Academic Ambassadors and the Diffusion of Financial Services among the Peruvian Poor

PIERI EVALUATION PROPOSAL

Presented to

Partnership for Economic Policy (PEP)

By

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SECTION I – RESEARCH

1. Introduction

1.1. Abstract

Given the Peruvian poor's lack of access to formal financial services, and its severe consequences on human development; in 2015 the Peruvian government announced its Strategic Plan for Financial Inclusion, which points to electronic money as a key mechanism for speeding up financial inclusion. In early 2016, the Pagos Digitales Peruanos company (PDP)[1] launched BIM: an electronic wallet targeted to those without access to financial services. PDP currently faces several challenges related to BIM adoption in poor communities, particularly lack of trust and resistance to change.

We propose to study a BIM diffusion strategy in which academically successful individuals from targeted communities play the primary role in spreading information and training. These individuals are drawn from Beca18, a program that facilitates access to post-secondary studies for impoverished high school graduates. In other words, we will explore whether adoption of financial technologies among the poor can be speeded-up by using role models from the community in the diffusion process.

PDP has confirmed its support for our project. Other stakeholders like the Commission for Financial Inclusion, the Banking and Insurance Bureau and the Ministry of Education in Peru have also expressed their interest. PDP will grant us access to anonymized BIM adoption and usage records. We will also implement a baseline and follow up surveys to capture information on other variables that can be affected by our intervention.

Financial inclusion is closely connected to economic performance and productivity, and we will also explore gender issues related to BIM adoption, all important themes at PEP.

1.2. Evaluated Intervention and Context

It is well understood that lack of financial inclusion severely restricts the wellbeing and economic opportunities of the poor. Only 29% of Peruvian adults have a bank account; and among the poorest 40%, this number is only 18%.[2] So in 2015, the Peruvian government announced the National Plan for Financial Inclusion.[3] This plan highlights the development of an electronic money platform as a mechanism to speed up financial inclusion. Responding to this challenge, in February 2016, PDP (a company founded by the members of the Peruvian Banking Association-ASBANC) launched BIM, an electronic wallet targeting the "financially excluded".

Activating a BIM account requires a basic cellphone (which more than 80% of the population owns) and the National Identification Document (DNI). You must dial the number *838#, enter your DNI, select the bank that will "take care" of your money, and choose a four digit secret code (required for transactions). With an active account, individuals can deposit and get cash with the

[1] PDP was founded as collaborative initiative of the members of the Peruvian Banking Association.
[2] http://www.bancomundial.org/es/news/press-release/2015/06/11/peru-familias-peruanas-avanzan-hacia-la-inclusion-financiera
[3] https://mef.gob.pe/contenidos/archivos-descarga/ENIF.pdf

help of a BIM agent in the community, and transfer money using cellphones. PDP plans to add other options in the future, like paying for goods and services, and basic savings accounts.

The BIM charges very low fees (0.10US$ per transactions up to US 30.00) for transfers. It does not require going to a bank, saving time and transportation costs. This benefit is highly relevant for the poor, since cash transfers play an important role smoothing consumption shocks. For small entrepreneurs, it can facilitate business transactions, such as paying for inputs and receiving payments. By providing flexibility in financial decisions and control over cash, it can also empower women.

Since the BIM account immediately connects its holder with a financial institution, its adoption essentially constitutes the first step towards financial inclusion, opening the door to other banking services, such as savings accounts and small credits. BIM usage creates an individual financial record that can provide banks with the information required to facilitate such services. The government is also considering using the BIM platform to deliver cash transfers associated with social programs, in order to expand coverage and reduce operation costs.

The BIM is a privately funded initiative operated by PDP.[4] According to PDP, the initial diffusion emphasis has been on major urban areas, where 60% of the adult population still doesn´t have a bank account. The BIM has been promoted through TV, radio spots, newspapers, and social media (Facebook and YouTube). By August 2016, close to 100,000 accounts have been activated, and PDP expects that by 2021, 5 million individuals will have a BIM account with 2.1 million using it frequently.

The main challenge in the time to come for PDP will be to expand BIM adoption to geographically distant small urban communities and rural districts (as well as marginal neighborhoods in big urban areas). Although BIM is a simple technology, PDP is fully aware of the take-up problems relating to trust and resistance to change issues; and is therefore interested in interventions exploring information diffusion mechanisms that can respond to these challenges.

1.3. Research gap

Our study aims at evaluating whether the delivery of information and training regarding digital financial services (BIM) by academically successful young members (role models) and their family networks in target poor communities can significantly increase adoption and usage rates.

Models regarding the adoption of new technology (Innovation Diffusion Theory – Rogers (1995) and Technology Acceptance Model – Davis (1989)) have been around for a long time and suggest that factors like security, trust, perceived usefulness, perceived ease of use, etc. need to be considered. Electronic wallet (EW) studies have also been present for more than a decade (see Chen and Adams (2005) and Sahut (2008)). However, to the best of our knowledge no study has tried to directly employ role models in a community as a way to improve its adoption and usage. Such tasks are typically the purview of administrative staff of the involved financial institutions (Karlan and Valdivia (2011), Valdivia (2015)).

Our proposal combines different threads of the literature. It relates to the recent studies on the

[4] http://pagosdigitalesperuanos.pe/

transmission of knowledge and adoption of new technology through a network. In this sense, it is akin to the research of Munshi (2004), and Conley and Udry (2010) [they find that the effect of usage (and profitability) of new inputs in agriculture by neighbors influences the adoption of such inputs by a particular farmer]. It is also related to Banerjee et al. (2013) who study transmission of information (about microfinance loans) within a network (neighborhood), and the relevance of specific households to the diffusion and adoption of the program. They show that specific community leaders (those with higher communication centrality) have a greater influence on the probability of households participating in the (microfinance) program. Our proposal offers to use a different network dimension – the importance of role models or the "royal family" (Goyal (2016)) in the adoption literature.

While it is well known that the likely adoption rate of EW will depend on whether agents are used to other forms of payments (e.g. cash, credit, debit cards), usage benefits, and whether a large player uses it regularly (e.g. government cash-transfers), our proposed study adds network-relationship considerations to the mobile-payment literature. Though the population size (network) already using the EW have been mentioned as a factor influencing possible new users (Sahut (2008)), the direct use of community members to promote adoption is a novelty within the literature. It would also allow us to understand how this interacts with network centrality for technology adoption.

1.4. Theory of Change

Following its launch in February 2016, the BIM's diffusion efforts have mainly focused on big, urban metropolitan areas, where 60% of the adults still do not have a bank account. The main challenge PDP will face in the time to come is to expand BIM adoption to marginal urban neighborhoods, geographically distant small urban communities and rural districts. PDP managers are fully aware of the difficulties related to take-up in such contexts, mainly due to trust issues and change resistance. PDP is therefore interested in exploring diffusion mechanisms that can effectively tackle these issues.

In the context of poor Peruvian neighborhoods/communities, one of the most popular government social programs is Beca18: an inclusive educational program helping talented, poor young individuals to access college education at elite Peruvian universities. Beca18 fellows are well regarded and strongly rooted in their communities. They are role models and their opinion is likely to be highly valued. They have shown to be highly productive at the high school level and they will certainly get a significantly higher education level than the average person in the community; and also likely be the most educated person in their social circle.

Taking this into account, and after discussing the issue with PDP officials, we plan to implement a BIM diffusion strategy in which Beca18 fellows act as its messengers. The recent findings in the microfinance literature support our proposal, and specially highlight the relevance of role models and central individuals in the network (Banerjee et al. (2013)).

Our intervention's mechanism is then clear: Beca18 fellows' opinion/information/training is likely to be more trusted than that provided by community outsiders. Consequently, we expect a BIM diffusion intervention in which Beca18 fellows are the main messengers to have a stronger effect on adoption than if performed by outsiders. Higher BIM usage would then lead to more

transactions, easier access to social programs, free-up time and in increased access to markets and basic financial services. Additionally, we expect BIM adopters to tell/show others about its benefits.

Our random assignment guarantees comparability among treatment and control groups, and our team's expertise assures the RCT proper implementation. Moreover, we will have the close support of PDP, and our results are likely to influence their diffusion related decisions. Our concerns relate more to obtaining sufficient funding for the implementation.

We are aware that as with any experiment having a finite sample we need sufficiently large adoption rates for statistical adequacy (which we expect). Also, we need for other possible interventions related to BIM diffusion not to be related to our treatment. However since we will be closely coordinating our work with PDP, this is unlikely to occur.

1.5. RCT Methodology

Our intervention primarily aims to influence individual decisions to adopt and use the BIM. Our unit of study are individuals residing within the neighborhood/community of Beca18 fellows, and that belong to their household's network.

To implement our RCT, first we will invite Beca18 fellows at a local private university: Universidad de Piura (UDEP)[5], to be part of a campaign supporting the diffusion of financial services in their neighborhoods/communities, with no mention of the BIM or the specific role they might play in its diffusion. To encourage participation, we will indicate that this activity will count for extracurricular academic credits.

For each Beca18 fellow in our intervention, we will map their household network within their neighborhood/community by asking them who the adult members in their household interact with in their neighborhood/community. They will also be asked to rank these household links in terms of the interaction intensity. We will select 10 to 12 members from this set and invite them to participate in the BIM training sessions.

We will therefore have one training group per Beca18 fellow. Half of these groups will be randomly allocated to treatment; that is they will receive information and training about the BIM from a Beca18 beneficiary; while the other half will receive information and training from PDP field staff (i.e. outsiders). Our randomization units are then these "training groups".

There are currently 420 Beca18 fellows at UDEP; however the BIM can only be implemented in district capitals that currently have representative (banking) agents related to a financial institution which is a member of ASBANC. This leaves us with 350 individuals in 107 district capitals, in 5 administrative regions, including Lima (see Map 1 and Table 1 in Appendix 1). Due to cost considerations and logistic issues, we will restrict our study only to provinces that have at least 6 beneficiaries. This leaves us with 309 beneficiaries in 84 district capitals (see Table 2 in Appendix 2).

In order to minimize contamination effects, such as information transmission about the program

[5] UDEP has campuses in Piura, one of the most important cities in Northern Peru and also in Lima, the country capital. UDEP has confirmed its support for this intervention.

from the selected Beca18 fellows to the not-selected (their friends in the control group), the training will take place at the beginning of the summer vacations, right after final exams. Also, to avoid for geographical spillovers, we will include in our analysis only neighborhoods/communities that are relatively distant from each other (UDEP will provide us with the exact geographic location of those who agree to participate).

It is important to take into account two critical issues that affect the external validity of our study. In first place we will only work with those Beca18 fellows that volunteer to participate, which may be different from those that do not. In second place, in every neighbourhood/village we will only study the BIM adoption and usage decisions of network members of the Beca18 household, which may not be representative of the typical network in the neighbourhood/community. Therefore our study conclusions cannot be extended to every neighbourhood/community with a Beca18 fellow, neither to all networks within these communities; but must be restricted to the specific context of our study.

As an external validity check we will present descriptive statistics regarding the level of education of the population in the selected communities (treated and comparison groups) relative to the rest of communities within the administrative regions (and the country). Likewise, using information from last available census, we could compare the socio-economic status of the selected communities (again, both treated and comparison groups) to the one of similar poor communities in the rest of the country.

We must also emphasize that the role of our local ambassadors will be just to diffuse information and provide training about the BIM. We will not require in any way our local ambassadors to force any network member to adopt the new BIM. Our local ambassadors will just provide clear information about the BIM benefits as well as its implied risks and how to mitigate them. This objective will be clearly explained to our local ambassadors during the training sessions.

During the June PEP meetings in Nairobi, one of the evaluators pointed to the fact that our intervention may fail to produce any effect not because the Beca18 fellows are not relevant in their neighbour/community network, but because the external agents in the treatment group are considerably more experience at information diffusion and training related to financial services. To alleviate this concern, our local ambassadors will be carefully trained, and their training sessions will incorporate practical cases and simulations to enhance their capabilities as diffusors of financial information.

2. Data requirements

2.1. Outcome variables

The primary outcome variables of our study are the decisions to adopt and effectively use the BIM, which are binary variables. Related outcomes will be BIM usage frequency (ordered variable) and transaction amounts (continuous variable). PDP will provide us with (anonymized) accounts records, giving us access to objective measures of adoption and usage. We will also ask for this information in our follow-up survey. It is also important to emphasize that power calculations will be done for the primary binary outcomes: adoption and usage variables.

In second place will also study outcomes related to financial inclusion and poverty such as savings;

access to formal financial services; capacity to smooth consumption shocks; intrahousehold decisions; assets accumulation; access to government benefits; etc. Most of these are continuous variables and will be captured in our follow-up survey. We must note that in this specific case our dependent variable is BIM adoption, which is a choice variable; and therefore for these outcomes a simple OLS regression will not capture the effect of interest. We will therefore exploit an IV estimation strategy. The IV will be a binary variable taking the value of 1 if you were assigned to the control group (received information from a local ambassador), and 0 if you were assigned to the treatment group (received information from an external agent). Using this approach we will able to capture a Local Average Treatment Effect: the effect on those whose behaviour is affected by the instrument.

We also plan to test for heterogeneous effects: whether male or female Beca18 ambassadors have a higher influence in the diffusion process, or explore which type of individuals are more likely to be affected by Beca18 ambassadors.

Finally, we will also aim to explore whether individuals in the treated group are more likely to pass on the information they receive to others in their own network, and how this affects BIM adoption by the others. In this case we will work with self-reported data.

2.2. Sample size

Launched in February 2016, the BIM is still in its initial diffusion stages[6]. PDP has informed us that they are just starting expansion into geographically distant small urban communities, rural districts, and marginal urban neighborhoods; and have very limited information on adoption and usage rates in these areas. In such context, we expect a relatively low baseline BIM adoption and usage levels in our study areas, likely below 10%.

Approximating the effect of our intervention entails some difficulties. First, there is limited evidence for similar interventions in the Peruvian or Latin American context, and therefore we lack a reference point. Second, given the particular nature of our intervention, the effect size our treatment must generate to be detected at the standard power levels is a function of the expected success rates in the control group. Hence in order to proceed we have made some reasonable assumptions.

We assume that the successful adoption and usage rates in the control group will lie between 10 to 30 percent, and therefore (details in Section 2.4) our intervention should generate an effect that ranges from 5 to 12 percentage points to be detected at the standard level of power (80%). For continuous outcome variables, we set our minimum detectable effect at two standard deviations relative to the control group mean (which is common practice in the literature).

We intend to work with 120 training groups as our cluster units (69 control and 60 treatment), and include 10 individuals per cluster, for an effective sample of 1200 observations. We need, however, to take potential attrition into account. In a previous study by a team research member in rural northern Peru (Salazar et al., 2016), sample attrition was around 15%. We therefore will oversample and include 12 individuals per cluster. We also need to take into account that some of the Beca18 fellows assigned to the control group may finally decide not to participate as local

[6] BIM diffusion efforts have focused so far on big, urban metropolitan areas.

ambassadors, which may affect the number of total clusters in the treatment group. We therefore will consider 15 to 20 extra clusters in the treatment group to account for this situation (75 to 80 in total).

Since we use a cluster randomization design with individual outcomes, we must account for the intra-class correlation (ICC). As we lack a baseline, we rely on similar studies to approximate it. For the case of saving groups in the Philippines, McKenzie[7] reports an ICC of 0.13 for saving balances among group members (approx. group size=20); while in a diffusion process study of improved stoves in small villages (ranging from 40 to 100 households) in rural Peru, the ICC for usage decisions was approx. 0.17 (Agurto, 2014). Taking this evidence into account, for our power calculations, we set the ICC at 0.15[8].

2.3. Power Calculations

Our design is a cluster randomized trial where the main individual outcomes is binary.[9] For power calculations with binary outcomes we use option "RCTs with Binary Outcomes" in OD®[10]. To assess power as a function of total clusters, we consider 10 individuals per cluster and explore three scenarios: in the first the expected BIM adoption rate in the control group one year after the intervention is set at 10%, in the second at 20%, and in the third at 30%. We assume that the 95% interval for the true proportion in the control group is between 5% and 45%. We consider that our treatment increases usage and adoption by at least 10 p.p. relative to training by PDP staff.

Table 1: Power vs number of clusters when the treatment is expected to increase the likelihood of the outcome in 10 p.p. (evaluated at different success rates for the control group)

	Number of clusters J		
	J=100	**J=120**	**J=140**
		Power	
Probability of success in control group = 0.10	0.93	0.95	0.98
Probability of success in control group = 0.20	0.74	0.82	0.87
Probability of success in control group = 0.30	0.62	0.70	0.76

Power calculations have been obtained using the "Randomized Clustered Trials with Binary Outcomes' available in the free software Optimal Design®. We consider 10 individuals per cluster and assume that the 95% interval for the true success rate in the control group is (0.05; 0.45).

Table 1 shows that with 100 clusters, statistical power of 80% is attained only if the treatment effect is relatively large compared to success in the control group; while 140 clusters would work relatively well in terms of power in most situations. With 120 clusters (our preferred design) we

[7] http://blogs.worldbank.org/impactevaluations/tools-of-the-trade-intra-cluster-correlations

[8] Given the small size and nature of the reference groups in our benchmark examples (with likely little heterogeneity in social and economic indicators), we expect this correlation to be an upper bound for the real one in our study.

[9] For calculations, we consulted the Optimal Design OD® software and manual (2011) and the 3ie Manual and Excel Sheet ® (2016).

[10] The details for power calculations with binary outcomes in OD® are specified in Spybrook et al (2011). Their approach is also close to Moerbeek et al. (2001). According to Martinez and Rothenbühler (World Bank Impact Evaluation Toolkit, undated) this approach presents more flexibility and relies on more sensible assumptions.

achieve at least 80% power in the first two scenarios. The power achieved with 120 clusters will be much lower if the treatment effect is below 10 p.p. To address this issue, Table 2 shows the minimum effect in p.p. we must generate at different control group success rates, so it can be detected with 80% power:

Table 2: Minimum effect in p.p. that can be detected with a power of 80% for different success rates in the control group (120 clusters)

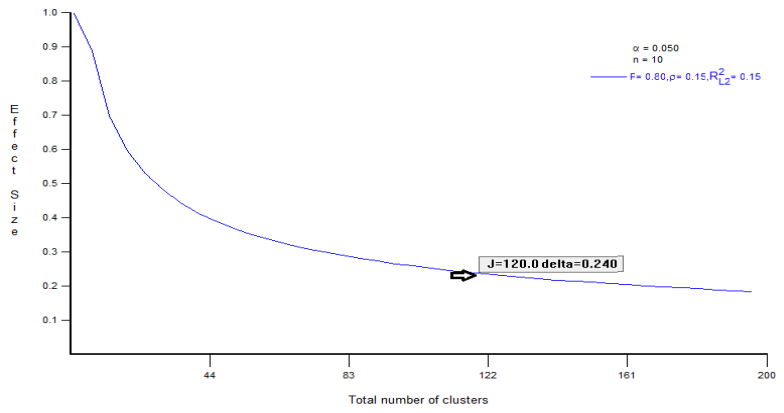
	Minimum detectable effect
Probability of Success in control group = 0.05	5 p.p.
Probability of success in control group = 0.10	7.p.p.
Probability of success in control group = 0.20	10 p.p.
Probability of success in control group = 0.30	12 p.p.

Power calculations have been obtained using the "Randomized Clustered Trials with Binary Outcomes' available in the free software Optimal Design©. We consider 120 clusters, 10 individuals per cluster and assume that the 95% interval for the true success rate in the control group is (0.05; 0.45).

Table 2 shows that depending on the control group success rate, our treatment effect must range from 5 to 12 p.p. Effects of this size are not unlikely, and are in the range of those observed in the financial literacy literature in Latin America[11].

As we mention before, we also will explore several continuous secondary outcomes (such as transaction amounts), we explore the effect (in deviations from the mean) we can detect with 120 clusters assuming 80% power. We also assume an intracluster correlation of 0.15. We use option "RCTs with Continuous Outcomes" in OD®, and make the conservative assumption that our baseline covariates will explain 15% of the outcome variance. Figure 1 shows that with 120 clusters we can detect an effect of at least 0.24 standard deviations of the control group mean[12].

Figure 1



We can improve statistical power by "blocking". We are evaluating two possibilities: i) blocking at the administrative region or province level or ii) blocking at the geographical level.[13] If blocks

[11] For the case of Peru, see Valdivia (2016), for the case of the Dominican Republic see Drexler et al (2014).

[12] The MDE generally assumed in experimental designs is 0.2 standard deviations.

[13] In the second case we will have the following blocks: Metropolitan Lima, Urban Coast, Rural Coast, Mountain Area and Jungle Area.

explain part of the outcome variance, our previous power calculations must be interpreted as lower bounds.

2.4. Baseline (max. 50 words)

Do you plan to collect baseline data yourself? Yes [X] No [ ]

We expect to collect important information about variables such as education, access to financial services, households' assets, use of mobile phones, etc., before the training sessions of Beca18 participants.

2.5. First follow-up (max. 50 words)

We will follow adoption and usage decisions and patterns right away after our training sessions (data will be provided by PDP). We will perform a follow-up approximately after 10 months of the intervention, to capture self-reported measures to these decisions, and other variables related to financial inclusion and wellbeing such as access to formal financial services, household assets, etc.

2.6. Second follow-up

Do you plan to conduct a second follow-up? Yes [X] No [ ]

We will be able to follow an individual's adoption, usage and BIM transactions beyond the PEP project scope. We also plan to obtain additional funding to perform a long term follow up 24 months after the intervention training sessions have taken place.

Additional Remarks:

1. Our proposed RCT considers comparing two groups: one that receives training and information by Beca18 fellows, and another that receives information and training by outsiders (PDP staff). Henceforth, our key question is whether the diffusion of a novel financial technology in impoverished communities improves when "academic ambassadors" have the main role at information diffusion and training. It has been pointed out, by one of the project evaluators during the PEP meetings, that in order to be able to separate the role of "pure information" from the "messenger role" we may consider adding a pure no treatment group. While we would have liked to include another group to our study: Individuals that do not receive any type of training, the budget provided by PEP in this competition is not enough to include them in the full study. However, depending on the number of Beca18 fellows who volunteer for this intervention, we may be able to include a third group, whose network we will map but won't be included in the baseline and follow up surveys. We however may be able to get administrative BIM adoption and usage data from PDP for these network individuals (in other words, for this group we will have adoption and usage data only).

2. During the PEP meetings in Nairobi, one of the evaluators pointed to whether the Beca18 fellows are indeed central in their network (which is related to the level of trust their network members have in them). We may be able to assess this during the baseline. We can design our survey to incorporate a set of questions that ask the individuals in the network of the Beca18 fellow for their own network

composition, and identify the position of the Beca18 fellow within this network. We will assess this possibility during the survey design.

3. Another evaluator pointed to the fact that individuals may not accurately report their BIM and usage decisions. It is however important to mention that the adoption and usage decisions will be obtained from PDP administrative records. In other words, for the case of BIM adoption and usage we will have objective indicators.

4. During the Nairobi meetings we were asked by the evaluators if we could pay the local ambassadors for the work they will perform during the training sessions in order to increase the potential number of participants. We will explore this possibility with Universidad de Piura as well as with the responsible Beca18 government office.

5. In the baseline and follow-up survey we would study the possibility of designing questions to explore different mechanisms through which the Beca18 fellows affect adoption and usage. Alternative channels to be analyzed could include belief in the accuracy of the information the ambassador is providing vs trust in the recommendation of the ambassador (regardless if the information was fully understood). We would like to explore these alternative mechanisms through an experimental approach; however the needed sample size would surpass our current budget.

SECTION II – CAPACITY BUILDING

1. List of team members

Full name	**Age**	**Sex** (M,F)	**Highest education level & country**	**Field of expertise**	**Affiliations** (working institution)	**Nationalities** (all nationalities)	**Main country of residence**
Brenda Silupú	40	F	Master in Finance, Peru	Microfinance, Entrepreneurship, Financial Literacy	Centro de Asesoría Empresarial - Universidad de Piura	Peruvian	Peru
Carolina Trivelli	46	F	Master in Agricultural Economics, Peru	Development Economics, Social Inclusion, Rural Development, Gender Issues, Financial Inclusion, Impact Evaluation	Instituto de Estudios Peruanos	Peruvian	Peru
Javier Torres	38	M	PhD in Economics, Peru	Development Economics, Labor Economics, Migration, Impact Evaluation	Department of Economics, Universidad del Pacífico	Peruvian	Peru
Marcos Agurto (Team coordinator)	37	M	PhD in Economics, Peru	Development Economics, Technology Adoption, Social Capital, Impact Evaluation	Department of Economics, Universidad de Piura	Peruvian	Peru

2. Expected capacity building

Name	Benchmark and expected capacity building
Brenda Silupú	Brenda is the Director of the Center for Microenterprise Support (CAM in Spanish) at Universidad de Piura. She has been and is currently involved in several initiatives to improve the managerial and financial skills of small formal and informal business owners and micro entrepreneurs in the Northern Region of Peru. This will be the first RCT evaluation in which Brenda will be involved, and therefore she will be able to acquire a solid and valuable hands-on experience on experimental design and implementation issues. These new skills will help Brenda to implement RCT evaluations related to the initiatives she develops at CAM in the future, as well as applying for international research funds supporting RCT evaluations. Brenda has started the Master in Research in Management at ESAN University in Peru, and intends to complete a PhD in Research in Management. She will be able to use the data and working papers emerging from this project to complete her doctorate studies.
Carolina Trivelli	Carolina is a renowned world leader in financial inclusion. She has been Minister of Development and Social Inclusion and has participated in several studies related to the financial inclusion of the poor, particularly in rural communities and marginal urban neighbourhoods. In September 2016, she has been awarded the prestigious Gus Hart Visiting Fellowship for her contributions in the area of financial inclusion. This particular RCT intervention will deepen Carolinas expertise, and allow her to apply her knowledge to a very unique context in Perú, in which fellows from an inclusive educational program can play a critical role in the financial inclusion of their neighborhoods and communities. The evidence that this pioneer study is expected to produce, will help Carolina at influencing decision makers in designing and implementing policies and interventions that combine educational inclusion and technological/social change in poor communities.
Javier Torres	Javier obtained his PhD in Economics from UBC in 2013. He has recently published in the journal Labour Economics and is currently an assistant-professor at Universidad del Pacífico. Javier has worked on several quasi experimental studies related to the social programs (Effects of the Peruvian Unconditional/Unfunded Pension program (for the poor) - Pension65) and political economy. This will be his first involvement in an experimental evaluation. As such, he will be gain significant knowledge on the quantitative tools and abstract-thinking needed to correctly perform an experiment. His involvement will grant him access to a crucial (and novel) research

	field: financial inclusion in poor/remote areas. Financial inclusion through the use of electronic money will become one of the key research focus in Peru (and developing countries). Javier's involvement in the project will not only expand his academic knowledge/horizon but allowed him to be part of a research strand that would shape how development could reach remote areas. The project itself will provide Javier a better understanding of the role networks play in transmit trusting information and helping the acceptance of new (beneficial) technology. Javier will also benefit from the interaction with the team members, which include experts on behavioral economics and economic development. With whom Javier would pursue future research related to the crucial subject of financial inclusion.
Marcos Agurto	Marcos has been involved in several quasi-experimental and experimental evaluations studies in rural communities (particularly in the Northern Peruvian Andes) related to technology adoption, and also in studies related to the social interactions of Beca18 fellows. This will be the first study related to financial inclusion in which Marcos will be involved, and therefore he will be able to strength his understanding on this critical topic, the role electronic money and other technologies play in this process, and the impacts that financial inclusion can have in the lives of the poor. In this sense, the new skills and expertise that Marcos will acquire in this field will help him in identifying and proposing strategies to speed up the process of financial inclusion in Northern Peru. This project will also deepen Marcos understanding related to the role the social network plays in generating trust and surmounting resistance to change. As other members in the team, Marcos will also benefit from the collaborative and interinstitutional academic work that will be performed, and which implies a close coordination with stakeholders and policy makers in the area of financial inclusion.

Additional comments to institutional capacity building:

This intervention will strengthen the capacity of the Center for Microenterprise Support (CAM) at UDEP to design and implement rigorous experimental evaluations. The CAM provides relevant services to formal and informal small firm owners and entrepreneurs in the Northern region of Perú, such as consultancy services and financial literacy training. In the past the CAM has received international support for its activities and projects. However most of the evaluations that CAM currently implements are of qualitative nature (or use observational data), and having a strong expertise at RCT is crucial in order to complement its qualitative analysis. This project will provide CAM with more rigorous evidence-based analysis skills, and help it obtain access to international and national research funding for RCT quantitative studies. This intervention will also strengthen the capacities of CAM to

interact with strategic partners in the private sector: PDP, and in the public sector: MIDIS and MINEDU.

It is also important to emphasize that Beca18 fellows that participate in our research study will acquire a solid expertise at designing and implementing technology diffusion strategies in their communities. These abilities will prove crucial in the future, particularly for the implementation and diffusion of social programs and technological change.

The evidence for our project will also benefit the Ministry of Education and Ministry of Development, and improve their capacity to design and coordinate on poverty alleviation strategies in which Beca18 fellows can play a critical role. We will closely interact with these two ministries during our intervention.

This project will also strength the capacity of the Departments of Economics of Universidad de Piura and Universidad del Pacífico, and Instituto de Estudios Peruanos, to implement field based interventions and collect first hand data to produce rigorous evidence that can support innovation in the process of financial inclusion. The intervention will also strengthen the capacity of these academic centers to undertake collaborative interinstitutional, field based, research projects. The synergies that will arise in this intervention can be applied in the future to other collaborative endeavours.

Specific tasks each team member would carry out in executing the project.

Name	Task and contribution to the project
Brenda Silupú	Brenda adds to this project her solid background in designing and implementing financial training programs at CAM. Brenda will work closely with Carolina Trivelli designing the content of the training sessions for our intervention. In coordination with PDP, Brenda will also be the main person responsible training Beca18 participants at Universidad de Piura, and will also be in charge of implementing the training sessions at Beca18 neighborhoods/communities. Brenda will also provide important support for the implementation of the baseline and follow up surveys.
Carolina Trivelli	Carolina's internationally recognized expertise in financial inclusion will be crucial for the design of the intervention and training strategy. She will be in charge of coordinating the work between PDP and the research team during the intervention. Particularly the design of the training content and the implementation of the training sessions by PDP staff. She will also coordinate with PDP the provision of the (anonymized) data records related to the BIM adoption and usage decisions of those individuals who participate in the training sessions.

	Carolina is a member of the Advisory Board for the Ministry of Development and Social Studies, and will help the research team to approach the Ministry of Development and the Ministry of Education in order to obtain early feedback, coordinate actions and present to them the results of the intervention. Carolina will also have crucial role at the diffusion of the intervention results particularly among the main stakeholders and policy makers.
Javier Torres	Javier brings to this project a solid expertise in empirical econometrics and rigorous data analysis skills using STATA software. Javier will be the main responsible for analyzing the intervention data, and will lead the process of interpreting and discussing the study results. Javier will also be the main responsible for the design of the baseline and follow up surveys, as well as for the implementation of the training sessions in the neighborhoods and communities situated in the Lima province (with the support of Carolina, who is also based in Lima). In addition to this tasks, Javier will support Marcos in the design of the RCT.
Marcos Agurto	Marcos adds to this project his experience at designing and implementing field evaluations in rural communities, as well as his previous experience at studying the role of social ties in the process of technology adoption. Marcos is also currently studying the social interactions of Beca18 fellows at UDEP. He will be the research leader, which implies that he will be in charge of coordinating the different intervention tasks as well as in continuous interaction with all the research members, Working closely with the research team, Marcos will be the main person responsible for the RCT design. This involves the process of selecting the Beca18 fellows, the geographical areas included (neighbourhoods and communities) and the distribution of treatment and control units. Marcos will also be responsible for the implementation of the baseline and follow up survey in the study areas, and will support Javier in the design of this survey. He will also support Brenda in the field implementation of the training sessions by Beca18 fellows.

3. List of past, current or pending projects in related areas involving team members

Name of funding institution	Project title	Team members involved
Global Development Network (current)	The effect of social interactions between economically disadvantage and wealthy	Marcos Agurto

	students: experimental evidence from the Beca18 program.	
Inter-American Development Bank (past)	Estimating the Impacts of a Fruit Fly Eradication Program in Peru: A Geographical Regression Discontinuity Approach	Marcos Agurto
IDRC (past)	Social capital and improved stoves usage decisions in the northern Peruvian Andes	Marcos Agurto
Spanish International Cooperation (past)	Program for the Strengthening of the Microenterprise network in the Piura Region	Brenda Silupú
Consorcio de Investigación Económica Social – CIES (current)	The Impact of Pension65 on elderly women empowerment.	Javier Torres
Universidad del Pacífico (current)	A study of the bias in the consumer price index in Perú.	Javier Torres
IDRC – Ford Foundation (current)	Proyecto Capital. Helping to move G2P payments through the financial sector as a means of financial inclusion	Carolina Trivelli
Ford Foundation (current)	From good social policies to coordinated productive and social interventions	Carolina Trivelli

SECTION III – POLICY ENGAGEMENT

1. Policy context and needs

According to PDP, there are approximately 10 million Peruvians[14] that lack access to formal financial services: 76% of them belong to the three poorest income quintiles, 97% have at most high school education, and many are recipients of government social programs.[15] Given this context in 2015 the Peruvian Ministry of Economy and Finance (MEF) leading a multisector commission announced a strategic plan to expand and speed up financial inclusion[16] for the poor. The plan, known as the "National Strategy for Financial Inclusion", indicates two high priority actions to promote financial inclusion: i) the development of an electronic payments platform and ii) the development of electronic money.[17] It also states that electronic money can be used to reduce the costs of delivering social programs and basic financial services to the poor. The plan identifies the Peruvian Banking Association (ASBANC), whose members founded PDP (the developer of BIM), as a main partner in the process. In this sense, our intervention is closely related to the current needs and challenges for financial Inclusion of the poor in Peru; and also importantly, it has the support of one of the main stakeholders in the process: PDP.

One of the most important challenges facing the PDP is convincing poor households to adopt and use its electronic wallet (BIM). As numerous studies in the field of technology adoption emphasize, lack of trust and resistance to change are among the most critical issues to address in the process.[18] Our intervention directly tackles these issues, and will provide important insights about the role the messenger´s characteristics play in information diffusion and training related to new financial technologies targeted at poor households. Our intervention will provide policy makers and implementation agencies with first hand evidence for the design of technology diffusion strategies in which individuals from the same community play an active role.

In the Peruvian context, financial inclusion strategies are still at the initial stages of design and implementation, and many lessons are still being learned. Therefore our findings have the potential to influence policy from the very beginning. Moreover, our study area involves more than 100 district capitals in 5 Peruvian Regions, covering a wide range of social, economic and geographic contexts. Consequently, our results are likely to have a high level of external validity.

It is also important to take into account that Beca18 is one of the most important social inclusion programs in Peru. Implemented by the Ministry of Education, Beca18 has benefited more than 100,000 young individuals from poor backgrounds, allowing them to access post-secondary education. Importantly, Beca18 already includes in their supporting resources, access to basic financial education. This training material has been developed by Proyecto Capital, a well-known financial inclusion group of experts from IEP, where our research member Carolina Trivelli is

[14] Approximately 1/3 of the total population
[15] http://pagosdigitalesperuanos.pe/wp-content/uploads/ModeloPeruPDP.pdf
[16] http://www.worldbank.org/en/news/feature/2015/08/05/peru-launches-national-financial-inclusion-strategy-to-expand-financial-inclusion
[17] https://mef.gob.pe/contenidos/archivos-descarga/ENIF.pdf
[18] http://www.mdx.ac.uk/news/2016/03/connecting-people

affiliated. Our intervention will be among the very first to provide evidence on of how Beca18 beneficiaries can be leading actors in the process of social and technological changes in their communities. The lessons from this experience can be extended to contexts other than the diffusion of financial services, such as the design and diffusion of agricultural or health interventions.[19]

All in all, our proposed research directly addresses critical factors influencing the dissemination success of new financial technologies, and is closely related to two relevant policies for the Peruvian government in the current context: financial and educational inclusion. Moreover, the timing of our intervention is the appropriate one, as it coincides with time horizon of the Peruvian strategic plan for financial inclusion, and the recent launching of the BIM by PDP in mid-February 2016.

1.1. Consultations to date

Name	Title	Institution	Email
Miguel Arce	Commercial Manager	Pagos Digitales Peruanos - PDP	marce@pagosdigitalesperuanos.pe
Jorge Viera	Coordinator	Coordinator of the Beca18 Program at Universidad de Piura	jorge.viera@udep.pe
Antonio Mabres	VP Research	Universidad de Piura	antonio.mabres@udep.pe

1.2. Identify target audiences

Name	Title	Institution	Email	Contact have been made?
Miguel Arce	Commercial Manager	Pagos Digitales Peruanos – PDP	marce@pagosdigitalesperuanos.pe	Yes. We have the support of PDP for this project. PDP can also sets us in contact with ASBANC.
Advisory Committee for the Ministry of Development and Social Inclusion	Advisory Committee	Ministry of Development and Social Inclusion		Carolina Trivelli is a member of the Committee and will set the research team in contact its members.
National Commission for Financial Inclusion (Luis Marino: Managing	The Commission is the responsible for the coordination and follow up of the National Strategy for	Ministry of Economics, Ministry of Development and Social Inclusion, Peruvian Central	lmarino@mef.gob.pe	We will coordinate with PDP in order to present our intervention and findings to the Commission. We have contacted one of its

[19] BIM, through PDP, in an Alliance with Proyecto Capital is working in complementing the existing financial education training program designed for Beca 18, with a specific module devoted to e-money (this component will be supported by grant money from the MIF (IADB)).

Director of ENIF)	Financial Inclusion	Bank.		members: Mariela Zaldivar.
Juan Pablo Silva	Deputy Minister and main responsible for Beca18 program	Ministry of Education		We have already contacted Mr. Silva and he is very interested in our intervention.
Raul Choque	Executive Director	PRONABEC / Beca 18 Program / Ministry of Education	raul.choque@pronabec.gob.pe	With the support of Universidad de Piura we will coordinate a meeting with Dr. Raul Choque.
Mariela Zaldivar	Deputy Superintendent for Financial Inclusion (Member of the Financial Inclusion Commission)	Peruvian Banking and Insurance Bureau		We have contacted Mrs. Zaldivar and she is highly interested in our intervention.

1.3. Define outreach and engagement strategy

In the first place, it is important to emphasize that we have the support of PDP, which the organization responsible for developing and implementation of BIM, and therefore the main user of our research results. We will work closely with PDP from the beginning of our intervention. We will discuss with them the information/training strategy design and field implementation. We will keep PDP informed on a frequent basis of the progress of the intervention as well as communicate research results. With the support of PDP we plan to communicate our design and results to the Peruvian Commission for Financial Inclusion. We have already contacted Deputy Superintendent Mariela Zaldivar who is a member of the Commission, and she is extremely interested.

With the support of Carolina Trivelli, we plan to inform the Advisory Board of the Ministry of Social Inclusion and Development about our proposed intervention. We aim to present the intervention design details to the board members in order to obtain their feedback as early as possible, and will communicate our ongoing challenges and results to them.

We plan to have a meeting with Mr. Juan Pablo Silva, Deputy Minister in charge of the Beca18 program at the Ministry of Education, to discuss the details of the intervention and obtain feedback. We will keep Mr. Silva informed about the performance of the Beca18 beneficiaries, and provide him with a full report of the intervention results. We also aim to discuss with Mr. Silva how Beca18 beneficiaries can play an important role in the diffusion process of technologies that can speed up social inclusion and economic change in their communities in areas such as agriculture and health. We have already contacted Mr. Silva and he is very interested in our project.

Given that all the institutions involved in this projects are members of the Peruvian Consortium for Social and Economic Development, we will coordinate with its executive director, Javier Portocarrero, about the consortium channels and mechanisms than can be used to communicate the intervention to other potential stakeholders and the general public.

1.4. Outline your preliminary dissemination strategy

Name	Title	Institution	Email
Presentation of the research design details and outgoing results to National Commission for Financial Inclusion, MIDIS and MINEDU	We plan to coordinate meetings with stakeholders at the Ministry of Economics, Ministry of Development and Social Inclusion and Ministry of Education to get feedback about the intervention design and communicate research results	Ministry of Economics Ministry of Finance Ministry of Development and Social Inclusion Peruvian Banking and Insurance Bureau	www.mef.gob.pe www.midis.gob.pe www.minedu.gob.pe www.beca18.gob.pe www.sbs.gob.pe
Research Network and Online platform of IEP (Carolina Trivelli)	IEP is considered the most important Peruvian Think Tank, and has an extensive outreach trough research networks. It also has 30K followers in twitter and 100K in Facebook.	Instituto de Estudios Peruanos	www.iep.org.pe
Research Networks Online platforms of Universidad de Piura and Universidad del Pacífico. (Javier Torres, Brenda Silupú, Marcos Agurto)	Official web sites and other online media channels. UDEP and UP together have more that 200K followers in Facebook.	Universidad de Piura, Universidad del Pacífico,	www.limase.pe www.udep.pe www.udep.edu.pe
Research Seminars at local universities, research institutions and Think Tanks.	We aim to present our results at several Research Seminars organized at the main Peruvian universities and research institutions.	Universidad del Pacifico, Universidad de Piura, Instituto de Estudios Peruanos, Universidad Católica, Peruvian Central Bank. Grupo de Análisis para el Desarrollo – GRADE	www.grade.org www.bcrp.gob.pe www.pucp.edu.pe
National Academic Conferences	We will present our research at Annual conferences organized by the main Peruvian academic associations and consortiums	Peruvian Economic Association Peruvian Consortium for Social and Economic Research Conference of the Peruvian Association for Research in Education	http://perueconomics.org/english/ http://seminarioanual.cies.org.pe/2015/

International Conferences	We plan to present our results at the main international conferences that focus on social inclusion and economic development	Latin America Economic Association Conference, CDESG at the Canadian Economic Association Meetings, Global Development Network Conference, NEUDC Conference (the research members have presented their works at these conferences in the past).	http://www.lacea.org/portal/ http://mit-neudc.scripts.mit.edu/2016/ http://cdesg.org/ www.gdn.int/conference2016
Press releases and interviews at radio and TV as well at the official sites of main stakeholders. Carolina Trivelli weekly opinion column at Peru21.	We will write articles about the intervention for diffusion in the local press, and plan to coordinate interviews at the main radio and TV programs that focus on social and development issues. Our research team member Carolina Trivelli has a weekly opinion column in one of the most important Peruvian newspapers: Perú 21.	Diario el Comercio Diario Gestión Diario Peru21 Radio Programas del Peru – RPP Radio and TV Canal N MIDIS, MINEDU	See for example the following news report and opinion articles of the research members related to Beca18: http://peru21.pe/opinion/carolina-trivelli-becas-inclusion-2249846 http://www.minedu.gob.pe/n/noticia.php?id=37307

Preliminary dissemination strategy outline:

The research team members have affiliations with the departments of economics at Universidad de Piura (UDEP) and Universidad del Pacífico (UP), considered among the best economics departments in Peru, as well as with Instituto de Estudios Peruanos (IEP), regarded the most influential Peruvian Think Tank for social and economic policy. We will diffuse the intervention design, challenges and outcomes through the official media channels of these institutions. We will also plan to present our work at the research seminars of UDEP, UP and IEP, as well as at those of other centers in our research networks, particularly at Universidad Católica del Peru (PUCP), Grupo de Análisis para el Desarrollo (GRADE) and the Peruvian Central Bank. With the support of PDP, we also aim to present our work to the members of the Advisory Board of MIDIS, the Peruvian Commission for Financial Inclusion and the Ministry of Education. We will also present our results at the Peruvian Society for Research in Education (SIEP in Spanish).

We also plan to present the results of our research at national and international conferences. At the national level we will present our results at the annual congresses of the Peruvian Economic Association and the Peruvian Consortium for Social and Economic Research. At the International level we plan to present our results at the Latin American Economic Association Conference, the CSGDE sessions at the Canadian Economic Association meetings, the Global Development Network

annual conference, and the annual conference of the North Eastern University Development Consortium (note that different members of the research team have presented their research in these forums in previous years).

Finally, we also aim to produce at least two working papers from this study, and publish it in a development journal ranked in the first quartile of the field. We will mainly target the following four journals: The Journal of Development Economics, World Development, Economic Development and Cultural Change and The Journal of Development Studies.

We also plan to present our results through the national and regional press as well as in the news sections of the stakeholders' websites. Some members of the research team (in particular Carolina Trivelli), have solid experience as opinion columnists in national newspaper such as El Comercio, Peru21 and Gestión, as well as in regional newspapers such as El Tiempo (for the Piura region). We will also aim to showcase the intervention through radio and possibly TV as well. Specifically we will aim for radio and TV programs focusing on economics and development issues.

SECTION IV – OTHER CONSIDERATIONS

1. Describe any ethical, social, gender or environmental issues or risks that should be noted in relation to your proposed research project.

Participation by Beca18 fellows in our proposed intervention will be completely voluntary, and to avoid interfering with their academic performance, the training sessions will take place outside the academic calendar (during academic recess). To encourage participation, we will indicate that participants will be able to obtain academic credits for extra-curricular activities, which is a regular practice at UDEP for students that participate in activities to support their communities.

No individual participating in the training will be forced to adopt the BIM. Adoption of the BIM will be completely voluntary. During the training sessions we will indicate the benefits of the BIM but also the risks implied in the use of electronic money (and how they can be minimized). To encourage participation in the training sessions by network members, small gifts will be used, which is a normal practice in RCT around the world.

The financial information of all individuals during the project will be protected. PDP will only provide the anonymized records of those that participated in the training sessions. When reporting our results from our baseline and follow-up surveys we will ask for permission from each interviewed individual, only average results will be reported and we will keep individual identities protected.

1.1. Ethical approval

Does your institution have an Institutional Review Board in order to provide Ethical Approval for conducting the RCT?

Yes [X] No [ ]

The Vice President of Academic Research at UDEP will provide a letter indicating that the intervention has the ethical approval of Universidad de Piura. However, if PEP considers it necessary, the Project can also be reviewed by PEP ethics committee.

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SECTION V – Timeline and Budget

1. Budget allocation

Summary Budget	
Activity	**Amount (US Dollars)**
1. Research Staff	
Research Staff	3,000.00
TOTAL RESEARCH STAFF	**3,000.00**
2. Local Travel	
Local airfare	1,750.00
Local accommodation	1,750.00
TOTAL LOCAL TRAVEL	**3,500.00**
3. Intervention Implementation	
Field Staff	7,000.00
Local ground transportation for field Staff	3,000.00
Training pilots (10)	2,000.00
Training Sessions (we are considering 120 group training sessions)	30,000.00
Subsistence (hotel and per diems for field staff)	4,000.00
TOTAL INTERVENTION IMPLEMENTATION	**46,000.00**
4. Data collection (Baseline and Follow up, 2,800 surveys in total)	
Survey design	1,000.00
Piloting the baseline	2,000.00
Supervision costs (includes travel and per diems)	6,000.00
Survey materials & equipment	1,500.00
Payments to surveyors	16,000.00
Printing questionnaires (or electronic items for data collection)	1,200.00
Survey processing	3,000.00
TOTAL DATA COLLECTION (the average cost per survey is US 12).	**30,700.00**
5. Data analysis and dissemination	
Workshops	1,500.00
National Conferences (3)	1,500.00
International Conferences (3)	5,000.00
TOTAL DATA ANALYSIS AND DISEMMINATION	**8,000.00**
6. Other	
Software – STATA (2 licences)	800
TOTAL OTHER	**800**
7. UNIVERSIDAD DE PIURA OVERHEAD	**8,000.00**
Total US$	**100,000.00**

1.1. Other funding sources

Does your team have other sources of funding for this evaluation?

Yes [ ] No [X]

Our proposed RCT considers comparing two groups: one that receives training and information by Beca18 fellows, and another that receives information and training by outsiders (PDP staff). Henceforth, our key question is whether the diffusion of a novel financial technology in impoverished communities improves when "academic ambassadors" have the main role at information diffusion and training.

We would have liked to include another group to our study: Individuals that do not receive any type of training. However, the budget provided by PEP in this competition is not enough to include them. The research team is currently exploring additional funding sources. In any case, we think that while including this group can expand the type of conclusions we can provide, is not crucial for the main objective of our intervention: comparing two types of diffusion strategies.

2. Timeline

Activity	Responsible	2017						2018								2019
		Jul	Ago	Set	Oct	Nov	Dec	Jan	Feb	Mar	Apr-Aug	Sept	Oct	Nov	Dec	Jan-Mar
1. Research ethical approval by Universidad de Piura	Marcos Agurto															
2. Meetings with main stakeholder (Pagos Digitales Peruanos - PDP) for coordination and feedback	Carolina Trivelli, Marcos Agurto, Brenda Silupú, Javier Torres															
3. Design of the BIM Training/Information Diffusion Sessions (Contents and Delivery Strategy)	Brenda Silupú in coordination with Carolina Trivelli and PDP															
4. Survey Baseline Design (final version ready by late September)	Javier Torres, Marcos Agurto															
5. Selection of Beca18 fellows that will participate in the intervention and mapping of their networks (at this point we still won't determine the treatment and control group)	Marcos Agurto, Brenda Silupú, Javier Torres															
6. Data Collection: Baseline	Marcos Agurto, Brenda Silupú, Javier Torres															
7. Recruiting of individuals that will be in charge of PDP training	Carolina Trivelli, Marcos Agurto, Brenda Silupú															
8. Random selection of Beca18 beneficiaries that will participate as local ambassadors (from those that volunteered to participate in 5)	Marcos Agurto, Javier Torres															
9. Training sessions for Local Ambassadors at Universidad de Piura	Brenda Silupú (Northern Region), Javier Torres (Lima)															
10. Implementation of BIM training sessions by Beca18 in local communities	Brenda Silupú in coordination with PDP															
11. Implementation of BIM training sessions by PDP in local communities	Carolina Trivelli in coordination with PD															
12. Gathering of administrative data (adoption and usage) provided directly by PDP	Carolina Trivelli															
13. Follow-up Survey Design	Javier Torres															

14. Data Collection Follow up	Marcos Agurto, Brenda Silupú															
15. Analysis of Follow up Data and preparation of reports and working paper	Javier Torres (main responsable), Carolina Trivelli, Marcos Agurto, Brenda Silupú															