



Quality and impact of the Innovation Agency's support to small firms

A qualitative investigation of the Healthcare Business Connect Programme

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The usual disclaimer applies.

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Executive summary

This report concerns a qualitative research project that was jointly set up by the Innovation Agency and Lancaster University Management School to investigate the perceived quality and impact of the support small firms receive from the Innovation Agency's Healthcare Business Connect (HBC) Programme. An additional aim of the study was to uncover any broader issues or challenges that influence the performance of the HBC programme and other relevant initiatives, which may however be beyond the control of the Innovation Agency. A sample of 20 small companies across the three sub-regional HBC programmes (Lancashire, Liverpool City, and Cheshire and Warrington) was studied. The research also considered the views of Innovation Agency staff and NHS procurement professionals.

The findings suggest that a substantial part of the studied small firms (16 out of 20 firms) that participate in the HBC programme state that they are either 'very satisfied' or 'satisfied' with the support provided. The exact support package varies in each case, but small firms are satisfied with aspects such as connectivity to clinicians and decision makers in the NHS, funding-related support, feedback on product and the sales approach, opportunities provided to build a profile and promote the product, and education regarding how the NHS works. Three firms stated that they are dissatisfied with the Innovation Agency's ability to connect them to appropriate individuals within the NHS. Almost all of the interviewed companies stated they would recommend the Innovation Agency to other small firms that aspire to penetrate the NHS market, as they value the experience, knowledge and connections of the Innovation Agency's staff.

The impact of the provided support was examined in terms of customer contracts /sales, additional funding that small firms have attracted, jobs created due to business growth, and positive changes in behaviours and /or improved capabilities of the small firms ('behavioural additionality'). In addition, the perceived 'value added' of the Innovation Agency's support to small companies was examined. This analysis was based on a distinction between a group of small firms that have already developed their product /technology (thirteen companies in the sample) which they wish to promote to the NHS market, and a second group of companies whose product is still under development or validation (seven companies in the sample).

The results for the first group of companies suggests that the engagement with the Innovation Agency and the HBC programme has helped some of them to secure NHS contracts, attract additional funding and create jobs. Several other companies stressed that their engagement with the Innovation Agency is still at early stages, and hence it has not yet produced any tangible outcomes. Regarding the second group of companies whose product /technology is still under development or validation, the 'NHS sales' criterion does not apply. There is hardly any evidence of these firms attracting additional funding or creating jobs as yet, although one firm reported the creation of two internships. However, such results could be expected as these firms are still at relatively early stages of the commercialisation process.

For both groups of small companies, there is considerable qualitative evidence suggesting that they have benefited from their participation in the HBC programme by changing their behaviours and /or approaches, and by expanding further their knowledge base and capabilities. Elements of behavioural

additionality observed include better understanding of the NHS market, improved ability to position and promote their offering to the NHS, value proposition refinement, sales strategy customisation, and increased propensity to engage in collaborative innovation projects.

Collectively, the analysis also suggests that the studied small firms perceive that the Innovation Agency's support has added value to their businesses in several ways. These include building reputation and credibility as a result of the Innovation Agency's vetting of the product and the company, accelerating the sales process, refining the product and value proposition based on Innovation Agency's feedback, and accessing clinicians and relevant NHS staff who provide valuable inputs into the product development and validation process.

The analysis uncovered many issues and challenges pertaining to the broader institutional environment within which the Innovation Agency and other AHSNs operate. These issues concern the NHS structure (e.g. silo thinking), NHS governance systems, misaligned incentives (e.g. reimbursement models), time and resource limitations impeding innovation effort, and cultural and behavioural barriers. Assuming that the above issues are well established, the report highlights two additional noteworthy challenges: a) the misalignment of the NHS procurement system, and b) the lack of mandate of AHSNs to bring about wider institutional changes in the NHS. It is imperative that policy makers pay attention to these issues to further equip AHSNs as key actors in the UK health innovation ecosystem, and possibly also to reinforce their role as institutional engineers. Such a focus could help unlock the full potential of health innovation processes for the benefit of the NHS and patients.

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1. Introduction

1.1. Background

In line with the UK Government's prioritisation of life sciences and health as strategic sectors driving social welfare and economic growth, Academic Health Science Networks (AHSNs) were established by NHS England in 2013 as regional health innovation agencies with a mission to identify and spread healthcare innovation "at pace and scale" (AHSN Network, 2019). NHS England and the UK Government Office for Life Sciences fund the AHSN Network comprising 15 AHSNs that serve different geographical regions and their populations across England.

This report concerns the Innovation Agency, which is the AHSN for the North West Coast. The Innovation Agency has been relicensed in 2018 for another five years. Under its renewed licence, the Innovation Agency is expected to collaborate more closely with the other 14 AHSNs and work on common, national-level innovation adoption programmes and clinical pathway changes, in addition to its ongoing programme of work dedicated to the North West region.

The focus of this report is on the Healthcare Business Connect (HBC) programme. The main purpose of this programme is to support local innovators and small companies with innovative products, technologies and services to gain access to the NHS market.

1.2. The Healthcare Business Connect programme

The Innovation Agency's HBC programme is closely related to the Innovation Exchange, which is a broader initiative commissioned by the Office for Life Sciences and is implemented at national level across all AHSNs. The Innovation Exchange has four priorities relating to identification of unmet needs, small business support and signposting, validation of products /technologies, and adoption and diffusion of promising innovations.

The HBC programme is fully funded by an European Regional Development Fund (ERDF) project meaning that support is free for small firms participating in the programme. The HBC programme is designed to support micro-companies and SMEs whose innovative products and technologies have the potential to improve health outcomes and reduce costs for the public healthcare system. The emphasis of the programme is on supporting the adoption and diffusion of innovations, although pre-revenue companies that are still in the process of developing a new product or technology are not necessarily excluded from receiving support.

According to the Innovation Agency's staff, the main aim of the HBC programme is to support economic growth of local businesses by facilitating their access to the NHS market and the adoption of their products. Another goal of the HBC programme is to fulfil a horizon scanning function for the NHS and to offer commissioners and NHS procurement teams a visibility of innovations that hold promise in terms of improving health outcomes and reducing NHS costs.

The HBC programme is split into three sub-regional programmes, namely Lancashire, Liverpool City Region and Cheshire and Warrington. The three sub-programmes exhibit some differences mainly in terms of the experience of the teams that deliver them, the number of local partners involved, the orientation and capabilities of small firms that the Innovation Agency interacts with, and the wider economic and business support infrastructure available in each sub-region.

1.3. Research purpose and questions

A small scale research project was agreed and set up jointly by the Innovation Agency and Lancaster University Management School to investigate the quality and impact of the provided support, as perceived mainly by small firms that participate in the three sub-regional HBC programmes. In addition to this main aim, the study set out to identify factors or issues beyond the control of the Innovation Agency (and AHSNs more broadly) that may have a bearing on the performance of the HBC programme and other related initiatives. In line with the above, three distinct research questions have been formulated:

RQ1: How do small firms perceive the quality of the support they receive as part of their participation in the Healthcare Business Connect programme?

RQ2: What is the impact of the support on small firms participating in the Healthcare Business Connect programme?

RQ3: What issues beyond the control of the Innovation Agency influence the perceived quality and impact of the support provided, and how?

1.4. Research approach and design

A qualitative research design based on semi-structured interviews, participant observation of workshops /meetings, and analysis of secondary data was employed to pursue the research questions. The aim was to develop an in-depth, qualitative understanding of the views and perceptions of innovators from small firms participating in the three sub-regional HBC programmes, Innovation Agency managers and senior procurement managers in hospitals across the North West. In summary, data collection activities entailed:

- 31 semi-structured interviews; these included 20 interviews with founders or directors of small firms, six with staff of the Innovation Agency and its partners (Lancaster University), and five with NHS procurement professionals. Appendix A presents the list of interviewees.
- Participant observation of two workshops organised by the HBC Lancashire programme, and informal discussions with participants during these events.
- Review and analysis of 28 documents including Innovation Agency communications, relevant health policy reports, and health innovation related reports (e.g. the King's Fund reports).
- Review and analysis of secondary data available online e.g. AHSN Network and NHS websites.

Interviewees from the small firms were selected in close consultation with the Innovation Agency staff and the three commercial managers responsible for each sub-regional HBC programme. Specific criteria were defined and applied for selecting small firms to interview. These included:

1. The sample should cover small firms from different sectors with special attention to 'Medtech' and 'Digital Health' oriented companies. The actual sample included eight 'Medtech' companies, eight 'Digital Health' firms and four in other areas e.g. Mental Health.

2. The sample should cover small firms participating in all three sub-regional HBC programme. The actual sample included ten firms from Lancashire, five from the Liverpool City region, and five from the Cheshire and Warrington region.
3. The sample should cover both small firms that have been successful in selling their products /technologies to the NHS and those that have not been successful, or are still in the process of doing so. The actual sample included nine firms that have already generated some sales to the NHS, and eleven that has not done so (yet).
4. The sample should include small firms at different stages in the process of product development and commercialisation, and with different levels of maturity more broadly. The actual sample included 13 companies with established products /technologies (which may or may not have been sold to the NHS), and seven firms with products /technologies that are still under development or validation.

A standardised interview guide (see Appendix B) was developed and applied across all interviews with the small firms, although this was used rather flexibly to accommodate the specific situation of each company and interviewee. Key themes covered during the interviews with small firms included description of the product /technology and its potential benefits, engagement with the HBC programme, types of support received, perceptions of the quality of support, the impact of the support to date, and the current challenges and future plans of the company. The open-ended nature of the questions allowed interviewees to express their views regarding broader issues such as the role of AHSNs, and challenges related to NHS culture and NHS procurement goals and incentives.

Interviews with Innovation Agency staff mainly focused on the implementation of the three sub-regional HBC programmes, but also covered broader issues such as the role of the Innovation Agency and AHSNs, and barriers to health innovation adoption. Interviews with NHS procurement professionals provided a deep understanding of the commercial procurement perspective, and of the environment within which NHS procurement staff operate. Interviews also uncovered many challenge areas with respect to SME access to the NHS market, and innovation adoption more generally.

1.5. Report structure

The remainder of this report is structured as follows. The next section (Section 2) presents the results regarding the perceived quality of the support provided by the HBC programme, while Section 3 analyses the impact of the support to date for small firms participating in the programme. Section 4 identifies and briefly discusses some issues and challenge areas that are seemingly beyond the control of the Innovation Agency and which influence innovation adoption-related goals. Section 5 concludes by summarising the findings and discussing limitations and further research opportunities.

2. Perceived quality of support

This section presents the findings with respect to the quality of the Innovation Agency's support, as perceived by the studied firms that participate in the HBC programme. Overall, the majority of small firms appear to be positive about the quality of support. These results are further analysed below. This section also outlines some key improvement opportunities identified by research participants.

2.1. Level of small firm satisfaction

In response to the question regarding the level of satisfaction with the provided support, 16 out of 20 firms stated that they are 'satisfied' or 'very satisfied' with the support they have received, with one firm indicating that it is 'somewhat satisfied'. Three firms stated that they are 'not satisfied'. Table 1 presents a summary of the results. It is important to note that no developed scale (e.g. Likert scale) with predetermined responses was applied when asking this particular question, given the qualitative nature of the study. The question (and responses) were open-ended and hence the four categories featuring in Table 1 were derived directly from the interviewees' responses.

Table 1: Level of satisfaction of small firms participating in the HBC programme

Satisfaction level of small firms	Frequency
Very satisfied	7
Satisfied	9
Somewhat satisfied	1
Not satisfied	3

The support activities reported by the interviewees varied considering their specific situation, and the stage they are at in the product development and commercialisation process. Overall, the interviewees referred to the following key types of support activities during the interviews:

- 1) Networking and connections,
- 2) Funding-related support,
- 3) Feedback on product and sales approach,
- 4) Education regarding the NHS structure, culture and language,
- 5) Workshops on specific themes for capability building purposes,
- 6) Signposting to relevant events and exhibitions,
- 7) Product vetting and promotion to the NHS,
- 8) Procurement-related advice and support,
- 9) Manufacturing-related advice,
- 10) Health economics-related advice, and
- 11) Organisation of clinical trials or pilots to help generate evidence.

The qualitative analysis of the interviews provides further insights into what drives the satisfaction level of firms, as reported in this study. Some key issues that the interviews uncovered are discussed in the following.

The firms that state that are 'very satisfied' or 'satisfied' seem to perceive that the one-to-one support they receive is of high quality. Although the exact nature of this one-to-one support varies, some common themes identified include connections and introductions to clinicians and decision makers in

the NHS, signposting funding opportunities and support with writing funding applications. In addition, many firms value the feedback provided on the product /technology and on the value proposition, the education regarding how the NHS work and how to navigate this complex landscape, and the access provided to events /exhibitions to showcase the developed products or technologies.

“I’m very satisfied. Like I said, the only downside, the only disappointment for me was not being able to secure any funding. The rest of it, the support and encouragement and the leads is brilliant. We’ve been able to use videos which obviously we’ve provided for, it’s on the LinkedIn site and we’ve obviously provided that for the Innovation Agency but they’ve allowed us to use it. So, it’s great for us as well. It’s spreading the word, it’s getting people to know who we are and what we do and that we’re not bad guys, we’re really quite good” (Managing Director, S5).

It is important to note that six firms from those that stated they are ‘satisfied’ or ‘very satisfied’ suggested that there is room for improvement when it comes to connectivity to clinicians and to NHS staff more broadly. More specifically, these firms requested for more targeted connections so that they can reach the most relevant decision makers. Interestingly enough, some interviewees also pointed out that connectivity to NHS staff who are not open to innovative solutions and resist change is of little value.

“So, that [connections] is what it [Innovation Agency] does reasonably effectively but making connections with people who don’t necessarily want to change is, actually, only a relatively small part of the challenge”. (Chairman, S16).

The firms that state that are ‘somewhat satisfied’ or ‘not satisfied’ appear to perceive a limited ability of the Innovation Agency to connect them to appropriate individuals within hospitals or other relevant organisations e.g. CCGs. Besides that, the qualitative data analysis suggests that the dissatisfaction of the particular firms might be driven, to some extent, by their very high expectations or even misconceptions about what the Innovation Agency can do for them, particularly in terms of funding and guaranteeing sales to the NHS.

“I would have thought it would have been more robust, even aggressive, targeting of people within Trusts that we could physically contact to, contact with” (Co-founder and Director, S2).

“They have given funding to companies and there is one particular company I know they’ve actually funded. So, they are in a position to fund companies as well. But then again, I’m not saying to them, “give me your money” I’m saying to you, you see value in it, why don’t you invest in these people and in a better way?” (Managing Director, S1).

It is important to note that some interviewees suggested that, despite their overall satisfaction with the support they have received, they do not expect high impact in terms of NHS sales and company growth. This is because the Innovation Agency and other AHSNs operate within restrictions posed by the broader institutional environment, and they have no mandate and limited power in practice to effect systemic change in the NHS. A particular aspect emphasised by these interviewees is the apparent disconnect between the HBC programme (and other related initiatives of the Innovation Agency) and the NHS procurement system. This point is revisited in Section 4.

“Great support, I mean the problem to be really honest is not at that level I don’t think. We have a significant disadvantage and this is my country that I can see clearly why innovation does not get in the healthcare industry, but it’s not at the Innovation Agency issue; it’s at the healthcare side the problem is” (CTO, S18).

“I’m afraid to say it because I think they have somewhat of poisoned chalice as a mission at the Innovation Agency, but I think unless the Innovation Agency has any teeth in terms of being able to, you know, force issues with NHS procurement and to force through change, then its existence comes into question” (Managing Director, S15).

In response to the question of whether they would recommend other small firms to engage and work with the Innovation Agency, 18 out of 20 interviewees stated that they would recommend the Innovation Agency. One interviewee suggested that although his company did not find such engagement useful, in principle he would encourage other firms to be involved with the Innovation Agency’s programmes. One other interviewee declined to comment.

The qualitative responses to this question suggest that the interviewees value the experience, knowledge and connections of the Innovation Agency’s staff, which are useful as a starting point to enter the UK healthcare market. Some interviewees qualified their positive responses by suggesting that engagement with the Innovation Agency is mostly to be recommended for firms that have already established a track record of sales, and for those that operate in digital health or medical technology segments rather than in other types of commodity products and hospital supplies.

“Absolutely. I think if you’re going to be successful in any public sector and, in fact, in any business, you have to network with people. I see a lot of companies struggle to penetrate into the UK healthcare market. Let’s be frank, if we haven’t built up a 20-year track record I don’t think I would start in healthcare with the barriers there are to acceptance” (Director, S19).

“Without a shadow of a doubt; I already have done, yes. I think if you’re going into healthcare I think you would be...you would struggle without them, unless you have lots of experience in healthcare” (CTO, S18).

“With the Innovation Agency? The problem with the Innovation Agency is that you need to show a reasonable track record in being a successful business, to stand a chance of winning some kind of funding competition. We’re luckily in the position where we can do that. If I was truly disruptive technology from a start-up position I think I’d do much less well” (Chairman, S16).

“Yeah, the Innovation Agency, also they are very good at analysing companies and finding out what’s going on, at least in my experience, of course they can see the strength and weaknesses of your business fairly quickly which I find impressive” (Project Manager, S4).

2.2. Improvements suggested by small firms

The interviewees suggested improvements with respect to the implementation of the HBC programme, the main of which are outlined below. Some interviewees indicated that they had no suggestions for improvement given their high level of satisfaction with the support they receive.

- Several interviewees suggested the need to provide more customised and specialised support, given that they felt that several aspects of the support provided (e.g. workshops, events, and even introductions to NHS staff) were rather ‘generic’. A more customised and specialised support package could be based on the identification and development of key sectors (e.g. mental health)

or technology segments (e.g. digital applications). This would require a sector- and technology-based structure of the HBC programme, in addition to the region-based structure that is currently employed. This could help to link more closely regional /local needs (demand side) to capabilities in specific sectors and /or technology areas (supply side). Innovation Agency staff have acknowledged this issue and reported that they are in the process of developing and rolling out more bespoke and targeted events.

- The Innovation Agency could play a larger part in educating and positively influencing NHS staff about the role and potential benefits of health innovation. It could attempt to influence NHS staff and decision makers to embrace innovation processes and change as a means of helping to deliver the required service improvements. Although many interviewees acknowledged that changing the mind-sets of NHS staff is a big challenge, they felt that additional effort could be invested in influencing NHS culture and behaviours. Feedback from the Innovation Agency staff suggest that there is scope for doing more in this area by leveraging further existing NHS connections and interventions (e.g. Coaching Academies). They also noted that small firms could not fully appreciate the effort put into influencing NHS culture since such activity is invisible to SMEs.
- In connection to the previous point, some interviewees from small firms suggested that the Innovation Agency and the HBC programme could do more in terms of organising workshops targeting NHS practitioners, rather than small firms. Such workshops would cover various themes in relation to the innovation process. This resonates with a related suggestion to involve clinicians and decision makers within hospitals and CCGs in workshops that are oriented towards SMEs.
- The Innovation Agency is recommended to put more emphasis on evidencing NHS cost savings realised through transforming clinical pathways, in addition to supporting the growth of small firms. Evidence generation regarding the financial benefits (cost savings) accrued to the NHS is an area that is currently underplayed in the AHSNs' agenda, according to some interviewees. Potential explanations for this could be the substantial time lag between support to innovators and realisation of financial and performance benefits for the NHS, and the lack of relevant data (at NHS provider level) and of a structured measurement and impact evaluation process.
- The Innovation Agency could strengthen their in-house knowledge and expertise in certain functional areas including manufacturing, health economics, and procurement. Regarding the latter, some interviewees felt that the Innovation Agency should have a more structured process and put more effort into supporting SMEs to enter framework agreements. However, this view underplays the need of the Innovation Agency to be seen as an impartial actor that cannot directly influence commercial procurement decisions.
- The Innovation Agency could also have a role to play in facilitating the development of shared databases resulting from related clinical trials or pilots, given that evidence generation is a key challenge area for SMEs with less established products or technologies.
- The Innovation Agency could improve further its connectivity function by making more targeted NHS connections, as already pointed out in the previous section (see Section 2.1).

3. Impact of support

The interviewees from the small firms that participate in the HBC programme were asked to provide information regarding the impact that the Innovation Agency's support has had on their businesses. For the purpose of this study, 'impact' is conceptualised in terms of following dimensions that policy evaluation frameworks typically include: 1) customer contracts /sales, 2) additional funding that the small firm has have attracted, and 3) jobs created due to business growth.

In addition to the above, the study examined the impact of the HBC support in terms of any positive changes to behaviours and any improved capabilities of the participating companies. This dimension is known in the innovation policy literature as 'behavioural additionality' (Luukkonen, 2000; Davenport et al., 1998) and it has gained prominence in policy evaluation frameworks as an important complement to traditional 'input additionality' and 'output additionality' indicators. Examples of behavioural additionality indicators featuring in the literature include improved R&D project management capability, increased propensity of firms receiving support to collaborate with others, and the development of an explicit R&D strategy (Hughes et al., 2011; Clarysse et al., 2009). Finally, the interviewees were asked to reflect upon the overall 'value added' to their businesses by the Innovation Agency.

The results presented in this section should be interpreted with caution given the small sample size (n=20) and the qualitative nature of the study. The intention of the present analysis is not to draw any robust conclusions regarding the impact of the Innovation Agency's support, as this would require a large-scale quantitative study (i.e. a survey) in order to produce statistically meaningful and valid results. The intention is rather to provide a qualitative understanding of the impact of the support on the interviewed firms. Such qualitative analysis should consider the stage at which a small firm is in relation to the product development and commercialisation process, and the level of maturity of a recipient company more generally.

The analysis draws a distinction between companies that have an already developed and established product /service/technology (thirteen firms in the sample), and those companies whose product /service/technology is still under development or validation (seven companies in the sample). This distinction is important to consider when investigating the impact of the HBC programme, as it is unreasonable to expect that companies that are still in the product development phase will be in a position to enjoy certain impacts e.g. contracts /sales and significant growth.

Two further points should be stressed. First, the usual challenges of attributing outcomes to specific actions or actors were highlighted during the interviews. More specifically, attributing outcomes to the Innovation Agency's support is far from straightforward given the complex interrelationships between the Innovation Agency's input and other actors' inputs e.g. other support programmes/ initiatives that small firms participate in. In addition, some interviewees found it difficult to separate their own effort and inputs from the inputs of the Innovation Agency's staff.

Second, a specific area of impact that was under-represented during the interviews is the direct (or even indirect) impact of support on cost savings and /or operational improvements realised by the NHS. Companies that answered this question referred mostly to the *potential* or *perceived* benefits of their innovations, but they largely failed to cite hard evidence of any actual benefits that the NHS has accrued. For this reason, this important aspect is excluded from the present analysis.

3.1. Companies with established products /technologies

Firms featuring in this category include SMEs that have already developed a product or technology which they either wish to promote to the NHS, to transfer from another application area (e.g. transportation) to the healthcare market, or to extend its application to additional segments of the healthcare market (e.g. elective care). Thirteen companies fall into this category, out of which nine have already generated some sales to the NHS, and four are still in the process of doing so. Table 2 in the next page presents the results regarding the impact of the HBC programme on the participating firms.

The findings in Table 2 show that five companies have secured contracts with NHS customers and generated some sales because of their engagement with the HBC programme and the Innovation Agency more broadly. Another six companies reported that they have secured customer contracts in the NHS or in the private healthcare sector. However, these generated sales cannot be attributed to the Innovation Agency's support as interviewees stated that were achieved independently. Six companies that have not generated any NHS sales yet indicated that they are still at early stages of engagement with the Innovation Agency for such effort to produce tangible results in terms of sales and income.

Regarding funding-related outcomes, five companies have secured additional funding because of their engagement with the HBC programme. Eight companies have not been able to attract any additional funding thus far, although two interviewees suggested that they would not need any funding because of good sales performance in private sector markets and adequate venture capital funding respectively.

In terms of the creation of new jobs resulting from company growth, evidence suggests that seven new posts have been created in total across five companies. Three other companies suggested that their engagement with the Innovation Agency has been too short to produce employment-related outcomes.

Regarding behavioural additionality, there is considerable evidence (in the interview data) suggesting that companies in this category have benefited from their participation in the HBC programme by changing their behaviours and /or approaches, and by developing their knowledge base and capabilities. Key observed areas include understanding better the NHS market and its complexity, becoming better at navigating the NHS landscape and avoiding false entry points, refining value propositions, developing a custom-made sales approach which considers the characteristics of the NHS market, and becoming more open to initiate collaborative projects with others organisations.

The results of the interviews also suggest that the Innovation Agency adds value to the small companies that participate in the HBC programme (see Table 2). Key areas of 'value added', as perceived by the interviewees, include connectivity to the NHS and relevant decision makers, becoming part of the health innovation ecosystem, understanding better how the NHS works, building reputation and credibility as a result of Innovation Agency's vetting of the product and /or the company, and accelerating the sales process.

Table 2: Observed impact of support on companies with established products /technologies

Company	Sales to NHS	Additional funding	Jobs creation	Behavioural additionality	Value added overall
S15	Two NHS Trusts	None (not needed, funded through sales in private sector)	[No available data]	No positive influence on behaviours and/or capabilities	Access to clinicians and NHS Supply Chain framework
S12	15-20 NHS Trusts (in some case trials with small value)	£60k in matched funded project	Two	No positive influence on behaviours and/or capabilities	Connections to hospitals and joint project
S11	Product roll out in Cheshire and Merseyside as part of large Vanguard commission	Various sources of funding secured (e.g. SBRI, NHS Innovation Accelerator)	Two	Better at evidence generation, marketing (use of case studies), health economics and business case development, NHS landscape and language	Connectivity, funding and access to health innovation ecosystem
S19	25 Trusts /CCGs as customers, but none due to IA support yet	None	[No available data]	Ability to navigate NHS landscape, and propensity to collaborate with other SMEs, considering hospital revenue as basis for business case	Becoming part of the healthcare community, and access to NHS
S20	Public Health England and CCGs, but none due to IA support yet	None yet (Innovate UK funding decision pending)	None yet (eight months of engagement)	Changed way of promoting and selling its value proposition	Building reputation and credibility and support with funding application
S3	Four NHS Trusts; one contract due to IA support	None	One	Formalisation of process regarding product support /training and contracting capability	Connectivity to senior managers within Trusts
S2	Two CCGs as customers, but none due to IA support	Some funding secured (no details given)	None	Better at refining value proposition and writing MOUs	Organisation of pilot project and evidence generation
S5	10 orders in total; Six orders from a NHS Trust due to IA support	None (funding is currently a burning issue)	None	Alternative manufacturing approach and finding right NHS channels re: sales	Selection of appropriate manufacturing partner; build reputation and credibility, and product promotion
S4	Two NHS Trusts, but none due to IA support thus far; Have also started exporting in India	SBRI funding (£100k)	One	Understanding hospitals' procurement and adoption process and adjusting sales approach	Feedback on the essential product features and support re: funding access
S16	None yet (awaiting NICE endorsement)	Funding secured, but details not disclosed	Indirectly only (no details given)	Learning to navigate NHS landscape and avoid false entry points	Conduit for connection to the NHS
S10	None yet	None (not needed, funded by American VC)	One (but further growth in UK market is expected)	Adjusting the sales process due to understanding better NHS market complexity and procurement system	Accelerating the sales process (by a year) by vetting product and connections
S6	A few GPs as customers across the country, but none due to IA support yet	None	None yet (engagement commenced seven months ago)	Understanding NHS market and its key pressure points helps build a sales /promotion strategy (GP Federations and CCGs focus)	Accelerating sales process through better NHS understanding and networking
S7	Customers in private sector, but none due to IA support yet (focus is on entering the NHS market)	None	Indirect impact on growth and jobs based on Lancaster University engagement	Refining value proposition and sales approach to connect to hospitals' labour cost reduction agenda; better at marketing	Better understanding of how NHS work and connections to right people

3.2. Companies with products /technologies under development

Companies in this category are still in the process of developing or validating their products through clinical trials or pilot projects. Table 3 presents the results of the analysis for this group of companies.

Table 3: Observed impact of support on companies with products /technologies under development

Company	Sales to NHS	Additional funding	Jobs creation	Behavioural additionality	Value added overall
S9	Not applicable	None	Two internships secured (indirect impact)	Better at pitching based on knowledge of key NHS priority areas; understand NHS market complexity	Providing focus and connecting company to NHS
S13	Not applicable	None	[No available data]	Better at initiating and managing collaborative projects, and capability regarding product development and commercialisation process	Product development feedback and linking in the regional innovation system
S14	Not applicable (decided to halt NHS engagement and prioritise other market applications)	None (successful in other market applications e.g. transport)	None	Better understanding of user (nurse) needs and NHS navigation	Product development feedback (product refinement) and connections to NHS
S18	Not applicable	None yet (although IA is offering support to find investors)	None	Change towards incremental innovation approach to accommodate NHS culture; understanding NHS market	Product development feedback, connections and education of how NHS works
S17	Not applicable	None	None	Commencing new projects by transferring skills to new areas	Connections and support regarding writing funding applications
S1	Not applicable (decided to implement platform to own GP practice only)	None	None	Collaborating with other SMEs and larger companies	Connection to collaborators and NHS decision makers
S8	Not applicable (engagement with IA ceased)	None	None	Better at approaching the NHS market and forming collaborations with NHS Trusts	No value add regarding reaching the NHS market

‘Customer contracts /sales to NHS’ does not apply as an evaluation criterion for the studied companies as they are still in the process of developing or validating their products or technologies. No company in this group appears to have been successful in attracting additional funding yet despite the Innovation Agency’s related support, but this finding should be qualified given that the companies are at relatively early stages of commercialisation. In terms of employment outcomes, one company reported that they have created two internship posts that could be partly attributed to engagement with the Innovation Agency. The rest companies have not been able to create any jobs as yet.

In terms of behavioural additionality, there is again considerable qualitative evidence suggesting that these companies have benefited in multiple ways from participation in the HBC programme. Key examples include increasing propensity and ability of SMEs to collaborate with others (e.g. hospitals and other firms), and improved ability to approach the NHS market due to gaining a better understanding of NHS structure and governance systems.

The interviewees in this group of firms stressed that the Innovation Agency has added value to their businesses in two key ways. First, through providing feedback during the product development process. This feedback is used to refine the product and its technical features and the value proposition. Second, through connecting them to clinicians and other relevant NHS staff. This allows gathering end user feedback, organising clinical trials or pilot projects, and raising awareness about their products.

4. Some identified challenge areas

The research has uncovered a number of challenges and issues that influence the performance of the HBC programme and other related initiatives. However, these issues appear to be beyond the direct control of the Innovation Agency. Many of these pertain to well established barriers to innovation adoption and diffusion in the NHS “at pace and scale”: the NHS structure (e.g. silo thinking), NHS governance systems (e.g. distinction between commissioners and NHS providers), misaligned incentives (e.g. reimbursement models), time and resource limitations impeding innovation effort, and cultural and behavioural barriers.

Although all of the above issues emerged during the interviews, they have already been covered comprehensively elsewhere (e.g. see Collins, 2018; Castle-Clarke et al., 2017), and hence they are not discussed further in this report. The following two sections focus on two noteworthy challenge areas that were stressed by the interviewees: a) the misalignment of the NHS procurement system, and b) the lack of mandate of AHSNs to bring about wider institutional changes in the NHS.

4.1. A misaligned NHS procurement system

Interviews with small firms and procurement professionals suggest that the NHS procurement system operates based on a very different agenda. NHS procurement goals and incentives are not aligned with the remit of the Innovation Agency and the AHSN Network more generally. In essence, the observed structure, goals and incentives, practices and norms of conduct within NHS procurement are hardly conducive to (SME) innovation. Some more specific issues uncovered during the course of the study are outlined below.

First, a narrow focus of procurement departments on hitting annual cost savings targets create an incentive system that discourages pursuing longer-term improvements by embracing innovation, including SME innovation. This essentially means that procurement departments prioritise large, multi-year contracts and large, incumbent suppliers to achieve economies of scale and optimise cost and prices. It is not likely that this situation will change with the newly established “Future Operating Model” as the appointed Category Tower service providers will be under an immense pressure to deliver significant savings. The achievement of such savings targets will be prioritised over innovation and SME involvement according to the interviewed NHS procurement professionals.

“I think for the average SME, I mean the first thing to say is I think they all have a culture, they all have a repeat order culture, the static supply in there is inertia in the system, including NHS procurement. I think the cards are largely stacked against a lot of those innovative products and ideas. I hate to say that, I’m a time-served, life-long NHS procurement person, 32 years, but I think in reality the cards are relatively stacked against. So, those who do get through that, those who do offer that innovation, who do build that customer base all credit to them” (Procurement Director, NHS Trust 1).

Second, the annual ‘Control Total’ agreed between NHS Improvement and NHS Trusts and the application of the ‘Purchase Price Index and Benchmarking’ (PPBI) tool (which emphasises variation from best price) exacerbate the challenges above by creating incentives for cost containment and variation reduction in procurement and supply management activities, which in turn discourage engagement with small innovative firms.

Third, a propensity of procurement departments in hospitals to use the NHS Supply Chain catalogue and to stick to well established framework contracts in order to reduce risk, minimise the cost-to-serve an order, and to reduce administrative work related to dealing with a new, small supplier. Based on the interview data, there seems to be a perception that dealing with SMEs is a ‘burden’ or a ‘problem’ to be avoided. In addition, the new ‘top slice’ approach of the Future Operating Model incentivises hospitals to maximise their use of the NHS Supply Chain catalogue and to minimise deviations from it.

“The way they [NHS Supply Chain] are currently funded is they apply a margin to what they sell. They put 10% or 8%, whatever it is, margin and that’s what funds them. We’re moving away from that model to a top slicing model which means each trust will have an amount of money taken off them at national level before we even see the funding, they take a bit off to fund the new NHS supply chain. Now, that sort of makes you... well, if you’ve paid for it why don’t you use it?” (Head of Procurement, NHS Trust 3).

Fourth, small innovative firms face significant challenges with respect to gaining access to framework agreements, as they often lack resources and a track record of performance. Appropriate timing, given narrow windows of opportunity to enter framework agreements, is also a key issue. Feedback from Innovation Agency staff suggested that this issue is well recognised and that there is currently work at national level to establish a dynamic procurement approach to be able to source innovative products with a proven value faster.

“What you have is...with most of the frameworks being something of multiple term contracts, two, three, four years, you’ve got an opening and you’ve got a limited window of opportunity for the market entrants to get on a framework and then for two, three or four years the market is locked out unless, of course, the dynamic purchasing system is the option they’ve gone down which is a different matter entirely. So, typically, that’s the first obstacle new entrants to the market have got. And, indeed, even existing market players with a new and innovative product, if their product isn’t approved on the framework then clearly their new product is locked out of the market” (Head of Procurement & Commercial Finance, NHS Trust 2).

Fifth, procurement departments in hospitals and their staff appear to have limited experience, knowledge and ability to use innovation friendly public procurement procedures specified in the UK Public Contracts Regulations (2015) such as the ‘competitive dialogue’ and the ‘innovation partnership’. Although there is some effort to educate procurement professionals on the use of these procedures, the impact has been negligible as they lack either confidence or time to implement such ‘riskier’ approaches.

Sixth, procurement in the NHS is seen as an administrative function whose role is to contribute to cost containment. It is telling that procurement departments in hospitals almost invariably sit under and report to Finance Directors. There is a failure to appreciate the strategic role of procurement and supply management with respect to adding value through tapping on to supplier innovations, and contributing to the 'top line' (as well as to the 'bottom line').

“The main challenge for procurement at the moment is where it was referred to as being ‘a cycle of doom’ because basically what happens is they constantly are battered by the fact that they can’t get past this annual savings target which is, seems to be one of the stumbling blocks at the moment. So, we did a presentation the other day and it seems to be a block there where, until the Finance changed the way they currently target procurement departments, that they’re going to be stuck in this cycle, constantly” (Assistant Director, NW Procurement Development).

Seventh, the Innovation Agency and AHSNs more broadly appear to put little emphasis on procurement-related hurdles currently. Although it is unlikely that AHSNs alone will be able to bring about the necessary structural and institutional changes in the NHS procurement and supply system, it might be helpful to intensify their efforts in this arena and to invest in developing further in-house expertise in procurement, and procurement of innovation specifically. Some interviewees suggested that AHSNs could assume a more active role in educating and influencing the NHS procurement community and building capability and capacity in procurement of innovation. Centralisation of procurement teams at regional level, possibly mirroring an Sustainability and Transformation Partnership (STP) footprint, could help enable this role of AHSNs.

4.2. AHSNs lack mandate to effect wider institutional change

Several interviewees (mainly from small firms) pointed out that the Innovation Agency and AHSNs more broadly do not have a broad enough remit, power or even a mandate to effect the broader institutional changes required in the NHS so as to break down barriers to innovation adoption, including changes in the NHS procurement system. This view was confirmed during interviews with Innovation Agency staff, who also suggested that the Innovation Agency needs to manage better expectations of small firms as to what it can do and change in the system, and what it cannot.

“And then the really big problem, and this actually isn’t the AHSN’s fault, it is basically the problem that means that whatever they do, it’s almost never going to succeed. Even if they make an introduction to us the hospital doesn’t have the capability of instructing us to do some work for them. They don’t have a way of paying for new things to go into hospitals. So, no matter how many introductions the AHSN make of a new thing, like we’re a new thing, a new product, a new service, a new something to the NHS, there’s no method, that I’m aware of whereby I say to the hospital ‘here’s our services, will you procure them from us?’ The hospital says ‘we don’t know how to do that’. There is no mechanism for us to bring new things into a hospital” (CEO, S12).

“[...] some clinicians just love the gloves they love and they’re never going to change. We can’t force people to change. We are not the commissioner, we are not the provider, we’re not the decision maker, we’re not the procurement team. We cannot make people use things. End of really. We can influence, we inform, we can engage, we can broker but if ultimately that end user or customer doesn’t want something we don’t have any power and nor would we really want any because [...] If it was a mandated thing then that’s a national thing, so NICE mandates something, or as you say Monitor, or the CQC say this must be done. That’s a different level. That’s not what we’re about. We’re about brokerage, and support and engagement. Trying to drive adoption but we can never force adoption (Chief Operating Officer, Innovation Agency).

Clinicians and decision makers in hospitals appear to often perceive AHSNs (which are formally arm length's bodies) as external organisations that attempt to impose their own agendas, and hence they tend to resist their interventions. Despite the effort invested by AHSNs in bringing about cultural and behavioural changes in the NHS, the research findings suggest there is scope for doing more in this arena, especially in the context of the HBC programme. More specifically, several interviewees from small firms suggested that the Innovation Agency should put more emphasis on educating NHS staff by organising more innovation-related workshops targeted at NHS practitioners, rather than at innovators /suppliers only.

"I don't think even now they've done very well at encouraging people to become innovative – sorry – to be encouraging NHS staff to become innovative, accepting, innovation accepting. So, I think that is Dr Such and Such, Clinical of Mersey Care of whatever, like that, he probably wanted to do that anyway. Whereas, I don't know if... you are initiating it or trying to teach people into how good innovation is on the job" (CEO, S11).

5. Conclusions

5.1. Revisiting the research questions

The key aim of this study was to investigate the perceived quality and impact of the Innovation Agency's support to small firms participating in the HBC programme. An additional aim was to uncover broader issues or challenges that influence the performance of the HBC programme and other relevant initiatives (e.g. the Innovation Exchange), which may however be beyond the control of the Innovation Agency. This section revisits the three research questions posed in the introduction section in the form of brief conclusions.

RQ1: How do small firms perceive the quality of the support they receive as part of their participation in the Healthcare Business Connect programme?

The available evidence suggests that 16 out of 20 small firms that were interviewed are either 'very satisfied' or 'satisfied' with the quality of support (see Table 1 for a summary of responses). The exact support package varies in each case, but small firms seem to be satisfied with aspects such as connectivity to clinicians and decision makers in the NHS, funding-related support, feedback on product and sales approach, opportunities provided to build a profile and promote the product, and education regarding how the NHS works.

The firms declaring 'somewhat satisfied' or 'not satisfied' seem to be critical mostly about the Innovation Agency's ability to connect them to appropriate individuals within hospitals or other relevant organisations. Dissatisfaction of these firms might be partly driven by their high expectations or even misconceptions regarding the Innovation Agency's role in terms of funding companies and guaranteeing sales to NHS Trusts.

All but one small companies in the sample stated that they would recommend the Innovation Agency to other small firms that aspire the penetrate the NHS market, as they see the experience, knowledge and connections of the Innovation Agency's staff as useful inputs.

The companies interviewed indicated several areas of possible improvements in the support provided such as more specialised /customised support packages to take into account sector specificities, and an increasing emphasis on involving and educating NHS staff (see Section 2.2 for details). It is noteworthy that despite their satisfaction with the HBC programme, some interviewees appeared to be sceptical about the impact that such support packages can have (e.g. on sales and growth) given the restrictions placed by the broader institutional environment within which the Innovation Agency and other AHSNs operate.

RQ2: What is the impact of the support on small firms participating in the Healthcare Business Connect programme?

The Impact of the Innovation Agency's support is investigated in terms customer contracts /sales, additional funding that small firms have attracted, and jobs created due to business growth. In addition to these dimensions that policy evaluation frameworks typically include, the research examined whether the HBC programme has resulted in any positive changes to behaviours and /or improved capabilities of the participating small firms ('behavioural additionality'). Finally, the perceived 'value added' to the small firms participating in the HBC programme was included in the analysis.

The analysis draws a distinction between a group of small firms that have already developed their products /technologies (thirteen companies) that they wish to promote to the NHS market, and a second group of companies whose products /technologies is still under development or validation (seven companies). The results are presented in Table 2 and Table 3 respectively. Regarding the first group of companies, there is some evidence suggesting the engagement with the Innovation Agency and the HBC programme has helped them to secure NHS contracts (five firms), attract additional funding (five firms) and create jobs (five companies). A few other companies stressed that their engagement with the Innovation Agency is still at early stages in order for it to produce such outcomes.

Regarding the second group of studied companies whose product /technology is still under development or validation, the 'sales' criterion does not apply. There is hardly any evidence of these firms attracting additional funding or creating jobs (although one firm reported the creation of two internships). However, such results could be expected given that these companies are still at relatively early stages of the commercialisation process.

In terms of behavioural additionality, there is strong qualitative evidence suggesting that small companies have benefited from their participation in the HBC programme in multiple ways: a) positive changes in behaviours and approaches, b) knowledge acquisition, and c) capability development. For companies with an established product /technology, related benefits include better understanding of the NHS market and improved ability to navigate it, value proposition refinement, sales strategy customisation, and increased propensity to engage in collaborative innovation projects. In a similar vein, companies with a product under development have become more open and able to collaborate with others (e.g. hospitals and other firms), increased their understanding of the NHS market, and improved their ability to position and promote their offering to the NHS.

Interviewees from small firms perceive that the Innovation Agency's support has added value to their businesses. For small firms with a developed product, key aspects of 'value add' include connectivity to the NHS and relevant decision makers, becoming part of the health innovation ecosystem,

understanding better how the NHS works, building reputation and credibility as a result of Innovation Agency's vetting of the product and /or the company, and accelerating the sales process. For companies with products under development, two key areas include feedback on the product and the value proposition, and access to potential clinicians and relevant NHS staff. Such access enables gathering end user feedback, organising clinical trials or pilot projects, and raising awareness about the product.

RQ3: What issues beyond the control of the Innovation Agency influence the perceived quality and impact of the support provided, and how?

The analysis of the interviews uncovered many issues and challenges referring to the broader institutional environment within which the Innovation Agency and other AHSNs operate. Most of these issues are already well known. This report highlights two additional challenge areas, notably the misalignment of the NHS procurement system (Section 4.1) and the lack of mandate of AHSNs to bring about wider institutional changes in the NHS (Section 4.2). It is imperative that policy makers pay attention to these issues to further equip AHSNs as key actors in the UK health innovation ecosystem, and possibly also to reinforce the role of AHSNs as agents of institutional change. Such a focus could help unlock the full potential of health innovation processes for the benefit of the NHS and patients.

5.2. Limitations and further research

This section outlines some caveats and limitations of the study and identifies opportunities for further research. First, this study stressed the perspective of small innovative firms (i.e. the supply side) and did not examine the perspective of NHS providers and their staff (e.g. clinicians and senior managers of hospitals) as the users of innovative products and new technologies. Particularly in relation to examining the impact of the HBC programme in terms of improving health outcomes and reducing NHS costs, it is imperative that future research includes the perceptions and views of relevant NHS providers, as the main source of demand for innovation.

Second, the qualitative nature of the research and the small sample of small firms (n=20) do not permit drawing any robust conclusions regarding the overall effectiveness and impact of the Innovation Agency's HBC programme. A different research design of quantitative nature (e.g. large-scale survey or econometric study) is required to evaluate the outputs and impact of the programme. The findings of this qualitative study should therefore be considered as a complement to the findings of the annual surveys conducted by the Innovation Agency to gather information about the perceived quality and impact of their support programmes.

Third, the results of this qualitative study regarding the impact of the support provided to small firms should be interpreted with care given the challenges of attributing outcomes (e.g. sales or jobs creation) to specific programmes, actions or actors, and of disentangling inputs and actions that interrelate in complex ways. This issue was also highlighted during the interviews. In addition, impact evaluation challenges seemingly extend to the lack of systematic evidence regarding impact on NHS performance in terms of improved health outcomes and cost savings, and the significant time lag between the support provided and the realisation of benefits. The latter is particularly the case when it comes to relatively young businesses.

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Appendices

Appendix A. The list of interviewees

Organisations	Interviewee Role	Interview duration	Date of interview
Small firms			
S1	Managing Director		26.10.2018
S2	Co-founder and Director		09.07.2018
S3	Managing Director		10.07.2018
S4	Project Manager		12.07.2018
S5	Managing Director		22.10.2018
S6	Sales Manager		11.07.2018
S7	Managing Director		13.07.2018
S8	CEO		25.10.2018
S9	Operations Manager		18.07.2018
S10	Head of Sales & Business Development		17.08.2018
S11	CEO		16.07.2018
S12	CEO		12.07.2018
S13	Managing Director		22.08.2018
S14	CEO		05.09.2018
S15	Managing Director		12.09.2018
S16	Chairman and Head of Innovation		13.07.2018
S17	Co-founder		13.07.2018
S18	CTO		13.08.2018
S19	Founder and Director		21.08.2018
S20	Managing Director		19.10.2018
Innovation Agency and partner(s)			
Innovation Agency	COO and Associate Commercial Director		17.10.2018
Innovation Agency	Commercial Manager, Lancashire HBC		09.10.2018
Innovation Agency	Commercial Manager, Liverpool HBC		15.10.2018
Innovation Agency	Commercial Manager, Cheshire & Warrington HBC		21.09.2018
Lancaster University	Business Engagement Manager, Lancaster University		15.08.2018
Innovation Agency & Lancaster University	Commercial Manager, Lancashire HBC and Business Engagement Manager, Lancaster University		07.12.2017
NHS Procurement			
NHS Trust 1	Procurement Director		05.11.2018
NHS Trust 2	Head of Procurement & Commercial Finance		16.08.2018
NHS Trust 3	Head of Procurement		07.11.2018
NHS Trust 4	Deputy Finance Director		26.09.2018
NW Procurement Development	Assistant Director		24.10.2018

Interview guide: Innovation Agency support to SMEs

A. Background

- What is your formal role within the organisation and what does your job entail?
- Brief description of the product/service developed (or under development)?
- What is your target market(s) /customer(s)?

B. Engagement with the Innovation Agency /its partners

- How long for?
- Why did you turn to the Innovation Agency for support?
- What do you expect to get out of it?
- How exactly do they support your company? Key areas of support?

C. Quality of Innovation Agency's support

- How satisfied are you with the provided support?
 - One to one support (e.g. expert advice, education)?
 - Networking /connectivity?
 - Brokerage e.g. meetings with NHS procurement people?
- How useful are the business support workshops provided? In which ways?
- Would you recommend working with the IA to other companies currently not engaged?
- Any challenges faced while interacting with the Innovation Agency?
- Any suggestions for improvement of support activities?

D. Impact of Innovation Agency's support

- Have you been able to sell your product /service to the NHS? If yes, provide details
- Have you been able to hire more people /create new jobs because of growth?
- Benefits for NHS customer(s) and patients
 - Financial benefits e.g. cost savings?
 - Non-financial benefits e.g. faster or better care?
- What is the "value add" of the Innovation Agency's support?
 - Financial?
 - Non-financial?
- Have you been able to attract additional funding as a result of the Innovation Agency's support?
- In which ways have you changed your behaviour or improved your capabilities as a result of the Innovation Agency's support (e.g. intent to enter new markets; increased networking /collaborations; ability to navigate the NHS landscape)?

E. Supplementary questions

- What are the key challenges that your company is currently facing?
- What are your plans moving forward /next steps?