

# A CRITIQUE OF THE BENEFITS STATEMENT 2006/2007 FOR THE UK NHS NATIONAL PROGRAMME FOR IT

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**Abstract:** With all the discussions of value and benefits based approach for managing information technology (IT) investments, few organizations publish a benefits statement for an actual project or programme. Thus the Benefits Statement 2006/2007 published by the UK NHS National Programme for IT (NPfIT) provides a valuable sample for us to inspect and draw lessons from. This paper examines the statement from the perspective of a value-based framework for project assessment. It is found that the NPfIT benefits statement is defective for a number of reasons. In addition to an admittedly immature theory of IT value assessment, the NPfIT authority did not start the programme with a baseline value proposition or a value assessment methodology. It also failed to make a good use of a centrally prescribed methodology by the UK government. It even ignored specific benefits estimates suggested by the government's audit office. Most if not all of these defects can be attributed to the lack of a coherent conceptual framework for project value assessment in the NPfIT authority.

## 1 INTRODUCTION

There are many open questions regarding assessing value contributions for any IT-based project or programmes. Is it even possible to give an accurate account of the value contribution of an IT project? If it is, what is the overall framework for guiding the compilation of such an account? This paper contributes to answering the above questions through a critique of a published benefits statement (NHS, 2008) by the National Health Services (NHS) in the UK on its large scale IT programme. The critique is based on a value-based framework for assessing project success.

The main contribution of the paper is to draw methodological lessons on how the value and benefits may be measured and presented for large-scale IT-based projects and programmes. The paper is organized as follows. First, the value based framework is briefly introduced and its suitability as the basis of the critique is discussed. Then the NHS Benefits Statement 2006/2007 is introduced briefly. A critique of the publication is then given from a number of perspectives.

## 2 THE VALUE BASED APPROACH

We proceed based on the assumption that an important channel for information technology to contribute to organizational value is through various information systems and the information contained therein. The design, development and implementation of the information systems through project and programme are a necessary part of value creation process. Therefore, this paper is anchored on the literature of the value-based approach (in contrast to the alternatives like the multi-dimensional approach, see e.g. Shenhar et al., 2001) for assessing project and programme success. It should be acknowledged that the value of information and information systems might be considered on their own, a project-based view is by no means unique (Farbey et al., 1992; Love et al., 2005; Thomas et al., 2007)

There is a degree of consensus for the value-based approach for project and programme management (Thiry, 2002; Yu et al., 2005; Winter and Szczepanek, 2008; Tohidi, 2011). Yu et al. (2005) proposed a specific value-based framework for assessing project success which will be the conceptual basis for the critique in this paper. A

brief summary of the framework is given here for the purpose of this paper. Readers are advised to refer to the full paper for more details.

Assuming a classic product-based project lifecycle, Yu et al. (2005) defined the concepts of net project execution cost (NPEC) and net product operational value (NPOV) as part of their value-based assessment framework. At the initial project execution stage, project cost dominates ancillary project value, hence the net project cost and value is designated as NPEC. By the end of project activities, a product is produced which embodies the value for the project sponsoring organization. This value is represented by NPOV which is the sum total of all the future values of the product, net any cost associated with realising the values.

The concepts of NPEC and NPOV may be used for assessing project success. They may be also used for describing how a decision is made to go ahead with a project. These two uses correspond roughly to “predictive evaluations” and “prescriptive evaluations” (Remenyi & Sherwood-Smith 1999; Thomas et al., 2007). However, project evaluation should not be restricted to these two occasions alone. There should be an on-going evaluative effort through a project (Remenyi & Sherwood-Smith 1999). Of course, the earlier the evaluation in a project lifecycle, the more it depends on estimates and thus less certain. The later it is in a project lifecycle, the more likely the factual evidence may be available. Whenever the evaluation is carried, it depends on an appropriate conceptual framework to guide the necessary evaluative activities. A lack of such a conceptual framework may lead to wasted efforts and opportunities of project evaluation.

As a large scale IT-based change programme, The UK Government’s NHS National Programme for IT (NPfIT) is associated with a huge budget (more later), and thus is always subject to public scrutiny in terms of its value and benefits to the public. The Benefits Statement 2006/2007 (NHS, 2008) is a welcome disclosure of how the programme authority views the investment and associated benefits. However, the publication reveals that the NPfIT authority does not have a coherent conceptual framework guiding its programme benefits evaluation. The main motivation for this paper is to provide a critique to NHS (2008) so that methodological lessons may be learned for future similar efforts.

There is a growing body of literature on project and programme benefits management (Lin & Pervan, 2003; Ward and Daniel, 2006; Docherty et al., 2008). The words “value” and “benefit” may be

used in somewhat different ways in different contexts but for the purpose of this paper, we treat them as synonyms. The following section provides a brief background to the programme, mainly based on NAO (2006, 2008) and NHS (2007).

### 3 THE NHS NATIONAL PROGRAMME FOR IT

#### 3.1 Background

The NHS National IT Programme (NPfIT) is a large-scale IT-based change programme. NPfIT was initiated in 2002 by the UK central government and aimed to deliver “four key developments” according to its initiation document (NPfIT, 2004):

- An electronic integrated care records service including a nationally accessible core data repository and digital images.
- The provision of facilities for electronic booking of appointments.
- The electronic transmission of prescriptions.
- An underpinning IT infrastructure with sufficient connectivity and broadband capacity to meet future NHS needs.

Other projects are also mentioned, including a “Picture Archive and Communications Systems (PACS)”.

At the beginning of NPfIT, the budget was estimated to be £6.2 billion. By 2007, the budget had increased to over £12.4 billion (NHS, 2008). Its value for money has often been called into question. Hence the NPfIT authority published a Benefits Statement for the year 2006/2007, attempting to provide an account of the benefits and thus value of the Programme (NHS, 2008). This is in response to a government audit report calling for quantified financial benefits and service improvements for the programme (NAO, 2006; Collins, 2008).

The NPfIT has been subject to studies from other perspectives (see e.g. Hendry et al., 2005; Currie & Guah, 2007). This paper focuses on the programme authority’s effort in assessing the value and benefits of the programme through its publication of the Benefits Statement 2006/2007.

#### 3.2 The Benefits Statement for NPfIT 2006/2007

The NPfIT Benefits Statement 2006/2007 is the only such statement available for the programme, despite the fact that the programme has been in existence

since 2002. Though the NPfIT authority promised an annual benefits statement in NHS (2008), no further report was published in 2009 or 2010. It has been reported that a draft benefits statement for 2007/2008 does exist (Collins, 2009) but is not published. There are some benefits statements within the sub-organizations of NHS but this paper limits the considerations to NPfIT at the national level.

### 3.2.1 The Declared Methodology

NHS (2008) provides some details on its adopted methodology for measuring benefits. The categories of benefits are given as follows (p28):

- cash releasing savings
- other measurable benefits to which a financial value can be attributed
- non-measurable benefits which provide local value.

This is a quite restrictive list of benefits to be considered, though not entirely out of line with recommendations from some sources (HM Treasury, 2003; Ward & Daniel, 2006; OGC, 2007). There are other suggestions to categorise benefits. For example, Farbey et al. (1992) suggested a scheme with categories of strategic, tactical and operational benefits (see also Love et al., 2005). The list of benefits given by NHS (2008) might be regarded as tactical and operational. There is no discussion of strategic and “intangible” benefits in the report.

Even within such a restrictive list, NHS (2008) only really reported the first category with little attention paid to the others, as the benefits included in the report are limited to:

*“real savings and other benefits derived from IT systems and services that have had time to ‘bed in’” (p28)*

The report goes on further to clarify that:

*“The inevitable time lag between benefits being realised and evidence being collected and analysed means that not all benefits realised from that period have yet been reported.” (p28)*

Therefore, NHS (2008) seems to have taken a historical approach, only including those benefits which are “real” and have been “realised”. Further, the report claims that it is based on data from 20% of the NHS organization involved in the NPfIT. It does not explain how the sample organizations are decided and how representative they are.

### 3.2.2 The Scope of the Programme

NHS (2008) reports roughly the same scope of the programme as that given in NPfIT (2004) as shown in Table 1. There is no obvious expansion or

reduction of the scope observed. Arguably, a change of scope should be accommodated within a value-based project evaluation methodology since the increase of scope is theoretically associated with the increase of cost, and vice versa.

Table 1: Comparing the main programme elements reported in NPfIT (2004) and NHS (2008).

| NPfIT (2004)   | NHS (2008)                                      |
|--|---|
| An electronic integrated care records service                      | NHS Care Records Service                        |
| Picture Archive and Communications Systems (PACS)                  | Picture Archiving Communications Systems (PACS) |
| The provision of facilities for electronic booking of appointments | Choose and Book System                          |
| The electronic transmission of prescriptions                       | Electronic Prescription Service                 |
| An underpinning IT infrastructure                                  | The National Network for the NHS (N3)           |

### 3.2.3 The Cost

The overall budget for NPfIT is estimated to be £12.4 billion by 2012. The Benefits Statement reports a cumulated expenditure of £2.4 billion by 31 March 2007. This is about £2 billion less than the predicted £4.5 billion (Collins, 2008). Cost is not the focus of this paper and will not be discussed further.

### 3.2.4 The Benefits

NHS (2008) reported a figure of benefits totalling £1,138.1 million. This is made up of three elements. The first is the reported savings of £208.4 million to 31/03/2007. The second counts further seven years’ savings from 2007 to 2014 based on an annualised figure of £119.1 million derived from the first element. The third element is a further adjustment of £96 million for the whole contract period due to “a higher level of certainty based on the sample size”. The explanation in NHS (2008) for this element is no detailed. Suffice it to say that, while the previous two elements are more based on evidence, this is more an estimate, though there is no reason to question its validity.

## 4 DISCUSSIONS

This section raises a number of issues regarding NHS (2008) and its adopted methodology of benefits assessment and reporting.

#### 4.1 The Feasibility of Value Assessment

There are clearly concerns on how feasible it is to conduct a full assessment of the value contribution of an information system to a business organization (Remeni, 2000; Love et al., 2005). Common reasons given include a) cost and benefits change and evolve over time and some benefits tend to be intangible; b) managers do not understand the importance of the investment evaluation process or the concepts involved; and c) organisational problems (such as lack of time, management support, and organisational structure) hindering the evaluation process (Thomas et al., 2007). However, there are likely to be more fundamental reasons. A piece of equipment (e.g. an automated production line) in a business represents an investment, just like many projects. The value contributions of capital assets to a business is captured at sales and are recorded in the accounts as a whole, not always discernable for each asset. The accounting system simply treats capital assets as one of the inputs into an operational black box. It is difficult to separate the contributions made by each input. It is so difficult that it might be counter-productive considering the cost involved. The activity-based-costing (ABC) method is one attempt to isolate value contributions from different inputs. Its success has been rather limited (Katz, 2002; Agndal & Nillson, 2007). Even the ABC method does not attempt to isolate the value contributions from every input. It regards some activities simply as “business sustaining” (Drury, 2007, p231). While further research should be encouraged to see how the ABC method can help evaluate projects, the cost and benefit of doing so should be assessed at the same time.

However, a value assessment is compulsory at the project initiation stage. Without a full value assessment, how could any project investment decision be taken? Even a “business sustaining” investment has its attached value if we believe everything can be measured (Hubbard, 2007). The important thing is to document whatever assessment assumptions and methodology used so that they may be peer reviewed both before and after project go-ahead decisions on a continuous basis.

It has to be acknowledged that with our current understanding of the economics of information (Remenyi, 2000), not all benefits can be meaningfully separated from other sources of value contributions and measured accordingly (HM Treasury, 2003). In other words, the theory of benefits measurement for IT investment is simply

not mature enough. For this reason, NHS (2008) is a useful and courageous attempt.

#### 4.2 The Baseline for Value Assessment

This section aims to address the question of how a project assessment may be linked into the initial business case (IBC). An IBC should provide a baseline in terms of project scope, cost, time and value propositions as well as project expenditure. Assuming that the project sponsor is rational, the estimated project value should exceed the total project cost. In the language of Yu et al. (2005), the initial estimated NPOV ( $V_0$ ) should exceed that of NPEC ( $C_0$ ) in order that a project may be authorised to proceed. It stands to reason that any assessment of the project value should be benchmarked against  $V_0$ . However, this is not the case with NHS (2008), in which the IBC is not mentioned. This is clearly an oversight in NHS (2008), demonstrating the lack of a clear conceptual framework within the NPfIT authority in constructing the benefits statement. There is a specifically documented overall business case (NPfIT, 2004) and individual business cases for constituent projects within the programme.

However, the IBC for the programme (NPfIT, 2004) is itself lacking in necessary details. In addition to providing baseline value propositions, an IBC should also make reference to a methodology on assessing project benefits. The same methodology should then be used at different project stages to ensure consistency. The IBC for NPfIT does not make reference to such a methodology.

#### 4.3 Methodology of Assessment

Considering that NPfIT is undertaken within the UK government where useful ideas for benefits measurement have originated (HM Treasury, 2003; OGC, 2007), the NPfIT authority could have made use of readily available methodologies like HM Treasury (2003). As a major government run programme, there is really no need to re-invent a methodology for benefits assessment. There is even less excuse not to apply it when it is readily available. It would be better of course for the programme authority to have adapted guidelines in HM Treasury (2003) to its circumstances. After all, any large-scale programme has its specific assumptions and circumstances that a general methodology will not be able to cover. There is no evidence that either the programme’s IBC (NPfIT, 2004) or its benefits statement (NHS, 2008) articulated a coherent methodology of assessment.

#### 4.4 The Actual vs. the Estimates

According to Yu et al. (2005), value assessment for a product-based project may be undertaken at any time, either during the project lifecycle or afterwards. The earlier the assessment is undertaken, the more it is based on estimates. The later it is in the project-product lifecycle, the more it may be based on actual evidence. Whenever the assessment is undertaken, it is important to take account of both the actually realised value and the future expected value so that the sum total of the benefits may stay relatively stable.

The evidence is that the authors of NHS (2008) take a somewhat contradictory position in dealing with this aspect of assessment. On the one hand, NHS (2008) claims that it only includes those benefits which are “real” and have been “realised”. On the other hand, the report does extrapolate the reported benefits to seven future years.

Following the suggestions above, the NPfIT authority should have maintained an account of “expected benefits”. As these benefits are realised, they can be moved to an account of “realised benefits”. The total of the two should stay more or less stable.

#### 4.5 Cost Savings vs. Value Contributions

The figures reported in NHS (2008) are almost exclusively based on “cash releasing savings”, despite other acknowledged categories in its methodology (see Section 3.2.1). While cost saving may be relatively easy to count, it may not even be the most important reason for undertaking a project. Following an audit of NPfIT, NAO (2006) acknowledged (p2):

*“The Programme has the potential to generate substantial benefits for patients and the NHS. The main aim is to improve services rather than to reduce costs.”*

If the focus is restricted to cost savings and neglects other benefits, it may easily lead to the impression that the programme cost exceeds its benefits when it may not be the case. This is what happened with NHS (2008). With a programme budgeted to cost £12.4 billion, the benefits statement is only able to show benefits of £1.138 billion.

Compared with counting cost savings, measuring “strategic” and “intangible” benefits of a project is considerably more challenging. However, it is not entirely impossible. In fact, NAO (2006)

provided helpful estimates of “patient safety benefits expected from the Programme” (p26):

- £2.5 billion as the human value of preventable fatalities from medication errors arising from inadequate information about patients and medicines.
- A large proportion of the £500 million spent each year on treating patients who are harmed by medication errors and adverse reactions.
- A reduction in the payments by NHS Trusts each year (approximately £430 million each year) for settlements made on clinical negligence claims.

Assuming the first figure is on an annual basis like the other two, and further assuming that the introduction of better information systems by NPfIT can reduce these costs by 50%, the savings could add up to £17.15 billion over 10 years. This is considerably more than the cost savings reported in NHS (2008). Patient safety is one of the reasons for undertaking NPfIT according to its initiation document (NPfIT, 2004). However, NHS (2008) made no effort in quantifying these benefits.

## 5 CONCLUSIONS

With all the discussions of value and benefits based approach for managing information technology investments, few organizations publish a benefits statement for an actual project or programme. For this reason, NHS (2008) provides an excellent opportunity for us to see a large-scale IT-based change programme’s value assessment in practice. This is particularly so since NHS (2008) was produced within an environment where the thinking on benefits management and “value for money” is strongly advocated (HM Treasury, 2003; NAO, 2006; OGC, 2007). However, NHS (2008) as a benefits statement is defective for a number of reasons. First of all, an important underlying reason is perhaps that the theory of benefits measurement for IT investment is simply not mature enough. However, it is useful for NPfIT to publish such a statement so that lessons can be learned from it. Secondly, despite all the discussions of value management and benefits assessment, the NPfIT programme was started without a baseline value proposition or a value assessment methodology specified in the initial business case. Thirdly, while the NPfIT authority does not have its own methodology, it failed to make a good use of a centrally prescribed methodology by the UK government. As a result, NHS (2008) focused on a

narrow range of benefits, missing the opportunity of providing a proper account of the value propositions of the programme. The report even ignored specific estimates suggested by the government's audit office. Most if not all of these defects can be attributed to the lack of a coherent conceptual framework for project value assessment in the NPfIT authority.

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