Critique of innovative programme evaluation: Meaning, methodology and practice

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Abstracts

The paper tries to critique innovative programme evaluation in terms of the meaning methodology and practice. What is usually wrong with most common methods of evaluating innovative programmes were highlighted and alternative methods for the assessment of the impact of innovative programmes and projects are proffered based on the nature of innovation and innovative programmes. These qualitative approaches take note of: use of system approval, looking for learning’s, setting realistic time frames, incorporating a process approach and use of appropriate methodologies. The paper winds up with a note that innovation will continue to be critical for national economic, social and technological development.

Key words. Innovation, Evaluation, Programme, Methodology.

INTRODUCTION

Innovation is defined by the Oxford Advanced Learners’ Dictionary as the introduction of new ways of doing things, or the introduction of new things. It also encompasses new ideas e.g recent innovation in the use of cassava flour in making bread in Nigeria, recent innovations in steel-making technology, innovations in mobile telephony. Innovation in industry is a matter of doing new things, or finding new ways of doing familiar things. Much of the discussions on innovation had always revolved around product innovation (the creation of new or improved goods and services, and process innovation (which are new ways of producing goods and services). There are also innovations in terms of interface between organisations and between suppliers and users of end-products (marketing, e-commerce, after sales services). Organizational innovations are sometimes differentiated from technological innovations. It is also worthy to point out another important distinction between incremental innovations (minor modifications to product or process) and radical innovations (major changes in processes and subsequent product).

While incremental innovations often emerge from the experience of making and delivering products, radical innovations, according to Lengrand (2006), often required research and Development or similar effort to bring new knowledge to bear on the product or process. Perrin (2000) sees innovation as novel ways of doing things better or differently, often by quantum leap versus incremental gains. Here Perrin (2000) agrees with the definition of innovation as used by the European Commission (1995), “the successful production, assimilation and exploitation of novelty in the economic and social spheres. Innovation is sometimes used synonymously with the development or use of new technologies. However, according to the EU (1995, the technological factor is just one element of innovation.
One can be innovative in many other respects as well, e.g. better working conditions or methods of service delivery that may or may not have technological component. The author is inclined to adopting the EU approach to innovation, seeing it as developing new ways of doing things, creating new and novel ideas to improve product and service delivery, making new improved products to enhance economic development. It is instructive to see innovation, whether it fails or succeeds as aiming at improved economic development, to reduce poverty, and to improve life and human value.

Innovation Programmes (IPs) according to Lengrand (2006), are measures, schemes, initiatives, etc. funded by (any level of) government, aimed at the promotion, support or stimulation of innovation-related activities. They may operate either directly, through provision of funding, information or other support, or indirectly through facilitation of the innovation process (i.e. via fiscal regulatory reform). Innovative Programme Evaluation therefore is the systematic assessment of innovation programme to determine (1) How far it is meeting objectives (and perhaps achieving other effects), (2) whether it is meeting these objectives efficiently and effectively, and (3) how the management structures (and other factors) have shaped these results. It is to be noted that many of the tools and techniques that may be employed for Innovation Programme Evaluation derived from those employed in the evaluation of Research and Development Programmes. However, the aims of Innovation Programmes are typically wider than those of Research and Development Programmes.

**The Nature of Innovation**

Perrin (2000) listed the following as nature of innovation:

- It is risky.
- It is unpredictable.
- It is about a particular activity or intervention
- It lists who benefits.
- It stipulates possible exactitudes
- It lists set of particulars circumstances
- States whether the discovery will be as intended.

Innovation essentially involves encouraging the generation of ideas and putting promising concepts to the tests. This does not always mean that the new ideas will work. Indeed, Hargadon and Sutton (2000), Al-Dabal (1998), Peters (1988), Ziber (1998) emphasize that ‘success’ comes from failure: Ziber (1998), indicates that ‘an average, good plans, people, businesses succeed only one in ten times. Only 10%-20% of the companies funded need to be real winners to achieve the targeted return rate of 25%-30%. Innovation also encourages an openness to learn. Drucker (1988), Hargadon and Sutton (2000), Champion and Carr (2000), and Peters (1988) opine that one learns at least as much from ‘failures’ as from what does work. Drucker (1998) stresses that unexpected failure can be a major source of innovation opportunity, and that innovation most frequently works in ways different from expected. And Peters (1998) states that lots of small failures can help avoid big failures and therefore suggested that one should be fanatical about failure. The above concept of innovation agrees with Campbell’s theory of evolutionary epistemology, which was based on the Darwinian metaphor of natural selection. Campbell had claimed that a blind-variation-and-selective-retention process is a basic component of all genuine increase in knowledge, involving three critical mechanisms:

- Generation of a wide range of novel potential solutions,
- Consistent selection process, and
- A means of preserving the selected variations. (Campbell, 1974, 1988a)

In Campbell’s “experimental society” (1969, 1971, 1988b), he emphasizes the importance of trial and error, and in particular trying out a wide range of bold potential ‘variants’, including approaches that may seem unlikely to work, provided that these are subjected to evaluation.

Innovation programmes are generally long term in nature, sometimes very long. According to Drucker (1998), the progress of innovation is uneven rather than continuous and the payoff rarely immediate. One cannot therefore do meaningful evaluation of impact prematurely. Attempting to assess ‘results’ too soon can be counterproductive. For example, assessing the impact of cassava flour on bakers in Nigeria now may not yield expected results, and in the face of wheat bread, it may not be easy to assess the level of acceptability of cassava bread among consumers. Drucker (1998) indicates that ‘knowledge-based innovations have the longest lead time of all innovations. Overall, the lead time involved is something like 50 years, a figure that has not shortened appreciably throughout history (Georghiou 1998). In innovative programmes, a considerable time is usually allowed for project effect to become evidenced e.g. Nigerians will begin to appreciate the contribution of the National Open University of Nigeria, not in the immediate presence but in the future. Buderi (2000) indicates that Business expects a variety of different levels of innovation. These ranges from short-term minor fine-tuning over a one-to-two year period, to the development of new products over an intermediate period, to the generation of revolutionary ideas that completely change the nature and business of the organisation and are essential for long-term survival. Innovation by definition and nature is risky and deals with the unknown. Be that as it may, innovation is not
characterized by a laissez-faire manner. For example, investors must be rigorously involved in extensive cost-benefit analysis before making investment, even though they expect to win on only a select few. The National Audit Office in the UK (2000), in a recent report, emphasizes the importance of managing risk. It is increasingly recognized that even fundamental research needs to be linked in some way with potential users and applications (Buderi, 2000).

Innovative Programmes – why critical?

Innovation has risen to the fore in thinking about the future prosperity and quality of life of countries and regions of the world. It is now widely accepted that economic performance is not just a matter of access of natural resources and large markets, or even of having skilled labour force to tap. These things are important, but much of the achievements that have been made in terms of economic growth and social achievements are related to innovation (Lengrand 2006). For example Nigerians are quick to point out success in telephony when telecommunication was privatized - an innovation, than when it was a government monopoly. It is used to advance reason for similar innovation in the down-stream oil business and power. Innovations in these areas are on-going and similar results are being expected. Innovation makes available new processes which provide impetus for mass markets for products that were previously the preserve of elites (e.g. Telephone in Nigeria in 70s, 80s, and 90s). New products have allowed people to achieve higher living standards. Innovative companies are more likely to grow and prosper. Countries and regions with more innovative environments are more dynamic and successful. This conclusion explains the yawning gap between the countries of the West and those of Africa and Asia (except Japan, Malaysia, and China). These views are universally accepted now. Innovation in science and technology had led to advancement in the Western Hemisphere to the whimsical division of the world into 1st world, 2nd world and 3rd world; developed and developing countries as the case may be). It will take real innovation for the countries of Africa and most of Asia to equal the developed countries of Great Britain, US, Canada, Japan, China, Germany, France, New Zealand. One can gauge the critical importance of innovation in today’s knowledge economy and globalization.

Innovation, according to the EU (2006) is becoming even more prominent as an issue because of the advent of new technologies, around which new products and processes are proliferating.

The world is also witnessing new biotechnologies (derived from genomics) which are beginning to find applications in health, agriculture, environment services etc. Nanotechnology- which covers a large range of very small things, from new materials through miniaturized electronics to nano-machines, - is in earlier stage of development. Applications from sun creams to extremely sharp cutting tools are already on the market. Successful economies will need to be making good use of these technologies, and where appropriate to be engaged in the supply and configuration of products based on them, and complementary goods and services supporting and enhancing them. Innovative programmes have become more critical as government of all political persuasions and hues, and regional dimensions and blocks have come to recognize the importance of innovation. Accordingly, they have sought to foster innovation in their territories.

Innovation has become core goal policy, and innovative programmes have become important tools for realizing innovation policies. The problem here is that while policy making is traditionally compartmentalized into a set of ministries or government departments – education, science, industry, energy, environment etc. Innovation spans all these and more. Government does not appoint ministers for Innovation in senior position in government. The EU (2006) also noted that Innovative policies and programmes are not usually championed by politicians. Innovative programmes will most often derive from regional governments and industries. This is because innovative policy is rather complicated most often than not, and not always coherent- set of activities undertaken across several arms of government. Sometimes policies inadvertently affect innovations positively or negatively. Evaluation has always uncover the fact that promising innovative programmes can be undermined by actions taken by other policy areas or department. The effect of gas supply in the implementation of the power roadway in Nigeria is a case in point. Gas is supplied by the petroleum ministry and power is the concern of the ministry of power. A policy summersault in the Petroleum Ministry can affect the independent power project (IPP) in the regions. It is suggested here that for a success of an innovative programmes that may cut across different ministries and departments, a synergy of activities at different stages of the programmed must necessarily be worked out to serve as a guard to such policy summersault.

Innovation Programmes Evaluation – Limitation of Typical Practices (Approaches) to Evaluation

The success or otherwise of a development project is gauged by monitoring the performance of such programme. This monitoring most time is seen as evaluation, especially of Research and Development Programmes. The usual traditional (typical) evaluation models of: 1.use of mean scores. 2. Use of experimental and quasi-experimental approach, 3. Use of quantitatively more data, 4. Dependent on higher percentage success
rating, 5. Use of linear models are employed. Researchers or evaluators are tempted to apply these approaches to evaluate innovative programmes. Overtime, researchers have come to discover limitations in the typical approaches to such evaluation, and these are summarized below:

### Appropriate use of Mean Scores to Assess Impact

It has been discovered that evaluation conclusions are most commonly based upon mean (or average) scores, (Perrin 2006). This is because: 1. the basis of the experimental and quasi-experimental approach is to compare the means of the experimental group with that of the control group or the comparison group and sometimes including comparison with the placebo. 2. There is an implicit assumption in quantitative data gathering and analysis that more is invariably better. E.g. a rating of 82 percent improved is usually considered positively, while if “only” 20 percent show a benefit, this generally is not. 3. Most evaluations look for the percentage ‘success’ rate, the numbers and proportion of participants who have succeeded/benefited on some criteria or other. They implicitly fail to acknowledge that just a few ‘success’ can make a programme worthwhile. Evaluative approaches that look for the percent ‘success’ do not acknowledge that with innovation one invariably succeeds via the small number of exceptions, and usually after series of ‘failures’. For example, a funding programme may have just one percent success rate. However, if that one project out of the many (say a hundred) results in the cure of AIDS surely it does not mean that the funding of the other 99 attempts represent failure. The same conclusion can be applied to programmes attempting to find innovation solutions to youth unemployment, constant supply of electricity, rural poverty, environmental degradation, waste management, cashless transactions, mass education, low admission capacity in conventional universities, mass failure in public examinations etc – where low percentage successful projects will be seen as a problem.

The above analysis suggests that mean scores invariably hide the true meaning and most important findings. Take this example: a mean rating of 3 out of 5 when all respondents achieve a score of 3. One can equally achieve a mean of 3 when none of the respondents get this rating; for example if the distribution is 5,4,1,1,4. The mean is also 3. This hypothetical situation represents radically different outcomes, which nevertheless are hidden, if one just had a cursory look at the mean of 3. Yet it is not uncommon to see research reports, even if it is written by research departments of international organisations, to represent mean scores without showing any breakdown or distribution or measures of variances.

### Simplistic Model Impact

Most evaluation reports look linear in presentations. This is far from innovation which do not occur in isolation, but always within a context of structured relationships, network, infrastructures and in a wider social and economic context Smith (2000) emphasizes the importance of a systems approval with respect to innovation and knowledge creation, indicating that an interactive model of innovation has emerged, and that linear notion of innovation have been superseded by models which stress interactions between heterogeneous elements of innovation process.

This view is in agreement with that of the EU (1999) which asserts that “The linear Science-Technology-production” type model has given way to the conceptualization of innovation as dynamic, interactive and non-linear process.”

Unfortunately, there are still considerable evaluation activities that assume a direct relationship between input and output. Georghiou (1998), Jordan and Streit (2000), Branscomb (1999), discuss this inappropriate assumption of direct cause-effect relationship, and the limitation of this and similar models and the need for a new conceptual model for discussing and evaluating public science that acknowledges that the nature and impact of innovation is mediated through context and interaction with many other activities. Other scholars like Campbell (1988a), Davies (1995), House (2000), and Stronach (2000a) have also added voice to condemn the use of traditional linear evaluation model in evaluating innovation programmes. It may not be appropriate to evaluate the educational innovation aimed at educating the high-risk almagiers in northern Nigeria by applying simplistic evaluation model.

Inappropriate application of the Performance Measurement Approach Georghiou (1998), Jordan and Streit (2000), argue that Performance Measurement is increasingly being used as a means of evaluation initiatives presumably based upon innovation. Performance indicator or objective-based approaches to evaluation can be useful in monitoring purposes, in particular for tracking project status to ensure that innovations are more or less on track. However, Arundul (2000) argues that performance measures are not relevant evaluating innovative activities which take place at the micro level where policy actions occur.

Performance indicators or measures are rarely inappropriate for assessing impact. Given that innovation by nature is unpredictable, it is not possible to indentify meaningful objectives or targets in advance. Moreso, true gains, including the identification of what can be learned from ‘failures’ as well as successes, can be difficult or impossible to quantify. Blalock (1999), Davies (1999), Greene (1999), Mintzberg (1996), Perrin (1998) have also indicated that performance indicators and
evaluation-by-objectives by themselves are rarely suitable for evaluating any programme, innovative in intent or not.

The Reactive Nature of Evaluation can Result in Less Innovation

There is an important and major problem with traditional approaches to the evaluation of innovation. This stems from the reactive nature of evaluation. Just as performance indicators reward safe, short-term activities, evaluations based upon mean scores rather than upon recognition of the few but extraordinary accomplishments punish innovation, and those that explore the unknown. They however reward mediocrity. The unintended result is to discourage people from trying anything truly innovative ‘Failures’ are usually viewed and treated negatively, with negative consequences for those judged to have failed, even if the attempt was very ambitions.

Alternative or Innovative Methods (Approaches) to the Evaluation of Innovation

In view of the limitations of the tradition evaluation approach the evaluation of innovation programmes, scholars have attempted to suggest alternative and innovative approaches to the evaluation of innovations. It is to suggest that when evaluating innovation, one should look for small successes, and not emphasize large negative outcomes. Evaluation is considered a learning opportunity especially where 80-90% of innovation projects do not record successes. This evaluators might put greater emphasis on identifying positive examples (best practices) rather than ‘averages’, even if the number is small, as well as other learning's that might arise from failures, as much as successes.

It is also necessary for one to use languages, both expressed and implied, with care in data interpretation and reporting. One should be careful of making statements such as “only 10 percent of funded projects demonstrated positive results. If ‘just’ one out of 20 projects demonstrated positive ways of, say, training unemployed youths in the Niger Delta, or addressing rural Poverty in Ogun State – Nigeria demonstrate positive results, and does so in a way that can inform future practice, then the programme has accomplished something very real. Therefore in evaluating innovation programmes:

Use a System Model

This is because; innovative process is not linear in nature. According to Perrin (2006), innovation rarely come from “lone wolf” geniuses working alone, but instead through partnerships and joint activities and within a much wider social and economic context. Outcomes, including applications of innovation, almost always take place in interaction with multiple other factors. Jordan and Streit (2000) stressed that innovation is only one factor contributing to the effectiveness of science and technology organisations. A simple in-put out-put or cause-and-effect model of evaluation will not be appropriate. Consequently, a system approach is recommended, considering the workings of an innovative approach, which may be applicable in many instances. Smith (2000) suggested that a system approach is more likely and able to explore the dynamics of the innovation and knowledge creation process. These dynamics and interactions may be more important than any single intervention. This approach, in particular, would appear particularly appropriate when looking at large-scale innovations, such as those at an organizational level, as well as others cutting across many organisations or at societal level.

Look for Learning, Successes and the Degree of Innovation

Evaluations of any innovative programmes and projects should identify the extent to which there has been any attempt:

- To learn from failures (as well as from successes)
- To identify implications for the future
- And the extent to which action has been taken based upon what has been learned.

The learning approach to the evaluation of innovation can be more important than tabulating a list of successful ‘lists’. In particular, at the programme or funding level, evaluation should focus on the extent to which learning’s have been identified and disseminated based on the funding agency’s own practices as well as the activities of its funded projects.

In the bullets below, some criteria for the evaluation of Agencies/Programmes supporting innovations are listed:

- How ambitious is the funding agency, with respect to its own practices and with respect to the projects and activities that it funds.
- Do a significant proportion of funded activities fail? (If not, is there any evidence demonstrating that these were actually innovative?)
- How soon does the agency withdraw funding (or pull the plug) on the projects that have not (yet) demonstrated ‘success’.
- Does the agency identify learning’s arising from its funded projects and implications for the future
• directions – including from those that have ‘failed’ as well as from the successes? To what extent does it attempt to synthesize key learning’s from across specific settings or projects, using a cluster evaluation approach or other means of synthesis?
• Are learning’s and implications disseminated, in appropriate language for the intended audience (i.e. in other than technical language for those with potential to use or apply the information)?
• Does action of some form follow from what has been learned?
• To what extent does the agency stimulate, support and reward risk taking, both internally amongst its staff and externally amongst its funded projects and key constituencies.
• To what extent is the agency calculated in its risk taking, e.g. through consideration of how much risk is appropriate or not, distinguishing between risky and poor quality proposals, identification of where there seems to be the greatest potential for major learning’s, or through other forms of risk management?
• Is some proportion of staff time and funding set aside to pursue ideas that do not fit into any established categories?
• How does the agency manage innovation and monitor and support the projects that it funds? (Perrin, 2000).

As it has been pointed out, useful learning’s arise at least as much from what has not work as from what has. Evaluation should also recognize that ‘failure’ may represent work in progress and that progress, especially as a result of significant innovations, is uneven, and generally occurs in quantum leaps after a long period of uncertainty rather than as incremental gains.

It is also to be noted that in innovative programme evaluation that ‘success’ and ‘failure’ are not dichotomous, but end points of a multi-dimensional continuum. There can be degrees of ‘success’ and ‘failures’, as well as differences of opinion about how the performance of a given initiative should be classified, especially when there is a lack of clear goals as is common place with many social programmes. The fact that a programme continues to exist, be it a private sector business or a social programme, does not mean that it is necessarily ‘successful’ (or will continue to be so) and cannot be improved. This is the case of River Basin Authority Programmes in Nigeria. With a learning approach that emphasizes what one can do to improve future effectiveness, there is less need to make summative judgments about ‘Success’ or ‘failures’.

Evaluation itself can play a major supportive role in helping to identify lessons learned and implications for future directions. Perrin (1999) suggests that this indeed can represent a major reason to undertake evaluation of innovation programmes. Along these lines, there may be opportunities for greater use of cluster evaluation approaches. There also appears to be a greater need for identifying and disseminating information about what has not worked, as well as the ‘successes’, to help avoid repeated reinvention of the ‘square’ wheel.

Set Realistic Time Frames

Major innovations can rarely be developed or properly assessed in the short term. For example, three months is damn short to evaluate the impact of most innovative activities, yet some attempt to do this. This may force evaluators to study the impact of pilot or demonstration projects before they hardly have had a chance to get established and to work through the inevitable start-up problems. A study of attrition rate for distance learning students of the National Open University of Nigeria will be an unrealistic project, as the Open University System is relatively new in Nigeria, and may yet have succumbed some of it start up problems which may impact the students. Withdrawal from a course to come back at the students’ convenience may be wrongly classified as attrition.

Logic models can help in identifying what forms of impact are appropriate to look for a given stage in a project cycle. While practical constraints dictate undertaking evaluation at an early stage, one should be explicit about this and be very cautious in drawing conclusions about impact.

Incorporate a Process Approach

Evaluation of innovation project or programme may take a process approach, identifying the extent to which projects embody those characteristics or principles known to be associated with innovation and the values or goals of the sponsoring agency. Related to this may be the extent to which the innovation is being managed such as to encourage the identification and application of innovative ideas and approaches. The specific principles and characteristics one should employ will depend on the particular topic area.

The following principles (Perrin, 2006, Buderi, 2000, Jordan and Streit 2000, Kanter, 1988, Zakonyi, 1994a, 1994b), may be used for the assessment of research.

- Legitimacy (e.g appropriateness and priority of the research as assessed by user groups)
- Potential relevance and application
- Quality of the research
- Contact/involvement of the research with potential user groups.
- Identification of learning’s, potential applications
and implications.

- Dissemination of findings and implications to a range of audiences, in particular to potential users as well as other researchers, in non-technical terms.
- The extent of partnership and collaboration
- The extent to which the idea is new or different, truly innovative.
- Openness of the research approach to serendipity and expected findings.

Thus innovation in research, even fundamental research, is tied to consideration of potential relevance, close contact with potential users, and with attempts to identify applications.

Use Appropriate Methodologies

The methods adopted for the evaluation of innovation programme and the researcher (evaluator). However, all methodological approach needs to be sure to be able to, according to Perrin (2006), do the following:

- To be able to get at the exceptions, including unintended consequences, given that research approaches based just on counting and summations are not relevant and will hide true achievements.
- Provide for understanding of the complex process involved as well as for identification of learning and implications, both from ‘successes’ and from ‘failures’.
- Be flexible enough to guarantee serendipity and unexpected findings, which particularly with innovations can represent the key outcomes.

It should however be noted that innovations are best evaluated using qualitative methods that can meet the demands of the i-iii above. Yin (1994), had suggested that case study designs would seem especially suitable for evaluation of innovation to permit exploration in detail of both apparent ‘success’ and ‘failures’, to identify what it is that makes them work or not, and what can be learned in either case. If the primary focus of the evaluation is learning, intentional sampling is recommended, instead of random sampling.

The foregoing does not preclude Quantitative analysis provided that they are not used alone. Quantitative analysis could be used to suggest where to look in more detail about potentially intriguing findings using qualitative means. It is recommended the one should not follow the usual traditional means of summation and mean scores, but to break down the data and look for the variations and outliers, recognizing impacts with respect to innovation mainly comes from these. (Miles and Huberman, 1994).

CONCLUSION

In evaluating innovation programme/project one must be guided by the fact that value comes from that small proportion of activities that are able to make significant breakthroughs, as well as identifying what can be learned from failures. Many who attempts to give definitions and predetermine objectives as the bases for evaluating innovation will certainly end up not evaluating innovation. While the paper does not intend to stamp any one method of evaluating innovation, qualitative methods, and sometimes in combination with quantitative analysis may be appropriate. It is also worthy to note that innovation is very critical for social, economic and technological growth of a country but the evaluation of these project must necessarily be allowed some time for the true pictures to emerge. This is because innovation cuts across various departments, ministries and strata of government, and must necessarily be interactive. Evaluation of innovation, if properly carried out, can be invaluable in helping to identify what can be learned both from ‘successes’ and ‘failures’ and implications for future directions.

References


