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A first step towards zero down time: the creation of synergy through equipment acquisition within the constraints of a small budget in an Army with civilian oversight - a case of the Botswana Defense Force (BDF)

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THESIS

A FIRST STEP TOWARDS ZERO DOWN TIME: THE CREATION OF SYNERGY THROUGH EQUIPMENT ACQUISITION WITHIN THE CONSTRAINTS OF A SMALL BUDGET IN AN ARMY WITH CIVILIAN OVERSIGHT - A CASE OF THE BOTSWANA DEFENCE FORCE (BDF).

by

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June 2005

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13. ABSTRACT (maximum 200 words)

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This thesis seeks to explore the satisfaction levels for variables that should be considered when procuring equipment in the BDF. It is believed that this investigation should lead to a statistical model specific to the BDF's procurement methods. New methods of acquisition are now demanded by the PPADB; hence new metrics have to be applied to strike an accord with the new requirements of buying for government. The null hypothesis, H_o, for this thesis is that: Downtime or turnaround time (TAT) cannot be reduced by favorable independent variables. This follows from the preliminary conclusion that there is substantial downtime as at present. It postulates that something can be done to ameliorate past mishaps. The null hypothesis therefore assumes that this will continue to prevail no matter what is done. The alternative hypothesis, H_a, is that: TAT can be reduced by favorable independent variables. The results show substantial dissatisfaction with the procurement methods of the BDF. Further research is recommended in the light of the weakness of the resultant regression model, which gave R^2 = 29%.

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Disclaimer

The views expressed in this thesis are entirely those of the author, and do not reflect on the official position of the Botswana Defense Force (BDF) or that of the Botswana government. The thesis adds to the continuing scholarly debates on defense acquisition in the Botswana Defence Force.

Dedication

First of all I would like to thank God for giving me health and the days to add to knowledge with this piece of research.

Secondly I would like to thank my wife, Itseng, whose emotional strength has always informed my resilience in all faculties of life. I also thank my daughter, Tshegofatso, whose love for Dad has charged me with indebtedness to achieve for my sake and hers.

Thirdly I thank the BDF for investing in me among other equally deserving officers.

Finally, I proceed to thank the Naval Postgraduate School, staff and faculty, for their support during my time of studies. Special mention goes to Professors Keebom Kang and John Dillard. Their experience, expertise and research, in Logistics and Acquisition respectively, shaped this paper to become what it is.

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I. INTRODUCTION

A. AIM

This thesis seeks to explore the satisfaction levels for variables that should be considered when procuring equipment in the BDF. This exploration should lead to a statistical model specific to the BDF's procurement methods. It will also reveal independence of evaluation from the respondents. The model and other results should give forward impetus to the design of professional procurement practices. It is also expected that encourage a new look towards the reduction of downtime.

B. BACKGROUND

The Botswana Defence Force was formed by an Act of Parliament on April, 15, 1977[1]. Before the formation of the BDF, Botswana depended on the Botswana Border Police (BBP) – a paramilitary police force. BBP later became Police Mobile Unit (PMU) to attend to boundary and border patrols. As recorded by Gaborone (1994), members of PMU constituted the formative structures of the BDF, before new recruitment could be done to fill the initial manpower requirement[2]. This was formed out of bare essentials because PMU was just a paramilitary organization that did not have the requisite personnel and equipment to be a fully fledged army.

Procurement of equipment and training were therefore going to make a good portion of the BDF budget during its toddler stages. In the midst of the turbulence of the early growth years, clearly outlined by Gaborone[3], it was difficult to have the requisite defense equipment all at once. Consequently there were donations from several countries to increase the little inventory that the BDF could put together within its small budget.

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[1] The Botswana Defence Force Act Chapter 21:05 section 4.

[2] Mabe R Gaborone. 1994. "*The Search for Peace and Security: The Case of Botswana" – a thesis for the Master of Science in International Resource Planning and Management at the Naval Postgraduate School, Monterey, California.* Pages 9 – 13.

[3] Ibid, footnote 2.

The first thorny issue with the early procurement methods led to infiltration of the wide variety of equipment in inventory. This equipment was different in technology whose design followed different military doctrines, hence training requirements. This puts a premium on both training and after sales support. The BDF's acquisition methods also did not help the situation, seeing by the continued maintenance requirement of the varied equipment base. For instance continuing to maintain different types of personal rifles is a prime example of the maintenance of variety. Assuming exponential distribution of failure times, as may be the case of unpredicted failures, the mean time between failures (MTBF), is reduced by the equipment in deployment introducing a small MTBF[4].

Reliability is defined as the probability that a system will perform satisfactorily during a given time frame under specified operating conditions. This gets reduced when the variety increases. The amount of spares required, also increases with the variety of equipment to be repaired or maintained, in order to keep a certain level of operational availability (A_o)[5]. This obviously translates into higher operational costs the more varied the equipment and by extension increased downtime for lack of funds. Operational availability is defined as the probability that equipment when used under stated conditions, in an actual operational environment will operate satisfactorily when called upon[6].

Training costs also go high as each supplier may have to train operators and technicians to use their equipment. This means an increase in the total cost of ownership (TCO)[7]. The individual supplier charges the buyer (BDF) the market rate and due to variety there is no bargaining power that accrues to the BDF. The BDF in a desperate endeavor to keep all its equipment operational is compelled to pay the exorbitant training and maintenance costs where sometimes a manufacturer's engineer is called into the country to 'advise' the

[4] Benjamin S Blanchard. 2004. Logistics Engineering and Management. 6th edition, page 47.

[5] Ibid, footnote 4.

[6] Ibid, footnote 4

[7] See Burt et al. 2003. WSCM[SM]: The Key to Supply Chain Management. McGraw-Hill Irwin. 7th edition, pages 341 – 342.

technicians and engineers[8]. (NB: Most of the equipment is purchased from outside the country).

The difficulty with military equipment is that it is normally not commercial off the shelf (COTS), so the argument for a varied supply base falls apart. Although there has been a requirement in the US defense procurement, to use COTS in defense equipment to lower initial costs, there are added costs later. Any change of a COTS item by the manufacturer results in additional costs for the buyer in reverse engineering[9], if say the particular equipment is no longer produced.

Nonetheless, the case for fewer suppliers is shaken only when considering equipment that has been licensed, for manufacturing, to several suppliers. In that case the different licensees could offer different prices according to their different production overheads. This is a case when market forces begin to dictate terms according to the law of supply and demand.

The second issue of concern is the lack of what McCaffery and Jones (2004) call Total Obligation Authority (TOA)[10]. Also the lack of Planning, Programming, Budgeting and Execution System (PPBES) explained by the same authors incapacitates proper equipping of the BDF. This is all the appropriations available from prior years including the current one to be used on programs. The BDF is treated just like all government departments in the civil service, where appropriations must be spent in one financial year and the remainder, whether obligated/committed or not, will revert back to government coffers. This means there is pressure to exhaust the year's funds each year to avoid Parliamentary punishment of a lower appropriation the following year. The Constitution of Botswana at section 118(1) demands that the withdrawal of funds from the

[8] See Burt et al. 2003. WSCM[SM]: The Key to Supply Chain Management. McGraw-Hill Irwin. 7th edition, pages 341 – 342.

[9] *Alford, Lt Col Lionel D. Jr. "Problems with Aviation COTS". Acquisition Review Journal. Summer 1999.*

[10] See Jerry L McCaffery and L R Jones. 2004. Budgeting and Financial Management for National Defense: A volume in research in public management. Information Age Publishing. page 370.

Consolidated Fund (i.e., government revenues not appropriated for anything), should be done by authority of an Appropriation Act of parliament[11]. This appropriation is done every year for each financial year according to the Finance and Audit Act of Botswana, implemented by the Ministry of Finance and Development Planning (MFDP), at sections 14 and 15[12]. The constraints this puts on thorough equipment testing/trials and evaluation are not without an adverse impact on planning. Further this means it is the responsibility of the BDF Commander (CDF) to bring the budget that includes the running program with the government budget each year. Parliament has never given in to a multiyear appropriation. This thesis intends to argue for more time and liberty for the CDF in order to analyze thoroughly the proposed equipment, without being concerned about whether the funds will be available to fund the project. The difficulty of the single year appropriation naturally leads to funds being transferred between programs to the detriment of the whole operational readiness of the BDF.

The Botswana financial year runs from April 1 of each year to March 31 of the following year. The Accountant General at MFDP requires that all payments should be done by the end of March each year. If the BDF returns a substantial portion of the financial year allocation then the next allocation will be less. This creates a lot of pressure to use funds. The rush leads to expenditure done for the sake of it sometimes. All funds released each year are closely related to the budgets that BDF would have submitted in July of the past year. The situation as it applies presupposes that all government procurement agencies should work within these time constraints to get the best equipment into their inventories. This is not always possible due to the long delivery lead times of military equipment. The issues surrounding this anomaly will be addressed in this thesis.

The third issue is the apparent irrelevance of the Defence Council. Kenosi (2003)[13] said that, "In a democracy, civilian control of the armed forces is a

[11] Constitution of Botswana, commenced on 30th September 1966.

[12] Finance and Audit Act, commenced on 23rd January, 1970

[13] Kenosi, Lekoko. 2003. "The Botswana Defence Force and Public Trust: The Military Dilemma in a Democracy". www.iss.co.za/pubs/Books/OurselvesToKnow/Kenosi.pdf. (Accessed 1/30/2004).

matter of paramount importance." This is a true statement and this thesis agrees with that. This is the duty that can be done by the Defence Council in Botswana. The BDF Act provides for the establishment of the council as appointed from time to time by the President of Botswana "…for the control, direction and general superintendence of the Defence Force"[14]. Hitherto the appointments had been confined to parliamentarians, which should be a good thing for purposes of proper representation before the legislature, who are the holders of the purse strings. This thesis intends to argue that the legislative provision for the Defence Council is vague at best. It further requires more executive responsibility for the Defence Council. For purposes of civilian control, critical for conventional forces, it has to be clear what the council can do to help the BDF in the appropriations and running programs. Unfortunately when it comes to the budget and its defense the CDF is alone and the council only scarcely makes an appearance. This is a weakening process, because the CDF being a civil servant cannot naturally handle the resistance of political forces in parliament when he is outside the fold. The Defence Council should stand in the gap and advance support for programs and not the CDF who should be a user or procurement customer.

Further to the above there is responsibility to the Ministry of Presidential Affairs and Public Administration (PAPA). This Ministry as it relates to the BDF is like a Ministry of Defense (MoD) or Department of Defense (DoD). A part of this Ministry is referred to as the Office of the President (OP) and is headed at an administrative level by the Permanent Secretary to the President (PSP). Budgets that exceed BWP 100 million must be approved there by the PSP. It is the duty of the CDF to take his budget to the PSP for approval. (NB:In other Ministries this is done by the Permanent Secretary of the Ministry).

Once approved, by the PSP, the budget is then sent to the MFDP for appropriations, which depend on funds availability. This process is made long for the BDF, by the absence of administrative staff of a fully fledged MoD/DoD. The Ministry of PAPA has other responsibilities other than defense that they deal

[14] BDF Act section 8(2), op. cit. page 1.

with. This is a further complication in the procurement processes of the BDF. It shall be addressed in this thesis.

Prior to June 20, 2002 when the Public Procurement and Asset Disposal Board (PPADB) was commissioned, all government tendering went through a government agency in MFDP called Central Tender Board (CTB). This was an operational unit of MFDP. PPADB was formed in response to a public outcry that tendering was not "transparent, accountable and fair"[15]. The main issue of contention with the former tendering process was that the civil service that ran the CTB did not have enough appreciation of the needs of free market competition. Further they were too busy with other responsibilities in their core jobs to be able to devote a lot of time to tendering. The BDF had to go through the CTB as much as it was a government entity.

Gideon Nkala said the following about the CTB process:

> There are countless systems and procedures within the government tender process, and cumulatively these result in the area being something of a closed book, closely guarded from public scrutiny[16].

Nkala had referred extensively to a report compiled by the Directorate of Corruption Economic Crime (DCEC), Botswana Confederation of Commerce, Industry and Manpower (BOCCIM), and Commonwealth Business Council (CBC). The report had concluded that government tendering was "run by cartels" and that "privileged information" may have been "passed on", so to speak. He further gave the landmark case of The State vs Kebonyekgotla Kemokgatla who was bribed to give priority to a road construction, as just a tip of the iceberg. Kemokgatla was finally charged with corruption and sentenced to a prison term. When there are no checks and balances there is bound to be abuse of inside

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15 PPADB background information, 2003.

16 Gideon Nkala, 2003, at http://www.iss.co.za/Pubs/Monographs/No89/Chap2.htm. (Accessed 10/30/2004). Penetrating State and Business Organised Crime in Southern Africa. Volume Two Edited by Peter Gastrow.

information. The BDF performed acquisition responsibilities during the CTB regime, just like many other government agencies.

Mpho Molomo writing in 2000 agreed with Kenneth Good that:

> …procurement of arms and operations of the BDF are surrounded with a cloak of secrecy to the extent of denying such information to members of parliament[17].

Kenneth Good in 1996 had disagreed with the then Minister of PAPA, Lieutenant General Mompati Merafhe. The Minister had argued that it is abnormal for countries to make defense expenditure revelations to the public.

It is outside the scope of this thesis to prove or disprove corruption in defense acquisition. The thesis nonetheless argues that the system of the CTB hampered proper equipping of the BDF. Proper accounting, supplier selection and transparent procedures of evaluation could not have been followed in such an unhealthy scenario. Further to that equipment in inventory is consuming substantial amounts in operations and maintenance money. The operational availability (A_o), of the inventory in the armories is considered very unsatisfactory.

The formation of PPADB[18] further establishes the fact of the creeping inefficiency and ineffectiveness of the former system. PPADB came as good news to the business community but like all changes there are teething problems. The BDF found itself having to use new methods of source selection that ushered in the needed transparency, fairness, equity, etc., and this led to longer source selection times. It became clear that acquisition needed enhanced expertise. This was underlined by the amounts of returned funds during the first year of PPADB's life. The CTB regime did not demand professionalism, because the acquisition personnel were just carrying out orders. Perhaps agreeing with Nkala (2003)[19], the BDF of the day with a good share of its budget going to defense acquisition, was a cash cow to a few beneficiaries. This thesis argues

[17] See Molomo, M.G., 2001. "Civil-Military Relations in Botswana's Developmental State." African Studies Quarterly 5(2): 3. [online] URL: http://web.africa.ufl.edu/asq/v5/v5i12a3.htm (Accessed on 10/30/2004)

[18] See Public Procurement and Asset Disposal Board Act of 2001. Botswana Laws.

[19] Ibid, footnote 15.

for a professional acquisition work force, which transcends the mere perception of the BDF as a money machine. It is the duty of the government to equip the army for a combat role and with equipment that will provide years of good service. Botswana's Vision 2016 also puts a further premium on acquisition procedures when it concludes that "there must be clear benchmarks for military expenditure, so that the burden on the economy can be controlled"[20].

There is a department of the BDF that deals with equipment acquisition. It is called the Directorate of Material Acquisition and Planning (DMAP). The directorate is responsible for the procurement of all equipment in the BDF. It is effectively an implementer of the decisions of the BDF command. There are no rules like the USA's Federal Acquisition Regulations that allows the director some level of independent decision making. Contract management after the orders are made is also subject to prior approval of command when modifications are to be made. It used to be headed at the rank of Major and from 2003 it was upgraded to be headed by a Lieutenant Colonel. At the time of writing the headship was upgraded to a Colonel's rank. But even then the route to decision making is still long. Suggestions currently go from a staff officer in the directorate, through the director; the Deputy Assistant Chief of Staff Logistics (DACOSL), a Colonel; the ACOSL - a Brigadier and ends up with the Deputy Chief of Staff Defence Logistics Command (DCOS DLC) - a Major General. The office of the DCOS DLC is where the acquisition decision making is done. This is a centralized system. It is in accord with current WSCM[sm] suggested by Burt et al. (2003)[21]. However the DCOS DLC also deals with logistics issues and not just acquisition. In order for organizations to maximize on the value of the supply chain the supply/purchasing manager must be senior enough to make decisions fast. The limp of the BDF process is the two extra positions in the reporting chain of command. The best option for now would have been for the directorate to report directly to the DCOS DLC to shorten the time to reach a

[20] See Vision 2016: Towards prosperity for all. 1997. Compiled by the Presidential Task Group for a Long Term Vision for Botswana.

[21] Ibid. footnote 7.

decision. At the rank of Colonel the director is senior enough to report to the DCOS DLC. Long reporting chains have the propensity to loose important details on the way. This can be avoided by providing for a high value of the supply manager. Adding to the handicap is the sparse staffing of the directorate. There are currently four staff officers who do not have specialized staff under them. The staff officers are the ones doing the clerical work as well as participating in the source selection processes. This thesis is in favor of a fully staffed directorate for purposes of efficiency: in fact there should be a position of Major General heading acquisition to separate this from logistics.

Perhaps it would also suffice to make a note of the expenditures on defense in Botswana. Unlike the unresearched criticisms of some voices hitherto, Botswana has a normal defense expenditure trend. It has to be noted that the figures that are published are inclusive of the budgets for personnel; operations and maintenance; military housing; procurement and other necessities. The BDF does not do research and development like some armies do, hence the controllable levels of expenditures. The following table, maps out this information from 1993/94 financial years to 2003/04.

Table 1. Defense Expenditure as a percentage of GDP

Item	Financial Year in millions of Pula (BWP)										
	93/94	94/95	95/96	96/97	97/98	98/99	99/00*	00/01*	01/02*	02/03*	03/04*
GDP[a]	1,115	2,530	4,631	8,015	20,438	23,259	25,363	29,353	34,049	39,497	45,817
DE[b]	45	53	91	45	639	869	938	975	1,182	1,411	1,500
GDP	.01	.61	.36	.47	3.12	3.74	3.70	3.32	3.47	3.57	3.27

a Gross Domestic Product in purchases value

b Defense expenditure

* The GDP figures were increased at a nominal rate of 16% which consisted of approximately 10% real growth and 6% inflation.

Sources: Bank of Botswana; Central Statistics Office; Africa South of the Sahara (Regional Surveys of the World and Janes Information Group).

Compared with South Africa the budget is higher as a percentage of GDP. It is clear from the table above that defense expenditure in Botswana hovers around 3-4% of GDP. Janes Information Group reports that the South African defense expenditure will go down to 1.47% of the national budget at the end of

2006/07[22]. This current year (*year of writing*) saw the South African government allocating ZAR 20.3 billion (USD 2.9 million). In money terms this is higher than the Botswana budget which stands at around USD 0.3 billion (2003/04 figures).

While there was higher defense expenditure during World War II and the cold war the United States expenditure on defense is around the same figures of 3-4% at peace time according to McCaffery and Jones, op. cit. page 1 at page 85. This and the above comparison are done here to show that the trend in Botswana is typical in peace time.

As mentioned above Botswana built the army from a police unit which did not have defense equipment. The Botswana government was initially not enthusiastic about military procurement, until the South African incursions of the 1980s. This led the government to reconsider. Gaborone (1994):op. cit., records this growth at page 54 of his thesis[23]. The point here is that there was insignificant operational availability of equipment in the BDF for a long time and it is being built now. The question is: Are the processes of procurement assisting to develop the necessary capability? An attempt to furnish answers will be done by this thesis.

C. RELEVANCE OF THE RESEARCH

Due to the recent formation of the DCOS DLC in the BDF, the bar has been raised for better performance of the acquisition function. The old methods inducted poor-performing inventory which has to be rectified. New methods of acquisition are now demanded by the PPADB as well; hence new metrics have to be applied to strike an accord with the new requirements of buying for government. Further to all this, there has been no published research on

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[22] The details related to this data is from Janes Information Group at http://80-www4.janes.com.libproxy.nps.navy.mil/K2/doc.jsp?t=Q&K2DocKey=/content1/janesdata/mags/jdw/history/jdw2004/jdw07205.htm@current&QueryText=%3CAND%3E%28%3COR%3E%28%28%5B80%5D%28South+%3CAND%3E+African+%3CAND%3E+Defense+%3CAND%3E+Budget%29+%3CIN%3E+body%29%2C+%28%5B100%5D%28%5B100%5D%28South+%3CAND%3E+African+%3CAND%3E+Defense+%3CAND%3E+Budget%29+%3CIN%3E+title%29+%3CAND%3E+%28%5B100%5D%28South+%3CAND%3E+African+%3CAND%3E+Defense+%3CAND%3E+Budget%29+%3CIN%3E+body%29%29%29%29&Prod_Name=JDW& **(Accessed 11/09/2004)**

[23] Ibid, Gaborone, page 1.

acquisition in the BDF. Conducting this research will lead to a model and hence a starting point for later use by the authorities.

There are new processes suggested for the BDF like TOA. This will give the acquisition workforce more analysis time in the selection of suppliers. To ensure that government does not continuously circle around one project for a long time, there is a need for long term planning. When this is done it demands that appropriations for the life of programs will be done at the initial stage. This will bind parliament to the program for the period projected.

D. METHODOLOGY

1. Exploratory Research

This thesis draws from the relevant published literature on the subject of defense specific to Botswana and in some countries around the world for exploratory studies. Studying other countries' methods, cannot be sufficient as a readymade solution because each country is controlled by different laws, rules and regulations. The main value of the exploration is to reveal the acquisition theories and methods of the defense acquisition world. Congressman Mavroules (1991) had emphasized that it is not a feasible exercise to copy a foreign system to solve a domestic problem. However, he underlines the importance of learning and perhaps adapting some foreign methods[24]. This thesis does not replace empirical research with this exploration. In the words of Cooper and Schindler (2003) exploratory research helps to,

> …expand your understanding of the management dilemma… and …look for ways others have …solved problems similar to your management dilemma[25].

The advice offered by the quotation above is followed here.

2. Hypothesis

The null hypothesis, H_o, for this thesis is that: Downtime or turnaround time (TAT) cannot be reduced by favorable independent variables. This follows

[24] Congressman Mavroules, 1991 in "Creating a Professional Acquisition Workforce" in National Contract Management Journal.

[25] From Cooper and Schindler, 2003, in Business Research Methods, 8th edition, at page 281.

from the preliminary conclusion that there is substantial downtime as at present. It postulates that something can be done to ameliorate past mishaps. The null hypothesis therefore assumes that this will continue to prevail no matter what is done. The alternative hypothesis, H_a, is that: TAT can be reduced by favorable independent variables. A five percent level of significance on a two tailed test basis, *i.e.* $\alpha = .025$ was used. This starts from a founding premise that several variables cause or prevent down time. This is a causal study where the dependent variable (DV) is TAT. The research question to be answered is: Are there procurement processes which would lead to better equipment performance? The thesis employs multivariate analysis where the following variables will be the independent variables (IVs) and will be used to infer causation:

- Time given to trials and evaluation before purchase decision is made (a).
- Deliveries lead times (b).
- Equipment variety (c).
- Inventory management (d).
- Quality of acquisition personnel (e).
- Supplier preference (f).
- Duration of supply contract (g).
- Reliability, Operational Availability and Maintainability (h).
- Relations with PPADB (i).

3. Sample Design

The sample here is the officers of the BDF from the ranks of Second Lieutenant and above. The officer ranks are used because they are privy to more information than their juniors in the other ranks. The use of the officer corps is consistent with the use of a sample frame[26] from where structured answers could be collected[27].

[26] See Benjamin S. Blanchard. 2004. Logistics Engineering and Management. Sixth Edition. Pearson Prentice Hall. Upper Saddle River, New Jersey. Page 188.

[27] Ibid, footnote 26. Page 362.

4. Questionnaire Design

The thesis measures the satisfaction of stakeholders and utility of equipment in the BDF as well as generates a regression formula for later use. The questionnaire was designed using a Likert Scale[28] so that the nominal data from the answers could be converted into interval data for analysis purposes. A Likert scale measure is a summated scale that measures how favorable or unfavorable a subject of interest is. There were four groups of respondents who would be revealed, i.e. user, maintenance personnel, acquisition personnel or Command (Commanding Officer and above). A Chi-squared test, χ^2, was then used to test for normality. This was a non-parametric test. A multivariate regression analysis was also carried out by ignoring the segmentation brought by the last question of declaring one's position. This introduces an intrinsic ability to manipulate variables accordingly in the future to maximize benefits from acquisition. Acceptable downtime or turnaround time was set at ten days. The reason for the use of these tests was that the thesis intended to encourage operational availability within the constraints of scarce and bare essentials.

[28] From Cooper and Schindler, 2003, in Business Research Methods, 8th edition, at page 253.

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II. EXPLORATORY STUDY

A. INTRODUCTION TO BDF ACQUISITION METHODS

In September 2003, Major General (MG) J.G. Tlhokwane[29], as the Deputy Chief of Staff Defence Logistics Command (DCOS DLC) promulgated what he termed "Tendering Guidelines for the Procuring Entities in the BDF". He did this in order to "ensure that high standards of professionalism, transparency and accountability are maintained". In his view the several directives issued in the past did not help the BDF's course because it continued with "inconsistent procurement practices…" that in his view, "…did not augur well for the promotion of efficiency, effectiveness, ethical and transparent procurement activities". This expression of disenchantment joined the chorus of intellectuals and journalists writing from outside the BDF like Molomo, Nkala, Good and others already referenced in Chapter I above.

MG Tlhokwane further argues for a well trained acquisition and procurement workforce. It shall become clear in the pages that follow that this is a long way from being achieved. In another unpublished internal document the CDF, just after he took over command of the defense force said:

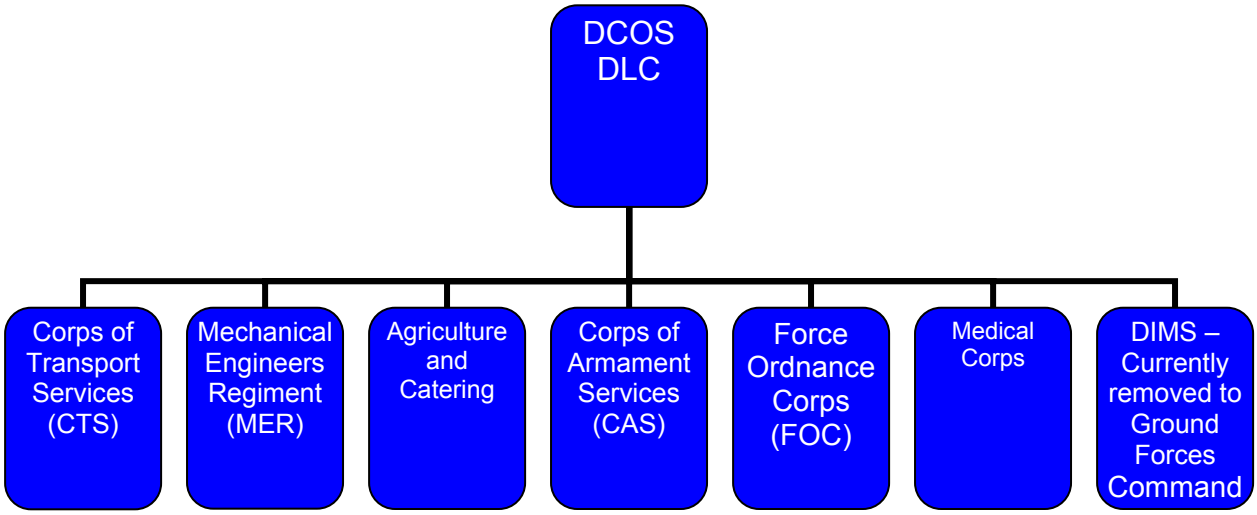
> …taking the BDF into the 21st century requires a dedicated, adequately trained… officer corps which is confident in its ability to command and lead[30].

The training of the acquisition workforce is currently not sufficient to say the least. The majority of the people that are still manning key acquisition positions have not recently had any new training and few new officers are getting any acquisition specialized training. How and when an aggressive and deliberate training of the workforce will be done to meet the demands of the 21st century is still course for conjecture. Most officers do not have even Diploma/Associate degree in acquisition/procurement courses. They progressed to higher ranks of

[29] This was an unpublished internal paper entitled "Tendering Guidelines for the Procuring Entities in the BDF".

[30] "Journey into the Future" by Commander, BDF. 1998. Unpublished.

the procurement workforce through longevity. If they were included in the acquisition workforce through some sort of professional merit, then this author begs to differ. There is currently a structure for the logistics command that encompasses the Directorate of Material Acquisition and Planning (DMAP). The figure that follows summarizes the logistics command structure that was designed by MG Tlhokwane as he assumed responsibility as DCOS DLC.



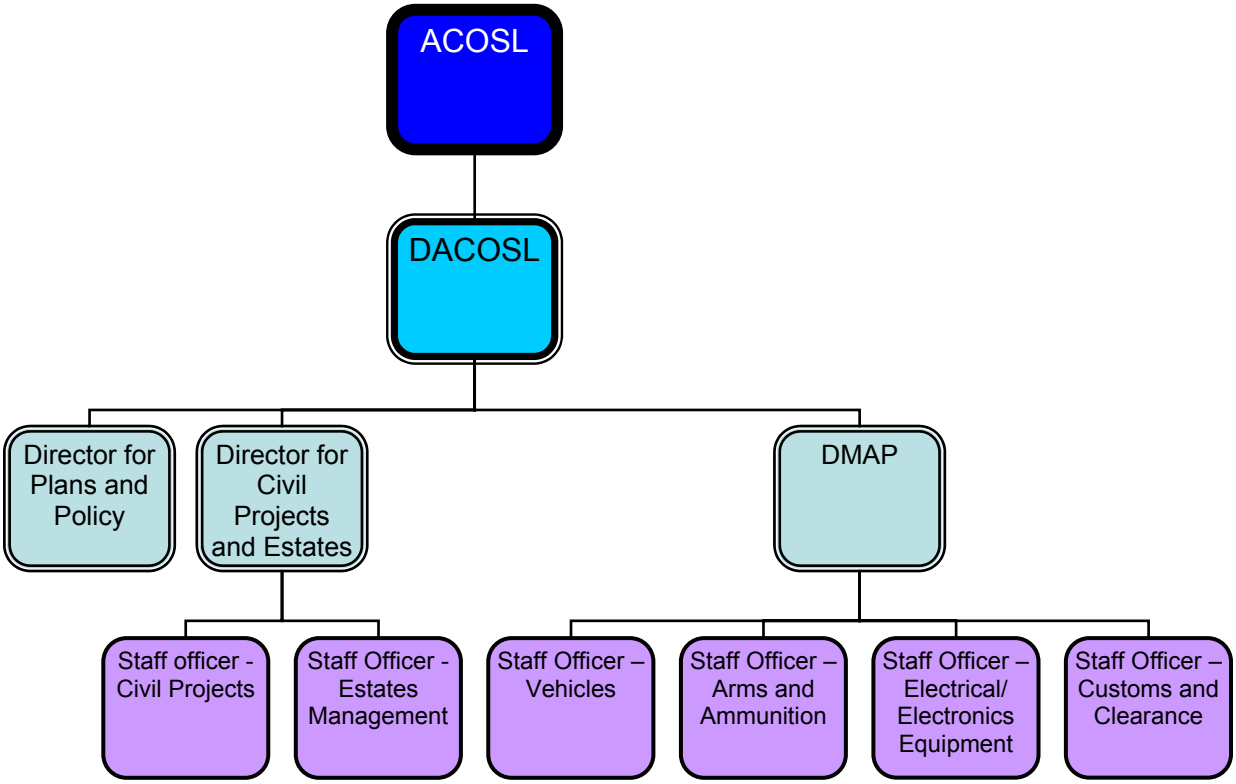
Source: Anonymous. Logistics Command. Unpublished Internal Paper

Figure 1. Logistics Command Units of the BDF and their Chain of Command

The next figure shows the BDF headquarters component of the BDF DCOS DLC, which performs mainly staff work. This is headed by a Brigadier who is the Assistant Chief of Staff Logistics (ACOSL). However he still reports to the logistics commander – the DCOS DLC. The structure in Figure 2 reveals that, decisions for acquisition have a long internal bureaucracy. The staff officers in DMAP report to their director, who then reports to the DACOSL. The DACOSL takes the matter up with ACOSL and finally a procurement decision is done by the DCOS DLC. This is required even if it had been approved before hand, that the program concerned should be included in the budget.

Currently there is a lot of micromanagement in BDF acquisition. This is because there are no clear rules of procedure and instruments for correction. In

the absence of these rules of procedure it will be difficult to apply punitive measures for deviant practices. The only solution seems to be the use of acquisition personnel for mere clerical work with no decision authority.



Source: Anonymous. Logistics Branch BDF HQ. Unpublished Internal Paper

Figure 2. Logistics Branch Structure at BDF HQ

There are ways in which the BDF does its procurement. The PPADB Act which was referenced in Chapter I sets out standards for all government departments and the BDF designed its methods closely following those generally required by the PPADB Act of 2001. MG Tlhokwane outlined five procurement procedures in his paper and these are treated in turn below[31].

1. Public/Formal Tender

This is the kind of tendering where there is prior advertisement in the Botswana Government Gazette or other publicly accessible media, either locally

[31] This was an unpublished internal paper entitled "Tendering Guidelines for the Procuring Entities in the BDF".

or internationally. It is the most preferred method and is demanded where the value exceeds BWP 100,000 (approximately USD 20,000). This brings the advantage that only the lowest bidder who is both responsible and responsive will win the tender. This is similar to what Burt, *et al*.[32] refer to as Competitive Sealed Bidding which requires that:

- All capable firms should be invited in the case of government business - only selected ones are invited in industry.
- Competitive price information should be kept confidential. In the case of the Botswana Defence Force prices are disclosed only when the bids are opened and the lowest bidder is announced.
- Unsuccessful bidders are then notified promptly. Again this comes immediately as the winner of the bid is announced. Further to that letters would be written to the unsuccessful bidders thanking them for their participation, as well as inviting them to do so next time.
- All bidders are treated alike.
- No bids are accepted after the bid closing date and time.
- Bidders are not punished for apparent mistakes in their bids.
- No auctions for low prices are to be done. This may lead to the supplier cutting corners to avoid making loses.

The BDF uses this specifically for all procurement of non-combat equipment. Combat equipment here refers to all weapons, surveillance, military communications and similar equipment which require a different method that will be discussed later.

2. Informal Tender

At the time of writing these procedures, the PPADB had not yet promulgated their regulations. The set price limits are the same as those set by the old CTB. In the case of what MG Tlhokwane, called informal tender procedures, the limit for the procuring entity was BWP 10,000 - 100,000

[32]See Burt, D.N., Dobler, D.W. and Starling, S.L. 2003. World Class Supply Management[SM] : The Key to Supply Chain Management. McGraw-Hill Irwin. Page 547.

(approximately USD 2,000 - 20, 000)[33]. This differs from country to country. The figures do not reveal anything beyond specific government decision. The procedure would otherwise be termed small purchase threshold also called simplified acquisition threshold which the USA Congress raised from USD 25,000 to USD 100,000 during Operation Desert Storm, although at the time this applied only to Outside Continental United States (OCONUS) suppliers[34]. However this has been revised to accommodate CONUS contractors. This limit was later changed by the US Congress from USD 100,000 to 200,000 for CONUS contractors and to USD 300,000 for OCONUS by the Homeland Security Act of 2002[35]. The earlier statutory relief compelled the outside contractors to still source their supplies from the US military contracting officers from the US based suppliers according to Wells (1995). Botswana as a country has not been involved in a major war with another country so the limit of USD 20,000 for small purchases may still be unnecessary. The limit could be raised based on the threat.

Further to the limitation of the contract price, the other control mechanism is the requirement for at least five quotations from capable suppliers[36]. The procurement officer is not precluded by this to go for public tender if they so wish. It is there to ensure legality of a decision when avoiding public tendering procedures and their busy work. This presupposes a desire to still motivate competition among suppliers – and by extension to limit corruption.

3. Selective Tender[37]

This procedure from PPADB, purports that certain equipment particularly for the disciplined forces is too sensitive for public tender. It is an incapacitating thought process since it assumes that Botswana is the world. Publications like

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[33] This was an unpublished internal paper entitled “Tendering Guidelines for the Procuring Entities in the BDF”.

[34] See R. L. Wells. “Contracting Readiness: Timely Support for Military Operations”. Acquisition Review Quarterly. Winter 1995. Pages 42 - 64

[35] GAO report. United States Accounting Office. Washington. March 31, 2004.

[36] Ibid footnote 29.

[37] Ibid footnote 29.

Jane's Information Group; Military Balance, Africa South of the Sahara etc. publish Botswana's defense purchases. The procedure thus paints the mistaken picture that once some purchase is kept away from the Botswana public knowledge then it is a secret. It cannot be true because, equipment for defense is never produced in Botswana.

Notwithstanding a schedule of the items that can be bought for the BDF is deposited with the PPADB for reference by the Special Procurement Committee[38]. The committee is designed to adjudicate upon the selective tenders when they reach the PPADB. This special treatment may become open to abuse by procurement officers and is herewith discouraged.

4. Single or Sole Sourcing[39]

These procedures are meant to accommodate disaster relief or a case of monopoly respectively. Their combined treatment emanates from their legal similarity. They both require a waiver from the PPADB prior to requesting quotations.

Finally any purchases under USD 2,000 can be done outside the ambit of the PPADB oversight.

Further to the procedures there are specific forms that must be filled. There are also prescriptive ways of designing invitations to tender (ITT). The PPADB being in its formative toddler years still uses forms from its predecessor the CTB. This carries on the legacy of the insufficient and apparently underhanded methods of the old order. It would be a better morale booster for private business and the procurement workforce if there could have been an annihilation of the old methods for ever. If the culture is to change, then, there is a need to work hard at encouraging just that. A new culture can not get inculcated in peoples' minds in a day[40]. The artifacts of a moribund culture have

[38] Public Procurement and Asset Disposal Act 2001. Section 63.

[39] Ibid footnote 29.

[40] Greenberg, Jerald. 2002. Managing Behavior in Organizations. 3rd Edition. Prentice Hall. Upper Saddle River. Page 314 – 315.

a tendency to keep the new one at bay. The good work of changing methods of procurement for government will take a long time to be realized with the slow obliteration of the CTB legacy in peoples' minds.

B. COMPARISON OF THE BDF AND THE BRITISH (UK) MINISTRY OF DEFENCE (MOD) ACQUISITION METHODS[41]

The British are the former colonizers of Botswana. Most of Botswana government procedure therefore follows the British ways. It is thus proper to delve into this comparative episode. The UK MOD has the Defence Council chaired by the Secretary of State for Defence being the most senior Minister in Defence. The UK Parliament votes on the appropriation of public money and this includes military funding. Further to that, the UK military has three service Boards for the Royal Navy, General Forces Command (Army) and the Royal Air Force (RAF). The services are all under the civilian supervision of the Defence Council. This is similar to the Botswana situation where there is a Defence Council but composed of members of parliament and appointed by the President. The voting of public money also follows the same route. However Botswana has only one service.

In UK there are two ministers under the Secretary of State who deal with Armed Forces defense procurement, as well as operations and policy. These ministers are each called Deputy Secretary of State. There is also a third ministerial post of Parliamentary Under Secretary who is responsible for personnel and estate management. All these four ministers answer to parliament on defense matters in UK. Botswana does not have such sub division at ministerial level.

In consonance with Thaga (2004)[42], there is a debilitating sub-stratum in the BDF setup where the CDF is everything to the BDF. Notwithstanding, being a civil servant, he has limited freedom to defend the government's policies before

[41] All facts about the UK MOD were gleaned from Kausal, T. (editor). A Comparison of Defense Acquisition Systems of France, Great Britain, Germany and the United States. Defence Systems Management College. Fort Belvoir, Virginia. 1999.

[42] Thaga, Laki S. March 2004. "Unpacking and Rearranging the Boxes": The Search for New Institutional Matrix of Democratic Control of the Military in Botswana. Thesis for the Master of Arts in Security Studies at Naval Postgraduate School. Monterey, Carlifornia. USA.

parliament. He however has responsibility to answer to the Public Accounts Committee. There are such committees in UK but there are also the parliamentary debates that elevate defense budgeting considerations to higher levels.

At the civil service level the UK MOD has two co-heads, i.e. Chief of Defence Staff (CDS) who is a military officer and the Permanent Under Secretary of State (PUS) who is a civilian. The former is the professional head of the Armed Forces while the PUS is the chief civilian advisor to government on defense matters. The two have deputies under them who supervise the Central Staff at MOD. At a professional level there are the three Chiefs of Staff for the services who report to the CDS/PUS.

There is also a separate post of the Chief of Defence Procurement (CDP) and this is the head of the Defence Procurement Agency (DPA). This shows the importance that the UK MOD attaches to defense procurement. Defence procurement agencies in most countries of the world are possessed with the deepest pockets. There is a need for a high level of decision making capability. In fact according to Burt et al (2003) referenced in Chapter I:

> The philosophy of World Class Supply Management[SM] requires change driven by upper management[43].

This suggests that there is currently a need to demand higher and higher responsibilities from those involved in purchasing and procurement matters. The highest level for the BDF is the DCOS DLC, who is a Major General. This thesis posits that it will be even more beneficial for the BDF to have a Major General directly responsible for Procurement and this should be separated from the Logistics Command.

The UK MOD also has the post of Chief Scientific Advisor (CSA). This officer is the best scientist or engineer who is brought into the service for a fixed term to advice on scientific matters in the procurement of defense equipment.

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[43] Burt, D.N., Dobler D.W. and Starling, S.L. 2003. World Class Supply Management[SM]: The Key to Supply Chain Management. McGraw Hill Irwin. Boston. Page 21.

This is the same scientist who influences the research direction at the Defence Evaluation and Research Agency (DERA) – a government funded research agency that researches on defense equipment.

All of the above are members of the Defence Council at the UK MOD, out of which the non-ministerial members form the Finance, Planning and Management Group (FPMG). The FPMG is chaired by the PUS and it is responsible for reprogramming and planning. BDF does not have that sort of arrangement. The Defence Council is divorced from the plenary process. Planning is done and concluded at the BDF headquarters and the Defence Council comes in only to approve what has already been done by the BDF CDF. This is herewith considered an anomaly in a defense force, where civilian oversight demands that, program approval should be geared towards clear national defense interests.

It is also postulated here; arguably, that a disposition is created that tends towards following pet projects by defense institutions in the absence of proper civilian oversight. The offshoot is the inevitable, disproportionate hemorrhage of the Consolidated Fund with no matching benefits. Further there is no thorough financial analysis where the CDF will have to bring up net present value, sensitivity or even simulated analysis so that the Defence Council could take to Parliament to prove the pecuniary assessment of the proposed programs.

The figure below summarizes the makeup of the UK MOD.

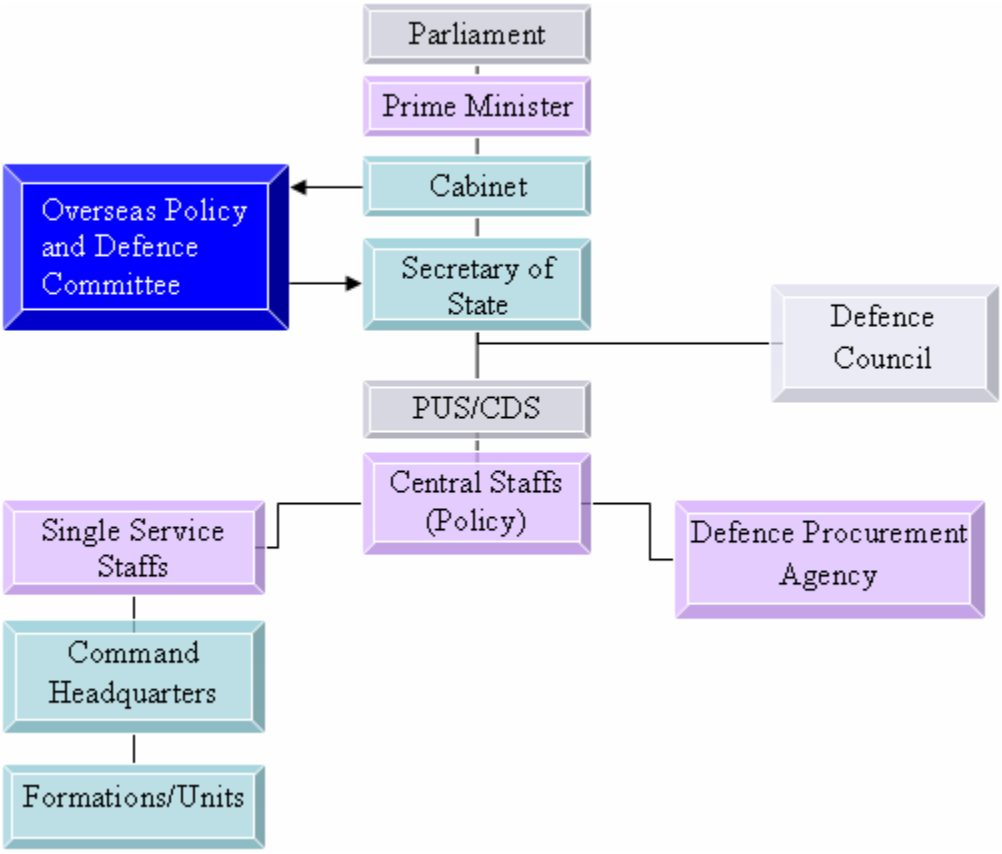


Figure 3. The UK Defence Chain of Command

There is a pressing need at this point to also compare the program costing methods of UK MOD with that of the BDF. Whereas the BDF lacks the long term considerations of program costing in UK it is done. This thesis can never overemphasize the need for this necessary approach to military defense procurement. In UK there is what is called the Long Term Costing method. This is both a plan and a program. It has a thirty year strategic plan, a ten year equipment plan and a four year short term plan. The four year plan is readjusted every year to cater for inevitable discrepancies in program costs that pervade the real world. Their short term plans start in April each year with plans and this planning must be completed in September. From there until October plans are finalized. Budgets are created from October till January. Whereas the Treasury

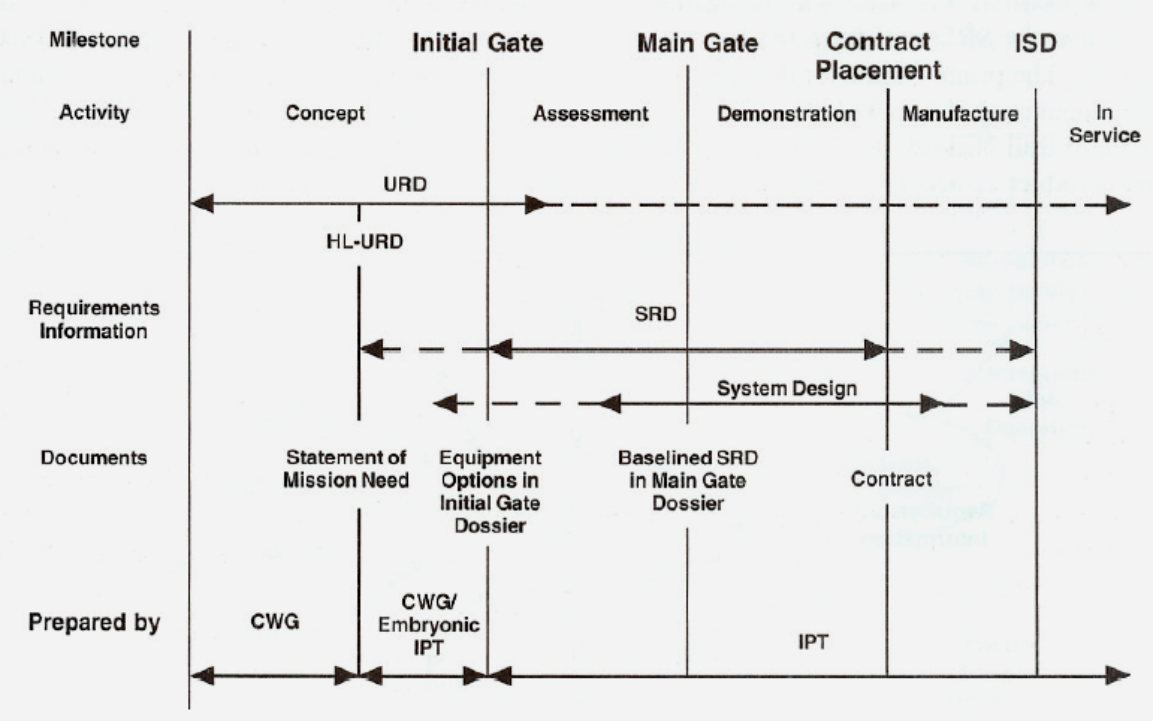
looks forward three years the MOD takes four. The budget is actually designed by the Service Chiefs before it reaches the Secretary of State for Defence. These Service Chiefs provide the budget as well as the manpower to the DPA at all stages. The Central Staff at MOD during this time submit User and System Requirement Documents (URDs and SRDs) through their Capability Working Groups (CWGs) headed by Capability Managers (CMs). As it is the Service Chiefs would have contributed by clarifying what capabilities they require and the Central Staff would then submit to the Equipment Approvals Committee (EAC) all new equipment requirements. The EAC can approve or disapprove any requirement for an amount between GBP 100 – 400m and over GBP 400m the approval is done by the Ministers. The information about what equipment could be bought is obtained from the independent Defence Evaluation and Research Agency (DERA). When the Ministers or the EAC approve a program then comparative assessment of the alternative equipment begins. Then after commitment to a single project the demonstrations follow. This is where one contractor will be selected. Manufacturing is allowed to start after appropriations from Parliament and after contract signing. After all budget approvals including parliamentary appropriations, the DPA takes over and starts buying.

This process has many checks and balances at different institutions and levels of decision making. It is not foolproof definitely but it possesses the potency to equip the UK's defense to a large extent. The programs for each approved acquisition are run by integrated project teams (IPTs) with a wide range of expertise. These IPTs become Chief of Defence Logistics (CDL) group after the equipment enters into service.

When the equipment enters into service then that is where the CDL takes over, preferably with the same IPT and perhaps downsized as necessary. The IPT is always expected to have clear disposal plans prior to a commitment to purchase.

Figure 4, summarizes the process just described. The solid arrows indicate the direction of communication and process flow. The dotted arrows

show the process flow after approval. The acronyms are as described in the preceding discussion, except HL-URD and ISD which mean Higher Level User Requirement Document and In Service Date respectively. The HL-URD is the base lined URD and it forms the Statement of Mission Needs. ISD is the date when the equipment purchased is introduced into service. This is a well defined process so that if there is a need to re-evaluate it then it will be easily traceable. It will also be easy to find the bottlenecks in the process.



Source: Kausal, T. (editor). A Comparison of Defense Acquisition Systems of France, Great Britain, Germany and the United States. Defence Systems Management College. Fort Belvoir, Virginia. 1999.

Figure 4. A Summary of the Phases of the UK MOD Defence Procurement

C. COMPARISON OF THE BDF AND THE USA DEPARTMENT OF DEFENCE (DOD) ACQUISITION METHODS

The US military is arguably the most powerful in today's world as the figures below will buttress. It is thus crucial that the less developed military systems should draw lessons learned from them. Botswana will do well to also utilize the wide experience of how the US military manages their large and complex systems.

According to the CIA world fact book the US military had an estimated expenditure for 2004 (as at March 2003) of USD 370.0 billion and this was 3.3% of GDP (*purchasing power parity, PPP, USD 2000)*[44]. Further the US GDP and GDP per capita are skyrocketing at USD 10.45 trillion[45] and USD 37,600 (*PPP, USD 2000)* respectively[46]. According to Nationmaster.com, China comes a distant second at USD 5,989 billion and a GDP per capita of USD 5,000[47]. But on an exchange rate basis the GDP for China becomes USD 1.4 trillion and GDP per capita becomes USD 1,090[48]. Botswana has a small population of 1,680,863[49]. The GDP of Botswana stands at BWP 36,336.5 million (approximately USD 8,074 million on an exchange rate basis of BWP 4.5 to the USD)[50] and a GDP per capita of USD 9,500 on a PPP basis[51]. The GDP per capita becomes USD 4,000 on an exchange rate basis[52]. As indicated in Chapter I of this thesis the defense expenditure takes around 3% of the country's GDP. Clearly this means the small population of the country should be afforded a good defense capability in terms of defense equipment. It requires that a pro active acquisition method be designed and modified as and when needed to ensure value for money.

Considering the many changes that the US DoD has gone through in acquisition reforms, it goes to show that they are not sitting on their laurels. They have adopted a systems approach to their organizational design. No process seems to have stayed permanent especially considering the period from 1987 to

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[44] See http://www.odci.gov/cia/publications/factbook/geos/us.html#Military (Accessed 1/28/2005).

[45] See Nationmaster.com at http://www.nationmaster.com/red/graph-T/eco_gdp&int=50

[46] Ibid footnote 44.

[47] Ibid footnote 45.

[48] See US Department of State website under the topic Bureau of East Asian and Pacific Affairs at http://www.state.gov/r/pa/ei/bgn/18902.htm (Accessed 1/28/2005).

[49] See the Botswana Central Statistics website at http://www.cso.gov.bw/ (Accessed 1/29/2005).

[50] See the Bank of Botswana website at http://www.bankofbotswana.bw/files/attachments/a1268909878.xls (Accessed 1/29/2005).

[51] See http://www.nationmaster.com/country/bc/Economy (Accessed 1/29/2005).

[52] See http://www.state.gov/r/pa/ei/bgn/1830.htm (Accessed 1/29/2005).

2003. This thesis is averse to proposals towards mechanistic approaches to defense acquisition. The approach used by the BDF is one of a prescriptive nature – effectively mechanistic in form as appears in MG Tlhokwane's paper[53]. The danger of this form is that much as it maintains command and control, inefficiency reaches a high water mark when "lots of inflexible people…" get, "bogged down in lots of red tape"[54]. The organic form (systems approach), on the other hand emphasizes self control, processes and outputs. The processes in the middle become a black box to top management who must get feedback from the process principals. They become responsible for the input, stipulate processes according to received feedback and expect the intended output. According to Wikipidea:

> By taking a systems approach, we can see the whole complex of bidirectional interrelationships. Instead of analyzing a problem in terms of an input and an output, for example, we look at the whole system of inputs, processes, outputs, feedback, and controls. This larger picture will typically provide more useful results than traditional methods[55].

The systems approach which is favored herewith is permitted to avoid a top down decision making situation and allows employees a good amount of "empowered decision making"[56], so they can do their jobs effectively. Similar sentiments were expressed by John Dillard, in the following words:

> What the cumulative research appears to support is that, for large complex hierarchies such as the Department of Defense, decentralized control and empowerment should be an organizational strength, given today's environment of program

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[53] This was an unpublished internal paper entitled "Tendering Guidelines for the Procuring Entities in the BDF".

[54] Greenberg, Jerald. Managing Behavior in Organizations. 3rd Edition. Prentice Hall. Upper Saddle River. 2002.

[55] This quotation is from Wikipedia, The Free Encyclopedia at http://en.wikipedia.org/wiki/Systems_thinking (Accessed 2/5/2005).

[56] Greenberg, Jerald. Managing Behavior in Organizations. 3rd Edition. Prentice Hall. Upper Saddle River. 2002.

complexity, evolving requirements, and rapid changing technology[57].

The USA DoD, has through the past seventeen years been designing, modifying and redesigning new methods for their acquisition personnel to implement[58]. The 1987 promulgation of the DoD 5000 documents started the process of reforms[59]. These documents were revised in 1991 and this led to the National Performance Review[60]. Prior to this Dick Cheney, Secretary of Defense, had written to the President indicating that, layers of authority, duplicative programs across services and general ballooning costs were the culprits of poor acquisition processes in the DoD[61]. The 1993 National Performance Review (NPR) set pace for a decade long process of improving the defense acquisition methods. This among other things required that the US government should change the otherwise bureaucratic layered systems of the 1980s which had intended to cut down on the costs of acquisition of the particular period[62].

The real reforms under the NPR came in 1995 following the Perry Memo of February 9, 1994 and the passage of the Federal Acquisition Streamlining Act of 1993 (FASA)[63]. These were followed by the Defense Reform Initiative of 1997 to 1999. These inventions were found to have brought about supply problems and were to change in 1999 with Gansler's *'The Road Ahead: Accelerating the Transformation of the Department of Defense Acquisition and Processes and Practices'*. J.S Gansler was the then Deputy Under Secretary for Acquisition,

[57] Dillard, John. 2003. "Centralized Control of Defence Acquisition Programs: A Comparative Review of the Framework from 1987 – 2003". Naval Postgraduate School. Monterey, California.

[58] Ibid.

[59] See DoD Directive 5000.1. Major and Non-Major Defense Acquisition Programs. September 1, 1987.

[60] Rogers, Edward W. and Birmingham, Robert P. "A Ten Year Review of the Vision for Transforming the Defence Acquisition System". Defense Acquisition and Review Journal. January-April 2004.

[61] Ibid.

[62] Ibid.

[63] Rogers, Edward W. and Birmingham, Robert P. "A Ten Year Review of the Vision for Transforming the Defence Acquisition System". Defense Acquisition and Review Journal. January-April 2004.

Technology and Logistics at the US DoD. The underlying demands were that acquisition was to be, "…faster...cheaper…and cheaper…" The authors of the article argue that, this led to the responsibility for failure "migrating to the contractor", which should be discouraged, in the case of the BDF. If this assumes pre-eminence it could lead to a defense force that had to dance to the demands of the contractor. The CDF's needs assessments should determine the course of acquisition.

In 2000 when the Republican Party won the mandate to govern this was changed to address the problem of the succession gap. The change led to the repealing of the DoD 5000 series, as they were after 1996, which were considered "too prescriptive" to permit "more PM (*program manager- emphasis mine*) discretion"[64]. These frequent changes led to some initiatives not being designed for use in the first place. Johnson and Johnson (2002)[65] discussing the latest acquisition processes contend that:

> The checks and balances put in place to ensure the acquisition office is doing it right often contribute to why it takes so long to do it at all.

However the current changes seem to want to control the technology "cycle gap", between the military and business. It states as its premise the idea of "evolutionary acquisition (EA)", which requires initial delivery of less than full capability to ensure affordability, risk reduction and agility as tradeoffs[66]. However the main undoing in the US was the initial lack of clear systems model design for the benefit of the implementers. This led to ambiguity and conflict which Sylvester and Ferrara do not see as "necessarily counter productive"; in fact possessed with the potential to be "improved as the organization undergoes an iterative process of interpretation, conflict, and refinement". This penmanship

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[64] Ibid.

[65] Johnson, Wayne M. and Johnson, Carl O. "The Promise and Perils of Spiral Acquisition: A Practical Approach towards Evolutionary Acquisition". Acquisition Defense Quarterly. Summer 2002.

[66] Richard Sylvester and Joseph Ferrara in an article "Conflict and Ambiguity: Implementing Evolutionary Acquisition" published in Acquisition Review Quarterly, 2003.

begs to differ with such trial and error attempts to convert trenchant phraseology into policy.

However terminology aside, this story of EA is interesting in the light of the formation of the BDF DCOS DLC where no such civilian oversight rules, regulations and laws had been implemented at such fast paces as in the USA. It is persuasive that the idea of more flexibility is relevant to the BDF case. The first impression with it is that it seeks to address operational needs satisfaction faster and better. This therefore begs the question: *Should the BDF employ EA?* This shall be left here for later consideration.

There are critics however of EA. Some researchers argue that hitherto only conflict and ambiguity can be realized from EA. This inevitable conflict they argue is good for the subsequent refinement of the policy implementation[67]. Any organization experiences conflict and any policy change is bound to usher in its own dose of it. As for ambiguity the authors bring in a mind gripping point when they refer to Lindblom's 'successive limited comparisons'. They conclude that the ambiguity leads to policy makers "blending rationality with realism". Although this is good, one cannot ignore the possibility of abuse by the participants who are more powerful than others. Resultant influences towards a course of action or decision point have been established to reside in the influencer's positional and/or personal power[68]. The policy must thus incorporate methods of control and punishment for abusers. EA if more clearly defined in terms of the systems model could benefit a small budget. The BDF may have to investigate this further and perhaps even court it.

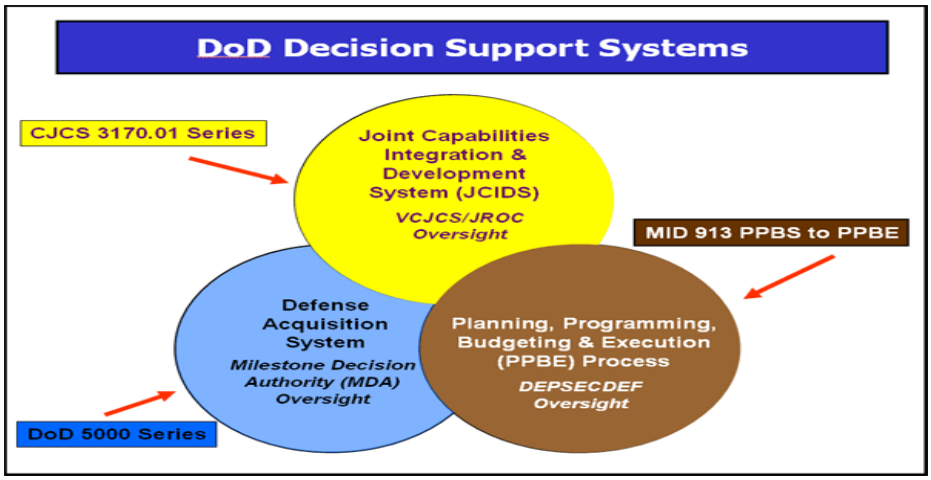
But how is the acquisition workforce regulated in the US DoD. At the federal level there is the Federal Acquisition Regulations (FAR)[69], that stipulate expected procedures and responsibilities for the whole US federal government acquisition workforce. This will be similar to the PPADB of Botswana already

[67] Ibid.

[68] Yukl, G. Use Power Effectively. In E.A.Locke (ed.), The Blakwell Principles of Organizational Behavior (pp 241-256). Oxford, England. Blackwell.

[69] See the Federal Acquisition Regulations homepage at http://www.arnet.gov/far/.

discussed above. But this thesis desires to confine itself to the DoD FAR Supplement (DFARS). The figure below shows the inputs to the DoD's decision support system.



Source: http://akss.dau.mil/dag/DoD5000.asp?view=document (Accessed

Figure 5. US DoD Decision Support inputs

The Defense Acquisition System, in the US DoD, to whom all the inputs arrive is headed by an MDA who is responsible for programs including Congressional testimonies[70]. The duty of the Chairman of the Joint Chiefs of Staff (CJSS), according to this directive is to give advice on military capability created by the programs according to Title 10, United States Code, Armed Forces. He is not the buyer like in the case of the BDF where the CDF is the user, planner, buyer and manager of programs. The MDA exercises oversight over the Defense Acquisition System[71].

The other attractive twist to the story is the Defense Acquisition Regulation System (DARS), headed by the Director of Defense Procurement and Acquisition Policy (DPAP) and does the design and management of the regulations[72]. Since Botswana is a small country and the BDF equally small by all standards, this aspect of the defense regulations being headed by other than a department of

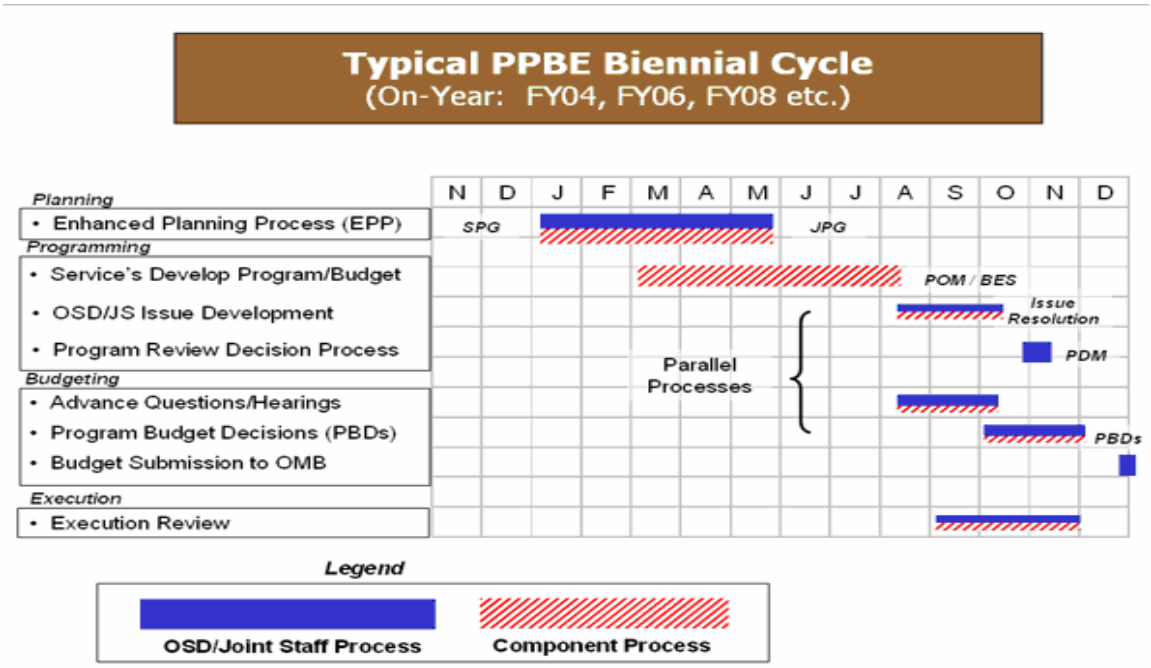
[70] Department of Defense. USD (AT&L). DoD Directive 5000.1. May 12, 2003.

[71] Department of Defense. USD (AT&L). DoD Directive 5000.1. May 12, 2003.

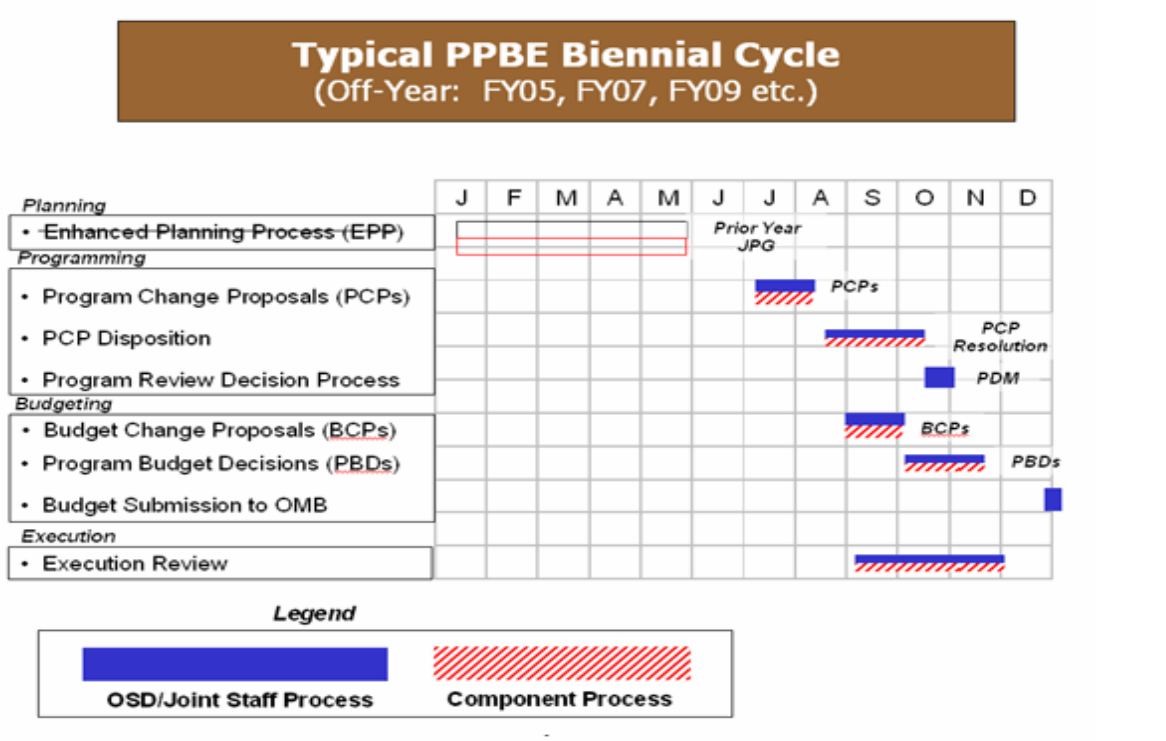
[72] See http://www.acq.osd.mil/dpap/dars/index.htm (Accessed 2/7/2005)

the PPADB may unnecessarily stretch the meager resources. However since there is a Special Tender Committee at PPADB this should have military personnel of the right qualifications and experience, to design and manage defense acquisition regulations under the leadership of the PPADB boss – not the CDF.

Another point of discussion that affects the arming of the US military is the use of the Planning, Programming, Budgeting and Execution Systems (PPBES). This is a strategic tool that plans for long term horizon programs and reprograms each year within the program period. The PPBES is the responsibility of Office of the Secretary of Defense (OSD) which sets policy, allocates resources and prioritizes the DoD requirements[73]. With a Ministry of Defence in Botswana this would be the responsibility of the minister. But then there is the Defence Council which can then be given such a responsibility. The PPBES is summarized in the following figure.



[73] See http://akss.dau.mil/dag/DoD5000.asp?view=document (Accessed 2/7/2005)



Source: http://akss.dau.mil/dag/DoD5000.asp?view=document (Accessed 2/7/2005)

Figure 6. PPBES for the on (even-numbered) years and the off (odd numbered) years

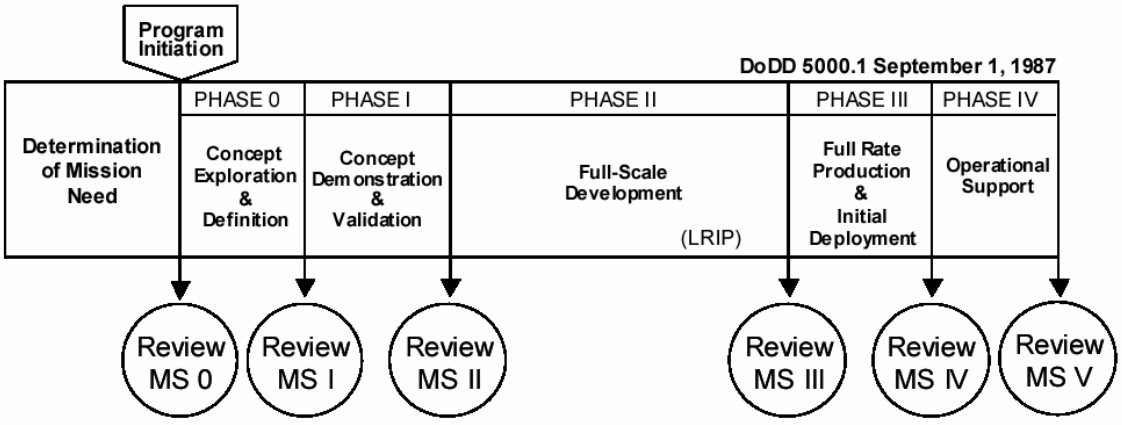
According to the PPBES[74] the military services are required to submit their Program Objective Memorandum (POM) and Budget Estimate Submission (BES) during the on-years. The CJCS provides the Joint Program Guide (JPG). The Program Decision Memorandum from the OSD follows after all the POM/BES of the on-year and the PCP/BCP of the off-year, towards the end of the year. Prior to the PDM, the Program Budget Decisions (PBD) is developed by the Office of Management and Budgeting (OMB), which is outside the DoD and is responsible for the President's budget. This is similar in many ways to the UK MOD's LTC discussed above. The BDF lacks the long term planning instrument similar to the two defense departments already discussed. It follows logically that, poor planning and a lack of defined programs are not too friendly to the public purse. It leads to spending for the sake of depleting the yearly allocation and other ills like the pursuit of pet projects.

[74] See http://akss.dau.mil/dag/DoD5000.asp?view=document (Accessed 2/7/2005)

The main undoing in the new system instituted by the current US Secretary of Defense (SECDEF), Rumsfeld, is the requirement for the many reviews. It seems like a tongue-in-cheek attitude. It is good that the administration of the day requires EA, flexibility, effectiveness and efficiency for the PMs, but to do that through more required reviews, than the past "broken" systems is difficult to learn by small armies.

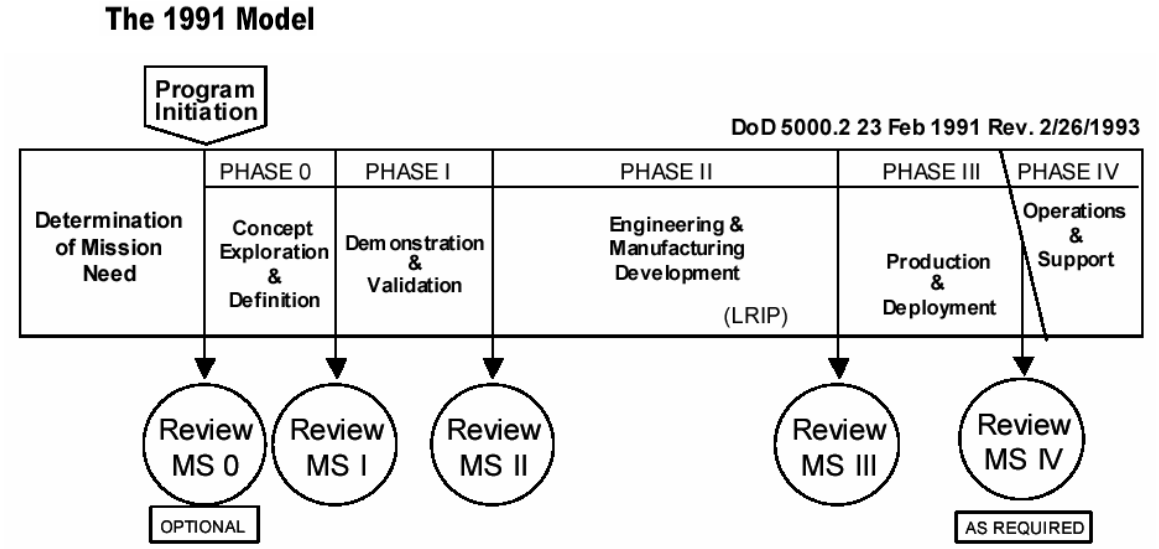
Small armies in small democracies like Botswana should be thoroughly encouraged to cut down the bureaucracy by laying down rules and corrective measures and then leaving their program managers to do their jobs. John Dillard captured this very well in his comparison of the different processes used in the US defense acquisition system. The figure below shows just how the different US processes evolved. However the fact that there were reviews shows that something was being attempted towards improvement. Perhaps this is also enhanced by the fact that decision making is pegged at national level being vested in a SECDEF.

The 1987 Model



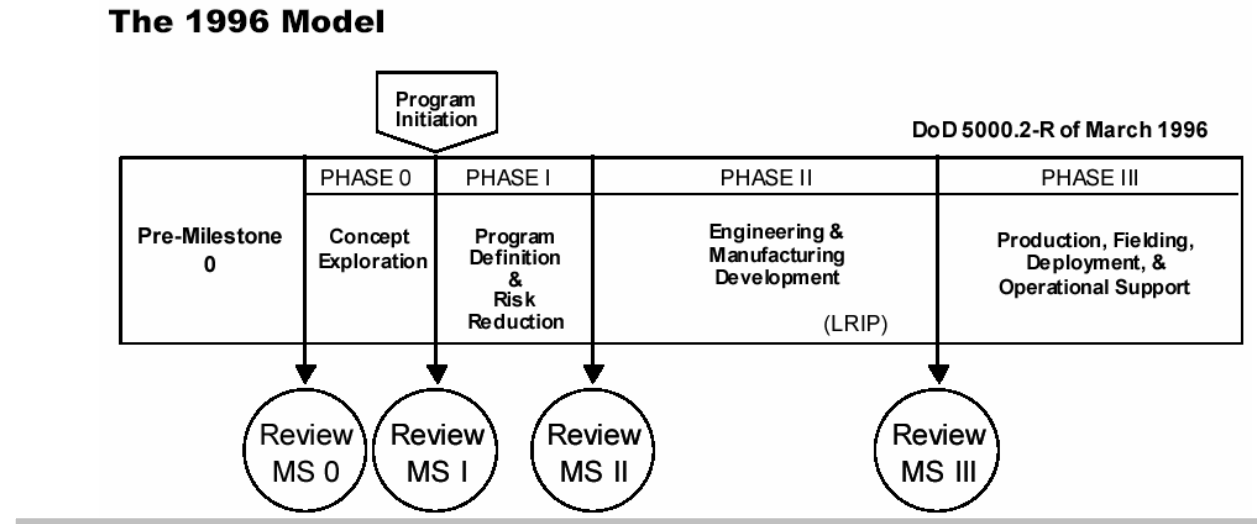
Source: Dillard, John. 2003. "Centralized Control of Defence Acquisition Programs: A Comparative Review of the Framework from 1987 – 2003". Naval Postgraduate School. Monterey, California.

Figure 7. The Life Cycle Systems Management (LCSM) model according to the then DoD Directive 5000.1



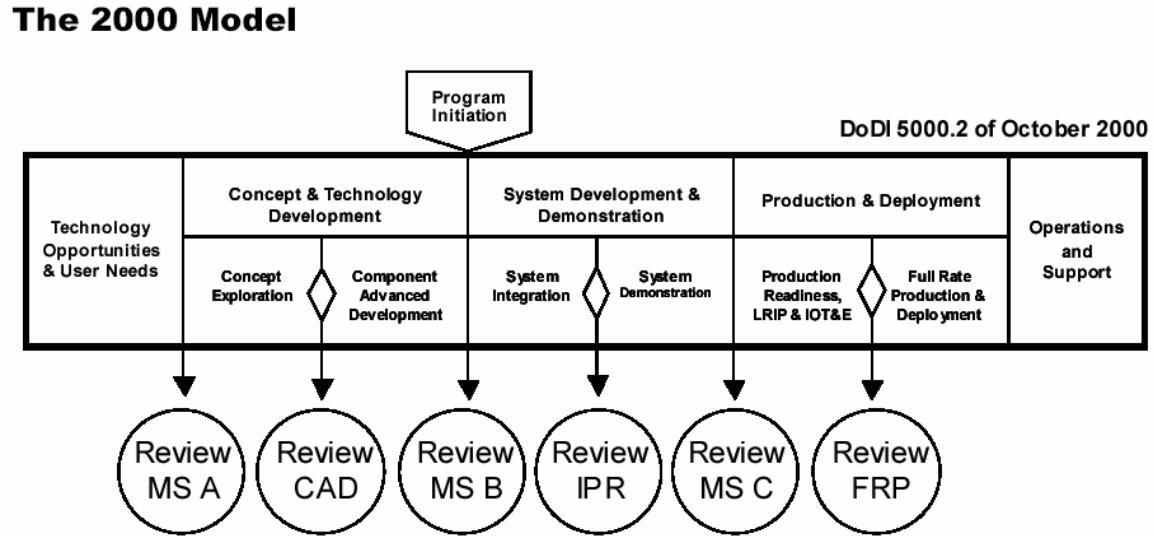
Source: Dillard, John. 2003. "Centralized Control of Defence Acquisition Programs: A Comparative Review of the Framework from 1987 – 2003". Naval Postgraduate School. Monterey, California.

Figure 8. Modified LCSM model



Source: Dillard, John. 2003. "Centralized Control of Defence Acquisition Programs: A Comparative Review of the Framework from 1987 – 2003". Naval Postgraduate School. Monterey, California.

Figure 9. The Defense Systems Acquisition Management model following the DoD Instruction 5000-2R



Source: Dillard, John. 2003. "Centralized Control of Defence Acquisition Programs: A Comparative Review of the Framework from 1987 – 2003". Naval Postgraduate School. Monterey, California.

Figure10. The latest model requiring EA and following the latest DoD 5000.2 document. *Adopted from John Dillard 2003*

D. COMPARISON OF THE BDF AND THE SOUTH AFRICAN MINISTRY OF DEFENCE (MOD) ACQUISITION METHODS

It will be proper to conclude this chapter with a look at the South African defense acquisition method. South Africa is Botswana's most powerful neighbor in military terms. It also espouses the principle of civilian oversight of the military. It is a new but large democracy in Southern Africa.

The current strength of the South African National Defence Force currently stands at 74,811 with military personnel totaling 59,214 and other public servants making up the remainder of 15,597[75]. This is proportional to the geographic area of the country as well as the population size. The geographic area is 1,219,912 square kilometers and the population is 42,718,530[76]. Botswana on the other hand has a total land coverage of 585,370 sq km and 15,000 sq km covered by water[77]. The population of Botswana is currently estimated at 1,680,863[78]

[75] See http://www.mil.za/Articles&Papers/StrategicPlan/DODstratplan04to07r.pdf. (Accessed 2/28/2005).

[76] See http://www.cia.gov/cia/publications/factbook/geos/sf.html. (Accessed 2/28/2005).

[77] See http://www.cia.gov/cia/publications/factbook/geos/bc.html. (Accessed 2/28/2005).

[78] See http://www.cso.gov.bw/. (Accessed 2/28/2005).

according to the 2001 population and housing census. Its military strength of is estimated by Jane's Information Group as amounting to 10,000 personnel[79]. Jane's further portrays the size of BDF to portend disproportion when they said that:

> Given the small size of Botswana's population, this is a large force.

This is outrageous to put it in lenient terms. The percentage of the BDF strength to the population is 0.59%. This is far from enough to cover the geographical area of the country. The BDF's mission is to defend the country against external aggression. It is not for the individual household to have a soldier guarding it, as Jane's seems to be portraying. The South African defense percentage of the population as currently reported by the figures above is 0.175%. But assuming recourse to the strength in relation to the geographic area of South Africa, this would be substantial comparatively. Botswana will have 0.017 soldiers per square kilometer, whilst South Africa has 0.048. These numbers are far from portraying extravagant expenditures on defense by the two countries.

The comparison continues here, to the structure of the South African Department of Defence. Botswana does not have a Ministry/Department of Defence. The figure below is the organizational structure of the South African DOD[80].

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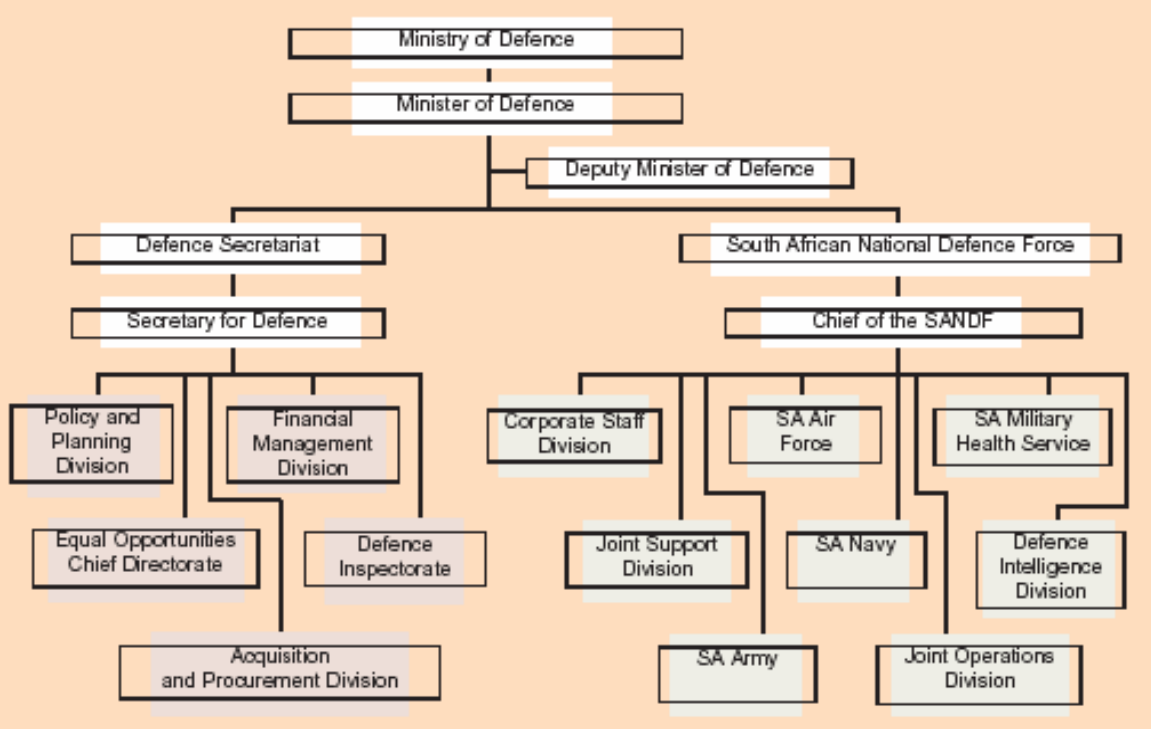
[79] See Jane's Information Group website at http://80-www4.janes.com.libproxy.nps.navy.mil/K2/doc.jsp?t=Q&K2DocKey=/content1/janesdata/binder/jwar/jwar1370.htm@current&QueryText=%3CAND%3E%28%3COR%3E%28%28%5B80%5D%28Botswana+%3CAND%3E+Army%29+%3CIN%3E+body%29%2C+%28%5B100%5D%28%5B100%5D%28Botswana+%3CAND%3E+Army%29+%3CIN%3E+title%29+%3CAND%3E+%28%5B100%5D%28Botswana+%3CAND%3E+Army%29+%3CIN%3E+body%29%29%29%29&Prod_Name=JWAR& (Accessed 2/28/2005)

[80] See http://www.mil.za/Articles&Papers/StrategicPlan/DODstratplan04to07r.pdf



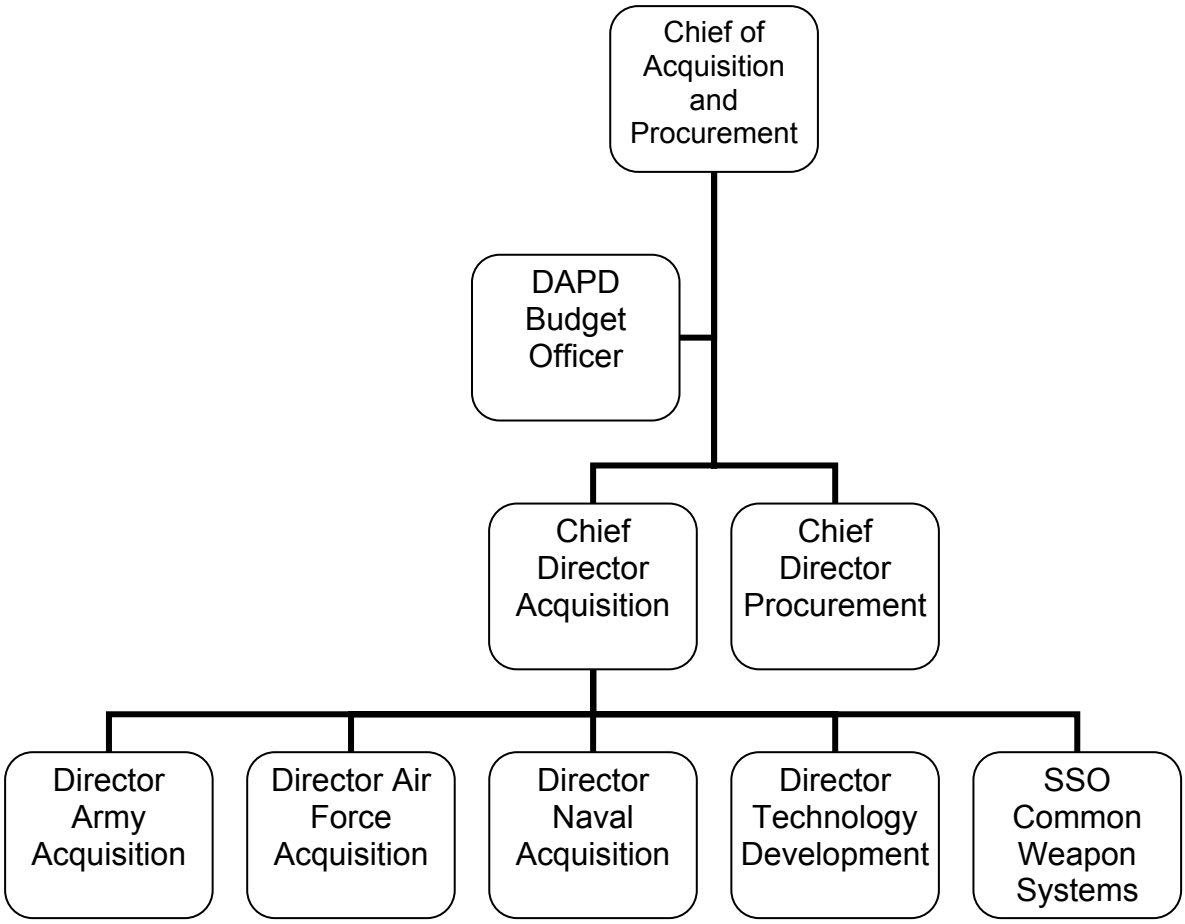
Source: http://www.mil.za/Articles&Papers/StrategicPlan/DODstratplan04to07r.pdf (Accessed 2/28/2005)

Figure11. Structure of the South African DOD

The above figure shows that Acquisition and Procurement Division is under the Secretary for Defence and not the services. The BDF on the other has DMAP under the CDF in general and the DCOS-DLC in particular. It is a BDF function not a Ministry function. It has already been indicated above that this leaves a lot of important players outside the defense acquisition loop.

Further to the comparison at the political/administrative level there is also the structure of DMAP and the South African Departmental Acquisition and Procurement Division (DAPD) that will be addressed. The DAPD as it falls under the Secretary of Defence is composed of qualified military and civilian personnel. This is similar to both the UK MOD and the USA DoD arrangements. The arrangement elevates defense procurement to national level and also allows only the specialists to man key positions. The figure below is the structure of the DAPD[81].

[81] See http://www.mil.za/Articles&Papers/StrategicPlan/DODstratplan04to07r.pdf



Source: http://www.mil.za/SecretaryforDefence/AcquisitionsDivision/presentation_files/slide0001 (Accessed 2/28/2005)

Figure12. DAPD Organizational Structure

The Chief of Acquisition and Procurement, the Budget Officer and the Chief Director Procurement were senior civilian personnel and the rest were military officers of the rank of Colonel and above at the time of writing. It is not clear what the distinction between acquisition and procurement is in the South African context although there is the Chief Directors of both Acquisition and Procurement. Notwithstanding acquisition is elevated to political oversight level, by inserting the Chief of Acquisition under a political head in the Secretary for Defence.

According to the South African Defence Review of 1998 at Chapter 13[82], acquisition is planned for on a multi-year basis for the Core Defence Technology Programs. However the Armament Acquisition Council (AAC) chaired by the Minister of Defence approves/disapproves programs. It also performs yearly reviews of running programs. The AAC is the highest approval level for defense acquisition. But then there is a lower body called the Armament Acquisition Steering Board (AASB) chaired by the Secretary for Defence, which approves non-cardinal projects. Cardinality of a project is determined by its total value. It is a program over ZAR 80 million that is considered cardinal. This is set at BWP 100m for the BDF. Before the AASB all projects pass through the Armament Acquisition Board (AACB) chaired by the Chief of Acquisition and it screens all projects in terms of resources and user requirements satisfaction.

The DOD also publishes the Long Term Requirements Statement (LTRS) to guide long term acquisition of programs. This is similar to the UK's LTC and the USA's PPBES. BDF does not have this. The South African DOD uses "fair and open competition". The methods used by the BDF include among others selective tendering which has the potential to limit competition – particularly for arms and ammunition procurement. This method should be discouraged seeing that all equipment bought is finally published in international journals like Jane's Information Group and others. This thesis argues for the repealing of the demand by government of selective tendering in favor of full and open competition. Selective tendering has not ensured secrecy of the BDF inventory. It can only serve to expose DMAP to temptations towards favoritism or deliberate suppression of competition.

It is best now rather than later to require full and open competition for all defense acquisitions, in the BDF. A detailed suggested structure of Botswana's defense acquisition department together with the suggested contracting processes will be part of the next chapter's offerings.

[82] See http://www.mil.za/Articles&Papers/StrategicPlan/DODstratplan04to07r.pdf

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III. RESULTS AND ANALYSIS

A. RESULTS

1. Introduction

Acquisition of equipment is considered herein, to be the required spring board for favorable reliability, operational availability and maintainability or the lack thereof. All interested parties must be invited to assist in deciding on a defense acquisition. This approach elevates customer satisfaction to be the main reason for procurement of equipment. This is the approach built into the questionnaire used for this research. Benjamin Blanchard (2004)[83] required that system engineering should be a top down approach which this thesis supports.

There is a need also for a life cycle costing approach covering all the necessary aspects of initial user requirements; design; development and production and in service support package. Disposal planning also has an important bearing on logistics support. Equipment that is procured without a disposal plan always leaves unnecessary artifacts of old systems lying around. It also delays the procurement of new equipment with better logistics factors as per the demands of changing technologies. The US DoD in recognition of these aspects requires that, there should a balance between mission accomplishment and costs of the out-years, in an acquisition strategy[84].

Further to that there is an indispensable need for a team approach by all stakeholders[85]. This involves the use of a systems engineering approach. The team should include the user as the initiator of an acquisition interest. Then there should be the invitation of technologists, logisticians etc by the program manager. Research has proven this method to work better than an isolationist approach[86], where the procurement officer decides alone.

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[83] Benjamin S Blanchard. 2004. Logistics Engineering and Management. 6th edition.

[84] Assistant Secretary of Defense (Program Analysis and Evaluation). "Cost Analysis and Guidance Procedures". US Department of Defense. December 11, 1992. Page 44.

[85] Anonymous. Acquisition Strategy Guide. Defense Systems Management College Press. Fort Belvoir, Virginia. December 1999. Page 3-5.

[86] Ibid.

The survey for this thesis was sent to all officers for the particular purpose of capturing all the stakeholders' interests in the BDF.

There were ten variables that this thesis sought to investigate, to unveil the satisfaction level of the officer corps of the BDF with acquisition. These are Time for trials and evaluation; Deliveries lead time; Equipment variety; Inventory management; Quality of acquisition personnel; Supplier preference; Duration of supply contract; Reliability, Availability and Maintainability; Relations with PPADB and finally Experienced downtime. These were selected with reference to established research and books, e.g. Blanchard (2004), US DoD guides and the methods gleaned from the comparative exploratory study of Chapter II above. They are labeled (a) to (j) in their respective order. These are intended to show that if procurement could have been done differently from the present methods, then better inventory of equipment would be occupying the armories of the BDF. The BDF, with its small budget, does not have the luxury to entertain trial and error acquisition methods. Explanations of the variables follow below:

a. Time for Trials and Evaluation

In the USA trials and evaluation is called Initial Operational Test and Evaluation (IOT&E)[87]. These are field tests on the product or product representative. It is done before a final decision to buy is entered into. The product must be tested using typical operational personnel in typical operational conditions. If the equipment/product fails to meet expectations then it is usually not purchased. This requires a deliberate process and it takes time. This if done purposefully will help in making a long term decision, not limited to meet the demands of the twelve months financial year only.

The BDF cannot afford specifically designed equipment. The budget is too small to foot the required bill for that. The advantage that BDF has is that technology is already available in abundance all over the world. Some of this would perform well in the Botswana operating conditions. (Recall from the BDF Act, that the BDF is for defense and not outside military excursions). It is in

[87] Anonymous. 2001. Test and Evaluation Management Guide. Defense Acquisition University Press. Fort Belvoir, Virginia. Pages 11-2 to 11-3.

this regard that one looks at the number of military manufacturers in the world and believes that something is definitely there for the BDF. It just requires to be proven through trials and evaluation: IOTE in the US DoD[88].

Equipment that has already been designed by manufacturers is normally brought into Botswana to be evaluated under the BDF's operating conditions. This is the stage of collecting data on the equipment of interest to ensure that it can withstand the Botswana climate as well as the BDF doctrine.

This is an important variable to be evaluated. The scale for the question would be most favorable at five when the period is more than just twelve months and decreases to one on a scale. The variable had two questions one asking whether the period is more than or less than twelve months and the other asking whether the BDF officers are satisfied with the equipment before it is bought, i.e. through trials and evaluation. The two answers were averaged out to give the variable score for variable (a).

b. Deliveries Lead Time

This is the length of time from ordering to the time that the shipment is received in inventory[89]. Most deliveries are done in a matter of months[90]. However when there is design and development involved this could take years. The BDF buys after these stages. There is also the distance between a typical supplier location and Botswana. For purposes of reducing the down time relating both to new purchases and the support of extant equipment this has to be investigated to see how much of this variable maximizes the BDF's utility function.

Once a decision to buy has been entered into the user then is charged with expectation. If this order is done before the trials and evaluation then there is going to be a delay since the trials would be required to be carried out. Further to that there is nothing that will stop the manufacturer from starting

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[88] Anonymous. 2001. Test and Evaluation Management Guide. Defense Acquisition University Press. Fort Belvoir, Virginia. Pages 11-2 to 11-3.

[89] Ibid, footnote 4 on page 110.

[90] Ibid, footnote 7 on page 262.

production in that case. In this regard, a decision to buy made after thorough trials and evaluation, should result in a shorter lead time. Industries shorten theirs lead times through fewer regulations. Perhaps it can be concluded that governments do not enjoy such liberty for accountability purposes. Typical deliveries lead times are normally longer for government procurement officers, because they are "stewards of the public trust"[91]. This has to be shortened by forward planning by the acquisition officers. One of the ways to do that is the performance of trials and evaluation prior to placement of order.

There were two sub questions for this variable. One question asked the respondents to declare whether it takes longer or shorter than twelve months to receive equipment, once the order has been placed. The other question wanted to find out if the users are served well by the current standard of deliveries lead time. The scale was set to be most favorable if the lead time was less than twelve months and reduce accordingly. For the second sub question the scale started at five, for a lack of satisfaction, ending at one for satisfaction with the current trends. This thesis posits that it does take a long time to receive ordered equipment and that this is not good for operational and training purposes. Again the two answers were averaged out to give the variable score for (b).

c. Equipment Variety

The variety of equipment means that mission success depends on their individual spares requirements. The variety further means more maintenance funds would be used since the spares requirements will be higher[92]. This is more expensive than when there is one type of equipment. The purpose of this variable is to discover if it helps operations to have, for instance, five types of rifles serving the same purpose or streamlining towards specialization.

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[91] See Burt et al. 2003. WSCM[SM]: The Key to Supply Chain Management. McGraw-Hill Irwin. 7th edition at page 596.

[92] Ibid, footnote 4. Pages 103-104

It is demanded here that, the less the variety the more favorable the cost structure for logistics[93]. Variety as indicated in earlier chapters and above does not enhance shorter downtime. There is all the different spares that have to be sourced from the different sources; the amount of training that has to be given to technicians and their increased overall number to cater for the variety; as well as the loss of visibility[94].

There were two questions covering those areas for this variable. The first question wanted to find out whether the respondent believed there was variety. It there was the score was five at the highest level reducing to one on a scale. The second question required the officer, to say from their experience, whether the variety serves their operational capability well. This would be awarded one for an affirmative answer reducing to one on scale. Again an average was taken as above to get a score for variable (c).

d. Inventory Management

Keebom Kang (1998)[95] found that excess inventory ties down funds. One of the culprits for the excess is the lack of asset visibility. This could lead to purchasing spare parts that are already there in inventory held by another US DoD service. By extension, the BDF may have similar problems where an item in stock may be reported as out of stock. Obviously an equipment breakdown would not be attended to during purported stock out periods. This naturally contributes to downtime. Asset visibility is a requirement that cannot be ignored.

While procurement concentrated on buying equipment through the years in the BDF, there was no attempt to collect data on the performance of the inventory. This leads to complications when troubleshooting has to be done. It is almost impossible to access data on any equipment. The reports are passed on by oral methods, when a decision has to be made on any equipment at the nick

[93] Benjamin S Blanchard. 2004. Logistics Engineering and Management. 6th edition.

[94] Ibid.

[95] Kang, Keebom. 1998. "DoD Inventory Management Cultural Changes and Training in Commercial Practices". Naval Postgraduate School, Monterey, California.

of time. Some records are available on hard copy, a method notorious for introducing human error, hence poor data quality. The standard of data quality could easily be the final arbiter, between mission success and loss of lives[96].

In order to measure the satisfaction level on inventory management methods, two questions were asked. One intended to show whether officers knew of any automated information system, that made data access easy – hence improved its quality. The scale for the sub question started at five when the officer believes there was automation and reduced to one accordingly. The second sub question wanted to find out whether there was ease of access to data and if this was the case, this would be scored at five reducing to one where it was not. Finally the two questions were averaged out to get the score for variable (d).

e. Quality of Acquisition Personnel

There are divergent views pertaining to professionalization in general[97]. There are arguments that it ushers in mediocrity, as it places emphasis on a Diploma and not service. The proponents pick a few examples from classical professions like Law; Medicine etc. But this thesis identifies with education and training as the basis for better comprehension of the demands of any profession. Failure to utilize the learning is more an individual problem than a professional blanket issue. This thesis investigates questions of level of training and experience.

It is critical to morale when the users do not trust the offerings of a supplier of services[98]. A professional acquisition workforce will have the confidence of the customers naturally.

The variable to measure this was divided into two questions as well. The first part measured the extent of qualifications of the acquisition

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[96] For details see Anonymous. DOD Guidelines on Data Quality at http://tricare.osd.mil/rm/documents/fa/DoDGuidelinesOnDataQualityManagement.pdf (Accessed 4/23/2005)

[97] Snider, K.F. "DAWIA and the Price of Professionalism". Acquisition Review Quarterly. Fall 1996. Pages 97-108.

[98] Ibid, footnote 24.

personnel – the more qualified the better. Further to improve the quality of decision making there has to be some level of experience which mainly goes with rank. Since the BDF is a young army, it is postulated here that the rank of Major should be the minimum requirement to head a department of acquisition at any level. The scale for these sub parts both started at five when there was a favorable environment as explained above with five being the most favorable score and one the least favorable. Then the average was taken to get the variable score for (e).

f. Supplier Preference

The BDF like other government departments is charged with a citizen empowerment function. This is embedded in the PPADB Act of 2001. It follows that other countries also protect their own local supplier base. The USA has the Buy American Act (BAA) of 1933. The Act has complicated acquisition mangers' job of getting good value for money[99], as required by the US Federal Acquisition Regulations (FAR). But it cajoles the economy well especially in a time of depression: there was a depression in the USA at the time of enactment of BAA and in the 1980s at the pinnacle of the cold war. Any award of a contract to any foreign supplier in the USA requires prior approval – and this is a source of delay[100]. Botswana has a small manufacturing base and a non-existent defense manufacturing capacity: the author knows this from experience. Perhaps the USA can enforce the BAA trusting for delivery by the locals: Botswana cannot, it needs international trade in defense products. The BDF needs to work within and around the preferential treatment clause in the legal landscape. Mission satisfaction should reign supreme in the search for the right defense equipment.

It is herein considered bad business practice to give a supplier preference simply on the basis of citizenship, unless the citizen meets the solicitation requirements. Although the PPADB Act[101] requires that government

[99] Smyth, Joseph S. "The Impact of the Buy American Act on Program Managers". Acquisition Review Quarterly, Summer 1999. Pages 263 – 272.

[100] Ibid

[101] Ibid, footnote 17.

agencies should give preference to citizen suppliers, it is difficult to imagine that being fulfilled in the case of military equipment. As mentioned earlier most Botswana businesses dealing in military equipment operate at an agency level. Award of a contract to the Botswana agent therefore, does not translate into socio-economic benefits to the country. The manufacturing and hence the jobs associated with that would still be done outside Botswana. Unless the notion of citizen supplier preference could be modified to *citizen supplier enrichment*, this thesis pleads for the liberty to stand at cudgels drawn. This thesis differs with the notion of preference for citizens, if this ignores value for money particularly for products procured for the high purpose of national defense. It is preferred herein, that fair and reasonable price of a purchase must take preeminence. If the BDF's statutory mission was to provide absorption of the offerings of the local business community, then it would have become clear when the legislators passed the BDF Act. The US defense acquisition workforce is not finding it easy to satisfy the Buy American Act, while at the same time cultivating competition[102]. It is this competition that leads to best value in markets – an issue already discussed above. It is in the interest of all suppliers to create goodwill through satisfactory products.

Again there were two sub questions for this variable. It was imperative that the favorable score of five be awarded when the respondent said there was no bias to *just buy* from locals. When there is sealed bidding, especially, then it should be most favorable (a score of five) when there is no citizen preference, for the first sub question. When the officer respondent believes that only price is the determinant for winning a contract, then the score should be five reducing to one accordingly. These scores were then averaged to give the variable score for (f).

[102] Smyth, Joseph S. "The Impact of the Buy American Act on Program Managers". Acquisition Review Quarterly, Summer 1999. Pages 263 – 272.

g. Duration of Supply Contract

The logic for the preferred duration follows the PPBES explained well by McCaffery and Jones (2004)[103]. It is better for planning to have a long term contract than a short one. The respondents would declare whether they prefer the extant short term contracts and its concomitant shortcomings or the long term version?

The extension of the duration of the supply contract beyond the present twelve months financial year limits, allows among other things improvements on the original contract. Further to that since a supplier is motivated by the assurance of more deliveries they can be encouraged to lower prices and perform better. This also saves on the time to be performing new preproduction trials and evaluation each year. It means that the only needed trials and evaluation will be those at the operational level leading to improvements[104] prior to the next deliveries.

There were two sub questions that sought to evaluate the satisfaction level with the duration of supply contract. The first sub questions sought to establish whether, it is a fact that yearly contracting was the norm. If it was then this will mean a score of one increasing to five on a scale. Further to that the second sub part wanted the officer to say whether they are happy with the present durations. If they were, then their answers were awarded a score of one increasing on a scale with their dissatisfaction, in line with theory - already treated. An average was also taken as above for the variable score for (g).

h. Reliability, Availability and Maintainability

Norcross (1997)[105] decried the burden that these logistics parameters had on the US Marine Corps, when he said:

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[103] See Jerry L McCaffery and L R Jones. 2004. Budgeting and Financial Management for National Defense: A volume in research in public management. Information Age Publishing. page 370.

[104] See the reasoning for longer period programs from the treatment of the UK MOD's LTC in Kausal (ed.) – footnote 41.

> **...**unmet reliability thresholds…, *drain* …scarce funding from other priorities.

The statement applies equally well to reliability, availability and maintainability. These metrics must of necessity have been elevated to acceptable levels by the acquisition process. The satisfaction with these variables was measured to conclude whether the BDF acquisition system improves or worsens the burden.

These elements of logistics[106] support pivot directly on the quality of the original product to the most part. Of course, they are also affected by the quality of the technicians and engineers at maintenance depots. This means that the maladies of logistics can be reduced by proper purchasing processes.

There were three sub parts to this variable designed to properly capture the essence of the three logistics terms above. It could not be done with fewer questions. Clearly it is better to have a high measure of all these logistics elements. When the respondent is satisfied to the highest level, his answers were given a score of five. This would reduce accordingly to one with the satisfaction level. Then these scores were averaged for the variable score for (h).

i. Relations with PPADB

The PPADB is a new control body. The BDF officers were asked to give first impressions during these early years of the PPADB's life.

The individuals would finally answer a question that reveals whether the answers came from a user, maintenance personnel, acquisition personnel or Command (CO and above). This was used to find out the level of satisfaction within each of the groups. But the total results of the interview were used to do the statistical analysis.

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[105] Norcross,Jr. Marvin J. "The Requirement for Acquisition and Logistics Integration: An Examination of Reliability Management in the Marine Corps Acquisition Process" – a thesis for Master of Science in Management, Naval Postgraduate School, 2002.

[106] Ibid, footnote 4 at page 46 to 77 for details of calculations.

The Public Procurement and Asset Disposal Board (PPADB)[107] is the new control body overseeing all government purchasing and disposal. The variable pertaining to their rules and regulations was intended to capture the sentiments already formed during the life of PPADB so far. The three sub parts were intended to show whether officers preferred to have the professionalism orientation that this board wants to inculcate or they would rather have the old systems with their trial and error disposition.

The first and the third sub questions were scored from five to one on a scale while the second was scored from one to five. Then the variable score was calculated for (i).

j. Experienced Turnaround Time

In tandem with the definition of turnaround time or down time already given in Chapter I above the smaller the turnaround time the better. This thesis uses ten days as the benchmark. Blanchard (2004) defines these terms as referring to the same concept[108]. For the first sub question, if the downtime was considered smaller than ten days then the respondent's answer was given a score of five. The second sub part assumes a current downtime or turnaround time that is unsatisfactory. It demands that the respondent declare whether they are satisfied or not. If they are satisfied then they were considered to have given the smallest score. Also for this variable (j) an average was taken.

2. Summarized Results

The table below shows the summarized data per question.

[107] Benjamin S Blanchard. 2004. Logistics Engineering and Management. 6th edition.

[108] Ibid, footnote 1

Table 2. Summarized Data for the Independent Variables

Response Number	a	b	c	d	e	f	g	h	i	j	Respondent
1	3.5	2.5	3.0	2.0	3.5	3.0	2.0	1.0	3.3	2.0	User
2	4.5	4.0	2.0	3.0	3.5	3.0	2.0	1.0	2.7	2.5	User
3	4.0	2.5	1.5	2.0	4.0	3.5	3.0	3.3	3.3	2.0	User
4	2.0	2.5	3.0	2.5	3.0	3.0	3.5	1.0	3.0	2.0	User
5	3.5	3.0	1.0	3.0	3.0	1.5	3.0	1.3	3.0	1.0	User
6	4.0	2.5	1.0	3.0	2.0	2.0	3.0	3.0	3.3	1.0	User
7	2.0	3.0	1.0	3.0	3.0	1.5	3.0	2.3	3.0	3.0	User
8	2.5	2.0	2.5	2.0	2.0	3.0	3.0	1.0	3.3	2.0	User
9	2.0	1.0	3.0	2.0	3.5	1.5	2.5	1.3	1.7	1.0	User
10	1.0	1.0	4.5	1.0	4.0	3.0	4.0	1.0	2.3	2.0	User
11	4.5	3.0	3.0	2.5	3.5	3.5	3.0	3.0	3.3	3.5	User
12	2.5	3.0	2.0	2.0	3.0	3.0	2.5	3.0	3.0	3.0	User
13	2.5	2.0	3.0	1.0	3.5	4.5	3.0	1.3	2.7	3.0	User
14	2.5	2.0	3.0	1.0	3.5	4.5	4.0	4.7	1.3	1.0	User
15	2.5	2.0	3.0	1.0	3.5	1.5	3.0	1.3	2.7	1.0	User
16	2.5	2.0	3.0	1.0	3.5	4.5	2.5	1.3	1.3	1.0	User
17	3.5	3.0	2.0	1.0	3.5	3.5	2.5	4.0	4.0	4.0	User
18	4.0	3.5	2.5	3.0	2.5	4.0	3.5	2.0	3.3	2.0	User
19	3.0	2.0	3.0	3.5	4.0	5.0	3.5	4.0	4.3	5.0	User
20	4.0	2.5	3.0	2.0	3.0	3.0	2.5	2.3	3.3	4.0	User
21	3.5	2.0	2.5	3.0	3.0	3.0	2.5	2.0	3.7	3.0	User
22	2.5	3.5	1.5	3.5	3.0	3.0	2.5	1.0	2.3	1.5	User
23	2.5	1.0	4.5	2.0	3.0	1.5	3.0	1.0	2.0	1.0	User
24	4.5	2.0	4.0	2.5	2.0	3.0	3.5	2.0	2.7	2.0	User
25	3.5	2.5	3.0	2.0	4.0	4.0	3.0	1.3	3.0	2.5	User
26	2.5	1.5	2.5	1.5	3.0	3.5	4.0	2.7	2.0	2.5	User
27	4.0	4.0	2.5	2.0	3.0	3.5	3.0	4.0	4.0	3.0	User
28	4.0	3.0	3.5	3.0	3.0	3.0	3.0	2.0	3.0	3.0	User
29	4.5	3.0	3.0	3.5	3.0	3.0	3.5	3.3	4.0	3.0	User
30	4.5	2.5	3.0	2.0	2.0	3.5	3.0	2.7	2.7	3.5	User
31	4.5	3.0	3.0	3.5	3.0	3.0	3.5	3.3	4.0	3.0	User
32	4.0	4.0	3.5	2.5	3.0	3.5	3.0	2.0	3.0	3.5	User
33	3.5	2.0	3.0	2.0	2.5	4.5	3.5	2.3	3.7	4.0	User
34	2.5	2.0	3.0	1.5	2.0	3.0	3.5	2.3	2.7	4.0	User
35	3.5	3.0	4.0	4.5	2.0	3.0	2.0	3.0	2.3	1.5	User
36	4.0	3.0	2.5	2.5	3.0	2.5	3.0	2.3	3.0	2.0	User
37	2.0	2.0	3.0	3.0	2.0	3.0	3.5	2.7	2.3	3.0	User
38	2.0	2.0	3.0	3.0	2.0	3.0	3.0	2.7	2.3	2.0	User
39	3.0	3.0	2.0	2.0	3.0	3.0	3.0	4.0	3.0	2.0	User
40	4.0	3.0	2.5	3.0	3.0	3.5	3.0	2.0	3.0	1.5	User

Table 2(continued)

Response Number	a	b	c	d	e	f	g	h	i	j	Respondent
41	1.0	1.0	2.5	1.0	1.5	3.0	3.0	1.7	1.0	1.0	User
42	3.0	2.5	3.0	2.5	2.5	3.5	3.5	2.7	3.7	3.0	User
43	3.5	2.5	3.0	1.0	3.0	4.0	3.5	2.0	3.3	1.0	User
44	3.0	4.5	3.0	2.0	3.5	3.0	3.0	2.0	3.3	2.0	User
45	3.0	3.0	3.0	3.0	2.0	4.0	3.0	3.3	4.0	2.0	User
46	3.0	3.0	1.5	1.5	3.5	5.0	3.0	4.0	3.3	1.5	User
47	3.5	3.5	2.5	2.5	3.0	4.0	3.0	2.7	3.3	3.0	User
48	3.0	3.0	1.5	1.5	3.5	5.0	3.0	4.0	3.3	1.5	User
49	3.5	2.5	2.0	3.0	2.5	3.0	3.0	2.0	4.0	2.0	User
50	2.0	3.0	3.0	1.5	3.0	5.0	3.0	3.3	3.0	3.0	User
51	4.5	3.0	4.5	2.5	3.5	3.0	3.0	1.3	3.0	1.0	User
52	2.5	2.5	2.0	1.0	4.0	3.0	1.5	2.0	4.7	3.0	User
53	2.5	3.0	4.5	3.0	3.5	3.5	2.0	2.0	3.0	2.5	User
54	3.5	3.0	3.0	3.0	4.0	4.0	2.5	2.3	3.3	2.0	User
55	2.0	2.0	2.5	2.0	2.5	1.0	4.0	2.0	1.0	1.0	User
56	2.0	2.0	2.0	4.0	3.0	3.0	3.0	3.0	3.3	3.0	User
57	4.0	2.5	1.5	3.0	3.0	3.5	3.5	3.3	3.0	2.5	User
58	2.5	3.0	2.0	1.5	3.0	4.5	2.5	2.0	3.0	2.0	User
59	4.0	3.0	4.0	5.0	4.0	2.5	1.5	2.7	3.0	1.0	User
60	3.0	3.0	2.5	3.0	3.0	4.0	3.5	4.0	3.3	2.0	User
61	3.5	1.5	1.5	1.5	3.0	4.0	3.5	2.0	3.3	4.0	MO
62	4.0	3.5	2.5	2.5	3.0	3.5	3.5	3.0	3.3	2.5	MO
63	4.0	2.5	4.5	3.0	2.5	4.0	3.0	1.0	1.0	1.0	MO
64	4.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	2.0	2.0	MO
65	2.5	3.0	4.0	2.0	2.5	4.0	2.0	2.3	3.7	2.0	MO
66	3.5	4.5	5.0	2.5	1.5	3.0	5.0	1.7	4.3	2.0	MO
67	2.5	2.5	3.5	2.5	1.0	4.0	3.5	1.7	2.7	2.0	MO
68	4.5	1.5	4.0	1.5	3.5	4.5	3.0	2.7	5.0	3.0	MO
69	1.5	3.5	3.0	2.0	4.0	3.5	4.0	1.0	3.3	1.0	MO
70	3.5	2.0	3.0	3.0	1.5	2.0	3.0	2.0	2.3	1.0	CO/Above
71	2.0	4.0	3.5	3.0	2.0	2.5	3.0	2.0	2.7	3.5	CO/Above
72	1.5	1.0	2.5	1.0	2.0	1.0	4.0	1.7	3.0	1.5	CO/Above
Averages	3.1	2.6	2.8	2.3	2.9	3.3	3.0	2.3	3.0	2.3	

There were a total of seventy two respondents for this research out of a selected sample frame of approximately one thousand officers of the BDF. This is a large enough response to assume normality which the chi test for normality sought to reveal below. From the table above it is also apparent that very few officers are satisfied at four to five levels. Most of the responses are scored at around three and below.

The respondents are just barely satisfied with trials and evaluation times; supplier preference methods used; duration of supply contracts and working

relations of the BDF with PPADB. All the other variables earned an unsatisfactory grade.

3. Regression Analysis

The table below shows the regression analysis of the results with downtime satisfaction level (j) as the dependent variable and the rest as independent variables.

Table 3. Regression analysis of the results in Table 2

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.542648
R Square	0.2944668
Adjusted R Square	0.1920507
Standard Error	0.866541
Observations	72

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	9	19.431	2.159	2.875	0.00668
Residual	62	46.555	0.751		
Total	71	65.986			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.376	1.069	0.352	0.726	-1.762	2.514	-1.762	2.514
a	0.000	0.132	0.000	1.000	-0.263	0.263	-0.263	0.263
b	-0.134	0.151	-0.889	0.377	-0.436	0.167	-0.436	0.167
c	-0.009	0.125	-0.075	0.941	-0.260	0.241	-0.260	0.241
d	0.026	0.143	0.182	0.856	-0.259	0.312	-0.259	0.312
e	-0.101	0.162	-0.621	0.537	-0.425	0.223	-0.425	0.223
f	0.190	0.132	1.433	0.157	-0.075	0.454	-0.075	0.454
g	-0.015	0.189	-0.078	0.938	-0.392	0.362	-0.392	0.362
h	0.132	0.133	0.993	0.325	-0.134	0.399	-0.134	0.399
i	0.536	0.150	3.575	0.001	0.236	0.836	0.236	0.836

The results above reveal an interesting phenomenon. The regression equation that comes out of table is as follows:

j = 0.376 – 0.134b – 0.009c + 0.026d – 0.101e + 0.190f – 0.015g + 0.132h + 0.536i.

The coefficient of determination (R^2) is only twenty nine percent (29%). This shows that the satisfaction or lack thereof with the equipment downtime is

explained seventy one percent (71%) of the time by other variables than those relating to acquisition. The standard error of estimate (s_ε) which is required to be close to zero because s_ε, is the square root of the squared deviations from the regression line is 0.87 – almost 1. The mean value for the dependent variable is 2.3 from Table 2, so that when s_ε, at 0.87 is large and cannot be used to conclude goodness of fit for the regression model. This is in agreement with the value of R^2 above.

There is an intercept value of 0.376, indicating that there will only be about 38% satisfaction caused by other than acquisition issues, even when the down time level is 100% satisfactory. This makes mathematical sense, but has no room in applications. It cannot be used here because there is none of the independent variables, which includes a zero[109]. The intercept is thus of no consequence here.

Further to the above all the coefficients have relatively large standard errors. The t-statistic for each variable and their p-values also indicate that there is no evidence to infer linearity of relationship between downtime satisfaction levels with those of the acquisition related independent variables. A more detailed interpretation will be afforded by the analysis part of the write-up below.

The next results report on the chi squared test for normality. This is important to find out whether there was independence of responses from the data that was collected. Each question was tested using Microsoft Office Excel and the report follows below.

[109] For details see G Keller and B Warack. 2003. Statistics for Management and Economics. 6th Edition. Thomson Brooks/Cole. Toronto. Pages 531 to 537.

4. Chi Squared Test for Normality

The following table is a summary of the Chi Tests for Normality for the different variables in Table 2 above.

Table 4. Summarized Results of the Chi Squared Test for Normality

Chi Squared Test Metrics	a	Procurement Process Variables from Table 3.1								
		b	c	d	e	f	g	h	i	j
chi-squared Stat	1.821	2.339	1.997	3.582	26.40	1.50	18.77	3.456	2.640	1.900
df	1	1	1	1	1	1	1	1	1	1
p-value	0.177	0.126	0.158	0.058	0	0.220	0	0.063	0.104	0.168
chi-squared Critical	3.842	3.842	3.842	3.842	3.842	3.842	3.842	3.842	3.842	3.842

Normality is established in the above table for all responses except for variable (e) and (g). The chi-squared statistic for (e) and (g) are 26.4 and 18.8 respectively, which is higher than the chi squared critical value of 3.8. This deviation will be explained further in the analysis part that follows. The deviation casts aspersion on the results for the particular variables from Table 2.

B. ANALYSIS OF RESULTS

1. General Comments

Table 2 above shows that generally the officers are dissatisfied with acquisition processes and its resultant downtime in later years of the equipment's life. The results prove the null hypothesis that there are methods which can be used to improve on that. This dissatisfaction belies a pedestrian mentality towards acquisition.

Acquisition as a part of supply management[110] has to be elevated to a high level of quality provision. This is the point of entry for all inventories and it should not be treated as an after thought.

Tables 4, shows that the distribution of the response elements was normal except for variables (e) and (g). The quality of acquisition personnel and duration of supply contract revealed substantial abnormality. As far as variable (e) is

[110] See Burt et al. 2003. World Supply Management [SM]- The Key to Supply Chain Management. 7th Edition. McGraw-Hill Irwin. Boston.

concerned, the most logical conclusion to be derived out of this is that, there is a lack of value standards towards professionalization of the acquisition workforce in the BDF. Professionalization could be done through training and subsequent work experience as already realized in the past chapters. Any method that debases this process opens the flood gates for shoddy outputs. Position holders with other than proper purchasing interests, could then abuse acquisition for personal gain. Variable (g) may have been influenced by the lack of grounds for comparison – BDF has always used short term contracting. That is respected and forgiven herewith.

It is cause for conjecture that only three senior officers responded. Also there is no response from the acquisition workforce. This is disheartening because any improvement not supported by top management, is bound to fail. In a world pervaded by scarcity and choice proper control mechanisms should be designed and enforced at a high level[111]. Further to that there has to be an interest from the acquisition workforce to seek better ways of service delivery[112]. The US DoD has had a go at improvement many times in the past and is still continuing. Congress has passed many legislation pieces to upgrade standards to ever higher levels: examples of which include the Federal Acquisition Streamlining Act of 1994 and the Clinger-Cohen Act of 1996[113]. The US military is undergoing continuous soul searching but even they experience acquisition scandals almost each decade[114]. This is even the more reason to believe that acquisition decision making has to be elevated to high decision making levels. The Defence Council should conduct the superintendence of the BDF fully in this regard.

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[111] See Lieberman and Hall. 1999. Introduction to Economics. 1st Edition. South-Western College Publishing. Mason, Ohio.

[112] See Sylvester and Ferrara's discussion of EA above: footnote 66.

[113] See Sylvester and Ferrara's discussion of legislative reforms: footnote 66.

[114] See Nicholas Mavroules. "Creating a Professional Acquisition Workforce". *National Contract Management Journal;* 1991; 24, 2; ABI/INFORM Global.

2. Structural Proposals

It is the duty of any academic work to provide solutions for the exposed process failures. This thesis, therefore, proposes the following defense acquisition structures for BDF, to ameliorate the maladies of the past. This is in line with the exploratory study from the previous chapter, as well as the results of this thesis. These suggestions are not necessarily offering a silver bullet. They are suggested following the trend of established results of research, as proposals, not absolute solutions in themselves. The underlying premise is that improvement of a process demands the continuous search for a better deal, as is the case with the US DoD. Sitting in one's laurels, has been overtaken by the times, in the era of knowledge working.

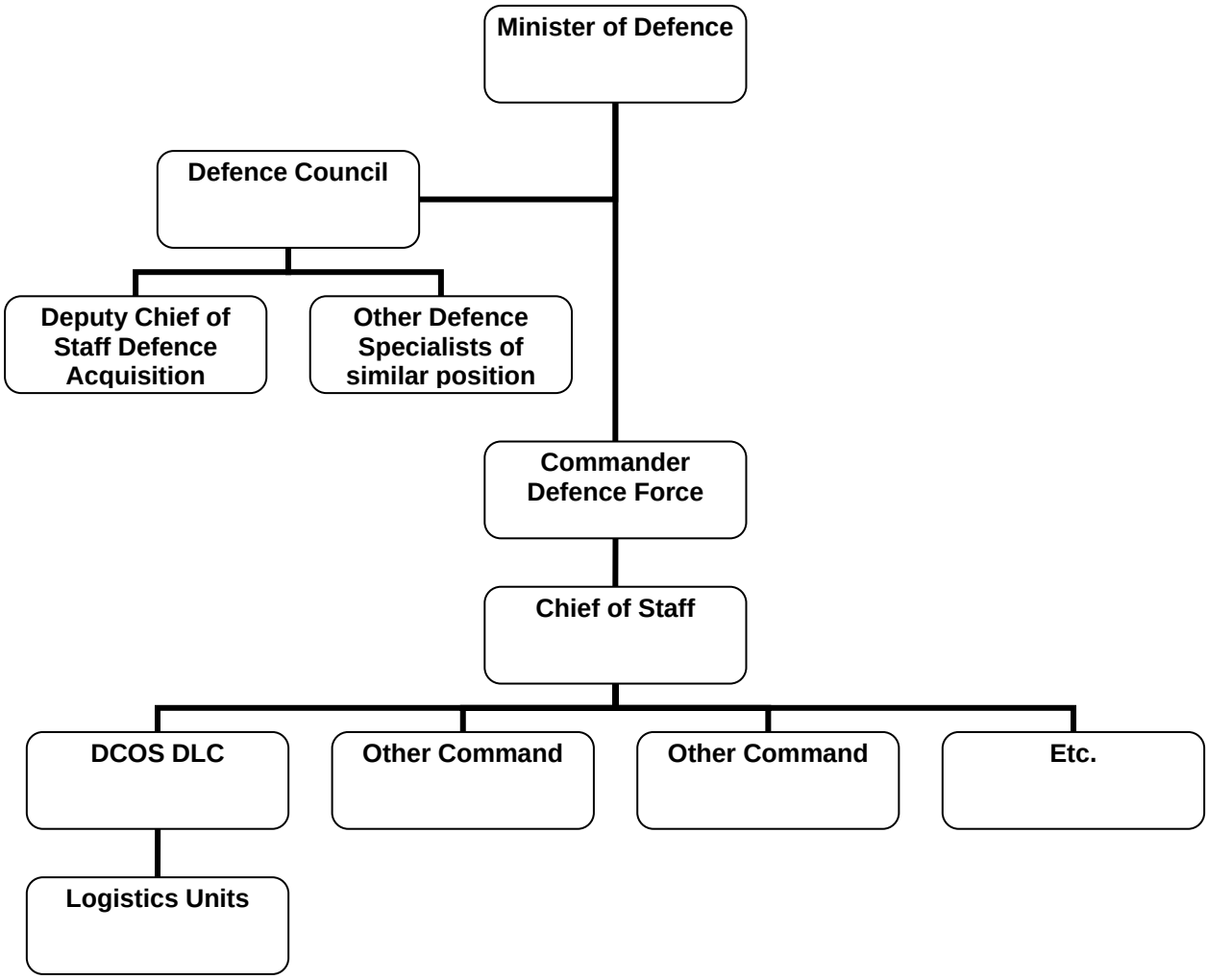

Figure14. The Proposed Strategic Procurement Structure for the BDF

The above structure was designed closely following the practices of the other three defense organizations that were treated in Chapter II above. It is the conviction of this thesis that when the acquisition command is separated from logistics command, then it would concentrate better on cultivation of best practices.

The Logistics function of the BDF which currently heads the acquisition workforce cannot solve its own problems. In this thesis, it is proposed that they should be the creators of the capability requirements. The Logistics Commander should head the user requirement teams which this thesis shall call Capabilities Design Group (CDG) to come up with the CDF's User Requirement Blueprint (URB), each year around July/August in preparation for the Botswana Budget Speech of February of the following year. The URB will not be the final document for presentation to Parliament. It will be meant as a proposal to assist the Defence Council in the programs that could finally be included in the Budget Speech.

The head of acquisition should then become a staff officer for the Defence Council, and it is proposed that he should be a Major General to elevate purchasing to decision making level as current trends outlined in Chapter I and II above demand. In tandem with the current naming of that level of office, he should be the Deputy Chief of Staff Defence Acquisition Command (DCOS DAC). This officer should have the authority to streamline programs in the URB, in line with running programs and the strategic plan for the BDF's mission satisfaction. He would add the lacking detailed pecuniary analysis to acquisition. The officer must then suggest his modifications or acceptance of the URB at the Defence Council meeting by October/November. The Defence Council chairperson, who should be the Cabinet Minister responsible for defense, should present the final document to the President as a Proposed Defense Budget (PDB).

What does the above proposed process achieve for the equipment user? It will provide the user with an ability to design their needs assessments without a view to the inside information on the *availability of funds*, which seems inextricable from political filibuster all over the world. With this method, the real needs will come out at the initial stages. These will not be controlled by the already appropriated funds as is the case now. It will therefore be the duty of the Defence Council to find the money for user needs satisfaction.

Structurally the Defence Council is outside the scope of this thesis, but it is suggested in passing, that this should be people with a high level of expertise in defense and management. That arrangement will follow the UK MOD. This will elevate decision making for defense expenditure to the elected legislators, when the budget is debated – an arrangement of the US DoD. The Cabinet minister will then be compelled to defend the budget for defense and not the user who in this case is the CDF. Further to this, it will demand professionalization of the Defence Acquisition Command (DAC) and elevate the heads of directorates within the command to a senior enough level to have garnered substantial experience and skills to navigate defense budgeting contours.

The proposed detailed structure for the office of the proposed DCOS DAC is given next. This also follows Chapter II's exploratory study in view to improving the user satisfaction levels, analyzed above. The structures used by the three defense organizations treated have an element of the functional responsibilities of acquisition that are identified with herein.

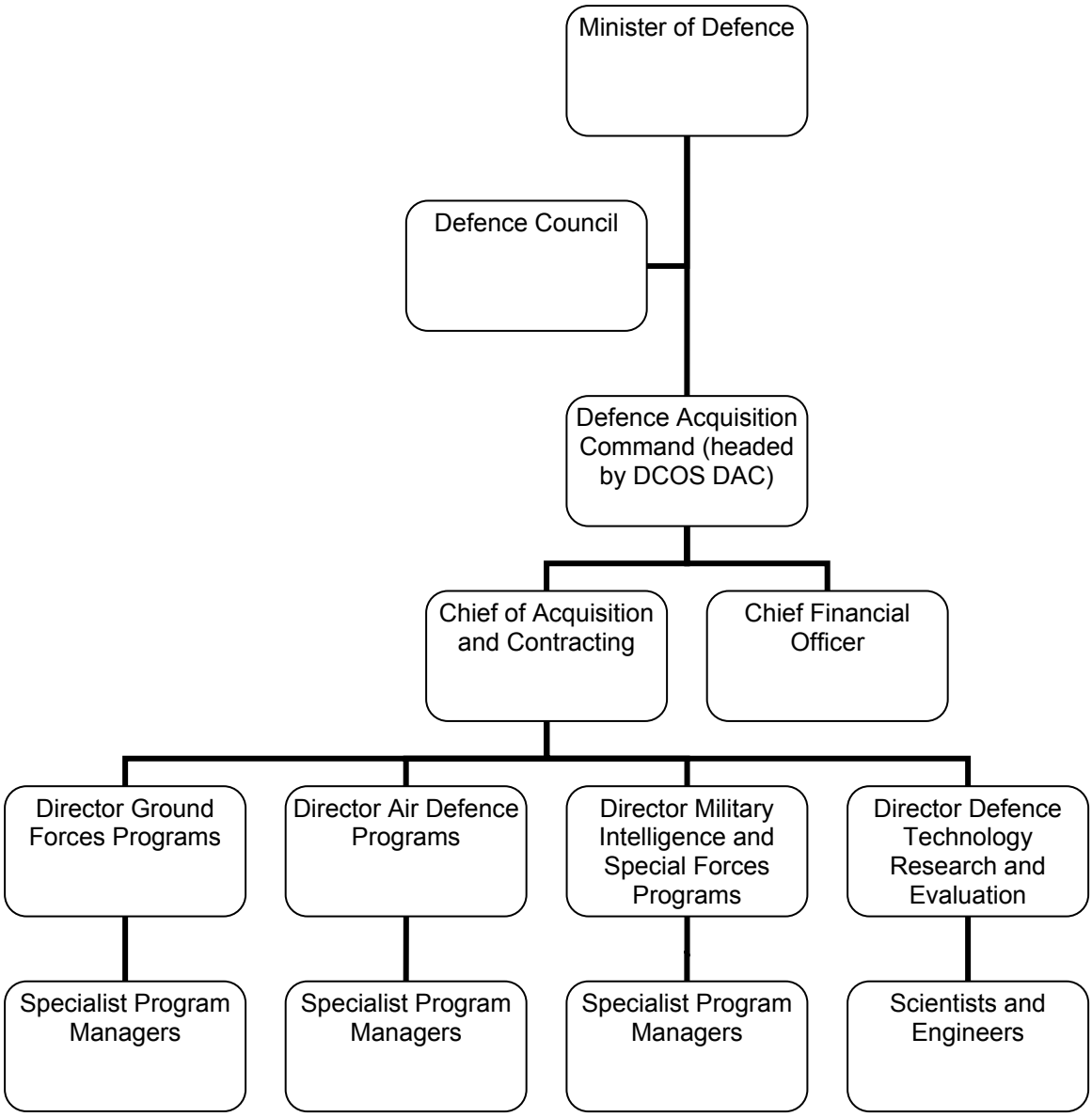

Figure15. Proposed Detailed Structure of the DCOS DAC

Starting from the bottom of Figure 15, the Specialist Program should be in touch with the detailed programs given to them by their directors. They should be required to conduct regular reporting to the directors supervising them. This will help in improving data quality and some level of specialization in acquisition. Solutions for problems would then become faster and easier. The scientists and engineers would assist in shortening the search for solutions for the requirements from the URB. They will be charged with continuously collecting information on

what is available in the international defense market. Further to that they will advise on proposed changes to the design of particular equipment to suit the Botswana environment. The input of all the directors will make up the contents of the PDB suggested above. This will be refined as the DCOS DAC makes changes and additions until it becomes presentable to the Defence Council.

There is also the suggested position of the Chief Financial Officer. This officer should be made responsible for funds management for reprogramming and investment appraisals for new programs to be included in the PDB.

3. Acquisition Process Flow Proposals

There is need for a process in order for the systems model, suggested by John Dillard (2003) and other sources referenced in Chapter II, to produce outputs and their attendant outcomes. To shun clear process design can only lead to trial and error with its concomitant corruption-potential. The following process flow is therefore suggested.

As noted earlier the CDF must be made responsible for designing a capabilities document for purposes of bringing the user needs of the soldier to the fore. This document, herein called the URB, should be done with the DCOS DLC as its head. Users from the different user units of the BDF and the maintenance officers should form a Capabilities Design Group (CDG). They would then send this for review to the DCOS DLC, who would pass on the final version he approved to the CDF.

The final URB will then go the Ministry of Defence to be handled by the DCOS DAC for analysis before any decision is taken on it. This would require that the DCOS DAC should necessarily send this to the Chief of Acquisition and Contracting, who would analyze the suggested programs and assign preliminary project teams – members of who should include user provided personnel. These are referred to herein, as Integrated Project Teams (IPT) for ease of reference.

The Chief Financial Officer (CFO), will be brought in with his staff to do the financial analysis part. The results from the IPTs and CFO would constitute a preliminary PDB. Once the PDB has been finalized by the Minister it would be

called a Defence Budget Memorandum (DBM), the final version of which would be signed by the Minister, for final presentation to the President. Once the DBM is approved at that level it would be finalized into a Defence Budget Decision (DBD) also signed by the Minister of Defence and included as such in the government budget. This is the document whose contents the Minister would defend in Parliament.

Once Parliament enacts an Appropriation Act on defense then programs would start. At this stage the Chief of Acquisition and Contracting (CAC) should send out proposal solicitations for major equipment (over BWP 100 million) and invitations to tender (ITT) for smaller purchases. These proposals and ITTs, would be received by the PPADB and not the DCOS DAC. The ITTs for sealed bidding would have an opening and award date. On the other hand proposals requiring negotiations would be registered by the PPADB and collected for further short listing and negotiation by the CAC. It is proposed that all major purchases should be negotiated and the minor purchases (BWP 100,000 to 100 million) can then go for sealed bidding. It is easy to design detailed technical specifications for small purchases since they are less complicated.

Major purchases must follow a performance based approach and be negotiated. The assigned program managers would form Contract Design Teams (CDT) to design and negotiate the specific contracts until they are signed by the DCOS DAC. At this stage there will be no requirement for the Minister to intervene, unless when there is a contract protest which should be handled by his/her office. All contracts would be signed by the DCOS DAC. This suggestion does not include the authorization of the expenditures for small purchases by field acquisition officers who should be allowed to negotiate and sign for contracts up to and less than BWP 100,000. The figure below summarizes the afore going.

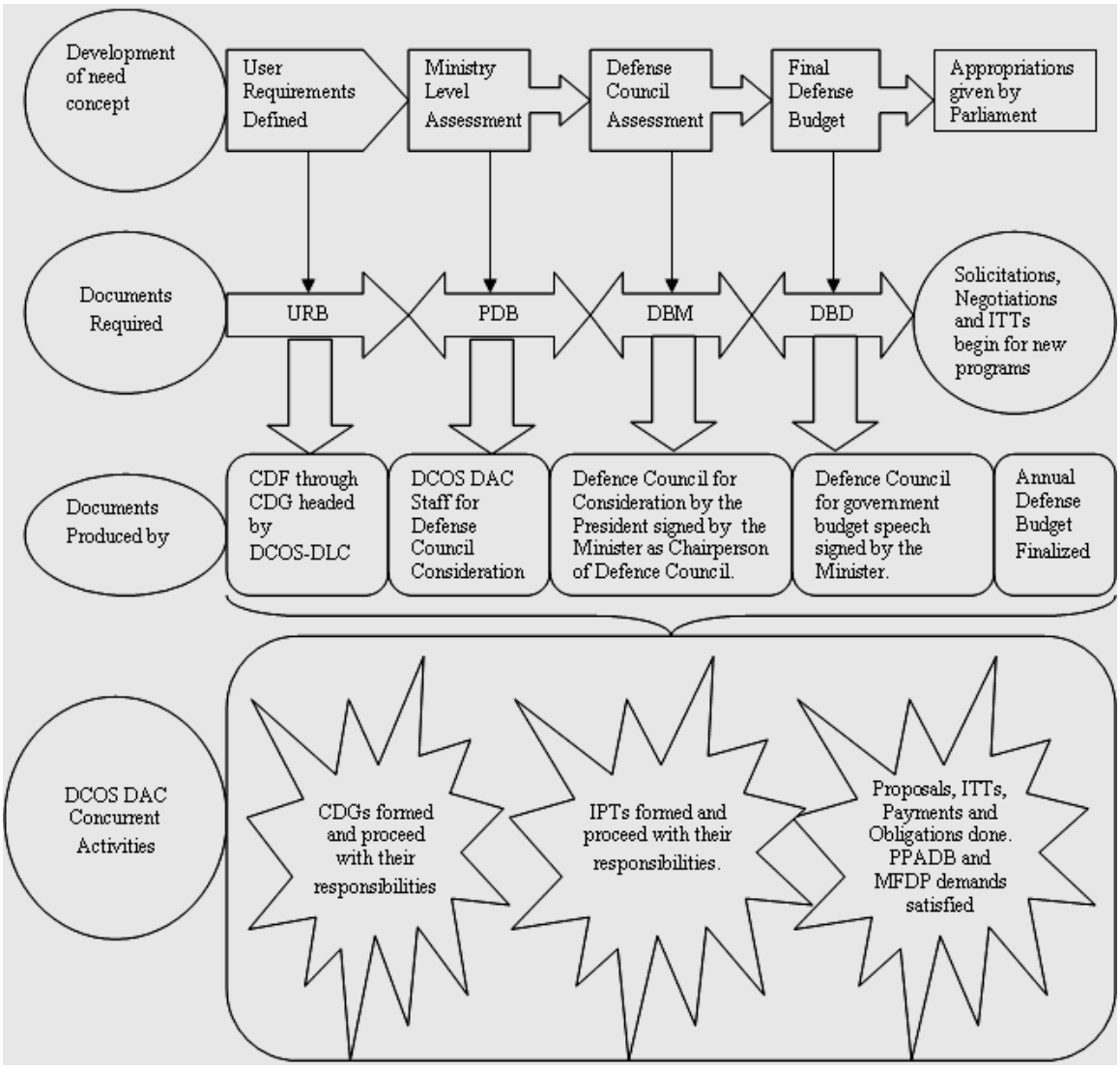

Figure16. Summary of Proposed Acquisition Process

4. Total Obligation Authority

There is abnormality of responses for the questions requiring rating of satisfaction with the duration of supply contract. Perhaps this is because there are no grounds for comparison for the respondents. Only one year contracting methods have been used in the BDF. However it is proposed here that acquisition should not be reduced to a twelve months expenditure of obligations. In order to develop a defense capability, programs have to be deliberately and thoroughly evaluated. The BDF must begin to have what McCaffery and Jones (2004) referenced above call Total Obligation Authority. Programs must be

started with the total cost of ownership taken into account. This should include operations and maintenance funds to be spent per year budgeted for at the program initiation stage. No funds allocated for equipment programs should revert to government coffers before expiration of program timeframes. Reprogramming would then be done each year to adjust for cost under- or over-runs. This would allow for proper trials and evaluation whenever these are needed.

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IV. CONCLUSIONS AND RECOMMENDATIONS

A. CONLCUSIONS

1. Summary of Results

It turns out from the null hypothesis, that there can be some ways to deal with equipment downtime in the BDF. The null hypothesis is proven to be true. The results show substantial dissatisfaction with the procurement methods of the BDF. If the results from the questionnaire indicated that there was substantial satisfaction with the acquisition methods practiced in the BDF then the alternative hypothesis would have been proven instead, i.e., that there was nothing that could be done in acquisition to change the poor performance of inventory in the BDF. There were seventy two responses and since this is higher than thirty, this assumes normality. Further analysis, using Chi Squared Test for normality; buttresses the preliminary cursory conclusion. The results were proven to be normal for the most part except variable (e) and (g). This means that the results of the thesis can be trusted that they are from a normal source.

The first issue that follows from the response to the questionnaire is that there is no support for acquisition development from top managers. This is evidenced by the fact that only three senior officers responded to the questionnaire as appears in Table 3.1 above. This creates a difficulty in that decision making is done at a high level – otherwise a good idea may not see the light of day. There is a clear requirement for the organization leaders to recognize the need for process change. Greenberg (2002)[115], on pages 370 to 375, teaches that when organizations realize that there is need to change then the leadership must come up with a new strategic plan. It has to be important to the leadership to agree with what their juniors are saying about the organization.

The second issue is the non-response of acquisition personnel. If these individuals manning the key positions involved with spending government money

[115] Greenberg, Jerald. 2002. Managing Behavior in Organizations. 3rd Edition. Prentice Hall. Upper Saddle River. Page 370 - 375.

would not be interested in a questionnaire that assesses their work area, then one wonders about their commitment to their jobs.

2. Structural and Process Contributions to Downtime

Unlike the other three defense departments compared in Chapter II, the BDF confines all the defense procurement processes within itself. Also acquisition is a part of Logistics in the BDF. This thesis concludes that all interested parties, to include the Defence Council and Parliament should have a stake in defense acquisition. Logistics Command must be a user of the services offered by the acquisition workforce. It is only in the case of separating the Logistics and Acquisition, that there can be a possibility of professionalizing acquisition. This professionalization is demanded by the PPADB and supported by this thesis. Further to that there would also be a possibility to fully staff the acquisition workforce, so that they could perform all the duties of coordinating and management. These include trials and evaluation; supplier assessments; contract design; program management; market research, etc. It is this insufficiency of the structure that leads to improper purchases.

The analysis of data for this research revealed that the officers are not satisfied with the trials and evaluation processes. It is concluded therefore, that not all the necessary steps are taken to assure the user of enhanced capability before the equipment is actually bought. This is important even when the BDF is only buying equipment at the non developmental stage (NDI)[116]. The equipment has to be tested under normal operating conditions before being purchased. In this case the problems inherent in the design will be revealed in the specific conditions that the BDF operates in. Defense equipment expenditure is large and must be done decidedly. On the basis of the results obtained and exploratory research, it is concluded that the BDF needs to improve on the area of trials and evaluation. It will be a good idea to be sure of performance before purchases are done.

[116] Anonymous. 2001. Test and Evaluation Management Guide. Defense Acquisition University Press. Fort Belvoir, Virginia. Pages 11-2 to 11-3.

It is also concluded here that deliveries lead time can be brought to controllable levels by giving sufficient time to assess the equipment to be bought. It is not proper to decide to buy equipment without trials and evaluation. Acquisition personnel must also carry out market survey to establish the best ways of satisfying a need. Only when these are done, in consultation with the suppliers concerned should the order to buy be placed. In this case it will shorten the deliveries lead time. The sooner the purchased item can be brought into service after an order the better for operations. The users will have a shorter waiting time for their equipment.

There is too much variety in the BDF. This, as shown above, leads to higher logistics costs[117]. The lack of funds will complicate this further as the spare parts become more expensive, due to variety. This contributes to downtime. It is concluded also that since the respondents to the questionnaire showed dissatisfaction with the variety of equipment introduced through acquisition, then the variety has to be reduced. It does not lead to better capability when the same purpose equipment is brought in various versions – it only brings about higher maintenance costs. This further leads to downtime as the ability to maintain equipment becomes more difficult than when there is one specialized supply.

The BDF lacks asset visibility. There is no inventory management IT system. Records on logistics metrics are done manually, if at all. This becomes difficult to assess the performance of the equipment already in inventory[118]. The respondents showed that they are unhappy in this aspect. The problem directly impinges on acquisition. Procurement of equipment requires that there should be knowledge of the lack of performance of the assets that are already in the armories, prior to a new needs assessment. Asset visibility eliminates the tendency to buy even when the current inventory is still performing. But in the

[117] Kang, Keebom. 1998. “DoD Inventory Management Cultural Changes and Training in Commercial Practices”. Naval Postgraduate School, Monterey, California.

[118] Ibid.

light of the downtime, the lack of IT means that not sufficient measures of capability evaluation can be performed.

Another weakness in the structure and processes is the fact that the acquisition workforce does not have a clear career path. Without proper training and education there can not be a development of the expertise. Experience in the office goes only as high as the individuals' exposure to extant knowledge. The design and implementation of these requirements will compel the BDF to staff all acquisition positions with the right personnel. All disciplines need a career path. For instance the BDF does not perceive of an infantry officer who does not go through continuous training. The question is, why should it be less important for those who support the infantry to have the same level of recognition? Clearly without good support the infantry can not succeed in an operation without properly procured equipment. This proper procurement can be done with the right minds put together. It is also concluded, that the acquisition head, has to be elevated to the higher position of say, Major General. This will equate the rank to that of other service decision making like the DCOS DLC. This officer should then report to the Defence Council. This shortens procurement decision making. It further ensures that the user's demands have an independent assessor. It will compel the office of acquisition to work within limitations set by the legislated BDF mission and the defense capability set by the Defence Council.

Mere preference for local suppliers is discouraged in defense procurement, albeit the fact that it is inculcated in the PPADB Act. Clearly from the results there is abnormality in the responses for the variable dealing with the citizen supplier preference. This may have been caused by the conflict between nationalist interests and the desire to arm the defense force. The BDF has to be considered differently from the other departments of government where their suppliers can manufacture locally or at least get their manufacturers based in South Africa. In that case the BDF can be assured that there is a stable supply chain. The agents, who represent foreign companies in defense sales, are only appointed on a short term basis by their principals. This creates a complication

in that the agent is not wholly a business stakeholder. His/her interest is to sell for the sake of the commission that they get after selling. Further to that there is little benefit to the economy because the agencies do not employ a lot of people for the purposes of doing agency work. The supplier could continue or disappear from the market regardless of whether they keep the same agent or not.

This thesis demands that there should be Total Obligation Authority[119]. The defense budget must not be based on a year to year basis. There should be multi year contracting. It creates some motivation to the supplier when they can be sure of future business. They would be encouraged to produce good quality. It also would save the BDF a lot of time in carrying out new evaluations each year.

The logistics metrics of reliability, availability and maintainability are also at unsatisfactory levels. These can always be traced back to procurement. When the test/trials and evaluation at all levels for equipment are insufficiently done, it is bound to lead to unsatisfactory logistics metrics. These can be bought. The level of each could be inculcated in the modification of the NDI, when he BDF chooses to buy in the first place.

The formation of PPADB is a good start towards professionalizing acquisition in government. The responses showed abnormality in Table 3.2, in relation to the PPADB relations with BDF. It is understandable in the light of the fact that this is a new body. But with time as acquisition continues to be staffed with experts in the field then there will be conviction to the need for the demands of this body.

The turnaround time has been shown to be unsatisfactory for the respondents. This is what this thesis expected. It is thus concluded that acquisition has not helped the situation very much.

[119] See Jerry L McCaffery and L R Jones. 2004. Budgeting and Financial Management for National Defense: A volume in research in public management. Information Age Publishing. page 370.

The need to begin to involve the Defence Council in procurement can not be overemphasized. A defense bureaucracy proposed by Thaga (2004)[120], is required in this thesis. The Minister responsible for defense should then be in a position to defend the defense budget in parliament among legislators. This will determine how much funding the country can afford for military equipment. The Defense Council should propose and maintain procurement standards for the BDF. The CDF will then be in a position to bring his user needs without being given the responsibility to deal with budget limitations as well. Further to that the holders of the purse strings will be compelled through this bureaucracy to set and permit a national level of defense through appropriations.

B. RECOMMENDATIONS

The following is the list of resultant recommendations from this research:

1. This thesis recommends that the BDF should attempt to adopt the structural and process proposals given in Chapter III above.
2. There should be thorough trials and evaluation for all the equipment that may be bought for the BDF.
3. The head of acquisition should be elevated to command level to assist decision making[121].
4. There must be a career path for acquisition personnel[122].
5. The BDF must introduce asset visibility through the implementation of IT[123].
6. In line with the above recommendation, the BDF must enforce collection of logistics metrics.
7. Preference for suppliers should be based on best value for money, not merely on citizenship.

[120] Thaga, Laki S. March 2004. "Unpacking and Rearranging the Boxes": The Search for New Institutional Matrix of Democratic Control of the Military in Botswana. Thesis for the Master of Arts in Security Studies at Naval Postgraduate School. Monterey, Carlifornia. USA.

[121] Ibid, footnote 7.

[122] Ibid, footnote 24.

[123] Ibid, footnote 95.

8. Total Obligation Authority must be studied, with a view to implement it in the BDF[124].

9. Further to that, further research is recommended in the light of the weakness of the resultant model in Chapter III. This research should find out whether empirical data for sampled equipment, shows that there is actually a low A_0. This thesis was using nominal data and the proposed further research would use interval data.

[124] See Jerry L McCaffery and L R Jones. 2004. Budgeting and Financial Management for National Defense: A volume in research in public management. Information Age Publishing. page 370.

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