Whole Life Program Success, Leadership Competencies and Motivation for Learning: UK Defence Case

WHOLE LIFE PROGRAM SUCCESS, LEADERSHIP COMPETENCIES AND MOTIVATION FOR LEARNING – UK DEFENCE CASE

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Abstract: The value of learning from program management has not received full recognition in the workplace. The purpose of our study was to investigate whole life program management success and its link to leadership competency units to define the meaning of true program success and motivation for learning. An inductive interpretive approach using the open-dialogue interview technique was applied. Seventeen Defence leaders responsible for the acquisition and support of UK major defence programs in excess £50 Billion published in the UK National Audit Office (NAO) Major Project Report 2015 participated in this study. A case study of the UK Defence programs provides insights into what success is in a Defence context. The study suggests that whole life program management success, measured against capability outcome as against performance, cost and time (PCT), can be achieved through competent leadership. This can be a motivation for learning from the program's success. The findings showed that success extended beyond baseline deliveries, and it is insufficient to measure success with PCT parameters. Our study defines what success is and proposes its achievement has a direct correlation to program leadership competency and its non-achievement be understood by organisations for survival in a complex highly structured environment.

1. INTRODUCTION

The aim of this study is to provide a conceptual empirical understanding of what success is when it comes to whole life program management and its associated leadership competency in organisations and draw how it can be a motivational tool for learning. Leadership skillset can be viewed as the ability to establish vision and direction, to influence and align others towards a common purpose, and to empower and inspire members in the organisation to set their goals and achieve success. The research was conducted in a UK Defence organisation. The UK Defence, pre-2007, had two distinct organisations that support defence capital programs, namely:

(1) *Defence Procurement Agency which is involved from program inception, development, and delivery.*
(2) *Defence Logistic organisation which is involved in operational support or what is known as in-service support.*

Post-2007, the two organisations were merged into one and called Defence Equipment and Support. As Defence realigned with Bernard Gray Report (2009), it proved that having two distinct organisations was not providing value for money for defence and the leadership of each organisations were not equipped to achieve defence intended outcome of capability. The merger brought a new approach where service support is considered as part of the business case to support any defence investment programs. The whole life approach to program management essentially is the consideration of all aspects of operation, management and leadership of projects from conceptual to outcome delivery. This was a new approach for the UK Defence. The whole life approach is intended to provide the defence organisation and its leadership with a capability mindset which incorporates acquisition and its support/operations together in one organisation.

The issues of program success are complex. Joiner and Tutty (2018) suggest that for organisations to achieve their intended outcome, i.e., success in the military environment, certain conditions should in place. These conditions are mainly, control, communication, and coordination. Control establishes constraints necessary to ensure consistent performance and future trajectory. Communications provide the flow and processing of information necessary to support a consistent decision, action, and interpretation throughout the system. Finally, coordination provides for effective interaction to prevent unnecessary instabilities within and external to the system, and integration which maintains system unity through common purpose, designed accountability, and maintenance of balance between system and constituent interests. System in this context refers to the people, processes, and governance, within an organisation working together in a connected way to achieve the desired outcomes of the program. Joiner and Tutty (2018) posited that in meeting these conditions within the system, integration and interoperability are two important drivers that can influence the defence organisation achieving its intended outcome. Integration was referred to as the characteristic of multiple systems, including their human interfaces and operators, to be compatible and work synergistically by design to achieve combined, desired, and emergent properties and effects. Joiner and Tutty (2018, p 7) argue that "interoperability is referred to as 'capable of working together', by some deliberate standard physical design features such as information protocols in a multi-network of information systems into a central database as an example".

Program outcomes ultimately aim for success. The problem is organisations try to measure program success based on pure performance, cost, and time (PCT) for each component of project without aggregating their combined effect through interoperability and integration for its intended desired outcome. Joiner and Tutty (2018) work evidently supports the notion that program success should consider the outcome, values, benefits realisation, and achievement of organisations' strategic objectives.

The objective and motivation to conduct this case study is clearly driven by the need for organisations to revisit traditional ways of program performance and program management leadership competency attributes requirement to understand their fit in the new world order. It is also to raise the need to learn from programs. The case addresses a program comprising of interrelated and interdependent projects. It is a challenge that changing business climate in the new world brings a definite shift in how programs are managed, and competencies requirement of a program leaders' that drive program management success. The attributes of competency required to manage programs in a volatile, uncertain, complex, and ambiguous environment like Defence, is the significant learning obtained from this study.

Project Management Profession (PMP) is the umbrella term used for projects, programs, and portfolio management (P3M) in many organisations and professional bodies. The case uses program because it is outcomes dependent and related to benefits accrued beyond delivery (during operations or use) which is what the case believes organisations ultimately seek to provide a return on investment. Our insight of "success" in a program environment is the valuable learning we have obtained from the case and identifying the contributions and at the same time allowing the nature of the dimensions presented during the life cycle of the program combined with the assessment of return on investment. We also focus on the contingency variable on the expectation of program management leader accountable for the achievement of an organisation, government bodies or global agencies desired outcome, who invest heavily to deliver and sustain both capital and social programs intended to make positive impact on citizens standard of living, protection of strategic assets, prevention of wars, disasters, relief support, products and services that provide a return on investment for shareholders. Programs according to the UK Office of Government Commerce, Managing Successful Program (MSP), (2011) is a temporary, flexible organisation created to coordinate, direct, and oversee the implementation of a set of related projects and activities to deliver outcomes and benefits related to the organisation's strategic objectives. Murray-Webster, Thiry (2000); Partington, (2000) argue programs are collections of projects that produce a strategic change. Though measure of success in program management is the end-user's perception of the capability and the benefit associated with the outcome (MSP, 2011). It is widely accepted that most defence acquisition programs, and modern programs are becoming increasingly complex, politically sensitive and managing them requires leaders that have both the hard and soft elements of modern management in terms of practical, technical, and interpersonal skills.

In this study, we apply Shao, et, al., (2012) four dimensions of success in program management together with Partington, et, al., (2005) level 3 and 4 competencies and proposes attributes of competencies from the 17 participants. The paper showcases the case reviews various scholars' position on both success and leadership competencies but notably the work of Shao, et, al., (2012) on program management success and Partington, et, al., (2005) leadership competencies framework with a focus on its level 3 and 4 attributes. For this study, we take the position that, competency encompasses skills, knowledge, attitudes, and behaviour that are casually related to bring about superior job performance, and it may include motives, traits, aptitudes, knowledge, or skills (Crawford,1997; Gadeken, 2000 cited in Genring, 2007).

This paper is structured into 5 sections. First section conceptualizes the background for our study and section 2 discusses in-depth the supporting literature and in section 3 we discuss using an inductive approach and taken the position of the definition of competency. In section 4 the analysis and results of the case are presented and synthesised against the dimensions of success and the level 3 and 4 competencies attributes. Finally, we conclude with recommendations for the defence organisation to view learning as a motivational tool.

2. REVIEW OF LITERATURE: PROGRAM MANAGEMENT SUCCESS AND ASSOCIATED LEADERSHIP COMPETENCY

Literature was reviewed from two perspectives: the first focuses on success measurement in a program management organisation and second reviews leadership competency.

2.1 Success in Program Management

The widely recognised view in the project management profession is that performance, cost, and time (PCT) or the iron triangle are the primary measurements of success (Ika, 2009). Neverrauskas, el, al., (2013), contend that cost, time, and quality do not give enough base to measure a successful program and suggested that it does not consider both internal and external communications. Authors state stakeholders' input and the environment in which the program exists, which is referred to as the "extended view" was often dismissed. Similarly, program success is judged not by the traditional PCT envelope but by whether the program delivers the desired outcome (Turner and Zolin, 2012).

Desired outcome could be in the form of new capabilities and business objectives (MSP, 2011), whether it achieves the desired long-term impacts, including delivering the organisations' strategic objectives (Eweje el at., 2012) and desired future development of the business (Shenhar and Dvir, 2007 cited in Turner and Zolin 2012). Consequently, stakeholders' changing expectations and the environment in which a program exist, referred to as context (Shao, Muller and Turner, 2012), affect success measurement. This stakeholder's changing perception over time is in three stages and includes impact, outcome, and output (Turner and Zolin, 2012).

Therefore, these contextual factors often draw much of program management practitioners' attention, efforts, and can cause them to make compromises and reshape their programs (Pellegrinelli, Partington, Hemingway, Mohdzain, and Shah, 2007 cited in Shao et al 2012). Similarly, effective program management approaches should be dynamic and flexible, adaptable to changing contexts and relationship-based (Lycett et al., 2004 cited in Shao, Muller and Turner, 2012). It has been well acknowledged that programs' success criteria, are beyond the traditional measures of time, budget, quality, and requirements (specification), and team satisfaction (Jha & Iyer, 2007). Furthermore, extant literature in management has established that competency, that includes appropriate personality and leadership style, can lead to improved organisational performance (Turner & Muller, 2005). Therefore, taking this premise, measurement of program success according to Shao et al., (2012) study relates to four dimensions of: delivery capability; organisation capability; market capability; and innovative capability. Shao, et, al., (2012) suggested that delivery capability (1) measures program success from the perspective of successfully delivering what the program is supposed to deliver, whether the stakeholders are satisfied with the deliverables, whether the expected business results are achieved, and so forth. Organisational capability (2) measures program success in terms of the program's contribution to the improvement of organisational capacity, either from improving the efficiency of processes and the like in their parent organisations known as the "hard-side" (Shao, et, al., 2012, p 41), or from influencing the organisational culture, changing the way of doing business, and so forth refer to as the "soft-side" (Shao, et, al., 2012, p 41). Marketing capability (3) measures the inner connection between programs and organizational strategies. Innovative capability (4) measures program success from a technology development perspective, such as whether new technologies were developed in the program. This measure reflects the program's contribution to its parent organization in terms of preparation for future opportunities. Among these four program success measurements, a delivery capability is closest to tangible benefits. The other three dimensions measure the more intangible benefits of programs. Their combination corresponds to benefits that allow the organisational to achieve its intended outcome which can be viewed as success. Shao, et, al., (2012) then posit that program success measurement criteria as expressed in **Table I** related to the four dimensions.

The scholars posit that all four dimensions of measurement cannot be conceptualised in isolation and hence the need for program leaders to have strong cognitive ability. Cognitive ability is having a keen mind, strong analytical ability, good judgement, and the capacity to think strategically and multi-dimensionally (Kotter, cited in Kirkpatrick and Locke, 1991). Delivery capability is a measure of the tangible benefits of the program, while the other three dimensions are closely related to the measurement of the intangible benefits, which is an affirmation of success dimension of benefit realisation (MSP, 2011) and the standard for program management (PMI, 2017), although changing stakeholders' perception over time and contextual factors are key issues or reasons for program failure (Cheung, 2015).

While literature has given meaningful insights into leadership in various forms, our paper suggests there has been little research into behavioural performance management of program leadership that focuses on cognitive ability that conceptualised the four dimensions of Shao, et, al., (2012) and combining Partington, et. al., (2005) competency framework to ensure program success. The section below discusses leadership competency with this focus.

2.2 Program Management Leadership Competency – Outcome and Strategic Capability Development

The traditional definition describes competency in the program field as a combination of technical, management and leadership abilities (PMI, 2017). This competency framework captures the architectural competence of an individual. This competency, which includes formal program management skills, focuses on the process, be that scientific or specialized, in the field and technical areas. The aim of a competency framework is to ensure that the PMP and team

Program Success	
Program Efficiency	Deliver within time frames. Deliver with budgets. Meet functional requirements
Impact on Program Team-member satisfaction	Team Specialty improvement Low fluctuation
Stakeholder satisfaction	User Satisfaction Customer satisfaction Supplier satisfaction Sponsor satisfaction Other stakeholders' satisfaction Stakeholder engagement Customer loyalty
Business Success	Business results Increase market share. Reoccurring business Power of influence
Preparation for the Future	New technology Technology leverage New market More efficient process Organizational capability
Social Effects	Social economic benefits Improvement of quality of lives for citizens Environmental value Science and technology development Social evaluation

Table I Source: Shao, et, al., (2012) Program Success Criterions bounded by the four dimensions of Delivery Capability, Organisational capability, Marketing Capability, and Innovation Capability.

members are able to apply tools and techniques more effectively and ensure that state-of-the-art methods in the program management field are maintained and attained by professionals in this field (Dan, 1995). The key strands of cognitive ability and delivery capability (1) (UK Major Project Report, 2015) are the demonstrating measures of leadership competency in the military within program management.

Competence can be defined as knowledge, skills and personal attributes that lead to superior results or to meet defined performance standards (Turner & Muller, 2005). Scholars Argyris (1962); Boyatzis (1982); Drouin, et, al., (2018) have researched and explored the concept of competence for improving management performance. Scholars claim that possession of a certain genre of personality and leadership style ensures the program manager is competent. Various studies in program management field, and leadership, provide the basis to build further on competency standards. Competency in program management requires a mixture of interpersonal skills and personal credibility (Partington et al., 2005). Mallia, et, al., (2013) also suggested that to achieve success, the leaders must possess: (1) Soft skills – teach, nurture, guide, challenge team and lead by example; (2) Strategy expertise – develop a strategy that inspires creative staffs; and (3) Creative expertise – build good relationships with other departments and with clients and shape the future vision of their organisations.

To achieve program management success, that is success beyond-delivery, Partington et al., (2005, p88) argues a "worker-oriented" concept gives a higher-order-of-conception (Sanberg, 2002, cited in Partington et al, 2005), and a growth-view (Argyris, 1973) is required. Partington et al., (2005) worker-oriented concepts elude mostly leader-led-management concepts with high-performance measures. The framework essentially identifies the program activities and then translates that into personal and professional attributes. The author describes levels 1 and 2 meeting the basic project output; level-3 being about the achievement of high-level program outcome whilst level-4 relates to development of strategic capabilities and consequently a higher-order-of-conception competence. This framework has been tested across various sectors excluding Defence. Hence our contribution to this study was to encompass this framework within a Defence programs management context to understand if the phenomenon can form a useful understanding in a highly bureaucratic organisation. Partington, et, al., (2005) developed a model of 17 attributes of competency at four levels (see **Table II**).

Some arguments that we draw in our discussion are competency-based practical skills as 'science', whereas the soft-skills (e.g., leadership and other attributes) as 'art' of program management (Ravindranath, 2016). Competency encompasses skills, knowledge, attitudes, and behaviour that are casually related to bring about superior job performance, and it may include motives, traits, aptitudes, knowledge, or skills (Crawford,1997; Gadeken, 2000 cited in Genring, 2007). The aforementioned are all deeply embedded in Taylor's (1914) classical scientific management. This understanding of competency is a widely accepted definition of program management in the UK. This study conducted refers to motivation, knowledge and experience, aptitude, traits, skills, and behaviour as each unit of competency. Early studies especially by Dolfi and Andrews (2007) and Geoghegan and Dulewicz (2008) posit that competency is the enabler of program success and their views are supported on two counts. First, a program managers competence contributes significantly to enhancing the program quality performance. Second, a program leaders' ignorance and lack of knowledge significantly affect program performance. So, in either case, competency and program management success are interrelated, and the latter is affected by the former. Some argue that once program management professional obtains

LEVELS OF CONCERN OF PROGRAM		1 Delivery scope	2 Impact	3 Outcomes	4 Strategic Capabilities Development
		Relationship: self and work			
S1. Focus		Detailed	Summary plan	Level 2 + personal involvement for stakeholder benefits	Level 3 + strong future external-context orientation
S2. Emotional attachment		Detached, factual	Benefits Success	Achievement Passionate	External Commitment
S3. Action Disposition		Procedural Trouble-shooter;	Proactive, analytical;	Experimental, reflexive	Intuitively realigns; design rules
S4. Role Approach		Focused Single	Multiple	Clear position	multiple divergent
		Relationship: self and others			
O1. Team Relationship		Supportive	Interactive	Social, inclusive, paternal, drive hard	Charismatic Confident, inspiring leader
Q2. Solutions Approach		Procedural	Legitimate Procedural	Legitimate negotiations	Creative
Q3. Educational support		Facilitator	Director	Coaches	Contextual Coaching
Q4. Questioning		Own clarification	1 + challenge others	2 + encourage creativity	3 + redefine problem; reframe purpose
Q5. Expectation		Contracted effort	Special effort	Exploit talents	Extends talents
		Relationship: self and program environment			
E1. Adaptive intent		Historical trend	Adapt-self	Suit-self	Suit-purpose
E2. Organisational capabilities Awareness		Assumes Delivery	Pushes for delivery	Pushes harder delivery	Explores internal /external delivery
E3. Risk Approach		Analyse, report, monitor	Risk Mitigation	Extreme contingency	Failure consequence ready
E4. Communications Approach		Objective facts	Consistent analysis and opinions	Level 2 + audience sensitivity	Level 3 + cultural sensitivity
E5. Governance Approach		Standardised	Create stable structures	Adapt/create control situational procedures	Embed into management structures
E6. Scope Attitude		Defined; changes authorised	Cost-benefit analysis	Trialled alternatives	Meet emerging changing needs
E7. Time Attitude		Schedule driven;	mobilise time	Change speed	Timeliness and maturity
E8. Monetary Attitude		Budget driven	Funding Driver	Financial ambiguities	Achievement Driven

Table II Source: Partington, el, at., (2005) Framework

an 'entry ticket' level of knowledge, any additional knowledge does not make them more competent (Hobbs et al., 2001). PMPs do not need training as they can just gain their competence through on-the-job experience, as the accidental PMP. The various positions taken by scholars such as Bresnen, M., (2007) and Geraldi, et, al., (2010) agree that competency acts as a pillar of success. Competency enables a PMP to take timely decisions that make the program meet its success criteria's, thereby providing satisfaction to all the stakeholders (De Bakker et al, 2011).

(1) The UK Major Project Report (2015) defines Capability as a knowledge and skill base that satisfies strategic requirements arising from the National Security Strategy. Commands meet the Strategic Requirement by providing military outputs to Defence. This capability descriptor arises from the employment of Military Capability mediated through Joint Capability Packages, which are composed of Force Elements and Joint Enablers. Commands' chief responsibility is to develop and generate this capability.

3. METHOD AND METHODOLOGY

A qualitative inductive and interpretive approach was applied for this study. As Thomas (2006) identified, it was the appropriate strategic approach to study an organisation's program and capability performance that embraced the suites of projects and the way it was led or managed. By taking this approach, it allowed the researchers to obtain extensive data through the documentation, interviews, and experiential narratives.

3.1 Interviews & Data Collection

A total of 17 Defence Program Managers responsible for the acquisition and support of UK major Defence programs and reported in the NAO Major Project Reports (2) were interviewed. The interviews were conducted in two stages. Stage one took a structured approach and Stage two involved an open approach with the participants sharing their experiential stories. Each stage took approximately one hour. The study also included observations of groups of managers executing the programs. With the open dialogue the program managers were encouraged to talk about critical incidents when sharing their experiential stories.

3.2 Analysis, Findings and Supporting Experiential Arguments

The use of a qualitative inductive approach allowed the raw data to emerge, and using a structured approach for the theoretical analysis, the data was reduced, displayed, and competency attributes drawn into the Partington, et, al., (2005) Framework (3) as the outcome achieved by the program management leader's intervention to the programs. We also used the PESTLE (4) Analytical Model (Aguilar, 1967) to highlight the stakeholder's boundaries that were forced upon each program within this case study. The framework underpins the real-life scenarios to which complex programs are subject to by the sponsors and policy makers. In this case study, these are the drivers that the program management leaders must take into consideration as part of success criterions and fundamentally aligns to the four dimensions of success as illustrated by Shao, et, al., (2012).

The case study analysed the emerging program management leadership competency attributes data and made the interpretations in accordance with Partington, et, al., (2005) framework and Shao, et, al., (2012) program success criterions for the four dimensions of success. Partington's (2005) framework and Shao's et, al., (2012) program success criterions within the four dimensions helped conceptualize the internal aspects whilst the PESTLE Analytical Model helped us interpret how the leaders dealt with the external expectation by the policy makers. The level 3 and 4 higher order of conception, the four dimensions of success and the PESTLE framework complimented and linked the emerging themes for the study: that being the determination of program management success and program management leadership competency. Sensitivity was considered, with the raw data that the participants shared about their incidents being embroiled in emotions. We have summarized the themes arising from the interviews and stories in tables and provided verbatim in certain sections to maintain the trueness of the expression from the participants' interviewed.

Part 1 relates to success perception using open question dialogue questioning. As Adam and Snell (2013) state how open dialogue provides a basis for critical discussions of practice, which highlight dilemmas instead of prescribing solutions, helping to develop and support thoughtful, flexible, and insightful practitioners. **Table III** below highlights the key drivers of the three different perspectives on the notion of success which was necessary to be able to analyse and collate attributes of competency-units (see **Table V** for competency units) displayed by these leaders.

(2) MPR Major Projects Report: The NAO is required to report annually to Parliament details on its performance in delivering Major Defence Equipment Projects in the previous year, the Departmental Major Projects Report (MPR). The report details the 20 largest post Main Gate projects in terms of value within the Equipment Plan and reports on delivery to performance, cost and time.

3.2.1 Success (Part 1)

There are three different categories that underpin success measurement in our case study, as expressed by the participants and these include organisational, program manager's view from an organisational perspective, and program manager's personal view. The key drivers for these three success categories are:

1. Defence organisation success measurement drivers are;

- Key User Requirement – Measure of milestones
- Staying within the approval limit
- Achieving Initial Operating Capability (IOC)
- Commitment

2. Program Manager's views of success from an Organisational Perspective

- Reputation
- In-service operation
- Impact of trade-offs on strategy
- Effect on team moral
- Need for disposal - .....is a through life organisation.

3. Program Manager's personal view on success measurement criteria's extending beyond delivery.

- Reputation
- Meeting the need of the users (Front-line Command) - getting the desired kit to do the job, by delivering military effects with the equipment during operation.
- Capability delivery
- Benefits and outcomes as success

To keep the impact of what success means and to define success in defence programs with interrelated projects, the following quotes demonstrate how the leaders are attached to the meaning of success. The extracts below are quotes from participants to support categories. These extracts support the later assumption on the interviewee's opinion of the top five rated attributes of competency units that will ultimately lead to program management success, rather than merely success at delivery with PCT.

- I am a soldier, hence there is a shift in what you would term success throughout the process but there is a capping success criterion or mission which is delivering IOC (5)". On the other hand, "we might often not necessarily agree with it, but as an organisation; baseline requirements, cost and time, are the priority in terms of measurement of program success".
- "If I agree to do something and I achieve it; that is success" and another level is "if I agree to deliver a program but the environment changes around the program so that it is no longer fit for purpose, even if within cost, time and baseline requirement. It can be argued that the outcome is not a success".
- If in use, the user puts the equipment beyond that envelop and it still works, then that is a success but if it does not work for what we designed it for, then that is not a success".

	Defence organisation success measurement drivers	Program Manager's views on success criteria's driver from an Organisational Perspective	Program Manager's personal view on success measurement criteria's extending beyond delivery
1	Key User Requirement – Measure of milestones	Reputation	Reputation
2	Staying within the approval limit	In-service operation	Meeting the need of the users (Front-line Command) - getting the desired kit to do the job, by delivering military effects with the equipment during operation.
3	Achieving Initial Operating Capability (IOC)	Impact of trade-offs on strategy	Capability delivery
4	Commitment	Effect on team moral	Benefits and outcomes as success
5	Knowledge & Experience	Need for disposal - DE&S is a through life organisation	

Table III: Key drivers of the three different perspectives on the notion of success

[3] A framework of 17 essential attributes of programme management work, each conceived at four levels in a hierarchy of competence
[4] PESTLE analysis is a tool or framework to analyse and screen the external environment at a strategic level.
(5) IOC: Initial Operating Capability is the military capability standard, which is considered by the Senior Responsible Owner (SRO), in conjunction with the User, to be the minimum level at which the capability or service is usefully deployable. The IOC date is defined in the Main Gate Business Case and is used in program planning.

- Delivery is one thing, but I think there is more than just delivery; it is being proud to be part of the team that delivers something, that in itself is a great motivator to people, attracts good people into the program team and it will keep them there because they are well motivated".
- 'There is a huge amount of uncertainty in the delivery of these programs, so to simply measure them on time and cost base is wrong in my opinion of success. Success is the delivery of the capability, the right capability to protect our Armed Forces".
- PCT is not a measure of success but a measure of delivery", "success is achieving the intended outcome for defence, which might be a certain type of capability, Value-For-Money, and a deal for British industry which are high-level objectives".
- "I never managed to achieve the time and or cost that was set back in.... which was at that point in time and you don't know enough to have a certainty about the outcome of the program".
- "I might think or know that my programme is delivering the wrong products, but what I get paid at the end of the year, is whether I am deemed to have met my objectives, will come down to ultimately to what I have agreed with my boss. So, on the one hand success, is meeting what I have said I would do for him/her even though it is wrong. On the broader sense, as a senior leader, I would not consider that a total success, because I know that the projects within the program are irrelevant or not strictly relevant".

3.2.2 Program Competency in Context (Part 2, section 1)

The following is Part 2. Columns 1, 2 and 3 in **Table-IV** describe the contextual and environmental factors that affect programs and may be referred to as PESTLE (Political, Economic, Social, Technological, Legal and Environment) by the PMP. While columns 4 and 5 are the basis for the attributes of the competency-units later shown in **Table-V**.

3.2.3 Consolidated Attributes Qualities of Competency Units (Part 2, section 2)

To elicit the attributes qualities of the competency-units, columns 4 and 5 from Table-IV were used as a critical indent to demonstrate the attributes shown by the participants superior. This was because self-serving bias is the tendency for people to take personal responsibility for their desirable outcomes yet externalize responsibility for their undesirable outcomes (Shepperd al, el. 2008). To limit the self-serving bias that might come into play in assessing the attributes qualities of the competency-units, program managers were asked about their direct superior (program leader) whom they report to. The results are shown in **Table-V**, while Fig 1 shows the pictorial relationship between the competency units. The top five attributes of the competency-units are a major finding, and the case study demonstrates that leaders need to possess a higher-order-of-conception competency to have a higher chance of achieving success in complex programs. This can also be used by organisations where the view of success is beyond delivery to appoint program leaders. Consequently, Table V shows the top five rated attributes qualities of each competency unit (Skills; Knowledge and Experience; Behaviours; Trait; Attitude; Drive and Motivation) from the 17 participants.

Attitudes refer to an individual's settled way of thinking or feeling and it is influenced by the individual choice of action or responses to challenging situations or contexts. Traits could be the distinguishing features of a leader in terms of his/her intuitive ability, sensing or judgment based on reflection and emotional intelligence. Knowledge and experience are the human faculty with respect to data interpretation and held to be true based on evidence or context.

These three factors of competency, i.e., attitude, trait, with knowledge and experience have an influence on leadership skill. This skill is the ability and capacity acquired by the three factors and it is applied in a systemic way to enable a program management leader to be able to adaptively carry out complex activities involving ideas through cognition (traits), technical ability (knowledge & experience) and interaction with people (attitude). This acquired skill will shape the behaviours of leaders and the driver for this behaviour is the motivation/drive which then results in the causality to bring about a superior job performance as expressed by the definition of the word "competency".

Programs	Major Event (Context) for a typical program (1)	Significance of this context (2)	Stakeholders' concerns and expectations (3)	Contribution made by superior in addressing concerns and expectations (4)	Impact of contribution (5)	PESTLE ANALYSIS (Summary)
A	support contract	Development of novel support-solution	Cost and price	Level of ownership and freedom to explore options	Achievement of civil-type commercial model, affordable with high flying rate	Political Legal
B	Accelerated business-case	Approved budget that allows phase 2 critical path to be completed quickly and minimise capability gap	Achieving defence-lines-of-development, minimal delay, defence priority	Strategic context setting, accelerated approval, program championing	Helped to joined up across IAC	Political Economics
C	Critical design review milestone	Critical Decisions	Reduce time scale	Team Reallocation	Upward level of interaction, transparency and ultimately meeting deadline	Technology
D	Cost forecast	Impact on Departmental key targets.	Bring the program back to a sensible level of control	Issue bad news with evidence and took corrective action to alignment. Structure approach	Program back on track	Economics
E	Stakeholder launch-event	Getting stakeholder community buy-in to regulate funding difficulties	Open minded to how to take program forward.	Interaction with the senior leadership up to Chief of Defence material	Engagement with senior leadership of the army 2/3-star level for continuous support.	Economics
F	Delivery	Capability Resolution	Aircrafts will be grounded.	Review and challenge of safety-case evidence presented. hands-on	Timely Delivery	Political Technology
G	Commissioning	Ship was floated out of the dock	Ship suitability in material state	Striking a balance between what is realistic and achievable for launch and float-out	Delivery of two aircraft carriers	Political
H	Mature design, Realistic risks & cost issues,	Achieving main-gate investment decision on £10B and give government	Delivering a credible and realistic output	Challenge against unrealistic expectation	Delivery within budget approval. Delegated decision	Economics Technology

Table IV: PESTLE Analysis (part 1 of 3)

		confidence to deliver to baselines.			making at various levels	
I	Setting PCT parameters too early for I	Set point in time without knowing enough to have certainty about the program.	Start manufacture, commitment to sustain industry capability. Assumption based on previous one	Negotiation with treasury and cabinet office to make sure commitment to keep industry going	Unrealistic expectation about the program outcome, the need to deliver overrode.	Economics Social
J	Achieving the main-gate business case	Business-case that supports Ministerial Funding and Taxpayer contribution	Analyse actual requirement against operational evaluation.	Providing a high-level of assurance before getting to the IAB	Feeling of confident that the submission will receive a successful outcome	Legal
K	Approval of the Release-into-Service and meets requirement, standards	Proving the process	Risk and level of assurance required for sign-off. Military-Aviation-Authority and Release-to-Service Authority regulatory compliance. Reputation of organisation to deliver as promised.	Empowerment to recruit additional safety managers for safety case reviews.	Greater depth of resources, hence risk reduction and increasing capacity.	Legal
L	Testing and demonstration manufactured products	Safety Standards	Bringing technology together	Close working relationship and feedback with stakeholders to ensure demonstration as intended.	Pushed boundaries, ensured stakeholders agreement on realistic test	Technology
M	Deliver better-priced M partnership support contract to meet EU regulation	Meets right availability and standard with view to reduction of cost of ownership by £1B in the next 10 years	Ability to integrate. Management of dependencies.	Stakeholders' engagement for collective support, clear strategic leadership.	Empowerment that allows novel and contentious approach. Creating the right environment.	Political Economics Legal
N	Establishing product capability	Priority focus	To demonstrate nation leadership.	Promote justifiable benefits by effectively de-risking their projects	Good constructive working relationship	Political Economics
O	Deliver credible assurances processes	Meet contractual obligation to its contractors.	Length of contract extension. Run competition, get	Clear -scope, outline and strategic direction	Opportunity for early engagement allows	Legal

Table IV: PESTLE Analysis (part 2 of 3)

	internally and externally to meet requirement and appropriate for government funds		assurance, and actual implementation		timeline to be meet	
P	Entry into service of P Platform with DAFCS	Much needed capability enhancement and a confidence booster	Management of transition	Oversight on meeting deliverables such as qualification evidence for the flight test programs and absolute focus	Risks were quickly identified and mitigated. Issues raised were bombed out as soon as they arose.	Technology
Q	Launch parallel procurement phase with statement-of-requirement to the US and UK industries for each to propose own innovative solution for the same requirement.	Procure an American off-the-shelf helicopter, so it gave UK industry an opportunity to come up with a solution that provided value-for-money.	Having a parallel procurement might take longer. Reservation on comparing procurement tender from two competing countries.	Management of significant political lobbying and maintaining the integrity of the process	Jointly agreed memorandum	Economics
In Analysing, it was noted that none of the programs were driven purely **by environmental** impact. This is noted as a handicap in the delivery as environmental issues are impacting any program since the climate gender has taken prominence with both the operational and disposal decisions.						

Table IV: PESTLE Analysis (part 3 of 3)

Top 5 Rated Attributes Qualities of competency-unit displayed by Program Leaders as perceived by the individual Program Manager					
Skill	**Knowledge & Experience**	**Behaviour**	**Traits**	**Aptitude**	**Motivation**
High Intellectual quotient	Program Management	Absolute assuredness of his own capabilities	Logical engineering style	Confidence	Delivery of capability and its sustainment
Ability to look ahead and anticipate problems	Understanding of the economic interest of the country	Clarity of direction and purpose	Flexible and responsive	Receptive (mutual consent)	Limit the risk to life
Solid programme management	Implication of strategies in relation to defence budgets	Willingness to listen	Foresight	Push people to innovate.	Deliver Value-for-Money for defence
Strong cognitive and analytical ability.	Financial	Open to engagement criticism and not seen as an isolated tower	Reflective	Delegate by showing trust	Deliver military effect and defence outcomes as stated in MOD objectives
The ability to understand the whole and see where how each part fit together (Visionary).	UK defence commercial knowledge and wider	Fair and inclusive	Proactive with adaptive ability	Very calm, measured and pragmatic	Organisational reputation

Table V: Top 5 Rated Attributes Qualities of Competency-Units displayed by the Defence Program Leaders

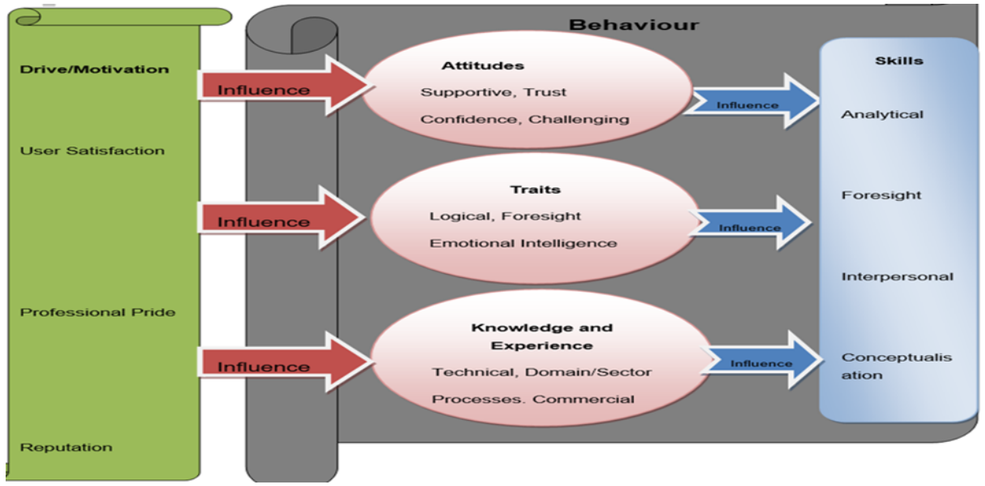

Figure 1: Pictorial view of the Causality between Program Leadership Competency Units

3.3 The Link between Program Success Criterions of Shao's, Partington's level 3 and 4 higher order of competency and case-study results.

This case study reveals there is a correlation between our findings of the attributes of the competency units and the extracts of outcome focussed perspectives for the reason of success. But most importantly, our study supports the causality between program management success and program leadership competency depicted in **Table V**.

This causality is shown in **Table VI** - the program success criteria of the four dimensions of success by Shao, et, al., (2012), the expectation of the level 3 and 4 higher order of conception competency attributes by Partington, et, al., (2005) and the supporting competency-units attributes revealed by our participants in our case study.

Shao et, at., 2012		**Partington, et., at., 2005**		**Defence Case-Study**					
Program Success		**Outcomes - level 3 competency**	**Strategic Capabilities Development - level 4 competency**	**Skill**	**Knowledge & Experience**	**Behaviour**	**Traits**	**Aptitude**	**Motivation**
Program Efficiency	Deliver within time frames.	**Relationship: self and work**		**Top 5 Rated Attributes Qualities of competency-unit displayed by Program Leaders as perceived by the individual Program Manager**					
	Deliver with budgets.	Summary plan + personal involvement for stakeholder benefits	Level 3 + strong future external-context orientation	High Intellectual quotient	Program Management	Absolute assuredness of his own capabilities	Logical engineering style	Confidence	Delivery of capability and its sustainment
	Meet functional requirements	Achievement Passionate	External Commitment						
Impact on Program Team-member satisfaction	Team Specialty improvement	Experimental, reflexive	Intuitively realigns; design rules	Ability to look ahead and anticipate problems	Understanding of the economic interest of the country	Clarity of direction and purpose	Flexible and responsive	Receptive (mutual consent)	Limit the risk to life
	Low fluctuation	**Relationship: self and others**							
	User Satisfaction Customer satisfaction	Social, inclusive, paternal, drive hard	Charismatic Confident, inspiring leader	Solid programme management	Implication of strategies in relation to defence budgets	Willingness to listen	Foresight	Push people to innovate.	Deliver Value-for-Money for defence
	Supplier satisfaction	Legitimate negotiations	Creative	Strong cognitive and analytical ability.	Financial	Open to engagement criticism and not seen as an isolated tower	Reflective	Delegate by showing trust	Deliver military effect and defence outcomes as stated in MOD objectives
	Other stakeholders' satisfaction	Own clarification, challenge others + encourage creativity	3 + redefine problem; reframe purpose	part fit together (Visionary).					
	Stakeholder engagement	Exploit talents	Extends talents						
	Customer loyalty	**Relationship: self and program environment**		**Supplementary Attributes of each competency-units from the participants**					
Business Success	Business results	Suit-self	Suit-purpose						
	Increase market share	Pushes harder delivery	Explores internal /external delivery	Risk Management	Sound technical engineering background	Engagement	Inquisitive and open to dialogue	Willingness to engage with problems	Organisation and personal ambition
	Reoccurring business	Extreme contingency	Failure consequence ready	Strategic thinking	Safety implication and Assurance	Focus conversation	Intentionally switched-on personality	Challenging to achieve better	Believing it is the right capability for the user
	Power of influence	Consistent analysis and opinions + audience sensitivity	Level 3 + cultural sensitivity	Understanding of the context	Process and structure	Trusting but also helps when required	Good judgement of people	Understand the requirement.	No capability gap or late delivery
Preparation for the Future	New technology	Adapt/create control situational procedures	Embed into management structures	Project Sequencing	Procurement insight	Good interaction with team and industrial partners	Gives overview of own superiority and an expert procurer	Urgency to mitigate against risk to life	Deliver a capability to user
	Technology leverage	Trialled alternatives	Meet emerging changing needs	Imaginative	Integration and industrial construct	Sense of doing the right thing	Very open and approachable	Supportive but not intrusive	Reputation for a job well done
	New market	Change speed	Timeliness and maturity	Strategic Vision	Approval process	Empathy	Thoughtful	Motivated.	Want to make a difference
	More efficient process	Financial ambiguities	Achievement Driven		Commercial.	Approachable	Ability to control his emotion	High level of confidence.	Do the right thing in his mind
	Organizational capability				International relationship issues	Absolute openness	Committed and driven	Clear purpose.	Professional pride
Social Effects	Social economic benefits			Ability to convert convoluted complex message to clear simple message	Referenced class analysis methodology	Constant dialogue with stakeholders	Risk adverse	Empowerment.	Users' satisfaction
	Improvement of quality of lives for citizens					Inclusivity across the team when communicating with contractors	Quite reserved	Aura of professionalism	Organisation as a top procurer
	Environmental value			Governance			Open and easy to deal with	Listening	Passion for the job
	Science and technology development			Brokering of deals across all stakeholders and industry.		Friendly but firm	Quite task in terms of delegation	Brave and Bold	Doing something for defence
	Social evaluation					Polite and seldom	Extrovert but introvert	Driven	Force and the people

Table VI: Relationship table between Shao, et. Al., (2012), Partington, et, al., (2005) and case study findings of associated Program Leadership competency to achieve Program Management Success

4. SUMMARY OF DISCUSSION & RECOMMENDATIONS

The findings suggest the accepted perception of what success is in an organisation has a direct correlation to its' program leader's competency attributes. The case study proposes that success for the Defence organisation is acceptance of the extended view of success related to outcome, benefits or values, and strategic objectives derived during operations or use.

Consequently, Derrick. et. al., (2015) in their study expressed that leadership has a key role to play within the context of delivering major change and an influence relationship with the team in which they lead Derrick. et. al., 2015 citing Burns (1978) and Bass (1985) to propose that transformation leadership is the ability to inspire team members to act not for themselves but for the group's common good. Derrick. et. al., (2015) citing Burns (1978) concluded

that transformational leadership occurred when people engage with others in a moral purpose to change for a common goal while emphasising that a transforming leader shapes, alters, and elevates the motives, values and goals of team members achieving significant change in the process for both individual and the organisation as one-whole. They also respond to the needs, aspirations, and values of team members to achieve organisational change with this shared responsibility to effect organisational change as the key point of transformational leadership.

The case study proposes that the attributes of the competency-units in Table-V supports the higher-order-of-conception or competency level 3 and 4 (Partington at el, 2005) as it led the programs achieving their intended outcome. Therefore, if these attributes are present in program leaders, it may lead to organisations achieving Shao et al., (2015) program success criterion. On one hand, barrier to achieving program-success is due to program leaders holding lower-order command or level 1 and 2 competencies (Partington at el, 2005) and view success as the point of delivery measured with PCT because the organisation having no issue with it or deemed it appropriate.

The findings also revealed an important change to the fundamentals of program management and contested the element of 'time' to have varied interpretations. The program leaders need to have a long-term view and look beyond their immediate responsibilities as the case study evidence clearly supports the extended view of success. Therefore, for organisations that view success to be at the point-of-delivery, the competency of its leader may certainly be insufficient to achieve success, as proposed by this case study. If the organisation supports the view that success does extend beyond-delivery, it is this paper conclusion that its' program leader's competency capabilities may be enhanced, enabled, and development of the full attributes' spectrum of the competency-units in Table 5 in a causal relationship. The paper also asserts that appointment of a program leader to deliver complex programs should consider the attributes of competency in Table V when appointing a program leader, while noting that PCT are performance measurement criteria and not the measurement of success.

The result of this case study also shows that if organisational processes, procedures, or frameworks are used as a baseline for program management this will enable and encourage the dominance of the lower-order-of-conception competency. This is because program leaders do not recognise or appreciate behaviours, attitudes and actions emanating from a higher-order-of-conception. However, on the other hand, if the soft attributes of motivation, aptitude and behaviours are given consideration, it will promote the understanding of higher-order concepts. Therefore, this led the case study to formulate a list of leadership attributes for each competency-units which must be in a causal relationship that concomitant organisations' program success in accordance with Shao, et, al., (2012) four dimension of success and Partington at el, (2005) level 3 and 4 higher-order-of conception competencies.

4.1 Implications to Organisational Learning and Knowledge Creation

To achieve success in relation to competency in organisations, learning must take place. This learning in organisations results in building capacity in program management skills and knowledge. In knowledge management studies, authors such as Koskinen (2004), Chant, et, al., (2019) and Mittal and Kumar (2019) posit that many practitioners are in a state of misery as to where organisational knowledge resides, that knowledge is complex and needs to be understood in both explicit and tacit form. Learning from programs is still a 'nice-to-do' effort but not really managed to achieve organisational learning. As Venkatachalam, et, al., (2019) posit that learning from practice to be meaningful needs to be approached with sensitivity and subjectivity where the learning experience has a longer-term developed crafted.

On the other hand, the book of knowledge by professional P3M bodies in the UK, US and Australia propose explicit knowledge because this is the type of knowledge that is formalised, codified, and is sometimes referred to as know-what (Brown & Duguid, 1998; cited in Frost, 2014). Frost, (2014) citing Wellman (2009) suggested that program management frameworks or methodologies need to meet the criteria of being able to be easily stored, identified, and retrieved to conduct learning. This type of learning from programs removes the human experience and hence leadership learning can be impacted. Organisations wishing to act on program management learning, and see the benefits, need to invest in experience. Experience holds tacit knowledge and is regarded as being the most valuable source of knowledge, and the most likely to lead to breakthroughs in the organisation (Wellman, 2009 cited in Frost, 2014). Gamble and Blackwell (2001) and Frost (2014) state that a link to the lack of focus on tacit knowledge may directly reduce the capability for innovation and sustained competitiveness in organisations. Ahern, et, al., (2015) building on from Davies and Hobday's (2005) knowledge-based view, that program management capabilities are not separate to the organisation, suggest that program management play a central role in capability building and learning.

When considering learning, in the military, the discussion of structure is relevant. As Rainey (1997) and subsequently Robbins and Coulter (2007) concur with Mintzberg (1979) early posit that acknowledging the hierarchical levels, specialized units and positions in organisations helps determine the way learning needs to occur to enable self-maintained organisational system. Organisation structure is a determining factor on the degree of freedom an organisation has on its decision-making process and the distribution of powers through the governance framework and the inter-play between groups and individuals. Organisational structure also strongly influences the ability and the willingness of people and communities to share knowledge and it also determines how knowledge is managed (Frost, 2014) especially in programs management organisation. Therefore, there is a correlation between knowledge management and organisation structure. Subsequently, Wu, et, al., (2010) identified that centralisation, formalisation, and complexity are dimensions of organisational structure. Centralisation is when decision making is centralised and consequently limits the cognitive and creative imaginative power of its' leaders; the extent to which behaviours in an organisation are governed by rules, policies, and so on is formalisation; while complexity is the condition of being composed of many, usually, though not necessarily, inter-related parts in an organisation. The limitations of these dimensions are evident at program team level through the lack of motivation by personnel to explore and use their imagination during the delivery of a program. This becomes prevalent because the behaviours of adherence to rules and procedure have become the norm and developed into the organisation culture and invariably inhibit team members' intuition to seek a new and improved way of doing things. Therefore, there is a correlation between organisation learning, its' structure and competency which might lead to program management success. Swan, et, al., (2010) affirms that learning in organisations need to take a long-term view, with continuous learning from programs being the focus to transfer expertise.

4.2 Recommendations that were Implemented by the Organisation.

The case study gave credence to successful achievement in Defence and was dependent on meeting the need of the end-users (the armed forces), and its strategic objectives by procuring and supporting the equipment provided through-life. Therefore, the following recommendations were proposed and implemented for the Defence organisation. However, other medium-sized Defence or non-Defence organisations could also benefit from these recommendations. They are as follows:

- Organisational clarity of the program outcome and its' dissemination by the organisational executives is needed to achieve success.
- More focus on risk management to recognise the future challenges of the program.
- A shift on using coherent and well-balanced success measures around the entire program lifecycle, including disposal or termination.
- Make visible the commitment to governance; and
- The competency of defence program leaders should reflect the idea of achieving capability that delivers value-for-money. Therefore, the competency-units should serve as criteria for selection of senior executive in Defence.

4.3 Case study Implications to Organisation, Theorist and Practitioners

The case study established that success in major programs is the achievement of value-for-money for taxpayers, delivery of strategic outcomes and benefits, and provided the attributes of competency units, that if present in program leaders, can lead to success. However, Program Leaders and Managers was the term used throughout this paper to describe the individuals who are responsible for whole-of-life approach; leading, managing and delivering these programs to ensure they meet the organisation strategic need. This case study sheds new order of thinking to ways of organising program management. It provides understanding and a practical 'know-how' from the stories shared in this qualitative action case study using a social constructionist viewpoint.

5. CONCLUSION

The achievement of success in program management as posited by this case study requires a certain type of leader that understands the two conflicting theories of success; success at the point of delivery with measurement criteria of PCT; and success beyond delivery-which relates to customers' or stakeholders' needs in an ever-changing environment. This case study also suggests that to achieve success, organisations require program leaders with the right attributes of competency who are responsive to a changing situation throughout the life of a program. Heifetz et al. (2009) state that leaders with adaptive skillsets will be able to take people outside their comfort zones and assess and address the toughest challenges. This case study supported the aforementioned statement, as evident in the data that program leaders sometimes may be required to deal with political alliances among nations, economic interest to retain sovereignty, social inclusion amongst its citizens, technological advancement, legal obligations, the issues of sustainable development, while at the same time managing stakeholders' expectations.

Furthermore, it is imperative that the program leader is able to invoke dynamic learning from the program and deliver through complexity and uncertainty.

This case study on the UK Defence Program provides an understanding to leadership competencies to determine program success. Capability development is critical, especially on what can be learned and unlearned when faced with changes, for organisations to sustain performance. Learning to achieve success in complex and uncertain contexts, from the leader's perspective and to distinguish between program performance measurement criteria and program success, can be regarded as a strategic competence that can manifest as dynamic learning. This understanding then places PCT parameters as possibly erroneous as a standard measurement of success for Defence major programs. This understanding can reinforce the tension between program performance measures and success, which is one finding of this case study that organisations can learn from.

While the case identified the empirical emergence of program success and leadership competencies, it also evidently lacked insights on what exactly could be learned, especially when distinguishing between tacit and explicit knowledge. We conclude that embracing a thorough analytical framework in the conclusion of any program and using a knowledge-based view to review the emerging themes, could identify where the organisation needs to continuously learn.

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