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Can citizen analytics transform the public sector?

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Abstract

This paper is set against a backdrop of significant public sector cuts. In that context, it looks at the opportunities and challenges facing the public sector, in particular the local government, as it begins to consider adopting increasingly sophisticated approaches to 'citizen analytics'. In addition to presenting the potential prize in terms of efficiencies and customer service, a range of cultural and legal barriers are considered.

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Can citizen analytics transform the public sector?

Sophisticated customer segmentation approaches, relationship marketing strategies and demand modelling programmes may be fairly commonplace in much of the commercial sector, but the use of 'citizen data' to drive service development and delivery is only now really getting a toehold in the public sector. Whether it can bring the same transformational benefits in terms of responsiveness and efficiencies remains to be seen, and much depends on whether there is the political will and organizational leadership to achieve the cultural change that will enable sustained improvement.

The public sector has shown over the last few years that it can make innovative use of citizen data to improve services and customer care. For example:

- The Department of Work and Pensions (DWP) and Her Majesty's Revenue & Customs launched the Work and Pensions Longitudinal Study data set in 2005, linking benefits and employment records. Among other things, the data set is used for impact analysis of 'back to work' programmes, evaluation of individual policies (eg the impact of changes to pension arrangements) and to assist in the identification of fraud.¹
- The Pensions Service (DWP) is using predictive analytics to profile the future service needs of 15 million pensioners and understand the potential impact of policy changes.
- A number of primary care trusts across the UK have been using accident and emergency readmission risk models since 2006 to drive strategic planning² and to target patients at highest risk with early intervention strategies.

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To date Central Government has taken the lead in applying sophisticated citizen analytics

- Several councils in the north of England last year began using a ‘burglary prediction’ model developed by University College London to identify potential crime hot spots³ — in some cases, the model has been successful in helping to increase detection and/or prevention.
- The London Fire Brigade is using predictive analytics to produce ‘future fire risk’ maps of London. This information is being used to support commissioning decisions, as well as helping to target prevention activity.

With a few exceptions, most of the more sophisticated initiatives to date have been run — or at least sponsored — by central government departments. They have not really taken off at a local level to achieve a step change in performance or quality. However, the real test may be coming.

A number of powerful demographic, financial and sociological forces are emerging that, together, will have a major influence on the future of citizen analytics, as both potential enablers and barriers. It is vital that political and organizational leaders, at national and local levels, understand the risks and opportunities they present.

Localism

Evidenced by numerous white papers across the political divide,⁴ the model of government in the UK appears to be overly centralized for modern needs. This has led to moves to shift power from the centre to the local — and ultimately to the citizen. Linked to this has been a call for more ‘joined-up’ government, offering greater responsiveness to the needs of local communities and individuals.⁵

Figure 1 illustrates how ‘analytical’ responsibility has implicitly shifted from central to local government.

Figure 1 also highlights the historical disconnect between policy formulation at a central government level and operational delivery of services at a local government level (one of the key reasons that attempts to replicate private sector ‘Customer Relationship Management’ (CRM) strategies have failed in the public sector).

Specifically with respect to analytics, local government has been driven by a shift in focus from ‘operational performance metrics’ (eg how many claims have we processed) to ‘outcome metrics’ (eg teenage pregnancy rates). This shift has driven local performance and policy teams to develop segmentation models and generated an increased interest in geospatial analysis.

However, as illustrated in the Figure 1, the focus of this analysis has tended to be on ‘What has happened?’ For example, what was the teenage pregnancy rate in the last time period.

‘Joined-up’ policy drivers have given rise to the previous administration’s *Total Place* initiative and the current administration’s *Community Budgets* initiative. Both seek to ‘un-ring fence’ local public sector funding to encourage greater cross-agency collaboration and a focus on the end user (the citizen) rather than service structures.

Government’s desire to shift decision making to a local level implicitly requires an increase in capacity and skills at the local level

Figure 1: Shifting responsibility for citizen analytics

A range of cross-agency 'partnerships' have also sprung up in response, including:

- Community Safety Partnerships — set up to ensure a coordinated response to crime and disorder issues, typically made up of councils, police forces, probation services and housing associations.
- Community Health Partnerships — set up to deliver coordinated responses to health needs, typically made up of community health, social care and specialist health services.

The shift to localism and partnership working also raises exciting opportunities to exploit cross agency data

Many of these partnerships have been mandated to produce joint views of future service demands (eg the Joint Strategic Needs Assessment for health partnerships). They were initially guided by limited aggregate performance data provided by their partner organizations. However, most have now developed the capabilities to build segmentation models, derived from aggregate geo-coded data and third-party socio-demographic models, most commonly Mosaic.

The results of these activities are often made available to the public via data observatories, for example the LASOS portal⁶ supporting the parts of the Yorkshire and Humber region. More recently, a few partnerships have begun to realize that the next step in this analytical evolution lies in the use of predictive analytics.

These techniques are likely to be critical to both improving 'commissioning competencies', so that services are better aligned with future demands, and ensuring that limited front line services are targeted where they are needed the most.

Proposed reforms in both the health⁷ and criminal justice⁸ systems are likely dramatically to increase the pressure for a more joined-up public sector and consequently a step change in these competencies.

The link between increased efficiencies and a more proactive public sector is widely accepted

Developments in citizen analytics are likely to move in step with the public sector's adoption of a 'prevention' oriented approach

Increasing demand and expectations

The ageing population and the increasing strain it is placing on service teams, especially in social care, benefits and health, is one of the most significant and seemingly intractable issues facing the public sector.

In parallel with this demographic shift, society continues to have escalating expectations of the services it receives from the public sector. In particular, the cost of delivering increasingly complex and innovative care and enabling the growing number of people with chronic conditions to live as independently as possible is escalating.

The public sector's response to this challenge is multi-faceted, with one key element encapsulated in the old adage that 'prevention is better than cure'.⁹ In that context, there is a growing body of anecdotal evidence that early intervention and prevention reduces 'total cost of care'.

Although this strategy makes sense intuitively, ensuring that the costs and benefits of early intervention generate greater savings later is not simple to evidence or orchestrate.

For example, understanding the impact of an early intervention by the social care team on the demands for a service delivered by a health team is critical to ensuring that these strategies do not simply shift the cost burden across public sector boundaries.

Given the precarious state of public sector finances, it is very challenging for social care and health commissioners to embrace this strategic shift without being able to evidence its success.

This focus on early intervention is not limited to health and social care; the recent Green paper published by the Ministry of Justice¹⁰ highlights the need to implement effective 'diversion' strategies to 'break the cycle' of offending and imprisonment for young offenders.

In many ways, the analytical challenges generated by this shift in focus have parallels with the private sector. Whereas the private sector is often concerned with identifying the potentially most profitable customers (in order to maximize 'share of wallet'), the public sector is concerned with identifying the most vulnerable in order to minimize 'total cost of care' (while delivering better outcomes for citizens).

Evolving technologies and social media

Social media and cloud computing are just two of the latest technology innovations that are transforming the way we live and the way in which businesses operate. These particular technology innovations have significant implications for analytics (for both the public and private sector) — providing access to a new rich source of data, as well as a source of low-cost processing capacity to model and analyse these data.

Social media sites are providing the data required to drive 'sentiment analysis', which uses natural language processing/text analytics to understand attitudes and opinions.

The importance of this technique in a public sector, political context is obvious — understanding how the electorate is responding to a

Technology developments are pivotal to the future of citizen analytics; in reducing costs and providing richer, real time data sources

particular policy direction or incident in near real-time is becoming an essential capability during national elections. However, its potential to help transform local government service delivery remains broadly untapped.

From a data processing perspective, cloud computing has the potential to generate dramatic cost reductions and provide a technology platform that is shared across sectors. This latter feature of cloud computing potentially provides a key plank for greater partnership working.

The G-Cloud is the Cabinet's Office flagship programme and began hosting a few central government systems, on a test basis in 2010.

High-profile catastrophic failures

Tragic cases (such as Fiona Pilkington¹¹ and Francesca Hardwick in 2007 or Victoria Climbié¹² in 2000) shock the general public, provoke a media outcry and trigger calls by politicians for urgent action to prevent their repetition.

Serious case reviews repeatedly call for more systematic ways for data to be shared across agencies so that the freedoms and liberties of vulnerable people can be protected.

In 'hindsight', it is easy to see that three years of anti-social behaviour calls to the police and social services, linked with the personal circumstances of the Pilkington family, should have sent warning lights flashing across agencies — but unfortunately for the systems that were in place (in common with most of the country) it equated to finding a needle in a haystack.

Although these catastrophic failures do not often result in such tragedies, they occur on a regular basis and contribute to miserable outcomes for many of the most vulnerable people in our society. This, despite the professionalism of service teams, dedicated to serving these specific groups of people.¹³

To improve the early identification of these individuals, Community Safety Partnerships are trying to get better at predicting those people at highest risk of poor outcomes and getting this risk information to the front line in a timely manner so that the right interventions can be put in place.

Public views on data ownership and privacy

From a legal perspective, there are a number of statutory and legislative requirements for disclosing person-identifiable information in the public sector, including the Data Protection Act, the Human Rights Act, the common law duty of confidentiality and the Information Commissioner's Framework Code of Practice for Sharing Personal Information.

Despite the fact that these statutory and legislative requirements facilitate and mandate data sharing (eg to safeguard children or the prevent fraud), the public sector has failed to deliver data sharing solutions to address these issues.

One of the highest profile failures of initiatives in this area is the ContactPoint database, created in response to the abuse and death of

Understanding and protecting vulnerability should form the cornerstone of citizen analytics

eight-year-old Victoria Climbié. The database cost £224m to set up and £41m a year to run and was scrapped by the current administration last year.¹⁴

Arguments against the ContactPoint database included both functional challenges (the system could be searched by over 300,000 professionals) and political and cultural concerns.

Unfortunately, although the database was a logical solution to many safeguarding issues, it was a centrally developed and mandated solution that was to a large extent imposed on local government agencies.

As such, it was both politically out of kilter with a shift to localism and more critically looked like another state-sponsored solution that would further erode our civil liberties. It was also probably unhelpful that this initiative was running in parallel with the Identity Card initiative (also scrapped in 2010¹⁵).

Resolving ‘trust’ issues between the public sector and the public lies at the heart of this challenge. Addressing this issue will require a change in the way that data sharing solutions are developed and critically presented to the public.

One innovative approach, beginning to get traction with a few councils, is that individual citizens should be able to trade ‘data sharing permissions’ for more responsive and joined-up services. This approach would allow vulnerable people (eg those at risk of Anti Social Behaviour (ASB)) to grant various agencies access to each other’s data (eg a police officer knowing that a victim has a disability when they receive notification of ASB).

Affordability

Almost without exception, all examples of sophisticated analytics in the UK public sector are found in large central government departments (or have been funded by these departments).

This fact highlights a key constraint to the use of citizen analytics at a local government level — that sophisticated solutions are out of the financial reach of all but a handful of large metropolitan councils. Unless there is innovation to address this issue, led by the private sector, adoption at a local government level will be very limited.

From the perspective of traditional private sector suppliers (eg SAS, SPSS, Experian etc.), it remains to be seen whether loss in revenues from their central government clients will be sufficient for them to fundamentally revisit the way in which their services are delivered — and priced. If not, there will undoubtedly be other organizations that will find ways to satisfy the increasing demand for services from local government.

Conclusions

As highlighted by the above, although there are many complex legal and technology barriers to the sharing of data across the public sector, the most significant and sometimes intractable issues are political and cultural.

Whether politically, demographically or ‘catastrophe’ driven, the imperative for a more responsive, efficient joined-up government

Establishing an acceptable ‘middle ground’ around data sharing needs the public to be engaged in a constructive dialogue

Ultimately the challenge will be can these solutions be delivered at a price point that is affordable to local government.

transcends the political divide. The current public sector financial crisis has simply accelerated the need to deliver this transformation.

From the perspective of citizen analytics, almost all central government departments have been employing sophisticated modelling techniques for many years. However, at a local government level (at the forefront of the required transformation), the discipline is less well developed.

In the short term, it is likely that the market will continue to evolve along the public sector's own departmental boundaries. For example, with analytics specifically targeting health — based on health data, or specifically targeting community safety — based on crime-related data.

As highlighted in the attached case study, the potential benefits of these silo-based approaches are significant.

However, these applications do not help to address the core issues highlighted in this paper, concerned with delivering efficiencies and improved outcomes through a more coordinated and joined-up public sector.

In order to address this challenge, the public sector (and the public) will need to move away from a black and white view of data sharing and look for solutions that can protect and safeguard the civil liberties of the vulnerable without compromising the civil liberties of everyone else.

Only once the public sector finds a politically and culturally acceptable way to share data across agencies will citizen analytics play its full role in the transformation of the public sector.

Case study — How citizen analytics is making a difference

At present, all Unitary and District Councils across England, Wales and Scotland (around 400 councils) administer Housing benefits on behalf of the Department of Works and Pensions. A key performance metric for these organizations is how quickly they can process new claims for benefits.

The teams providing this service are under increasing pressure to maintain performance standards while absorbing a significant reduction in funding (in common with other teams).

In order to respond to this challenge, many councils have embedded risk models into their 'new claims processes'. These risk models provide an indication of whether a new claim is likely to be in 'error' (by providing an indication of whether the details provided by the claimant are consistent with historical data).

On the basis of this risk score, councils can decide whether claims details need further verification or whether the claim can be into payment without any further investigation. This approach makes the new claims process smarter.

In terms of benefits, the approach is delivering improved services for many claimants, a reduction in overpayments due to error and critically enabling councils to maintain performance standards.

From a financial perspective, one council in Scotland projects around £400k of savings in administration costs from the implementation of this approach.

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