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Measuring the influence of stakeholders on an issue, cause, brand, institution, or company.

A White Paper by Onalytica on how a new type of stakeholder analysis is helping marketers, policy makers and public relations experts win the battle for awareness and influence.

Executive Summary

In the academic world citation indexes¹ have long been the established way of objectively measuring the influence of journals, universities and researchers.

This White Paper shows how citation analysis can be applied to information in the public domain to give a clear picture of how stakeholders influence the public opinion of an issue, brand or organisation.

It is also demonstrated that the method is effective in measuring how stakeholders influence each other; both directly and indirectly.

Furthermore the paper demonstrates how the method can be used to identify where information can cost-effectively be injected into the public debate.

Last but not least the paper gives an example of how statistical textual analysis can be used to identify which parts of a larger issue a particular stakeholder is most focused on and therefore most likely to be engaged on.

Objective measurement of the influence of stakeholders is increasingly being used by marketers, policy makers and public relations experts to improve the effectiveness of their work.

By explaining the scientific argument and using real life examples, this paper demonstrates why.

¹ An index based on the network formed by linking citations.

Measuring influence

Marketers, policy makers and opinion influencers have always been interested in understanding who has potential and actual influence over the issues they are focused on.

The traditional (and only) way of identifying stakeholder influence has long been to rely on assessments by experts.

While relying on experts has a number of benefits it inherently has a number of serious drawbacks.

These drawbacks range from lack of ability to effectively identify indirect influence; over potential self-serving biases; to systematically overrating familiar and underrating unfamiliar influencers.

In the academic world, citation analysis has long been recognised as a way of determining the influence of academic journals, universities and researchers.

Citation analysis is based on the conjecture that a journal is influential to the extent its articles receive many citations from articles in other² journals, and more so if the citing articles themselves appear in journals receiving many citations, and so on.

Some publishers of citation indexes also publish so-called Impact Factors for many academic journals. These factors are calculated using citation analysis and used by an increasing number of universities as a key metric when calculating bonuses for their academic staff and allocating funding for research projects. By summarising the number of articles published by a researcher, multiplied by the impact factor of the respective journals, the university management gets a good idea about the overall publishing quality of each researcher.

Of course citation analysis has its drawbacks too.ⁱ An author may cite publications for a variety of reasons, including limited knowledge, self-interest and perfunctory reasons. However the fact that an author will erode his or her own credibility by citing large amounts of work that are obviously not the most relevant, works as a limiting factor in this respect.

While citation indexes and impact factors have their drawbacks, research has shown that they are less prone to systematic biases than subjective measures.ⁱⁱ

² Some citation indexes take "self-citations" into account, others do not.

Analytica Stakeholder Analysis

The concept of using citation indexes to measure influence is taken further by Analytica in its Stakeholder Analysis product.

In an Analytica Stakeholder Analysis the influencers of *an issue* are identified and analysed.

An Analytica Stakeholder Analysis consists of 3 main parts:

- Key metrics for each stakeholder, including the *Issue Influence Index™* which ranks the stakeholders according to their structural influence on the issue.
- Relationship maps that graphically shows how the most influential stakeholders influence each other.
- A statistical analysis of common words and phrases used by the most influential stakeholders when “talking” about the issue in focus.

Similar to the structural influence calculated for academic journals, Analytica has developed an index that measures the structural influence of stakeholders in relation to virtually any issue, the *Issue Influence Index™*.

The issues analysed are diverse. Some recent examples include "further education", "functional food", "youth crime", "anti-social behaviour" and "liquid bio fuel".

How we do it

The construction of an Analytica Stakeholder Analysis consists of the following steps:

The issue is defined as phrase.

It can be a precise phrase like the name of a product, brand, company or a phrase well defined within the industry. Alternatively it can be a wider phrase such as "vocational/practical learning", "anti-social behaviour" or "liquid bio fuel".

The geographical area of interest is defined

In order to make the results of the analysis more relevant there is often a focus on a particular geographical area. If the issue is "Youth Crime" the geographical area of interest may be "United Kingdom".

Identifying and retrieving relevant material

Our computer systems download relevant material from the internet. The process is often referred to as "crawling". Our internet-crawlers are able to identify most issues correctly even if they are not phrased precisely as the "issue-phrase".

A typical crawl identifies and downloads between 3,000 and 50,000 relevant documents and web pages.

Analysing the material

All the identified material is analysed for citations and references. This builds a huge network of interrelated references.

Using algorithms similar to those used to calculate structural influence of academic journals we can now calculate the structural influence of the identified stakeholders of the issue in focus.

Example: Preventing juvenile obesity

An Analytica Stakeholder Analysis into the issue “preventing juvenile obesity” identified 3,674 freely and publicly available documents³ referring to the issue.

A total of 302 relevant stakeholders were identified.

Tables 1, 2 and 3 shows the top 20 stakeholders in relation to 3 key metrics.

| Organisation | Citations |
|---|------------------|
| Department of Health | 22 |
| British Medical Journal | 20 |
| National Heart Lung And Blood Institute nhlbi | 15 |
| WHO | 15 |
| Health Development Agency | 13 |
| Cancer Research UK | 12 |
| Dfes Department For Education And Skills | 12 |
| Houses Of Parliament | 12 |
| Food Standards Agency | 11 |
| NHS Scotland | 11 |
| British Heart Foundation bhf | 10 |
| National Institute for Clinical Excellence | 10 |
| University Of York | 10 |
| Health Protection Agency | 9 |
| NHS | 9 |
| Uk National Audit Office | 9 |
| Centers For Disease Control And Prevention | 8 |
| Mhra medicines mhra | 8 |
| Nature | 8 |
| Scottish Executive | 8 |

Table 1 - Number of Citations

Table 1 shows the 20⁴ organisations who received the most citations⁵ from the other identified stakeholders. A value of 22 (Department of Health) means that 22 of the other 302 stakeholders referenced the Department of Health in a context that was determined to have at least some information relating to prevention of juvenile obesity.

³ The analysis was conducted in June 2005 and focused on the United Kingdom.

⁴ British Medical Association, Scottish Intercollegiate Guidelines Network (SIGN) and The Lancet also received 8 citations in this context, but the table show only 20 organisations due to layout reasons.

⁵ Self-citations not counted

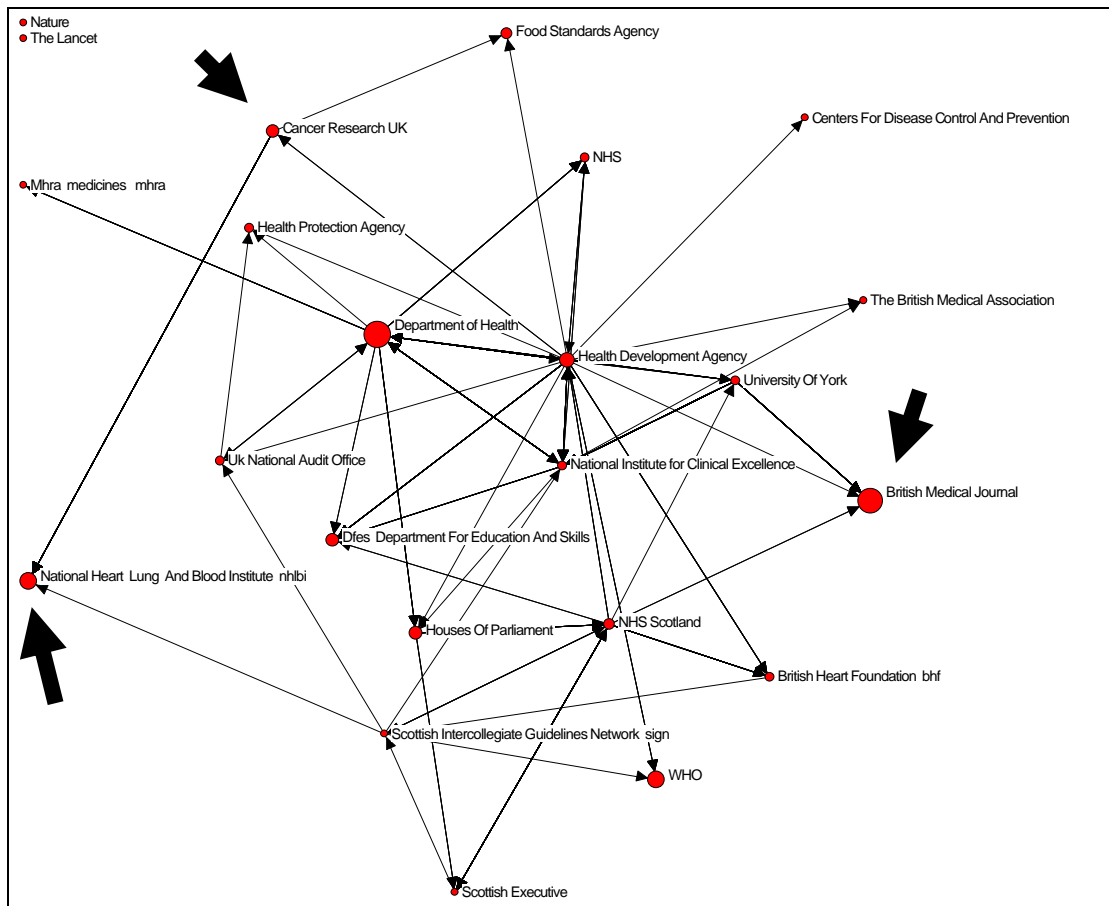


Figure 1 - Citations among top 20 cited organisations

Figure 1 shows how the organisations in Table 1 cite each other. The arrows show the direction⁶ of the citation, e.g. Cancer Research UK cites National Heart Lung and Blood Institute in the context of *preventing juvenile obesity*⁷.

The size of the dot representing the organisations indicates the overall number of citations. So while British Medical Journal is seen to only receive 3 citations in Figure 1 it is due to the fact that it only receives 3 citations from stakeholders in Table 1.

In fact, Table 1 shows that British Medical Journal received 22 citations from the identified stakeholders. Consequently it can be deduced that British Medical Journal received most of its citations from stakeholders who themselves did not receive many citations.

⁶ It should be kept in mind that the flow of information, knowledge and influence is the opposite way of the arrow. If A cites B then it is A who is influenced by B.

⁷ The context can be phrased differently, for example “working to reduce obesity among children”.

| Organisation | Issue Influence Index™ |
|--|-------------------------------|
| Scottish Intercollegiate Guidelines Network sign | 4.93 |
| NHS Scotland | 4.74 |
| Eating Disorders Association | 4.57 |
| National Heart Lung And Blood Institute nhlbi | 3.87 |
| Diabetes UK | 3.55 |
| Department of Health | 3.36 |
| British Medical Journal | 3.27 |
| Health Development Agency | 3.26 |
| Houses Of Parliament | 2.70 |
| Elsevier | 2.63 |
| Food Standards Agency | 2.61 |
| Cancer Research UK | 2.54 |
| Dfes Department For Education And Skills | 2.40 |
| WHO | 2.39 |
| IASO | 2.25 |
| Scottish Executive | 2.21 |
| HM Treasury | 2.20 |
| Blackwell Synergy | 2.16 |
| Center For Science In The Public Interest | 2.16 |
| The Nutrition Society | 2.15 |

Table 2 - Issue Influence Index™

Table 2 shows the *Issue Influence Index™* for each organisation. The index works as a citation index and calculates the structural influence of each of the stakeholders.

Comparing Table 1 and Table 2 we can see that there are a number of organisations appearing in only one of the tables.

Examples are *University of York* and *The Health Protection Agency*, who appear on Table 1 and not on Table 2, and *Diabetes UK* and *HM Treasury* who appear on Table 2 but not on Table 1.

An organisation that have many citations (Table 1) can have low structural influence (Table 2) if the organisation

- 1) is cited by organisations who themselves have low structural influence, and/or
- 2) is cited by organisations who have substantial structural influence, but cites a large number of organisations as this reduces the influence any one of the cited organisations have on the citing organisation.

The *Issue Influence Index™* can be interpreted linearly, meaning that NHS Scotland has roughly twice the structural influence on the issue than The Scottish Executive. (4.74 and 2.21 respectively).

| Organisation | Information Influence |
|--|------------------------------|
| Health Development Agency | 32% |
| Department of Health | 13% |
| BBC News | 10% |
| NHS Scotland | 8% |
| Scottish Intercollegiate Guidelines Network sign | 6% |
| The University Of Exeter | 5% |
| National Institute for Clinical Excellence | 5% |
| The Royal College Of General Practitioners | 3% |
| Houses Of Parliament | 2% |
| Baby Milk Action | 2% |
| National Electronic Library For Health | 2% |
| Association for the Study of Obesity | 2% |
| University College London | 1% |
| National Heart Forum | 1% |
| Bristol University | 1% |
| Biomed Central | 1% |
| The University Of Sheffield | 1% |
| UNICEF UK Baby Friendly Initiative | 1% |
| Patient UK | 1% |
| Guardian Unlimited | 1% |

Table 3 - Information Influence

Table 3 shows another metric popular with clients of the Analytica Stakeholder Analysis.

This metric, *Information Influence*, uses a metric popular in social network analysisⁱⁱⁱ and other forms of network analysis. To put it simply the metric identifies how often an actor is on the information-path between two other actors.

Imagine that stakeholder A gets his information about the issue in focus from stakeholder B. B, in turn, gets his information from C who again gets his information from D. This will put both B and C in a situation where they relay information from D to A. Acting like such a relay station gives potential influence over what gets relayed.

Another way to put it is that *Information Influence* indicates what proportion of the overall information an actor could exert influence over.

Information does not exclusively pass via the shortest path in such a network; however, the metric is well recognised in many areas of science as a good indication of how large a part of the information a node in a network can exert in formation over.

Comparing table 1, 2 and 3 it is clear to see that *The Health Development Agency (HDA)* has extremely high information influence (32%); much more so than *Scottish Intercollegiate Guidelines Network (SIGN)* (6%). However, as the latter has more structural influence than the former, it can be concluded that *SIGN* has more influence than *HDA* with organisations who themselves are important influencers.

Inspection of the two organisation's networks reveals that while *HAD* is cited by such organisations as *BBC*, *Guardian* and *Department of Health* (and others), those organisations also cite large number of other organisations in the same context. Consequently *HDA* does not have much structural influence with them.

Same inspection also reveals that *HDA* to a large extent work as a broker of information between the academic world and the public (via the press). This in turn explains their high *Information Influence*.

It is interesting to see that a couple of organisations not found in tables 1 or 2 appear in table 3.

On notable is Baby Milk Action (*BMA*).

BMA's information influence (of approx. 2%) stems from the fact that, in the context of *preventing juvenile obesity*, *BMA* is on the shortest information-path from *Save the Children*⁸, *The Royal Society*⁹, the UK government's *Pesticides Safety Directorate* and *The New Scientist*¹⁰ to *UNICEF UK Baby Friendly Initiative* who in turn is cited lots of organisations.

In fact no other stakeholder is found to cite *Save the Children*, *The Royal Society*, the UK government's *Pesticides Safety Directorate* or *The New Scientist* in the context we're analysing. This puts *BMA* on the shortest information-path from these organisations to any other identified stakeholder.

BMA is also on the shortest information path between on one side *Friends of the Earth*, *Sustain* and *The Food Commission*; and a lot of other stakeholders. However *BMA* is not alone in relaying information from these 3 stakeholders in the relevant context.

Figure 2 shows *BMA*'s relations in network form.

(*BMA* may not be well known but in the context of *preventing juvenile obesity* *UNICEF UK Baby Friendly Initiative* cites *BMA* along with only 4 other stakeholders, including *The Lancet*, *British Medical Journal*, and *Stanford University*.)

⁸ An influential charity

⁹ The independent scientific academy of the UK dedicated to promoting excellence in science

¹⁰ An influential science publication

Example: Anti-Social Behaviour

An Analytica Stakeholder Analysis into the issue of “anti-social behaviour” identified 49,603 freely and publicly available documents¹² referring to the issue.

A total of 607 relevant stakeholders were identified.

Tables 1, 2 and 3 shows the top 20 stakeholders in relation to 3 key metrics.

| Organisation | Citations |
|--|------------------|
| Office Of The Deputy Prime Minister | 128 |
| The Home Office | 128 |
| Crime Reduction Initiative | 95 |
| Office Of Public Sector Information | 88 |
| BBC News | 78 |
| Together - Tackling Anti-social Behaviour | 54 |
| Victim Support | 50 |
| defra uk - department for environment food and rural affairs | 46 |
| Dfes Department For Education And Skills | 43 |
| Department For Work And Pensions | 41 |
| CrimeStoppers | 40 |
| Houses Of Parliament | 40 |
| Shelter | 38 |
| Youth Justice Board | 38 |
| The UK Police Service | 35 |
| Department Of Trade And Industry | 32 |
| Talk To Frank | 32 |
| Environment Agency | 31 |
| Department of Health | 30 |
| The Scottish Executive | 30 |

Table 4 - Number of Citations - Anti-Social Behaviour

¹² The analysis was conducted in September 2005 and focused on the United Kingdom.

| Organisation | Issue Influence Index™ |
|--|-------------------------------|
| The Home Office | 29.10 |
| Office Of The Deputy Prime Minister | 28.59 |
| Office Of Public Sector Information | 19.04 |
| Crime Reduction Initiative | 16.31 |
| BBC News | 16.13 |
| Houses Of Parliament | 9.99 |
| Together - Tackling Anti-social Behaviour | 9.42 |
| Department For Work And Pensions | 9.22 |
| Joseph Rowntree Foundation | 8.86 |
| The Local Government Association | 8.73 |
| Dfes Department For Education And Skills | 8.44 |
| Youth Justice Board | 7.96 |
| The UK Police Service | 7.87 |
| The Scottish Executive | 7.79 |
| Victim Support | 7.72 |
| defra uk - department for environment food and rural affairs | 7.67 |
| 10 Downing Street | 7.04 |
| Mediation UK | 6.71 |
| Department Of Trade And Industry | 6.69 |
| The Chartered Institute Of Housing | 6.65 |

Table 5 - Issue Influence Index™ - Anti-Social Behaviour

Comparing Tables 4 (number of citations) and 5 (structural influence) it can be seen that *CrimeStoppers*, *Shelter* and *Department of Health* appears to have less influence than the number of citations they receive could lead to believe.

On the other hand *Joseph Rowntree Foundation*, *10 Downing Street* and *The Chartered Institute of Housing* are relatively more influential than some of those with many citations.

The point is that stakeholder X's influence on an issue does not come from the number of other stakeholders who single it out as relevant, but from the aggregated influence of those stakeholders who deem X relevant; combined with the proportion of those stakeholder's attention span X holds on the issue.

| Organisation | Information Influence |
|--|------------------------------|
| BBC News | 19% |
| Office Of The Deputy Prime Minister | 10% |
| Crime Reduction Initiative | 9% |
| The Home Office | 6% |
| Association Of London Government | 4% |
| Guardian Unlimited | 4% |
| 10 Downing Street | 2% |
| Dfes Department For Education And Skills | 2% |
| King s College London | 2% |
| Thames Valley Police | 2% |
| Chartered Institute Of Environmental Health | 2% |
| Mediation UK | 2% |
| Liberty Human Rights | 2% |
| Sussex Police | 1% |
| defra uk - department for environment food and rural affairs | 1% |
| Together - Tackling Anti-social Behaviour | 1% |
| Community Legal Service Direct | 1% |
| Communigate | 1% |
| Active Citizenship Centre | 1% |
| The Scottish Executive | 1% |

Table 6 - Information Influence - Anti-Social Behaviour

BBC News and *Guardian* have a higher *information influence* on the issue of *anti-social behaviour* than on *preventing juvenile obesity* (19% and 4% vs. 10% and 1%).

Also *BBC News* carries has substantially more structural influence over the issue of *anti-social behaviour* than over *preventing juvenile obesity* (16.13 vs. 1.25)

It may simply be that *anti-social behaviour* makes for better popular news than *preventing juvenile obesity*.

Typical phrases identify the sub-issues

| <i>Capitalised Phrase</i> | <i>Relative Frequency</i> |
|------------------------------|---------------------------|
| The Council | 13% |
| Anti-Social Behaviour | 10% |
| Council Tax | 7% |
| Disorder Act | 6% |
| Community Safety | 6% |
| London Borough | 5% |
| Social Care | 5% |
| Anti-Social Behaviour Act | 5% |
| Young People | 5% |
| Social Services | 4% |
| Housing Benefit | 4% |
| Housing Act | 4% |
| National Projects | 4% |
| Finance Bill | 4% |
| Northern Ireland | 4% |
| Hunting Bill | 3% |
| Anti-Social Behaviour Orders | 3% |
| Local Authority | 3% |
| City Council | 3% |
| Licensing Act | 3% |

Table 7 - Capitalised Phrases - Anti-Social Behaviour

Table 7 shows the top capitalised phrases identified during the analysis. Capitalised Phrases are effective for identifying the hot topics within the issue.

While table 7 shows the top capitalised phrases for all stakeholders, Table 8 shows the top capitalised phrases used by the Office of the Deputy Prime Minister when the context is “anti-social behaviour”.

| <i>Capitalised Phrase</i> | <i>Relative Frequency</i> |
|---------------------------------|---------------------------|
| The Government | 13% |
| Housing Act | 12% |
| Anti-Social Behaviour Act | 9% |
| The Council | 5% |
| Disorder Reduction Partnerships | 5% |
| The TMO | 5% |
| Housing Corporation | 4% |
| Supporting People | 4% |
| The Anti-Social Behaviour Act | 4% |
| Disorder Act | 4% |
| Urban Policy | 3% |
| Sustainable Communities | 3% |
| Green Paper | 3% |
| Housing Benefit | 3% |
| Registered Social Landlords | 2% |
| South East | 2% |
| Spending Review | 2% |
| Housing Bill | 2% |
| Local Authorities | 2% |
| Housing Action Trusts | 2% |
| Possession Actions | 2% |
| Multiple Occupation | 2% |
| Local Authority | 2% |
| Anti-Social Behaviour Orders | 2% |
| Housing Health | 2% |

Table 8 - Capitalised Phrases - Anti-Social Behaviour - Office of the Deputy Prime Minister

Comparing the phrases in Table 7 and Table 8 shows that while the Office of the Deputy Prime Minister focuses on many of the same issues as the average stakeholder, there are a number of differences, such as “The TMO”¹³, “Sustainable Communities”, “Urban Policy”, “Registered Social Landlords” and others.

If one is seeking to engage a stakeholder on a particular issue this can usually be done more effectively when one is aware of the particular sub-issues that are highest on the stakeholder’s agenda.

¹³ Tenant Management Organisation

Friends-of-Friends

Often it is impossible or simply not effective to try and influence a stakeholder directly.

There may be no direct channels for the communication, a lack of trust or other reasons.

The Analytica Stakeholder Analysis can be used to identify indirect relationships that may enable a stakeholder to more effectively influence another stakeholder through a third party trusted by both stakeholders.

Imagine stakeholder A takes information about a topic from stakeholder B and stakeholder B, in turn takes information about the same topic from stakeholder C.

This will often mean that there is a “chain of trust” flowing from C to A.

If C wants to influence stakeholder A, doing it via stakeholder B may prove more effective than trying to influence stakeholder A directly.

Because A cites B and B cites C as relevant sources for information about the topic there is often already a trust relationship between A and B and between B and C. Communicating a message from C to A via B may not be quicker but it may very well be more effective.

About Analytica and how we can help

Analytica can help you improve your understanding of who influence issues of your interest.

Armed with the intelligence we can provide, you can get your message across more precise and more cost-effective.

Analytica was founded in 2003 and we are operating out of London, United Kingdom.

We have done work for private and public organisations in United Kingdom, Ireland, Scandinavia, Japan and the USA.

Our main services consist of Stakeholder Analysis and Social Network Analysis.

Our services in Stakeholder Analysis provide our clients with a clear picture of how stakeholders of a particular issue, organisation or brand influence each other. This knowledge help our clients communicate their messages more cost-effectively to those they seek to influence.

We conduct stakeholder analysis on topics of interest to individual clients. We also publish regular reports on industry specific issues and issues of general interest.

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