

# THE PROBLEM OF EVALUATING 'VALUE FOR MONEY' OF SCHOOL BUILDING PROGRAMMES

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The programmes of school development in the UK have been driven by high profile strategic initiatives from Buildings Schools for the Future, to Priority School Building Programme; each with a major focus on education but with an objective around better value. The subsequent programme evaluation used quantitative evidence of Value for Money (VfM) to support the strategic rhetoric and delivery policy. In other fields, principally medicine, there is a growing critique of this evidence based public sector provision and this research undertakes this with the school building programmes. In this, it deconstructs the data itself, its analysis and its use through the themes of quantification, rationality and politicisation. Using sample secondary cost and design data, obtained using the Freedom of Information Act 2000 from The National Audit Office, the Education and Skills Funding Agency and Local Education Authorities, it explores this basis of this evidence and its use. The sample data confirmed that the Priority School Building Programme was producing cheaper schools; however, the reductions were not as great as claimed with some doubts about comparability. Although, this shows that the Education Funding Agency control of costs was successful, the nature of the end buildings was obscured. Thus, political clients chose their definition of VfM through setting the rationality and quantification to emphasise what to them is good. However, the politicisation of the evidence does not convince other or future stakeholders. Thus, the important task of delivering better schools is constrained by the quantification methodology for cost and quality data as it is a political activity.

Keywords: evidence-based, procurement, quantification, rationality, politicisation

## INTRODUCTION

Education is a major issue for the UK government. Spending on education in 2016 accounted for approximately 11% of public spending being £84 billion pounds (ukpublicspending.co.uk 2017) with a capital spend of £4.8 billion (Long and Bolton, 2016) allowing for an overall increase in the number of places (NAO 2017). Education policy is also a big issue with the voting public (IPSOS MORI, 2016), making it often the centre of election rhetoric. Thus, education capital programmes are promoted to the public, either to demonstrate action or as a source of criticism.

The focus of the current UK government is to cut the national deficit by reducing spending wherever possible through cuts and increased efficiency (Kraftl 2011). The 2010 Conservative/Liberal coalition government cancelled the previous Labour

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administration's school capital projects, the 'Building Schools for the Future' programme [BSF], and provided a new programme, 'Priority School Building Programme' [PSBP] which focused on lower costs and more streamlined delivery. It is claimed that significant savings have been achieved, despite overspending of almost 10% on the original budget. (NAO 2017). Thus, politics is promoting cost savings as a desirable outcome as well as criticising the previous administration for poor value for money in their capital investment.

In a similar political world of medical provision, there is a growing critique of 'naive rationalist' approaches to evidence-based policy (Klein 2000, Greenhalgh and Russell, 2009). These works both look at the limits of evidence and on the use of it in decision making. Thus, Greenhalgh et Russell, (2009) critique the positivistic complete belief in numbers because chosen metrics deny complexity and context. This simplification to metrics is convenient for the rhetoric of politics but completely denies the conflicting values in the system of service delivery. Drawing from these ideas, this paper critiques 'value for money' in schools' projects through three themes: rationalisation, quantification and politicisation; arguing that they are the necessary lens to understand the constitution of the VfM data collected, the interpretation of this and its use. Sample data has been collected from numerous projects through freedom of information requests and then used to explore the meaning of metrics and data (rationalisation and quantification), trying to determine what the numbers say but also how they are used selectively for the purpose set by the initiator (politicisation). The conclusion shows how a political exercise is created from costing, giving a problem for the construction industry but more importantly a problem for the future development of schools.

## **THE CONSTITUTION OF VALUE FOR MONEY**

Value for Money (VfM) has long been considered as an issue in the construction industry (Olatunji *et al.*, 2017). Baker *et al.*, (2013) provide a definition that VfM is 'the optimal use of resources to achieve the intended outcomes'. However, a richer lens is required to deconstruct the use of 'value for money' in practice and this is provided by considering its rationalisation and politicisation as well as its quantification. Rationalisation sets the metrics uses as these embody how we understand what is involved and what causes this. Rationalisation is a prerequisite for quantification but quantification adds a certainty and factualness to the presentation. Politicisation encompasses the power over meaning and the differences seen by different stakeholders.

### **Rationalisation of Value for Money**

The idea that it is possible to determine value and set this against the cost of a building has long been established in the construction industry (Best and de Valence, 2016). In the last 30 years, UK governments, through Latham (1994) and Egan (1998), prioritised VfM taking it as a simple, achievable outcome. Even, the Construction 2025 report (HM Government, 2013)) does this, seeking a universal cost reduction of 33%, although equivocating that life cycle costs and environment are also important.

The key rationalisations are the metrics chosen to represent VfM. These need to be abstract and simplified for calculation but to carry meaning to support arguments. In the UK public sector, VfM is audited on behalf of parliament by the National Audit Office (NAO). They define VfM, as achieving Economy, Efficiency and Effectiveness i.e. minimise the resources used; maximise the productiveness of those

resources; and ensure that they achieve their objectives. Figure 1 shows the rationalisations that builds up this VfM. The NAO offers metrics for these values (Table 1) which have been further developed by the Education Funding Agency (EFA) for assessing VfM in academies and free schools (Table 2).

It is apparent that NAO approach is not universally agreed and this conflict of rationalisations is similar to that discussed about construction improvement metrics (Green 2011). VfM is a complex concept which can only be simplified to cost in certain circumstances. Boyd and Chinyio (2007) suggest that client satisfaction is an intrinsic part of VfM but emphasise its changeable and ambiguous nature. The complexity of VfM increases if it also considers users who Wandahl (2004) describes as 'Value Carriers' as each holds an individual viewpoint. Thus, Heald, (2003) suggests that the true measure of VfM is impossible to ascertain.

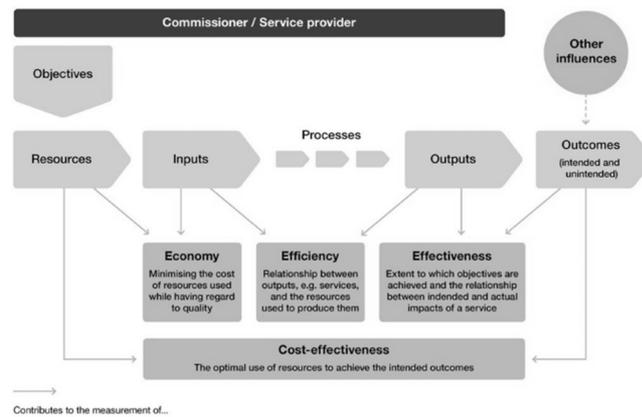


Figure 1: NAO value for money guidance (NAO 2011)

Value Driver and Short Description	Suggested Metrics	Value Driver and Short Description	Suggested Metrics
<b>1. Maximise business effectiveness</b> Describes how facility deliver the benefits required by the business case. This includes issues relating to staff productivity, unit costs of production and ease of working. It also includes creating environments that employees and users enjoy and that encourage business processes.	*Staff satisfaction *Operating costs per head *Post occupancy analysis *Staff turnover *Churn costs *Sickness turnover	<b>4. Impact positively on the locality</b> Describes issues that relate to the building's aesthetics, the way it conveys the organisation's corporate image, and the building's relationship to its context.	*Post occupancy evaluation *Design awards *Design Quality Indicator *Response of planning authority
<b>2. Ensure effective project management and delivery</b> Relates to the management processes used, and the selection of an integrated team working throughout the supply chain.	*Compliance with achieving excellence targets *Construction industry standards KPIs *OGC Best Practice Project Management Guidelines *OGC Gateway Review	<b>5. Minimise building operation and maintenance costs, and environmental impact</b> Issues to do with maintaining, operating and cleaning the facility once it is in use. This also includes minimising impact on the environment and environmental sustainability.	*Whole life cost *Facilities management estimates *BREEAM assessment or equivalent *Sustainability index *Construction Excellence Sustainability KPIs (Environment)
<b>3. Achieve the required financial performance</b> Defined by the business case for the project. It includes achieving the optimum balance between capital costs, a building's operating and maintenance costs and residual whole-life value.	*Net present value *Internal Rate of return *Whole Life Cost	<b>6. Comply with third party requirements</b> Describes statutory and other requirements including planning consent. Covers all aspects of Health and Safety both during and after construction, and addresses adherence to Central Government guidance	*Public survey *Planning approval *Industry KPIs *Accident rates *Health & Safety statistics

Table 1: Suggested VfM metrics (redrawn from NAO 2004).

### Quantification of VfM

Quantification is a tool that establishes a numerical basis for describing the world (van Basten, 2014). In this, it not only accounts for quantity but tries to lock down value and even intangible entities (van Basten, 2014). This move to objectivity gives an authority to numbers and presents them as a truth (Powers 1994). Quantification of construction costs is an extremely well-established discipline which in the UK is delivered by quantity surveying (e.g. Kirkham 2007). This long history of establishing building costs has delivered a consensus around costing practices which make them appear uncontroversial; however, the fact that there are endless disputes about what money is to be paid and how this relates to work done, shows that this is superficial.

**Value for money framework for the academies and free schools programmes**

This framework indicates the various factors that we will look to consider in making an overall VfM assessment

Inputs <i>Additional resources invested</i>	Outputs <i>Impact on education</i>	Outcomes <i>Impact on attainment and wider outcomes</i>
<p><b>Administrative costs:</b></p> <ul style="list-style-type: none"> <li>• Total DfE administrative costs</li> <li>• Average cost per school</li> <li>• How efficiencies are being achieved</li> </ul> <p><b>Start-up costs:</b></p> <ul style="list-style-type: none"> <li>• Total start-up costs</li> <li>• Average cost per school</li> <li>• Progress made in minimising costs</li> </ul> <p><b>Capital costs (where relevant):</b></p> <ul style="list-style-type: none"> <li>• Total capital costs</li> <li>• Average cost per place</li> </ul> <p><b>Operating costs:</b></p> <ul style="list-style-type: none"> <li>• Additional recurrent operating costs</li> <li>• Progress in minimising additional costs</li> </ul> <p><b>Overall total costs:</b></p> <ul style="list-style-type: none"> <li>• Total additional costs of the programme</li> <li>• Total additional cost per school</li> </ul>	<p><b>Use of autonomy:</b></p> <ul style="list-style-type: none"> <li>• What academies and free schools are doing differently</li> <li>• Extent to which freedoms are being used</li> <li>• Evidence on benefits of using these freedoms</li> </ul> <p><b>Impact on education quality:</b></p> <ul style="list-style-type: none"> <li>• Impact on Ofsted inspection ratings</li> <li>• Areas being improved over time</li> <li>• Prevalence and benefits of multi-academy trusts</li> </ul> <p><b>Attractiveness of academies:</b></p> <ul style="list-style-type: none"> <li>• Extent to which academies and free schools are filling their places</li> <li>• Evidence of impact on parents getting first choice of school</li> </ul> <p><b>Behaviour and attendance:</b></p> <ul style="list-style-type: none"> <li>• Impact on improving absenteeism and exclusion rates</li> </ul>	<p><b>Impact on attainment:</b></p> <ul style="list-style-type: none"> <li>• Attainment over time, compared to similar schools and by length of time open</li> </ul> <p><b>Narrowing attainment gaps:</b></p> <ul style="list-style-type: none"> <li>• Pupil intake characteristics</li> <li>• Impact on reducing attainment gaps for disadvantaged groups</li> </ul> <p><b>Impact on wider schools system:</b></p> <ul style="list-style-type: none"> <li>• Impact on attainment in other local schools through competition effects</li> </ul> <p><b>Impact on longer term outcomes:</b></p> <ul style="list-style-type: none"> <li>• Impact on post-16 attainment and labour market outcomes</li> <li>• Estimated impact on improving longer term economic and social outcomes</li> </ul> <p><b>Overall value for money:</b></p> <ul style="list-style-type: none"> <li>• Costs per unit increase in attainment</li> <li>• Net Present Value of the programme</li> <li>• NPV per additional £ pound spent</li> </ul>

Table 2: EFA Value for Money Guidance (DfE 2013)

In government terms VfM is purely judged on simplified calculation of increased output per pound spent. This is shown in reports from various agencies. The NAO (2017) presents high level figures based on square metre unit rate, costs per pupil and total sums. Hampshire CC, (2017) also use high level data with single point averages for floor areas, average floor areas per pupil, contract periods, gross and nett metre squared costs and average costs per pupil place. It provides further detail on the breakdown of average metre squared gross and net costs in total area bands, as well as breaking the costs into categories for New Build, Re-build and Extension and Refurbishment. GCS (2015) reports annually on the progress of selected government departments towards their cost reduction goals. The data is presented in more detail in this report with elemental costs, benchmark cost data broken down into area bands as well as average cost for the 20th and 80th percentile. An elemental breakdown of the baseline BSF costs is also provided to measure any savings achieved, by the EFA led capital projects. NAO, (2013) reports high level cost data for total programme spend and per place unit costs across programme waves. It reported that free schools have lower build costs than previous programmes by up to 45%, but this was not expanded upon. James and Brown, (2013) reports that schools built under the contemporary EFA programmes are projected to save 40% when compared to BSF schools, with caveats about small sample size and the use of projected costs.

**Political Stakeholders**

Education capital spending is political. Thus, both the delivery of schools and the reporting of the success of this delivery are coloured by the political tension being played out, namely the Labour and Conservative parties fighting for power.

When Labour came to power in 1997, education spending was at its lowest in real terms since the 1950s (Lupton and Obolenskaya 2013). Education was a prominent part of its manifesto and spending on capital projects doubled from 5.5% of the education budget in 1998 to 11.6 % in 2009 (Lupton and Obolenskaya 2013). Labour also changed the way new schools were funded, building upon the Conservatives’ PFI initiatives. This peaked in 2008, with the global ‘credit crunch’ and criticism of the VfM of PFI deals (Shaol *et al.*, 2013).

The Conservative and Liberal Democrat Coalition entered power in 2010. Their main concern was cutting deficits by implementing austerity measures (Kraftl, 2011). The focus of school capital investment was shifted from achieving world class education to

individual schools in poor condition (Lupton and Thomson 2015). Privatization continued through PFI. The James review (James 2011) made recommendations on how to proceed with education capital procurement with a view to improving VfM. This changed the priority to dilapidated schools, rather than social deprivation. The review called for clarity and consistency in the criteria used to select capital allocation, and that this should be based on condition (Lupton and Thomson 2015). It also centralised procurement strategies with standard contract arrangements and standardized designs and specifications, managed by the EFA rather than the LA.

## **METHODOLOGY**

This research explores the challenge of evaluating value for money in construction projects. VfM is substantively a subjective concept; however this is driven by the quantitative representation of value and cost. Taking a critical realist stance (Archer *et al.*, 1998), the factual nature of costs and facilities can only be interpreted through the social construction of meaning of the quality of the facilities and the successful delivery of these as well as the calculation of VfM. The research used an analytical framework, with themes of rationalisation, quantification and politicisation, derived from the work of Greenhalgh and Russell (2009). The study involved collecting quantitative data to understand their problematic nature and how they could be used. This was not an attempt at engaging in a competing statistical analysis with the NAO but one of developing an understanding through the practice of collecting and using numbers about the difficulty of creating and using costs and specifications of schools. In line with critical realism, this helped answer the question what sort of reality has to exist (Archer *et al.*, 1998) for the use of VfM to be viable.

The study used design and cost information held by agencies such as the EFA and Local Councils collected using the Freedom of Information Act (FOI) 2000. This included background data on the NAO (2017) report specifically where the claim that schools built under the PSBP were one third cheaper than under BSF. Details were requested for the square metre costs in each case and the basis for the calculation, as well as the source data. Data was also requested from all local councils in England and Wales, asking for cost data on their 3 most recent secondary school capital projects; set to ensure returns would not exceed the cost limit of £450 set by the FOI 2000. Finally, data was requested from the Education Funding Agency (EFA) about details of their 10 most recently completed capital projects. The EFA returned drawings and data from 12 schools completed under the PSBP programme. This enabled an exploration of specification and quality.

Sixty seven local authorities returned results giving 113 projects. The level of detail varied due to the interpretation of commercially sensitive material and material which could facilitate security breaches. The main exclusions using these exemptions from the FOI 2000 were for elemental breakdown, with some authorities exempting all cost information. Thus, only 44 schools were reported with sufficient information: 15 academies, 21 BSF schools and 8 locally procured schools. Only 23 had elemental cost data. To maintain consistency, projects involving refurbishments or extensions or primary schools or special schools were rejected. The data was then rebased to 2017 costs and calculations performed to provide £/m<sup>2</sup>, £/place, m<sup>2</sup>/pupil. The projects that provided high quality drawings were examined to establish sanitary provision for comparison with the PSBP and baseline designs.

## DISCUSSION ON ACHIEVING VALUE FOR MONEY

The discussion considers what could be learned from this quantitative study of school construction costs. In some ways this is exactly the exercise undertaken by governments and agencies but they report it uncritically as if they are uncovering facts. This discussion seeks to deconstruct the VfM debate. It first considers the quantification data exposing differences in data use. Then, it enquires into the rational system of thinking which allows this to take place. Finally, it reveals the different meaning that different stakeholders place on this and shows who has the power to have authority over this meaning.

### Quantification

#### *Comparing costs per square metre and costs per pupil*

The simple metrics of price per square metre and price per pupil for the PSBP, returned by the National Audit Office, were examined alongside the result from the Local Authority Survey to give a basic cost comparison between PSBP schools and schools procured under other routes (Table 3 and 4).

*Table 3: Results summary for square metre unit costs £/m<sup>2</sup>*

Sample	size n	mean	Minimum (£)	Maximum (£)
PSBP (NAO)	35	2060	1822	2625
LA Survey	44	2473	1797	3324
Academies	15	2480	1971	3324
BSF	21	2585	2035	3177
Locally Procured	8	2167	1797	3050

The results for cost/m<sup>2</sup> and cost per pupil follow the same pattern. The sample results agreed that the PSBP schools were the lowest cost group at around 20% below the Local Authorities sample. The NAO revealed in an explanatory note that the average sizes of the PSBP schools were smaller than those for other schools. A comparison of the size of sample schools from the EFA PSBP sample and the Local Authorities sample suggested that the PSBP schools were on average smaller than the Academies, BSF schools and the Locally Procured schools. The idea that scale has a non-linear effect on costs is important. The £/pupil is a main determinant of funding and so it may be a hidden encouragement to build a particular scale of school.

*Table 4: Summary of results for £ per pupil unit costs*

Sample	size n	mean m (£)	Minimum (£)	Maximum (£)
PSBP (NAO)	10	16433	13029	23810
LA Survey	44	21677	13650	31170
Academies	15	21362	13650	26550
BSF	21	22927	15548	31898
Local	8	18987	15668	22137

#### *Comparing pupil per toilet*

This abstract metric has the intention of investigating provision and space quality as a response to criticism of the PSBP programme by Mark (2015). Drawings were examined to count the facilities available in each school available for 4 PSBP schools, 6 BSF schools, 1 Academy and 1 Locally Procured school. The numbers of pupils per toilet (Table 5) shows a greater number of pupils per toilet as schools increase in capacity. The designs were compared for the space related to the sanitary facilities. This found that the PSBP schools had the lowest mean ratio of area per toilet at 3.08 m<sup>2</sup> against the Local Authority schools of 3.96m<sup>2</sup>; again a changed base.

Table 5: Summary of results for number of toilets per pupil

Programme	n	Average Capacity	Av. No. Toilets	Ratio per pupil (2d.p.)	Minimum Ratio	Maximum Ratio
PSBP	4	1001	60	17.18	13.15	23
Combined	8	1242	68	18.22	15.91	21.65
Academies	1	1440	80	18	18	18
BSF	6	1145	65	17.68	15.91	18.49
Local	1	1624	75	21.65	21.65	21.65

The investigation of the data from the reduced sample found that, while the Priority School Building Programme was producing cheaper schools, the reductions were not as great as claimed. The difference between the average costs, with BSF schools being around 25% more than PSBP, is not as substantial as the claim made in the NAO (2017) report. The average size per pupil was slightly smaller for PSBP schools, with the average for the combined Local Authority survey around 3.9% higher; however, the difference was not statistically significant. The results also revealed that the scale of school influenced the cost and that this was not accounted in the figures presented. In addition, the recommended classroom size for 30 students was reduced from 60m<sup>2</sup> to 55m<sup>2</sup> from Building Bulletin 98 to 103 (DfE 2014; DfES 2004). This impacts on the overall area per pupil without any adjustments to out of class or social spaces. In all these cases the simplified metrics confuse the meaning of the quantification.

It is clear that quantitative reports were produced for a reason. For example, the National Audit Office has a remit to audit or report on the appropriate agencies, whilst the House of Commons Library's remit is to provide impartial briefing material to MPs and ministers. The benchmarking studies by Hampshire County Council, are produced by local authority property professionals in partnership with the Local Government Agency and EFA, to support delivery. All the reports give limited background data in a heavily summarized format. Assessment of building quality or of performance are absent in any meaningful form. The reports also use the same or derivative data, which are taken to be factual records of transactions.

### **Rationalisation**

The driving rationalisation for VfM is that lower costs are a good thing. The NAO sophisticated VfM assessment is not actually used in practice with simple cost/m<sup>2</sup> calculations being used in the NAO (2017) claim that the DfE is building schools at lower cost than the BSF programme. It even concedes that it does not follow its own rationalisation by stating that no quality assessments or post-occupancy evaluations have been made. As a proxy, the NAO undertook a survey of 53 school leaders, of whom 45 (85%) were satisfied with their new buildings; thus, there is little real indication of the VfM only a view of costs. The NAO report also does acknowledge criticism from RIBA (2015) who see problems in value because of: standardisation; short timescales; changes to sanitary facilities; the reduction in social space and lack of expansion potential. However, there is no assessment of these risks in completed schools.

Certainly, using cost/m<sup>2</sup> or cost per pupil encourages the narrow focus on costs. The rhetoric of VfM may be about value but the quantification involves being selective of measures, resulting in simplification of the situation to make it tractable. In such circumstances, evaluations only work when there are 'like for like' situations which are difficult to find. Even to approach consistency, data requires to be normalised both against differences and against time thus distorting fact with assumption. This debate

has long been played out with cost benefit analysis (Ackerman 2008) and for VfM within the evaluation of foreign aid (Barr and Christie, 2015). These refer to the problem of: pricing, incommensurability of data, uncertainties being removed, and futures being solidified. It is also the point made by Greenhalgh and Russell (2009) about the avoidance of complexity and context in evaluating health provision. Even the accuracy of construction cost data is easily challenged. For example, Robson *et al.*, (2016) show how cost data from BoQs is produced for the sake of tendering and payment but then used for extended purposes such as estimation of improvement. They show that construction cost data is problematic and limited to set purposes.

Power (1994) refers to such numerical rationalisations within her work on the audit explosion. This involves both promoting the correctness of evidence and how important it is for transparency to be made important to the public. This rationality is paramount within the NAO and drives what is thought important; not the delivery of good schools but creating greater m<sup>2</sup> for a lower cost. Ultimately, Power (1994) sees this as a form of administrative control of meaning which is a political agenda.

### **Politicisation**

Value for Money is an important concept in the political context surrounding the Priority School Building Programme. The current administration has focused on austerity and efficient use of its available resources. Based on this, the PSBP aspires to maximise the creation of modern functional school buildings. Fundamentally this is not the same aim as BSF, which was to produce world class facilities to engender an educational transformation. Such differences in aims become subsumed into criticism of the previous governments' excesses and wastefulness.

The EFA, who act as the client for the construction of school capital projects, has an interpretation of VfM that is focused on minimising costs for a given output. It must be recognized that the outturn costs of schools are only part of the picture. Criticisms have been made about quality of schools built both under the new regime (Mark, 2015) and of the BSF (James 2011). Quality of school buildings is part of the educational environment, and several studies have shown correlation between school premises factors and educational achievement of pupils (Duran-Narucki 2008), (Uline and Tschannen-Moran 2007), (Barrett *et al.*, 2015). Students are more likely to be concerned about feeling safe in an environment that helps to prevent theft, vandalism and bullying (Sorrel, 2008). Teachers, who will be judged on the students' results, may be more focussed on the design of their classroom - the single most important factor in affecting achievement (Barrett *et al.*, 2015). Thus, whilst the EFA are the construction client, they are not the end user and they collect little data on the quality of the schools and experience of end users. The current design of secondary school buildings is heavily regulated (DfE 2014) and funding is based on the predesigned solutions. This method of funding allows little room for attempts to improve quality. The RIBA (2015) suggest that funding needs to be raised by 20%, if real VfM is to be achieved. It needs to be recognised that relationship between good buildings and student attainment is framed by the politicised rhetorical environment making it difficult to really improve VfM.

### **CONCLUSIONS**

The analytical framework determined that quantitative representations of VfM are set by the rationality of the evaluation and the meaning making of the political system. Thus, the VfM methods employed by the EFA to control cost are successful within the

system set up by them to audit activity. This audit is a political task for which its rhetorical argument, driven by rationalisation and quantification, proves better decisions or blames previous decisions. Indeed, quantitative analysis is presented as neutral which is used to reinforce arguments as to whether something is good or bad. In this complex rhetorical environment, quality can suffer as a result of the promotion of such cost rationalisation measures, and the different stakeholders who want to reduce costs have their own agenda in this activity. Thus, VfM exercises are products of the political domain of powerful stakeholders who control the rationalisations and quantifications, which makes agreement across stakeholders unlikely and complicates the development of schools for better operational performance.

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