LESSONS FROM IMPACT EVALUATION STUDIES ON AGRICULTURAL EXTENSION PROGRAMS IN SUB-SAHARAN AFRICA: WHY CONTRADICTORY IE RESULTS?

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MIND THE MAP: From Evidence to Policy Impact
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Outlines

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- Agricultural extension IE results
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Introduction

- The faith on agricultural extension t
  developing countries in solving food
  in security and poverty problems
- The emphasis was on promoting
  successful extension experiences suc
  as green revolution
- In the 1980s, however, it was learn
  that success of extension program
  varies across the world by type of
  extension approaches
- IE has several benefits. However, if
  not done properly, ➡ wrong
  conclusions ➡ wrong decisions

Methodology

- based on review of some easily available IE reports on agricultural extension programs
- After collecting 21 results of impact evaluations of agricultural extension programs in SSA, analyzed
- the indicators used, the extension approach evaluated and the impact levels reported are summarized
- case study, Meta evaluation is employed to assess the quality and validity of impact evaluation conducted on agricultural extension program in Ethiopia by applying the frameworks proposed by Stuffleam, (1974) and Shadish, Cook and Campbell (2002)

S.No	Country	No of IE studies/results
1	Ethiopia	3
2	Kenya	4
3	Uganda	4
4	Tanzania	2
5	Somalia	1
6	Mozambique	1
7	Ivory cost	2
8	Zimbabwe	2
9	Rwanda	1
10	Burkina Faso	1
Total		21

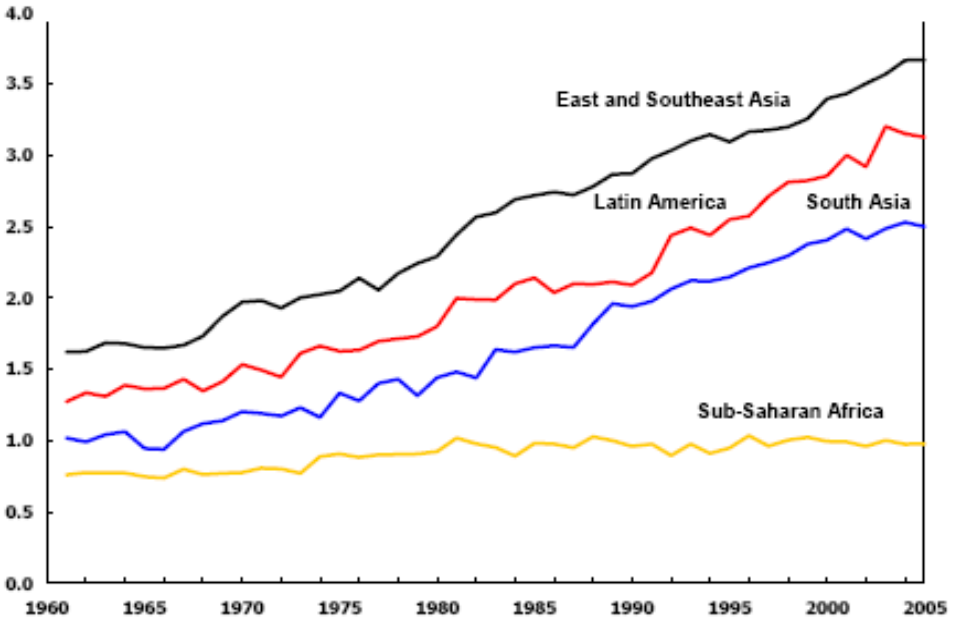
The importance of Agric. In SSA

- Agriculture is the most important economic activity in SSA.
- 62% of the population of the region (excluding South Africa) lives on agriculture (FAO, 2006)
- for the majority of SSA countries agriculture is the main source of economic growth (average of 30-60 percent of GDP)
- the region to have a definite comparative advantage in the agricultural sector (Tollen E, 2002)
- agriculture has a high multiplier effect on the economy. Some estimates this to be in the ranges of 1.5 to 2.7 per cent (UNECA 2006).

Agric production and productivity in SSA

- Most literatures agree that the performance of the agricultural sector in SSA has been disappointing
- agricultural production in Africa has increased at a lower rate than that of population growth over the past four decades
- per capita agricultural production to have a declining trend in contrast with increasing trends in Latin America and East Asia

Figure 1: Cereal production growth trends by region (1960-2005)



Source: FAOSTAT as reported in (JM.Staatz & NN.Dembele, 2007)

Agric production and productivity in SSA

- Due to the poor performance of the agriculture sector in the region:
  - number of chronically under-nourished people increased from 168 million in 1990-92 to 194 million in 1997-99 (NEPAD, 2003)
  - Almost 33 percent of the population of SSA, or close to 200 million people, is undernourished (FAO,2006).
  - decrease in agricultural exports and increased imports of food.
  - food aid in the region oscillated between 2.6 million tons in 1996 and 5.2 million tons in 2003 (WFP, 2005).

Agricultural extension IE results

- Majority of reports of impact evaluations conducted in the region have reported a positive impact of agricultural extension programs.
- From the 21 IE results analyzed, 15(71%) IE studies reported positive impact
- considerable impact evaluation studies 6 (29%) that reported insignificant impact
- Some of the impact evaluation studies contradict each other.
  - Bindlish & Evenson (1997) Vs Gautam & Anderson (1999).
  - Ayele etal (2005) and (IFPRI, 2008) Vs EEA/EEPRI (2006).

Why Contradictory IE Results ?

- **The Nature of Impact Evaluation**
  - Attribution
  - estimating the counterfactual
- **The Nature of Extension**
  - Lack of Comparable Control Group…using non beneficiaries
  - Selection bias
  - Endogeneity in extension-farmer interaction
  - Other sources of information and technology
  - Extension to be effective needs other support services

Why Contradictory IE Results ?....

- The nature of agriculture
  - Diverse, complex and risk prone
  - Detail data collection on agricultural indicators
- **Methodological factors**
  - IE Designs
  - Sampling
  - Statistical analysis
  - Designing and implementation of the research process
  - Indicator used to measure outcomes

Why Contradictory IE Results ?....

- **Data related factors**
  - Baseline data
  - Availability of reliable data
- **Capacity related factors**
  - Shortage of Skilled Manpower to Conduct Rigorous IE
  - Poor M&E system due to lack of facilities
  - Budget constraints for IE studies

Case Study: Evaluation of Ethiopian Agricultural Extension with Particular Emphasis on the PADETES

Background

- The evaluation is conducted by Ethiopian Economic Association (EEA)
- With the aim of assessing whether the agricultural extension program that has been implemented in Ethiopia since mid 1990s (PADETES which is a modified T&V) has successfully achieved the desired goals of increasing agricultural production and productivity thereby ensuring food security and reducing poverty.
- The report is published in 2006 by EEA.EEPRI.

Evaluation goals

- The objectives of the evaluation are so broad and are difficult to address using the methodologies employed in the evaluations. Some of them are too general and the outcomes to be measured are not clear

Evaluation designs

- The evaluation design seems the 'with' and 'without' outcome comparison
- However, this is not considered as rigorous design for impact evaluation as it doesn't help to control for unobservable differences between the "with" and "without" groups (ADB, 2006).
- In cases where there is no baseline data and comparable control group, it is recommended to use 'non-equivalent control group post test only design' (Adamchak S etal, 2000).
- This design requires creating control groups by matching
- more sophisticated statistical techniques to produce valid estimates of program impact.

Timing of data collection and analysis techniques

- For rigorous evaluation, data from at least two points in time, before and after project implementation.
- agriculture is highly affected by natural events such as rainfall, pest, disease etc which varies over the years
- However, in this study in most cases, only one year data was employed that is collected after program implementation.
- The statistical analysis techniques used for quantitative data are descriptive statistics such as averages, maximum and minimum.

Evaluation results

- there exist serious capacity limitations to effectively plan and implement extension activities.
- frequent restructuring of offices
- the M&E component is weak in the extension system not focused on delivering market information to farmers.
- the PADETES lacked the elements to be participatory
- complimentary services are still under developed.
- there are some positive impacts, farmers and pastoralists' income and productivity has not been increased in a significant and sustainable way.

Conclusion Validity

Threats to Internal Validity

- **Selection or De-selection:** in the evaluation report there is no clear attempt to control this important factor.
- **Spillover effects:** in the study non beneficiaries used as control group without employing any method to control the spillover effect. if spillovers are positive and not properly accounted, they will underestimate the true program impact (ADB, 2006).
- **Attrition:** in extension programs the poor and the uneducated would drop out of the program and the remaining beneficiaries would remain the better offs and the resources full which even would be successful without the extension program. This would exaggerate the impact of the program. In the report it is not clear how attrition effects are accounted.
- **Less rigorous designs:** the design employed for the study is not rigorous.

Conclusion Validity…

Treats to Statistical Conclusion Validity

- **Low Statistical Power :** not clearly stipulated in the study how the sample size was determined. Only 2548 beneficiaries were sampled where as the total number of beneficiaries is reported to be 4.2 million in 2001/02.
- **Unreliability of treatment implementation:** In the study it is reported that the application of the package of technologies is diverse and in most cases beneficiaries have not applied the full package of the extension program.
- **External events influence outcomes:** There are various external factors affecting extension program effects. For instance, it is reported that the necessary services for improved uptake of agricultural technologies are under developed in the country.
- **Inaccurate Effect Size Estimation:** Only simple averages are used to estimate the effects without controlling the effects of other confounding factors and design effects.

Conclusion Validity…

Threats to Construct Validity

- **Inadequate explanation of constructs:** In the study extension beneficiaries are ambiguously defined. Are they those using full package, or any one of the components of the package? The definition given to poverty is vague and income is used as single indicator for measuring level of poverty. Similarly, food security is defined only from availability perspective. However, food security is about availability, access and utilization of food.
- **Confounding Constructs with Levels of Constructs:** the extension packages as a treatment applied by most of the beneficiaries (60%) at low level (not the full package) of intensity and the rest 40% have applied the full package. these aggregated data are used to make general conclusions. This is misleading as a higher level of treatment might have produced a more significant effect.

Conclusion Validity…

- **Threats to External Validity**
- **Program outcomes vary in different settings:** the sample districts selected represent diverse settings such as agro ecologies, moisture regimes, market opportunities, availability of various services such as communication centers, access to technologies etc. Hence, blanket conclusion may not be feasible as the program outcomes vary in each setting.
- **Interaction of history and treatment:** The effect of the treatment may differ across time periods. In the study mostly one year data is used to conclude the overall impact of the extension program. However, the impact might be different over the years as agricultural productivity is highly affected by various factors which vary overtime.

Conclusion & Recommendation

Conclusions

- Lag in agricultural performance in the region
- Most IE on Agricultural extension reported positive results
- contradictory results…with the reality & between IEs
- Methodological, data, capacity factors

Recommendations

- Capacity building
- Using cost effective and easy methods
- Sharing of knowledge, skill and experience in IE

THANK YOU!