Reviewer's report

Title: Modeling Technology Innovation: How science, engineering and industry methods can combine to generate beneficial socio-economic impacts.

Version: 4 Date: 29 February 2012

Reviewer: George Teather

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Revised Title: Modeling Technology Innovation: How science, engineering and industry methods can combine to generate beneficial socio-economic impacts
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Responses to review questions:

1. The focus of the article is well defined and provides an integration and expansion of existing literature on the subject.
2. The processes are well defined and described in sufficient detail.
3. There is no data in the article.
4. The manuscript adheres to normal article protocols.
5. The discussion is reasonably well balanced and the conclusions summarize the discussion and analysis.
6. The title accurately portrays the topic and the abstract provides a summary of the article content.
7. Writing is fine.

General Comments

As stated previously, the article is an important paper that integrates several concepts into a more system level approach. The article focuses on technological innovation in the health sector, but can be applied in other sectors. If followed, the approach to selecting and carrying out research will improve the likelihood that the research will leads to socio-economic outcomes valued by society.

There are no major compulsory revisions.

There are two minor essential revisions. It is the “Natural Science and Engineering Research Council, not National.

In the second paragraph of the Conclusions the word needed is manufacturer not manufature. Could also use producer.

The following suggestions are provided for the authors consideration.
The first sentence of the Abstract begins with a general statement applying to all sectors. I would suggest the addition of “for example, to the beginning of the next sentence, as it is a particular example of application of the first sentence.

In the background section, the authors have decided to stick with the original GPRA 1993 reference. I would suggest a footnote describing the recent revisions. In the sentence following reference 3, I would suggest the addition of R&D before activities, as we are discussing R&D, not all activities.

In the sentence ending with reference 12, I would suggest the wording “generate social and health benefits to targeted groups”, just to put the focus on health.

In the next section just before reference 20, I would add “the Natural Science and Engineering Research Council (NSERC) of Canada, such as the Business –Led Network of Centers of Excellence”.

Under the definitions section, the CIHR example is specific to health , and as such is not a general definition. The authors could use a footnote to note that while this definition refers to health benefits, it can be easily modified to be either rspecific to another sector or more general.

In the sentence before reference 12, the authors may choose to broaden the wording to state “only then considers what combination of delivery mechanisms and activities to undertake.

I offer the following as an observation and leave it to the authors to decide how to deal with it. In the section entitled Extending R&D outputs to Production Impacts, the authors correctly extend the pathway from R&D towards commercialization, with the R-D-P model. However, I would suggest that it needs to be extended even further past production to include utilization. This is in fact acknowledged by the authors in the sentence ending with reference 34, which includes application. As I stated in my previous review, the development of a commercial product or process is not the final outcome, particularly in the health sector. That innovation which has been produced must be used by people before the long term socio-economic benefits can occur.

In the Conclusions, I would suggest the use of “low level of outcomes” rather than “lack of outcomes”, which may imply none.

In the Summary Section, I would suggest:
1. “Ensuring awareness, interest, support for and implementation … ”
2. Replace “implement” with “utilize”

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I have no competing interests.