

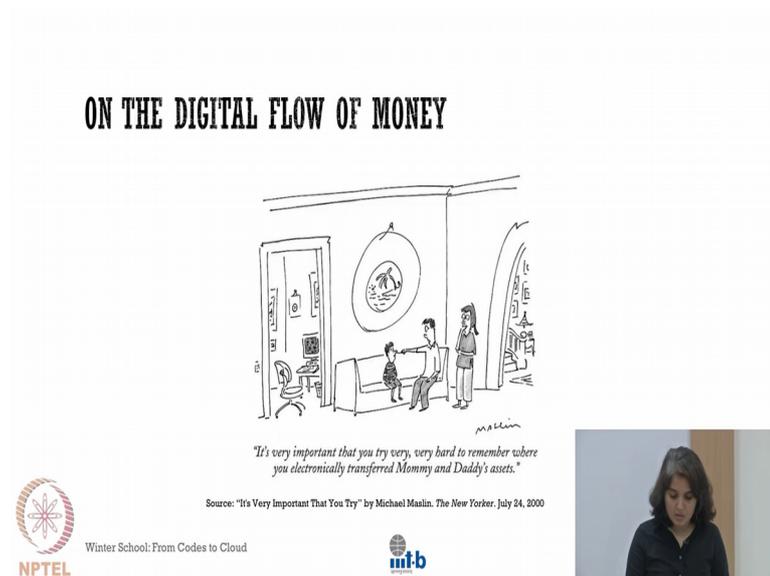
Digital And The Everyday: From Codes To Cloud
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Lecture – 15
Digital Finance-Part 01

So, very warm welcome to all of you, for showing up in this sports length session on financial lives in the digital age. My name is Janaki Srinivasan I am an assistant professor here at triple IIT Bangalore, I want to take a shot moment to apologize for not being here and person for this session unavoidable circumstances, but anyway I hope this is a useful session for all of you, now I am sure you have all heard about the way in which digital tools, are revolutionizing our lifes right?

And then finance as much as an other kinds of domains and when I say our financial lifes, I mean both the kinds of people that I hear today in this room, but also people who might not for instance be integrated into the formal banking networks. Because you know, we have heard that digital finance will revolutionize life, especially for those kinds of people who are not included in these networks.

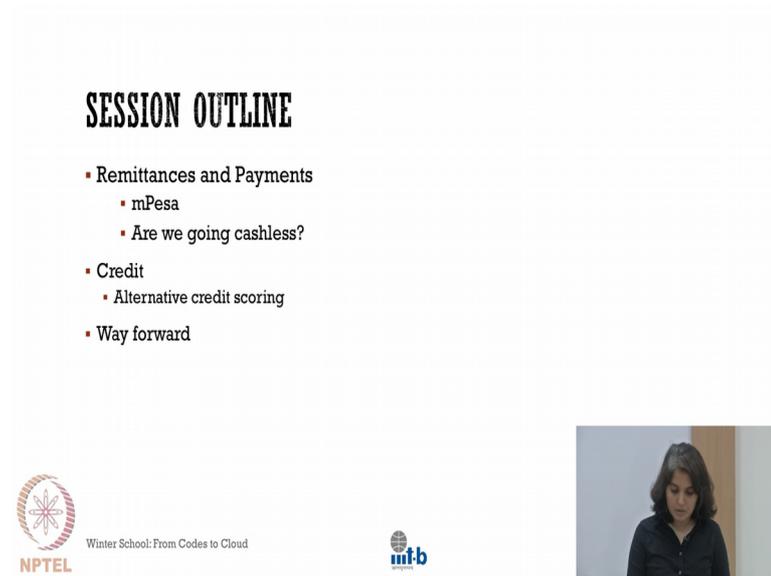
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So, for instance here is cartoon on the digital flow of money is basically, this kid sitting in a North American context, who has electronically transferred his parents are somewhere, who knows where and he and his parents are equally puzzle by what has

happened. But when we look at sort of diverse population, who are not necessarily very used to formal financial networks or to digital technologies, this puzzle meant as enhanced if you will and that is part of what will be looking at today.

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SESSION OUTLINE

- Remittances and Payments
 - mPesa
 - Are we going cashless?
- Credit
 - Alternative credit scoring
- Way forward

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Now, digital finance is a very vast space, and we will only be looking at 2 slices from that, one will be remittances and payments that are made using digital tools and another is the whole idea of digital credit. In remittances and payments, we will mainly be looking at the poster child of mobile money, one specific kind of digital finance called mPesa, which many of you might have heard about in Kenya. And the second question we are going to look at is, why is that many of us probably all of us continue to also pay in cash? When we have these other more sophisticated ways of making payments under credit we will be looking at some of the innovative things that new digital credit companies are doing and also focus a little bit on alternative credit scoring.

Now, throughout this entire presentation I will try and focus on some of the things that came up that must come up in your yesterday sessions around privacy around the importance of policy, the whole idea of data and identity and the importance of algorithms. And finally, we wrap up with thinking about some of the ways, in which we can think about the space more productively going forward.

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REMITTANCES AND PAYMENTS



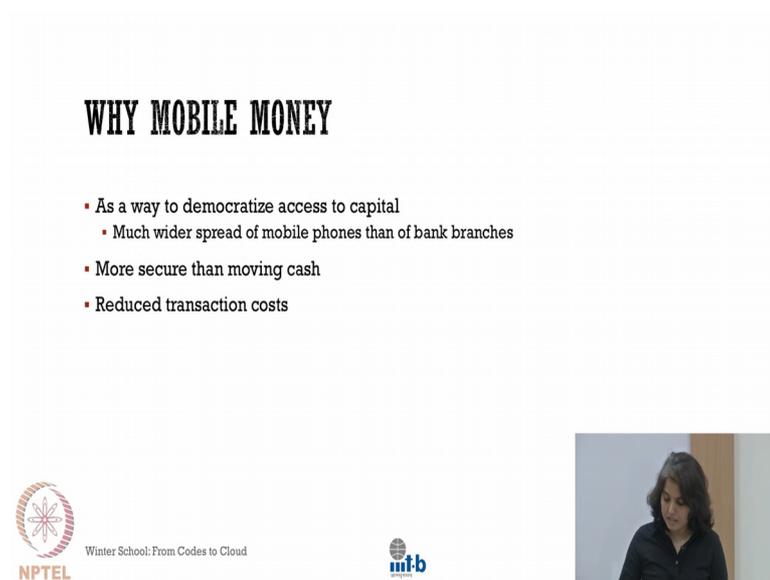
The slide displays a collection of logos for various payment and remittance services. At the top, the title "REMITTANCES AND PAYMENTS" is written in a bold, black, serif font. Below the title, there are several logos: "paytm" in blue and black, a blue wallet icon, "airtel money" in red and white, "BHIM" in black and green with the tagline "BHARAT INTERFACE FOR MONEY", "bitcoin" in black and white, a stack of colorful credit cards, and "WESTERN UNION" in yellow and black with the tagline "MONEY TRANSFER". At the bottom left, there is the NPTEL logo and the text "Winter School: From Codes to Cloud". At the bottom center, there is the MIT-B logo. On the right side, there is a small video inset showing a woman speaking.

All right? So, when they think of various tools of remittance and payments, there is a wide variety now right? So, this paytm which is the posted child of Bangalore, there is airtel money, we have an app like BHIM, now which allows you one interface and way of making payments. There been age old things like Western Union, which is used for money transfer between countries for example, people have been using credit cards and for the more tech savvy and geeky amongst us, some of us might also be using bitcoins correct.

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WHY MOBILE MONEY

- As a way to democratize access to capital
 - Much wider spread of mobile phones than of bank branches
- More secure than moving cash
- Reduced transaction costs



The slide is titled "WHY MOBILE MONEY" in a bold, black, serif font. Below the title, there is a bulleted list of reasons. The first bullet point is "As a way to democratize access to capital", which has a sub-bullet point "Much wider spread of mobile phones than of bank branches". The other two bullet points are "More secure than moving cash" and "Reduced transaction costs". At the bottom left, there is the NPTEL logo and the text "Winter School: From Codes to Cloud". At the bottom center, there is the MIT-B logo. On the right side, there is a small video inset showing a woman speaking.

But even before we go into this whole space of part of which is what you would call mobile money, let us think about what the rationale for something like mobile money is right um? So, around the early 2000, people who are working on say poverty eradication started saying that demo access to credit needs to be democratized right? We knew by that time that banks had not been successful in including everyone, in their formal financial networks in these kind of demographics in developing countries on. And so, forth what was also happening in the 2000 this was the longer conversation right?

But what was also happening in the 2000, was that mobile money ownership and use was proliferating. So, people started think about how about if we, piggyback on this widespread network of mobile phones and try and see, if we can reach credit and bank accounts and some kind of accounts for saving 2 people, piggybacking on these mobile phones. So, that was one reason second one is that transfer in digital currency was typically safer, than transferring hard cash right cash could get stolen it could get damaged etc, problem that digital cash would presumably not have and finally, there was the whole question of transaction cause.

So, when earlier people wanted to move money and of course, people were doing that whether or not they had bank accounts, when they wanted to move money, what they would do? Is maybe send it with a bus driver, who was going from one town to a village etc, and when they did that they would have to pay that person a certain amount of commissioner or fee whatever, and presumably when you started using mobile money, you started sending digital currency to people directly, this would be cause that would be reduced.

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So, coming now to the poster child of mobile money, MPesa MPesa something that was started by this telecom company called safari dot com in Kenya in 2007. So, were actually now celebrating a decade of mobile money. Now, MPesa has many firsts and numbers to it is credit, it is now live in 10 countries it does not operate only in Kenya. In fact, India also has MPesa in partnership with Vodafone; some of you might be using that. It 287000 agents, who help people with MPesa at the end of 2006, that have been 6 billion transactions in that year it has 30 million active customers so on and so forth.

So, very, very huge numbers, right? So, what exactly does MPesa do, it was basically introduced as a tool to transfer money from 1 place to another one person to another and it it has a very interesting history, in that the telecom companies didn't think of it on the roam, they actually saw how people were using the mobile phone and this idea came out of that. So, basically what people would doing, and this was again in Kenya mostly in Africa is that people was sending other people money through a time minutes.

So, those of you who remember the days of prepaid cards, prepaid currency for mobile phones, will remember that was something called you basically get this scratch card. You put a certain amount of you pay certain amount of money, get that scratch card it will give you a certain amount of minutes on your phone correct. Now, that is air time now what people were doing was that, they were transferring air time to each other.

So, instead of having to transfer cash, they were transferring air time um. So, seeing this telecom company people started thinking, that maybe this is also a way in which mobile phones can be used to directly share money. So, that is how this came about.

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REMITTANCES



Video:
<https://www.youtube.com/watch?v=nEZ30K5dBWU>

Source: mPesa ad from 2007 reproduced in Nelms and Rea. 2017. *Mobile Money: The First Decade*. UC Irvine

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So, how does it actually happened though, will get into that I first wanted to show you an iconic ad from 2007. So, you see what is happening here, there is a person who presumable in a city he wants to send money to friends family in a village rural area, he uses his phone you will notice the this was 2007. This is not a smart phone, this is just normal brick phone, he uses it to transfer you can see those currency notes sort of flying across and it reaches this other person at the other end, right?

So, money has been transferred. In fact, we should pause now and also look at this video, this whole thing also has the screenshot is basically of an ad which also had a video formats. So, will try and watch that, just to get a better sense of how this works.

Now, you can send paisa past and safe using safari dot com, new service MPesa it is the new reliable way to send and receive money, using a mobile phone visit in your MPesa agent today terms and conditions apply.

All right? So, as you saw basically, what happens is that the person who wants to send the money goes to an agent pays them a certain amount of money, that is transferred into

digital currency on their phone using the number of the person they wish to send the money to, they transfer a certain amount to them.

At the other end the receiver, will go to a mobile money agent with this receipt of the money, that they have been sent, that agent will then convert that back. He will take the digital currency into his own phone, and will give them cash instead of it. So, this is how this whole process really works.

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FEATURES AND CONCERNS

- Still used mainly for remittances, rather than for payments or savings (Nelms and Rea 2017)
- Role of regulation
- Existing practices of sending money home
- Role of mobile money agents
- What data is being collected or aggregated?
- Reliance on cash



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Now, this is continue to grow, over the last 10 years. In fact, that also been a while it useful for regular transactions, it was also seen as very useful at moments of crisis. So, for example, 2007 shortly after this was introduced, the Kenyan election happened and they were followed by violence and riots and during this time, lots of people needed to get their hands-on money. Because they wanted to move away from where they were where the was violence etc, and MPesa actually was really enormously beneficial, at that time.

From this I want to go onto looking at some of the features of MPesa. Now, MPesa has been the poster child of mobile money, but people have been trying to replicated in different countries scenarios etc, but it hasn't always been as successful right? So, why and infant even within Kenya what is really worked with MPesa have been remittances? After that people have also emphasize also introduce other ways, in which you can pay

say merchant's you can save on your mobile wallet etc, that has not really taken off or at least not the same extent as remittances have.

So, let us try and think about why this is? What is the specificity of ampersand Kenya which made it? So, successful right? Some of these we have already looked that, but let us sort of recap. Now, one thing that perhaps did not come through as much in, what I have been saying so far is the importance of regulation. Now, Kenya used what is called telecom led model of mobile money, what does that mean? MPesa was basically introduced by safari dot com, which was Telecom Company it was an introduced by a bank right?

So, there are 2 ways in which mobile money has typically been introduced around the world, one is the telecom led model, and the other is the bank led model. A country like India for example, follows the bank led model, now what happened in the case of Kenya was safari dot com was a huge monopoly, it was the biggest telecom provider in Kenya at the time and it also had it already had dedicated subscriber base right?

So, that made a huge difference, when it came to things like remittances. Now, the other thing was also that already people were sending remittance to different places, it might not have been through MPesa, but they were doing it anywhere. So, though social network also existed now, when these things change like in the Indian case for example, which is a bank led model what; that means, is that mobile wallet us and mobile money is treated as a banking transaction. So, you have to be a bank, in order to say take deposits take savings payout money etc, So, because in the Indian case, mobile wallet was regulated by banking regulations things was slightly slower right? It was not led by Telecom Company. So, basically telecom companies would tie up, with a banking partner and only then a mobile wallet will be launched.

Now, this is not a bad thing in and of itself, but what happened was, the regulators constantly shifted what these kinds of mobile wallet us for allowed to do, and what they were not allowed to do. So, in 2006 for example, I was doing research in Kerala, among fishing communities trying to understand their adoption of mobile wallet us right? By that time India already helped airtel money, for quite a few years it had Vodafone MPesa and also some other companies and it was not really being used as much, and from the telecom providers point of you, when you ask them, why given that people had access to

mobile phones etc, why they want pushing for mobile wallet us. One of the things they said was that, the regulatory space was actually shifting very quickly. So, for example, by 2006 they had given out payment bank licences, to some of these mobile wallet Telco companies, which basically means that they could now do more. They could take deposits for example, right which was not the case the previous year, but because things were constantly moving telecom companies one necessary sure how much they wanted to focus on mobile wallet us.

So, that is at the supply end. Now, at the other and Kerala might be a bit of an exception in this case, but people already had access to ATM, which off fairly close to where they left. So, cashing out money or access to cash, was not necessary seen such a big problem. So, in the Kenyan case the level 2, which the banking infrastructure had failed was not necessarily true in the Kerala case. So, that was another reason this might be another reason, that a mobile wallet mobile money kind of scenario does not work, is not equally successful everywhere. Now, coming back to Kenya and why did work there? Another big reason was the widespread network of mobile money agents, that that MPesa deployed right?

So, one of the reasons for the failure of the banking infrastructure was that, bank branches could not be everywhere and they did not reach many parts of the country, but mobile money agents, on the other hand work much more widespread. An interesting sort of corollary to this was also that, mobile money agents typically tended to be of the community, that they was serving and what does meant was that people could tendered to trust them more.

Now, having local member be an agent, comes to this pros and cons and will look at some of the cons later, but basically people who were not necessarily, very conversant with how to use something like this, felt going up to mobile money agents, who they knew who are from the community and who would help them in this whole process of money transfer and by all accounts these, agents have been critical in how well MPesa has worked for remittances.

Now, one of the things that we want to think about in light of the earlier session, that you guys have taken is that with sort of the uptake and the introduction of uptake and mobile

money, there is also lot of data that that is getting generated right about how much money people store? How they spender? What they sent in terms of remittances? Etc.

So, it is always work asking who has data about this customers? And how it is being used? And I think what mix all of this even more important is, that especially in the financial inclusion sort of conversations. Many of these people who have mobile wallet us might be people, who are use neither to formal banking networks nor necessarily to the use of digital technologies. So, I think these question become very important enlighten of that, and when we come to digital credit, we will again see that another person who might have data, is actually the mobile money agent. So, how do we think about the kind of data trails, that people are leaving behind, how do they think about the data trails that they are living behind.

Now, finally, I want to sort of bring these threads back, to the idea of cash rights. So, we are talking of mobile money versus cash, in a way we talking about what are the advantages that mobile money has over cash? Why is it that it made remittances easier? Etc, but I want to take a step back now and think of why we continue to keep using cash. In fact, if you take a momentum look at the MPesa case, even the that is not cashless right? So, what is basically happening that, is the this person going to mobile agent paying them in hard cash, to get a certain amount digital currency. Now, that is getting transferred, but at the other end it is again cash, right? That person goes with the receipt and gets what is called cash out? So, they transfer the digital currency to the agent, but in return for that they get cash.

Now, in Indian case for example, because of regulations cash out was not allowed. So, basically what that meant? Was that you had to transact in the digital currency itself, use that to pay something else, you could not actually use it like an ATM and take cash out now why is it that we are. So, attached to cash, right? So, that is the question that I want to come to next.

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PAYMENTS



Source Whatsapp forward received November 8, 2016. Source unknown.

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All right? So, I think the place for cash in an economy was something that came to the forefront especially in the Indian case slightly over here back. Now, this was a picture that I received on Whatsapp and I received it on November 8 2006. So, let us pause for a moment and ask what is the context of this picture? And what did it mean?

Student: after 501000 rupee lost, their identity has a legal tender, they were just made paper which can be used, they can be used for any purpose like paper , they have lose their value as the currency (Refer Slide Time: 19:50) newspaper for anything (Refer Slide Time: 19:55). So, I can use I can use it for a any it is just a paper now, it does not have any other value or you can store it as a memory or something, but.

Student: I think this images quite funny, because it is it kind of portraits are those currency notes do not have any value, but still you are supposed to exchange it. Because you earned it, you supposed to exchange and get the new currency notes. So, I mean it is not a simple as it seems, like can you said to. So, peanuts, but till before the deadline you have to exchange it, because they still have some value and you need to get it back.

Student: Saying how he promises to pay the some more pay the bearer the sum of 500000. So, this is a (Refer Slide Time: 21:00) take on how this is nothing but me a paper.

Student: I think my point is related to the future of this kind of currency system, I mean the value of the digital money, I am in the way we were exchanging in the money. So, was it shifted to into the form of a digital currency that is what I will say.

Student: So, this is a creative answer. So, it is like an Indian [FL]. So, once it has lost all its value, the person is also trying to make use of the last bit of you know what he is losing after demonetization. (Refer Time: 21:42)

Student: Yea it is just an Indian [FL] for that instance.

Student: on digital money is we used to say that, like we can rely upon; that means, on the starting time, it was like you know you do not know at what time, that is going to disappear and all starting time though was some news, regarding this digital money, but when compared to this image hear the regarding the ₹ 1000 note also, like we cannot say that what time this is going to disappear. So, it is a comparison I guess.

Student: actually, sir paper currency may lose its value for a sometime or time period, but the digital currency will not. So, by this way we can use the more payment method digital mode, digital mode by this picture we can see that, if the paper waste currency can you know, less can lose its value sometime, but if it is the digital currency then it will not.

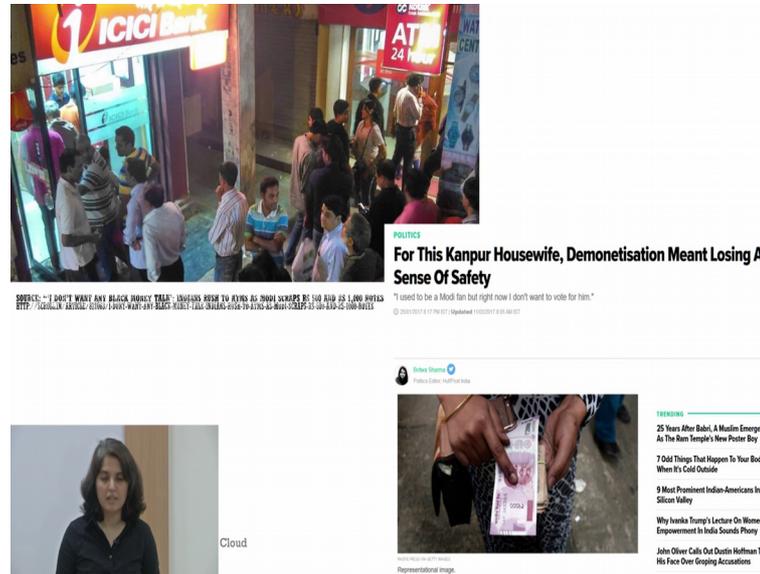
Student: that she as mam as focused on the point, that why do we use cash? So, India needed such big push as big as demonetization to push the currency towards a little more on a digital size, digital note you can say, because even me I started using Paytm and all these digital modes after demonetization, early I was even you know induced to use it.

So, presumably some of you figured out that November 8th was when Prime Minister Modi, declared that 2 demonetizations the 500 rupee note and the 1000-rupee note were, no longer of any value to from mid night that day right? I am sure all of you remember that moment.

Now this picture basically depicts, that suddenly these notes are only worth serving peanuts, and right? They have no monetary value. Now, you would imagine and demonetization itself, also postured this vision that with this move alongside various

other goals that it had, was that people would switch over to more convenient ways of transacting, not continue to stick with cash, right?

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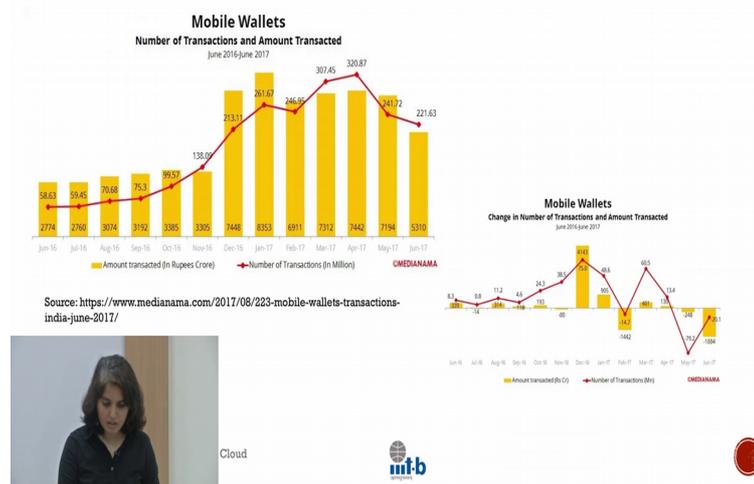
Here when you went out the day after, what was one of the iconic images that you saw in newspapers on the road etc, was lots of people queuing up for cash right.

Now, the question rely is why are why were we then? And why we still hankering after cash? Why do we need cash when there are so many other ways of transacting? Now one way to think of that is that; obviously, the one tin of people who are willing to take something other than cash, there is definitely that part, but the other also other reasons a very dismays way of thinking about the this, would be to say that well some people just do not like adopting new technologies, we just have to either wait for them to catch up, or you know somehow coheres them into using that technology, but if we try and actually understand what, why as that people place any value in cash? I personally feel that is more useful way of looking at this, for instance look at this one of the and I know this is not the only case were this comes up.

Many of you might have seen newspaper headlines heard enactor etc, about how angry housewives, were when the demonetization move as announced. Maybe, you can see if any of you remember, but anyways what this headline releases is for this Kanpur housewife, demonetization meant loosing a sense of safety. Now, what was really happening is that housewives like, this one and many others across the country, where

used to saving cash left over from their household expenses, in the house. Now, they saw this as a store of safety, it was not something that they necessarily provided accounts of to their husbands. So, in a sense it was their own sort of secret stash, that they could either use discretionarily or use in times of emergency etc, use in times of crisis. So, they basically saw this as a safety net and what demonetization did was, because essentially much of this might have been saved in the notes, that were demonetized people had to return it to the bank and as soon as they did that; obviously, that cash become visible and housewife started to feel, that it became part of an account right? So, it was no longer there secret stash that they could immediately dive into in times of emergency.

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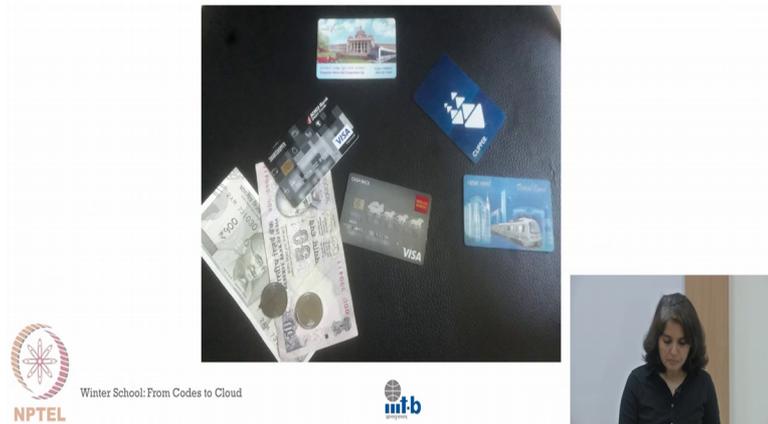
Um and again I think these graphs also show the same thing, that peoples reliance on cash continues, right? So, you can see that the number and volume of mobile wallet transaction really peaked just after demonetization, than they sort of stabilize there and they have actually started to drop. I mean of course, there still more than the pre-demonetization period, but I think it is worth asking, why this fluctuations? Why is dipping?

Even though today you would say, that right after demonetization. In fact, they were issues of you might remember people would go to merchants, but those guys would not necessarily have the card reader, right? So, there were issues like that presumably those

have stabilized overtime. So, you would have expected much more peeking, of mobile wallet transactions, but that isn't happening. In fact, it is even coming down.

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HOW WOULD YOU LIKE TO PAY?



So, why this going back to cash are people just a bunch of (Refer Slide Time: 27:35). So, there more to it before that, I want to just take before we go into all the reasons I want to take a moment to see, how all of us really transact right? Maybe take out your wallet, that is what I have done and I put out a few of the things, that I found in it and see what kinds of things come from. It that you use for financial transactions and then also take out your mobile phone and see what kinds of things there, you use for different kinds of financial transaction.

So, when I took out mine for example, I found a couple of credit cards fairly normal, one of which I use when I travel to the US and because I used to live there the other one is, an Indian credit card, I have a little bit of cash and I also have these other transport cards rights? So, these are things that I have loaded up with cash, but which I can only use in specific kind of venues. So, I have a Bangalore metro card, now I cannot go and use that for I do not know buying carats right? It is a very specific kind of currency, if you think about it and of course, I have cash, as I am sure all of you also discovered you do.

Now, what is the point that I am trying to make with this, there are a couple of? So, well one thing is that besides all the sophisticated digital technology we saw so; obviously, we also all of us use cash that is like the sort of baseline inside from this exercise.

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We also saw that there are other kinds of currency, right? besides the transport cards that, I showed you which work and very specific venues and which I paid for with cash, there also are the things like I am sure many of you have frequent flyer miles right. So, basically you pay for that through miles, through how the extent to which you travel and you can convert it back into various thing, it can be gifts it can be other travel etc. So, that is also one kind of currency. So, we all deal with various kinds of objects and currencies, when you go about financial transactions that sort of the larger inside.