Institution: Lancaster University

Unit of Assessment: 19, Business and Management Studies

Title of case study: Improved Business Performance Using Soft Systems Methodology.

1. Summary of the impact

Soft Systems Methodology (SSM), developed by Peter Checkland and colleagues at Lancaster University, has been adopted worldwide for tackling complex problems in both private and public sectors. It is used widely in consulting practice, leading to major business and economic impacts. In examples 1 and 2 we report major impacts, including a reshaped multi-national business and extra profits of RMB 50M in a Chinese company. In addition, SSM has helped effect major cultural change within multinational business as described in example 3 and has been adopted as part of mainstream business analysis (examples 4, 5 and 6). This has been achieved through a deliberate policy of action research and post-experience education, supported by academic and practitioner-oriented books.

2.Underpinning research

SSM is the result of research by Professor Peter Checkland and colleagues over a 30-year period including the years 1993 onwards. Checkland is now Emeritus Professor in the Department of Management Science at LUMS and current members of the Department continue to use and develop SSM. Lancaster is the home of SSM and has led its development through on-going research and practical application of systems thinking to a variety of real-world problem situations facing managers in large and complex organisational settings.

SSM began with a realisation that 'hard' problem-solving methodologies were based on the assumption that problem solving is a straightforward process. This assumption was embedded in approaches such as systems engineering (SE) adopted for example, by Bell Labs during the 1960s. Such SE assumed that objectives were clear cut and could be unambiguously stated and tackled, using a reductionist approach. This allows a problem to be broken down into manageable and independent chunks whilst attempting to keep an eye on the whole system being designed or analysed.

Checkland's early action research demonstrated was that this is far too simple a view and that a rather different approach was required, particularly when analysing and designing systems that involve purposeful human activity. As developed through further action research, SSM asserts that problems, and their definitions, should be constructed and tackled in an iterative manner, allowing learning to occur and encouraging accommodation among stakeholders. This is well suited to complex situations in which different stakeholders may hold distinct views.

The core of SSM is a cyclic process, often represented as seven steps, in which participants negotiate acceptable problem definitions that enable them to agree on appropriate action. It is widely taught in universities around the world, from which relevant research papers continue to appear. In addition, at least 30 master's students have been academically supervised at Lancaster on industrial projects using SSM during the REF period. A key component of the work of Checkland and his colleagues is its reliance on action research, in which successive versions of SSM were used in practice and improved over time, This process of cyclic refinement was crucial for its development, but is also key component of SSM use. Action research has also played a major part in the adoption and use of SSM around the world. Thus the references given below are a mixture of methodological development and action research.

3. References to the research

The papers cited below describe, in order, the use of SSM as a rigorous approach to problem structuring, the place of SSM in general management thinking, an action-research-based case

study of its use in healthcare, a substantive discussion of its role in information systems, two different views of SSM and some requirements for its appropriate use. They have been published in well-received and positively reviewed books and peer-reviewed international journals:

1. Checkland, P.B. and Scholes, J. (1999) *Soft systems methodology in action*, revised edition, Wiley: Chichester
2. Checkland, P.B. (1994) 'Systems theory and management thinking'. *American Behavioral Scientist*, 38(1): 75-91.
3. Hindle, A., Checkland, P.B., Mumford, M. and Worthington, D.W. (1995) 'Developing a methodology for multidisciplinary action research: a case study'. *Journal of Operational Research Society*, 46(4): 453-464, URL: http://www.jstor.org/stable/2584593.
4. Checkland, P.B. and Holwell, S. (1997) *Information, systems and information systems: making sense of the field*. Wiley: Chichester.
5. Checkland, P.B. and Winter, M. (2006) 'Process and content: two ways of using SSM'. *Journal of Operational Research Society*, 57: 1435-1441.
6. Checkland, P.B. (2012) 'Four conditions for serious systems thinking and action'. *Systems Research and Behavioral Science*, 29(5): 465-469. DOI: 10.1002/sres.2158

4. Details of the impact

The adoption of SSM around the world in private and public sector institutions has delivered significant measurable benefits and also changes in culture and mind-set that lead to better performance. A general indicator of the scale and range of its impact is given by a Google search using the precise phrase "Soft Systems Methodology" which returns almost 120,000 hits including case studies (google.co.uk, October 15th, 2013). Lancaster is the home of SSM and four mechanisms have helped create and sustain this impact:

1. Teaching and publications by Lancaster and other academic institutions (such as Australian National University, Copenhagen, Kent and Warwick).
2. Application of SSM to real-world problem situations, resulting in an accumulation of practical experience.
3. Ongoing development of the methodology through continued action research and practitioner sharing, es evidenced in example 4 below.
4. Publication of practitioner-oriented books such as Checkland and Poulter ('*Learning for Action: a short definitive account of soft systems methodology and its use for practitioners, teachers and students'*, Wiley, 2006).

The six examples below were chosen for their clear evidence of different and current forms of impact for SSM, based on its use in the UK and other countries. Four are highly specific and the other two show the general influence and impact of SSM. Together they show the impressive reach and significance of the impact generated by SSM.

Example 1: Mars Petcare

Following the global economic downturn of 2008 most consumer goods companies were facing increasing pressure on margins and volume growth. In Europe Mars Petcare, a substantial business comprising several categories each generating revenues of hundreds of millions of Euros, faced such a challenge in 2009/10. One of the categories obtained consulting support from a team led by Dr Jim Scholes, Visiting Professor to the Department of Management Science at Lancaster University Management School. The team worked with the European Head of the category to design an initiative which brought together over 60 managers from HQ functions and country management across Europe in a process of strategy co-creation. For just over 4 months the managers worked together through a series of facilitated workshops to develop shared understanding of the challenges facing the business; identify growth options; agree strategic direction; and then implement country-specific plans.

The initiative helped Mars's managers re-shape the business, focusing on the relationship between owners and their pets and re-defining the category logic within the company and with its customers. During 2010/11 the category management team was able to deliver tangible benefits from their work: accelerating percentage growth of sales revenues into double digits and achieving increased profits. Based on this success, the new approach was adopted globally with the aim of building a worldwide business with revenues of over $1B by 2015. This approach to strategy co-creation was developed using Soft Systems Methodology (SSM) as a diagnostic, design and learning tool.

Example 2: Tonson Adhesives

As a second example, Lui et al. (2012) report on a study conducted in China in which a performance management approach based on SSM was designed and successfully implemented. The company, Tonson Adhesives – the number one Chinese company in the industry adhesives sector – returned profits of RMB 100m in 2008.

As a result of the SSM project conducted by Lui and colleagues, which led to a new performance management system, Tonson Adhesives reported a profit increase of 50% during the year leading up to February 2010. This is clear evidence of real-world impact on business performance based SSM's role in the design of systems that support improvement in organisational performance.

Example 3: Hitachi Project Management Division, Japan

The Japanese Association for Action Research (JAAR) was established in 2003, with Peter Checkland as Honorary Chairman and Professor Kenichi Uchiyama (Diato Bunka University) as President. It engages in action research with external organisations, using SSM.

Since 2003 a team from JAAR has facilitated a series of week-long, bi-annual workshops, each for about 15 Hitachi systems engineers, following the introduction of the Project Management Body of Knowledge (PMBOK) standard in 2000 within Hitachi. The aims of the collaboration were to reduce costs, improve delivery times and make Hitachi more competitive in the marketplace by developing a new management style for project management.

The workshops ask engineers to reflect on their own project management style by using the question 'What does it mean to manage a project?' This approach revealed the importance of the qualitative or emotional side to the project management work, allowing the PMO (Project Management Office) in Hitachi and JAAR to encourage engineers to reevaluate the balance between their working lives and personal expectations.

SSM has often been used in Western organisations to uncover and understand the cultural environments in which work is conducted. However, in Japan, the work culture was already well understood and integrated with everyday life. JAAR used SSM in Hitachi to explore how this could be theorized to provide the organization with a strategic advantage by making the work of project managers more effective. This demonstrates the use of SSM by a large Japanese multinational company that wished to change its culture to increase its success.

Example 4: SSM underpins the development of an investment prospectus in the Australian Dairy Industry

The Lighthouse Consulting Group, based in Victoria Australia, used SSM to develop an investment prospectus for the Victorian Dairy Extension Centre. The DEC assists farmers in making decisions that lead to increased profitability, and has many stakeholders. Representatives took part in this study, concluding that the industry was not enabling an acceptable standard of risk management at the farm level through the use of appropriate feeding systems. This led to an investment prospectus that was signed off in May 2009 and then went to investors.

This is an example of SSM's use for project development purposes, helping stakeholders

reach accommodation that leads to appropriate action.

Example 5: Linking SSM to other analytical approaches in Sweden

Holm and Dahl (2011) focus on a different use of SSM, this time as a precursor for building patient-flow simulation models in a new Swedish hospital that wished to optimise the design of its new Emergency Department in 2008. SSM enabled the team to understand and interpret different stakeholder views, resulting in a successful design project for the new ED.

Hospital emergency departments operate in conditions of great stress and are rapidly changing environments on which to work. Their performance depends on good staff communications, on close links with other areas of a hospital and on suitable physical facilities. SSM

This is an example of its use as a precursor to detailed quantitative modelling to ensure that the modelling leads to a better design by taking formal account of stakeholder views.

Example 6: Routine use of SSM in the Defence, Science and Technology Laboratory

The Defence, Science and Technology Laboratory (DSTL) includes operational analysis within its remit; the aim being to inform the development of the Ministry of Defence strategy and policy and to improve cost effectiveness. Within DSTL, SSM is in widespread use on a routine basis to support both policy studies and cost-effectiveness work.

In illustration of this, the Chief Policy Scientist at DSTL states: *'We have been users of Checkland's Soft Systems Methodology (SSM) since at least 2000 and continue to do so. We expect our staff to be familiar with its basic ideas and to employ them as appropriate either in toto or in conjunction with other methods and approaches…Our experience is that the SSM approach is highly valuable and enables us to make rapid progress in our work and we regard it as a routine part of our analytical toolkit.'*

This demonstrates that SSM has become a routine method of analysis within the large UK defence community; clear evidence of its success.

5. Sources to corroborate the impact

Example 1: Regional President Petcare - Latin America, Mars - corroborates that the collaboration with Lancaster helped Mars's managers to reshape their business achieving higher percentage growth of sales and profits with the aim of building worldwide business revenue of over $1B by 2015.

Example 2: Lui, W.B., Meng, W., Mingers, J., Tang N. and Wang, W. (2012) 'Developing a performance management system using soft systems methodology: A Chinese case study'. *European Journal Operational Research*, 223(2): 529-540.

Example 3: Professor Kenici Uchiyama, Japanese Association for Action Research

Example 4: 'Using soft systems methodology to support extension program development in the dairy industry', Lighthouse Consulting

Example 5: Holm, L-B. and Dahl, F.A. (2011) 'Using soft systems methodology as a precursor for an emergency department simulation model'. *OR Insight* 24:168-189.

Example 6: DSTL Chief Policy Scientist - confirms that the organisation has been using SSM since at least 2000 and expects its 400 analytical staff, who provide advice to Government on issues in Defence and Security, to be familiar with its ideas to incorporate into their work.