our logistics and supply chain of agricultural goods through efficient storage and transportation facilities. This shall mean relying heavily on new technologies. To attain this, the major constraint that India will face is the problem of efficient credit lending.

Problems

Farmers in rural India have traditionally relied on money lenders for credit. Socially, even with exorbitant interest rates, farmers feel comfortable borrowing credit from them since they belong to the same village and know each other in person. Another aspect is lack of bank branches in many regions, which leaves farmers with money lenders as the only solution.

Due to these high rates and the hassles faced on high delinquency with institutional money lenders, there is a prejudice and lack of faith surrounding credit in some farmers.

Agricultural lending is not only an issue for farmers, but also for banks in India. 1/3rd of the country is prone to droughts and 1/6th is prone to floods. Farming is India is heavily dependent on monsoons. Around 35% of agricultural land in India is reliably irrigated. The general tendency amongst farmers in India is to borrow credit from both banks and money lenders, in which case, they prefer paying money lenders first over banks. The lack lending history, crop history, income and performance history and land records make credit lending in India makes agricultural lending a bit risky affair. Banks must allocate 18 percent of ANBC or credit equivalent amount of Off-Balance Sheet Exposure towards agriculture. This makes portfolio risk management an important concern for banks.

There are around 30,000 commercial bank branches in India. These have around 77 million credit accounts of which 39 million accounts belong to small and marginal land holders (less than 2 hectares). Of the total agricultural credit size, almost 70% are crop loans and 23% are equipment loans. Even with these figures, Indian banks are far off from penetrating the rural India. Considering all these problems, the agriculture lending in India has improved significantly. The policies of Indian Government which revolve around digitizing the process and introduction of Aadhar has helped the banks in creating reliable history for a farmer and thus reducing the farmer onboarding inefficiencies.

Opportunities

Presently, only 40- 45% of agriculture in India is mechanized. Government is pushing for farm machinery susbidisation through schemes like Central Sector Plan Scheme etc. The percentage of agricultural workers to total workforce in India will decline to 25% by 2050. This implies, with increased migration to urban areas and urbanization of many regions in India, the probability of an increase in the average land holding is high. This figure presently stands at 1.1 hectares compared to 14 to 17 hectares for developed regions like US and UK. The increased land holding per farm and reduced available labour will increase use of machinery, agricultural inputs to manage farm activities and production.
This creates a huge opportunity for commercial banks in the future. However, to effectively tap this huge demand, banks will have to adopt new technologies, increase efficiencies in their existing processes which shall eventually lead to optimized interest rates and a better risk portfolio. The areas where banks will need to focus to create an efficient banking process for the future are -

Easy Access to Banks

This means banks will either have to increase the number of branches or create unique

PHOTO BY MEENA KADRI

'Point of Contacts' for individual borrowers. Presently, the mobile internet penetration in India is as low as 18% (as per Internet and Mobile Association of India). However, with the Government pushing for digitalisation, it will work in favour of banks to create better access through apps and call centres, as the users increase.
Reducing the lead time – between the loan application and sanction of loan.

Customer Knowledge
Accurate customer knowledge is the most important data point for banks. It shall not only lead to reduced lead time, but also help in optimizing interest rates, reducing NPAs. The data required along with the present data collected by banks to create a good farmer profile includes KYC, Digital Land Records, Historical Farming Practice, Historical Yield and Income, Sowing and Harvesting Data, Efficient Collection Cycle. To reduce NPAs and improve the balance sheet, it is very important for banks to have a timely collection cycle.

How Earth Observation Satellites (EOS) Data can fill the present data gaps?
Earth Observation Satellites have been circling around the earth for almost past 40 years. They have been collecting data which so far has not optimally been used in any activity except by government organisations. The increase in number of satellites and reduced manufacturing and operational costs implies this satellite data, which earlier found major applications in military surveillance, is now affordable and can be commercialized.

Satellites can provide historical region specific, crop specific data. Combining this data with the existing technologies of improved computing abilities, cloud servers, machine learning, deep learning and AI, can help provide great insights and patterns which previously were not possible due to the lack of right technology.

This data can help banks in better underwriting, efficient and targeted customer acquisition and collection cycles. As per the Basel III Capital Accords, agriculture now is to be treated as a retail exposure and the corporate credit risk portfolio models cannot be applied to agriculture. Satellite data provides an opportunity for a transparent and efficient creation of credit risk models for agriculture and thus a better agriculture credit risk portfolio.

Thus, to tap the future food security needs, India will have to start adopting technology in the agriculture sector. The major driver for this adoption is going to be an efficient credit lending system by the financial institutions. Thus, it is the right time for banks to start incorporating and experimenting with new available technologies, which they feel can be easily integrated into their system and processes for a future which lies just a couple of decades from now.

HOW SATSURE IS TRANSFORMING SATELLITE IMAGERY TO DECISION INTELLIGENCE

By Aadra Gunashekar, Product Manager

Commoditizing your product's complement has become the trend in the ever competitive tech industry - the trend is defined as layers of the stack attempting to become monopolies while turning other layers into perfectly-competitive markets which are commoditized, in order to harvest most of the customer surplus.

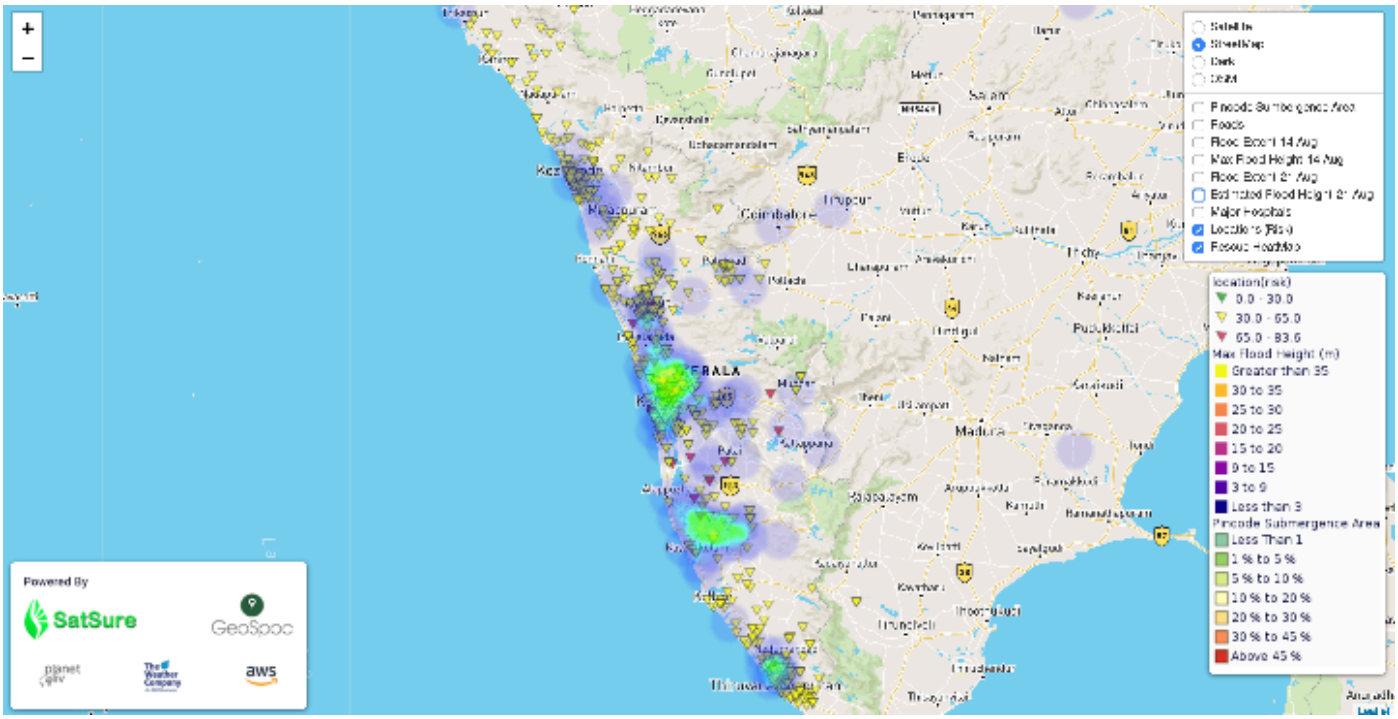
Many internet companies attempt to commodify another company in their product's stack, or defend themselves from being commodified. One such successful attempt was made by Google Maps, Maps has been dominating web mapping services in the past decade, getting far ahead the curve of competitors like Apple has been well documented in this post by Justin O'Beirne - Head of cartography at Apple. Google used computer vision techniques for feature extraction, especially building footprints, from satellite data images coupled with ground truthing by StreetView crews as early as 2007. The juggernaut that Google Maps started a decade back is now being adopted in different use cases across sectors. Satellite image derived analytics is picking up around the world in myriad industries and will continue to span the globe as the entire planet turns into a neatly labelled, queryable, predictable data structure.

SatSure believes that this is the era when geospatial data will occupy centerstage on a global level with advances in cloud computing allowing for near real-time processing of terabytes of high resolution satellite imagery. While satellite data has been available for many decades, key challenges associated with analyzing the data are related to the size of the files, resolution of images, a remote sensing training and inhibitory costs. With the opening of floodgates of satellite imagery and public access available to high temporal and spatial resolution satellite images like Sentinel 2, Landsat, Planet, and many others, the world of remote sensing has achieved 20/20 vision on a global scale across many indicators.

NSR's ***Big Data Analytics via Satellite*** Report described a continuing growth trend in downstream big data solutions driven primarily by earth observation (EO) and machine-to-machine (M2M)/IoT applications in transportation, government, military and energy sectors. Overall, satellite big data analytics will reach close to a $3 billion revenue opportunity by 2027, with 54% from M2M/IoT applications and 46% from EO applications. North America is predicted to dominate the revenue opportunity, but demand in the rest of the world is expected to pick up. Asia Pacific will be the second-largest earth observation market by 2020, with an estimated market share of 27.9%.

and cloud computing to deliver analytic insights at the regional, state and national level. Using classification algorithms on remote sensing data has been proved to model complex class signatures more accurately and can accept a large number of inputs compared to traditional rule-based parametric classifiers. Class signatures identified and mapped include urban rooftops, ships, buildings, cars, deforested land, palm tree tops, etc.

SatSure is working with state governments to reduce the cost of crop cutting experiments by randomizing the site selection after multi-layer stratification. Policy-makers get additional near real time data points when they use time series



Using satellite imagery as the primary data input, SatSure analyzes the entire cropping cycle through the seasons and has several partners for ground truthing. 60 districts and over 492,000 square km of agricultural area is being currently monitored by SatSure, providing risk management and business intelligence solutions to multiple sectors such as banks, insurance government, and food processing. Dramatic cost reductions in the building and launch of satellites from US$ 200 Million to US$ 200,000 has led to exponential growth in the number of satellites launched. Yesterday's military intelligence has become today's business intelligence. SatSure has engineered solutions to automating and scaling feature extraction from satellite imagery, classification, clustering algorithms, socio-economic datasets

satellite data that can assist in enabling more informed decision-making plugging institutional data gaps. The 2018 Kerala floods saw thousands stranded in remote areas with no access to basic supplies. The National Remote Sensing Center (NRSC) in Hyderabad provided alerts on flooding, areas of inundation during and after rain, and weather forecasts. SatSure also set up a portal to assist in search & rescue operations, by layering processed flooding insights using Sentinel-1 radar data and current rainfall statistics among other such as administrative boundaries, road network, and emergeny rescue helpline heat maps. SatSure again repeated the same for the damage assessment in the immediate aftermath of Cyclone Titli, which devastated coastal Andhra Pradesh later in 2018.

AWS AGRITECH DAY

HYDERABAD

TIME
10:00 AM - 03:00 PM

DATE
MARCH. 9th 2019

VENUE
T-Hub, Hyderabad

DELHI

TIME
05:00 PM - 09:30 PM

DATE
MARCH. 8th 2019

VENUE
Amazon Internet Services (AWS), Delhi

MUMBAI

TIME
06:00 PM - 10:30 PM

DATE
MARCH. 7th 2019

VENUE
WeWork, Mumbai

AGENDA

- VC Panel
- Enterprise Panel
- Entrepreneur Panel
- VC Connect
- Startup Enterprise Connect

SatSure omnivore YOURSTORY t-hub wework