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Is Multinationality cheaper? – A Study of NATO Logistics in the Balkan theatres

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Abstract

The NATO-led forces deployed to the Balkan theatres of Bosnia Herzegovina (Stabilisation Force (SFOR)) and Kosovo (Kosovo Force (KFOR)) are made up from more than 30 nations, all working towards the same goal. In many instances several nations are currently working closely together, pooling resources, manpower and expertise to provide a necessary service within theatre. NATO doctrine states that working multinationally leads to savings in cost and increased benefits for the nations involved. This belief is based on the military judgement of logisticians and planners within NATO, but has never been quantified. The aim of this study, which is an NC3A study sponsored by SHAPE, is to assess the potential savings that can be accrued by working multinationally.

The assessment considered the following five logistical areas within SFOR and KFOR – port activities, arrival of troops, military police, transport co-ordination and fuel distribution. Some of these functions have been undertaken both nationally and multinationally at different times during deployment, whereas others have only been performed in a single manner. The cost drivers for each functional area have been identified and these form the foundation for modelling the costs for each nation operating independently and nations working together multinationally. Savings have been identified in all areas assessed and a report released to those nations involved in the Balkan theatres.

This paper discusses the approach to modelling, summarises the results of the exercise and analysis, and highlights some of the challenges of obtaining reliable data.

Introduction

A goal of NATO is to encourage the development of multinational logistics through a series of multinational co-operative measures; these measures include Lead Nation (LN), Role Specialist Nation (RSN) and Multinational Integrated Logistic Units (MILUs). The key enabler to assist in promoting and executing these concepts is the Multinational Joint Logistic Centre: the MJLC. Amongst many other benefits, NATO believes there is the potential for real cost savings, created

by nations working multinationally. The main purpose of this study has been to quantify some of these benefits, in order to help NATO to promote this multinational concept amongst the nations.

The study is an analysis of the potential savings that might result from nations working multinationally within the Balkan theatres of SFOR (Stabilisation Force in Bosnia-Herzegovina) and KFOR (Kosovo Force in Kosovo). There are already a number of instances where nations are working closely together, pooling resources, manpower and expertise within these theatres.

The study examines five logistics functional areas, with the aim of identifying the savings (if any) resulting from providing those functions multinationally rather than individually by each nation. The areas are: port activities, arrival of troops (reception and staging), military police, transport co-ordination and fuel distribution.

CORDA[1] has performed this study under contract to the NATO C3 Agency (NC3A). The NATO sponsor of the study is SHAPE Logistics Division, Mons, Belgium. There were also many other organisations involved in the study, without which the study could not have been successful.[2]

Assessment

Although each functional area required a different approach, a general method was applied. The overall method of analysis is described below, along with general assumptions made in the study. Each functional area is then discussed in turn, giving a summary of the analysis performed and the savings quantified.

General Method of Analysis

The study was performed iteratively, with tasks being revisited as a better understanding of the functional areas was gained. A general process was followed and this is shown in Figure 1.

As Figure 1 indicates, the initial task was to gain an understanding of how each of the functional areas is performed. This began with general briefings from the relevant nations and theatre personnel and was followed up with visits to some of the European MODs and the SFOR and KFOR theatres. This part of the process continued throughout the study to continually clarify understanding.

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[1] CORDA Ltd. is a wholly owned, independent subsidiary of BAE SYSTEMS, which carries out specialist defence and operational analysis services.

[2] Lt Col Simon Bate, Logistics Branch, Logistics Division, SHAPE has provided invaluable support, particularly with contacting the relevant personnel within theatre (SFOR and KFOR) and European MODs. The following organisations have provided significant and invaluable contributions to the study, without which this project could not have been a success: HQ KFOR MAIN, HQ KFOR REAR, HQ SFOR, NSEs at Petrovec, Multinational Headquarters at Ploce, MND(SE), French contingent at Pristina Bulk Fuel Installation, French MOD, PJHQ, Petrovec APOD, MNB(C), MCG (MNB(C) Co-ordination Group).

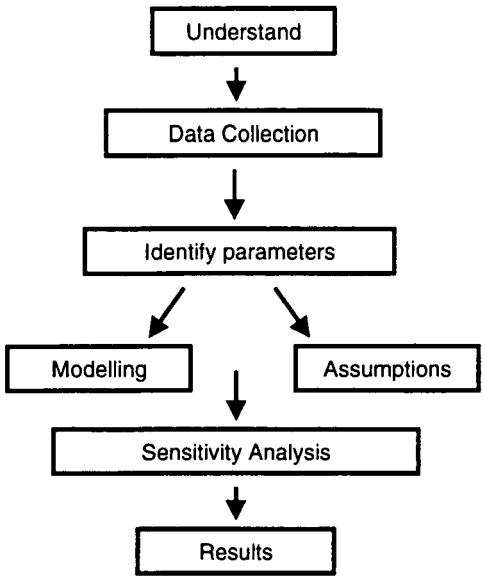

Figure 1 – General methodology for assessing costs for each functional area

Figure 1 shows the general flow of the assessment, although it should be made clear that the process was iterative, revisiting each of the tasks throughout the study. For example, as data was collected and models were being produced, it was often necessary to clarify understanding of the functional areas to ensure that the models were representing the real situation. As an understanding of the areas developed, further data was requested to enable a thorough analysis.

Once the study team had an initial understanding of the functional areas, data was requested from relevant sections in theatre (SFOR and KFOR) and some MODs (Ministry of Defence) through meetings and questionnaire style data requests. From this data, the parameters to be assessed could be identified. It became clear at this stage that very limited financial data would be available and that manpower, assets and infrastructure would have to be the parameters assessed. The cost drivers were identified for each functional area and, where possible, analysis performed to fill the gaps in the data.

It was necessary to make a number of assumptions for each functional area. Spreadsheet models were then built relating costs to the identified cost drivers. Modelling enabled the multinational and national costs to be compared and also supported sensitivity analysis to assess the effect of variation in some of the parameters.

There are a number of additional benefits of multinationality that cannot be quantified (for example the political benefits) which need to be considered in parallel to cost savings; these have not been included within the study.

General Assumptions

As well as making assumptions specific to each functional area, it has also been necessary to make a number of general assumptions and these are discussed below.

This study relies on data supplied by the nations and SFOR and KFOR theatres. The main assumption is therefore that the data provided is reasonably accurate.

In instances where the cost of an alternative national or multinational mode of provision is estimated through modelling, it is assumed there are no political or diplomatic reasons for not undertaking the function in this manner.

Reimbursement has not been considered in the multinational situations, as this is a transferral of costs from one nation to another, which does not affect the combined costs.

In many of the functional areas, savings are quoted in terms of total manpower and asset requirements. There are consequent cost savings associated with each of these. A reduction in manpower leads to savings in training, messing, accommodation and travel costs and a reduction in assets leads to savings in depreciation and maintenance costs. There is also the benefit that a requirement for fewer resources allows their re-deployment to other areas.

This study examines individual functional areas in isolation, meaning that the full extent of potential savings may not be explored. It would be beneficial to assess the savings within, for example, a multinational brigade, assessing the total savings due to multinational initiatives.

Analysis of Functional Areas

Although a general method was applied in the study, each functional area required different assessment techniques and assumptions; the areas are discussed individually below.

Seaport Activities

Background

Deployment/redeployment and sustainment in SFOR is the responsibility of the individual nations, with each Troop Contributing Nation (TCN) selecting which port to use. SFOR advises which Seaport of Disembarkation (SPOD) should be used, but each TCN ultimately decides how to deploy and sustain its force; deployment is a national responsibility.

Currently, the French manage Ploce SPOD as Lead Nation (LN) with elements of support from Italy and Spain. France supplies the SPOD service to the TCNs. These services include accommodation, messing, hard standing, loading and unloading support, Mechanical Handling Equipment (MHE), refuelling, de-gassing, etc.

The UK used Split SPOD nationally until March 2001, but has now moved port activities to Ploce.

Analysis

Modelling the manpower required and costs of using Ploce multinationally and Split nationally enabled the potential savings of running a multinational operation to be quantified. It was not possible to include all costs in the assessment; some costs were not included because it was

unclear whether a saving was due to multinationally (e.g. berthing at Ploce is cheaper than at Split, but this is not definitely due to the multinational operation of Ploce). Additionally, set up costs were not considered as these are no longer available, meaning that it is the current steady state that is assessed and not the initial deployment period.

Results

It was assessed that there is the potential for savings of about 25% in both financial costs and manpower by the nations operating multinationally rather than individually.

Arrival of Troops (Reception and Staging)

Background

Reception and staging deals with the arrival of troops into theatre, from organising the arrival of the aircraft (or ships) to collecting luggage, Theatre Awareness Briefings, and obtaining theatre passes. This function is the responsibility of the individual nations, although there are multinational Passenger Reception Centres at some locations, which assist with some of these activities.

Due to resource constraints, the study only examined the reception and staging at Petrovec APOD (Airport of Disembarkation) in the Former Yugoslav Republic of Macedonia (FYROM)[3].

The current provision is hybrid, with some co-operative and some national elements. Therefore, for the purpose of the study, a multinational generic model of reception and staging at Petrovec APOD has been produced by HQ KFOR, which allows a comparative analysis to be made against the national model produced by the study team.

Analysis

Due to a lack of cost data comparative analysis focuses on man-hours. The multinational model has a fulltime reception and staging staff, making the man-hours a simple calculation of the working hours and personnel required.

The national model is based on estimates of the national weekly passenger traffic at Petrovec APOD, and the man-hours required to handle the peak throughput in the multinational generic model. The model examines 8 of the 21 nations that have used Petrovec APOD during the last 12 months. These nations are Belgium, France, Germany, Greece, Italy, Netherlands, UK and USA, which together make up 80% of the total traffic. Estimates for the man-hours required have been calculated assuming that in the national model personnel would not be permanently tasked on reception and staging activities and would therefore have to travel to Petrovec to deal with arriving troops. It is further assumed that reception and staging staff are based in Kosovo with a return journey time of 6 hours.

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[3] Turkey recognises the Republic of Macedonia with its constitutional name.

The potential savings are dependent on the values given to the parameters in the national model with the travelling time to Petrovec and the interval between national aircraft from the same nation arriving having the most significant effect. The following factors significantly improve the national method of operating:

- Optimising the scheduling of passenger flights
- Shorter travelling times for reception and staging staff to Petrovec APOD (e.g. if the national staff are based in Petrovec instead of Kosovo).

Within the multinational model the reception and staging personnel work full time on this activity, so poor scheduling of flights has no effect on the man-hours dedicated to these tasks multinationally; poor scheduling may however lead to queues and waiting time for passengers, thus reducing the level of service provided.

Results

Assuming that reception and staging staff are based in Kosovo, with a return journey time of six hours, and that there are 6 hours between national flights arriving on the same day, there are potential savings of up to 45% in man-hours during an average week. By varying the assumptions (e.g. location of reception and staging staff) there may however be fewer savings and in some instances additional costs associated with a multinational operation.

Military Police Company

Background

A multinational Military Police Company (MP Coy) was set up in October 2000 in Muti-National Brigade (Centre) (MNB(C)) to replace the national services previously provided. The MP Coy undertakes MP tasks within the Area of Responsibility (AOR) MNB(C). Norway is the Framework Nation for the multinational MP Coy and supplies manpower and vehicles along with Finland, Sweden and the UK.

Analysis

The manpower and vehicle requirements have been modelled to compare the multinational and national modes of provision. No costs have been included in this assessment, as the data provided was too aggregated to enable a direct comparison.

There has been a decrease in the manpower required, which might be expected to lead to other assets decreasing accordingly. The raw data suggests, however, that 25% more vehicles (increasing from 52 to 65) are required for the multinational MP Coy than previously. An analysis of the ratio of vehicles to manpower revealed an overall increase from 0.42 to 0.66 vehicles per person multinationally. This increase has been attributed to a potential increase in the level of service and the incompatibility of vehicles across nations.

Results

Maintaining a similar level of service to that provided nationally, and assuming the UK were to deploy left-hand drive vehicles[4], the number of vehicles required could be reduced by approximately 4% in the multinational MP Coy.

The manpower dedicated to MP duties in MNB(C) has decreased from 125 to 114, which is a saving of more than 9%. This could be further increased to a saving of 26% of the MPs required nationally, if the 15 national MPs[5] still in MNB(C) were no longer deployed.

Transport Co-ordination

Background

The Transport and Movement Co-ordination Cell (TMCC) was established in August 2000 to provide MNB(C) with a multinational transport co-ordination service. The TMCC co-ordinates the second and third-line transport within MNB(C), with each nation being lead nation (LN) for separate transportation services: UK – fuel, Finland – personnel, Sweden – cargo, Norway – water.

The establishment of the multinational TMCC is the first stage of a set of transport initiatives within MNB(C). It is expected that in the future, a multinational transport company will be established to enable further savings and improved interoperability. This would lead to the sharing of resources across the nations and not just the co-ordination as with the TMCC.

Analysis

The manpower and vehicle requirements before and after the TMCC was set up were modelled alongside the distances travelled to compare the national and multinational modes of provision. Fuel activities have not been included in this assessment, as at the time of this study, they were not co-ordinated by the TMCC, due to interoperability issues.

One of the aims of the TMCC is to improve the transport planning and thus reduce the distances travelled. There was a shortage of operational data, mainly due to the 6 monthly rotation of staff officers, meaning that a number of assumptions had to be made. It is considered that the assumptions made may lead to underestimates of pre-TMCC distances travelled, and thus any savings estimated may be on the conservative side.

To assess whether any changes in the distances travelled are the results of improved co-ordination, it is necessary to ensure that the volumes transported have not changed over time. As this data was again unavailable, it was assumed that the transportation requirements have not changed since

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[4] The main incompatibility issue at the time of this study was that the UK had deployed right-hand drive vehicles, which cannot legally be driven by personnel from the other nations within MNB(C).

[5] Some of the nations have decided that in addition to the multinational MP Company, they will still deploy national MPs.

the establishment of the TMCC. This assumption seems reasonable, as the study team is not aware of any significant changes within MNB(C).

Results

There is the potential for savings of 25% in manpower and 38% in the vehicles required. There are also savings to be made in the distances travelled.

Fuel Distribution

Background

France, as Role Specialist Nation (RSN), supplies class III fuel to all TCNs (except Greece). There are three types of fuel supplied – diesel, gasoline (or mogas) and jet fuel.

The French purchase the fuel from civilian contractors who deliver about 60% of the fuel to Petrovec (FYROM[6]) by road and the remainder directly to Pristina (Kosovo) by rail. The French have Bulk Fuel Installations (BFIs) in Pristina and Petrovec and transport additional fuel from Petrovec to Pristina by road. The nations collect about 65-70% of their fuel from Pristina and the reminder from Petrovec.

If fuel were to be supplied nationally, there would be no BFI in Pristina, but each nation would require a BFI in Petrovec. This is because the small quantities of fuel would not be enough to use rail transportation, and civilian contractors are not permitted to transport fuel into Kosovo by road.

Analysis

A multinational model with the French supplying fuel to its own forces as well as those of Germany, Italy and the UK was compared with a model for these four nations undertaking the function nationally[7]. These nations consume approximately 50% of the fuel currently distributed by France.

This assessment assumes that the nations considered would undertake fuel distribution in the same manner as the French. France has estimated, by examining fuel consumption, that the UK and Germany would have the same asset and manpower requirements as France and that Italy would have slightly fewer requirements. For simplicity, this study therefore assumes that each of these nations has a similar fuel requirement and continues to operate with the same force structure and fuel demands.

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[6] Turkey recognises the Republic of Macedonia with its constitutional name.

[7] The US is not included in this assessment despite consuming about 30% of the fuel, as the French have indicated that the fuel US standards are different from European ones, making it impossible to predict the assets and manpower required nationally. The smaller nations are also not included as it is viewed as unrealistic that they would supply and distribute their own fuel.

Currently, the nations collect only 30% - 35% of fuel from Petrovec, so the additional trips to Petrovec required in the national situation need to be considered. It has been assessed however, that the extra transport costs are insignificant compared with the costs of installing and maintaining the equipment at the BFIs and so, for simplicity, transportation costs have not been included in the analysis.

To enable a direct comparison to be made between the national and multinational costs, we must estimate the costs for a reduced multinational provision, whereby France supplies the fuel requirements of just the four nations being considered; these amount to 50% of the current overall total. These costs have been estimated by interpolating between the French estimates of the cost of unilateral supply of a single nation and the current total cost with France as RSN.

Results

It has been calculated that by operating multinationally there are savings of 21% in set-up costs, 22% in monthly maintenance costs and 27% in manpower.

There is also an estimated 30% saving in the infrastructure and miscellaneous vehicles required multinationally, although there is no cost data available for these requirements.

Further savings are expected by undertaking this function with a RSN, as fuel would most probably be more expensive to purchase individually nation by nation as each nation would be bidding against each other for smaller quantities.

It should also be remembered that only 4 nations have been considered in this study and that the smaller nations are likely to benefit significantly from an RSN supplying fuel within theatre. Some nations would not be in a position to distribute their own fuel, due to lack of expertise and equipment or due to the small size of the force deployed.

Challenges

There were a number of challenges facing the study team that needed to be overcome for the study to be successful. Firstly, all the functional areas needed to be understood, which meant a cycle of obtaining data and requesting clarification. The staff, who provided information, were all experts in their fields and therefore did not always realise when details in the functional areas were not obvious to the study team. This was resolved by having face to face meetings and by keeping in regular contact with theatre and MOD personnel.

The second challenge was actually obtaining data. Having decided the data that was required, it was necessary to explore what had been recorded and could therefore be used in the assessment. There were some instances where data simply had not been recorded, as it was not seen as important. In other instances data had been misplaced and was therefore not available; this was mainly due to the frequent rotation of staff within theatre. Occasionally, operational requirements also restricted officers from being able to find and provide data within convenient timescales.

In addition there were also communication difficulties between the study team and theatre. This was mainly due to the restriction of theatre networks being classified and therefore not connected to the UK civilian industry. There were also language difficulties caused by the number of different nations involved and the distance required to travel for meetings. This led to frequent written communications, which are not always as clear as a face to face meeting, particularly since many of those involved do not have English as a first language. It soon became clear to the study team that the best method of obtaining data was to provide tables to be completed by theatre staff.

Conclusion

The results of the study have been briefed to all NATO and PfP (Partnership for Peace) nations through the Logistics Coordination Board (LCB), National Military Representatives (NMRs), MNB(C) Coordination Group Meeting (MCG) and MODs involved. As a result, the study has highlighted the potential benefits of working multinationality, although it does not attempt to formulate specific recommendations. However it is clear from the study that multinationally should be a considered option when organising logistical functions.

The study highlighted to the nations and theatre staff that keeping accurate data records is extremely important. This was not an aim of the study, but it became clear when briefing the results that the assessment of each functional area suffered somewhat from a lack of data. This resulted in nations suggesting that perhaps data capture and recording need to be thought about more seriously if sensible results were required of future studies. Data availability would be particularly important if a more formal assessment of savings was conducted to calculate reimbursement between nations.

Within each functional area, the study successfully quantified savings based on a set of assumptions. Sensitivity analysis was applied where possible to make the results more robust, but it was clear that the accuracy of the savings quantified is very dependent on the accuracy of the data supplied.

The sponsor regards the study as very successful and is using it to promote multinational logistics throughout NATO and PfP nations. It has been suggested (although no decision has been made) that this assessment should be taken further to examine other functional areas. Further assessments would take into account Host Nation Support (Greek support in Thessaloniki) and assess the savings of working multinationally with medical facilities (the forming of a multinational medical unit in KFOR). These assessments would enable a further promotion of the multinational concept.