Policy Brief

Telecenter Evaluations: Why not use Propensity Score Matching techniques?

International Development Agencies and national governments invest heavily on Information and Communication Technology for Development (ICT4D) projects on the precept that they would bridge the 'Digital Divide' between developed and developing nations, and also urban and rural. Their focus is largely on telecenters – Internet access points at rural level created significantly additional investment than they would earn selling facilities.

With a school now arguing the unprecedented mobile penetration rates observed in these countries, mobile handsets and not the telecenter is the delivery mechanism of the socio-economic benefits to the same communities[1], it is essential to determine the impact of telecenters. But how to isolate it, when multiple factors contribute to development?

This Policy brief proposes the use of Propensity Score Matching, a quasi experimental design that measures a program's effect on project participants with respect to non participants with similar characteristics.

Some evaluations are straightforward…

A fertilizer manufacturer claims his products improve the harvest of a crop by x% percentage. This is scientifically verifiable. All one needs is two set of identical groups of crops. Group A is treated while group B is not. A comparison of the harvests of the two groups at the end of experiment will either confirm or deny the claim.

…but others are not.

Surveys have indicated a decline in crime rates in selected US cities in the 1990s. In a controversial paper titled **'The Impact of Legalized Abortion on Crime'**[2] researchers John Donohue and Steven Levitt argue that the legalization of abortion in the 1970s contributed significantly to reductions in crime rates experienced in the 1990s. This is not a claim that can be tested using a control group.

Is there a walk around?

Propensity Score Matching (PSM) is a quasi experimental design that measures a program's effect on project participants with respect to non participants with similar characteristics. This is done by creating a **'comparison group'** (or counterfactual group) from the **untreated population** as close as possible to the **treatment group** by matching the probability of a non-participant undergoing a treatment. For example, to find the effects of smoking, health of a sample of smokers should be compared with non smokers with same age, same gender and close physical characteristics. It results least biased estimation of treatment effects.

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[1] Galpaya, H. (2007). Mobile Kills the Telecenter Star? Presentation at Annenberg Research Seminar on International Communication, Southern California, USA. Retrieved July 25, 2010, from http://arnic.info/galpayaseminar.php

[2] Donohue, J.J.& Levitt, S. D., (2001) The Impact of Legalized Abortion on Crime, Quarterly Journal of Economics Retrieved on September 25, 2010 from http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID174508_code010501110.pdf?abstractid=174508&mirid=1

PSM is inferior to true experimental design but in most cases like the example of crime rates, the latter is not feasible. PSM also has its own limitations. As in any statistical exercise, large samples always yield better results. The group overlaps may be substantial and still hidden bias may remain because matching only controls for observed variables.

What does this mean in Telecenter Evaluation?

Methods so far used in telecenter evaluation are non experimental. Evaluations based on Propensity Score Matching (PSM) provide more acceptable results, as it compared apples with apples, not with oranges.

Irrespective of quantitative or qualitative, ex-post evaluation techniques suffer from the drawback of non-experimental design that does not isolate the outcome of a treatment from other possible influences. Ex-ante experimental design is ideal as controlled experimentation directly co-relates the outcome to treatment, but not practical everywhere. Difficulties in the initial identification of beneficiaries and formation of control groups make robust experimental design not feasible.

A compromise is presented with quasi experimental design. When the evaluator has little or no control over the allocation of the treatments or other factors being studied, this is a more feasible approach. The key difference in this empirical approach is the absence of random assignment.

Any other reasons to use PSM techniques in Telecenter Evaluations?

PSM based evaluations:

a) Isolate the impact of treatment from the other fasters of influence.

b) Can be done with zero baseline data.

c) Do not necessarily need large samples. (though larger the samples more accurate are the outcome)

Conclusion

Some of the present telecenter evaluation techniques can certainly benefit from using PSM based techniques. PSM does not have to be used stand alone but can supplement to the rest.

If the funding agencies were to rethink their strategies it would have been ideal for them to run PSM on the current projects. That will segregate the project impact from other developments. It will also indicate what works better. For example, a comparison of mobile payment usage among the low income users with telecenter beneficiaries as the treatment group and mobile phone users as comparison will solve the perennial question whether the mobile penetration has killed the so-called 'telecenter star'.

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