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Inclusive Innovation: *Definition, Conceptualisation and Future Research Priorities*

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Inclusive Innovation: Definition, Conceptualisation and Future Research Priorities

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Abstract

There is increasing policy, practice and academic interest in “inclusive innovation”. In simple terms, this is the means by which new goods and services are developed for and/or by those who have been excluded from the development mainstream; particularly the billions living on lowest incomes. However, there are many competing perspectives on inclusive innovation, which this paper resolves into an integrated ‘ladder’ model of different levels of inclusive innovation.

Research has so far lagged practice and there is need for a more concerted effort at knowledge-building for inclusive innovation. Based on a three-country interview study with 37 policy-makers, strategists, private sector and NGO sector representatives – and founded on a review of existing literature on inclusive innovation – this paper reports findings about research priorities in inclusive innovation. Respondents identified a set of eleven priority research topics, which are categorised as stakeholder-, systemic- or process-oriented.

These priorities provide evidence-based guidance for future research on inclusive innovation.

A. Introduction

Innovation and innovation systems in developing countries have conventionally been associated with large formal organisations, often addressing export markets or producing goods (rarely services) for higher-income local consumers. The innovations produced have been associated with inequality, and have little connection or relevance to the low-income majority of the population.

Since the ideas of Fritz Schumacher and the concept of appropriate technology, there have been alternative models of innovation, which seek to develop and deliver innovative technologies (goods and services) incorporating the needs and interests of the poor; and which seek to stimulate growth for those on lowest incomes (Kaplinsky 2011). Recently, there has been an extension in practice of these alternative models with significant involvement of the private sector and global value chains, the development of poor consumers as an accessible mass market, growth of technological capabilities within developing countries, and the involvement of new technologies, especially information and communication technologies (ICTs) such as mobile phones.

There has been a lagged, though parallel growth in academic interest, with labels attached to this phenomenon including “inclusive innovation”, “pro-poor innovation”, “below-the-radar innovation”, “grassroots innovation”, “BoP [*base of the pyramid*] innovation” and more (*ibid.*, Cozzens and Sutz 2012, Ramani et al. 2012). In this paper, we focus on “inclusive innovation”, which currently appears to form the main terminology around which debate and activity are circulating.

The origins of use of the term are sometimes traced to Utz and Dahlman (2007), and the recency of its emergence can be judged from proxy measures such as web search traffic as shown in Figure 1 and academic publications as shown in Figure 2. From the former perspective, inclusive innovation is a largely post-2011 terminology but digging behind that mainstream reflection, one can see that work on inclusive innovation has been ongoing for a number of years in academia.

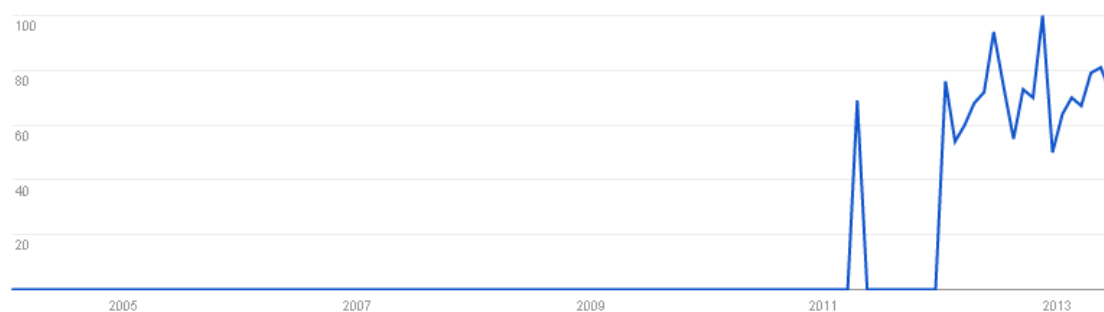


Figure 1: Google Trends Data for “Inclusive Innovation” Search

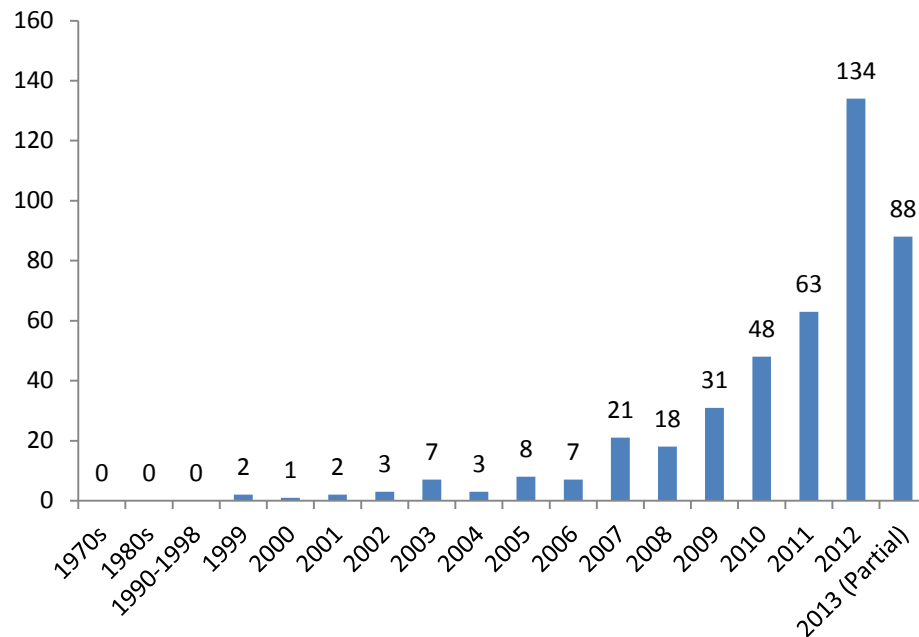


Figure 2: Google Scholar Academic Citations for “Inclusive Innovation”

More concrete evidence of this recent growth in interest includes:

- *Donor strategy*: with initiatives including the World Bank’s national and cross-cutting actions on inclusive innovation (e.g. Utz & Dahlman 2007, Goel 2011), IDRC’s programme on Innovation for Inclusive Development (IDRC 2011), GIZ’s sponsorship of the Sustainable and Inclusive Innovation initiative (CII-ITC 2013), and OECD’s project on Inclusive Innovation (OECD 2013).
- *Government policy*: for example, India has placed inclusive innovation as a core policy element for the decade of the 2010s (OAPM 2011), including a US\$80m India Inclusive Innovation fund; Thailand has reshaped its innovation policy to incorporate strands of green and inclusive innovation (Damrongchai 2011); and China has “shown strong interest in inclusive innovation” (World Bank 2012).
- *Academic activity*: alongside the evidence shown in Figure 2, this also includes individual activities such as Harvard University’s (2013) Inclusive Innovation initiative and the launch of a postgraduate degree programme in Inclusive Innovation Studies in South Africa (UCT 2013), and also networking actions such as GRIID, the Group for Research on Innovation for Inclusive Development, and the 2013 international Inclusive Innovation Workshop (OU 2013). There are also broader networking actions such as formation of LinkedIn (<http://www.linkedin.com/groups/Inclusive-Innovation-4849613>) and Facebook (<https://www.facebook.com/groups/128244120693202>) groups in inclusive innovation.

What is Inclusive Innovation?

The growing hum of inclusive innovation activity shows recent interest in research, policy and practice. But it all begs the question: what is inclusive innovation?

At root inclusive innovation takes a different view of development from conventional views of innovation (IDRC 2011):

“Conventional views of innovation (often implicitly) understand development as generalised economic growth. By contrast, inclusive innovation explicitly conceives development in terms of active inclusion of those who are excluded from the mainstream of development. Differing in its foundational view of development, inclusive innovation therefore refers to the inclusion within some aspect of innovation of groups who are currently marginalised” (Foster and Heeks 2013b:335)

This in turn triggers two key aspects in defining inclusive innovation. First, which marginalised, excluded group is to be the focus for attention of inclusive innovation? That varies from source to source. For example, women, youth, the disabled and ethnic minorities have been the target of concern for inclusive innovation (Codagnone 2009). However, dominant attention has been on “the poor”, those on lowest incomes which may typically be defined as some small number of US dollars – US\$1, US\$1.25, US\$2, US\$2.50, etc – per day.

Second, which “aspect” of innovation must the excluded group be included within? On this there is no clear agreement, with a strong differentiation of views, including a recognition of differences within individual sources. For example:

- "we thus make distinctions between two kinds of inclusion – passive and active inclusion. The narrow one is about reducing income inequality and bringing the poor out of poverty through raising their income. The broad one is about giving rights, voice, capabilities and incentives for the excluded to become active participants in processes of development and innovation." (Johnson & Andersen 2012:8). These authors also emphasise the importance of inclusive innovation systems.
- George et al (2012: 661) centre on the idea of innovation for inclusive growth: “Inclusive growth can be viewed as a *desired outcome* of innovative initiatives that target individuals in disenfranchised sectors of society as well as, at the same time, a characteristic of the *processes* by which such innovative initiatives occur”.
- Cozzens and Sutz (2012:12) directly address inclusive innovation: “innovation needs to be ‘inclusive’ in at least two ways: inclusive in terms of the process by which it is achieved and inclusive in terms of the problems and the solutions it is related to”.

It seems most helpful to understand the different views as a “ladder of inclusive innovation” (see Figure 3): a set of steps, with each succeeding step representing a greater notion of inclusivity in relation to innovation. In more detail these are:

- **Level 1/Intention:** an innovation is inclusive if the intention of that innovation is to address the needs or wants or problems of the excluded group. This does not relate to any concrete activity but merely the abstract motivation behind the innovation.
- **Level 2/Consumption:** an innovation is inclusive if it is adopted and used by the excluded group. This requires that innovation be developed into concrete goods

or services; that these can be accessed and afforded by the excluded group, and that it has the motivation and capabilities to absorb the innovation. All of those stages could be seen as sub-elements of this level of the inclusive innovation ladder, though all will be required for consumption so they are not hierarchical sub-steps (as appear in later levels).

- **Level 3/Impact:** an innovation is inclusive if it has a positive impact on the livelihoods of the excluded group. That positive impact may be understood in different ways. More quantitative, economic perspectives would define this in terms of greater productivity and/or greater welfare/utility (e.g. greater ability to consume). Other perspectives would define the impact of innovation in terms of well-being, livelihood assets, capabilities (in a Senian sense), or many other foundational understandings of what development is. For those with concerns about inequality, this could include a condition that the benefits were restricted to the excluded group, or were greater than those achieved by 'included' groups using the innovation. One can therefore differentiate an absolute vs. relative notion of inclusive impact of innovation, the latter being a sub-step above the former.
- **Level 4/Process:** an innovation is inclusive if the excluded group is involved in the development of the innovation. It is highly unlikely that the entire group could be involved so this immediately shrinks down to "members of the excluded group": a point taken up further below. This level needs to be broken down according to the sub-processes of innovation: invention, design, development, production, distribution. These would create a set of sub-steps with, for example, an assumption of greater value of inclusion in the upstream elements than the downstream elements. Further complicating matters, the extent of involvement is equated with different levels of inclusion. Again, there would be sub-steps akin to those seen when discussing participation in development with higher sub-steps representing deeper involvement. Borrowing from Arnstein's (1969) ladder of participation, sub-steps can include: being informed, being consulted, collaborating, being empowered, controlling.
- **Level 5/Structure:** an innovation is inclusive if it is created within a structure that is itself inclusive. The argument here is that inclusive processes may be temporary or shallow in what they achieve. Deep inclusion requires that the underlying institutions, organisations and relations that make up an innovation system are inclusive. This might require either significant structural reform of existing innovation systems, or the creation of alternative innovation systems.
- **Level 6/Post-Structure:** an innovation is inclusive if it is created within a frame of knowledge and discourse that is itself inclusive. (Some) post-structuralists would argue that our underlying frames of knowledge – even our very language – are the foundations of power which determine societal outcomes. Only if the framings of key actors involved in the innovation allow for inclusion of the excluded; only then can an innovation be truly inclusive.

From this discussion, one can see that there is a third aspect to defining inclusive innovation: the question of who – from the excluded group – is to be included in innovation. This is rarely if ever an explicit part of any definition; being more an issue to be assessed in practice rather than pre hoc. However, one can see that in

many of the notions of innovation just discussed, it would not be every member of the excluded group that would be included. Mostly it would only be a subset: for example it might only be less-poor, male adults within the BoP who consume a particular innovation; or it might be only a small number of community-based organisation officials who participate in an innovation process. Where only a subset of a group is included, this would raise contentions about representation and heterogeneity and inequalities within the excluded group.

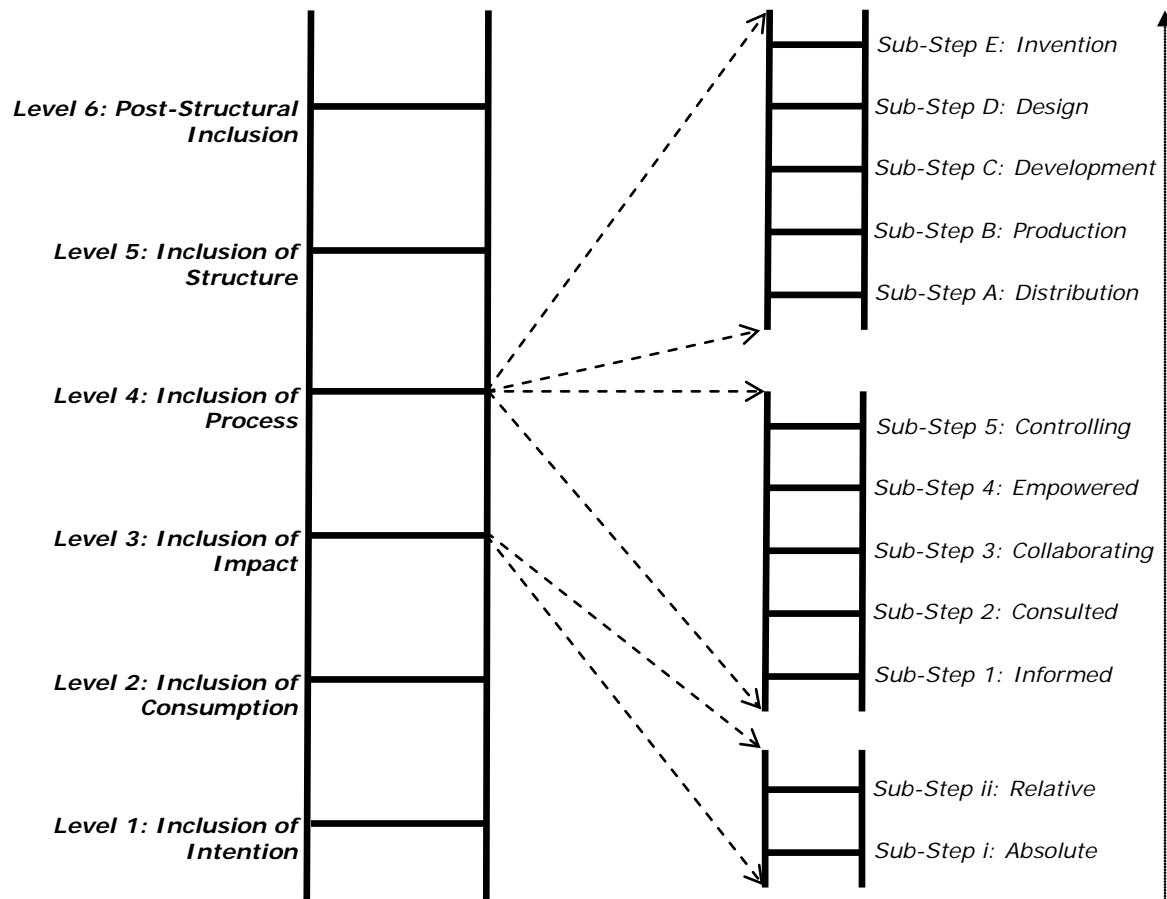


Figure 3: Understanding the Different Levels of Inclusive Innovation

The levels are akin to steps on a ladder because each level involves a gradual deepening and/or broadening of the extent of inclusion of the excluded group in relation to innovation. In general each level accepts the inclusion of the levels below, but pushes the extent of inclusion further. Thus, for example, those concerned with inclusion of impact accept – necessarily – the value and actuality of inclusivity of intention and consumption, but feel this is not sufficient to fully justify the label of ‘inclusive innovation’.

The corollary is that a commentator standing at any particular step of the ladder would not regard views or practice at lower levels to represent true inclusive innovation. Taking the example of those at the base-of-the-pyramid as the excluded group, those at Level 4 would feel that innovation is only inclusive if those on low

incomes somehow participate in the innovation process; perhaps typically in the development of the new good or service. A new good or service which benefited the poor without this (i.e. an innovation at Level 3 developed non-participatively by a large firm or by government) would not be regarded as an inclusive innovation.

One may also detect a move from the positive towards the normative in ascending the ladder, with a decreasing number of real-world examples as one ascends. Thus there are many examples of new goods and services which are developed and consumed by excluded groups, some of which have a beneficial impact. Involvement of excluded groups in innovation processes is not frequent but it does occur. However, one may be harder-pressed to find examples of structures let alone widely-shared knowledge frames in practice: these levels may represent aspirations more than realities at present.

The Research Gap Around Inclusive Innovation

There is a sense of rebranding about inclusive innovation: in other words that it represents a phenomenon that has been around for many years to which this particular label has only recently been applied (Chataway et al. 2013). This is clearly true if one looks at Figure 3's ladder of innovation: for example, low-income groups have been consuming new good and services for centuries. However, with typical definitions of inclusive innovation lying at Level 3 and above – and as noted above – there has been both an uptick in interest and in practice in recent years, and new features as also noted above:

- New actors and new loci of inclusive innovation capabilities
- Newly- or more-readily-accessible markets among excluded groups
- New technologies that can support inclusive innovation especially ICTs
- New modes and contexts for inclusive innovation

The combined expansion of both interest and practice in recent years has created a vacuum of knowledge around inclusive innovation. Academic nature abhors a knowledge vacuum, and so there has been an in-rush of writing. But much of the work has been literature reviews, position papers or conceptualisations. There has been limited research utilising new primary data. If the strength of the vacuum – of demand for knowledge and for evidence from donors, governments, large firms, academics and others – can be sustained, then it will eventually be filled.

However, it seems logical to shape the in-rush and to analyse what might be the research priorities; most obviously by analysing research demand – asking those who are intended users or beneficiaries of inclusive innovation research what gaps they perceive. This is the objective of the current paper: it asks “What should be the priorities for future inclusive innovation research?”.

It does this, in Section B, via the foundation of research prioritisation literature to date in this field. Given that this literature mainly presents the views of academics in the global North, it was felt important to supplement this with the views of practitioners in the global South. Section C explains the basis for a small piece of

field research that was undertaken in three developing countries – India, Indonesia and Uganda. Findings from this research are presented in Section D. Finally, the paper draws some conclusions about research priorities for inclusive innovation.

B. Reviewing the Research Field of Inclusive Innovation

Inclusive innovation has no inherent geography. It may thus appear as an issue of relevance in all parts of the world. Thus, for example, it is seen as being relevant to the work of the European Union (Codagnone 2009) and also to the global reach of multinational corporations (e.g. DuPont 2013, Microsoft 2013). However, in practice the great majority of academic writing and the great majority of policy and practice of inclusive innovation focuses on developing countries. It therefore seems appropriate to understand the research field of inclusive innovation as shown in Figure 4: as the intersection of the disciplines of innovation studies and development studies (see also Cozzens and Sutz 2012).

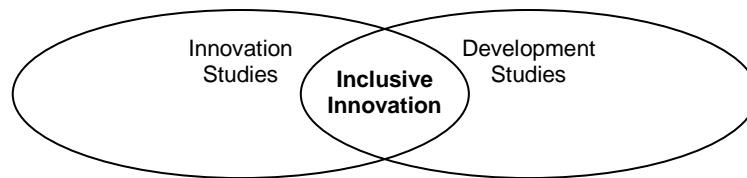


Figure 4: The Disciplinary Foundations of Inclusive Innovation Research

Acceptance of this portrayal would have a number of research implications: for sources for conceptualisation of inclusive innovation; for guidance on methodologies for inclusive innovation research; and for outlets and audiences for research publication. We can also use it as the basis to create a stakeholder map of inclusive innovation – see Figure 5 – which combines key stakeholders from both development and innovation practice, and selects those at the base-of-the-pyramid as its core excluded group. This will be of value as one perspective on research priorities, but also in identifying targets for any demand-led survey of inclusive innovation research priorities.

Given that this is a structural representation of inclusive innovation, it needs to be supplemented by a process representation. This is shown in Figure 6.

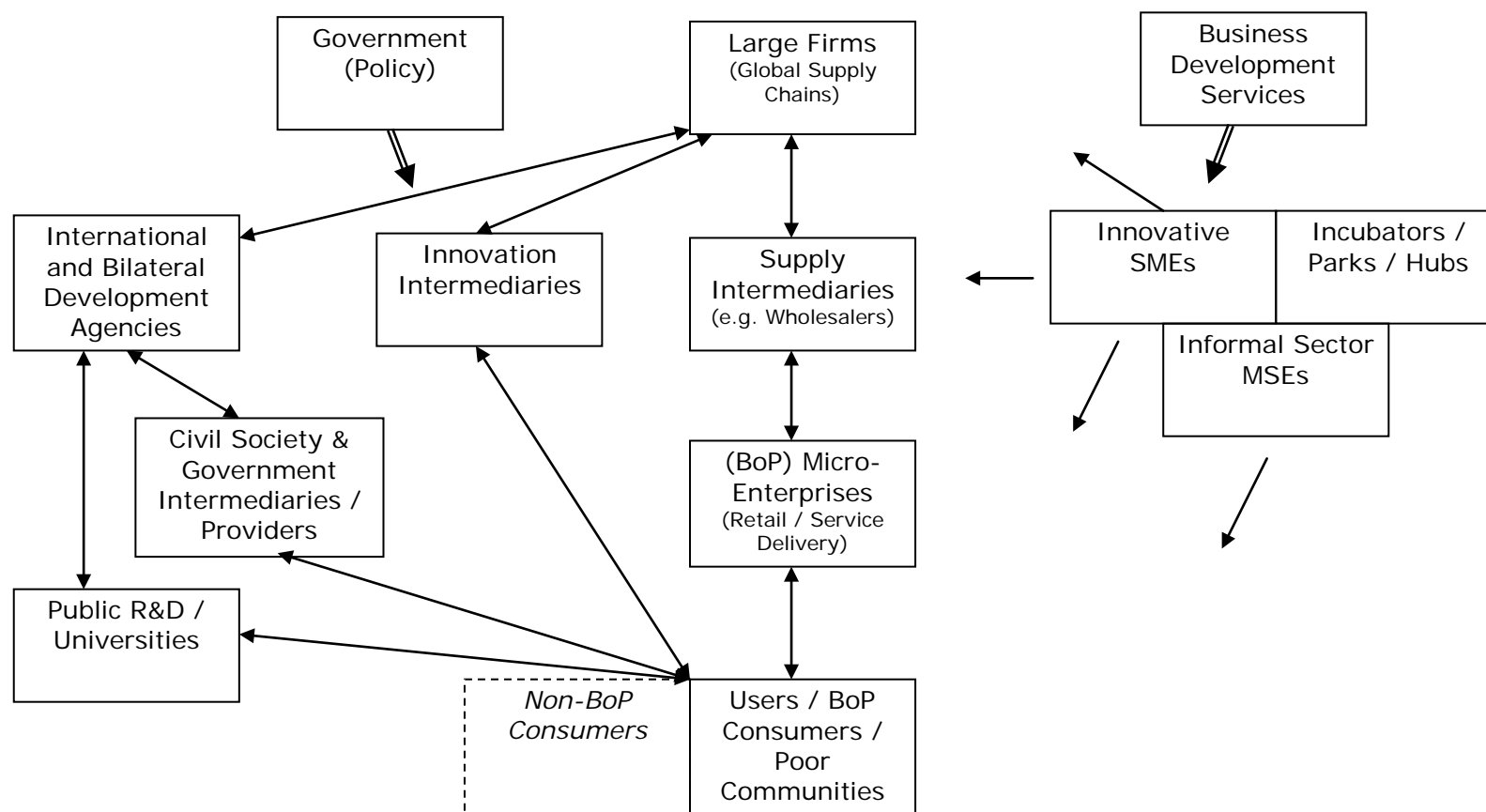


Figure 5: Stakeholder Map of Inclusive Innovation

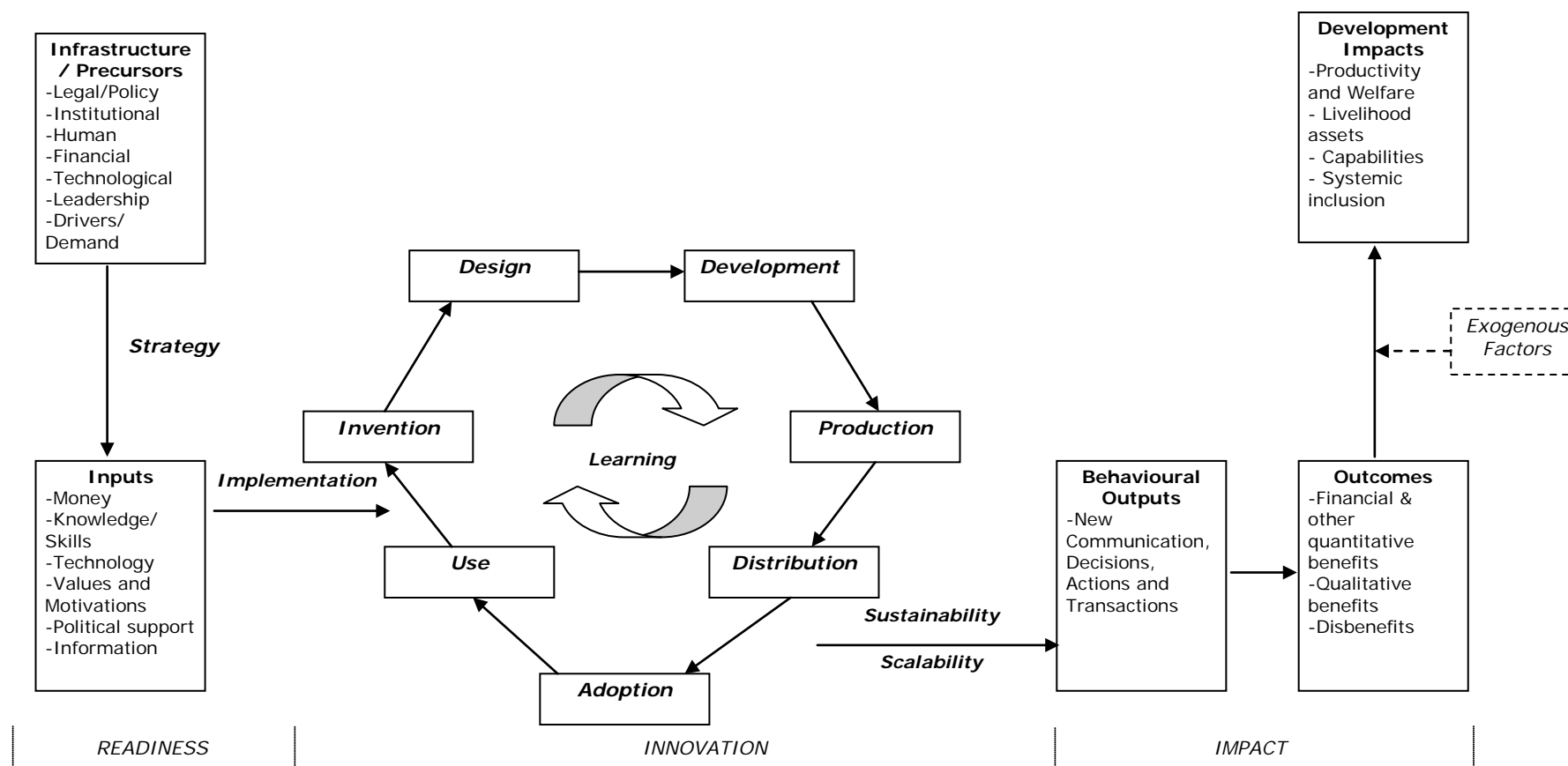


Figure 6: Process Map of Inclusive Innovation

Literature Guidance on Inclusive Innovation Research Priorities

Knowledge gaps or research priorities relating to inclusive innovation are identified in a number of items of recent literature, as summarised below.

IDRC (2011) set three key research themes for its short-lived programme on Innovation for Inclusive Development:

- Women: as innovators and as impacted by innovation.
- Intermediaries: particularly their role in diffusing and scaling innovations.
- Informal sectors: such as natural resource-based sectors, services, cultural industries, and the role of innovation within them.

Cozzens and Sutz (2012) provide a very detailed consideration of inclusive innovation, rooted particularly in notions of inclusive development and in an identified association of inclusive innovation as a group activity within contexts of informality. Their proposed research agenda is as follows:

- Focus on grassroots innovation (given that inclusive innovation is seen as being by the marginalised not simply for them) that encompasses both social and technical forms of innovation.
- Look for both women and men as innovators.
- Analyse the role of formal organisations rather than prescribing or assuming.
- Ask whether and how systems ideas – such as systems of innovation – apply.
- Keep the big picture of change in the informal sector and wider economy in mind.
- Ensure a theoretical foundation.

These can be seen mainly as principles for research rather than specific research topics. They can therefore be taken forward as guidance, but they do not seek to prescribe particular priorities.

George et al (2012) undertake a broad overview of inclusive innovation (understood as “innovation for inclusive growth”), and provide a research agenda from two directions. More implicitly, they review a series of conceptual frameworks of relevance to inclusive innovation, and identify the types of questions these frameworks could address:

- Governance/agency: how do community institutions impact inclusive innovation?
- Transaction cost/organisational economics: how do differing contractual relations apply in situations of large numbers of dispersed actors with differing access to information and other resources?
- Competition/strategy: what organisational designs are optimum for inclusive innovation?
- Stakeholder engagement and property rights: what are the competing claims on corporate activity in situations of inclusive innovation?
- Adoption of innovation: what are best practices in assisting diffusion and adoption of inclusive innovations?

More explicitly, they identify four themes for future research on inclusive innovation:

- Origins and trajectories of inclusive innovation: where does it start from and how and why does it continue, or fail to do so?
- Large vs. small actors: what is the optimal actor size for inclusive innovation, and how can different actors collaborate?
- External vs. internal factors: what is the role of and interplay between external (e.g. policy, infrastructure) and internal (e.g. resources, motivation) factors in inclusive innovation?
- Impact: what is the developmental impact of inclusive innovation?

Johnson & Andersen (2012) recommend developing inclusive foresight exercises that understand how the core institutions engaged in knowledge production interact with users from excluded groups; and analysing how ‘interactive learning spaces’ can be made more inclusive.

Lundvall & Lorenz (2012) look generally at innovation in low-income countries rather than specifically targeting inclusive innovation, and see research priorities in development of:

- “the theoretical understanding of how work organization relates to innovation performance and competence building in low income countries
- indicators for mapping forms of work organization and competence building in the formal and informal sector
- methods for data gathering on work organization and competence building in the formal and informal sector
- policy and development strategies that give attention to how work organization in the formal and informal sector contributes to innovation performance and competence building”.

Overall, these are very helpful but we can note a number of lacunae that apply to some of the latter analyses. They are driven largely from within the academic world. This is of significant value given the role of academics as consumers of research, but that represents only a partial picture of all stakeholders with interests in inclusive innovation research (which would include all those shown in Figure 5).

They are somewhat traditional in orientation; seeming to approach inclusive innovation incrementally from the direction of conventional innovation, with its emphasis on formal R&D and large firms. While that certainly represents a very important aspect of inclusive innovation, it is not the only model and higher-level understandings of inclusive innovation (e.g. structural and post-structural) might well reject such an orientation. And, there is no overall conceptual framework provided on which to map the proposed research priorities. To be fair, George et al. (2012) do provide a systematic input-process-output type of framework for inclusive innovation, but they do not explicitly map their priorities onto that framework.

C. Study Methods

In order to move beyond literature-based, academic-centred research prioritisation, we needed to connect with inclusive innovation stakeholders in the field. We selected what we felt were three key groups from the stakeholder map (Figure 5 above):

- Government policy makers, policy implementers or strategists.
- Managers working in private firms serving the base-of-the-pyramid.
- Managers in business development services organisations and NGOs (some of which had adopted a social enterprise business model) supporting enterprise- or technology-related innovations in poor communities.

We selected three countries in Africa and Asia – India, Indonesia and Uganda – which we hoped provided a range of different interests and experiences, given their differentiation in terms of some key forces shaping inclusive innovation: levels of wealth and inequality; strength of national innovation system; and extent of innovation policy including policy recognition for inclusive innovation.

Given funding limitations, we set a baseline requirement of four interviewees from each of the three stakeholder categories in each of the three countries. In Uganda, serendipity allowed an additional interview, making a total of 37 interviews conducted in total. Again given funding constraints, interviewees were selected by an approach of mixed purposive and convenience sampling: selected as those most likely, from the contact networks of the in-country co-authors, to provide reflective and insightful responses.

In order to ensure some critical mass, consistency and comparability, it was decided to select all interviewees from a single sector. The ICT sector was chosen, in large part because it has been the source for many recent examples of inclusive innovation since the mass diffusion of ICTs represents the single most significant technological change within low-income communities in recent years and, more contentiously-arguably, ever. There are many and growing opportunities for inclusive innovation within the ICT sector itself and in ICT-enabled goods and services (for example, m-xxx such as m-health, m-finance, m-agriculture, etc). But, equally, the spread of ICTs can be the basis for more cross-cutting changes to processes and structures of innovation that could be inclusive; for example by more-readily enabling excluded groups to participate in innovation through digital communication or through e-learning.

The stated interests of the study were answers to six overall issues for each interviewee:

- i. The main ICT innovation processes, outputs and models (if any) that they use.
- ii. Their knowledge gaps in relation to ICT innovation for BoP markets: what models, ideas, concepts do they want that they currently lack?
- iii. Their evidence gaps in relation to ICT innovation for the BoP: what data and information to they currently lack?

- iv. Their advice gaps in relation to the same topic: what guidance and recommendations would they like to receive?
- v. Of the suggested inclusive innovation topics in an attached research map (see Figure 8), which would they prioritise, and why?
- vi. What would be the best means by which any research outputs (of new knowledge, evidence and advice) should be disseminated to them?

Based on this list, an interview pro-forma was developed for each of the interviewee groups. This was applied in a semi-structured manner, allowing the interviewer to probe responses for more detail and to follow-up emergent issues of interest. Findings from the interviews are reported below. In practice items ii-iv were merged into an overall consideration of future research priorities.

D. Findings

D1. Inclusive Innovation Today

Although information and communication technology can be argued one of the recent success stories of inclusive innovation – at least up to Level 3 of the inclusive innovation scale – serving excluded groups is still patchy as a core business strategy. In Indonesia, for example, large firm interviewees did not see low-income groups as a main market: they were ignored or filed under “corporate social responsibility”. Only those firms driven by the necessity of competition and shrinking margins in their existing top/middle-of-the-pyramid markets or driven by the recognised revenue opportunity were addressing low-income consumers.

Those closer to low-income groups – such as small enterprises or civil society organisations – were much more focused on them, but were less clear that their activities constituted innovation; in part because there was a strong emphasis on imitation, on adaptation, and on what others would call social as much as technical innovation. These types of activity were also found in larger firms, but some were either developing new technical solutions to meet needs and wants of low-income consumers, or were innovating around existing solutions to try to increase accessibility and/or reduce costs of these solutions for such consumers.

A key issue for larger, well-established firms was how to handle the relationship between their existing, traditional structures and processes of innovation, and those required to serve low-income consumers. In general, these firms were developing new structures and processes at the margins of their activities – working their way experimentally, incrementally towards inclusive innovation rather than attempting a wholesale reinvention of their innovation system.

For example, the component of the innovation process that firms had changed the most was the precursor of market research. There was some use of focus groups and prototyping involving low-income consumers – a few firms in India had formal

models to escalate findings from these consumers – but no sense in which the core innovation model was being disrupted, and no sense in which direct members of excluded groups were anything other than consumers; they were not partners, co-creators, innovators, etc. Inclusive innovation was being held at arms’ length partly due to the novelty and risk of inclusive innovation activities, and also likely in part due to stereotypical attitudes towards the BoP within these firms.

When gathering market intelligence and later-stage information about low-income consumers, firms were choosing one of three strategies: insourcing, outsourcing, and automation. Insourcing was relatively rare, and would involve firm staff undertaking market research including direct observation of low-income communities. Much more frequent was outsourcing of some aspects (again, with a major emphasis on market intelligence) of the innovation process. This had given rise to a new cadre of “inclusive innovation intermediaries”, drawn from a great variety of sources. Specialists organisations are moving down from standard market research into this field; diagonally from technical/policy/social science research; sideways from themselves serving lower-income markets, or as social enterprises; and upwards from community development. Thus, even prior to the process of innovation itself, inclusive innovation is fuelling a wealth of structural and organisational innovation with many different models emerging. There were aspirations that these structures could form new inclusive innovation platforms but as yet they seem more experimental and emergent than permanent, so the notion of platforms may be premature.

As noted, these intermediaries serve to bridge between core innovation activities and BoP markets, but they can also serve to distance and protect. One typical example from an Indian firm is shown in Figure 7. The core, traditional new product development (NPD) team works with the main inclusive innovation intermediary via a nominated individual who has been given responsibility for the BoP market. The intermediary will often sub-contract work e.g. organisation of focus groups, meaning the core team is rather well-buffered from its low-income customers.

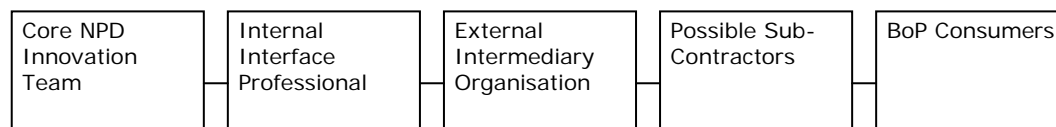


Figure 7: Large Firm Inclusive Innovation Chain

As noted, the poor only seem to be conceptualised as consumers: there is no recognition let alone incorporation of grassroots innovations. This despite the fact that these innovations are not only occurring within low-income communities (particularly as ICTs diffuse ever-further), but that they are known to be an integral and essential part of the diffusion, adoption and use of technology in low-income communities (Foster and Heeks 2013c). Thus a rather traditional view of innovation pervades inclusive innovation: one that focuses more on technical than socio-technical or social innovation, and one which does not recognise the centrality of

‘innofusion’: the continuous need for ongoing innovation during the process of diffusion (Foster and Heeks 2013b).

Automation is less common as a strategy for connecting to excluded groups, but seems to be on the rise. Examples were particularly seen in the Ugandan interviews. Banks had used cameras to monitor behaviour of users from low-income communities when ATMs were first introduced into those communities, and had altered interfaces and placed bank staff by the ATMs for the first few weeks of use, having observed difficulties users were experiencing. Firms and NGOs were also using cookies and similar mechanisms within ICT applications in order to log user behaviour and also to capture specific user data that could then be fed further into the innovation cycle.

Some specific government interventions (universal service funds, licensing of mobile money systems, encouragement of e-government) were identified as having enabled particular innovations for low-income groups. But, overall, policy was not seen to play very much of a role in inclusive innovation, at least in response to open or general questions. Those outside government did not often identify policies of relevance to inclusive innovation, they generally failed to mention policy at all unless prompted, and their views were sometimes negative about policy: not just its content but also poor implementation. This was also reflected in the responses of policy makers themselves. Rather than seeing a direct contribution of their policies, they were unsure and uncertain about inclusive innovation. They wanted to understand more about the concept, and they particularly wanted some hard evidence about the value of inclusive innovation. This fits with earlier research findings which suggest that policy plays an important role in actual cases of inclusive innovation (Foster & Heeks 2013a). However, these important policies are typically foundational around trade, competition, business: “it is only a slight exaggeration to conclude that the policies which have fostered inclusive innovation in these cases are not centrally about either inclusivity or innovation” (*ibid.*:116) Hence it is not surprising that interviewees sometimes struggle to identify a role for policy, which has been more often indirect than direct.

Problems with policy are one of a number of key barriers to inclusive innovation that interviewees identified, which mesh well with the notions of readiness for inclusive innovation outlined in Figure 6. Barriers included:

- Legal/Policy: absence of policy support.
- Institutional: lack of collaborative structures and organisations to support inclusive innovation.
- Human: lack of skills and knowledge necessary for inclusive innovation.
- Financial: poor access to capital.
- Technological: poor ICT connectivity and bandwidth.
- Drivers/Demand: lack of need to address excluded groups and/or lack of information about demand for innovations among these groups.

There was also widespread identification of lack of knowledge as a key barrier to inclusive innovation: a lack that can be structured in terms of future research priorities; discussed next.

D2. Stakeholder Research Priorities

Interviewees were offered the map of stakeholder-based research priorities shown in Figure 8. This deductive approach to identifying research priorities did not work very well. Some interviewees struggled to understand the map; particularly the meaning of the research priorities. Some merely prioritised the research issue associated with their particular stakeholder group. One or two stated that all the research issues were important. Acknowledging these limitations, the three areas which did emerge most were (in order): inclusive innovation policy, grassroots innovation, and incubators.

The first two also emerged from the more open interview questions that preceded presentation of the stakeholder map, as did the issue of innovation intermediaries among several interviewees. Given that the prompted responses on incubators sometimes conflated a perceived need for more incubators with the need for more research about incubators, the three main stakeholder-related research priorities were as follows:

- **Policy for Inclusive Innovation:** research was wanted to provide guidance on how policy on paper and in practice can better support inclusive innovation. This was mainly interpreted in terms of the content of policy for inclusive innovation, though with some nod towards the importance of policy structures and processes (such as implementation gaps). Policy makers themselves but also others wanted some means of tracking the impact of interventions via measurements or benchmarks of inclusive innovation (see below). There was also an implicit concern from some outside government to understand the political economy of inclusive innovation policy in order to understand why policy sometimes was failing to deliver on its promises. Others wanted to know how to promote the legitimacy and acceptability of inclusive innovation to policy makers (one answer being – see below – to develop benchmarks and measures of inclusive innovation). Within both of these latter issues lay the question of policy makers' framing of inclusive innovation: what they understood by it, and their views – including political prioritisation - of those who were to be included.
- **Grassroots Innovation:** interviewees had some awareness that user innovation (particularly with ICTs) was likely going on within low-income communities, and that it might be important, but that their levels of understanding and even awareness were very low. Research was therefore required to build knowledge about grassroots innovation: who is innovating within low-income communities, what are they innovating, how are they innovating, why are they innovating, etc. Research was also seen as needed around a pre hoc and a post hoc grassroots innovation issue. Interviewees wanted to know how best to improve the innovative capacity of low-income communities: both of individual users but also of those downstream organisations within the value chain which are embedded

in these communities and are responsible for the innovations that ensure diffusion, adoption and use of new goods and services. They also wanted to know how best to help grassroots innovation become more part of the mainstream innovation chain: a form of reverse innovation since it flows from end users back into lead innovation organisations.

- ***Inclusive Innovation Intermediaries:*** as noted above, interviewees recognised and described the activities of a number of different inclusive innovation intermediaries. They understood intermediaries had a critical role to play but wanted further research: to categorise the different types of intermediary and explain the pros and cons of these different types; to understand what roles they could play in inclusive innovation; and to highlight critical success and critical failure factors in those roles.

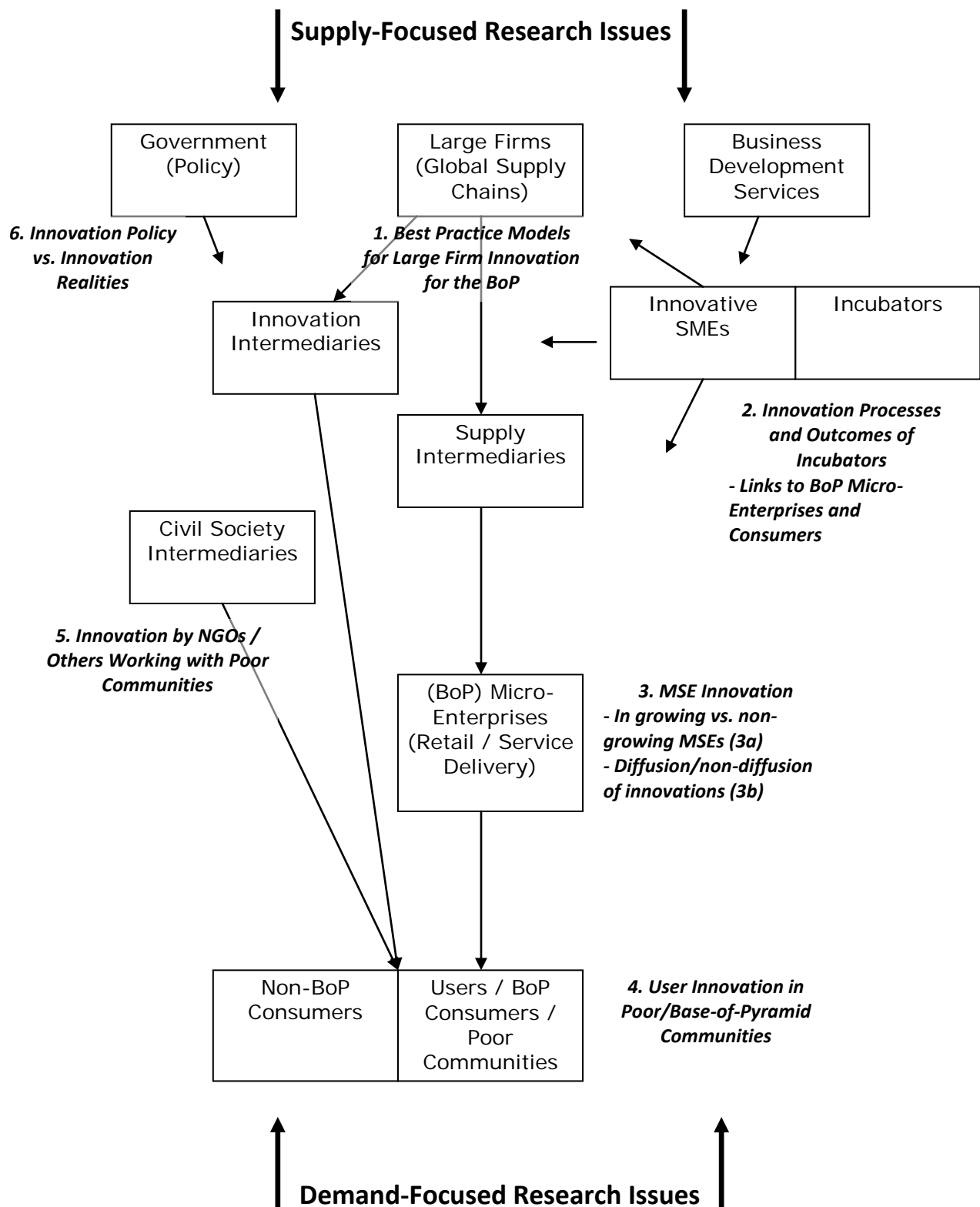


Figure 8: Stakeholder-Based Research Priorities in Inclusive Innovation

D3. Systemic Research Priorities

Four research priorities emerged from the interviews which were more systemic in nature:

Basics of Inclusive Innovation: for a number of interviewees, innovation for excluded groups such as those on low incomes at the BoP, was a relatively new activity or even new idea. One danger in asking this group about research priorities was that they “don’t know what they don’t know”. But – getting a little more Rumsfeldian – some were aware of these unknown unknowns, and their priority was to get some more basic definitions, explanations, cases and evidence about inclusive innovation. This may not require new primary research, but it will require new outputs based on existing knowledge.

New Models of Inclusive Innovation: beyond the involvement of new actors, such as the intermediaries outlined above, interviewees were aware that new systems or new models of innovation were emerging as a result of the growth in inclusive innovation. Underpinning this perspective, and also issues discussed earlier is a very broad notion of the types of innovation that relate to inclusive innovation, as shown in Figure 9.

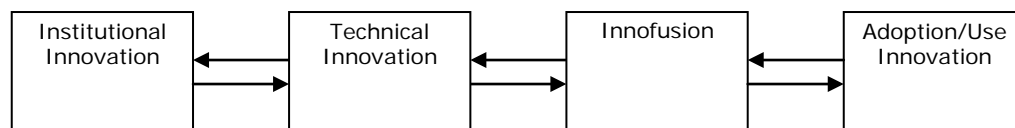


Figure 9: Forms of Innovation in the Inclusive Innovation Chain

In more detail, these are as follows:

- Institutional innovation represents the changes in institutional arrangements that are necessary in order to create the conditions for and facilitate the emergence of inclusive technical innovation: these arrangements can be thought of as new models or systems of innovation. This will cover much of what is understood as governance of innovation: changes in policies, laws and regulations; the development of business and organisational strategies by lead firms involved in developing innovations; the development of mechanisms for negotiations and other decisions; creation of a culture that supports the technical innovation; and also the formation of structures and relationships such as those with new inclusive innovation intermediaries.
- Technical innovation represents the process by which the focal innovation is produced by the core innovator and others who may be included.
- Innofusion represents the innovations necessary to enable the innovated good or service to be diffused to the low-income group that it is supposed to serve. Innofusion is typically also held to include, but in this case has been separated from ...
- Adoption/use innovation: the innovations necessary in order to put the innovated good or service into use by the low-income consumer.

Though not of these elements has been researched in any great detail, there is a particular gap around the non-technical elements – the institutional innovations that precede the core innovation, and the innovations of diffusion, adoption and use that follow it. The latter are described elsewhere but here the research priority discussed is the identified need to understand the institutional innovations as new models of inclusive innovation: what are the different structural models that exist, who are the main actors, what are their interrelations (e.g. what items are exchanged between them), how structurally-connected and incorporated are the excluded groups that are the focus for inclusive innovation?

Some aspects of this will overlap with the issues of process discussed next, but the emphasis here is on the structural arrangements. These may be understood largely organisationally, or this may be expanded to incorporate institutions in neo-institutionalist terms as those arrangements which serve to shape innovative behaviour, thus also including research on drivers and incentives to inclusive innovation.

Informatics and Inclusive Innovation: the new models of inclusive innovation that are emerging all involve information and communication technologies in some way. In some cases, ICTs are the object of innovation – as noted above, mobile particularly is the base for many current inclusive innovations – and interviewees were keen for research to help them understand any special features of ICT which had particular impacts on innovation. Such features could include network effects, ICT's disruptive potential, its virtualisation of goods and services, the way in which it enables certain types of user innovation but constrains others, and the very high levels of hope and expectation they see associated with ICT among low-income consumer groups.

They also sought more cross-cutting research to explain how ICTs were altering the overall process of innovation: How could automated/ICT-based means of gathering data about low-income consumer be incorporated into inclusive innovation? Were ICTs helping make inclusive innovation processes more open or were they introducing new inequalities? Of course, this prioritisation of ICTs is unsurprising given the selection process for interviewees, but both issues reflect priorities identified by broader forums, such as the 2013 international Inclusive Innovation Workshop (OU 2013).

Benchmarks for Inclusive Innovation: as noted above, policy makers particularly wanted harder evidence about inclusive innovation. They wanted to understand its current extent and they wanted to understand justifications for future policy or financial investments in inclusive innovation. Ideally this would be presented to them in the form of statistics but failing that rating scales or benchmarks might be used. Since these do not exist at present, research would be required to create them.

Benchmarks and similar measures could target three aspects of inclusive innovation, reflected in the process diagram shown in Figure 6: readiness (that is the

foundations and precursors that input to the innovation process); innovation (the process of innovation itself); and impact of inclusive innovation. Measuring the process of inclusive innovation will be very challenging and likely labour-intensive, involving regular on-the-ground surveys. The same could be true of impact measurement, a topic discussed further in the next section.

Here, we target the idea of an Inclusive Innovation Readiness Index. This would focus on the infrastructure for inclusive innovation, based around measures of the precursors shown in Figure 6 and also identified above by interviewees as barriers to inclusive innovation if not fully in place. These would include:

- Legal/Policy Infrastructure: the existence of policies necessary to support inclusive innovation.
- Institutional Infrastructure: the extent to which collaborative structures and organisations exist to support inclusive innovation.
- Human Infrastructure: the level of skills and knowledge necessary for inclusive innovation.
- Financial Infrastructure: the degree to which capital can be accessed to support inclusive innovation.
- Technological Infrastructure: the diffusion and availability of the technology of relevance to inclusive innovation.
- Drivers/Demand: the existence of incentives to inclusive innovation.

In overall terms, this would be very similar to conventional innovation indices, such as the innovation input component of the Global Innovation Index, which measures: institutions (including policy), human capital and research, infrastructure (including ICT), market sophistication (including credit), and business sophistication (Dutta and Lanvin 2013). However, it would require amendment in order to encompass the specific features of importance to inclusive innovation.

D4. Process Research Priorities

The last set of main research priorities can be understood in relation to the process model shown in Figure 6:

Readiness for Inclusive Innovation: on the ‘readiness’ or ‘input’ side of the model, interviewees – especially those at the policy or strategy level – wanted research to guide them on what infrastructure needed to be put in place to facilitate inclusive innovation, typically at national level. As well as the ‘where are we now’ reflection seen in benchmarks like the Inclusive Innovation Readiness Index, they also saw such research as providing guidance on future strategic actions and investments.

Inclusive Innovation Good Practice: the single main area of research interest was the core of the inclusive innovation process; particularly guidance on good practice so that those involved could ensure they were getting the best out of their actions. This fragmented into a number of specific issues but two related areas stood out.

First, there was a consistent theme – especially from the Asian interviewees – of the hybridity of inclusive innovation. That is, inclusive innovation was seen to involve the mixing of two different things. This was expressed as mixing of external and local knowledge; as mixing of new technology and traditional contexts; as mixing of frontier and basic technologies (echoing earlier interests in ‘intermediate’ and ‘blended’ technologies). This hybrid innovation was seen to take place in various ways: within a single individual, within a group, within an organisation, via collaboration, via intermediaries. Interviewees therefore wanted guidance from future research on how best to hybridise: what structure and what models would work best, and above all how to design and manage the hybrid innovation process – how to meld very different knowledges and worldviews and interests together into a successful and inclusive innovation activity.

Very much linked was a concern that can be understood as design-reality gaps (Heeks 2002): based on interviewee experiences that innovation designs they had been involved with were often mismatched to the realities of low-income consumer contexts, causing those innovations to fail to be adopted, or leading to the innovations having to be expensively reworked. Interviewees wanted research guidance on what the core problems were and how they could be avoided. They saw one core aspect as being an assumptions-expectations gap: when incorrect designer assumptions about low-income users meet incorrect user expectations about new (ICT-based) innovations. They wanted research into this specific issue to help them understand and mitigate this gap.

Scaling Inclusive Innovations: interviewees readily perceived that some innovations in their experience had scaled to low-income groups, while many others had not. The main request was for investigation of the scaled innovations – from both commercial and non-commercial spheres – to help understand how they had been successful, and to seek to draw lessons for future inclusive innovation. Some, additionally, suggested the more difficult mirror image – seeking to research innovations that had failed or which had failed to scale – and trying to draw conclusions for practice from those.

Impact Evaluation of Inclusive Innovation: Level 3 of the inclusive innovation scale defines inclusivity in terms of impact of the innovation on the excluded group. Interviewees were interested in the impact that innovations are having; for example on livelihoods of the poor. As already discussed, such research could take a relatively conventional line using economic indicators of productivity and welfare/consumption, or broadening a little to assess the impact of an innovation on livelihood assets. But the ‘inclusive’ aspect of innovation prompted some interviewees to seek rather deeper and/or longer-term evaluation methods. This might incorporate a concern with impacts on reducing inequality. It could be understood in Senian terms to research the impact of innovations on the capabilities and functionings of excluded users. It could move towards more of a process approach to evaluation, seeking innovation less as a delivered good/service and more as the development of a capacity and culture within low-income communities; thus moving up the inclusive innovation scale.

D5. Research Dissemination Mechanisms and Channels

Research on inclusive innovation was generally understood as something that would be conducted by specialist research institutions, such as universities or research consultancies. But this is a relatively traditional model that can be somewhat hierarchical; in other words it may not be very inclusive or very innovative as an approach to researching inclusive innovation. Among some interviewees, notably those in India, there was interest in exploring alternative research models. For example, a number of organisations were seen to be active in the field of inclusive innovation, and future research was encouraged to explore network models of research which would allow these organisations to share experiences and learn lessons among themselves in a community-of-practice manner.

Therefore, alongside the need to build knowledge about inclusive innovation was the need to build inclusive innovation research capacity. In part this would be within the specialist research institutions but it would equally be within the main stakeholder organisations (see Figure 5) involved with inclusive innovation practice.

Finally, interviewees were asked about preferred dissemination channels for research on inclusive innovation. Answers were not particularly insightful, though mechanisms that allow for the active involvement of research beneficiaries were preferred: channels for making and doing rather than just telling. Examples included workshops, policy dialogues and online forums. The use of multiple forms and multiple channels was recommended, and researchers were asked to try to allow further use and adaptation of research products as much as possible: using open access and creative commons approaches, allowing access to raw data, and offering tools for further manipulation of results.

E. Conclusions

This paper has offered a definition and integrated conceptualisation of inclusive innovation, and then built from that to identify knowledge gaps and thus research priorities based on the views of 37 interviewees associated with one sector in three developing countries. The identified research priorities do not overlap particularly with those that emerged from the brief literature review reported in Section B, perhaps because of the practitioner rather than academic derivation of the results (though of course other factors will have played a role as well) but they will be of relevance to academic researchers, especially those with an interest in research impact. The priorities overall are summarised in Table 1.

<i>Perspective</i>	<i>Research Priority</i>
STAKEHOLDER	<ul style="list-style-type: none"> - Policy for Inclusive Innovation - Grassroots Innovation - Inclusive Innovation Intermediaries
SYSTEMIC	<ul style="list-style-type: none"> - Basics of Inclusive Innovation - New Models of Inclusive Innovation - Informatics and Inclusive Innovation - Benchmarks for Inclusive Innovation
PROCESS	<ul style="list-style-type: none"> - Readiness for Inclusive Innovation - Inclusive Innovation Good Practice - Scaling Inclusive Innovations - Impact Evaluation of Inclusive Innovation

Table 1: Summary of Inclusive Innovation Research Priorities

Inclusive innovation as a research domain is subject to competing centripetal and centrifugal forces. As a topic of growing interest it has a centripetal magnetism that draws in interest from academics, policy makers, large firms strategists, donor agencies, NGOs, etc. And within the research community, those working within development studies, innovation studies, economics, business and management, science and technology studies, sectors such as health and agriculture and informatics, and other disciplines and sub-disciplines have all been drawn into the field.

But those differences in organisational and disciplinary origin also create centrifugal forces that encourage inclusive innovation to splinter into many fragments, driven by different terminologies, frames of reference, perceived interests, etc. If research priorities are similarly fragmented then each new piece of research – rather than being a rock of insight that builds a growing cairn of knowledge around inclusive innovation – will be thrown into a pond: making a small, temporary splash but then disappearing without trace.

From metaphor to practice, this encourages those working in inclusive innovation to focus their research around a few key priorities, thus creating a critical mass. This paper has offered some potential priorities, emergent from an evidence base about research demand. It is hoped these priorities may help shape future research in this field.

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