NHS Adoption of NHS-developed Technologies

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Executive Summary

Background

For more than a decade, reports have been calling for greater and swifter development and adoption of innovative technologies by the NHS. Much research has been undertaken into the organisational factors and processes that determine the extent and rate of technology assimilation within NHS organisations but one question that has not been answered is whether NHS-developed technologies are adopted into the NHS any differently from those technologies developed commercially. This is an important question for two reasons. First, it is important to know whether the balance of influence on technology development between technology users and technology suppliers impacts on the success or failure of the adoption process. For example, it may be the case that because NHS developers are motivated by professional concerns and problems with which they have personal involvement they have limited concern for the future market and are therefore essentially producing innovations for which there is little or no applicability elsewhere. On the other hand, commercial technology suppliers may focus on extending or improving their current range of products and ignore unmet needs that care providers in the NHS are experiencing. Secondly, there are costs associated with developing technologies within the NHS and supporting their commercialisation and these costs may not be justified if the benefits gained from successful adoption into other parts of the NHS are not materialising.

Aims

The highest level aim of this research is to help the NHS fulfil its aspiration to become more effective in technology adoption. More specifically it is looking at the adoption of technologies into the NHS and investigating how the origin of the technology impacted on the adoption process. It is seeking answers to the following specific questions:

1. To what extent has the development process that produced a technological innovation determined specific aspects of the technology that have an impact on its adoption?

2. For a specific adoption context, what are the main factors that mediate the success of adoption and to what extent is this success related to the technology’s origin?

3. How do external adoption drivers in combination with an innovation’s origin impact on the potential for adoption?
4. Does the adoption process differ for NHS-developed technologies when compared with those that are commercially-developed?

Methods

This study started with a literature review. It began with an examination of reports published by the NIHR SDO programme that have addressed areas that are important to the study of innovation and adoption in the NHS. The remainder of the review takes key issues raised in the SDO reports with respect to the adoption of innovative healthcare technologies into the NHS and examines them further. This review helped with the framing of the research questions and informed the remainder of the research.

The research was conducted in two stages. Stage 1 identified 33 technologies that met the criteria ‘NHS-developed’ and through a series of telephone interviews with the developers of those technologies, their industrial partners (if any) and adopters, and by studying any published information about them, built up a data set looking at their characteristics. Five important dimensions of these characteristics were used to select six theoretically important technologies for further study. This further study was undertaken in Stage 2 of the research.

The purpose of Stage 2 was to compare the adoption of NHS-developed technologies with the adoption of equivalent commercially-developed technologies so the first task was to identify a competing or equivalent technology for each of the six technologies selected at the end of Stage 1. When this had been done, primary and secondary research started in order to gather data that would allow six pairs of comparative case studies to be developed which in turn would allow similarities and differences between and across pairs could be identified.

Results

The six technologies that were identified for investigation in Stage 2 were:

- a telehealth system
- a basic item of equipment
- a technology for informing diagnosis
- a technology for monitoring during surgery
- a clinical assurance technology
- an engineered component

These were identified on the basis that they would provide six theoretically interesting case studies.
Across stages 1 and 2, the research showed that the relationship between an innovation’s NHS origin and its subsequent adoption by the wider NHS is not a simple one. The blurred boundary between NHS-developed and commercially-developed technologies makes it difficult to prove beyond doubt that one or other origin has a positive or negative impact on adoption. There is, however, strong evidence to suggest that the origin of an individual technology does give rise to certain characteristics that encourage or inhibit its adoption, but looking across a range of technologies there is not a consistent pattern of benefits or disbenefits. In short, being NHS-developed can, under certain circumstances, bring significant advantages in terms of securing adoption, but this is not the case for all technologies. There are circumstances where it does constrain adoption. For example, NHS origin can have a negative impact on potential adoption due to the technology produced having a rather narrow focus. Narrow applicability may be the result of a single inventor taking a somewhat blinkered view of the purpose of the technology being developed or the range of its possible uses. In contrast, the more market-oriented approach taken by a commercial developer usually ensures that the scope of a technology is extended to attract as broad a market as possible. It was also found that the simpler the technology, the less marked the effect of origin.

By examining specific issues that arose in the pairs of cases, such as, external adoption drivers, evaluation and evidence, professional and structural barriers to adoption and adoption decision-making, it has been possible to make a number of suggestions. These suggestions centre on: the need to consider the market implications at an early stage and take these into account when deciding the form, scope and wider design features of the innovation; the need for a project champion; changes to the form and quantity of technology evaluation that is undertaken; improvements to adoption support; and changes to culture and the need for ways to build commitment during adoption. Overall, it is suggested that consideration should be given to creating systems for technological innovation in healthcare that have structures and processes to support adoption at their heart. These systems would need to operate at different levels. At one extreme there could be a need to look across the NHS and at the other a system would need to operate at the level of the individual technology and treat each innovation as an individual project or part of a portfolio of projects, depending upon the nature of the technology.

Conclusions

It is clear from this research that the origin of the technology does affect adoptability in terms of both the extent of adoption (within a site and across sites) and the level of success achieved in an individual adopting site. It is also clear that being NHS-developed sometimes has a positive effect and sometimes a negative. Paying attention to the issues identified
by this research could increase the proportion of NHS-developed technologies that gain a positive advantage from their NHS origin. However, it is fair to say that this research has shown that many of the adoption problems encountered by NHS-developed technologies are shared by those developed independently of the NHS so many of the recommendations that will be set out here apply to technology adoption by the NHS generally.

The overall aim has to be to create an effective system for innovation. This report concludes that this system should draw on open innovation strategies developed in other sectors and makes some suggestions as to how this should be done.