

1Workshop discussion - Cloud Computing: The New Horizon?

Research Questions

1. What are the benefits of utilising the Cloud?
2. What are the risks associated with using the Cloud in the short, medium and longer terms?
3. What are the differences between individual suppliers' performance and service?
4. Are there ethical questions about the management and ownership of 'Cloud' environments?

Task

1. As a group chose ONE of the research questions related to cloud computing services. Choose a context for the research (eg individuals, SMEs, international organisations)
2. How you would develop your research method to answer this chosen research question in that context?
3. What are the advantages and drawbacks of your method in relationship to the research question? *Please record these on your flipchart*
4. Nominate a member of the Group to briefly present your discussion

The Delphi study

Originally developed in the 1950s at the RAND Corporationⁱ to help predict or forecast future events (only later named the Delphi technique). A 'classic' Delphi study "elicits, refines, and draws upon the collective opinion and expertise of a panel of experts"ⁱⁱ usually by using a series of questionnaires. The aim is to reach a consensus of opinion. The process is as followsⁱⁱⁱ:

- Establish the panel of experts – experts know the researcher but not each other; they never meet to discuss the study
- Conduct Round 1:
 - design the questionnaire – a series of open questions to gather as many views/issues as possible
 - send to the experts and ask them to respond by a pre-determined deadline
 - (qualitatively) analyse the results to develop a set of themes
- Conduct Round 2:
 - design the questionnaire – use the themes from the Round 1 analysis to create a structured questionnaire requiring the experts to rank them using a scoring technique
 - send to the experts and ask them to return their ranking by a pre-determined deadline
 - (quantitatively) analyse the results ordering the themes by their rank value; calculate measures of central tendency (average) and dispersion (eg standard deviation) to show variability/divergence
- Conduct Round 3:
 - design the questionnaire – use the rankings from the Round 2 analysis to create another structured questionnaire requiring the experts to further rank them/refine their rankings using a scoring technique
 - send to the experts and ask them to return their ranking by a pre-determined deadline
 - (quantitatively) analyse the results ordering the themes by their rank value; calculate measures of central tendency (average) and dispersion (eg standard deviation) to show variability/divergence
- Conduct a further round(s) until a convergence of the findings or a 'consensus' is reached with an estimate of the degree of dispersion from the average (central tendency)

A 'modified' Delphi study is one in which at least one of the 'rules' is deliberately omitted from the design e.g. to accommodate local requirements^{iv}. Modifications include: e-format (traditionally paper); definition of an 'expert'; identities disclosed among the panel/the panel may meet; divergence not just consensus (to expose uncertainties rather than focus purely on reaching consensus^v).

Co-operative Inquiry

Co-operative inquiry is a derivation of action research, which was developed in the 1970s by John Heron^{vi}, and further evolved through his work with Peter Reason^{vii}. Within traditional research frameworks, the roles of the researcher and subjects are mutually exclusive; the researcher only contributes the thinking that goes into the project, and the subjects only contribute the action to be studied. In co-operative inquiry these exclusive roles are replaced by one role, that of co-researchers. A group of individuals, with a common concern or research focus, come together as co-researchers. The co-researchers might be professionals with a common concern or a group of community activists. The co-researchers may have different levels of experience but within the context of the research their views are accorded equal weight. Together they design, manage and draw conclusions from the

inquiry, which they develop through action research. Thus as Heron and Reason state '*this is not research on people, but research with people*^{viii}'.

Moving through the action research cycle, as defined by Susman and Evered^{ix}, the co-researchers diagnose the issues under discussion, plan action, take action and then specify learning. Thus their roles are those of researcher and, through the action taken, subject entwined.

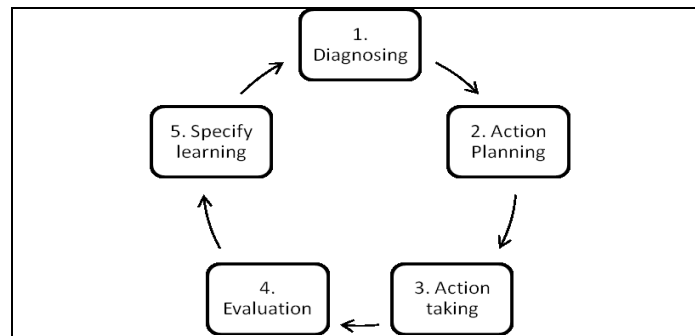


Figure 1: Representation of action research cycles based upon Susman and Evered (1978) reproduced from Brown, Demb and Lomas (2009)^x

Typically a co-operative action research framework will involve a minimum of four cycles. Each cycle may be fairly short. Equal weight will be given to reflecting on the problem solving aspects of the work and also on the research delivery^{xi}, in accordance with the action research model outlined by McKay and Marshall. It is the process of reflection and action combined that ensure the delivery of the research objectives.

Co-operative inquiries may be used to understand and impact upon a wide range of issues. Unlike some other research methods it is not necessarily trying to create objective findings that can be generalised, but is rather helping to solve specific problems and answer identified questions.

Public / Community Consultation

Public and community consultations are *deliberative* research methods whose roots are in democratic (political) theory. They are used when it is important to involve the public/a community in decisions which affect them, the deliberation usually occurring between the decision-maker and the public/community but potentially also among the public/community participants. Deliberation is more than a discussion "it is the act of considering different points of view and coming to a reasoned decision."^{xii}

These consultations have been used in a wide variety of sectors, eg local government, health, environment, biotechnology, social policy, to deliberate about legislative changes, services, ethical issues, governance and health care systems. They have a long history of use in some sectors. They can take a variety of forms and may include one or more data collection techniques. For example:

- The Data Sharing Review^{xiii} (public consultation) gathered views/perspectives on the issue of the sharing of personal data from organisations, professional bodies and individuals across all sectors. A set of structured questions was issued; submissions included responses to this plus open letters covering some/all of the points
- SharePoint in UK HEIs (community consultation) enabled a wide range of HEI stakeholders (eg professional groups, institutions, vendors and individuals) with an interest in SharePoint in that sector to express their views on its impact and its

anticipated future use. An short online questionnaire returned by email (with guaranteed anonymity) was widely publicised through appropriate websites and listservs

- Users' trust in Web information resources (community consultation) sought input on the findings from a literature review to validate and extend them. An online Delphi study and a roundtable meeting of key stakeholders, drawn from one region of the UK, were used.
- Citizens' juries, planning cells, deliberative polling, consensus conferences and citizens; panels have also been used. (See Abelson et al for examples).

ⁱ Dalkey N and Helmer O (1963). An experimental application of the Delphi method to the use of experts. *Management Science*, V3, pp. 458–467.

ⁱⁱ Gupta UG, Clarke RE (1996) Theory and applications of the Delphi technique: a bibliography (1975–1994). *Technol Forecast Soc Change* V53, pp. 185–211. (quote on p.185)

ⁱⁱⁱ Linstone HA and Turoff M (eds) (2002) The Delphi method: techniques and applications. A reproduction of the original 1975 text. Information Systems Department, College of Computing Sciences, New Jersey Institute of Technology, Newark. <http://www.is.njit.edu/pubs/delphibook>

^{iv} Goldstein NH (2002) A Delphi on the future of the steel and ferroalloy industries. In: Linstone, 2002, p564.

^v An example see: McLeod J and Childs S. (2007). Consulting records management oracles—a Delphi in practice. *Archival Science*, V7(2), p. 147-166

<http://www.springerlink.com/content/12131752258334h5/fulltext.pdf>

^{vi} Heron, J. *Co-operative Inquiry: Research into the Human Condition*, London, Sage, 1996.

^{vii} Heron, J. and Reason, P. (2006) 'The practice of co-operative enquiry: research 'with' rather than 'on' people' in Reason, P. And Bradbury, H. (2006) *Handbook of action research*. London: Sage Publications, pp. 144-154.

^{viii} Ibid, p.144.

^{ix} Susman, G.I., Evered, R.D. (1978), 'An assessment of the scientific merits of action research', *Administrative science quarterly*, 23 (4), pp.582-603.

^x Brown, M., Demb, S. R. and Lomas, E. (2009) 'Continued communication – maximising the potential of communications: the research and outputs of a co-operative inquiry', *Proceedings of the Managing Information in the Digital Era Conference*, Botswana October 2009.

^{xi} McKay, J. & Marshall, P. (2001) 'The dual imperatives of action research', *Information technology and people*, 14 (1), pp. 46-59.

^{xii} Abelson, J et al. (2003). Deliberations about deliberative methods: issues in the design and evaluation of public participation processes. *Social Science & Medicine*, V57, p239-251. (quote on p241)

^{xiii} The Information Commissioner & Dr Mark Walport, Director of the Wellcome Trust.

<http://webarchive.nationalarchives.gov.uk/> & <http://www.justice.gov.uk/reviews/data-sharing-submissions.htm>