Benchmarking service quality in UK electricity distribution networks

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Abstract
Purpose – The purpose of this paper is to review the evolution and development of customer service performance measures in the electricity sector since privatization in 1989, and then examine the impact of a specific recent energy regulatory requirement (known as information and incentives project (IIP)) on the organizational management of an exemplar electricity distribution company. Also discussed is how the sector has tried to learn from benchmarks from a number of such literary disciplines as economics, marketing service quality, and total quality management.

Design/methodology/approach – The research first presents a survey of the historical development of performance standards based on archival documentation. It is then augmented by the employment of a longitudinal “tracer study”, involving the isolation and firsthand real time qualitative observations of a company’s key strategic and operational activities, to understand how they related to the other organizational phenomena at large. This process spanned an investigative period of two years.

Findings – The paper finds that much of the early standards used in electricity immediately after the sector’s privatization rested much on those in the water and gas safety sectors, which themselves were then admittedly inadequate in UK. The IIP, a complementary set of service quality standards, worked on these early problems, but the implementation of the new scheme proved problematic and warranted major organizational reengineering, as shown in the exemplar company, ElectriCo. IIP has impacted on organizational management mostly in the areas of: higher-level strategic change, causing noticeable internal confusion during strategic transitions, building a performance management system, improvements in performance data, and establishing more effective ways for management.

Research limitations/implications – While the case example used in the research is a regional monopoly and is a good representation of the context in which the service standards operate, the findings are limited to the one company. It is a UK specific context without international comparison.

Originality/value – The research has combined archival research with an innovative firsthand methodological approach (tracer studies). Its value is in how the story of service standards in electricity (and specifically distribution) has been augmented from the early customer service standards to the most recent IIP considerations. It also looks from within the company, which has been missing in longstanding research in the more traditional disciplines such as economics.

Keywords Electricity industry, Benchmarking, Customer services quality, Performance management, United Kingdom

Paper type Research paper

1. Introduction
The last decade has witnessed a growing number of consumer representation groups and regulatory bodies in UK. This has highlighted the increasing recognition of public interest concern (and even safety) in sectors which provide essential services and for which there is limited competition and little (or no) consumer choice. Clear examples are evident in the recent failure of the British Railtrack model of managing and in Transco’s record fine of £15 million for the culpable homicide of a family of four in Larkhall (Scotland, UK).
A wealth of literature has discussed the state of UK privatized utilities (Cooper et al., 2001; Parker, 1998; Jones, 2000) after the Labour government came into power in 1997 and their attempt to modernise the regulatory framework (DTI, 1998). Now over a decade later, this paper looks specifically at the benchmarks for, and early impact of, one specific regulatory initiative that has recently (since 2002) been introduced in the UK electricity distribution network – the information and incentives project (IIP).

The concept of benchmarking has long since been considered important in the management literature, particularly in operations management (Watson, 1993; Yasin and Zimmerer, 1995; Soltani and Lai, 2007), but it has yet to be settled in its application to governmental policy and practice (for a review of recent benchmarking literature, see Dattakumar and Jagadeesh, 2003; Kyro, 2003; Northcott and Llewellyn, 2005). The meaning of benchmarking in this paper is regarded as the comparison of practices inside and/or between organizations in order to identify best practices and areas for improvement. *Benchmarking: An International Journal* has reviewed extensively how benchmarking can be of use in the services sectors and the relation to overall firm performance (Anderson and McAdam, 2004; Bhutta and Huq, 1999; Carpinetti and de Melo, 2002; Dawkins et al., 2007; Kumar et al., 2006; Maire et al., 2005; Sharif, 2002; Yasin, 2002). These well-established principles have however long been omitted in understanding institutional relationships, so this begs the question of why that is so particularly when there are gains that can be sought from the principles of transferring good management practices to contexts that perhaps require these most. Given that service sectors, particularly those that are essential to consumption as well as carry health risks (such as essential household utilities), are probably in most need of continuous quality improvement, it is of value to explore how this can be so done (Saunders et al., 2007) and not just to evaluate performance data.

This paper draws on a longitudinal research project on the strategic control implications of regulatory constraints for management in UK monopoly network utilities (for details, see Chau, 2006). The paper is principally in two halves:

1. the first presents a story of the service standards in use prior to IIP’s implementation; and
2. the second, its consequences since it went live in April 2002 for an exemplar company.

The latter part is particularly interested in the managerial/organizational responses of the teams managing regulatory constraint to externally imposed performance criteria. Hence, the paper begins by explaining the full methodology of this paper employed, then a discussion of issues relating to the regulation of service quality in UK utility industries, and how this was benchmarked to others. It then outlines the key components that make up the IIP scheme, with some details of the lessons it has gained from experiences elsewhere. The regulation project is then explained in relation to IIP’s actual impact upon the company’s management, and these issues are discussed. The paper ends with some views on IIP, with respect to its appropriateness of purpose as a regulatory tool, and implications for future developments. The value and contribution of this paper is in the presentation of the service standards pre- and post-IIP and their usefulness for benchmarking exercise, as well as the internal view of the organization that is not normally disclosed in more conventional and longstanding disciplinary studies (Chau and Witcher, 2005a).
2. Methodology

2.1 On service standards prior to IIP’s implementation
An extensive review of literature from the regulation policy perspective, drawing mainly from the longstanding economics perspective, was first pursued. From this, explanations of the underlying principles of benchmarking in utility regulation are explained in the specific context of UK. Some empirical data on the performance of the electricity distribution sector are presented to illustrate the problematic nature of the constantly improving attainment levels over time. These archival data came from a quantitative survey which looked specifically at UK utilities service standards (Chau, 2002; Waddams Price et al., 2002); the dataset resulted from compiling annual performance data of each of the electricity distribution companies published by the energy regulator, Office of Gas and Electricity Markets (OFGEM).

2.2 Organizational implications of IIP after implementation

2.2.1 Research method. The findings presented in this paper on the impact of IIP come from another project (Chau, 2006) which looked specifically at the qualitative implications of such service standards. The firsthand methodological approach used in the latter part of this research paper is known as longitudinal tracer studies. Dating back to its first use in organizational studies by Woodward, tracers concern:

...the isolation of a particular order or batch of products, central to and representative of the firm’s... activity, and by following its progress through the planning, execution and feedback stages of the control system, observing the way in which people become involved in plans, decisions and tasks relating to it (Kynaston Reeves and Woodward, 1970, p. 40).

The approach is facilitated by the use of “tagging” (Hornby and Symon, 1994) whereby key issues are continually monitored, such as various IIP standards, to allow the unfolding of other important issues during the research. In the research, three key tags were used in the electricity distribution company, which were conveniently the customer interruption (CI), customer minutes lost (CML) and telephone response standards which make up IIP. The significance of this methodological approach is that it allows an examination of the detailed implications for management which are normally ignored in traditional economic modelling research, such as that of Giannakis et al. (2005), for example, and this is an important contribution of this paper, as “longitudinal studies are infrequent” (Gurd and Thorne, 2003, p. 23) and they “provide a better focus on the long-term impacts on decision-making and broader behavioural impacts” (p. 24).

Hence, the research involved following through in real time key elements of new regulatory incentives all established at the time of IIP being implemented to explore how the researched company responded to them and to assess the extent of this impact. In other words, key aspects of the policies were used as vehicles to guide the research and to examine the strategic management of the daily activities within the electricity distribution company – for reasons of confidentiality, it is referred to in this paper as ElectriCo. The selection of which policy incentives to follow through was dependent upon their importance from the points of view of regulators and the company itself (either as competencies or weaknesses).

2.2.2 Data analysis. Following Laughlin (1995), these key elements served the role of tags, and were guided by a skeletal theoretical framework, which over time became gradually fleshed out by the empirical details abstracted from the researched setting.
(for a detailed explanation of this approach, see Chau and Witcher, 2005b). The framework used for this purpose was Simons’ (1995) model of strategic control levers, and the data were grouped within its sub-categories of beliefs systems, boundary systems, diagnostic control systems and interactive control systems (which, according to the model, are exerted in a balanced mutuality to achieve corrective action of medium term objectives and long-term vision upon minor deviation or significant impact), where they were subsequently content analysed.

The data were collected predominantly through a series of about 40 semi-structured, open-ended interviews with senior and middle managers in regulatory and corporate strategy departments. They were compared against additional published regulator reports and internal company documentation of the same research period (between April 2002 and May 2004). This process formed a pool of data which was entered onto a self-maintained database of respondent quotations and commentary (Chau and Witcher, 2004). Data analysis followed the guidelines of Huberman and Miles (1994) on three distinct stages of qualitative data analysis:

1. data display;
2. reduction; and
3. conclusion-drawing.

By reflecting on the issues from the research which surfaced and by using these to extend the preconceptions about the impact of regulation upon management where necessary (Laughlin, 2004), interesting insights about the impact of IIP, among other things, emerged.

3. Service quality in monopoly network utilities

3.1 The imperative for economic regulation

The major privatization programmes of UK in the 1980s/1990s were the outcome of the intention to remove the public sector requirement’s burden and to expose it to more competitive environments (Jones, 2000), to promote greater efficiency. But:

[...] whether the privatization programme proves to be successful will largely depend upon the regulatory framework adopted; that is on whether the natural monopoly elements can be successfully monitored and controlled while ensuring adequate service and supply, and on the impact of competition on the non-monopoly parts of the business (Helm and Yarrow, 1988, p. ii).

In the utilities industry, where fully/sufficiently competitive environments are not achieved, the general public’s interests are at risk, either through price exploitation, or through the degradation of quality of supply and customer services. Such conditions are possible where a privatized firm’s interests are in raising shareholder value by increasing dividend payments rather than reinvestment of profits for the improvement of the network. The renowned Professor Littlechild of UK, writing at the time for telecommunications, who later became the first Director General of Electricity Supply, argued that “regulation . . . is [merely] holding the fort until competition arrives” (Littlechild, 1983, p. 7). Where regulation sits as a proxy for the missing competition, levels of service quality and prices must be stipulated by the economic regulator. If this is the case, how best is it to regulate or to bring in the long awaited for competition, and from which other existing industry to learn the answer?
In the case of natural monopoly network utilities – where essential services are delivered through “pipes and wires” (NAO, 2002) – the industry is characterised by falling average variable costs, and it is impracticable to break down the network and open each part to competition; total costs are only minimised when the entire output of an industry is supplied by a single producer, and for consumers, the addition of the extra user (marginal cost) reduces the average cost of operating the network per consumer. However, as the network provider becomes larger (increasing its market power), the potential entry to the market of a rival incumbent becomes smaller, and renders it even more difficult to imitate a competitive environment. So there is a greater potential for the abuse of the dominant market power, exerted by either charging higher prices, or providing lower levels of service standards, to its customers.

3.2 Regulating monopoly networks: the use of price caps
The regulation of companies is undoubtedly not an easy task, and regulatory rules normally involve the linking of a regulatory response to a standard of performance, whether relating to price or service. The present paper is interested predominantly in the service quality aspect, but of course, there is an obvious trade-off between the two, where it is assumed traditionally in economic regulation that an improved standard of service quality must come at the cost of a higher price to customers for delivering it. This does itself conflict with the principles of benchmarking – that is, in the particular context of quality management, to transfer practices which enable both improvements in quality of output without increases (or with falling) cost levels (Crosby, 1980).

UK utilities are regulated by a price-capping formula RPI-X; this is different from the standards US (and most other international) rate-of-return forms of regulation where the regulator allows a rate to be retained by the company. Each UK utility has a periodic price review, usually at five-yearly intervals. This review includes standards of quality, delivery and specific customer service performance targets as part of the regulatory process. The application RPI-X provides a restriction on the real price increases (as the total value of RPI-X is the cap on prices and the determination of the size of X is indicative of the level of management inefficiency – or, better put, the potential increase in efficiency or other cost reductions); further, a change in the levels of costs and revenue directly affects the level of profits, and the level of shareholder gains. The retail price index is used rather than an industry-specific index as this cannot be manipulated by the regulated company and therefore it gives customers clearer and more predictable signals about real price levels (Armstrong et al., 1994). It is also more relevant to consumers in general (as this is itself a consumer index).

The logic behind the RPI-X formula is that it gives companies incentives to deliver services at a lower cost than that anticipated by the regulator where additional profits may be retained until the next regulatory review of the cap. These savings can then be passed on to consumers through lower prices or improved standards of service which the regulator imposes in subsequent periods, or reinvested back into the network for longer-term durability. On the assumption that this holds true, the RPI-X price-capping mechanism provides strong incentives for improved efficiency for the ultimate benefit of consumers. Determination of the value of X, and other requirements along with it, is based on a continuous review of company ability to perform. Alternatively, if the incentive is too strong, the companies may seek to reduce costs by degrading quality. Equally important:
the incentive power of price cap regulation comes not from the severity of the cap, but the right of the company to any residual profit. A company which is maximising profits will seek the same cost reductions to a level that maximises profit, regardless of the cap’s tightness. Only if the cap is so tight as to make the company go out of business (which would violate the regulators’ duties), or if the company is aiming at some “satisfactory” level of profits rather than the maximum, does the tightness of the price cap affect cost cutting incentives (Markou and Waddams Price, 1999, p. 396).

In essence, this is a failure of RPI-X, and for which more direct standards of service quality may need to be in place additionally. There is a subtle irony (or even absurdity) in the logic behind RPI-X: that is, the regulator is allowing the companies to charge a lot more in the present time in the hope that they will use such profits to lower future costs that can be shared with the consumer in the longer-term. This is a strange surrogate of a competitive industry!

3.3 Regulating service quality and setting performance measures

Arguably, perhaps the RPI-X form of economic regulation has indirectly encouraged companies to lower quality of the network, which has led to the direct need to regulate quality standards. This is because RPI-X allows the company to retain profits (to be reinvested back into the network) by being more cost-efficient and operating within the maximum price permitted, so the obvious defect is the threat of the company maximising short-term and shareholder gains with high profitability while deteriorating the quality of service standards to reduce costs. However, quality is a difficult matter to address, and to quantify, than is price. For example:

Regulators generally find it easier to regulate price than quality. Price has the great advantage of being (in certain markets at least) both one-dimensional and objectively measurable. Quality, on the other hand, is harder to pin down. It has many dimensions, some of which typically rest upon subjective evaluations by the purchaser and consumer; and in many cases the true quality of a product only comes to light some time after it has been consumed. In some cases, it never comes to light (Baldwin and Cave, 1999, p. 250).

The definition of quality varies, depending upon the discipline within which it is being defined: in the total quality management context, this is determined by the ultimate customer (Pruett and Thomas, 1996; Witcher, 1995). This places a strong onus on defining quality adequately if there is an explicit shift from price regulation to a focus on quality, indicative by the increased legal power of consumer councils.

One way to explain the model of regulating quality, based on individual and overall quality standards, is to assume the choice of tiered levels of service quality, requiring compensation for those directly affected. In this way, compensation levels should be equal to the claiming consumer over the probability of a claim made, although in practice, this amount is estimated. Over time, the compensation levels have only roughly increased in line with such type of calculation (Chau, 2002). Waddams Price et al. (2002, 2008) find inconsistent views within and between regulators on regulating service standards, and that the regulated companies are motivated by political factors as well as economic ones (i.e. not just the financial rewards and penalties for their quality targets). One obvious contradiction is that “OFGEM believes that it is important to introduce guaranteed and overall standards of performance in respect of certain non-contestable activities…” (OFGEM, 2001d, p. 75), but the managers expressed doubt about how the regulator had chosen standards with one suggesting
that the regulator’s philosophy was “to squeeze until you’ve got a problem but by the
time you realise you’ve got a problem it’s a long way past remediing very quickly . . .
[and] the appropriate customer standards were below current standards” (Waddams
Price et al., 2002, p. 24). Equally, the negative views of the standards, such as
“constraints which aren’t always binding [because of] . . . gaming the system . . .
[despite] a lot of brainpower is put into optimising against the incentives scheme
because we can actually make more money” (Waddams Price et al., 2002, p. 24), raises
the possibility of optimal breach – a condition where deliberately not complying is
better than complying – and questions the effectiveness of regulating customer service
quality standards.

There can be two obvious approaches for setting standards:

1. to set a penalty for each standard the company does not meet, which is most
effective if these penalties are compulsory and automatic (Waddams Price et al.,
2002); and

2. to create an incentives scheme that ensures the standards are being maintained
(Bowdery, 1994).

Rovizzi and Thompson (1992) suggest four possible mechanisms for regulating
quality:

1. the requirement to publish measures of quality;
2. to include a measure of quality in the price-capping formula (RPI-X + Q);
3. to set up customer compensation schemes; and
4. to specify minimum standards and back them with legal consequences.

Alternatively, an incremental improvement in service quality would mean that
intra-marginal consumers (those affected before the improvement) would still benefit
from the quality improvement (Helm and Yarrow, 1988). Even prior to any meaningful
quality standards were set, Helm and Yarrow had already recommended the need to
either:

[. . .] link allowable prices to indicators of service quality, or introduce more direct incentives
for improved quality of service by, for example, providing for individual redress for the
regulated firm when performance falls below some acceptable standard (Helm and Yarrow,
1988, p. xxi).

Ironically, the first two privatized utilities (telecommunications and gas) made no
provision for regulating service quality, which solely operated on standards of
voluntary bases (Graham, 2000). This is probably because there were few
well-established successful benchmarks on which to base at the time. Even the first
report of Office of Water Services (OFWAT, economic regulator of water and sewerage
industry) on customer service standards admitted in their first quality report that:

[. . .] the Levels of Service Indicators are not performance or efficiency measures in themselves
[. . .] [and] confidence in the information for comparative purposes will improve rapidly over
the next few years (OFWAT, 1990, pp. 1 and 5).

Despite the then expression of lack of confidence, OFWAT does take the matter of
reporting accurately seriously, as it was recently shown by huge fines potentially
imposed upon companies that misrepresent such data (BBC, 2008). It was not until the enactment of the Competition and Service (Utilities) Act 1992 when regulators gained general powers to regulate the quality of service standards (now consolidated by the Utilities Act (2000) and the Water and Communications Act (2003)). In imposing adequate levels of standards, the very difficult task of assessing the qualitative optimal equilibrium between marginal benefits and marginal costs of providing a service standard is required (Baldwin and Cave, 1999), and increasingly so, there has been the recognition of “a tendency for the measurable to drive out the unmeasurable” (Baldwin and Cave, 1999, p. 254, *sic*).

With these many problems in mind and the recognised dissatisfaction with the performance measurement systems applied in the UK network industries by the regulators (some) researchers and consumers (Office of Electricity Regulation (OFFER), 1999; OFGEM, 2001b; OFWAT, 2001), more composite mechanisms have been introduced as incentive schemes. It would seem that although the set of performance measurement (and management) literature in public and private organizations stands as a robust standalone entity (Fitzgerald *et al.*, 1991; Neely *et al.*, 1997), particularly in applying a financially-focused approach (Modell, 2004), there are shortfalls in its application in the utility sectors (Shaoul, 1997). Regulating utilities with management incentives is far from simple (Strasser and Kohler, 1989) and involves greater thought and planning than that from the perspective of economic regulation alone (Chau and Witcher, 2005a).

3.4 Customer service standards

The electricity provided to households is the outcome of broadly four important components:

1. that of electricity generation;
2. that of electricity supply;
3. that of distributing it to households; and
4. that of high-voltage transmission.

Historically, particularly at the time of privatization, these services were bundled together. Since the opening up of the market to competition – such as in 1998 when customers were given a choice of suppliers – and the separation of the businesses, the energy regulator OFGEM – formerly OFFER – had set increasingly more stringent targets on customer service standards.

The first set of published data on the quality of the (then known as) public electricity suppliers (PESs) was in the 1991/1992 Report on Customer Service (OFFER, 1992) to “assess the quality of the service [customers] receive and to enable them to compare it with the service provided by other electricity supply companies” (p. i). These customer service standards were established by a regulatory framework initiated by sections 39 and 40 of the Electricity Act 1989, and:

[...] one of the main purposes [...] is to set a common framework for customer service [...] to ensure a minimum level of service for all customers and to encourage companies to aim for higher levels of performance (OFFER, 1998, p. 63).

It was difficult to find adequate benchmarks at the time, except in similar sectors, but this was also difficult as there was no obligation on any of the utilities to keep a record or, let alone publish, their performance data.
For electricity distribution, performance data are reported in the Report on Distribution and Transmission System Performance (OFGEM, 2002). These supply and distribution standards formed the guaranteed and overall, standards of performance scheme (GOSPs), which comprise two types of standards:

1. guaranteed standards (GS); and
2. overall standards (OS).

GSs set standard levels which must be met in each individual case, and in the event of failing to reach the required level, the customer affected is entitled to a package of compensation, upon request. OSs cover areas of service which are not appropriate to give individual guarantees but where the customer should have the right to expect a minimum level of service; no compensation is available to customers for these but the company suffers negative reputational effects.

The key difference between the two types of performance standards is that GSs run across all the companies; so for example, GS5 demands that companies give at least five days’ notice for an interruption to supply, for which a compensation of £20 (rate in 2002) is imposed in the event of failure. OSs however are set for the specific company depending on its own circumstances; so for example, the attainment level of OS5 (the moving of a meter within 15 working days) for Manweb in 1992/1993 was 100 per cent but only 95 per cent for Swalec, and in 1994/1995 was 95 and 90 per cent for the respective companies, although all the targets were rather standardised by 1997/1998. A detailed account of the evolution of these standards from privatization to 2001 is given by Chau (2002) who finds that companies have gradually become better at achieving these while the regulator is tightening the targets. But this is rather nebulous, given the background of changing ways these standards are being classified, defined and recorded, rendering it difficult for researchers, let alone customers and the general lay public, to make meaningful comparisons. An example is that payments for some standards have been made automatic (but not all) and so the overall number of customer claims may fall while the overall amount of money paid in claims may be higher, only further confused by increasing rates of pay per claim over time; for instance, claims for “making and keeping appointments” (originally GS9 now GS8) have become automatic while those of “notice of planned interruption of at least 2 working days” (originally GS5 now GS4) are payable only upon a manual claim.

This begs the question of how adequate these standards really are, and whether it is time for radical changes to how these performance measures are defined, and if so, how to benchmark these, given their complexity; the questions apply to both regulators as policy-makers as well as companies who are players within this “regulatory game” (Veljanovski, 1991). By around 1997, coinciding with the government green paper on modernising utility regulation (DTI, 1998), the idea of establishing a new set of composite performance measures arose; and in electricity distribution, this resulted in formal discussions in December 1999 (OFGEM, 2001a) on the IIP.

4. OFGEM’s information and incentives project (IIP)

4.1 Origins of IIP

Introduced under the Utilities Act (2000), IIP became fully operational in April 2002. It did not replace GOSPs; rather, it mainly established a framework with which to “strengthen the incentives on the electricity distribution companies to deliver the
agreed quality of output and to value better changes in the quality of output” (OFGEM, 2001c, p. 1). The additional focus is an internal management one, whereby one aim is to reduce uncertainty and transparency, which are characteristic of traditional principal-agency problems (Jensen and Meckling, 1976) between regulator and regulatee. Hence:

The [IIP] provides clarity to the companies on what they are expected to deliver. This reduces uncertainty and increases transparency (OFGEM, 2001c, p. 8).

However, despite OFGEM’s consultation with various consumer groups (OFFER, 1999; OFGEM, 2001b) for establishing a benchmark in quality, there is insufficient evidence that IIP’s design had recognised key principles of service quality in the marketing/management discipline, such as customer relationships (Parasuraman et al., 1985, 1988) and technical/functional quality (how service is actually received – Gronroos, 1983, 1990). OFGEM did note the importance of some criteria:

It is important that in future there is sufficient incentive on the companies to deliver [...] but the incentives regime must meet certain criteria if it is to be effective [...] It should be transparent, fair and workable, and not create perverse incentives on companies [...] It would also be advantageous if the additional mechanisms are not unduly complex (OFGEM, 1999).

Some time after, OFGEM did conduct a consumer survey on how well such standards actually represented consumer favour (OFGEM, 2001b), and incidentally, there has been much excitement and speculation as to how IIP would impact upon company performance and its implications for management. For instance, the UK National Audit Office had praised the scheme as “a promising development” (NAO, 2002, p. 33), and it has been remarked by scholars that “the IIP [...] is likely to be the centre of regulatory attention over the next few years” (Weyman-Jones, 2001, pp. 246-7). This view has indeed materialised with surging commentary about it (Ajodhia and Hakvoort, 2005; Crouch, 2006; Jamasb and Pollitt, 2007; Turvey, 2003; Williamson, 2001).

4.2 Composition and functioning of IIP

IIP comprises essentially two parts:

1. the information; and
2. the incentives aspects.

Hence the name. The information part of the scheme is ongoing but began a year in advance of IIP becoming fully operational and the incentives aspect taking effect. A greater emphasis has however been evident in literature on the latter than the former (Green and Trotter, 2003; Friday et al., 2003) despite estimates of initial informational errors being possible of up to 30 per cent (Giannakis et al., 2005). The project anticipated improvement in the way information was presented to the regulator to reduce asymmetry of information and regulatory risk (a potential principal-agency issue), furthered by a strengthening of the incentives to achieve efficiency savings and deliver agreed quality of output to customers. Indeed, incentives are difficult to provide without information. The first year of the scheme focused primarily on creating the quality of service information collected by the distribution companies, and secondarily on defining outputs to be incentivised for the companies. Thereafter, the incentives aspect of the scheme was implemented and took priority.
The financially incentivised output measures include: the number of CIs; duration of interruptions, measured as CMLs; and customer satisfaction. The IIP consists of a scheme that penalises companies at the maximum rate of 1 per cent of revenue in the first year (amounting to about £2 million per company) in 2002/2003, and increasing to 2 per cent in the second and third years. The other side of this coin is a financial reward for companies that exceed their specified targets for 2004/2005, based on their rate of improvement in their performance to date. The third part of the incentives scheme involves a way of rewarding companies that have achieved frontier performance (best possible level of quality) by the next price control period.

In order to measure this “quality frontier”, a normalisation model is specified by OFGEM as a framework for adjusting companies’ actual performance to account for different network characteristics and customer density in the physical area in which they serve. The final part of IIP is the assessment of the quality of telephone response. The original set of GOSPs did not include a standard for telephone response, unlike one which does exist in the water sector. Further, the urgency to develop one as part of GOSPs was softened as IIP would instead bring into effect this standard. As it is difficult to compare the quality of telephone response across industries, making it difficult to establish a range of standards of telephone response, incentivisation under the IIP scheme is therefore based on outperforming the average performer in the industry. Hence, the companies are performance-ranked, and penalties apply to those below the average performer and rewards to the above-average performer. The companies that continue to either fall below or improve above average in the following years are either penalised or rewarded, respectively, by an amount based on an “incentive rate” which specifies the amount of revenue that a company either loses or gains for each “unit” above or below the average performer (OFGEM, 2001c).

While GOSPs still function in parallel with the IIP, a few amendments have been made to some of the OS standards of performance to match IIP’s rationale. Most obvious are OS1a and OS1b, whereby a given percentage of customers must be restored after an interruption within 3 and 18 h, respectively. A financial penalty which is imposed under the Utilities Act (2000) for poor performance does not automatically preclude the imposition of another financial penalty under the legislation for failing an OS standard. The significance of the Utilities Act (2000) has therefore brought about much interest (James et al., 1997, 2001), particularly the technical details of how exactly IIP operates (for full technical particulars of IIP, see OFGEM, 2001c, and for a technical discussion of their likely impact, see Curcic and Reid, 2003).

5. The regulation research project: implications of IIP

5.1 Rationale for the research

The two-year longitudinal research project explored the implications of regulation policy incentives for strategic control in the management of UK regulated monopoly network utilities (Chau, 2006; Chau and Witcher, 2005a). This involved understanding how specific incidents of regulatory policy incentives, including those of IIP, affect the organization-wide management of the strategy and daily activities in companies of electricity distribution, gas transportation and water services; the findings reported in this paper involves only the electricity distribution part of this overall project. The principal contribution of the overall research project is the provision of an internal management understanding of the company that complements existing and
longstanding views of institutional relationships; this better understanding would provide to policy-makers a clearer view of managing constraints, and suggestions for improved management practices to practitioners.

Understanding how regulation impacts upon the organization or how regulatory incentives influence internal management is somewhat more intricate than traditionally considered in managerial economics (Holmstrom and Milgrom, 1991), and there are other strategic and performance management issues concerned (Witcher and Chau, 2008); where a managerial change in regulated sectors is dynamic, changes to governmental and regulatory policies may impact upon micro-organizational practices unpredictably (Wilson and Jarzabkowski, 2004). The project was also novel in that it utilised a rare research approach (longitudinal tracer studies) in the regulation sector to explore issues inside the organization, treating it as a “black-box”, to complement extant knowledge about the regulatory environment outside it.

5.2 Findings from the regulation project
A number of issues emerged from the regulation project were considered as significant internal organizational implications of the IIP coming into effect. The data analysis indicated that five issues seem most prominent in the investigation (where, in methodological terms, these issues corresponded with points of data analysis where the sufficiency of abstraction proved highest).

5.2.1 Company profile and monopoly network status. The research was conducted in real time through an interesting phase of major organizational change and industrial consolidation. ElectriCo, at the time of the research’s commencement, was part of a large regional PES which was sold off to another whose responsibility of IIP was contracted out to a third-party company. The company then merged with yet another PES of similar size, whereby the contractor company provided the forefront IIP services for the new company under three separate distribution licences. This was only to be superseded in the fall of 2003 by the takeover of another utility giant. The rapid, yet significant, organizational changes within the reasonably small timeframe were regarded by ElectriCo as a strategic response to regulatory imposition, including the specific constraints of IIP. The literature on the link between organization structure (Dalton et al., 1980) or change programmes (Dean et al., 1999) and performance seems to suggest the viability of this view.

However, the obvious constraint is the monopolistic character of the company. If the purpose of IIP is to help provide a surrogate for a competitive environment, this has not worked, as the response of the ElectriCo has been to strengthen its monopoly position from being a local distribution network to a conglomerate of networks. A regulation manager of ElectriCo explained how the regulator falls within the company’s list of major risks and constraints, and commented:

[... in the absence of the regulator, we’d raise our prices, cut our costs [...] and behave like monopolists [...] we’d charge with high profits to our shareholders – that’s always going to be our ultimate driver [...] but the regulator will always prevent us from doing so, but we’ll always find some way.

This suggests that one purpose of regulation is in fact not well received by the company.

ElectriCo has tried out (or “tested”) a number of business models before settling to its current; this is consistent with literature that argues that the testing of a number of
strategies (organizational structures), especially for regulated monopolies, at a macro-level is necessary before settling down to an agreed way forward (Dobbin and Dowd, 1997) for a better overall compliance. IIP has impacted upon the micro-operational level to quite a surprisingly small extent, given the comparative impact on the higher-level strategic decisions. At the micro-organizational decision-making level, the research identifies that a useful strategy may be optimal breach – that is, the deliberate choice of non-compliance of regulatory requirements where the penalties are comparatively smaller than the potential gains. An ElectriCo employee explains: “IIP is important, but success should be determined by much more . . . we might be willing to sacrifice our IIP success if there are greater goals elsewhere”. So at the local level, IIP has not significantly altered the mindset of optimising alternative company objectives for financial gains.

5.2.2 Internal confusion. An immediate consequence of major organizational restructuration was the confusion (of work responsibilities as well as strategic direction of the company) experienced by personnel within the different original units of ElectriCo. The extant literature of the economics discipline, on which regulation is predominantly based, has rarely considered internal management dynamics as a consequence (for example, such as Crew and Kleindorfer, 1996; Dnes et al., 1998). The problems identified in the research concern the control over activities and clarity of individuals’ current/new job specifications. For example, a general manager commented:

[…] we no longer have teeth on the contract [the former agreement] – the uncertainty and change we are going through are causing a bit of confusion as to how much we do and where the line is between what we do about performance and how far we go about influencing that performance.

It seems that these high order strategic approaches cause these interim complications but eventually they level out and become resolved slowly. Three months after the comment was made, the same manager commented: “there’s [now] a bit more sense of belonging to the team, and hopefully the customer will pick up on that, and more a sense of responsibility about how we treat our customer and how we look after our network”. In essence, the IIP has succeeded in providing a potential for improving the network (as the consolidated ElectriCo group owns and operates the distribution network assets, providing potential scale economies), but has failed to address the management complications in the transitional interim.

5.2.3 Building IIP into the company performance management system. The customer service standards implemented immediately following privatization of the electricity industry had focused more on trying to measure company performance based on quality measures rather than on managing it (Chau, 2002) – hence, it has been more of a performance measurement system rather than a performance management system. Economic regulation has tended to specify outputs (the quality targets) rather than the processes for delivering them; IIP is probably the best attempt so far to get a tighter grip on a company’s management system. The efficient integration of objectives into the company’s management system normally requires the satisfaction of the SMART criteria, argue Cross and Lynch (1988) – that is, they must be simple/specific, measurable, accurate/agreed-upon, reliable/realistic and timely. Given that these regulatory objectives are already specified, the question is how well they integrate into the company’s performance management system to have best effect in maintaining SMART conditions.
It seems the easiest way to do this is to make the company’s already existing key performance indicators (KPIs) directly the IIP targets, for convenience, so that the KPIs can frequently inform the company of its IIP progress. This is because the initial KPIs were designed to already have the benefit of being SMART which help to provide timely control over necessary changes. A manager explained that “some of the KPIs are lined up with the regulatory targets . . . [and they] are being refined and redefined and being rebased on the IIP process . . . and in some cases they are IIP targets”.

This alone is insufficient or perhaps only half the trick: the other half is communicating IIP across the organization so that everyone in the company can work towards a common goal of which the regulatory targets are a part (Witcher and Chau, 2007). This is an important principle of performance management (Kaplan and Norton, 1996). The need to manage multiple objectives has been recognised long ago, even since Drucker (1955) who advocated the term “management-by-objectives”, meaning the management of organizational activities based on specified objectives. But for ElectriCo, this was rather difficult, given the rapid changes in its organizational structure, reflecting the need to additionally manage multiple local strategies. At one point of the organizational transformation, ElectriCo:

[... ] did it [communicate IIP issues to the rest of the organization] in the form of a game where [ElectriCo] replicated the Monopoly Board and gave each street an IIP standard [... ][and] as it’s not the sexiest subject of all, you need to get a bit more involved (a general manager, ElectriCo).

IIP’s impact upon management comprised redefining constantly ElectriCo’s overall objectives against the background of a higher-level strategic move of organizational restructuration.

5.2.4 Actual improvements in service quality? The question of whether actual improvements in service quality were really being made was asked with the GOSPs system just before the introduction of IIP. If IIP is just a reinforcing infrastructure for GOSPs targets, then what additional improvements can be expected? A regulation manager of ElectriCo commented, “RPI-X is the big grand-daddy of all incentive mechanisms, really, and IIP is just a kind of second-order incentive when compared with the general incentives created by the [periodic] price review [assessment]”.

It is unclear whether IIP has been successful in this respect – that is, whether the effect of IIP has been positive because it has strengthened the RPI-X framework, or IIP has failed because ElectriCo’s response to regulatory impact is really to RPI-X and not to IIP. As the present paper reports findings from immediately after IIP’s implementation in ElectriCo, it is too early to judge whether there has been significant improvements in distribution performance, particularly where the mass organizational change has blurred the understanding of it somewhat.

But perhaps the interesting thing for discussion here is not the achievement of the regulatory objectives per se, but rather whether there is natural alignment of the regulatory and organizational objectives and a propinquity relationship between them. Much company effort and resources may be saved where this alignment is sound (Kaplan and Norton, 1996). The research identifies that some of the IIP targets were either transformed into an existing organizational objective or incorporated into a subset of an organizational objective. The ease at which this was done was really due to the alignment in the purpose of the objectives, and both of the regulatory imposed and already existing organizational ones are for the good of the company in terms of
the long-term durability of the network (for a suggestion, see Witcher et al., 2007). So, why then must economic regulators be given powers to impose standards on companies which are already good for them? The answer may be one of control: if regulation can affect “the process by which managers influence other members of the organization to implement the organization’s strategies” (Anthony and Govindarajan, 2001, p. 6), rather than simply affect the company’s “planning” (Anthony, 1965) process, which does not necessarily ensure a consistency between the regulatory and ordinary organizational objectives, then it has succeeded in making a significant impact and fulfilled its role. In other words, in this way, not only may improvements be made more adequately through a closer alignment, the purpose of regulation has also been satisfied.

5.2.5 An improved way of managing. An internal management impact concerns the possibility of improved ways of managing for results – that is, the complex processes for delivering the required performance targets (Chau, 2008; Chau and Witcher, 2008). The water and gas sectors have attempted to benchmark the early lessons from IIP – see OFWAT’s overall, performance assessment scheme (OPA) equivalent (OFWAT, 2002), and OFGEM (2005b, 2006) for gas distribution, for example. Similarly, OFGEM had taken preliminary expert feedback from academics, practitioners and consultants to form improvements for the next price control review; see OFGEM (2003) for details, including the present author’s comments as part of this consultation.

A number of different performance management approaches were being used in the separate parts of ElectriCo before the merger of 2003, but the most promising was considered that of the balanced scorecard (Kaplan and Norton, 1996) with which multiple objectives can be managed organization-wide, mainly in the areas of finance, customers, business processes and learning and growth, to encourage individual participation for the achievement of the central vision and strategy. The present research followed the stages of how the company had built an entirely new balanced scorecard for its networks branch within ElectriCo. In ElectriCo, a number of local operational scorecards exist that feed into a higher-order scorecard containing strategic ambitions – the networks branch scorecard is directly concerned with managing IIP and service standards. As a general manager explains:

[...] there will be a team [the networks branch] looking at chunks of work, and it will be easier to provide the teams than it is to go in and understand what they’re doing and drill down in their processes as well as the things above and below in other areas.

The key impact of IIP is in how the Kaplan and Norton approach was augmented for issues directly relating to it. In essence, ElectriCo’s balanced scorecard comprises four perspectives of:

1. financial;
2. people;
3. processes; and
4. customer.

Each of these perspectives contains either direct service standards or targets which somehow relate to an IIP target. For example, an objective of the customer perspective of the balanced scorecard is to “improve quality of supply”, measured in terms of CI and CML definitions. Equally, new within the management of the company is
“what [ElectriCo] has developed called ‘tree management’”, which fits within the process perspective under the objective of “improve contractor relationships and performance” and measured by “tree-cutting against plan”. It is explained, “we can go and measure the exact amount of cut made off a tree, but that wouldn’t tell us a man can clear ten trees a day . . . but putting in the balanced scorecard can help us monitor and manage this process” (general manager). New operational processes were therefore devised to enable the better management of IIP requirements, and were identified as being a benefit from adopting use of the balanced scorecard.

But how significant a role has regulation played in ElectriCo’s decision to employ the balanced scorecard approach? A general manager suggested “the scorecard is a very good . . . and powerful tool, and if [ElectriCo] were to move to any other process, probably most of the fundamentals of a scorecard would still be there”. Equally, should ElectriCo not be a regulated monopoly, a balanced scorecard may still be used for general management, given about 62 per cent of world-wide companies have already adopted it (Rigby, 2003). The ElectriCo respondents showed awareness of the constraints a regulated monopoly has and that the scope of its strategic options available is limited, giving such examples as the inability to market a homogenous a product (electricity distribution) in a variety of colours. The electricity supply market was only opened up to competition in 1998 so that a more competitive environment could be provided as much as possible, where features such as price and service quality would characterise the regional monopoly (and the product/service). ElectriCo had belonged to a heritage of the supply business before focusing solely on distribution at one point. This raises questions as to whether regulation had delayed a company’s adoption of a balanced scorecard approach, since it has been over a decade since its first appearance in Kaplan and Norton’s (1992) seminal paper, and two decades since the first scorecard approach was used in Analog Devices in 1987 (Schneiderman, 1999).

6. Conclusions
6.1 Contribution and limitations
The paper has reviewed the importance of regulating service quality in monopoly network utilities and explained the performance measures used in electricity distribution prior to and after IIP’s introduction, paying particular attention to how it has benchmarked from other industries. It has contributed to extant literature by discussing service quality and IIP’s consequences for internal organizational management. It has not however provided authoritative answers to any longstanding questions on how exactly to manage to deliver higher levels of service quality, so some scope remains for future research. The regulation project has captured an interesting phase of major organizational change in ElectriCo; during this time, there were also other economic issues of importance recognised in the research, but were excluded in this paper to avoid over-complication. These included: the winter storms of 2003, verdict of the Larkhall explosion, liquidation of Railtrack (and fading away of the Railtrack model of management), impact of the European Working Times Directive, UK pensions crisis, and the general changing face of UK governmental control – all of which provided valuable lessons for utility management, and the best practices available for benchmarking. The case of UK distribution networks only was considered, and no international scope for comparison was afforded.
6.2 Remarks on service standards prior to IIP
The findings from some early research (Chau, 2002; Waddams Price et al., 2002) and the regulation research project (Chau, 2006; Chau and Witcher, 2005a) seem to suggest that performance levels of service quality are improving over time. The reason for this may not be a direct outcome of regulatory impact but perhaps to do with other issues, such as improving technology over time. This is probably not the most critical concern: what is of concern is the degree to which the distribution companies recognise the importance of performance targets as a safety and long-term “good” for the company, and do not regard them as part of an overall regulatory game in which the rules are now only too well understood. The purpose of IIP was not to reset the rules of this potential game; it was to better reinforce the incentives for more efficient internal management to pay greater attention to improved outputs of customer service quality. In this way, as there is a mutual gain for both regulator and company, there is an alignment of regulator and company purposes. This view is perhaps supported by the Utilities Act (2000)’s reversal of primary and secondary duties of the regulator, by setting a primary responsibility “to protect the interests of consumers” by improved network performance and longer-term durability, and only then, as a secondary consideration, to ensure that “licence holders are able to finance their activities” (pt II, Sections 3A.1 and 3A.2).

6.3 Remarks on the impact of IIP
The case of ElectriCo is indeed only one (three by the end of the research) of 14 separate distribution licences, but should be regarded as representative of the likely industry response, given the size of the electricity distribution industry it covers and how other distribution companies have referred to ElectriCo’s recent experience from which to take lessons and benchmark practice in each of the five ways identified in the research above. Overall, the impact of IIP on the management of ElectriCo can be regarded as significant, particularly in the case of major organizational restructuration as well as how IIP was built into the management processes of the company. But if “the regulator’s job is dependent upon the continued requirement for a regulator and the success of the regulatory process” (Crowther et al., 2001, p. 236), then IIP is really just a convenient by-product of the measures already in place.

6.4 Lessons for benchmarking in electricity distribution
While there has been a marked need to address the pertinence of improved service quality trends in the electricity sector, “it is possibly not too surprising that the results achieved by the privatized industries and the regulatory process itself have been defended by the regulators” (Crowther et al., 2001, p. 236). A regulatory manager of ElectriCo commented:

IIP […] has definitely stimulated a lot of interest […] certainly on the incentives side of things. For us, it needs to sink in; it’s a bit like an oil-tanker – you can’t really turn it around in ten minutes. For OFGEM, I don’t think there’s enough juice left in them to stimulate much more imagination!

Only time can tell what future changes will be to how service quality in UK electricity distribution networks will be regulated. For now, perhaps IIP as “the devil you know” is sound enough, as it is being reviewed (OFGEM, 2005a) before being implemented in the UK gas sectors (for a review, see, OFGEM, 2005b, 2006).
And if IIP is really just a reinforcing framework for RPI-X (the overall price regulation mechanism), then the onus is on the adequacy of RPI-X. It is questionable therefore how adequate this really is, despite its longstanding existence, given that the retail price index is based on a basket of weighted general consumer items, when the world is currently experiencing surging prices in fuel and other household consumer products and services. Going back to the renowned point of Littlechild (1983, p. 7) that regulation is only “holding the fort until competition arrives”, perhaps the only best solution is to wait for this desideratum: the lessons to be gleaned from the electricity distribution experience, from the present research, are as yet too unclear to qualify as perfectly useful practices for general benchmarking.

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Further reading

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