

IMPLEMENTING BUSINESS CONTINUITY MANAGEMENT IN A DISTRIBUTED ORGANISATION: A CASE STUDY



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ABSTRACT: This article analyses the findings of a BCM audit of the Medical Research Council's 26 UK sites, carried out over the course of 2008. Of particular interest is the observed variation in maturity of BCM programmes at the different sites even though each site had had access to the same training, support and consultancy resources over the preceding three years. This variation allows the identification of some underlying drivers of effectiveness in BCM which, it is argued, are of general applicability. Neither author is aware of any similar analysis having been published elsewhere.

Introduction

Understanding what organisational factors predispose towards effectiveness in establishing a business continuity management system is of great benefit in the design and implementation of BCM programmes. This is particularly so in the common situation of trying to roll out a corporate programme across a number of different business units or sites.

This case study examines the effectiveness of embedding BCM in the individual sites within a large distributed organisation – the UK's Medical Research Council (MRC). Since 2005, the MRC has been engaged in a major project to embed BCM in all of its Units. The project was centrally managed and funded with the aim of providing every Unit with equal access to training and various other forms of support. Despite this, a recent audit has found that, three years into the programme, the level of BCM maturity varies greatly between sites.

Based on the findings of the audit, this article explores some factors that may predispose an organisation towards effectiveness in implementing BCM. Whilst the nature of the MRC's work is highly specialised, the organisational factors examined are likely to have widespread applicability in many other organisations.

Background

The Medical Research Council was established in 1913 as a publicly-funded organisation dedicated to improving human health. The MRC is a world-class organisation employing over 4,000 people in the UK and overseas with a particularly strong presence in Africa. The annual budget (£625 million in 2007/08) is divided between its own research facilities and supporting around 3,000 researchers in universities and community settings. A total of 27 scientists employed or supported by the MRC have won Nobel prizes including, most famously, Crick and Watson for the discovery of the structure of DNA in 1953.

The MRC's approach to BCM had to accommodate the distributed structure of the organisation. With 31 academic research institutes and units across the UK from Dundee to Southampton - some stand-alone, others embedded within university departments - and ranging in staff numbers between 40 and 600. The strategy had also to reflect the broad nature of medical research undertaken from laboratory-based science to work in the community and the different support structures within its host universities. A one size fits all approach therefore was not an option. The approach adopted aimed to make each unit as self-sufficient as possible in developing, managing and exercising its own continuity plans.

The MRC BCM programme began with a one-day workshop in summer 2005 for senior managers from various Units to identify the key BCM issues. Consultants then spent a week at each of two Units to design a BCM plan template and supporting materials that would be sufficiently flexible to be used at all locations. This was followed with a number of two-day courses for BCM coordinators from each Unit to give them the knowledge and confidence to develop Unit BCM plans based on the templates.

After attending the training courses, a small amount of consultancy support was made available at no cost to individual Units. Take-up of consultancy was varied with a large number of Units not availing themselves of the free consultancy on offer, whilst two Units paid for additional consultancy out of their own budgets.

Once draft plans were written, the programme continued in late 2006 with each Unit Crisis Management Team taking part in a half-day desk top exercise to ensure familiarity with the plan contents and identify areas for further plan development. This stage of the programme ran until late 2007.

BCM is still in its infancy in the UK academic sector and the MRC acknowledges that it has some distance to go in developing robust plans for all of its sites. However, in 2008 it was decided to conduct a BCM audit of 26 UK sites against an audit framework loosely based on BS 25999. (The MRC research units in Africa were not included in the audit programme as their BCM is more mature due to the local environment in which they operate.)

Analysis of these audit results has enabled the MRC to take a more focussed approach to the way forward in implementing BCM across the organisation and to develop better interfaces with its host institutions. We still believe that encouraging MRC research units to be as self-sufficient as practicable is the way forward given the diversity of the work undertaken, range of size, and geographical distribution of operations.

Method

The audit consisted of 19 sections (see Annex A); however the sections specifically pertaining to the conduct of exercises and follow-up of exercises were not included in this analysis as many sites had not carried out their annual exercise by the time of the audit. This left a maximum of 17 sections per site, but fewer in some cases as not all sections applied to every site. Each site was graded as reaching one of the following four levels for each applicable section:

- Nil;
- Basic;
- Good Practice; or
- Best Practice.

For simplicity of analysis and to avoid small sample size, the results for 'Nil' and 'Basic'; and 'Good Practice' and 'Best Practice' were combined. The analysis explores three separate null hypotheses as follows:

- Effectiveness of implementing BCM is independent of the presence of high-risk activities;

- Effectiveness of implementing BCM is independent of senior management involvement; and
- Effectiveness of implementing BCM is independent of business unit size.

A Chi-square test based on 1 degree of freedom with a predetermined level of significance of 0.05 and a critical value of 3.841 was used to test the above null hypotheses (an explanation of the use of Chi-square tests is contained at Annex B).

Results

High risk activities

Different MRC sites have to manage a wide range of hazards including:

- Radioisotopes,
- Pathogens,
- Toxins,
- Chemical hazards.

However, the single most high risk activity is having experimental animals on the premises. The presence of animals on site shortens recovery time objectives from days to hours, and greatly increases the potential for financial and, more importantly, reputational losses. Presence of animals on the premises is therefore used as the measure of risk in this analysis.

	Number of Sites	Total Number of Sections	
		Nil/Basic	Good/Best
Animals on Premises	9	83	68
No Animals on Premises	17	199	76

Table one: impact of high risk activities on the number of sections with Nil/Basic or Good/Best BCM in place.

Applying the Chi-square test to table one, our calculated test statistic = 13.2.

The test statistic (13.2) exceeds the critical value (3.841) at the 0.05 probability level, and so our null hypothesis is rejected. We can say therefore that the presence of high risk activities does influence the effective implementation of the BCM programme.

As can be seen in table two below, which shows the average score, sites with animals on the premises tended to have fewer sections scoring Nil/Basic with significantly more reaching the Good/Best Practice categories.

	Number of Sites	Average Number of Sections	
		Nil/Basic	Good/Best
Animals on Premises	9	9.2	7.6
No Animals on Premises	17	11.7	4.5

Table two

Senior management involvement

It is often stated that senior management involvement is critical to the success of a BCM programme (1) and this is now formally captured in BS 25999:

“Top management shall establish and demonstrate commitment to a business continuity management policy.” (BS 25999: Part 2 para 3.2.2.1)

The different levels of involvement from Unit Directors during the course of the MRC programme enabled the impact of senior management involvement on the effectiveness of the BCM programme to be tested. We took as a proxy for senior management involvement, whether or not any of the Unit Directors on a site attended the desktop exercise held at each location in 2006/07. Table three shows the results in this area:

	Number of Sites	Total Number of Sections	
		Nil/Basic	Good/Best
Director Attended	10	95	66
Director Did Not Attend	16	187	78

Table three

Applying the Chi-square test to table three our calculated test statistic = 5.98.

The test statistic (5.98) exceeds the critical value (3.841) at the 0.05 probability level, and so our null hypothesis is rejected. We can say therefore that the involvement of a Unit Director at the desktop exercise influenced the effective implementation of the Unit's BCM programme.

As can be seen in table four below, which shows the average scores, Units where the Director was involved tended to have both fewer sections scoring Nil/Basic and more reaching Good/Best Practice.

	Number of Sites	Average Number of Sections	
		Nil/Basic	Good/Best
Director Attended	10	9.5	6.6
Director Did Not Attend	16	11.7	4.9

Table four

Size of the organisation

As stated in the introduction, the size of MRC Units varies enormously and some site plans cover more than one Unit. Over the course of the BCM programme, a number of arguments were put forward suggesting that larger sites should be able to carry out BCM more effectively; reasons for this assumption include:

- Greater inherent resilience e.g. the ability to spread critical activities across numerous buildings;
- Larger overall budget, making it easier to allocate some budget for BCM;
- Economies of scale, e.g. it is often impractical for a very small organisation to access IT disaster recovery services; and
- The flexibility to dedicate staff to BCM planning.

For the purposes of this analysis, Units were split into two equally-sized groups. The results are shown in table five:

	Number of Sites	Total Number of Sections	
		Nil/Basic	Good/Best
Larger Units	13	126	86
Smaller Units	13	156	58

Table five

Applying the Chi-square test to table five our calculated test statistic = 8.63.

The test statistic (8.63) exceeds the critical value (3.841) at the 0.05 probability level, and so our null hypothesis is rejected. It would therefore appear that the size of the business unit does influence the effective implementation of a BCM programme. However, it should be noted that animals are usually present at the larger research sites. If we consider only sites that do not use animals, the results are as shown in table six.

	Number of Sites	Total Number of Sections	
		Nil/Basic	Good/Best
Larger Units	8	87	41
Smaller Units	9	112	35

Table six

Applying the Chi-square test to table six, our calculated test statistic = 2.21.

The test statistic (2.21) does not exceed the critical value (3.841) at the 0.05 probability level, and so our null hypothesis cannot be rejected. This result conflicts with that for table five: once the effect of having animals on site is removed, the increased effectiveness of larger sites seems to disappear. We cannot however discount the possibility that there may be a more complicated relationship between business unit size and effectiveness in implementing a BCM programme. It should also be noted that the underlying population is small, fewer than 10 units for both groups, and this may have an influencing effect on the result.

Discussion and suggestions for further research

The MRC audit was not originally designed as an experimental tool, so the findings are necessarily limited. It is also important to acknowledge that as one of the authors (Roberts) also designed and ran the audit there is the potential for subconscious bias. There is a clear need for further research to confirm and expand on these initial findings; some specific ideas are given below.

There are a wide range of organisational factors that may influence the effectiveness of a BCM programme which it was not possible to measure in the MRC (e.g. profitability) or were too uniform across Units (e.g. staff turnover) to perform any meaningful analysis. A retrospective analysis of similar projects in the commercial sector may be able to shed light on the impact of some of these.

As stated above, the only relationship between size of the organisation and effectiveness in BCM programmes that could be tested with the available data was a simple linear one: i.e. large sites had more effective programmes than small sites. It is entirely plausible that there may be a more complicated relationship between size and outcome which could be the subject of further research. In particular, it would be interesting to explore the hypothesis that there is

an 'ideal' size of organisation for BCM planning purposes, and that BCM programmes are less effective in entities both smaller and larger and smaller than this.

Finally, building on this initial work, it would be illuminating to design an element of experimentation into a similar large-scale project in the future by deliberately varying some parameters from site to site. These could include:

- The quantity or type of training given to different sites;
- The quantity of consultancy / support offered to sites; and
- Allocating a specific budget for BCM to each site.

However, large sample sizes might be required to show any statistically significant differences.

This would also be useful to establish to what extent these factors could compensate for the underlying drivers of success, identified in the present research.

Conclusions

Analysis of the results of the MRC audit established two significant drivers for effective implementation of BCM programmes:

- The presence of high risk activities; and
- Senior management involvement.

Whilst the positive influence of senior management involvement could reasonably have been predicted in advance (although it was still necessary to demonstrate that the effect is statistically significant), it would have been much more difficult to predict the impact of the presence of high risk activities. Indeed it would have been perfectly plausible to argue that the presence of obvious risks could actually distract attention from more general areas of the BCM programme such as IT back-up, plan-writing and exercising. Demonstrating that the presence of high risk activities predisposes organisations to more effective overall BCM is the most significant finding from this study. We would strongly argue that both these drivers for success are transferable to any other industry sector.

The analysis of the influence of the size of the organisation on the effectiveness of BCM planning was inconclusive and would benefit from further investigation. Indeed, this preliminary study highlights a number of areas where further research could usefully be carried out.

The next step for the MRC will be to revisit its BCM strategy and analyse the impact of these results. These results will be valuable in persuading unit directors of their need to become more involved and show overt support for business continuity planning for their research programmes.

Annex A – topics covered in the audit framework

BCM Programme Management

- Selection and training of an appropriate BCM coordinator.
- Selection and training of an appropriate BCM sponsor.

Understanding the Organisation

- Identification of critical activities, RTOs and RPOs.
- Effective integration of existing risk management practices into the BCM process.

Determining Business Continuity Strategy

- Identification of appropriate business continuity strategies for the Unit.
- Communication of strategies to staff and other stakeholders.

Developing and Implementing a BCM Response

- Selection and training of the incident management team.
- Integration of BCM with host institution (where applicable).
- Emergency response plans.
- Arrangements for communicating with staff.
- Availability and accessibility of the BCM plan.
- Mutual support arrangements with neighbours and other MRC Units.

Exercising, Maintaining and Reviewing BCM Arrangements

- Conduct of regular desktop exercises.
- Post-exercise follow-up.
- Procedures for routine plan maintenance.
- Procedures for management review.
- Testing of IT backup arrangements.
- Testing of emergency power supplies (where applicable).

Embedding BCM in the Organisation's Culture

Extent of awareness training for staff.

Annex B – The Chi-square test

The Chi-Square test is widely used in the biological and social sciences to test whether a statistically significant relationship exists between sets of categorical data. Categorical variables yield data in categories, for example 'yes' or 'no' and the Chi-Square statistic compares the tallies or counts of these responses between two or more independent groups. Each of the examples above tests the relationship between the outcome of the BCM audit (expressed on a two-point scale) and an organisational variable (also expressed on a two-point scale) for example "senior management involvement" (yes or no).

The test of independence assesses whether paired observations, the column variable and the row variable, expressed in a contingency table (tables one, three, five and six) are independent of each other. For the test of independence, a Chi-Square probability of less than or equal to 0.05 is generally interpreted as justification for rejecting the null hypothesis for example, "Effectiveness of implementing BCM is independent of senior management involvement". By rejecting the null hypothesis we can assert that there is indeed a relationship between the organisational variable and the outcome of the BCM audit. Obviously there is still a five percent chance that the results arose purely by chance.

References

- (1) Power P (1999) *Business Continuity Management – Preventing Chaos in a Crisis*, London: Department of Trade and Industry.

Further reading

- Lewis-Beck MS (1995) *Data Analysis: An Introduction*, Sage Publications
- Bailey NTJ (1995) *Statistical Methods in Biology*, Cambridge University Press.