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**STRATEGIC INTEGRATION OF LOGISTICAL SUPPORT FOR  
ENHANCED CONTRACT MANAGEMENT AND FLEET  
OPERATIONS EFFICIENCY IN THE  
ROYAL MALAYSIAN NAVY**



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**DOCTOR OF PHILOSOPHY  
UNIVERSITI UTARA MALAYSIA  
JULY 2024**

**STRATEGIC INTEGRATION OF LOGISTICAL SUPPORT FOR  
ENHANCED CONTRACT MANAGEMENT AND FLEET  
OPERATIONS EFFICIENCY IN THE  
ROYAL MALAYSIAN NAVY**



**Thesis Submitted to  
College of Business  
Universiti Utara Malaysia,  
in Fulfilment of the Requirement for the Degree of Doctor of Philosophy**



**Kolej Perniagaan**  
(College of Business)  
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## ABSTRACT

The effectiveness of fleet operations in the Royal Malaysian Navy (RMN) has been affected by several issues, including delays in refit programs, costly delays in spare parts delivery, procurement process leakages, and integrity issues in the RMN. These difficulties are closely linked to contract management in the RMN. The aim of this study is to investigate the strategic integration between logistical support factors and enhanced contract management towards the RMN fleet operation efficiency. A quantitative survey was distributed to RMN Supply & Secretariat Officers located all over Malaysia. A total of 204 officers responded through a simple random sampling method. The data were analyzed using Statistical Package for the Social Science version 25 and Partial Least Squares Structural Equation Modelling version 3. The result demonstrated that there was no significant association between financial support and effective contract management. The result then shows a significant and positive correlation between leadership support and effective contract management. In addition, the findings reveal a significant and positive relationship between contract compliance and effective contract management. There is a significant positive relationship between technological support and effective contract management. Finally, contracting officer competency significantly moderates the relationship between technological support and effective contract management. The findings from this study suggest that to establish an optimal procurement and contract management procedure, RMN must apply compelling technological support on contracting officers' skills as well as establish a Contract Management Office, Project Management Review, and Supply Working Group to improve efficiency, cost-effectiveness, and good procurement outcomes. Future studies should focus on mixed-mode approaches to provide a comprehensive understanding of effective contract management in the defense industry.

**Keywords:** Fleet operations; Contract management; Strategic integration; Technological support

## ABSTRAK

Keberkesanan operasi armada dalam Tentera Laut Diraja Malaysia (TLDM) telah terjejas oleh beberapa isu termasuk kelewatan dalam program pasang pulih, kelewatan penghantaran alat ganti yang mahal, ketirisan proses perolehan, dan isu integriti dalam TLDM. Kesukaran ini berkait rapat dengan pengurusan kontrak dalam TLDM. Matlamat kajian ini adalah untuk menyiasat integrasi strategik antara faktor sokongan logistik dan pengurusan kontrak yang dipertingkatkan ke arah kecekapan operasi armada TLDM. Kaji selidik kuantitatif telah diedarkan kepada Pegawai Bekalan & Urusetia TLDM yang berada di seluruh Malaysia. Seramai 204 pegawai memberi maklum balas melalui kaedah persampelan rawak mudah. Data dianalisis menggunakan Pakej Statistik untuk Sains Sosial versi 25 dan Pemodelan Persamaan Struktur Kuasa Dua Separa Terkecil versi 3. Keputusan menunjukkan tiada perkaitan yang signifikan antara sokongan kewangan dan pengurusan kontrak yang berkesan. Seterusnya, keputusan menunjukkan korelasi yang signifikan dan positif di antara sokongan kepimpinan dan pengurusan kontrak yang berkesan. Di samping itu, penemuan kajian mendedahkan hubungan yang signifikan dan positif antara pematuhan kontrak dan pengurusan kontrak yang berkesan. Terdapat hubungan positif yang signifikan antara sokongan teknologi dan pengurusan kontrak yang berkesan. Akhir sekali, kompetensi pegawai kontrak menyederhanakan hubungan di antara sokongan teknologi dan pengurusan kontrak yang berkesan. Dapatan kajian mencadangkan bahawa, untuk mewujudkan prosedur perolehan dan pengurusan kontrak yang optimum, TLDM mesti menggunakan sokongan teknologi yang menarik terhadap kemahiran pegawai kontrak serta menubuhkan Pejabat Pengurusan Kontrak, Kajian Semula Pengurusan Projek dan Kumpulan Kerja Bekalan untuk meningkatkan kecekapan, kos efektif dan hasil perolehan yang baik. Kajian masa hadapan perlu memberi tumpuan kepada pendekatan mod campuran untuk memberikan pemahaman yang komprehensif tentang pengurusan kontrak yang berkesan dalam industri pertahanan.

**Kata kunci:** Operasi armada; Pengurusan kontrak; Integrasi strategik; Sokongan teknologi

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## LIST OF ABBREVIATIONS

|         |                                                    |
|---------|----------------------------------------------------|
| AO      | : Area of Operation                                |
| AVE     | : Average Variance Extracted                       |
| CC      | : Contract Compliance                              |
| CM      | : Contract Management                              |
| CMB     | : Capability Management Board                      |
| CMO     | : Contract Management Office                       |
| CMMM    | : Contract Management Maturity Model               |
| COC     | : Contracting Officer Competency                   |
| DE      | : Development Expenditure                          |
| FS      | : Financial Support                                |
| ECM     | : Effective Contract Management                    |
| $f^2$   | : Effect Size                                      |
| ILS     | : Integrated Logistics Support                     |
| ISS     | : In-Service Support                               |
| ITNMB   | : Malaysian National Institute of Translation      |
| JKPAK   | : Government Asset Management Committee            |
| HoD     | : Head of Department                               |
| LS      | : Leadership Support                               |
| MTR     | : Mid Term Review                                  |
| NBCD    | : Nuclear, Biological and Chemical Damage          |
| OE      | : Operating Expenditure                            |
| PMR     | : Project Management Review                        |
| PV      | : Patrol Vessel                                    |
| $r^2$   | : Squared Multiple Correlations                    |
| RMN     | : Royal Malaysian Navy                             |
| RMNSM   | : Royal Malaysian Navy Strategic Meeting           |
| ROI     | : Return of Investment                             |
| SB      | : Supply Board                                     |
| SEM-PLS | : Structural Equation Model – Partial Least Square |
| SCM     | : Supply Chain Management                          |
| SLOC    | : Sea Lines of Communication                       |
| SPSS    | : Statistical Package for the Social Science       |
| SSNVR   | : Straits Settlement Naval Volunteer Reserve       |
| SWG     | : Supply Working Group                             |
| TS      | : Technological Support                            |
| VM Lab  | : Value Management Lab                             |

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

Royal Malaysian Navy (RMN) was established on 27 April 1934. The establishment of RMN was with a very small intake from the local Malay known as the Straits Settlement Naval Volunteer Reserve (SSNVR). In the early years, the locals were fully trained by the British Navy (Royal Navy). In fact, assets such as ships, buildings and naval experts were also provided by the British Navy. Koontz, O'Donnell, and Weihrich (1980) stated premising is the formal recognition in the planning process that plans operated in an environment, both internally to the enterprise and externally. Despite its very small and limited capabilities, RMN has now evolved and developed in parallel with the progress of Malaysia by having more sophisticated assets and warfare systems such as strategic submarines, attack helicopters, combatant ships such as Frigates and Corvettes, Patrol Vessel (PV) as well as the acquisition of other infrastructures like Forward Bases, tactical training infrastructure namely submarine simulator, navigation simulator, Maritime Tactical Centre, Chemical, Biological, Radioactive, Nuclear, and Damage (CBRNDC) Training Centre and many more. To date, RMN has one main headquarter in Kuala Lumpur namely Royal Malaysian Navy Headquarter, Ministry of Defence (MinDef), nine main bases located at Langkawi, Lumut (Western Fleet Command), Kuantan, Klang (National Hydrographic Centre), Johor (Naval Volunteer Reserve Headquarter), Kota Kinabalu (Eastern Fleet Command & Submarine Force Headquarter), Sandakan, Semporna (Special Force) and Tawau (Naval Volunteer Reserve Unit). RMN has been equipped with 49 warships (27 West Malaysia, 22 East Malaysia) of various functions, 2 submarines and 15 helicopters (12 West Malaysia, 3

East Malaysia) for attack and reconnaissance purposes. What is more remarkable is that those assets and infrastructures are operated and managed by Malaysian. Figure 1.1 shows the vast Area of Operation (AO) that covered by Royal Malaysian Navy which encompassing Economic Exclusive Zone (ZEE) with total area of 569, 845 square kilometers and the Coastal Line of 6,037 kilometers.

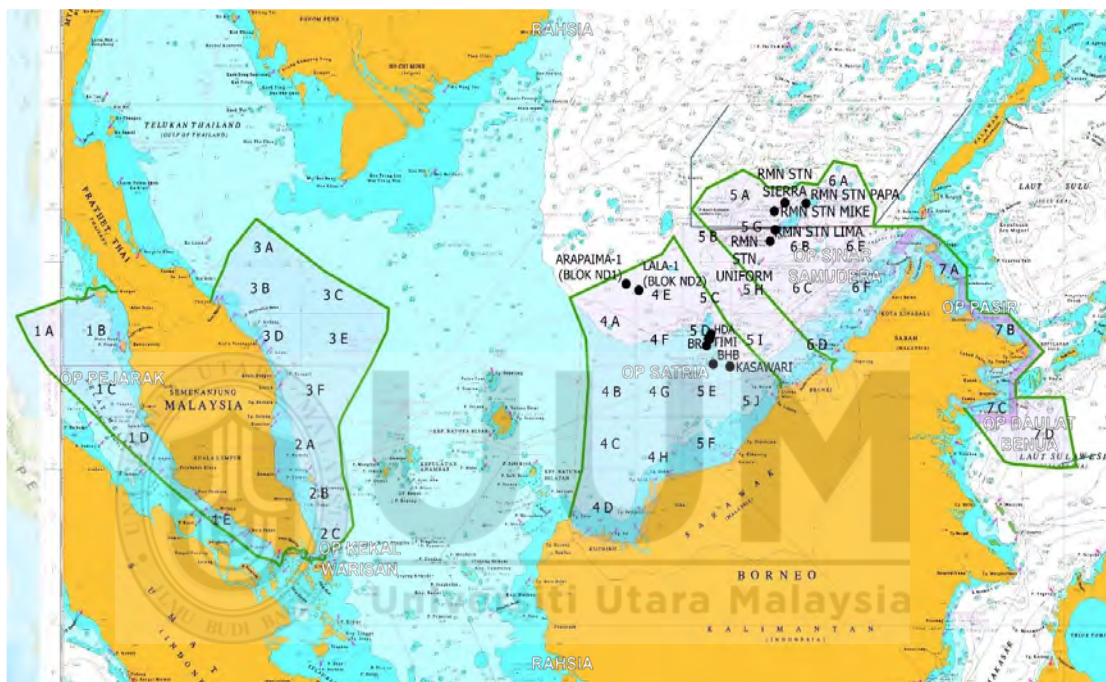


Figure 1.1

*Royal Malaysian Navy Area of Operation*

Source: Royal Malaysian Navy Operation & Exercise Department, (2024)

Strategically managed organizations typically outperform non-strategically managed ones (Wheelen & Hunger, 2008). Thus, one of the primary tenets of RMN's existence is its capacity to maintain its standing as the public's preferred naval source. Budgeting and strategic management are two different but related tasks. Both procedures enhance an organization's capacity to produce and maintain exceptional performance when used correctly (Blumentritt, 2006). Because it is a maritime defense force that manages assets valued at RM17 billion (according to the Government Asset Management

Committee, or JKPAK), the RMN must be regarded as a national maritime defense organization that is consistently capable of managing and using maritime defense assets to their fullest potential. This is consistent with Robbins' (1993) theory, which holds that an employee's job performance is determined by their capacity to meet the organization's goals and objectives.

Contractual agreements are widely utilized mechanisms for mitigating transaction costs and minimizing transaction uncertainty within the realm of business transactions (Ali & Kumar, 2015). A contract refers to a legally binding arrangement between parties involved in a contractual relationship, namely the contractors and contractees. It serves as a formal document that delineates the distribution of key components, including threat, incentives, and decision-making authority, within their transactional interactions. This definition is supported by various scholarly sources, such as Ali and Kumar (2015), Sykuta and Parcell (2003), Sykuta and Cook (2001), and Paulson et al. (2010). The logistical support of the Royal Malaysian Navy (RMN) is experiencing growth and modernization efforts to effectively address the challenges posed by the progressively complex maritime security landscape in Southeast Asia. These endeavors aim to safeguard the nation's maritime interests and uphold its sovereignty. The utilization of contracting and service delivery, while not a recent phenomenon, has been expanding in breadth and scale (Dean & Kiu, 2002). Concurrently, the logistics support of the Royal Malaysian Navy (RMN) has been effectively deployed from strategically located sites across the nation, ensuring uninterrupted aid for operations conducted in the South China Sea, Strait of Malacca, and Sulu Sea. The effectiveness of logistics assistance has been evidenced by its ability to function in remote maritime areas such as the Indian Ocean during the MH 370 incident and the Gulf of Aden during anti-

piracy endeavors. Ensuring efficient contract administration is crucial in facilitating logistics support as platforms become increasingly sophisticated and complex. It is necessary to safeguard these invaluable assets and ensure their optimal operational readiness.

Therefore, this research attempt to investigate the variables shaping the current state of RMN logistics affairs, explore short- and long-term solutions to address difficulties and ultimately enhance the overall effectiveness of RMN contract management.

The next section discusses the problem statement of the study.

## **1.2 Problem Statement**

Acquisition continues as a main challenge in maintaining the military asset. The goal of contracts management strategy is to increase service quality, enhance resource usage efficiency and institutionalize a performance-oriented culture. It requires sufficient budget and fully implemented contract and efficiency of the contract managers. On top of that, organisation must give greater attention to proper acquisition planning, adequate requirements definition, sufficient price evaluation, and proper contractor oversight in order to make the contract well managed (Moyer et al., 2020).

Acquisitions is required to be conducted in a manner that will meet operational requirements in the most cost effective manner (Davies, 2015). In acquisition element of value-for-money, economic efficiency and financial control is crucial (Bawole & Adjei-Bamfo, 2020). In order to have effective contract management budget planning and adequate budget allocation can be used as the indicator of transparency in the

public procurement. Financial support must also be present. Otherwise, it created problem by simply insufficient available budgets which caused by lack of adequate analysis and information that can cause delayed and cost overrun (Davies, 2015). Therefore, management of procurement risk is important to avoid detrimental effect.

However, some procurements considerably delayed and according to Kundu, (2021) this delayed was caused by incomplete information where in the situation of enforcement of contracts penalty action cannot be taken. Additionally, this is resulting from ineffective contract management. This will also resulted to the cost and, schedule or completion of the procurement (Kundu, 2021). Based on study by Moyer et al., (2020) factor that contributed to ineffective contract management is incompetence of acquisition officers.

Successful strategy implementation by having good leadership requires management involvement that has the resources and authority for its enforcement. Leadership plays an important role in deciding whether the acquisition process need to be continued or stop immediately. The leader is also responsible for ensuring the expectations and goals of the success contract are consistent with the aims of the organization.

On the other hand, acquisitions officers also hold a critical role in contract management. They must master the extensive, complex body of knowledge encompassing material and operations management, contract law, cost analysis, negotiation techniques, and industrial marketing. Moyer et al., (2020) stated acquisition officers must be able to think strategically, execute efficiently, and manage acquisitions like corporate business leaders. They must also understand both sides of the buyer-seller relationship.

In the context of RMN, being the largest maritime defence force, RMN currently operates with a total strength of 16,999 personnel (2425 officers, 14574 other ranks) that make up the number RMN workforce as invaluable assets which must be optimised to support the effort in improving logistics support as well as maritime defence assets and infrastructures. This is seen in line with Koontz et al. (1980) stressed on the function of staffing has to do with filling the roles within an organization structure in such a way as to ensure that an enterprise can be competently operated both for the present and the future. With the budget allocated by the government, RMN operates an invaluable maritime infrastructure and high-tech assets. To achieve effectiveness, it is imperative that budgets are aligned with the strategies of the organization. This alignment should be accompanied by the implementation of strategic planning and performance management (Neely, Bourne & Adams 2003). Therefore, all assets and infrastructures are obtained through budgeting provisions which are granted by the Central Government through financial mechanisms such as Operating Expenditure (OE) and Development Expenditure (DE). Koontz et al. (1980) stated budgeting is never more perfect than the planning behind it. Budgeting is the deliberate and organized process of distributing an organization's financial resources among its various components, operations, and investments (Blumentritt, 2006). In 2023 the RMN has been allocated RM 1.601 billion to managing all assets, infrastructures and human resources. The necessity for facilities is derived from the consumer's intentions for the product, as well as specific requirements pertaining to the operation, utilization, and maintenance of the product (Brimer, 1995).

Thus, with such allotment, RMN is able to perform well in handling with threats from all dimensions of warfare from the air, surface and subsurface (underwater warfare).

Performance assessment and monitoring are key priorities for managers both globally and across all industries (Dean & Kiu, 2002). In addition, the presence of high-tech assets into the RMN's inventory has been strongly supported by a contract management practice whereby those assets are able to function as a good deterrence to other countries or elements that may pose a threat to the stability and security of the country. This perspective is consistent with the conclusions drawn by Dean and Kiu (2002), who assert that there is a growing trend in the use of contracting for government services. The existing body of research strongly suggests that contracting out has the potential to enhance efficiency levels while maintaining or even improving service quality standards. It is again, evidence that the RMN has successfully kept the country's shipping lanes or Sea Lines of Communication (SLOC) properly in generating the Malaysian economy to the highest degree. Malaysia is a maritime nation where nearly 60 % of its economy activities are through comprehensive maritime areas and jut up into the waters of Sabah and Sarawak.

Since the founding of RMN, there has been an entity dedicated to logistics. Contract management is still a crucial component that, in its absence, severely impairs an organization's ability to operate successfully. The logistics organizational structure, rules, and procedures are expected to have seen growth and stability over the span of 89 years, starting from 1934, in order to facilitate logistics support for the RMN fleet. Therefore, it can be inferred that the robust organizational structures, policies, and processes implemented by the RMN have likely contributed to the effectiveness of fleet operations, resulting in a heightened state of readiness and efficient allocation of resources.

Throughout its existence, the logistics organization of the RMN has successfully implemented a variety of initiatives. These include the adoption of Integrated Logistics Support (ILS), implementation of the In-Service Support (ISS) concept, computerization and automation of logistical processes, and establishment of strategic alliances with logistics service providers. However, despite the aforementioned efforts to improve logistics support, particularly in terms of organizational structure and operational procedures, the Royal Malaysian Navy (RMN) has faced various challenges, including issues with procurement process integrity, incomplete deliveries, inadequate items, delays in refit completion, and concerns regarding integrity. Therefore, it is crucial for RMN to adopt complex contractual arrangements that not only specify the required actions and conditions regarding contractual breaches but also offer a systematic framework for resolving unforeseen disputes (Olmos, 2011). Given the extensive track record of achievements, it is imperative for the RMN to leverage its considerable organizational expertise to successfully tackle these issues. This entails prioritizing the identification and resolution of underlying causes rather than merely addressing the surface-level symptoms of these deficiencies.

Several persistent challenges have hindered the fleet operation efficiency. The challenges encompass issues such as program refitting delays and costly delays in the procurement and delivery of spare components. Furthermore, it is worth noting that certain instances, such as the occurrence of leaks during the procurement process and integrity concerns at the logistics depot, have served to underscore the imperative for focused and diligent efforts in particular domains. These areas are characterized by "handshake" contracts that lack clarity and precision regarding the obligations of the contracting parties (Olmos, 2011).

Logistics concerns that require attention, the variables that have shaped the current state of logistics affairs, and potential short- and long-term solutions to address these difficulties are some of the important topics that this study needs to cover. To that end, the research cannot attempt to downplay the several ways in which RMN logistics management has proven to be strong. RMN logistics management will undoubtedly rise to a far higher status with a balanced strategy that draws on strengths to magnify what has already worked while finding innovative solutions to address challenges. Therefore, RMN practices the idea of legally binding contracts with suppliers, contractors, enterprises, manufacturers, and service providers in asset and infrastructure management. The management of government procurement contracts, namely contract management, is overseen by many important stakeholders within the Royal Malaysian Navy (RMN). The parties involved in this context encompass the RMN Submarine Force Headquarters, RMN Headquarters (Material and Engineering Department), the Fleet Supply Depot, and the Naval Supply Depot. The main goal of the organisation is to offer assistance in the RMN's comprehensive operations by efficiently overseeing procurement contracts. Carter et al. (2012) suggest that proficient contract administration has the potential to yield significant cost reductions, enhancements in quality and timeliness, as well as innovations in goods, services, or business processes. Consequently, it has been noted in contract management that binding contracts can give the RMN (government) a positive Return on Investment (ROI). Certain contracts, such as the purchase of the Super Lynx and Fenmun helicopters, have produced positive returns for the RMN since the helicopters have accumulated a sizable amount of flying hours. A number of other contracts, including those for the purchase of offshore patrol boats and naval operations and training facilities, were also successfully fulfilled within the allotted time limits and in accordance with RMN standards. According to Carter,

Kirby, and Oxenbury (2012), contract management is the process of ensuring that all parties to a contract are aware of their responsibilities and that they must be fulfilled effectively and efficiently to get the most out of the money that has been spent. This comment was directly related to the top management of RMN's efforts, which always focused on protecting the rights and interests of the government while negotiating contracts with enterprises, manufacturers, suppliers, contractors, or service providers.

The next section discusses the gaps in the study.

### **1.3 Gaps of the Study**

The primary objective of this study was to examine the logistical support aspects and contract management difficulties that require attention, with the purpose of filling knowledge gaps and contributing to the current body of information. The text also examines the various variables that have impacted the present condition of contract management, along with prospective short- and long-term strategies to address the difficulties encountered in upholding efficient contract administration in RMN. This study aims to ascertain the extent to which RMN complies with government regulations that emphasize the notion and execution of proficient and productive asset management, encompassing inventory control.

Although contract management has been instrumental in the growth and advancement of RMN since its inception, there has been a notable absence of dedicated research conducted within the organization on this topic. This is despite the fact that RMN has already gone through several phases of development and modernization as a result of the management of the contracts involved. There was concern that the RMN's

reputation might be damaged if this issue was not appropriately handled because of its perceived insensitivity to the components of excellent contract management governance. This complied with Carter, Kirby, and Oxenbury's (2012) fundamental standards for effective contract management, which uphold best practices. The framework for contract management established by the British Government encompasses four fundamental pillars of the structure. In addition, it involves the development of resources, capabilities, and strategies. These four frames of good practice also incorporate elements of governance.

Contract management, as described by Carter et al. (2012), pertains to the meticulous and efficient execution of responsibilities by all parties involved in a contract with the aim of maximizing the value derived from the allocated funds. In order to ensure effective management and adherence to financial regulations, procedures, and contractual obligations, it is imperative to undertake a comprehensive assessment to evaluate and ascertain the performance level of contract management within the RMN.

The researcher also discovered that while contract management (CM) is a subset of supply chain management (SCM), not much research has been conducted on the topic, particularly in the defense sector. The lack of empirical research on contracts has been noted by Camén (2010). The predominant focus of scholarly inquiry is primarily on contract management within the business domain, which pertains to the generation of financial gains, expansion of enterprises, and attainment of organizational objectives. Several important studies have addressed the different elements of pre-award contracting processes, performance monitoring, quality metrics, cooperative working relationships, and construction contracts. For instance, Rendon (2015) briefly

comments on the maturity stages within the pre-award contracting procedures, notably Procurement Planning, Solicitation Planning, and Source Selection. Dean and Kiu (2002) dive into the issue of performance monitoring and quality measures.

When the gaps from earlier research are examined, it can be shown that there exist incomplete holes in contract management, particularly in the defense sector. Most studies pay very little attention to variables influencing contract management efficacy. The public sector has already benefited from many efficiency improvements that come with a contract management approach (McGuinness, 2013). Despite the wide range of scholarly works pertaining to the subject of contracting, Haarala, Lee, and Lehto (2010) contend that a full theoretical framework for contracting has yet to be established. Contract theories are commonly employed to examine various aspects of contracting.

The next section discusses the research questions.

#### 1.4 Research Questions

This research is based on the difficulties and gaps identified above. Therefore, the main aim of this study was to determine and address subsequent inquiries:

RQ 1: What is the descriptive level for logistical support factors (financial support, leadership support, contract compliance and technological support), contracting officer competency **towards** effective contract management?

RQ 2: What is the relationship between logistical support factors of financial support **towards** effective contract management?

RQ 3: What is the relationship between logistical support factors of leadership support **towards** effective contract management?

- RQ 4: What is the relationship between logistical support factors of contract compliance **towards** effective contract management?
- RQ 5: What is the relationship between logistical support factors of technological support **towards** effective contract management?
- RQ 6: What is the most contributing of logistical support factor between financial support, leadership support, contract compliance and technological support towards effective contract management?
- RQ 7: Is the contracting officer competency has moderating effect on the relationship between logistical support factors and effective contract management?
- RQ 8: What is an optimal procurement and effective contract management procedures toward effectiveness of RMN fleet operations?

The next section discusses the research objectives.

### **1.5 Research Objectives**

The primary aim of this research is to examine the correlation between logistical support variables and the efficacy of contract management, in line with specified research inquiries. This research aims to achieve the following specific objectives:

- RO 1: To identify the descriptive level of logistical support factors (financial support, leadership support, contract compliance and technological support), contracting officer competency and contract management
- RO 2: To analyze the relationship between logistical support factors of financial support and contract management.
- RO 3: To determine the relationship between logistical support factors of leadership support and contract management.

RO 4: To identify the relationship between logistical support factors of contract compliance and contract management.

RO 5: To determine the relationship between logistical support factors of technological support and contract management.

RO 6: To **rank** the most contributing logistical support factor between financial support, leadership support, contract compliance and technological support with effective contract management.

RO 7: To **measure** the contracting officer competency has moderating effect **towards** relationship between logistical support factors and effective contract management.

RO 8: To create an optimal procurement and effective contract management procedures toward effectiveness of RMN fleet operations.

The next section discusses the significance of the study.

## **1.6 Significance of the Study**

This study holds substantial importance from both theoretical and practical perspectives, specifically within the fields of logistic support and contract administration. The main aim of this study is to make a significant contribution to the current literature. The projected result of this investigation will aid the organization in efficiently tackling new difficulties pertaining to logistics support and contract management, hence having wider ramifications for operational logistics in its entirety. This study aims to support the Materiel Department at the Naval Headquarters in the development of a more efficient and effective methodology for controlling and managing contracts associated with the procurement of supplies, works, and services

within the RMN. The primary objective of this study is to provide valuable insights and recommendations to improve the overall relevance, rationality, and competency of contract execution. The findings of the research also aim to buck up the performance of the Materiel Department which is in control of the RMN contract management as well as administering and managing the assets and infrastructures in the RMN. Effective contract management is able to boost the performance and reputation of the RMN in the public eye where it would give the impression that the RMN is an organization that has always emphasised on good governance in the management of assets and infrastructure.

Furthermore, this research also aims to open a space for studying and related empirical evidence regarding the factors that affect the contract management associated with the acquisition of assets and infrastructures in line with the vision of the RMN in becoming “The World Class Navy”. From a practical standpoint, the findings of this research are expected to be able to function as a fundamental consideration in designing the acquisition of RMN assets and infrastructures in the future in accordance with the financial provisions that have been and will be allocated to the RMN. It is crucial to ensure every asset is well managed and operated are able to meet the RMN's maritime strategic function which is to float, to move and to fight.

### **1) Theoretical Significance**

This research has the potential to make a valuable contribution to the existing body of information and literature regarding logistical support variables and the impact of moderating factors on the effectiveness of contract management. Previous study by Rendon (2015) have discussed on contract management and the output of the study was

only focussing on the contract promulgation processes and level of organizations' maturity in handling contract management. Nothing been discussed on factors that really affecting the smooth handling of logistics support and contract management. Dean and Kiu (2002) stressed on performance monitoring and quality measures whereby According to Haarala, Lee, and Lehto (2010), the existing body of literature on contracting is characterized by its diversity; however, it lacks a unified and all-encompassing theory of contracting. Contract theories often examine several facets of contracts. Based on these literatures, the researcher intend to explore more on other factors that may affect or theoretically has a significant relationship with logistics support factors and effective contract management. Thus, there is a requirement to carry out studies on logistics support and contract management which is later part will give some significant contribution in the area of operational logistics as well as to the contract management theory.

## **2) Methodological Significance**

It has been noticed that most of the research methods regarding logistics and contract management are only aimed at the process of preparing the contract and the ability of the contract to safeguard the interests of the government. Most of these researchs do not use specific research methods either quantitatively, qualitatively or mixed-mode. The researcher aims to conduct this study by using a total quantitative method approach. Lack of empirical research concerning contracts (Camén (2010). Therefore, the researcher intends to provide an answer or empirical evidence on all the findings of the research later so that it can be proven steadily because it has been analyzed quantitatively. Indirectly this research has contributed another level and approach in research methodology related to logistics support and contract management.

Consequently, the method applied for this research could benefit the future researcher in a way of enhancing further on logistics support and contract management in quantitative perspectives.

### **3) Practical Significance**

In terms of practicality, most studies only focus on logistics management in the commercial field. These studies are almost all centered on the output that will be obtained when a logistics management is successful. This study has moved to another level by including elements of contract management and its relationship with logistics support factors. This study was also carried out on a branch of the military in Malaysia which is the Royal Malaysian Navy. This study aimed to investigate the correlation between logistical support variables, the competency of naval commanders, and the significance of contract management in the military domain. The findings of this study have the potential to offer valuable insights into the fields of logistics and contract management, which might be beneficial for other industries seeking to enhance their understanding of these areas. It is capable of being a benchmark for other sectors or there may be room for improvement that can be practiced together for the good of the operational logistics field in an effort to empower the country's logistics management. It is expected to be a contribution to any government policy when it come to logistics and contract management matter.

### **1.7 Justification of the Study**

Despite previous reports, several concerns persist, including delayed delivery, partial delivery of equipment or things, substandard quality, and underutilization of acquired equipment, commodities, and infrastructure. This issue is perceived as a hindrance or

limitation to the RMN procurement process and has implications for the functioning of the RMN. Therefore, the researcher intends to incorporate this element into the study to enhance the validity and reliability of other factors that exert a significant influence on the efficacy of federal contract management for procurement in the RMN. Carter et al. (2012) believe that the process of good contract management yields positive value creation.

A supply chain is a series of activities that deliver an outcome to a recipient (Booth, 2010). Throughout 30 years in the service, the researcher observed that nearly 90 percent of procurements in the RMN whether they involve supplies, work and services are managed through a contract. As a government agency under the Ministry of Defense, RMN always moves in tandem with any directives from the ministry when it is related to the procurement process that will consequently involve contract management.

Although RMN is a military organization, the RMN always adhere to its corporate responsibility to the Ministry of Defense. Corporate responsibility encompasses various dimensions, including ethical considerations, environmental stewardship, sustainable practices, and the promotion of equality and fairness. In recent years, there has been growing awareness and recognition of the significance of this phenomenon among the general public. It has become an essential requirement or a fundamental aspect for the majority, if not all, of organizations (Booth, 2010). Attached additional justifications for why the aspect of contract management in the RMN should be properly addressed in several sections.

### **1) Contracting Officer's Competency**

Recently, a few cases on RMN officer competency/integrity has become the headline in social media and it really tarnished the good image of RMN. What makes it serious is that it involved the manipulation and fraud in contract management as well as the wastage of government money on a big scale. Looking at the officers involved, all of them are contracting officers who are responsible for handling some procurement contracts (spare parts, propulsion systems, electronic and weapon systems, and general items). Those cases open the public eyes to why such a military organization like RMN can afford to have this kind of scandal and mismanagement? What has gone wrong with it? Is it something to do with training or lack of exposure? Are they competent to perform the job? Therefore, the RMN reputation is at stake. Top management of the RMN should take deliberate measures in order to reinstate RMN's good image as well as its relevancy in the eyes of the public. Given the emphasis placed on regulatory regulations, risk management, and cost control by executives, numerous organizations are currently turning to contract management as a means to improve their visibility, control, and performance. Consequently, organizations are compelled to enhance their methods and instruments utilized for the management of diverse tasks associated with contract administration, encompassing contract formation and performance evaluation (Patel, 2006).

### **2) Technological Change and Patterns of Conflict**

As a credible naval force that always wants to be seen as relevant in the public eye, RMN should always be alert and keep pace with the drastic changes in military technology. RMN must specify the procurement planning to meet the needs of current and future technologies. The pattern of conflict and war which seem uncertain in the

present day also requires commitment and accountability of senior management in determining whether each acquisition is able to meet or at least works well whenever it is needed.

### **3) Mission Capability and Operational Availability**

To determine any acquisition of assets is able to meet the needs of Mission Capability and Operational Availability, former Chief of Navy, Admiral Tan Sri Abdul Aziz while delivering his keynote address during the year of his reign in 2009 highlighted the following strategies: "The first strategy is outlined to ensure the readiness of the fleet are at high readiness or preparedness. The main focus is to ensure our fleet is able to be deployed in any missions and operations. Therefore, performance is to be evaluated in terms of the percentage of the vessel is operating in mission capability and operational availability. I wish that at least 50% of our platform can operate in full mission capable of categories 1 and 2, while at least 80% operational availability platform or in a category 1, 2 and 3". The statement is clearly understood that the readiness or preparedness of all assets is paramount in determining whether the RMN is always capable to perform its function as a credible navy, feared and at par with other navies in the region. Thus the operation of the assets arising from effective and efficient contract management practices should always take precedence.

### **4) Government Asset Management Committee (JKPAK)**

The committee will convene quarterly. It is a platform where the inventory status and current asset holdings will be reported to the RMN's top management. The meeting will involve a comprehensive and detailed discussion of many areas of contract management pertaining to the procurement of supplies, work, and services. Materiel Department at

the RMN Headquarters is responsible for presenting and monitoring the matter and ensuring an effective reporting process is delivered with the data presented and will adhere to such regulation as prescribed by Treasury Circular No. 5 of 2007 and No. 1 of 2014.

The next section discusses the scope of the study.

### **1.8 Scope and Limitations of the Study**

The objective of this study is to assess the current state and degree of effectiveness in contract management inside the RMN. This study examines the significance and impact of several elements on the practice of contract management. The main aim of this study was to investigate different RMN Formation Headquarters that are tasked with the oversight and implementation of contract management activities. These include the RMN Navy Headquarters-Material Department, Submarine Force Headquarters, Western and Eastern Fleet Supply Depots, and Naval Supply Depots. The study will encompass RMN Supply and Secretariat Officers, who have been designated at the Navy Headquarters, and various RMN formations. These officers consist of various ranks and positions and they are the main driver of the procurement process in the RMN because it is an essential task for them to formulate, develop and collect important data before a contract come into existence. Therefore, based on the functions and specifications of the task, this group of officers will be able to give a good response and input to this research.

Some limitations were identified in this research as follows:

- 1) The research concentrated on contract management effectiveness implemented in

RMN without involving other sister services ie: the Royal Malaysian Army and the Royal Malaysian Air Force. This study focused on four key elements of logistical assistance: financial assistance, leadership support, technological support, and contract compliance.

- 2) The research is limited to 1 moderating factor which is contracting officer competency.
- 3) The research focused on RMN Supply & Secretariate Officers as they are directly involved from the early stage of contract promulgation until the disposal of the contract.

The research address contract management effectiveness in the defence sector. Why it is limited to the defence sector because RMN, for instance, remains one of the most intensive maritime defence organizations that rely on contract management as its assets and infrastructures are procured via contract management. However, it is predicted that the finding of this research could be shared and disseminated to various industries.

As stated in the previous paragraph, this study does not take into account on contract management handled by the other two sister service, namely the Malaysian Army and the Royal Malaysian Air Force, because their functions and roles of assignments as well as the type of assets and specifications managed are not the same as those managed by RMN.

There are several other elements of logistic support that are not included in this study, for example IT support, service provider support, transport support and retailer support. The researcher believes that the 4 logistic supports included in this study are closely

related to the issues and incidents that have occurred in RMN recently. In order to identify the level and achievement of contract management effectiveness in RMN, the researcher has included human resource elements ie; by examining the relationship, impact and contribution of human resource competency to logistic support.

In accordance with what has been outlined in the Research Questions and Research Objectives, the researcher also intends to know which variable is relevance and has an impact on effective contract management.

This study involves Supply & Secretariat Officer only. The findings of this study may be different or have other effects if it involves other ranks in the RMN Supply & Secretariate Branch. Findings from a competency point of view may be different considering the competency of other ranks is usually quite different due to their training system as well as their chain of command structure which is different from officers.

The next section discusses the definition of key terms of this study.

## 1.9 Definition of Key Terms

To achieve the objectives of this study, the following fundamental principles were utilized:

- 1) **Logistic support factors:** It pertains to the assistance provided to ensure the smooth and proficient movement and safekeeping of products, services, and associated data, starting from the source to the destination, with the aim of satisfying the needs and expectations of clients (Rahman et al., 2020). **Financial support:** It refers to any form of monetary aid, including loans, guarantees,

collateral, or other types of financial assistance, whether it is currently available or could be provided in the future (Oláh et al., 2018).

- 2) **Leadership support:** It refers to the capability to oversee all logistics operations within a business, inspiring the team to achieve optimal outcomes and consistently devising creative solutions to enhance the overall supply chain strategy (Mokhtar et al., 2019).
- 3) **Contract compliance:** It denotes the delegation of responsibilities related to resource management by a company to a third-party organization that specializes in handling logistical activities, including transportation, storage, and fulfilling orders (Kummer et al., 2020).
- 4) **Technological support:** It refers to any technological tool and system that facilitates the management of the movement of goods from production to the end consumer in a fast and efficient manner within the logistics industry. This includes hardware, such as machinery and vehicles, as well as software for computing and data processing (Cimini et al., 2019).
- 5) **Contracting officer competency:** It refers to an officer's proficiency in executing multiple job responsibilities concurrently and consecutively and is crucial in employing various procedures to achieve the desired outcomes in contract management domains (Rendon, 2019).
- 6) **Effective contract management:** It encompasses the active surveillance of all essential activities required to guarantee the delivery of goods or services in compliance with contractual agreements (McGill & Brisley, 2021).

### **1.10 The Organisation of the Study**

The present thesis comprises five chapters. The first chapter provides an introduction to the background, issue statement, and gaps in the existing literature. This is followed by a presentation of the research questions, objectives, impact and rationale of the study, scope of the research, meanings of relevant terminology, and the overall organization of the study.

The subsequent chapter provides an overview of the existing body of literature pertaining to this particular topic. First, a comprehensive overview of contract management is presented. The literature encompasses an examination of logistical support, which can be categorized into five distinct subtopics: contract compliance, financial support, leadership support, technical support, and contracting officer proficiency. The study encompasses fundamental concepts, theoretical frameworks, contract management models, and underlying assumptions. There is a summary of the chapter in the conclusion.

The approach to this investigation is covered in the third chapter. The method and procedure used to obtain the data required to test the hypothesis comes first. Since the researcher intends to conduct the research quantitatively, this chapter will explore the research framework, research design, research instrument, questionnaire design, population and sampling, data collection techniques, test pilot, testing normality, linearity testing, reliability testing and data analysis techniques.

The results obtained from the statistical analysis of the current investigation are presented in the fourth section. This chapter employed a multistep strategy to

investigate the topic. The process of data coding, screening, assessing normalcy, examining multicollinearity, identifying outliers, and handling missing data was conducted using the Statistical Package for the Social Sciences (SPSS). The subsequent stage involved conducting a descriptive analysis to explore demographic data and ascertain the characteristics of the participants in the survey. Subsequently, the standard error of the mean (SEM) was calculated using Smart PLS Version 3 software. This chapter presents the Logistics Support Factors (LSF) (LS, CC, FS, and TS) and their function as autonomous variables within the context of ECM. Additionally, this chapter provides an overview of the measurement and structural models associated with these factors. COC serves as a mediating factor between LSF and ECM. The subsequent section presents the outcomes of the direct and indirect hypotheses.

The final chapter of this study encompasses the discussion and conclusions. It begins with a concise overview of the research objectives, followed by a review of the inquiry. Subsequently, the chapter delves into a comprehensive analysis of the findings, highlighting their contributions, implications, and recommendations for future research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

At practically every level of management, whether in commercial or public organizations, issues pertaining to contract management are frequently discussed. The past studies that will be presented will focus on the techniques, specializations, and approaches used by earlier academics to examine various elements of contract management. The researcher sought to uncover gaps in the literature evaluation of earlier investigations. The administration of contracts as well as supply chain management (SCM) in general can be improved by further research by scholars with a deeper understanding of contract management.

The next section discusses the overview of contract management.

#### **2.2 Overview of Contract Management**

Before embarking on contract management (CM) specifically, it is best to register that the 'parent equipment' of CM is the Supply Chain Management (SCM) itself. CM is one out of a million elements that form SCM as a whole. Supply chain management (SCM) is defined by Chopra and Meindl (2013) as the participation of all stakeholders, directly or indirectly, in meeting customer demands. New product creation, marketing, operations, distribution, financing, and customer support are just a few of the aspects that it encompasses. Regarding the issue of all parties' involvement, direct or indirect, Baljko Shah (2002) concurs with Chopra and Meindl's assertion that observers anticipate improvements in the earnings ratio itself when they decide how to share data

and more closely identify the relationships between suppliers and customers.

According to Halldorsson, Kotzab, Mikkola, and Larsen (2007), the field of supply chain management (SCM) is continually evolving because global businesses' ability to manufacture and deliver customized goods and services quickly and effectively is becoming increasingly important to their ability to compete. Afterwards, they define the supply chain as including an organization and the movement of products and information from suppliers of raw materials to final consumers between organizations. The supply chain is a meta-organization made up of several companies that have merged their business operations beyond divisional boundaries and developed partnerships with other organizations. Supply (chain) management is essentially about influencing behavior in specific directions and methods, according to Storey, Emberson, Godsell, and Harrison (2006). Careful attention should be paid to underlying reasoning, causes, enablers, and impediments warranted.

### **2.2.1 Definitions of Contract Management**

It is crucial to register that the definition of contract management varies and most of it is encompassing logistical support be it in the field of defence, legal, engineering, information technology and finance purposes.

Contract management, according to Carter, Kirby, and Oxenbury (2012), is the process of ensuring that all parties to a contract are aware of their responsibilities and that they must be fulfilled effectively and efficiently to get the most out of the money that has been spent. Then, they describe contract management as actively managing the contractual arrangement between the contractor and the customer in order to buy goods

and services in accordance with collectively decided criteria. Although Carter, Kirby, and Oxenbury (2012) were cited by the Office of Government Commerce, contract management is defined as the stage of the procurement cycle in which the supplier provides the goods or services needed to meet the requirements established by the body making the acquisition. According to Patel (2006), effective contract management is a means of raising expectations and lowering uncertainty.

### **2.2.2 Previous Study**

According to Dobriansky (2006), effective contract management is a means of raising expectations and lowering uncertainty in response to a series of queries regarding the reasons behind challenges that arise during the contract management stage of the acquisition life cycle. When it comes to contract management phases, how do you prevent and lessen program challenges? Next, he discusses contract management, which is the phase of the acquisition life cycle that follows the contract award. He goes on to say that, in the acquisition industry, contract management is neither a novel nor a very attractive idea. Effective contract management is crucial. Additionally, he asserts that there exist five primary factors crucial to the achievement of effective contract management subsequent to the period of contract award, which are as follows:

1. Assign the right number of resources to properly manage the contract.
2. Assign the right type of resources to properly manage the contract.
3. Develop and manage realistic program schedules.
4. Minimize program funding changes
5. Minimize program changes including changes to the contract objectives and work statement.

Patel (2006) states contract management automation is one of the quickest and most effective ways to improve visibility and contract compliance – and mitigate supply risks. Further, he lay out a step-by-step process to measure contract performance as follows:

1. **Adopting Appropriate Technology**

Having the capability to do thorough searches within contracts and gaining access to information regarding pricing, terms, clauses, and other relevant details is of utmost importance in efficiently regulating and managing supplier contracts. Furthermore, technology facilitates tracking and monitoring by automatically generating alerts for contract renewals and milestones.

2. **Securing Executive Support**

When individuals have substantial backing, they are more inclined to comply with a diverse array of policies and procedures.

3. **Measuring Performance**

It focuses on three distinct domains of adherence: transactional, procedural, and regulatory. Organizations are progressively evaluating and assessing their performance at predetermined times.

McGuinness (2013) stated contract management is not a single thing, but rather a cluster of related techniques as follows:

1. **Performance Delivery Management**

The purpose of this measure is to guarantee that the service or supply is being provided according to agreed-upon terms, meeting the necessary standards of performance and quality.

2. **Relationship Management**

The primary objective is to maintain an open and productive connection between

the supplier and customer, with the aim of resolving conflicts and promptly identifying and rectifying any issues that may arise.

### **3. Contract Administration**

The purpose of this is to improve the formal governance of the contract as well as any modifications made to the contract. Contract management encompasses the various processes and strategies implemented to effectively attain and maintain these objectives during the entire duration of the contract.

McGuinness emphasizes that a fundamental principle of contract administration involves the establishment of a centralized repository for procurement contracts. The study conducted by Jones, Carey, and Sinéad (2009) did not find significant evidence to suggest a direct relationship between the social changes that occur with the implementation of e-procurement and the level of corporate political power. Nevertheless, it has been noted that consumer perceptions play a crucial role in influencing the dimensions of professionalism and substance related to contract compliance. Insufficient contract management can lead to a scenario in which a business accrues costs for services that were not initially delineated or sanctioned in the original contractual arrangement.

Based on the analysis conducted by Nerenz (2006), it can be concluded that contract bundling poses a substantial barrier that impedes the participation of small enterprises in contractual arrangements with the federal government in the United States. The results suggest that contract bundling is a rare and sporadic phenomenon that does not play a significant role in explaining the restricted participation of small enterprises in government procurement. Qi's (2007) study centered on the subject of risk management

in the procurement domain. The objective of this study is to determine the demand for goods by utilizing the prevailing distribution function. Hence, it is crucial to have a proficient buying strategy to rectify any shortcomings in condition or performance. The study conducted by Xue (2009) aimed to investigate the inventory management and procurement strategies implemented within various organizations. The findings of this study underscore the significance of adopting a functional policy to address the difficulties presented by unpredictable fluctuations in commodity prices proficiently. According to Shah (2002), one of the project management contracts under consideration seeks to enhance the buyer's access to improved information regarding the responsibilities of the contractual partners. Table 2.1 present the summary of knowledge gaps.

Table 2.1  
*Summary of Knowledge Gaps*

| No. | Researchers            | Focus                                                                                                                                                                                                                                                                                                                                                                 | Findings                                                                                                                                                                                                                                                                                                                                                       | Knowledge Gap Areas                                                                                                                                                                                                                                                                  |
|-----|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Pfohl & Zöllner (1997) | The study focuses on how contingency factors, such as product line and organizational size, intersect with the overall strategy of an organization to shape its logistics department. It argues that while these factors are important, their influence is limited and can be modified by the organization's strategic direction. By understanding this relationship, | The findings suggest that while contingency factors like product line and organizational size play a role in shaping logistics departments, their influence is limited and can be overridden by the organization's strategic direction. The study highlights the importance of aligning logistical tasks with the overarching strategy of the firm to optimize | The study identifies several knowledge gap areas in the understanding of logistics organization within firms. These include the need for further research on the specific mechanisms through which contingency factors interact with organizational strategy to influence logistical |

Table 2.1 (Continued)

| No. | Researchers                                 | Focus                                                                                                                                                                                                                        | Findings                                                                                                                                                                                                                                                        | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                             | firms can effectively design their logistical tasks to meet specific requirements and enhance their competitive advantage.                                                                                                   | operations and enhance competitiveness. This implies that organizations should carefully consider both contingency factors and strategic objectives when designing their logistics functions.                                                                   | decisions. Additionally, there is a gap in understanding how different industries or contexts may require unique approaches to logistics organization, considering varying contingency factors and strategic objectives. Furthermore, there is a need for empirical studies to validate and expand upon the theoretical frameworks proposed in this area, providing practical insights for organizations striving to optimize their logistical functions. |
| 2   | Storey, Emberson, Godsell & Harrison (2006) | The focus of the study is to critically assess the current state of supply management theory and practice by examining six supply chains across 72 companies in Europe, with a particular emphasis on blue-chip corporations | The findings reveal that supply management is still in its emergent stages, with practitioners struggling to implement theories effectively across supply chains. Significant gaps persist between theory and practice, with few companies able to fully extend | The study highlights key knowledge gap areas in supply management, including the implementation divide between theory and practice, challenges in effectively managing supply chains across echelons, and                                                                                                                                                                                                                                                 |

Table 2.1 (Continued)

| No. | Researchers                     | Focus                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Findings                                                                                                                                                                                                                                                      | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                                        |
|-----|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                 | operating internationally. The findings highlight that supply management remains emergent, with significant gaps between theory and practice, and identify key barriers and enablers to effective supply management. The study aims to inform both theorists and practitioners about the challenges and opportunities in supply management, suggesting practical steps to overcome barriers and improve prospects for supply chain management in the future. | their reach across the supply chain as suggested by modern theory. Key barriers and enablers to effective supply management are identified, alongside trends that may shape the future of supply chain management as a discipline.                            | ambiguity regarding the roles of supply chain managers. It underscores the need for further research to understand barriers hindering effective implementation and to clarify the responsibilities of those managing the supply chain. Additionally, the study emphasizes the importance of identifying future trends to inform strategic approaches in supply management. |
| 3   | Yoho, Rietjens, & Tatham (2013) | The focus of the study is to provide an introduction to the special issue of defence logistics by offering an overview of the field, discussing historical and contemporary issues faced by researchers and practitioners, describing current research, and                                                                                                                                                                                                  | The findings of the study highlight the current state of defence logistics research and propose a research agenda for future work. The study discusses the anticipated characteristics of future combat operations and suggests areas for further exploration | The study identifies knowledge gap areas within defence logistics, including the need to integrate past and present research findings, anticipate future challenges, and compare defence logistics with commercial counterparts for                                                                                                                                        |

Table 2.1 (Continued)

| No. | Researchers   | Focus                                                                                                                                                                                                                                                                                                                                                                                                                               | Findings                                                                                                                                                                                                                                                                                                                                      | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                         |
|-----|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |               | proposing a research agenda for future work in defence logistics. The study aims to highlight the current state of defence logistics research and anticipate future challenges and opportunities based on transformations in warfare and changes in the global strategic landscape. Additionally, it compares defence logistics operations with commercial counterparts to identify potential areas for adaptation and improvement. | based on recent transformations in warfare and changes in the global strategic landscape. Additionally, comparisons between defence logistics operations and commercial counterparts are made to identify potential opportunities for adaptation and improvement in the field.                                                                | potential adaptations. While the research proposes a research agenda based on anticipated characteristics of future combat operations, there may be additional unknown challenges requiring further investigation. Addressing these gaps can enhance understanding and practice in defence logistics, leading to improved military supply chain management. |
| 4   | Rendon (2015) | The focus of the study is to present the results of contract management process maturity assessments in the US Navy using a process capability maturity model. It aims to benchmark the Navy's contract management processes, identify areas for improvement, and develop a roadmap for implementing process improvements and knowledge-sharing                                                                                     | The findings of the study reveal higher maturity levels in pre-award contracting processes (such as Procurement Planning, Solicitation Planning, and Source Selection) compared to post-award processes (like Contract Administration and Contract Closeout) within the US Navy. Additionally, the research indicates that process capability | The study reveals higher maturity levels in pre-award contract management processes compared to post-award processes within the US Navy. Variations in process capability enablers between pre-award and post-award stages underscore the need for further investigation to identify underlying factors.                                                    |

Table 2.1 (Continued)

| No. | Researchers   | Focus                                                                                                                                                                                                                                                                                                                                                                                                                     | Findings                                                                                                                                                                                                                                                                                                                                                                                            | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                                                 |
|-----|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |               | initiatives within Navy contracting agencies.                                                                                                                                                                                                                                                                                                                                                                             | enablers scored higher for pre-award processes and lower for post-award processes, reflecting the extent of contracting best practices implementation within Navy contracting agencies. These findings suggest areas for improvement in post-award processes to enhance overall contract management effectiveness.                                                                                  | Additionally, assessing the transferability of findings to other government agencies beyond the US Navy is crucial for improving contract management practices across the broader government procurement landscape.                                                                                                                                                                 |
| 5   | Rendon (2019) | The focus of the study is to analyze the competency framework for Department of Defense (DoD) contracting and compare it with frameworks from other federal agencies as well as those established by procurement and contracting professional associations. The study aims to identify gaps and areas for improvement in the DoD contracting competency model to enhance the professional and technical excellence of the | The findings of the study highlight disparities between the DoD contracting competency framework and those of other federal agencies and professional associations. Analysis reveals areas where the DoD framework may lack alignment with industry standards and best practices, potentially impacting the professional and technical excellence of the DoD contracting workforce. Recommendations | The study identifies knowledge gap areas within the DoD contracting competency framework. It highlights the need to assess alignment with industry standards and best practices, compare the framework with those of other federal agencies, and understand the impact of disparities on workforce excellence. Addressing these gaps can enhance the effectiveness of the framework |

Table 2.1 (Continued)

| No. | Researchers                             | Focus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                         | DoD contracting workforce.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | are made to improve the DoD contracting competency framework to better equip the workforce with the necessary skills and knowledge for effective contract management within the defence sector.                                                                                                                                                                                                                                                                                                | and better prepare DoD contracting professionals for the challenges of the defence sector.                                                                                                                                                                                                                                                                                                                                                                                         |
| 6   | Moyer, Walls, Phillips, & Rendon (2020) | The focus of the study is to analyze contract management deficiencies reported by the Department of Defense Inspector General (DoD IG) for the Air Force and align them with the Contract Management Body of Knowledge (CMBOK) framework provided by the National Contract Management Association (NCMA). Additionally, the study compares the NCMA framework with the Air Force Contracting Self-Inspection Checklist used for internal controls. The research aims to provide recommendations for training opportunities and | The findings of the study reveal correlations between contract management deficiencies reported by the Department of Defense Inspector General (DoD IG) for the Air Force and elements of the Contract Management Body of Knowledge (CMBOK) framework provided by the National Contract Management Association (NCMA). Additionally, the comparative analysis between the NCMA framework and the Air Force Contracting Self-Inspection Checklist highlights areas where the checklist may need | The study highlights several knowledge gap areas within contract management practices in the Department of Defense (DoD). It identifies a need for further investigation into the alignment of DoD contract management practices with industry standards and best practices, particularly concerning recognized frameworks like the Contract Management Body of Knowledge (CMBOK) provided by the National Contract Management Association (NCMA). Additionally, there is a gap in |

Table 2.1 (Continued)

| No. | Researchers | Focus                                                                                                                       | Findings                                                                                                                                                                                                                                                                | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|-------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |             | improvements to the checklist to enhance the competency of the Air Force contracting workforce and address review concerns. | improvement to better align with industry standards and best practices. Recommendations are made for training opportunities and enhancements to the checklist to improve the competency of the Air Force contracting workforce and address review concerns effectively. | understanding the effectiveness of internal controls, such as the Air Force Contracting Self-Inspection Checklist, in mitigating risks and ensuring compliance with regulations and standards. Furthermore, while the study recommends training opportunities to enhance the competency of the Air Force contracting workforce, further research is needed to determine the most effective training methods and strategies for addressing specific deficiencies and improving overall performance. Addressing these knowledge gap areas can contribute to the development of more robust and effective contract management practices within the DoD, ultimately enhancing efficiency, effectiveness, and compliance across |

Table 2.1 (Continued)

| No. | Researchers                                       | Focus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | the organization's contracting activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 7   | Kummer, Herold, Dobrovnik, Mikl, & Schäfer (2020) | The focus of the study is to identify and examine the organizational theories used in blockchain literature within the context of Logistics and Supply Chain Management (LSCM). Additionally, the study aims to formulate relevant research questions for investigating blockchain technology in LSCM based on the content of the identified organizational theories. Through a systematic literature review, the study seeks to provide insights into how various organizational theories can be applied to understand and address specific blockchain-related challenges in logistics and transport. | The findings of the study reveal that six organizational theories are commonly used in blockchain literature within the context of Logistics and Supply Chain Management (LSCM): agency theory, information theory, institutional theory, network theory, resource-based view, and transaction cost analysis. Additionally, the study presents how these theories can be applied to examine specific blockchain-related problems in LSCM. Through the formulation of blockchain-specific research questions based on these theories, the study offers insights into potential avenues for further investigation in the application of blockchain technology in logistics and transport. | The study identifies several knowledge gap areas within research on blockchain applications in Logistics and Supply Chain Management (LSCM). It highlights the lack of clear theoretical foundations in much of the existing literature, indicating a need for further exploration of organizational theories' integration. Additionally, the extent to which identified organizational theories are utilized and their effectiveness in addressing blockchain-related challenges remains unclear. Further investigation is needed to determine the depth of application and the most promising research questions for advancing |

Table 2.1 (Continued)

| No. | Researchers  | Focus                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Findings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Knowledge Gap Areas                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | blockchain technology in LSCM. Addressing these gaps can contribute to a more comprehensive understanding and effective application of blockchain in the logistics and supply chain domain.                                                                                                                                                                                                                                                                                       |
| 8   | Kundu (2021) | The focus of the study is to use risk analysis methodology to discuss the challenges faced in defence procurement in India. The study aims to identify the most probable and severe causes for poor procurement performance by analyzing an original dataset of 88 contracts. It specifically examines the impact of technological and contractual risks on delays in Indian defence procurement, highlighting the frictions and transaction costs associated with these risks. Additionally, | The findings of the study reveal that in Indian defence procurement, technological risks are identified as the most probable cause for delays, followed by contractual risks. Technological risks are particularly concentrated in cases of indigenous procurement due to infrastructure and resource deficiencies. Contractual risks, on the other hand, predominantly occur in contracts involving external agents like foreign suppliers, indicating the presence of friction and transaction costs. These findings are supported by insights from | The study identifies knowledge gap areas within defence procurement in India. It highlights the need for robust methodologies to quantify the impact of procurement risks and identify the most severe ones. Additionally, there is a gap in understanding the specific nature and mechanisms of technological risks, particularly in cases of indigenous procurement. Further research is needed to elucidate effective strategies for mitigating contractual risks and reducing |

Table 2.1 (Continued)

| No. | Researchers | Focus                                                                                                                                 | Findings                                                                                                                                       | Knowledge Gap Areas                                                                                                                              |
|-----|-------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|     |             | insights from extensive fieldwork in India, including 53 interviews, complement the quantitative analysis of procurement performance. | extensive fieldwork, including 53 interviews, providing a comprehensive understanding of the challenges faced in defence procurement in India. | transaction costs in defence procurement. Addressing these gaps can lead to more efficient and effective defence acquisition processes in India. |

The definition of contract management appears to vary across disciplines, as shown in Table 2.2.

Table 2.2  
*Contract Management Definitions*

| Discipline                                  | Author                     | Definition                                                                                                                                                                                                                                                                      |
|---------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Defence                                     | Rendon (2015)              | “A contract between the government and a contractor reflects a principal-agent relationship. The principal (government) contracts with the agent (contractor) to perform a specified level of effort, such as developing and manufacturing a product or providing a service.”   |
| Execution and efficiency measures (Quality) | Dean and Kiu (2002)        | “Encapsulate three key areas: ensuring the contractor’s work is faithful to the contract terms, identifying the extent of variation in quality and its relationship to cost factors and determining whether clients and the contracting agency are satisfied with the service.” |
| Structure (Industrial)                      | Lai, Yik, and Jones (2004) | “A contract is formed when two rational parties believe that there are gains from the trade by either party, as a result of their differences in belief, preferences and/or comparative                                                                                         |

Table 2.2 (Continued)

| Discipline                              | Author                        | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         |                               | advantages”                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Data system (DS)                        | Ngwenyama and Sullivan (2007) | “the contract is as a mechanism for addressing risks associated with IS outsourcing as well as a tool for implementing management strategies to address these risks.”                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Public Carriage Sector (Transportation) | Camén (2010)                  | <p>“The contract:</p> <ul style="list-style-type: none"> <li>• acts as a communication tool in the transmission of information from one party to another;</li> <li>• by reducing uncertainty and risk by stating each party’s contribution to the relationship; and/or</li> <li>• by meeting the requirements of accepted practice in a given business setting</li> </ul> <p>One of the principal functions of the contract is that it should specify the content of the service and the resources needed for the service to be produced, with service quality being one of the issues.”</p> |
| Food Production (Agriculture)           | Olmos (2011)                  | <p>“a. Contract is the outcome of an optimisation process in which the relative benefits and costs of additional incompleteness are traded- off at the margin”</p> <p>“b. The main costs incurred by the search for a more complete contract (as against a more incomplete one) will be costs of writing, enforcement and potential flexibility, and, in the absence of sufficient advantages, these costs will be a deterrent to formal contracting.”</p>                                                                                                                                   |

Table 2.2 (Continued)

| <b>Discipline</b> | <b>Author</b>                  | <b>Definition</b>                                                                                                                                                                                                            |
|-------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Legal             | Haarala, Lee, and Lehto (2010) | “Contracts and contracting be understood as a way of balancing the trade-offs between hard and soft elements and that the optimal management of contracting capabilities needs to take these trade-offs into consideration.” |

Having those definitions and understanding of contract management from various disciplines and fields of study, it is significant to forward a solid comprehension that contract management is a process which incorporates crucial elements of logistics support such as principal-agent relationship, post-contract award phase of the acquisition life cycle, visibility and contract compliance and mitigates supply risks that adhere to the whole activities of effective contract management.

### **2.3 Logistical Support Factors**

The evolution of logistics from its origins in military operations to its broader application in business, as observed since the 1960s, underscores its foundational role in contemporary organizational endeavours. Initially rooted in military logistics, which focused on the strategic coordination of resources for effective military operations, the concept has expanded to encompass broader supply chain management practices. This expansion, as noted by Yoho, Rietjens, and Tatham (2013), acknowledges logistics' crucial role in facilitating efficient operations across various sectors beyond the military.

According to Pfohl and Zöllner (1997), logistics entails a comprehensive framework involving organizational structures, strategic planning, operational execution, and regulatory oversight. From transportation and handling to storage and packaging, logistics encompasses a wide array of activities aimed at ensuring the smooth movement of goods and information exchange. This comprehensive perspective highlights logistics' dual objective of achieving desired service levels while minimizing overall expenses, emphasizing its critical significance in organizational efficiency and effectiveness.

Within the Royal Malaysian Navy (RMN) and its procurement agencies, logistical support plays a pivotal role in implementing contractual standard procedures. A systems view approach, as emphasized in the study, holds promise in enhancing logistical efficiency and, consequently, improving contract management capabilities. Integral elements such as financial support, leadership endorsement, contract compliance, technological integration, and contracting officer competency emerge as key factors in bolstering the RMN's contracting process capability. By focusing on these elements, the RMN can streamline its logistical operations, thereby optimizing fleet operations and mission readiness.

In conclusion, the study's perspective on logistical support factors underscores the critical role of logistics in enhancing contract management within the RMN and its procurement agencies. By recognizing logistics as a strategic enabler and incorporating it into procurement processes, the RMN can optimize fleet operations and ensure mission readiness. Through a comprehensive understanding of logistics' significance and integration of key elements into contracting practices, the RMN can navigate

contractual complexities more efficiently, ultimately strengthening its operational effectiveness and fulfilling its duties effectively.

### **2.3.1 Financial Support**

Patel (2006) underscores the critical role of documentation in financial reporting and internal controls, particularly in light of the Sarbanes-Oxley Act. This legislation emphasizes the need for organizations to maintain transparent and traceable transactions to enhance financial transparency and reinforce control measures. Within the context of the study on the strategic integration of logistical support within the Royal Malaysian Navy (RMN), Patel's insights highlight the importance of transparency and adherence to regulations in contractual engagements. This aligns with the RMN's objective of promoting accountability and efficiency in its procurement processes.

Carter et al. (2012) emphasize the necessity of transparency in contractor involvement to achieve cost reduction without compromising product or service quality. Their observations are pertinent to the study's focus on enhancing contract management and fleet operations efficiency within the RMN. By ensuring transparency in contractor engagements, the RMN can assess the impact on costs and prices while maintaining the quality standards essential for its operational effectiveness. Moreover, Carter et al.'s insights underscore the importance of comprehensive cost analysis to identify potential gains or losses, aligning with the study's objective of optimizing logistical support to minimize expenses and maximize efficiency.

The significance of ensuring the financial stability of contractors, as highlighted by Patel and Carter et al., resonates strongly within the RMN's context. In the realm of

defence procurement, where reliability and stability are paramount, the RMN must meticulously evaluate the financial standing of its contractors. This aligns with the study's focus on contract management, emphasizing the importance of selecting financially stable partners to mitigate risks and ensure smooth operations. By prioritizing financial stability and scrutinizing relevant data such as financial statements and credit ratings, the RMN can safeguard its contractual engagements and enhance its operational resilience.

In conclusion, Patel (2006) and Carter et al. (2012) insights offer valuable perspectives on the importance of documentation, transparency, and financial stability in contractual engagements. These principles are integral to the study's exploration of strategic logistical support integration within the RMN. By incorporating these insights, the RMN can strengthen its procurement processes, optimize logistical operations, and enhance its overall operational efficiency and effectiveness.

### **2.3.2 Leadership Support**

The insights provided by Shah (2002), Hosie (2003) Patel (2006), and Carter et al. (2012) shed light on the multifaceted nature of leadership support within the realm of contract management, offering valuable perspectives that can enrich the study's exploration of strategic logistical support integration within the Royal Malaysian Navy (RMN).

Shah's (2002) observation regarding the limitations of technology in strategic thinking underscores the indispensable role of human leadership in setting organizational goals and trajectories. While technology can handle transactional tasks efficiently, it lacks the

ability to engage in strategic thinking. Within the context of the RMN's logistical operations, effective leaders possess the vision, qualities, and capabilities to align logistical support efforts with operational objectives, driving organizational transformation and achieving mission readiness. Shah's insight underscores the importance of human leadership in guiding strategic decision-making and ensuring alignment between logistical support activities and overall organizational goals.

Hosie's (2003) study on the significance of performance evaluation underscores the importance of aligning organizational objectives with individual performance assessments. This insight is particularly relevant in the context of contract management within the RMN, where optimizing productivity and ensuring congruence between business objectives and operational plans are paramount. By emphasizing the role of performance evaluation in optimizing productivity and aligning individual efforts with organizational objectives, Hosie's study highlights the importance of leadership support in driving performance excellence within the RMN's logistical operations.

Patel (2006) highlights the critical influence of senior management's leadership support on staff compliance with laws and regulations. This insight underscores the importance of top-level endorsement in fostering a culture of adherence to contractual obligations. In the context of the RMN's logistical operations, where compliance with regulations is paramount, Patel's assertion emphasizes the need for strong leadership buy-in to ensure regulatory compliance and operational effectiveness. By advocating for the identification of 'champions' of contract management and securing robust backing from executive leadership and shareholder interests, Patel underscores the pivotal role of leadership support in promoting transparency and accountability in contractual

engagements.

Carter et al. (2012) emphasize the significance of key leaders within contractor organizations in maintaining supply chain continuity and fulfilling contractual obligations. Their observation underscores the critical role of leadership stability in ensuring timely delivery of supplies, which is essential for fleet operations within the RMN. By highlighting the potential risks associated with the departure of key leaders, Carter et al. emphasize the importance of succession planning and ensuring sustained leadership support to mitigate disruptions effectively. This aligns with the study's focus on enhancing contract management efficiency and operational resilience within the RMN.

In summary, integrating the insights from Patel, Carter et al., Shah, and Hosie provides a comprehensive understanding of the multifaceted role of leadership support in contract management and logistical operations within the RMN. These perspectives underscore the importance of leadership stability, strategic alignment, and performance optimization in enhancing operational efficiency and effectiveness. By incorporating these insights into the study's exploration of strategic logistical support integration, a more nuanced understanding of the factors influencing contract management efficiency within the RMN can be achieved.

### **2.3.3 Contract Compliance**

Carter et al. (2012) emphasize the importance of contract performance measurement as a tool for assessing accomplishments and determining when contractors merit special acknowledgement or incentive payments. Within the context of contract management,

it is crucial to ensure that performance measurements are based on predetermined standards and results, encompassing factors such as quality, quantity, timeliness, and cost-effectiveness. This approach aligns with the objectives of the study on the strategic integration of logistical support for enhanced contract management and fleet operations efficiency in the Royal Malaysian Navy (RMN). By implementing robust performance measurement mechanisms, the RMN can evaluate contractors' ability to meet organizational requirements and identify areas for performance enhancement, thus contributing to the overall efficiency and effectiveness of fleet operations.

Furthermore, the resolution of specific problems within the contracting process is integral to ensuring contract compliance and successful outcomes. Palleschi (2011) highlights efforts undertaken by the Defense Intelligence Agency and the Pentagon to reorganize their contract review process, including the implementation of training programs and heightened emphasis on contract file checklists. These measures aim to ensure that contracts with contractors and suppliers consistently adhere to established principles and guidelines. This underscores the significance of contract compliance from a defence perspective, as adherence to contractual terms and obligations is essential for maintaining operational readiness and mission success within the RMN.

However, despite efforts to promote contract compliance, breaches of contract terms are inevitable. This reality underscores the criticality of exploring the role and function of contract compliance, particularly within the defence sector. By conducting a comprehensive analysis of contract compliance practices and challenges, the study aims to provide insights into strategies for mitigating compliance risks and enhancing the effectiveness of contract management processes within the RMN. Through a nuanced

understanding of the complexities of contract compliance, the RMN can proactively address issues, minimize disruptions, and optimize fleet operations efficiency.

In conclusion, contract compliance plays a pivotal role in ensuring the success of contractual agreements within the defence sector, including the RMN. By exploring the criticality, role, and function of contract compliance, the study contributes to the overarching objective of enhancing contract management and fleet operations efficiency. Through robust performance measurement mechanisms and proactive measures to address compliance challenges, the RMN can strengthen its contractual relationships, maintain operational readiness, and achieve mission success.

#### **2.3.4 Technological Support**

The integration of technological support into contract management, as advocated by Patel (2006), offers a swift and highly effective approach to improving transparency and ensuring adherence to contractual obligations. This assertion aligns with the imperative of reducing the potential impact of risk provisions, particularly pertinent within organizations like the Royal Malaysian Navy (RMN), where the efficacy of logistical operations is pivotal. Similarly, Carter et al. (2012) highlight the consequential effects of utilizing outdated technology in contractor operations, emphasizing the adverse impact on the reputation and reliability of offered products. In the context of the RMN, where supply chain efficiency directly influences fleet operations, the adoption of contemporary technological solutions becomes imperative for sustaining competitiveness and operational effectiveness.

Furthermore, Baljko Shah (2002) posits technology as a transformative agent within contract management, framing it as a comprehensive project that encompasses the management contract and offers advantages to purchasers by facilitating access to information regarding contractual obligations. The evolving landscape of government sector procurement, including initiatives like e-SPKB, My-SPATA, and 1GFMAS, presents opportunities to enhance efficiency, transparency, and accountability in contract management processes. However, a nuanced exploration of the practical implications and challenges associated with the adoption of new tools and systems within the government sector, particularly within the RMN, is essential.

Despite the shared view among Patel (2006), Carter et al. (2012), and Baljko Shah (2002) on the positive impact of technology on contract handling, a thorough examination of potential implementation challenges is warranted. Issues such as data security, interoperability with existing systems, and user adoption may pose significant obstacles to effective implementation within the RMN. Therefore, while technology holds promise in enhancing contract management practices, a comprehensive exploration of its potential benefits, coupled with strategies to address implementation challenges, is necessary to fully realize its efficacy in optimizing logistical support and fleet operations efficiency.

In conclusion, the integration of technology into contract management presents considerable potential for improving transparency, streamlining processes, and mitigating risks within the RMN's logistical operations. By leveraging modern technological solutions and embracing initiatives like e-SPKB and 1GFMAS, the RMN can enhance efficiency, transparency, and accountability in contract management

processes. However, a thorough understanding of implementation challenges and a strategic approach to address them is essential to maximize the benefits of technology integration and optimize fleet operations efficiency within the RMN.

### **2.3.5 Contracting Officer Competency**

Rendon (2015) emphasizes the paramount importance of individual competency in fulfilling contract management duties, underlining its pivotal role in achieving success within an organization. This assertion resonates deeply within the context of the study, which delves into the strategic integration of logistical support for enhanced contract management and fleet operations efficiency in the Royal Malaysian Navy (RMN). By highlighting the significance of individual competency, the study aims to explore how the proficiency levels of personnel within the RMN influence the outcomes of contract management processes and contribute to overall operational effectiveness.

Moreover, Rendon (2015) underscores the necessity of establishing organizational process maturity to ensure consistent and improved outcomes for an agency. Organizational process maturity is fundamental for enabling the RMN to navigate the complexities of contracts, mitigate risks effectively, and optimize logistical support processes. Hence, the study seeks to investigate how organizational process maturity contributes to the realization of strategic objectives within the RMN's contract management framework, particularly in the context of enhancing fleet operations efficiency.

Understanding competency entails considering both individual and organizational perspectives, as elucidated by Devkar and Kalidindi (2013). They define competency

as a composite of skills, knowledge, abilities, and other associated traits possessed by an employee. This comprehensive understanding underscores the multifaceted nature of competency and its significance in driving efficiency and effectiveness in contract management activities within the RMN.

Given recent incidents such as procurement leakage and breaches of trust within the RMN, the exploration of competency within the study takes on added importance. Analyzing the role of competency in mitigating such incidents and ensuring adherence to contractual obligations is crucial for enhancing trust, reliability, and operational readiness within the RMN's fleet operations. Therefore, the study aims to critically analyze the implications of competency within the context of contract management and its relevance to addressing challenges and optimizing outcomes within the RMN's operational framework.

In conclusion, the study's examination of competency within contract management activities aligns with the imperative of achieving enhanced success and operational effectiveness within the RMN. By critically analyzing individual and organizational competency, the study seeks to provide insights into strategies for improving contract management practices, mitigating risks, and optimizing logistical support processes within the RMN's fleet operations. Through a nuanced understanding of competency, the RMN can strengthen its capabilities, enhance trust and reliability, and achieve mission success in its operational endeavours.

Based on previous studies, findings and knowledge gaps that have been discussed in Table 2.1 as well as arguments related to aspects of logistical support and contract

management, the researcher found that the following issues need to be given attention and taken into account in the study that will be carried out. Here are some crucial points to consider; (1) logistics as a strategic enabler; (2) the importance of documentation, transparency, and financial stability in contractual engagements; (3) the importance of leadership stability, strategic alignment and performance optimization in enhancing operational efficiency and effectiveness; (4) robust performance measurement mechanisms and proactive measures to address compliance challenges; (5) leveraging modern technological solutions and embracing new and high end initiatives; and (6) critically analyzing individual and organizational competency. The researcher believes that by taking into consideration on those crucial points, a well balance research will strive to be carried out more thoroughly and can further contribute to the boundary of knowledge.

## **2.4 The Underpinning Theories**

It is essential to identify the relationship between an empirical study and theory in social science studies. A theory is crucial to define the interest areas, explore these areas, and understanding the areas of interest. Due to the nature of variables under this study, the researcher employs two foundational theories, specifically the Principal-Agent Theory and the Competency Theory as the underpinning theory for the current study and supports the framework of the study. The next subsection presents this theory with supportive arguments highlighting how both theories supports the framework of this study.

### **2.4.1 Principal-Agent Theory**

The principal-agent theory was first developed during the 1970s by scientists from the

fields of economics and institutional theory, as documented in *The Economic Times*. A paper was published in 1976 by Michael Jensen from the Harvard Business School and William Meckling from the University of Rochester. This study introduced a theoretical framework about ownership structure with the objective of reducing what is commonly known as agency expenses. This theory also explores the correlation between agency costs and the concepts of separation and control. Principal–agent theory is a conceptual framework that emerges when a principal establishes a scenario in which the objectives of an agent are not congruent with those of the principal. In the majority of instances, the onus rests on the principal to build motivational mechanisms that effectively incentivize the agent to conform their behaviors in accordance with the principal's desires. This encompasses a wide range of factors, from monetary incentives to the mitigation of information asymmetry.

Eisenhardt (1989), Brown et al. (2009), Tate et al. (2010), and Gopal and Koka (2010), as referenced by Rendon (2015), provide more elaboration on the prevailing examination of government contracting via the lens of principal-agent theory. The contractual arrangement between the government and contractor serves as an illustration of a principal-agent relationship. Within the realm of government operations, the principal assumes the role of entering into contractual arrangements with an agent to carry out a specified level of endeavor, encompassing activities such as the development and manufacturing of a product or the delivery of a service (Rendon, 2015). In this scenario, the government generally formulates its objectives with the intention of ensuring prompt procurement of goods or services that fulfil the desired criteria of cost, origin, quantity, and quality. The author includes a citation as per Rendon's work in 2015. Cooper (2003), Cohen and Eimicke (2008), and Thai (2004)

posited that the federal government has an extra objective of ensuring that the acquisition of a product or service is in accordance with both public policy and statutory criteria. In contrast, contractors are motivated by a variety of objectives, such as the generation of profits, expansion of their firm, maintenance or gain of market share, and improvement of cash flow (Rendon, 2015).

According to Rendon (2015), there is a possibility that the government possesses more information about the agency's mission, procurement requirements, and available budget, whereas the contractor may have greater knowledge of its technical capabilities, cost drivers, and return on investment requirements. Both the principal and agent have asymmetric information and competing goals, which motivate each to act in a particular way.

Subsequently, Rendon (2015) emphasizes the contract management process—which is based on agency theory and the principal-agent dilemma—and how contracts are created, structured, granted, administered, and closed out. Given that contracts are products of the processes that gave rise to them, process maturity is directly related to the contract management procedures and results inside an organization.

In a study conducted by Rendon (2015), an examination was undertaken to evaluate the benchmarking of contract management systems across the United States Navy. The study is grounded in principal-agent theory as its foundational framework. The researcher distributed an online assessment tool to contracting organizations within the United States Navy, specifically targeting aviation systems, marine systems, and logistics support installations. The evaluation tool consists of a collection of survey

questions related to the application of optimal contracting methods. The survey responses were subsequently employed to calculate the level of maturity of the agency's contract management procedure. The results of the study revealed that pre-award contracting processes, specifically Procurement Planning, Solicitation Planning, and Source Selection, demonstrated greater levels of maturity. In contrast, the processes related to post-award contracting, namely Contract Administration and Contract Closeout, exhibited comparatively lower levels of maturity. The findings of the study regarding the factors influencing process competence also revealed that pre-award processes exhibited higher mean scores, whereas post-award processes demonstrated lower mean scores. The maturity levels and process capability enabler scores are utilized as metrics to assess the extent to which contracting best practices have been effectively integrated within the contracting agencies of the United States Navy.

Looking at the flow and approach of the research, it is observed that the survey items used such as procurement planning, solicitation planning and others have been deployed to contracting agencies, those representing the principal (government) and there were no agents (contractors) involved during the process. In fact, the items are actually advocates of the process flow as well as the internal process in the organizations. In other words, the research does not conform to the principal-agent theory.

In relation to this study, the preliminary observation indicates a resemblance between the theory and the sequential nature of contract management protocols. The notion of contract management is commonly seen as the government assuming the role of the principal, with the primary aim of constantly protecting the government's interests

throughout the process. The agent in this contractual arrangement comprises two elements: contract compliance and technology assistance, as previously elucidated. The researcher made the decision to conduct an investigation on the role of contracting officer competency as a moderating variable within the specific setting of government/principal relationships. To achieve equilibrium in the principal-agent interaction, this research incorporates two supplementary aspects that serve as symbolic representations of the principal: financial help and leadership support.

#### **2.4.2 Competency Theory**

According to Cooper and Schindler (2014), theory is a collection of concepts, definitions, and propositions that are systematically interconnected and put forth to provide an explanation and prediction of phenomena or facts. Therefore, competency theory will be used in this research as it will explain better in line with having contracting officer competency as one of the items in this research.

According to Latham and Gross (2007), the concept of competency theory, as stated by Kruger and Dunning (1999), asserts that people's proficiency in a given subject is linked to their capacity to appraise their skill sets appropriately. It is further proposed that persons with lower-level talent may lack awareness of their impairment.

According to Latham and Gross (2007), competency theory posits that individuals who possess a higher degree of information literacy skills are inclined to exhibit self-doubt over their performance capabilities, while those with a lower level of skills are more prone to overestimating their abilities.

In relation to this work, the first findings suggest that the theory is consistent with the development of contract management protocols. Contract management is often perceived as the government assuming the position of the principal, with the primary aim of consistently protecting the government's interests throughout the process. The contractual agreement comprises two key elements: contract compliance and technology support, as previously stated. The researcher chose to investigate the influence of contracting officer competency as a moderating factor within government/principal relationships. To attain equilibrium in the principal-agent interaction, this study integrates two complementary facets that function as symbolic representations of the principal: assistance in financial matters and guidance in leadership development.

## **2.5 Contract Management Model**

According to Cooper and Schindler (2014), a model is a created representation of a system that is utilized to investigate specific elements of the system or its entirety. There is a distinction between models and theories, wherein theories primarily serve the purpose of explanation, while models primarily serve the purpose of depiction. To ascertain the primary concerns within this research, a model from a prior study will be employed as it will subsequently provide a comprehensive understanding of the research. Table 2.3 presents the Contract Management Maturity Model (CMMM) model developed by Rendon (2008).

Table 2.3

*Contract Management Maturity Model (Rendon 2008)*

| MATURITY LEVELS | CONTRACT MANAGEMENT Maturity MODEL    |                       |                 |                  |                |                   |
|-----------------|---------------------------------------|-----------------------|-----------------|------------------|----------------|-------------------|
|                 | CONTRACT MANAGEMENT KEY PROCESS AREAS |                       |                 |                  |                |                   |
|                 | Procurement Planning                  | Solicitation Planning | Solicitation    | Source Selection | Contract Admin | Contract Closeout |
| 5<br>OPTIMIZED  |                                       |                       |                 |                  |                |                   |
| 4<br>INTEGRATED | A                                     | A                     | A               | A                |                |                   |
| 3<br>STRUCTURED | D<br>B E                              | D<br>B E<br>C F       | D<br>B E<br>C F | D<br>B E<br>C F  | A D<br>C F     | D<br>F            |
| 2<br>BASIC      | C F                                   |                       |                 |                  | E              | A<br>C E          |
| 1<br>AD-HOC     |                                       |                       |                 |                  | B              | B                 |

### 2.5.1 Contract Management Maturity Model

Rendon (2003) first introduced the application of the maturity model in the field of contract management. The Contract Management Maturity Model (CMMM) was developed to assess an organization's contract management processes in relation to its proficiency and level of advancement (Rendon, 2003). In a subsequent scholarly article, Rendon (2008) delineated certain criteria pertaining to Contract Management Maturity Models (CMMM). These criteria pertain to the six core process areas of contract management:

1. **Procurement Planning:** The process of determining the optimal alignment between organizational requirements and the acquisition of external items or services. This process encompasses the evaluation of whether to acquire, method of acquisition, selection of items to be acquired, quantity of items to be acquired, and timing of acquisition.
2. **Solicitation Planning:** The procedure involved compiling the necessary documentation to substantiate solicitation. This procedure entails the documentation of program requirements and the identification of potential suppliers.

3. **Solicitation:** The procedure of soliciting bids or proposals from potential vendors to ascertain how project requirements might be fulfilled.
4. **Source Selection:** The procedure of soliciting bids or proposals and employing evaluation criteria to choose a provider.
5. **Contract Administration:** The procedure of guaranteeing that the performance of each involved party aligns with the stipulated contractual obligations.
6. **Contract Closeout:** The process of ensuring the completion of all administrative matters pertaining to a contract that is otherwise physically finalized. This process entails the finalization and execution of the contract, which encompasses the resolution of any outstanding matters.

The CMMM consists of five levels of maturity applied to the six key process areas as discussed above: The five levels of contract management process maturity are:

- 1) “Ad hoc” level (Level 1)
- 2) “Basic,” disciplined process capability (Level 2)
- 3) “Structured,” established, and institutionalized process capability (Level 3)
- 4) “Integrated” with other organizational processes resulting in synergistic enterprise-wide benefits (Level 4)
- 5) “Optimized” processes focused on continuous improvement and adoption of lessons learned and best practices (Level 5)

The contract management maturity model represents the approach how to assess the maturity of a contract in the organization. This approach is conducted after the post-award of a contract. The main reason for conducting such an exercise is actually to uphold the contracting process capability as well as implement process improvement

within the organization. Looking at the key process area and levels of process maturity which form the CMMM, it is significant to conclude that this model has intensively covered the whole spectrum of contracting activities.

However, the item such as key process area and level of maturity used in the model represents the process flow in handling contract management. The main contributor to ensuring maturity, as well as contracting capability, should rely solely on the competency of the contracting officer in essence. Therefore, the researcher intends to dwell in deep on the aspect of contracting officer competency and related elements that may have a link or association with effective contract management.

## 2.5.2 Competency-Based Work Assignment Model

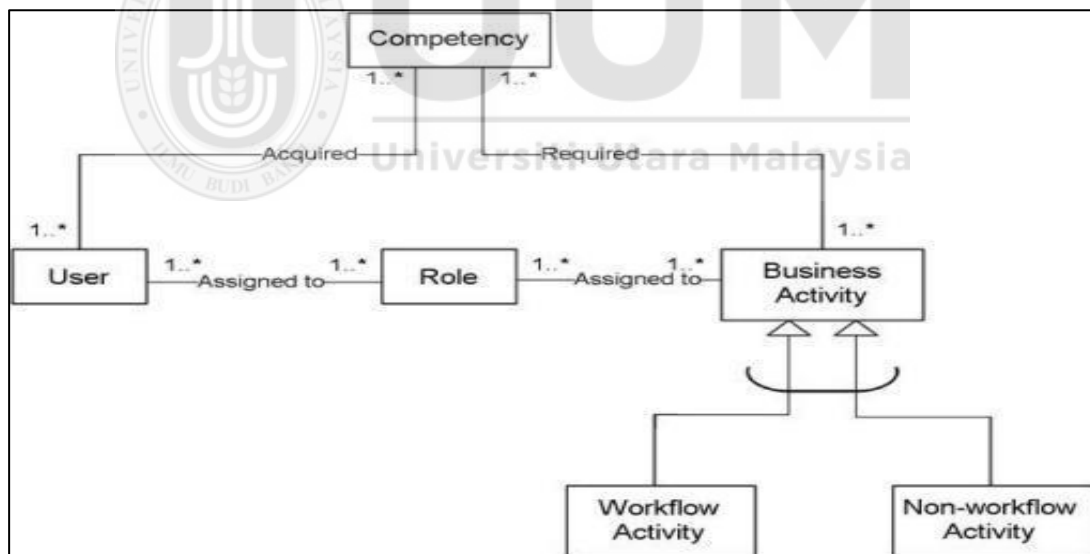


Figure 2.1

*A Static View of Work Assignment in the Form of a Class Model*

Based on Figure 2.1, Macris, Papadimitriou and Vassilacopoulos (2008) state in a workflow environment, roles can be seen from two perspectives:

1. From the user perspective, roles represent the combined capabilities and privileges

of workflow participants.

2. From the workflow perspective, roles represent the capabilities and privileges required for the proper execution of workflow activities.

According to Macris, Papadimitriou, and Vassilacopoulos (2008), competences can be integrated into more intricate roles, wherein higher-level roles encompass a broader range of business operations than lower-level positions. The outcome of this phase would entail the establishment of role definitions that serve as comprehensive representations of the skills and abilities necessary for individuals to assume specific positions within an organization and carry out the corresponding job responsibilities. This task involves the identification of competencies necessary for different business activities that form either the workflows representing business processes or align with conventional information system applications. Additionally, it requires the assignment of closely aligned roles to business activities, considering many-to-many interactions.

Therefore, the point of “roles as encapsulations of the competencies required to occupy certain organizational positions and perform associated job functions” is valid and in line with the research aim which is to enlighten the cruciality of contracting officer function and existence in the contracting process whilst at the same time holding the responsibility to uphold the organization survivability.

## **2.6 Contract Management Framework**

Drawing upon an in-depth examination of the existing literature, an analysis of the underlying theoretical framework, and a careful examination of various models, the researcher formulated a research model with the aim of exploring the factors that impact

the connection between logistical support factors and the efficacy of contract management.

### **2.6.1 Theoretical Framework**

This research employs a theoretical framework that encompasses several variables related to logistical support factors as the independent variable and effective contract management (ECM) as the dependent variable. The moderating variable in this study will be the competency of the contracting officer (COC). As per the definition proposed by Baron and Kenny (1986), a moderating variable refers to a variable that has the ability to impact the direction and/or extent of the association between an independent or predictor variable and a dependent or criterion variable. The logistical support aspects consist of four fundamental sub-elements: financial support (FS), leadership support (LS), contract compliance (CC), and technology support (TS). Figure 2.2 illustrates the theoretical framework utilized in this research, which incorporates two separate theories: principal-agent theory and competency theory.

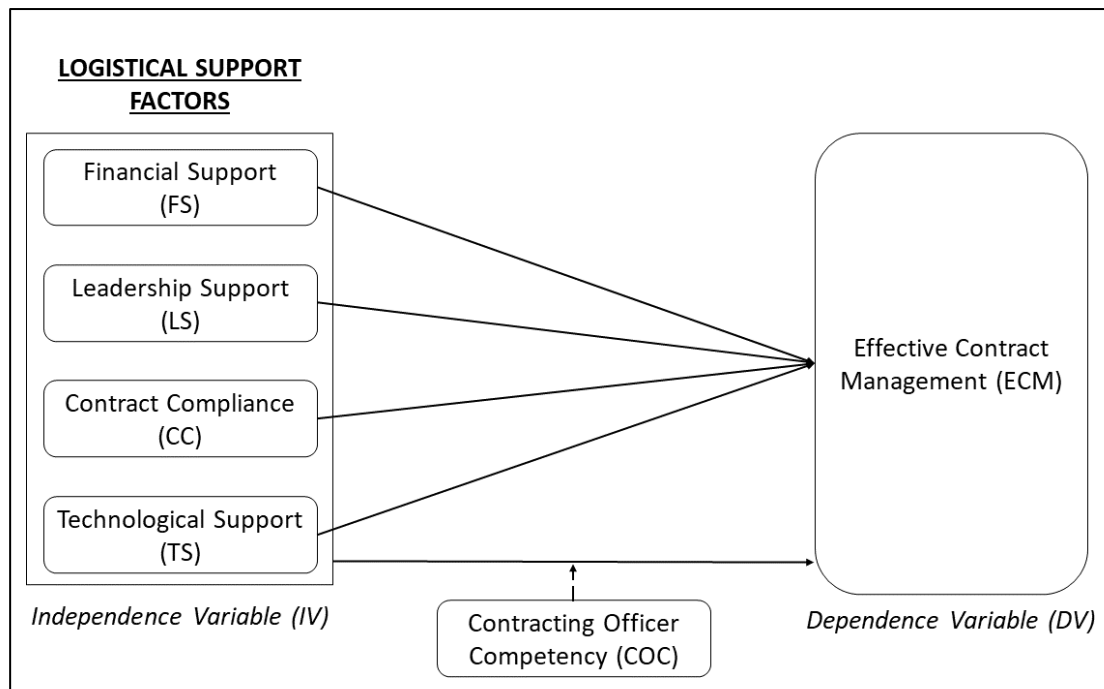


Figure 2.2  
*Theoretical Framework of the Study*

## 2.7 Hypotheses

According to Cooper and Schindler (2014), the term "hypothesis" refers to a notion that is formulated for the purpose of empirical testing. Hypotheses are additionally characterized as assertions wherein variables are allocated to situations. Drawing upon the established research and theoretical framework/model, the researcher formulated the following hypotheses:

- H1: There is a significant relationship between the logistics support factors of financial support and effective contract management.
- H2: There is a significant relationship between the logistics support factors of leadership support and effective contract management.
- H3: There is a significant relationship between the logistics support factors of contract compliance and effective contract management.
- H4: There is a significant relationship between the logistics support factors of technological support and effective contract management.

technological support and effective contract management.

H5: There is a moderating effect of the the contracting officer competency on the relationship between the logistics support factors of financial support and effective contract management.

H6: There is a moderating effect of the contracting officer competency on the relationship between the logistics support factors of leadership support and effective contract management.

H7: There is a moderating effect of the contracting officer competency on the relationship between the logistics support factors of contract compliance and effective contract management.

H8: There is a moderating effect of the contracting officer competency on the relationship between the logistics support factors of technological support and effective contract management

The next section discusses the chapter summary.

## **2.8 Chapter Summary**

The researcher has established a research model base on underpinning theory and related models to investigate whether logistical support elements (IV) have to do with the effective contract management (DV). Whilst the contracting officer's competency is tested whether it correlates with effective contract management. This study proceed to Chapter Three which is discussing the research methodology.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes the approach and process that will occur to get the data needed to test the hypothesis. Since the researcher intends to conduct the research quantitatively, this chapter explored the research framework, research design, research instrument, questionnaire design, population and sampling, data collection techniques, test pilot, testing normality, linearity testing, reliability testing and data analysis techniques.

The next section discusses the research framework.

#### **3.2 Research Framework**

To achieve the research aim, a research framework is built to demonstrate the interactions between the variables (Figure 3.1). It is generally accepted that the research framework runs throughout the research process because it can reframe the research questions and identify the key theories and concepts, providing a perspective and retrospective overview of the whole study (Cooksey & McDonald, 2011). There are six variables in this framework: (i) Logistics Support Factors of Financial Support, (ii) Logistics Support Factors of Leadership Support, (iii) Logistics Support Factors of Contract Compliance, (iv) Logistics Support Factors of Technological Support, (v) Contracting Officer Competency, and (vi) Effective Contract Management.

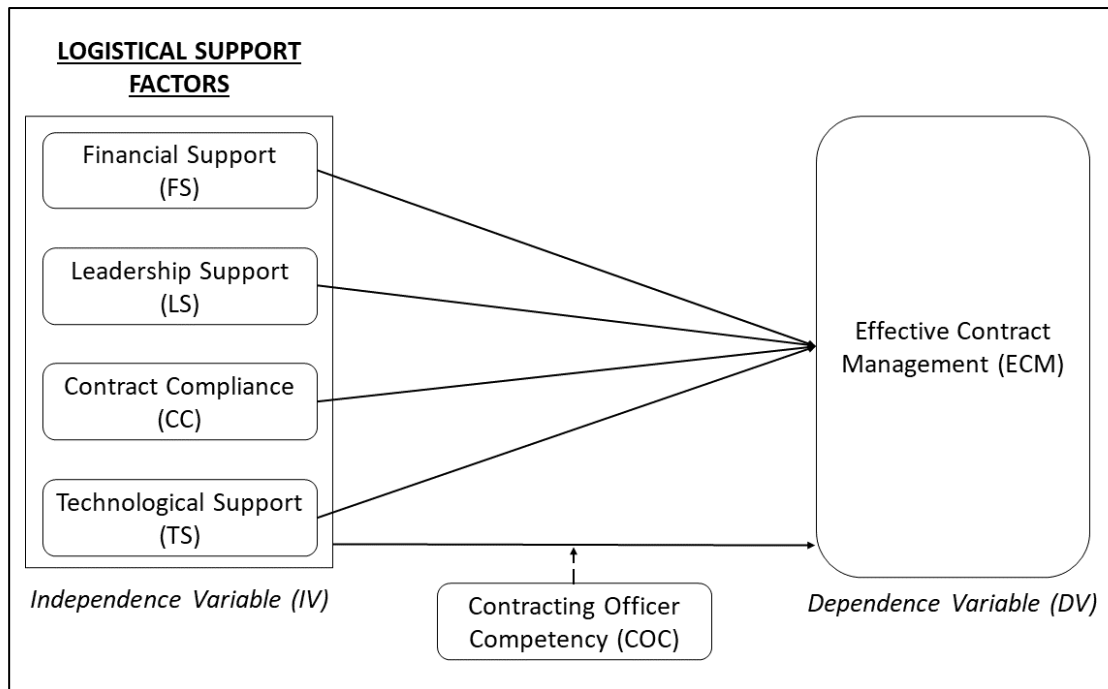


Figure 3.1

*Research Framework*

Notes: Dash line is moderating variable.

The straight line is a direct effect.

Based on the figure above, the logistics support factors (the exogenous variable) were conceptualised as an influencing process through future officers' capacities and abilities to integrate skills into institutions, communities, and individuals, based on studies of effective contract management in administration. Logistics support elements have four distinct components: financial support (FS), leadership support (LS), contract compliance (CC), and technological support (TS). In light of previous research, it is worth noting that the competence of contracting officers has the potential to influence the connection between logistical support variables (FS, LS, CC, and TS) and the effectiveness of contract administration.

Logistical support factors play a crucial role in facilitating good contract management.

They are regarded as an essential component of logistics because of their significance

in attaining desired service levels while minimizing overall costs within the logistical system (Pfohl & Zöllner, 1997).

### 3.2.1 Independent Variables

Hence, referring to the principal-agent theory it is best to operate the framework by describing independent variables as follows:

1. **Financial Support:** At this juncture, financial support plays a major part in whether the acquisition of government assets and infrastructure could be done with the amount of budget/financial status allocated to RMN on a yearly basis. Patel (2006) emphasizes the importance of organizations prioritizing the creation and maintenance of documentation related to financial reporting and internal controls. The main aims of this strategy are to establish auditable transactions, improve financial transparency, and strengthen internal control mechanisms. Based on the underlying theoretical framework, this particular variable is categorized under the jurisdiction of the government (primary) because of its susceptibility to government regulation and authorization.
2. **Leadership Support:** Having allocated sufficient financial support, the RMN leadership need to prioritise which job, project and system to be acquired first in order to be seen as a strategic decision that fulfils the RMN requirements. This variable will be under the government (principal) as it is at the discretion of the government (principal) to give full support in ensuring the effective contract management process flow. According to Carter, Kirby, and Oxenbury (2012), the presence of a key leader within a contractor, such as an account manager responsible for overseeing organizational and supply contracts, is likely to result in a heightened understanding of the organization and its requirements. However,

the departure of this leader from the contractor may lead to a decline in supply provision.

3. **Contract Compliance:** Contract compliance is always at stake. However, by practising a smart partnership with the contractor, RMN is capable of ensuring every single term that has been agreed upon will materialize accordingly. This variable will be under the contractor (agent) as the government will depend on the contractor to comply and fulfil what has been agreed during the contracting process. Carter et al. (2012) assert that contract performance measurement provides a method for evaluating achievements and serves as a basis for determining when a specific accomplishment deserves special attention in the form of incentive payments, prizes, and acknowledgment for contractors.
4. **Technological Support:** Being the largest maritime force in the country, RMN always move in tandem with new technology and welcome new approach as long as it is for the betterment of the force. This variable will be under the contractor (agent) as the government will let the contractor bring in/introduce the best technology offered in the market in a way to gain a win-win situation. Patel (2006) asserts that the integration of automation into contract management offers a prompt and highly effective method for improving transparency and guaranteeing adherence to contractual obligations, thereby reducing the impact of risk provisions. Carter et al. (2012) argue that the utilisation of obsolete technology by a contractor can have a substantial impact on the contracting organisation.

### 3.2.2 Moderating Variable

Contracting officer competency. It is the most subjective element above all. This aspect encompasses integrity, attitude, mindset, and ideology. Contracting officers are

recognized as the most valuable asset within an organization, as they play a crucial role in ensuring the efficient and effective management of contracts within the RMN. This variable is subject to government oversight, as it is within the purview of the government to provide comprehensive support in the development of adequate human resources. According to Thai and Yeo (2015), competency can be defined as a combination of skills, knowledge, abilities, and other related characteristics possessed by an employee, allowing them to perform their tasks with greater efficiency and effectiveness. Rendon (2015) aligns with the findings of Thai and Yeo (2015) by asserting that individual competence plays a crucial role in achieving higher levels of effectiveness in contract management tasks and activities. Moreover, Rendon provided further explanation that the level of organizational process maturity will play a crucial role in ensuring a consistent and enhanced outcome for the agency. There are two issues can be churned out from both scholars. Clearly they insisted on competency in a way of achieving process maturity as it may ensure the organization upward mobility.

### **3.2.3 Dependent Variable**

Effective Contract Management. This variable will be under the government (principal) as it is the ultimate expectation from the higher authority in the RMN in ensuring the acquisition of government assets and infrastructures are properly managed according to the financial allocation. According to Carter et al. (2012), contract management is a procedural approach aimed at ensuring a clear comprehension of the responsibilities and obligations of both parties engaged in a contract. The primary objective is to ensure that these obligations are fulfilled in a manner that maximizes efficiency and effectiveness, thereby optimizing the value derived from allocated financial resources. Contract management can be defined as the proactive management of the customer-

contractor relationship, with a focus on adhering to mutually agreed-upon contractual terms for the acquisition of goods and services.

In general, the framework presents a thorough methodology for comprehending the correlation between logistical support components (FS, LS, CC, TS) and the efficacy of contract management. Additionally, it examines the influence of contracting officer ability as a moderator in these associations.

The next section discusses the research design.

### **3.3 Research Design**

Saunders et al. (2016) suggest that the concept of research philosophy pertains to belief systems and underlying assumptions that guide the advancement of scientific knowledge. A research philosophy based on a consistent and coherent system of beliefs and assumptions will establish credibility for the methodology selection, research plan, collecting methodologies, and data processing procedures. Many primary research philosophies are employed in social scientific studies, including positivism, critical realism, interpretivism, postmodernism, and pragmatism. Each philosophical framework encompasses a set of principles and presuppositions pertaining to ontology, epistemology, and axiology (Saunders et al., 2016). The researchers selected the philosophy of positivism for this investigation based on the rationale provided by Saunders et al. (2016):

- a) Positivism can be transferred and applied clearly and widely in social science research.
- b) According to ontological assumptions, the philosophy of positivism admits that

social reality exists objectively and independently and is not bound by time and context.

- c) The philosophy can be used to prove or reject a hypothesised relationship between variables or test a theory, but not create a new theory.
- d) The development of science is based on theory and literature studies, with contributions in terms of causal explanations and predictions.

Research design refers to the systematic approach employed in gathering information with the aim of accomplishing a specific study objective (Konting, 1998). According to Blaikie (2000), research design refers to a systematic plan and strategic approach employed to establish a connection between the research questions, acquired data, and tools and processes utilized to address those research issues. According to Cooper and Schindler (2001), research design encompasses various elements, such as temporal considerations, study inquiries, source and information selection, a conceptual framework for understanding the interplay between research variables, and the procedural aspects of conducting the research. Gay and Airasian (2003) explained that research design should be viewed from the perspective of the purpose, which is formed from the descriptive aspect and the description, acquisition, and analysis of the data.

Therefore, it can be inferred that the study design primarily centers on the selection and implementation of methodologies and protocols, the establishment of metrics, and the analysis of data in order to address the research inquiries. This encompasses considerations such as the data collection techniques employed, the nature of the sample utilized, and the temporal and financial limitations that need to be taken into account. To address the inquiries posed in this research, a quantitative approach was employed,

which entailed the use of a survey instrument in the form of a questionnaire. This decision was consistent with the perspective of Gay et al. (2006) that quantitative research design is appropriate for studying large populations because of the ability to systematically transfer uniform facts and information from respondents. This methodology is significant in providing an overview of the present circumstances, as well as in discerning connections and causal links (Gay et al., 2006).

According to Swanson and Holton (2005), quantitative methods allow the use of small groups or samples to make generalizations about large groups or populations. Survey methods using questionnaires are also deemed suitable for measuring attitudes and orientations in large populations, as well as individual opinions and beliefs (Babbie, 2013). Babbie (2013) supported quantitative research design because it would be suitable—in terms of cost, speed, lack of favouritism, and transparency—for answering research questions as the identities of those in the sample remained confidential.

Consequently, the data for this study were acquired through a cross-sectional approach, wherein data were collected at a certain point in time using a questionnaire (Babbie, 2013). The cross-sectional approach is appropriate for research projects that gather data on multiple variables from large geographically diverse groups (Cohen et al., 2008). Additionally, the design strategy advocated by Swanson and Holton (2005) is encouraged because of its cost-effectiveness and potential for generalizability from a small sample to a larger population. Given the inclusion of a substantial sample size, the use of a cross-sectional questionnaire survey methodology was deemed suitable and rational for this investigation. The rationale behind this was that the study cohort comprised supply and secretariat personnel from the Royal Malaysian Navy (RMN)

who were deployed to different units, formations, and headquarters within the RMN, such as the Submarine Force Headquarters, Naval Headquarters (Materiel Department), West Fleet Supply Depot, and West Naval Supply Depot. Primary participants were selected using a stratified random selection technique.

### **3.4 Operational Definition**

While the conceptual meaning of the variables under investigation must be understood, it is also essential to determine how they were operationalised in this study. The concepts are presented in this section under headings related to the key terms.

#### **3.4.1 Financial Supports**

Financial support plays a crucial role in enabling the government to acquire assets and infrastructure within the budget allocated to the Royal Malaysian Navy (RMN) on an annual basis. In his study, Patel (2006) emphasizes the need of organizations or enterprises to preserve records of financial reporting and internal controls. This practice facilitates auditable transactions, improves financial transparency, and strengthens internal control mechanisms. Following this principle, the government (as the principal) controls and approves this variable.

#### **3.4.2 Leadership Support**

Given adequate financial support, the RMN leadership must prioritise acquiring jobs, projects, and systems strategically that fulfil the Navy's requirements. The government (as the principal) controls this variable and is responsible for ensuring an effective contract management process flow. According to Carter et al. (2012), it is proposed that designating a primary leader, such as an account manager, to oversee the management

and administration of organizational and supply contracts can yield advantages. This individual is expected to have a comprehensive comprehension of the organization's requirements. Nevertheless, in the event that an individual departs from the contractor, it is plausible that the supply chain could encounter disruptions.

### **3.4.3 Contract Compliance**

Contract compliance is always a concern, but through a strategic partnership with the contractor, the RMN can ensure that all agreed-upon terms are fulfilled. This variable is under the responsibility of the contractor (as the agent), as the government relies on the contractor to comply with and meet agreed-upon terms during the contracting process. Carter, Kirby, and Oxenbury (2012) assert that the assessment of contract performance plays a crucial role in evaluating accomplishments and establishing criteria for granting special acknowledgment, such as incentive payments, awards, and recognition systems, to contractors.

### **3.4.4 Technological Support**

As the largest maritime force in the country, the RMN consistently embraces new technologies and approaches that can enhance its capabilities. The duty for this variable is with the contractor who acts as the agent. The government grants the contractor permission to implement the most advanced technology available in the market with the aim of achieving a mutually advantageous result. Patel (2006) asserts that the automation of contract management is a rapid and highly efficient method for enhancing visibility and ensuring adherence to contractual obligations while concurrently mitigating risk provisions. Furthermore, according to Carter et al. (2012), the provision of outmoded technological resources by a contractor may exert a

substantial influence on the contracting organization.

#### **3.4.5 Contracting Officer Competency**

The most subjective element of contract management encompasses factors such as integrity, attitude, mindset, and ideology. Contracting officers are considered the organization's most important asset, as they hold a pivotal position in facilitating effective contract administration inside the RMN. The responsibility for this variable is with the government acting as the principal, as it is its duty to ensure the provision of sufficient human resources to facilitate the contracting process. Thai and Yeo (2015) defined competency as a composite of skills, knowledge, talents, and other attributes exhibited by employees, facilitating their enhanced efficiency and effectiveness in doing their tasks.

#### **3.4.6 Effective Contract Management**

The responsibility for these variable falls under the government (as the principal), as they have the ultimate expectation from higher authorities in the RMN to ensure that the acquisition of government assets and infrastructure are appropriately managed within the allocated budget. Carter et al. (2012) assert that contract management plays a crucial role in facilitating a clear understanding and efficient fulfilment of duties by all parties engaged in a contract, ultimately leading to the optimal utilisation of resources. Furthermore, contract management is defined as the proactive administration of the association between the client and contractor, predicated on mutually established criteria for the acquisition of commodities and services.

### 3.5 Population and Sampling

Sampling is a fundamental research procedure described by Sekaran (2000). It involves the deliberate selection of an adequate number of elements from a population. This selection is crucial to gain a comprehensive understanding of the sample's attributes. Ultimately, this understanding enables researchers to draw meaningful conclusions and make generalizations about the larger population under investigation.

#### 3.5.1 Unit of Analysis

According to Bhattacharjee (2012), the unit of analysis refers to the object, person, and collective that the researcher is concentrated to examine. The level of the unit of analysis is determined on the study problems and concerns, whether person, group, organization, or country (Sekaran & Bougie, 2016). This study examined the relationship between Logistical Support Factors (LSF) and Effective Contract Management (ECM) with the moderating effects of the use of Contracting Officer Competency (COC) in the Supply & Secretariate Branch in RMN.

Therefore, the unit of analysis of this study is the **Supply & Secretariate Branch** which represent the Royal Malaysian Navy organization. The respondents were 252 officers that served and hold various appointments under the Supply & Secretariate Branch.

In short, the respondents were considered as the leading individuals inside the organization, making a significant contribution to facilitating the wellbeing of the organization by controlling, knowing each detail inside the organization and engaging in the contract planning process.

### 3.5.2 Population

The primary objective of this study is to examine the demographic characteristics and professional assignments of RMN Supply and Secretariat Officers throughout the Royal Malaysian Navy, encompassing their deployment across different units, formations, and headquarters. The aforementioned establishments encompassed the Submarine Force Headquarters, Naval Headquarters (Material Department), West Fleet Supply Depot and West Naval Supply Depot. The population involved in this study is from the group of Supply & Secretariat Officers who serve in the Supply & Secretariat Branch which is one of the three main branches in RMN namely the Executive (sailor) Branch and the Engineering Branch. The total strength of this branch is 372 officers (RMN Materiel Department, 2024) consisting of various ranks, experience, academic background and competency. These officers are the driving force behind all government procurement activities, drafters, monitors and enforcers of government contracts in RMN. These people are serving in various RMN units, ships, headquarters and formations throughout Malaysia. The total strength of Supply & Secretariate Officers are shown in Table 3.1.

Table 3.1  
*Strength of RMN Supply & Secretariate Officers*

| <b>Rank</b>               | <b>Total</b> |
|---------------------------|--------------|
| Rear Admiral              | 1            |
| First Admiral             | 3            |
| Captain                   | 10           |
| Commander                 | 55           |
| Lieutenant Commander      | 111          |
| Lieutenant                | 114          |
| Sub-Lieutenant            | 63           |
| Sub-Lieutenant (Training) | 15           |
| <b>Total</b>              | <b>372</b>   |

Source: Royal Malaysian Navy Materiel Department, (2024)

Therefore, in order to simplify the sampling process from this population, the researcher adopted an approach to use the **simple random sampling** method to ensure all data and information obtained are able to provide valuable information for the researcher to pursue the study to the next level.

Hayes (2023) describes simple random sampling as a subset of a statistical population in which each member of the subset has an equal probability of being chosen. A simple random sample is meant to be an unbiased representation of a group. In short, a simple random sample takes a small, random portion of the entire population to represent the entire data set, where each member has an equal probability of being chosen.

According to Krejcie & Morgan (1970), for a population of 360 people, the appropriate sample size is only 186 (51.6%) people (officers). These 186 officers seems like they are a subset of the overall group of officers being studied. This means that each member of the population (officers) has an equal probability of being chosen. The researcher then calculated that if only 186 respondents were selected, the number of responses to be received may be reduced from the expected number of 186 officers.

Based on simple random sampling practice and the researcher's calculation, the questionnaire was distributed to 252 officers of the population with the aim of ensuring that more respondents would involve and expect the number of respondents to exceed more than what has been determined by Krejcie & Morgan (1970). The other reason why the researcher opted to distribute to 252 officers (respondents) was because these officers were in active service and holding various appointments in RMN units, ships, headquarters and formations throughout Malaysia. Meanwhile, for the remaining 120

officers, they consist of 15 officers with the rank of Sub-Lieutenant who are still undergoing basic training at the RMN Training Centre and 105 officers are under the category of being on a long course, pursuing academic studies at the degree, master's level and doctor of philosophy and there are also those who are in intensive health treatment.

### **3.6 Research Instrument**

Factors involved in the independent variables, moderating variable and the dependent variable of the research were measured. These factors were measured using an instrument developed by appropriate earlier researchers. The questionnaire were using Likert scale. This instrument measured all variables involved in the research model and expected to have a good legitimacy and validity of Cronbach Alpha. The researcher put extensive effort into getting the best instrument for every variable involved.

### **3.7 Questionnaire Design**

The researcher used a structured questionnaire. The measurements used were derived from academic and scientific journals which have been certified its authenticity.

The structure of this questionnaire contained seven main sections:

- 1) Demographics (personal information)
- 2) Section A of the items related to financial support (IV)
- 3) Section B of the items related to leadership support (IV)
- 4) Section C of the items related to contract compliance (IV)
- 5) Section D of the items related to technological support (IV)
- 6) Section E of the items related to the contracting officer competency (MoV)

7) Section F of the items related to effective contract management (DV)

All of these items were collected from research and instrument that was developed by earlier researchers, and of course, it's in English. Therefore, in order to facilitate an understanding of the questions raised, the questionnaire was distributed in both languages, namely English and Bahasa Malaysia. By using bilinguals, respondents would have the freedom to choose languages that they are comfortable with and understand better while answering the questionnaire. Thus, it may avoid confusion and misinterpretation of the item involved which may lead to the acquisition of inconsistencies and inaccurate data. The instruments and items of the questionnaire survey are shown in Table 3.2.

Table 3.2  
*Instrument and Questionnaires Item*

| Section | Factors            | Reference                                                            | Item | Total Items |
|---------|--------------------|----------------------------------------------------------------------|------|-------------|
|         | Demography         | Branch, rank, years of service, gender, age and qualification        | 6    | 6           |
| A       | Financial Support  | Odero and Ayub (2017)                                                | 6    | 10          |
|         |                    | Apiyo and Mburu (2014)                                               | 4    |             |
| B       | Leadership Support | Apiyo and Mburu (2014)                                               | 5    | 10          |
|         |                    | Manu, Mahamadu, Booth, Olomolaiye, Coker, Ibrahim, and Lamond (2019) | 2    |             |
|         |                    | Kipkemoi (2017)                                                      | 3    |             |

Table 3.2 (Continued)

| Section | Factors                        | Reference                                                            | Item | Total Items |
|---------|--------------------------------|----------------------------------------------------------------------|------|-------------|
| C       | Contract Compliance            | Manu, Mahamadu, Booth, Olomolaiye, Coker, Ibrahim, and Lamond (2019) | 4    | 9           |
|         |                                | Olumbe, B. (2011)                                                    | 3    |             |
|         |                                | Kant and Dalvi (2017)                                                | 2    |             |
|         |                                |                                                                      |      |             |
| D       | Technological Support          | Li, Akintoye, Edwards, and Hardcastle (2005)                         | 1    | 10          |
|         |                                | Sambasivan, Wemyss, and Rose (2010)                                  | 2    |             |
|         |                                | Lau (2017)                                                           | 4    |             |
|         |                                | Apiyo and Mburu (2014)                                               | 2    |             |
|         |                                | Olumbe, B. (2011)                                                    | 1    |             |
|         |                                |                                                                      |      |             |
|         |                                |                                                                      |      |             |
| E       | Contracting Officer Competency | Odero and Ayub (2017)                                                | 5    | 10          |
|         |                                | Manu, Mahamadu, Booth, Olomolaiye, Coker, Ibrahim, and Lamond (2019) | 1    |             |
|         |                                | Osei-Tutu Mensdah, and Ameya (2011)                                  | 2    |             |
|         |                                | Sambasivan, Wemyss, and Rose (2010)                                  | 1    |             |
|         |                                | Olumbe, B. (2011)                                                    | 1    |             |
|         |                                |                                                                      |      |             |
| F       | Effective Contract Management  | Odero and Ayub (2017)                                                | 5    | 10          |
|         |                                | Osei-Tutu Mensdah, and Ameya (2011)                                  | 3    |             |
|         |                                | Islam, Murad, McMurray and Abalala (2017)                            | 1    |             |
|         |                                | Ndung'u, Were, and Mwangangi (2020)                                  | 1    |             |
|         |                                |                                                                      |      |             |

Finally, after skimming through the approaches and for the purpose of data collection, as well as the pursue to achieve the objectives of the study, the data collection was conducted through an extensive questionnaire that was developed and adopted from the previous researchers in order to gain information and respond from respondents about their view on Financial Support (FS), Leadership Support (LS), Contract Compliance (CC), Technological Support (TS) and the use of an Contracting Officer Competency (COC) as the moderating variable in a way to see its impact and effect on the Effective Contract Management (ECM) in the Royal Malaysian Navy.

The questionnaire was distributed through Google Survey to the whole population of Supply & Secretariate Officers consist of 252 personnel and administered by the researcher. As mentioned before, a formal appointment was conducted on top management to seek permission to distribute the questionnaires to the respective Supply & Secretariate Officers.

### **Section for Demography**

Section demography consists of six items related to the personal information of each respondent. The respondents were required to provide demographic information, which formed part of the questionnaire as a control variable, such as their branch, rank, years of service, gender, age and academic qualifications. The respondents were required to provide this information by indicating the appropriate options.

### **Section A: Financial Support**

Section A, financial support consisted of a 10-item instrument measuring the importance and implications of financial support in each respondent's understanding.

The questionnaire was derived from former researchers by Odero and Ayub (2017) and Apiyo and Mburu (2014). For this research, this section was measured as unidimensional using the following five-point Likert scale levels of agreement: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, and 5 = *strongly agree*. In this research, the FS is measured by using 10-items. The FS 10-item statements that were included in the questionnaires are presented below:

1. Procurement contract planning based on approved budget
2. Poor planning leads to budget deficits
3. Procurement contract process begins with planning
4. Contract needs assessment is undertaken
5. Market capability analysis is carried out
6. Funds availability before procurement begin
7. Procurement planning helps in resource allocation
8. Procurement planning helps to achieve value for money
9. Procurement planning results into compliance to set procedures
10. Without budgeting procedures, it would be difficult to come up with a procurement plan

### **Section B: Leadership Support**

Section B, leadership support consisted of a 10-item instrument measuring the importance and implications of leadership support in each respondent's understanding based on the questionnaire developed by Apiyo and Mburu (2014), Manu, Mahamadu, Booth, Olomolaiye, Coker, Ibrahim, and Lamond (2019) and Kipkemai (2017). For this research, this section was measured as unidimensional using the following five-point Likert scale levels of agreement: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*,

4 = *agree*, and 5 = *strongly agree*. The LS 10-item statements that were included in the questionnaires are presented below:

1. Top management supports procurement planning activities for contract management
2. The top management ensures that only competent staff is involved in final procurement planning for contract management
3. The top management regards procurement function important
4. The management ensures that only what is in the master procurement plan is procured.
5. The management ensures that the policies and procedures in place followed
6. Leadership and top management support procurement planning for contract management
7. Leadership as internal mechanism that ensures conformance to procurement policy and procedure
8. Conflicts of interest are quickly declared by members of staff
9. Strict codes of conduct ensure purchasing procedures are followed
10. There's confidentiality in dealing with supplier information

### **Section C: Contract Compliance**

Section C, contract compliance consisted of a 9-item instrument measuring the importance and implications of contract compliance in each respondent's capability based on the questionnaire developed by Manu et al. (2019), Olumbe (2011) and Kant and Dalvi (2017). For this research this section was measured as unidimensional using the following five-point Likert scale levels of agreement: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, and 5 = *strongly agree*. The CC 10-item statements

that were included in the questionnaires are presented below:

1. There is internal anti corruption mechanism in place
2. Effective procurement auditing procedure is followed
3. Application of sustainability principles in procurement being obey (eg. Contract Specifications, Tender Selection Criteria)
4. Penalty for non-compliance implemented as in contract document
5. I ensures that goods/services are delivered as per specifications made
6. I ensures that materials deliver from the contract has the quality can never be doubted.
7. Contractor supply delivery as promised time and quality
8. Contractor with effective and efficient supply chain are more competence in deliver their contract output.
9. I believe a long-term strategic partnership as well as a positive relationship with the contractor are essential for successful contract compliance.

#### **Section D: Technological Support**

Section D, technological support consisted of a 10-item instrument measuring the importance and implications of technological support in each respondent's capability based on the questionnaire developed by Li, Akintoye, Edwards, and Hardcastle (2005), Sambasivan, Wemyss, and Rose (2010), Lau (2017), Apiyo and Mburu (2014) and Olumbe (2011) . For this research, this section was measured as unidimensional using the following five-point Likert scale levels of agreement: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, and 5 = *strongly agree*. The TS 10-item statements that were included in the questionnaires are presented below:

1. Technology transfer improves knowledge and management of government

procurement.

2. I can find quickly the information that I need using technology
3. Technology used in performing my job provide information in managing procurement contract
4. The necessary information is easily available in the procurement contract supporting system
5. The necessary information provided by the procurement contract supporting system can be effectively utilize
6. The information from the procurement contract supporting system have a lot of consistency
7. Sound procurement systems enhance accountability in procurement
8. Technology as a tools assist in decision and policy making in contract management
9. Technology give the information integrity required to develop compliance and procurement management practices.
10. I rely heavily on the procurement process in the appropriate system, which follows the procurement guidelines.

### **Section E: Contracting Officer Competency**

Section E, contracting officer competency consisted of a 10-item instrument measuring the autonomy of competency for each respondent based on questionnaire developed by Manu et al. (2019), Osei-Tutu et al. (2011), Sambasivan et al. (2010) and Olumbe (2011). For this research, this section was measured as unidimensional using the following five-point Likert scale levels of agreement: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, and 5 = *strongly agree*. The COC 10-item statements

that were included in the questionnaires are presented below:

1. Organization deploys staff based on skills
2. I have adequate skills
3. I have knowledge on procurement rules and regulations
4. Organization sponsors staff for training
5. Training has improved my knowledge skills and experience
6. Training and Effective Procurement personnel development are in place
7. I have professional procurement qualifications
8. I kept good procurement record keeping.
9. I find a systematic procurement system enables me to accomplish my work efficiently
10. I always monitors the delivered items and cross-checked with item specifications

#### **Section F: Effective Contract Management**

Section F, effective contract management consisted of a 10-item instrument measuring the importance and implications of contract management support in each respondent's capability based on questionnaire developed by Odero and Ayub (2017), Osei-Tutu et al. (2011), Islam, Murad, McMurray, and Abalala (2017) and Ndung'u, Were, and Mwangangi (2020). For this research, this section was measured as unidimensional using the following five-point Likert scale levels of agreement: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, and 5 = *strongly agree*. The ECM10-item statements that were included in the questionnaires are presented below:

1. Our organisation performed excellent contracting, which resulted in higher-quality services
2. All of our procured products and services are delivered on time as a result of

effective contract management practises.

3. We receive fewer complaints from users as a result of more effective contract management.
4. Wastages and damages has been reduced efficiently with good contract management
5. Operating costs have been reduced with proper contract management
6. Every contract has a proper payment system in place.
7. Corruption prevention measures are being implemented in our organisation.
8. The contract document serves as the primary source of information for effectively managing the contract.
9. Sufficient written procurement procedures and checklist are used in the contract management
10. Organisation never missed deadline for schedule procurement

### **3.8 Data Collection Procedures**

In order to have a broad understanding on the context of the study, the researcher utilized a range of approaches to obtain the requisite data. These approaches encompassed conducting interviews, accessing secondary data sources (specifically proprietary data), analyzing contract documents and contract handling instructions, reviewing Circulars on Finance issued by the Treasury, examining the Military Council Order and distributing questionnaires.

#### **3.8.1 Conducting Interviews**

This approach was conducted by having a courtesy call on various Head of Departments (HoD) in the Supply & Secretariate Branch within the RMN. There were

eight HoDs involved in this approach. They were the RMN Assistant Chief of Staff Materiel, Commanding Officer of Western Naval Supply & Logistic Depot, Commanding Officer of Western Naval Supply Depot, Commanding Officer of Western Naval Armament and Explosive Depot, RMN Eastern Naval Logistic Commander, Commanding Officer of Eastern Naval Supply & Logistic Depot, Commanding Officer of Eastern Naval Supply Depot and Commanding Officer of Eastern Naval Armament & Explosive Depot. During the courtesy call, the researcher briefed those HoDs about the significant of the research, a briefed on the research purpose, processes and lastly requesting each of them to support the research by allowing their staff officers (Supply & Secretariate Officers) under their command to response to the interview as well as the distributed questionnaire. They gave a very good co-operation and allow their officers to take part.

### **3.8.2 Accessing Secondary Data Sources (specifically proprietary data)**

This approach was conducted with the support of Materiel Department of Naval Headquarter. The Assistant Chief of Staff Materiel granted the researcher to have an access on reviewing some documents with a security classification ranging of 'STAFF IN CONFIDENT' up to 'SECRET'. To mention a few, those documents involved were minute of meeting of RMN Capability Management Board (CMB), RMN Strategic Meeting (RMNSM) and Supply Board (SB). Those documents provided the researcher a good information on the insight of RMN development programme, RMN current and future challenges as well as way forward to tackle each challenge. However, due to highly security classification and restriction the researcher unable to reveal it in the research but suffice enough for the researcher to pick up some of the issues and points as a guidance to venture more throughout the research.

### **3.8.3 Reviewing Contract Documents and Contract Handling Instructions**

In any organization, the existent of contract document and contract handling instruction play a very crucial part in ensuring both contracting parties abide to what has been agreed upon. By reviewing the documents, the researcher able to know what is the current issues in RMN contract handling. The RMN Contract Management Office (CMO) has provided full commitment and grant the researcher to access the whole 183 contracts that exist in RMN. To date, the contracts worth about RM 2.98 billion which the government need to spend about RM 1.2 billion a year just to maintain the contracts (Contract Management Office, 2024). The figure shows that the RMN really need to have an extensive financial support in order to operate the whole maritime force throughout the year.

### **3.8.4 Reviewing Circulars on Finance issued by the Treasury**

The main purpose of reviewing the Government's Financial Circular is to know and understand the rules and guidelines that must be followed by every government employee before they are eligible to deal with parties that will do business with any government organization. For the purposes of this study, the researcher views the aspect of compliance with the Government's Financial Circular also has a significant relationship with effective contract management. The Government's Financial Circular should be used as one of the reference materials and guidance when a contract is to be drafted, implemented and subsequently come into enforcement.

### **3.8.5 Examining the Military Council Order**

The main purpose of examining the Military Counsel Order is to find out and understand what are the rulings and directives from the Supreme Management of the

Armed Forces are in matters related to contract management, financial management, compliance and then the extent of their support towards the aspects of contract management within the Malaysian Armed Forces in general and RMN in particular. Throughout the review, the researcher found that there is a clear and close connection between the existence of the Government's Financial Circular and the Military Counsel Order. In terms of financial management and contract management, the Military Counsel Order is found to function more as a body that makes endorsements on every rule and guide involving matters such as finance, government spending procedures, government procurement procedures and terms and conditions for contracting with civilian parties who want to deal with the Malaysian Armed Forces.

Respondents were briefed on the objectives and research guides before answering the questionnaire. Respondents have been given two days to answer the questionnaire and were given the opportunity to ask questions while answering. For respondents who served in East Malaysia, they also been given the same opportunity to return the questionnaire by e-mail to the researcher. The personal information of respondents is for researcher reference only. The questionnaires were collected by the researcher for further action after the respondents had answered. A pilot study for this research has been carried out in two stages.

To maximize the total return of the questionnaires distributed, the researcher took the initiative by making a courtesy call to each senior Head of Departments in the unit, headquarters, branches and formations involved. It involved the unit Commanding Officer, Senior Director, Assistant Chief of Staff and Commander of the Formation and Headquarters. The researcher expected to receive at least 75% of the entire

questionnaire that was circulated.

### **3.9 Data Analysis Techniques**

The data obtained from the questionnaires will be analyzed using the latest SPSS software to perform descriptive and inferential analyses. Commonly utilized statistical techniques for hypothesis evaluation include analysis of variance (ANOVA), Pearson correlation, and multiple regression. This study utilizes statistical inference to analyze its objectives, specifically exploring the correlation and influence of logistical support elements, contracting officer competency, and effective contract management. Furthermore, the researchers sought to empirically examine all previously documented ideas.

One-way ANOVA analysis will be done when there are more than two independent variables on which the statement null hypothesis ( $H_0$ ) for one-way ANOVA test there was no significant difference between the effective contract management and logistical support.

As for the Pearson correlation analysis, it will be compared with a significance level of 0.01. If the significance level obtained for an association is below 0.01, then it is obvious the correlation is indicating a significant level based on Hair (2003) recommendations.

The purpose of this study is to perform regression analysis to evaluate the magnitude and nature of the association between two variables, as well as to generate forecasts on this association. The aforementioned analysis is employed in situations when multiple

independent variables are utilized to establish the anticipated outcome of a dependent variable.

Partial Least Squares Structural Equation Modelling (PLS-SEM) is a statistical technique employed in the development of theoretical frameworks for novel research endeavors. Furthermore, the PLS-SEM framework emphasizes the examination of variation in dependent variables during the process of study validation. SEM analysis gives an advantage to researchers because it produces graphics that are easier to understand, and process data more efficiently and effectively in terms of time and cost. For example, exploratory factor analysis which is typically used to test theories and concepts, need not be implemented based on SEM analysis using PLS-SEM software, as it has validated hypothesis, theory and concept testing based on researcher research (Hair et al., 2017).

The next section discusses the pilot study.

### **3.10 Pilot Study**

The pilot test was scheduled to take place at many locations, including the Naval Headquarters (Materiel and Engineering Department), RMN Submarine Force Headquarters, Western Fleet Supply Depot, Western Naval Support Depot, Eastern Fleet Supply Depot, Eastern Naval Support Depot, and all RMN ships. The specific date for the test remains to be determined. This pilot study involved a cohort of 30 participants. The primary objective of this study was to assess the participants' comprehension of the questionnaire in order to evaluate the validity and reliability of the survey items prior to conducting the actual research. The returned questionnaires

will undergo a thorough evaluation to verify that all inquiries have been addressed prior to the assessment of data reliability for testing objectives. Table 3.3 shows the result of pilot study.

### Reliability Test

Table 3.3  
*Pilot Study Result*

| <b>Variables</b>               | <b>Cronbach Alpha's value (Pilot Study)</b> | <b>Cronbach Alpha's value (Actual Study)</b> |
|--------------------------------|---------------------------------------------|----------------------------------------------|
| Financial Support              | 0.953                                       | 0.885                                        |
| Leadership Support             | 0.912                                       | 0.911                                        |
| Contract Compliance            | 0.820                                       | 0.833                                        |
| Technological Support          | 0.933                                       | 0.940                                        |
| Contracting Officer Competency | 0.877                                       | 0.887                                        |
| Effective Contract Management  | 0.826                                       | 0.909                                        |

The reliability coefficient of Cronbach's Alpha ranged from 0.820 to 0.953 of the pilot study test, which ensured the reliability of survey questionnaires. The Cronbach's Alpha results of the pilot study presented in Table 3.3 shows the results of the pilot test for the FS, LS, CC, TS, COC and ECM instruments. The results showed the Cronbach's Alpha for FS was 0.953, LS was 0.912, CC was 0.820, TS was 0.933, COC was 0.877 and ECM was 0.826. These were acceptable for the pilot test because all the measurement factors were above 0.70.

The pilot study test suggested that the officers were familiar with all aspect of questionnaires. The respondents were the officers that functioned as the driving force behind all government procurement activities, drafters, monitors and enforcers of government contracts in RMN. In addition, these officers were chosen because they are

involved in planning, implementing and responsible of organization strategies.

### **3.10.1 Normality Test**

Normality test is a prerequisite for most statistical inference methods (Hair et. Al., 2007). This test is conducted to ensure that the data collected or distributed is almost normal. Histogram and Normal QQ Plot is used to prove that the data is distributed or normally distributed (Coakes & Steed, 2007).

### **3.10.2 Linearity Test**

Linearity testing is also important as a prerequisite for statistical inference methods that aim to ensure that the assumptions are not violated homoscedasticity (Coakes et. Al., 2007). If there is a linear relationship between all variables during scatter-plot tests carried out it may be assumed inference can be made.

### **3.10.3 Reliability Test**

Coakes, Steed and Dzidic (2006) state that there are several types, but usually testing the reliability coefficient Cronbach's Alpha is often used. Thus the researcher will test the consistency of all the instruments in this study by using the Cronbach Alpha model. Sekaran (2003) stated reliability coefficient of 0.8 and above is good. As for the 0.6 to 0.8 are acceptable and values less than 0.6 are considered poor. Cronbach alpha values that are closer to 1, indicate the higher reliability of the consistency of all the instruments involved. Cronbach Alpha values are shown in Table 3.4.

Table 3.4  
*Cronbach Alpha Values*

| <b>Cronbach Alpha</b> | <b>Reliability</b> |
|-----------------------|--------------------|
| < 0.6                 | Poor               |
| 0.6 - < 0.7           | Moderate           |
| 0.7 - < 0.8           | Good               |
| 0.8 - < 0.9           | Very Good          |
| 0.9                   | Excellent          |

Source: Hair et. al. (2003)

### 3.11 Chapter Summary

This chapter provides an overview of the concept, outlines the plan to conduct a survey, discusses the design and implementation of the research, identifies the entities engaged in the study, describes the process of population and sample selection, and outlines the data analysis techniques employed to ensure suitability for subsequent processing. The subsequent chapter presents the research findings in accordance with the previously established objectives and hypotheses.

## **CHAPTER FOUR**

### **DATA ANALYSIS AND RESULTS**

#### **4.1 Introduction**

In Chapter Four, a comprehensive overview of the study's findings is presented, which were obtained through meticulous data analysis. After the completion of the data collection phase, the collected data were analyzed using a multi-step approach. The Statistical Package for the Social Sciences (SPSS) was initially employed to execute a range of data-related operations, including coding, screening, evaluating normality, investigating multicollinearity, discovering outliers, and identifying missing data. The aforementioned approach is commonly employed for assessing and structuring data in anticipation of the subsequent analysis stage (Pallant, 2007, 2013). The third step entailed the utilization of a descriptive analytic approach to investigate demographic variables and ascertain the unique characteristics of the study participants.

Following this, the chapter estimated the structural equation model (SEM) using Smart PLS Version 3. The validity and reliability of the constructs were evaluated using Cronbach's alpha test, construct average variance extracted (AVE), and reliability measures, as suggested by Hughes et al. (2011). Convergent and discriminant validities were also demonstrated. This chapter additionally introduces the measurement and structural models, along with the importance of Logistics Support Factors (LSF) (LS, CC, FS, and TS) as independent variables in the association between ECM. Furthermore, the concept of COC serves as a moderating factor between LSF and ECM. Finally, the results pertaining to both the direct and indirect hypotheses are presented.

## 4.2 Response Rate

The actual amount of respondents received during the study were 206 officers affiliated from the Supply & Secretariate Branch of the RMN. However, 2 surveys were decided to be omitted from the analysis due to missing information as well as exhibiting outlier characteristics. As a result, 204 respondents are considered qualified for the study. The present investigation experienced several challenges and obstacles during data collection. A number of challenges arose because of limited comprehension and familiarity among certain participants regarding the concerns presented in this research. Moreover, a subset of participants exhibited unhelpful and uncooperative behavior when completing the survey. Several factors contributed to the non-completion of the questionnaire. One such factor was the reluctance of certain respondents to provide answers to personal inquiries, such as those pertaining to education, age, and experience. Additionally, some respondents left certain sections of the questionnaire incomplete because of their lack of knowledge or familiarity with a specific topic. This had an impact on the frequency of questionnaires that were either not returned or left incomplete.

The survey for the current study was administered between March 1, 2022, and March 15, 2022. A total of 252 survey questionnaires were distributed to the participants. Questionnaires were disseminated to each organization to increase the response rate. A total of 206 questionnaires were successfully completed and returned by the respondents. It is important to acknowledge that two (2) surveys were omitted from the analysis due to the presence of missing information, leaving 204 questionnaires available for analysis.

Subsequently, it was ascertained that two (2) cases exhibited outlier characteristics, resulting in a final count of 204 questionnaires deemed suitable for analysis. A sample size of  $n = 204$  was deemed sufficient for the present investigation. The sample size for the study consisted of 204 participants, which adhered to the recommended ratio of 5:1, as proposed by Hair et al. (1998) and Kline (2005). Hair, Sarstedt, Hopkins, and Kuppelwieser (2014) noted the potential impact of missing data on the mean value. However, it is important to note that this effect was observed only when the proportion of missing data was below 5% of the total critical data. In the present study, this threshold was not exceeded. Table 4.1 provides a concise overview of the response rates and data gathering.

Table 4.1  
*Summary of Data Collection and Response Rate*

| <b>Number of Surveys</b>                                     | <b>Total</b> |
|--------------------------------------------------------------|--------------|
| Circulated questionnaires                                    | 252          |
| Unanswered questionnaires                                    | 46           |
| Reverted questionnaires                                      | 206          |
| Incomplete questionnaires                                    | 0            |
| Completed and returned questionnaires                        | 206          |
| Response rate<br>(Returned questionnaires $\times$ 100%)     | 81.7 %       |
| Distributed questionnaires                                   |              |
| Outliers                                                     | 2            |
| Usable questionnaires                                        | 204          |
| Valid response rate<br>(Usable questionnaires $\times$ 100%) | 80.9 %       |
| Distributed questionnaires                                   |              |

### **4.3 Data Screening**

Data screening is a crucial step in the research process, aimed at ensuring the integrity and quality of the data prior to statistical analysis. The current study involved data screening methods that encompassed the examination of outliers, missing data, and evaluations of normality, linearity, homoscedasticity, and multicollinearity.

#### **4.3.1 Outliers**

According to Kwak and Kim (2017), outliers are exceptional values that deviate significantly from the general pattern of a variable distribution. These outliers may arise because of a variety of circumstances, such as errors in participant responses or data entry. The prevailing norms and conventions provide guidelines for the inclusion of outliers in data analysis. In the field of statistics, outliers can be classified into two main categories: univariate outliers, which correspond to extreme values observed for a single variable, and multivariate outliers, which pertain to atypical combinations of values across multiple variables (Hair et al., 2006; Kline, 2015). According to the findings of Hair et al. (2006), it was proposed that a standard score of  $\pm 2.5$  was appropriate for small sample sizes (less than 80), whereas a standard score of  $\pm 3$  standard deviations from the mean was considered suitable for big sample sizes (more than 80), indicating the presence of outliers.

In this study, a strategy was applied to identify univariate outliers by categorizing the items of the variables to represent a single variable. The examination data values were transformed into standardized scores, known as z-scores, using the descriptive statistical functions of SPSS (Hair et al., 2014; Tabachnick et al., 2007). The findings suggest that, within the sample, a total of two outliers were detected by identifying z-

scores that exceeded  $\pm 3$ . As a consequence, the previously indicated cases were omitted from the dataset, leaving a total of 204 cases for the study. Table 4.2 presents a visual representation of the occurrences of outliers with respect to the variables under investigation in the conducted study.

Table 4.2  
*Univariate Outliers*

| Variable                       | Code | Case of | z-scores<br>> $\pm 3.0$ |
|--------------------------------|------|---------|-------------------------|
| Effective Contract Management  | ECM  | 28, 52  | More than $\pm 3.0$     |
| Contracting Officer Competency | COC  | 28, 52  | More than $\pm 3.0$     |
| Financial Support              | FS   | 28, 52  | More than $\pm 3.0$     |
| Leadership Support             | LS   | 28, 52  | More than $\pm 3.0$     |
| Contract Compliance            | CC   | 28, 52  | More than $\pm 3.0$     |
| Technological Support          | TS   | 28, 52  | More than $\pm 3.0$     |

#### 4.3.2 Normality

This section examines the normality of the data. The standard deviation depicted in Figure 4.1 is approximately 0.990, a value that is close to 1. Consequently, the bell curve exhibits a distribution that closely approximates a normal distribution.

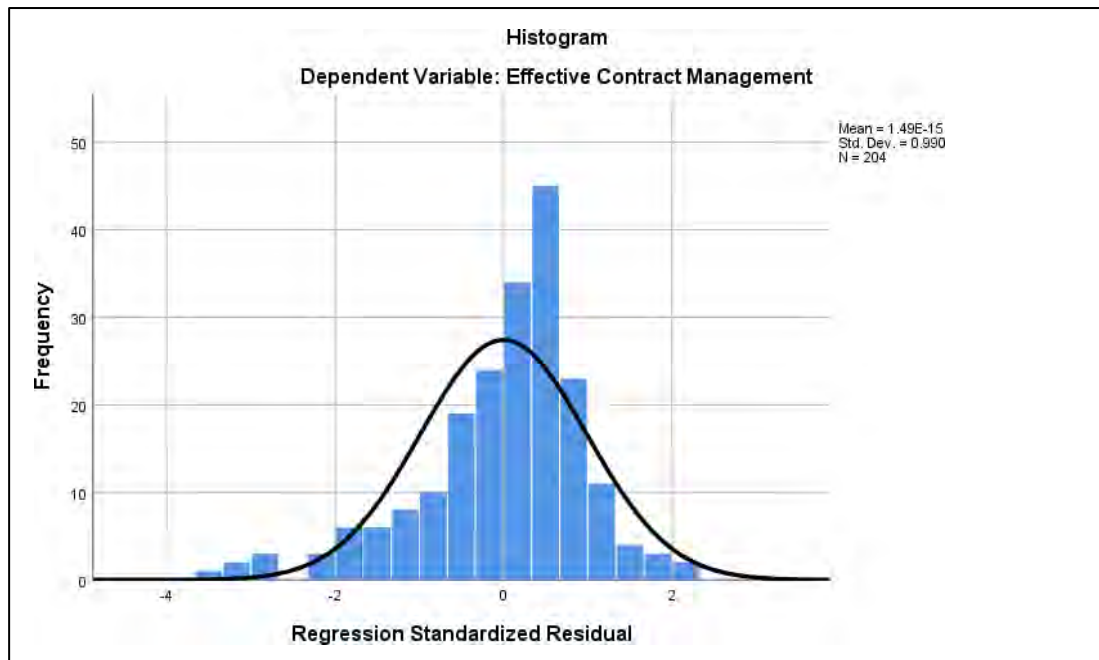


Figure 4.1  
*Normality Test*

Moreover, Chou and Bentler (1995) as well as Ghazali and Fuad (2005) have proposed that a dataset may be categorized as exhibiting a normal distribution if the Z-value skewness is within the range of less than  $\pm 3$  and the Z-value kurtosis is within the range of less than  $\pm 7$ . Nevertheless, it is crucial for researchers to consider that a restricted sample size, often including 50 cases or less, could potentially exert a substantial influence on the distribution of the data in comparison to a larger sample size of 200 cases or more.

The current investigation followed the guidelines of Hair, Ringle, and Sarstedt (2011), who proposed the use of a critical threshold of  $\pm 2.58$ . The kurtosis and skewness values for each construct were within the range of  $\pm 2.58$ , as shown in Table 4.3. The results of the descriptive analysis indicated that the distribution exhibited a close approximation to normality, as seen by the mean kurtosis values ranging from 0.047 to -0.998. The observed skewness value was within the interval of -0.147 to -0.423.

Table 4.3  
*Skewness and Kurtosis for Variables*

| <b>Variable</b>                | <b>Code</b> | <b>Skewness</b> | <b>Kurtosis</b> |
|--------------------------------|-------------|-----------------|-----------------|
| Effective Contract Management  | ECM         | -0.238          | -0.474          |
| Contracting Officer Competency | COC         | -0.147          | -0.183          |
| Financial Support              | FS          | -0.293          | -0.998          |
| Leadership Support             | LS          | -0.239          | -0.777          |
| Contract Compliance            | CC          | -0.423          | 0.047           |
| Technological Support          | TS          | -0.275          | -0.887          |

### 4.3.3 Linearity

According to the definition provided by Hair et al. (2006), linearity refers to the assumption of normality, which implies that the dependent variable demonstrates equal variability across several independent factors. A scatter plot is a visual depiction of the association or correlation between two distinct datasets. Therefore, the main purpose of the scatter plot is to visually represent the dashed line, which demonstrates a linear relationship. The results of the study suggest that there is a direct correlation between the average ECM scores given by participants with RMN and the scores of the dependent variable. This correlation was discovered through the examination of scatter plot residuals using SPSS 25. The linearity assumption of the error correction model (ECM) is visually shown in Figure 4.2, demonstrating that the dependent variable in the current study fulfills this assumption.

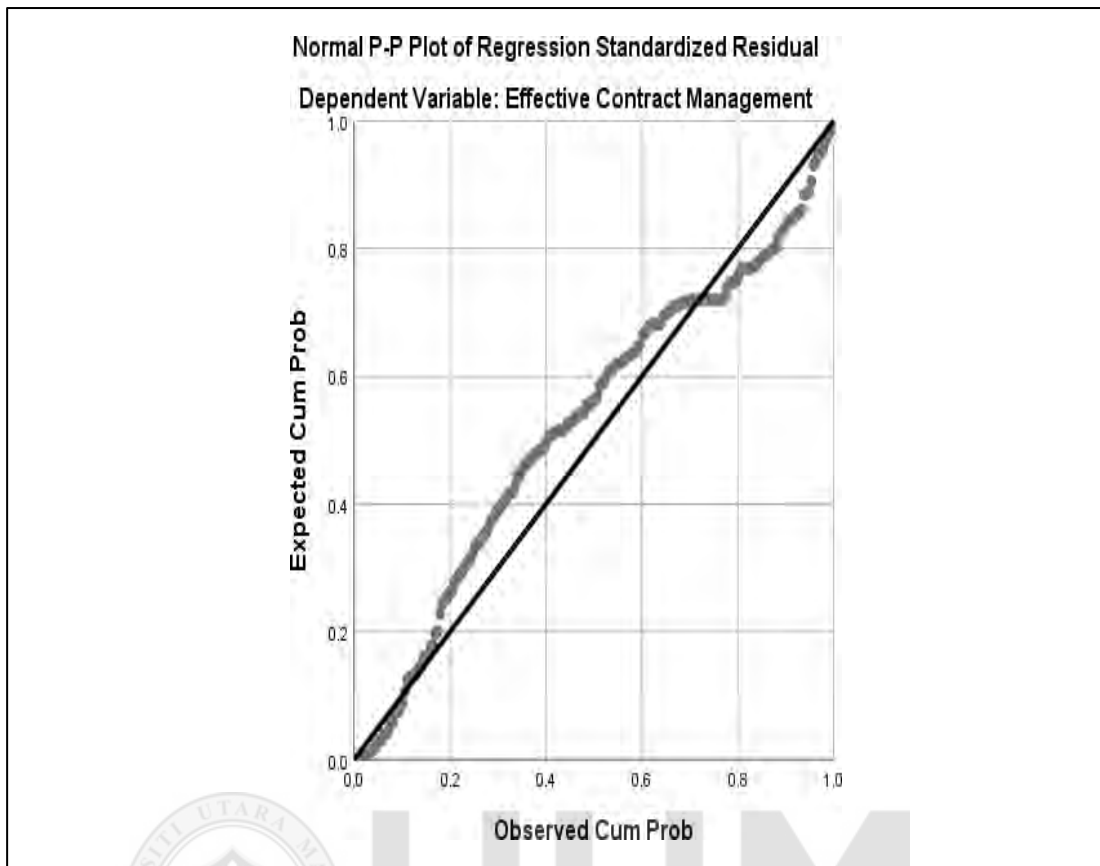


Figure 4.2  
*Linearity Assumption for Effective Contract Management*

#### 4.3.4 Homoscedasticity Assumption

Scatter plot diagrams of the standardized residual are employed to examine the existence or absence of homoscedasticity in a collection of exogenous variables and/or the variance of the endogenous variable. Figure 4.3 displays the visual examination of the residual distribution, indicating the lack of homoscedasticity.

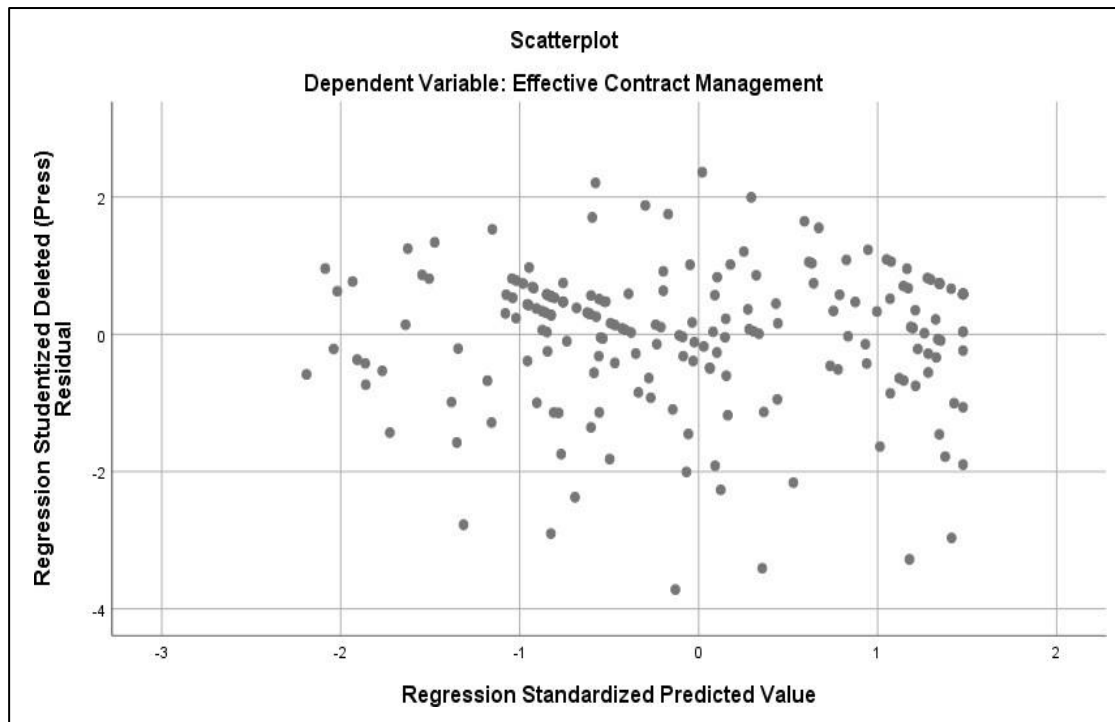


Figure 4.3

*Homoscedasticity Assumption for Effective Contract Management*

The next section discusses the descriptive analysis of demographic characteristics.

#### 4.4 Descriptive Analysis of Demographic Characteristics

In this section, the researcher presents the result of descriptive analysis for demographic characteristics that consist of gender, age, qualifications, branch, rank, and years in service of 204 valid respondents who voluntarily participated in this study.

##### 4.4.1 Gender

The results indicated that the male participants accounted for 64.7% (132 out of 204 respondents), while the female participants constituted just 35.3% (72 out of 204 respondents). The distribution of respondents by gender is shown in Table 4.4.

Table 4.4

*Distribution of Respondents by Gender*

| <b>Category</b> | <b>Number of respondents</b> | <b>%</b> |
|-----------------|------------------------------|----------|
| <b>Male</b>     | 132                          | 64.7     |
| <b>Female</b>   | 72                           | 35.3     |
| <b>Total</b>    | 204                          | 100      |

**4.4.2 Age**

The age of the participants in the present study was categorized into four groups: 21-30 years, 31-40 years, 41-50 years, and 51 years and older. According to the data presented in Table 4.5, the age group of 31-40 years exhibited the highest proportion of respondents, with 97 individuals accounting for about 47.5% of the overall responder population. The subsequent category consisted of individuals aged 41-50 years, comprising 26.5% or 54 participants. The 21-30 years old category consisted of 16.7% or 34 responses. However, the findings also indicated that the demographic group consisting of those aged 51 years and older had the lowest percentage. This group included 19 respondents, which accounted for 9.3% of the total respondents. The results of this study revealed that the age group with the largest number of responses fell within the range of 31-40 years old. Nevertheless, the minimum age observed in this study was 51 years or older. This finding indicates that a significant proportion of RMN officers were youthful. The age distribution of the respondents is presented in Table 4.5.

Table 4.5  
*Distribution of Respondents by Age*

| Category                      | Number of respondents | %    |
|-------------------------------|-----------------------|------|
| <b>21-30 years old</b>        | 34                    | 16.7 |
| <b>31-40 years old</b>        | 97                    | 47.5 |
| <b>41-50 years old</b>        | 54                    | 26.5 |
| <b>51 years old and above</b> | 19                    | 9.3  |
| <b>Total</b>                  | 204                   | 100  |

#### 4.4.3 Qualification

The results of the survey indicated that the majority of the surveyed population, specifically 57.4%, possessed a degree. Additionally, a significant proportion of the population (35.3 %) held a master's degree, while a smaller percentage (6.4 %) held a diploma. Finally, a minority of the population, specifically 1.0%, held a degree in Doctor of Philosophy. The results of the study suggest that the majority of managers who participated in the survey have an academic degree. The respondent with the lowest rank among the participants was an officer in the Royal Malaysian Navy who possessed a degree in Doctor of Philosophy. Table 4.6 displays the distribution of participants according to their level of qualification.

Table 4.6  
*Distribution of Respondents by Qualification Level*

| Category                    | Number of respondents | %     |
|-----------------------------|-----------------------|-------|
| <b>Diploma</b>              | 13                    | 6.4   |
| <b>Degree</b>               | 117                   | 57.4  |
| <b>Master</b>               | 72                    | 35.3  |
| <b>Doctor of Philosophy</b> | 2                     | 1.0   |
| <b>Total</b>                | 204                   | 100.0 |

#### 4.4.4 Branch

A significant proportion of participants (99.5%, n=203) were associated with the supply and secretariate branches, while a negligible minority (0.5%, n=1) belonged to the engineering discipline. Additionally, the results revealed a dearth of participants from the executive (seamen) industry. The survey findings indicated that the Supply and Secretariate Branch exhibited the highest degree of engagement compared to other branches within the RMN. Table 4.7 displays the distribution of respondents based on their various positions.

Table 4.7  
*Distribution of Respondents by Branch*

| Category              | Number of respondents | %     |
|-----------------------|-----------------------|-------|
| Executive             | 0                     | 0     |
| Supply & Secretariate | 203                   | 99.5  |
| Engineering           | 1                     | 0.5   |
| Others                | 0                     | 0     |
| Total                 | 204                   | 100.0 |

#### 4.4.5 Rank

The findings revealed that the majority rank of RMN for this study was Lieutenant Commander representing 38.2% (78 of the 204 respondents), followed by 24.5% (50 of the 204 respondents) were Lieutenant RMN. Next, was Commander RMN which is 24.0% (49 of the 204 respondents) while Sub-Lieutenant RMN contributed 7.8% or 16 respondents. Furthermore, for the rank of Captain RMN stated 4.4% or 9 respondents and the lowest was Admiral and above which is 1.0% (2 of the 204 respondents). Table 4.8 below illustrates the distribution of respondents by gender.

Table 4.8  
*Distribution of Respondents by Rank*

| Category                        | Number of respondents | %     |
|---------------------------------|-----------------------|-------|
| <b>Admiral and above</b>        | 2                     | 1.0   |
| <b>Captain RMN</b>              | 9                     | 4.4   |
| <b>Commander RMN</b>            | 49                    | 24.0  |
| <b>Lieutenant Commander RMN</b> | 78                    | 38.2  |
| <b>Lieutenant RMN</b>           | 50                    | 24.5  |
| <b>Sub-Lieutenant RMN</b>       | 16                    | 7.8   |
| <b>Total</b>                    | 204                   | 100.0 |

#### 4.4.6 Years in Service

According to the data, the findings indicate that the majority of participants had a duration of service of 16 years or more. Specifically, 117 individuals, accounting for 57.4% of the sample, fell into this category. The subsequent age group consisted of those aged 6–10 years, comprising 17.2% of the participants, while those aged 11–15 years accounted for 16.2% of the sample. A mere 9.3% of the total respondents, namely 19 individuals, reported having a tenure of fewer than five years in their respective positions. The results of the study revealed that the respondents with the longest tenure were those in the Registered Nurse (RMN) category, with a minimum of 16 years of work experience. Nonetheless, it is worth noting that the respondents who possessed the least amount of professional experience were those affiliated with the Royal Malaysian Navy (RMN), with a service duration of fewer than five years. Table 4.9 displays the duration of service for the individuals being surveyed.

Table 4.9  
*Distribution of Respondents Years of Experience*

| Category             | Number of respondents | %     |
|----------------------|-----------------------|-------|
| Less than 5 years    | 19                    | 9.3   |
| 6 years to 10 years  | 35                    | 17.2  |
| 11 years to 15 years | 33                    | 16.2  |
| 16 years and above   | 117                   | 57.4  |
| Total                | 204                   | 100.0 |

The next section discusses the descriptive analysis of latent constructs.

#### 4.5 Latent Construct

The variable is referred to as an "unobservable variable" in academic literature. The identification of latent variables can be achieved by observing their influence on observable variables. Salkind (2010) asserts that a significant portion of the constructs utilized in research are latent variables (p. 697). Based on the data provided in Table 4.10, it can be observed that the variable denoted as "FS" displayed the highest average value of 4.47, accompanied by a maximum score of 5. Subsequently, the variable denoted as "TS" exhibited a mean value of 4.39, while the variable labeled as "CC" showed a mean value of 4.31. Additionally, the variable referred to as "LS" demonstrated a mean value of 4.26. The mean values for ECM and COC interactions were the lowest, with both measurements exhibiting an average score of 4.15. The mean refers to the arithmetic average of the variables observed within the sample of individuals who completed the questionnaire. The study variables exhibited an average value of 4 on a scale of 5. The observed standard deviation (SD) exhibited a range of values between 0.42 and 0.56, indicating a notable degree of variability within the dataset.

The descriptive statistics for the study variables are presented in Table 4.10 below.

Table 4.10  
*Descriptive Statistics for All Variables*

| <b>Variable</b>                | <b>Minimum</b> | <b>Maximum</b> | <b>Number<br/>of Items</b> | <b>Mean</b>  | <b>S.D</b> |
|--------------------------------|----------------|----------------|----------------------------|--------------|------------|
| Effective Contract Management  | 2.60           | 5.00           | 10                         | 4.15 (83.0%) | 0.56       |
| Contracting Officer Competency | 2.30           | 5.00           | 10                         | 4.15 (83.0%) | 0.54       |
| Financial Support              | 3.50           | 5.00           | 6                          | 4.47 (89.4%) | 0.42       |
| Leadership Support             | 2.80           | 5.00           | 10                         | 4.26 (85.2%) | 0.56       |
| Contract Compliance            | 2.33           | 5.00           | 6                          | 4.31 (86.2%) | 0.50       |
| Technological Support          | 2.90           | 5.00           | 10                         | 4.39 (87.8%) | 0.52       |

The next section discusses the assessment of SEM-path model result using Smart PLS software.

#### **4.6 Assessment of SEM Path Model Result**

As previously indicated, structural equation modeling (SEM) employs a two-step approach in the analysis of data, wherein the assessment of the measurement model is followed by the estimation of the structural model. The evaluation of the measuring model encompasses the examination of convergent, discriminant, and construct validity pertaining to the reflective constructs. The present investigation employed a two-stage sequential approach utilizing partial least squares-based structural equation modeling (PLS-SEM), as described by Hair et al. (2014). The present study adhered to the methodology outlined by Hair et al. (2014), which underscores the importance of initially evaluating the measurement model, followed by the analysis of the structural model, and then hypothesis testing.

#### **4.6.1 Assessment of Measurement Model/ Outer Model**

The measurement model pertained to the relationships between the observed variables and constructs. The constructs were measured using the observable variables provided by the items. The study of the measurement model yielded loading estimates that indicate the magnitude of the measures. During the phase of assessing the measurement model, the relationships between indicators and their respective constructs were examined through the evaluation of construct validity. This evaluation encompassed the assessment of convergent and discriminant validity.

Rouibah, Ramayah, and May (2011) defined convergent validity as the degree to which many items measuring the same construct demonstrate consistency. Assessment of the measurement model necessitates the inclusion of convergent validity as a crucial component. According to Hair et al. (2013), the establishment of convergent validity is indicated by high loading values of items (greater than 0.5), an Average Variance Extracted (AVE) of at least 0.5 for the constructs, and a composite reliability coefficient (CR) exceeding 0.60, which signifies a satisfactory level of internal consistency reliability.

Figure 4.4 displays the outcomes of the factor loading study. All loadings were found to be more than 0.5. Based on the research conducted by Hair et al. (2013), it has been shown that an outer loading over 0.50 holds statistical significance, suggesting that the associated item should be preserved. Items with an outer loading below 0.50 should be omitted from the scale as long as removing such items does not lead to a reduction in the AVE value.

#### **4.6.2 Examining of Individual Item Reliability**

Assessment of the measurement model involved an examination of the outer loading of each item inside the construct (Hair, Ringle, & Sarstedt, 2012; Hair et al., 2014). Based on the guideline proposed by Hair et al. (2014), it is generally recommended that items be retained in a measurement model if their factor loadings fall between the range of 0.40 to 0.70. However, it is important to note that loadings outside of this range may still be considered acceptable if they do not significantly impact the AVE. Out of a total of 49 items, a subset of seven items was excluded from the analysis because their loading values fell below the predetermined threshold of 0.70. Hence, the final model had 42 elements, which were selected based on their loadings ranging from 0.681 to 0.841.

#### **4.6.3 Ascertaining Internal Consistency and Reliability**

According to Peterson and Kim (2013), the primary techniques utilized to assess the internal consistency reliability of items in management and marketing research consist of Cronbach's alpha and the composite reliability coefficient. The researchers chose to employ the CR as an approach for evaluating the internal consistency reliability of the measures in the present investigation. This decision was based on the CR's ability to provide a more cautious estimate of reliability bias when compared to Cronbach's alpha coefficient. The researchers in this study chose to utilize a composite coefficient as a means of evaluating the reliability of internal consistency in accordance with the recommendations put forward by Bagozzi and Yi (1989). In this particular instance, it is advisable to ensure that the composite reliability coefficient attains a minimum threshold of 0.70 or surpasses it. The current investigation examined reliability values, namely Cronbach's alpha, which ranged from 0.840 to 0.939. Additionally, the study

also noticed CR values, which ranged from 0.882 to 0.948. Hence, all values pertaining to the CR and Cronbach's alpha were above the prescribed level of 0.60.

The findings revealed that the factor loadings for all items surpassed the threshold of 0.60. Furthermore, the results displayed in Table 4.11 demonstrate that the AVE surpassed the prescribed threshold of 0.5. The AVE values ranged from 0.501 to 0.594. Table 4.11 displays the values of CR, factor loading, and AVE for the items and constructs examined.

Table 4.11

*Item Loadings, AVE, Cronbach's Alpha and Composite Reliability (CR)*

| Construct                               | Items | Loading | AVE   | Cronbach's<br>alpha | CR    |
|-----------------------------------------|-------|---------|-------|---------------------|-------|
| <b>Financial<br/>Support (FS)</b>       | FS4   | 0.754   | 0.556 | 0.840               | 0.882 |
|                                         | FS5   | 0.716   |       |                     |       |
|                                         | FS7   | 0.785   |       |                     |       |
|                                         | FS8   | 0.745   |       |                     |       |
|                                         | FS9   | 0.796   |       |                     |       |
|                                         | FS10  | 0.669   |       |                     |       |
| <b>Leadership<br/>Support (LS)</b>      | LS1   | 0.742   | 0.578 | 0.919               | 0.932 |
|                                         | LS2   | 0.760   |       |                     |       |
|                                         | LS3   | 0.736   |       |                     |       |
|                                         | LS4   | 0.747   |       |                     |       |
|                                         | LS5   | 0.795   |       |                     |       |
|                                         | LS6   | 0.816   |       |                     |       |
|                                         | LS7   | 0.738   |       |                     |       |
|                                         | LS8   | 0.681   |       |                     |       |
|                                         | LS9   | 0.79    |       |                     |       |
|                                         | LS10  | 0.79    |       |                     |       |
| <b>Contract<br/>Compliance<br/>(CC)</b> | CC1   |         | 0.57  | 0.849               | 0.888 |
|                                         | CC2   | 0.805   |       |                     |       |
|                                         | CC3   | 0.744   |       |                     |       |
|                                         | CC4   | 0.773   |       |                     |       |
|                                         | CC5   | 0.799   |       |                     |       |
|                                         | CC7   | 0.722   |       |                     |       |
|                                         | CC8   | 0.679   |       |                     |       |

Table 4.11 (Continued)

| <b>Construct</b>                           | <b>Items</b> | <b>Loading</b> | <b>AVE</b> | <b>Cronbach's alpha</b> | <b>CR</b> |
|--------------------------------------------|--------------|----------------|------------|-------------------------|-----------|
| <b>Technological Support (TS)</b>          | TS1          | 0.761          | 0.647      | 0.939                   | 0.948     |
|                                            | TS2          | 0.731          |            |                         |           |
|                                            | TS3          | 0.832          |            |                         |           |
|                                            | TS4          | 0.85           |            |                         |           |
|                                            | TS5          | 0.841          |            |                         |           |
|                                            | TS6          | 0.828          |            |                         |           |
|                                            | TS7          | 0.79           |            |                         |           |
|                                            | TS8          | 0.817          |            |                         |           |
|                                            | TS9          | 0.772          |            |                         |           |
|                                            | TS10         | 0.813          |            |                         |           |
| <b>Effective Contract Management (ECM)</b> | ECM1         | 0.759          | 0.560      | 0.912                   | 0.927     |
|                                            | ECM2         | 0.731          |            |                         |           |
|                                            | ECM3         | 0.78           |            |                         |           |
|                                            | ECM4         | 0.788          |            |                         |           |
|                                            | ECM5         | 0.794          |            |                         |           |
|                                            | ECM6         | 0.711          |            |                         |           |
|                                            | ECM7         | 0.679          |            |                         |           |
|                                            | ECM8         | 0.764          |            |                         |           |
|                                            | ECM9         | 0.783          |            |                         |           |
|                                            | ECM10        | 0.683          |            |                         |           |

#### 4.7 Validity of the Constructs

This study included two distinct statistical validity assessments. Initially, the measurement model underwent convergent validity analysis using Smart PLS to assess the extent to which the indicators within a scale exhibited shared loading on a singular concept. The second type of validity assessment, known as the discriminant validity test, was conducted to ascertain whether the questions designed to measure distinct components indeed evaluated distinct constructs.

##### 4.7.1 Convergent Validity

Rouibah et al. (2011) provide a definition of convergent validity as the degree to which several items measuring the same construct exhibit concurrence (p. x). The inclusion of

an assessment of convergent validity was necessary to evaluate the measurement model. Convergent validity was deemed to be present when the items had robust factor loadings beyond a threshold of 0.5. Additionally, the constructs exhibited an AVE of no less than 0.5, indicating a satisfactory level of shared variance. Furthermore, the CR measures, which assess internal consistency reliability, exceeded a value of 0.70, further supporting the establishment of convergent validity. This source was published in 2013. Chin (1998) proposes that in order to achieve satisfactory levels of convergent validity, the AVE for each latent concept should be equal to or above 0.50. The AVE values of the study exceeded 0.50, as presented in Table 4.11 and Figure 4.4.

The findings of the factor loading study are displayed in Figure 4.11 and Table 4.12. All loadings exhibited values above 0.5. Based on the research conducted by Hair et al. (2013), it has been shown that outer loadings over the threshold of 0.50 are considered statistically significant. This suggests that the respective items should be retained within the model.

#### **4.7.2 Discriminant Validity**

Discriminant validity, as defined by Hair et al. (2013), pertains to the degree to which a specific construct can be differentiated from other constructs. The assessment aims to ascertain the lack of association between the measurement and other constructs, as well as ascertain the quantity of indicators that alone indicate a singular construct. The metric proposed by Fornell and Larcker (1981) was introduced as a means to evaluate discriminant validity. The condition for discriminant validity is satisfied when the values on the diagonal of a matrix are greater than those off the diagonal within their respective columns and rows. The correlation matrix displayed in Table 4.12 offers

empirical support for discriminant validity. Discriminant validity was demonstrated by noting that the AVE values were higher than the squared correlations for each set of components. Based on the data provided in Table 4.12, it is evident that the square root of the AVE consistently displayed larger values compared to the correlations identified across the latent components. This finding offers substantial evidence to substantiate the concept of discriminant validity.

Table 4.12  
*Discriminant Validity*

|                                          | <b>Contract<br/>Compliance</b> | <b>Effective<br/>Contract<br/>Management</b> | <b>Financial<br/>Support</b> | <b>Leadership<br/>Support</b> | <b>Technological<br/>Support</b> |
|------------------------------------------|--------------------------------|----------------------------------------------|------------------------------|-------------------------------|----------------------------------|
| <b>Contract Compliance</b>               | 0.755                          |                                              |                              |                               |                                  |
| <b>Effective Contract<br/>Management</b> | 0.672                          | 0.748                                        |                              |                               |                                  |
| <b>Financial Support</b>                 | 0.597                          | 0.598                                        | 0.745                        |                               |                                  |
| <b>Leadership Support</b>                | 0.745                          | 0.696                                        | 0.711                        | 0.76                          |                                  |
| <b>Technological<br/>Support</b>         | 0.613                          | 0.676                                        | 0.641                        | 0.661                         | 0.804                            |

The results displayed in Tables 4.10, 4.11, and 4.12 offer support for the validity of the measures used to assess the five constructs: FS, LS, CC, TS, and ECM. The determination was made by considering the parameter estimates and statistical significance of the measures (Mallinckrodt, Abraham, Wei, & Russell, 2006). Following the presentation of the measurement model outcomes in this study, which showcased the reliability and validity of the measurements for all constructs, the second step entailed presenting findings pertaining to the structural model. To provide a thorough understanding of the results obtained from the structural model, it is essential to first introduce the revised model that was utilized in this specific study.

The next section discusses the assessment of the significance of the structural model (main hypotheses).

#### **4.8 Assessment of the Significance of the Structural Model (Main Hypotheses)**

This section presents the results of the structural model and hypothesis testing. It focuses on evaluating theories concerning moderating and direct impacts. To evaluate the significance of the path coefficient, the current study used the SEM standard bootstrapping approach with 300 bootstrap samples and 216 instances (Hair et al., 2012; Hair et al., 2014).

To evaluate the links between the research hypotheses, the structural model employs the SEM technique to determine the path coefficients, t-statistics, standard errors, and  $R^2$ . The  $R^2$  value serves as a measure of the proportion of variance accounted for by a given model. Path coefficients, on the other hand, provide information regarding the strengths and directions of the relationships between variables. Finally, t-statistics and standard errors offer insights into the statistical significance of the observed effects. The degree to which the recommended model can account for the observed phenomena was assessed by examining the relationship between the variances and dependent variables. Bootstrap resampling was employed to create standard errors and t-statistics.

The results presented in Figure 4.4 demonstrate that the squared multiple correlation ( $R^2$ ) values for the dependent variables (ECM,  $R^2 = 0.597$ ) suggest a favorable fit of the model to the data. The four latent variables, FS, LS, CC, and TS, collectively accounted for almost 60% of the variance observed in the ECM. Latent variables, which are derived from observable data using models, are commonly referred to as inferred

variables (Duncan, Duncan, & Strycker, 2013). The diagram in Figure 4.4 is presented below.

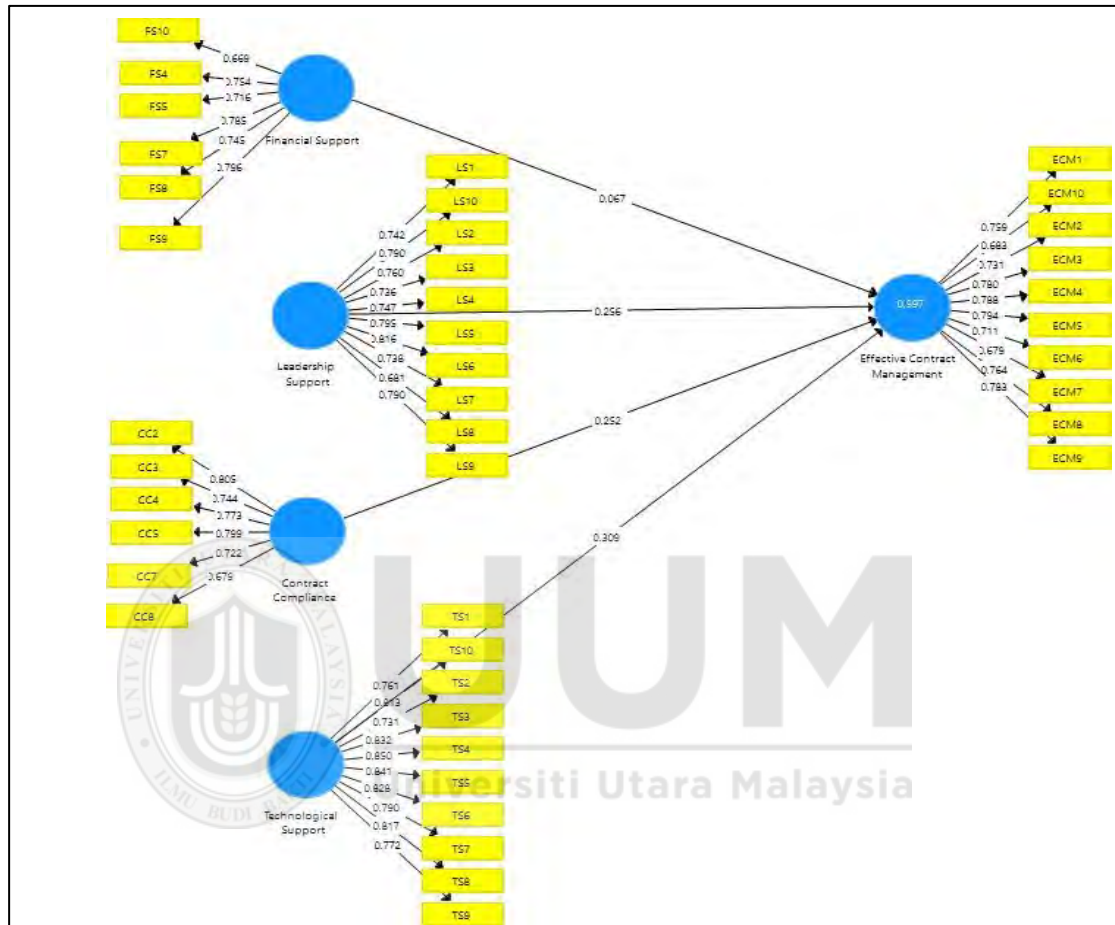


Figure 4.4  
Measurement Model/Outer Model (Main Hypotheses)

The next section discusses the main hypotheses and results.

#### 4.9 Main Hypotheses and Results

The main hypotheses of a research study are typically related to the expected relationships between the examined variables. After conducting the research and analyzing the data, the results were used to either support or reject the hypotheses. In this section, the researcher presents an overview of the main hypotheses and

corresponding results obtained from the data analysis. The findings provide insights into the relationships between the variables and their impact on the study's outcome, thus contributing to the knowledge base of the research area.

#### **4.9.1 Financial Support and Effective Contract Management**

As shown in Table 4.13, in terms of predicting ECM, the t-value was 0.858 and the p-value was  $>0.05$  FS. Thus, this finding suggests that there was a  $>0.05$  chance of obtaining a t-value of up to 0.858 in the overall value. At the 0.05 level, there was no discernible difference between the regression weight for FS and zero in the ECM predictions. Therefore, H1 was not supported.

#### **4.9.2 Leadership Support and Effective Contract Management**

With respect to H2, the results indicated that the t-value was 2.314 and the p-value for the LS method in predicting the ECM was 0.021. This finding indicates that the probability of attaining a t-value of up to 2.314 in the entire sample is less than 0.05. At a significance threshold of 0.05, the path coefficient for LS in the ECM forecasting exhibited a significant deviation from zero. As a result, hypothesis H2 was supported. The observed path coefficient was 0.256, demonstrating a positive connection between LS and ECM.

#### **4.9.3 Contract Compliance and Effective Contract Management**

In predicting ECM, CC's t-value of CC was 2.495 and its p-value was 0.003, according to the results of H3. This result suggests that there was a  $<0.05$  chance of obtaining a t-value as high as 2.945 in the overall value. At the 0.05 level, the path coefficient for CC in the ECM forecast was substantially different from zero. Therefore, H3 was

supported. Furthermore, a positive correlation between CC and ECM was indicated by the path coefficient result of 0.252.

#### 4.9.4 Technological Support and Effective Contract Management

According to the results of Hypothesis H4, the t-value for predicting ECM using TS was 4.647, with a corresponding p-value of 0.000. This finding indicates that the probability of obtaining a t-value as extreme as 4.647 in the entire sample is less than 0.05. The path coefficient for the TS in the ECM forecasting shows a significant deviation from zero at the 0.05 level. Thus, hypothesis H4 was supported. Moreover, path coefficient analysis revealed a significant positive correlation of 0.309 between TS and ECM.

To provide a concise overview, the evaluation of the structural model pertaining to the primary hypotheses in this study is presented in Table 4.13.

Table 4.13  
*Summary of Structural Model Assessment Direct Main Hypotheses*

| Hyp. | Relation             | Original Sample ( $\beta$ ) | Standard Error | t-value | p-value | Result        |
|------|----------------------|-----------------------------|----------------|---------|---------|---------------|
| H1   | FS $\rightarrow$ ECM | 0.067                       | 0.079          | 0.858   | 0.391   | Not Supported |
| H2   | LS $\rightarrow$ ECM | 0.256                       | 0.111          | 2.314   | 0.021   | Supported     |
| H3   | CC $\rightarrow$ ECM | 0.252                       | 0.086          | 2.495   | 0.003   | Supported     |
| H4   | TS $\rightarrow$ ECM | 0.309                       | 0.066          | 4.647   | 0.000   | Supported     |

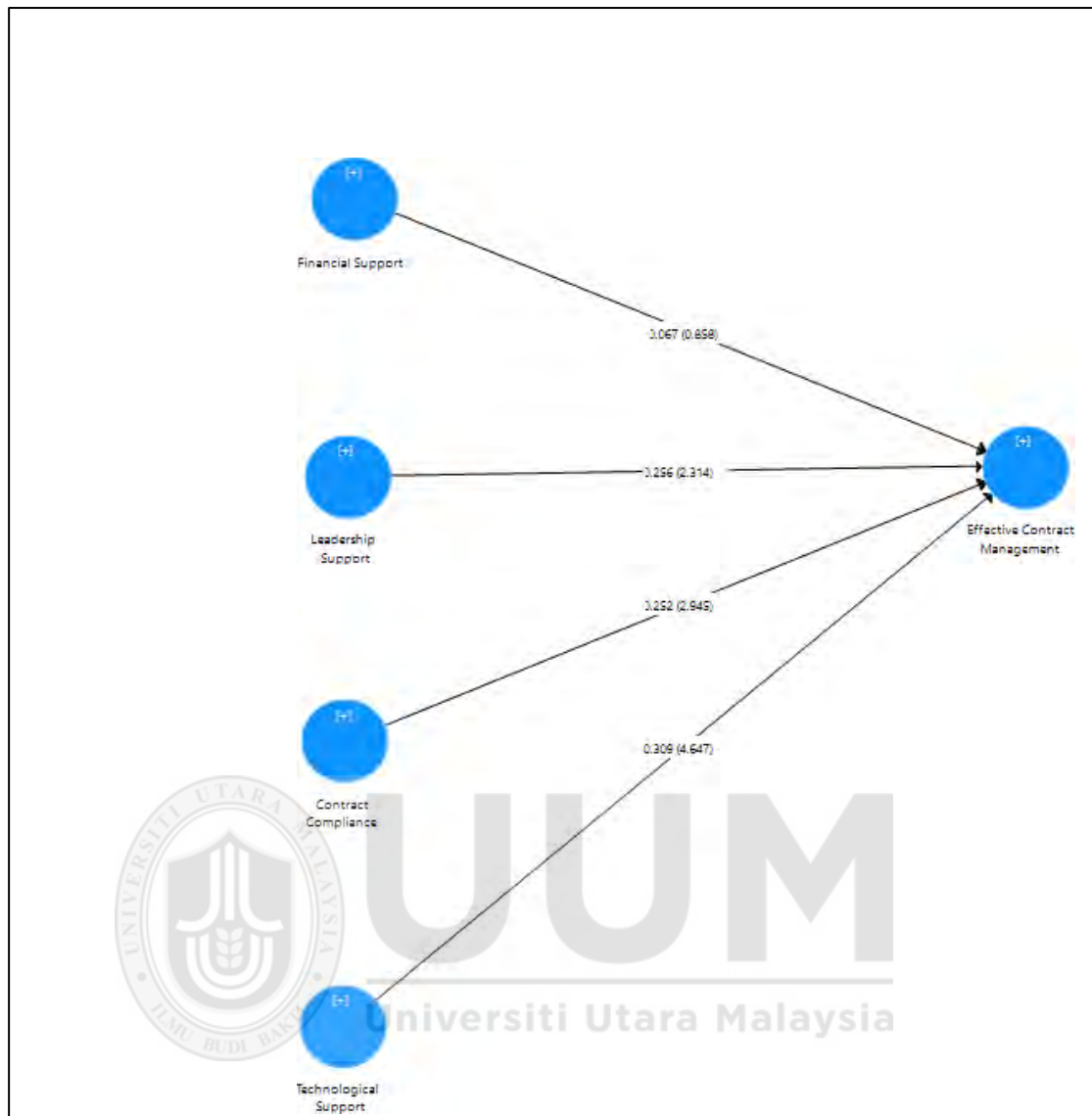


Figure 4.5  
*The Structural Model with Bootstrapping (Main Hypothesis)*

The next section discusses the test moderating effect.

#### 4.10 Test Moderating Effect

A third variable that modifies or influences the relationship between independent and dependent variables is known as a contingent variable or moderator. The degree or value of the moderator determines how the independent variables affect the dependent variables (Holmbeck 1997). Furthermore, the moderator influences the dependent

variables through its interactions with the independent factors. When there is an unexpectedly weak or inconsistent relationship between a predictor and criterion variable, Baron and Kenny (1986) define the moderator as a variable that affects the direction and/or strength of the relationship between an independent and a dependent variable.

Table 4.14  
*Summary of Structural Model Assessment Moderation Analysis*

| Hypothesis | Relationship                                                                          | Std. Beta | Std. Error | t-value | Decision      |
|------------|---------------------------------------------------------------------------------------|-----------|------------|---------|---------------|
| H5         | Financial Support*Contracting Officer Competency -> Effective Contract Management     | 0.18      | 0.171      | 1.052   | Not Supported |
| H6         | Leadership Support*Contracting Officer Competency -> Effective Contract Management    | 0.143     | 0.107      | 1.104   | Not Supported |
| H7         | Contract Compliance*Contracting Officer Competency -> Effective Contract Management   | 0.098     | 0.108      | 0.907   | Not Supported |
| H8         | Technological Support*Contracting Officer Competency -> Effective Contract Management | 0.143     | 0.078      | 1.838   | Supported     |

As seen from the data presented in Table 4.14, it can be observed that only H8 is substantiated. In the context of moderation analysis, the significance of the  $R^2$  change should be duly acknowledged. Therefore, the  $R^2$  value for the main effect model was

0.597; however, in the interaction effect model, it increased to 0.661. The increase in  $R^2$  of 0.064 suggests that the inclusion of the interaction term (Technological Support\*Contracting Officer Competency) resulted in a 6.4% augmentation in the explained variance. According to Cohen's (1988) guidelines, with an  $f^2$  value of 0.05, it can be inferred that the effect size is minimal. According to Chin et al. (2003), it should be noted that a low effect size  $f^2$  does not necessarily indicate that the underlying moderator effect can be considered insignificant. Table 4.14 presents a visual representation of the positive correlation between Technological Support and Contracting Officer Competency. However, it is worth noting that variations in magnitude may not be readily apparent.

It can be challenging to ascertain the precise characteristics and extent of this phenomenon based only on the coefficients. This challenge becomes more pronounced when one or more coefficients exhibit positive or negative values or when there is a substantial discrepancy in the standard deviations of variables X and Z (Dawson, 2014). Dawson (2014) suggested that the creation of an interaction plot could serve as a means to monitor significant interactions. Figure 4.6 illustrates that the gradient of the line representing high contracting officer competency is more pronounced compared to the line representing poor contracting officer competency. This implies that a stronger positive association exists when the skill level of contracting officers is high. Consequently, the hypotheses before the study were aligned with the hypothesis.

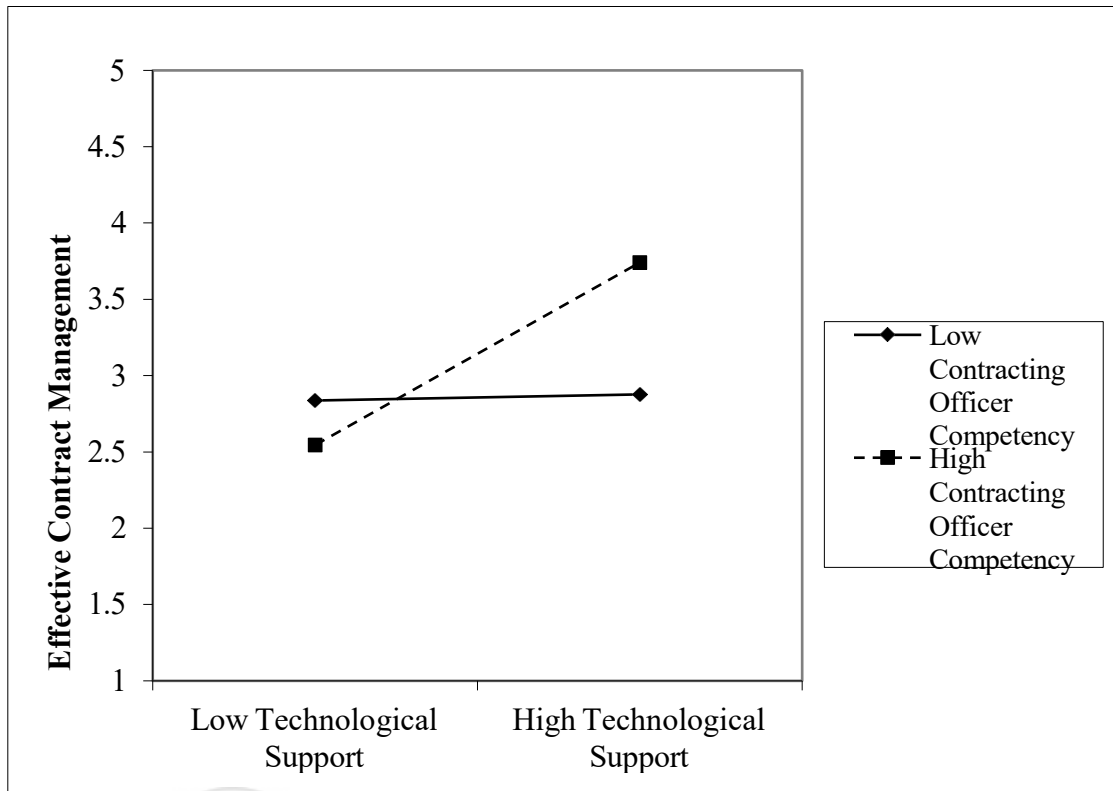


Figure 4.6  
*Interaction Plot*



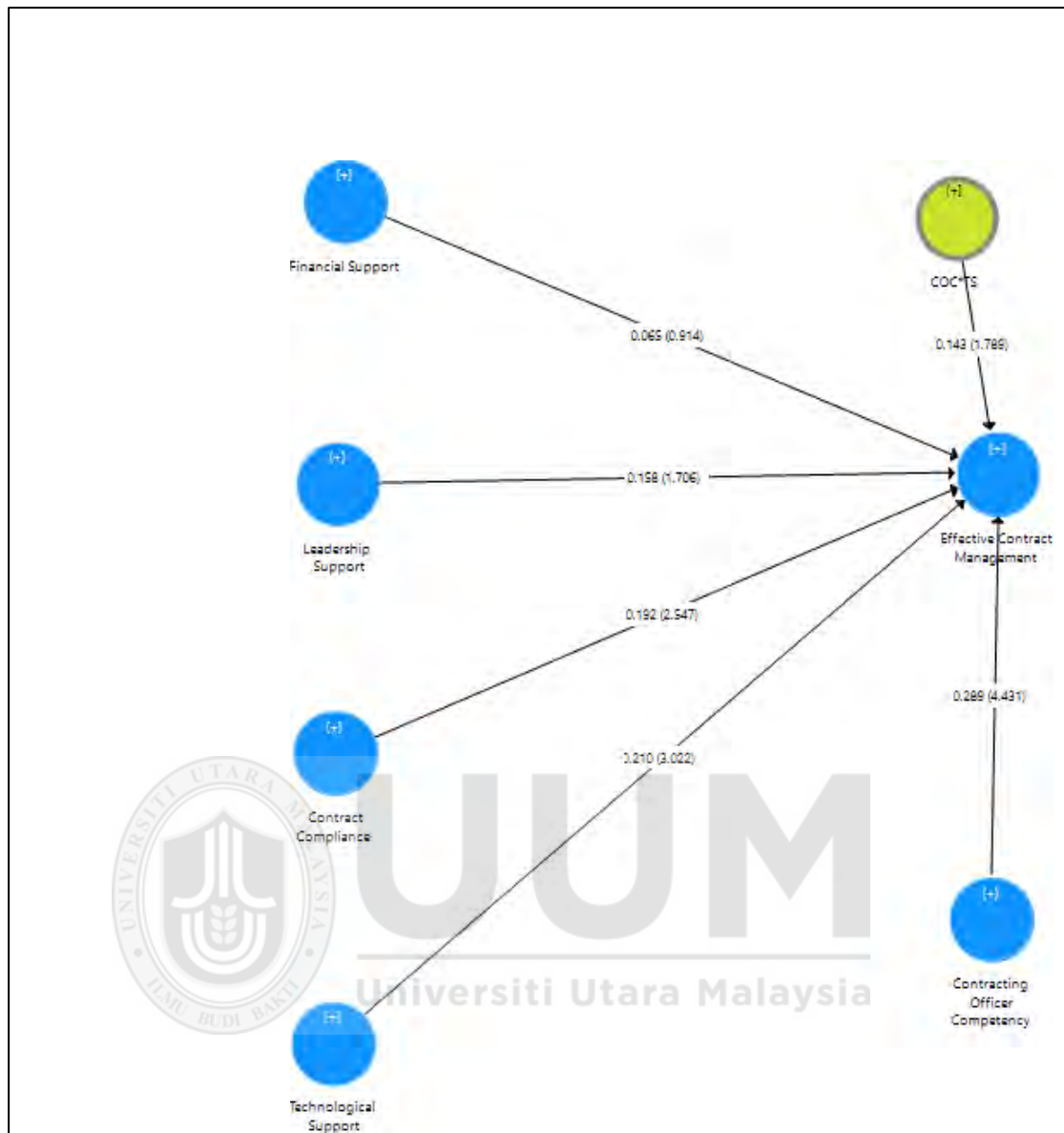


Figure 4.7

*Measurement Model/Outer Model (Moderating Effect)*

Note: \*\*Significant at Bootstrapping  $p < 0.01$ . \*Significant at Bootstrapping  $p < 0.05$

The next section discusses the squared multiple correlations ( $R^2$ ) of the structural model.

#### 4.11 R Squared Multiple Correlation ( $R^2$ ) of the Structural Model

According to Hair et al. (2014),  $R^2$  values of 0.75, 0.50, and 0.25 correspond to substantial, moderate, and weak interpretations, respectively. The structural model's  $R^2$

squared multiple relationships on ECM in the current investigation was 0.661. The results showed that 66.1% of the variance in the ECM was explained by all external variables.

The next section discusses ascertaining the Effect Size ( $f^2$ ).

#### 4.12 Ascertaining Effect Size ( $f^2$ )

According to Chin (1998), effect size is utilized to demonstrate the relative influence of a specific exogenous latent variable on an endogenous latent variable by employing variations in  $R^2$ . The calculation involves determining the discrepancy between the proportion of unexplained variance in the latent variable and the increase in the  $R^2$  of the latent variable associated with the path (Cohen, 1988). According to Cohen's (1988) definition, a small impact size is classified as 0.02, a medium effect size is categorized as 0.15, and a large effect size is characterized as exceeding 0.35. Table 4.15 presents the results pertaining to the impact of the external latent factors on the endogenous latent variables, as measured by the effect size.

Table 4.15  
*Effect Size of Predictive Variables*

| <b>Variables</b>                      | <b>Effective Contract Management</b> | <b>Rating</b> |
|---------------------------------------|--------------------------------------|---------------|
| <b>Financial Support</b>              | 0.005                                | No Effect     |
| <b>Leadership Support</b>             | 0.022                                | Small         |
| <b>Contract Compliance</b>            | 0.042                                | Small         |
| <b>Technological Support</b>          | 0.114                                | Medium        |
| <b>Contracting Officer Competency</b> | 0.124                                | Medium        |

The effect sizes for the variables FS, LS, CC, TS, and COC on ECM, as shown in Table 4.15, were 0.005, 0.022, 0.042, 0.114, and 0.124, respectively. According to Cohen's (1988) criteria, the effect sizes of the two exogenous latent variables on ECM were found to be minor. Additionally, the impact of TS and COC on ECM was determined to be of medium magnitude. However, no significant influence was observed on FS. The impact sizes for TS and COC on ECM were 0.114 and 0.124, respectively, indicating a medium effect size.

The hypotheses examined in this study and their corresponding test outcomes are presented in Table 4.16.

Table 4.16  
*Summary of the Hypotheses Tested*

| No. | Hy. | Hypothesis statement                                                                                                         | Outcome       |
|-----|-----|------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1   | H1  | There is a significant and positive relationship between financial support and effective contract management.                | Not Supported |
| 2   | H2  | There is a significant and positive relationship between leadership support and effective contract management.               | Supported     |
| 3   | H3  | There is a significant and positive relationship between contract compliance and effective contract management.              | Supported     |
| 4   | H4  | There is a significant and positive relationship between technological support and effective contract management.            | Supported     |
| 5   | H5  | Contracting officer competency will strengthen the relationship between financial support and effective contract management  | Not Supported |
| 6   | H6  | Contracting officer competency will strengthen the relationship between leadership support and effective contract management | Not Supported |

Table 4.16 (Continued)

| No. | Hy. | Hypothesis statement                                                                                                            | Outcome       |
|-----|-----|---------------------------------------------------------------------------------------------------------------------------------|---------------|
| 7   | H7  | Contracting officer competency will strengthen the relationship between contract compliance and effective contract management   | Not Supported |
| 8   | H8  | Contracting officer competency will strengthen the relationship between technological support and effective contract management | Supported     |

The next section discusses the chapter summary.

#### 4.13 Chapter Summary

This chapter provides an examination of the data analysis methodologies employed during the initial and subsequent data testing phases to improve the items prior to performing the Smart PLS (SEM) analysis. The linearity, normality, and multicollinearity of the data were evaluated to determine their appropriateness for univariate analysis. The chapter also presents the profile of the respondents, encompassing details such as gender, age, position, qualification, branch, rank, and years of service.

Although no statistically significant positive link was found between FS and ECM, the path coefficient indicated a notable and positive relationship between the key components, namely LS, CC, TS, and ECM. Moreover, the ECM saw a notable and positive impact due to the regression coefficient linking the variables of LS, CC, and TS.

Regarding the moderating influence of contracting officer competency (COC) factors on the association between FS, LS, CC, and TS and effective contract management

(ECM), the results of the partial least squares (PLS) path coefficient analysis indicate that only one of the four proposed hypotheses demonstrates a significant and positive effect. Specifically, an increase in contracting officer competency strengthens the relationship between efficient contract management and technology support.

The subsequent section presents a comprehensive analysis and conclusion of the ongoing investigation, together with its notable contributions, consequences, limitations, and potential directions for future research.



## **CHAPTER FIVE**

### **DISCUSSION AND CONCLUSION**

#### **5.1 Introduction**

The main goal of this study was to identify the factors that influence effective contract management, which has been extensively studied in the logistical support factors literature. However, the results of these studies have been debated, and the impact of logistical support factors on effective contract management has been inconsistent. Chapter Two of this study reviewed the literature on logistical support factors and identified several key elements that contribute to effective contract management. One of these elements is communication, which is crucial for ensuring that all parties involved in the contract have a clear understanding of their roles and responsibilities. Collaboration and coordination between contracting parties are also essential to identify potential issues and resolve them promptly. The availability of resources, including financial and technological resources, is another crucial logistical support factor that contributes to effective contract management. Overall, the theoretical framework presented in Chapter Two suggests that logistical support factors play a crucial role in successful contract management. Nonetheless, further research is needed to clarify the relationship between these factors and their impact on effective contract management.

Based on the findings of this study, it is evident that the use of ideas and frameworks derived from the commercial sector is not suitable for contract management within the defense industry. According to Patel (2006), there is a lack of clear definition of the roles and responsibilities associated with the execution, oversight, and enforcement of compliance under contract post-award. The theoretical framework of this study was

built upon several elements within the logistical support factors literature that were discussed in Chapter Two. The control variables for this study were focused on effective contract management and were carefully examined throughout the research. The independent variable was logistical support factors, which were identified as critical components that influence contract management. These logistical support factors included communication, collaboration, coordination, and availability of resources. The moderating variable, on the other hand, was the competency of the contracting officer, which is an important aspect in managing contracts. By including this moderating variable, the study aimed to explore how the competency of the contracting officer affects the relationship between logistical support factors and effective contract management. Therefore, the theoretical framework of this study provided a comprehensive understanding of the factors that influence contract management, including the role of logistical support factors and the moderating effect of contracting officer competency.

This section provides an overview of the main findings derived from the study undertaken in Chapter Four and examines their connection to the theoretical framework and prior scholarly investigations. Subsequently, a comprehensive examination of the theoretical, methodological, and practical ramifications of this study is presented. The chapter concludes by providing a comprehensive summary of the study's findings and discussing their implications for future research in the contract management domain. Moreover, the chapter delineates and examines the constraints of the study and proposes potential avenues for future research to mitigate these constraints. The main objective of this chapter is to offer a thorough comprehension of the study's discoveries and their consequences for both theory and practice. Additionally, it aims to emphasize potential

avenues for future research within the domain of contract management.

The implications derived from the results of this study emphasize the significance of ensuring that the Royal Malaysian Navy (RMN) complies with the government's stipulations on efficient and proficient asset management and inventory procedures. The aforementioned conclusions were derived from the study's stated purpose, research inquiries, and a comprehensive examination of the collected data. This chapter also includes a discussion of the significance of the study's findings and subsequent suggestions. The researcher thoroughly comprehends the implications of the study's findings for both theoretical and practical applications. The chapter concludes by providing recommendations and suggesting avenues for future research to address the shortcomings observed in the study. In general, this chapter presents a comprehensive and succinct overview of the primary discoveries of the study and their pragmatic ramifications, along with recommendations for future investigations aimed at improving contract management practices inside the RMN.

The next section discusses the recapitulation of the research objectives.

## **5.2 Recapitulation of the Research Objectives**

The restatement of the research objectives is a fundamental element of every study. The information provided offers a concise overview of the primary objectives of the research, delineating the precise research inquiries and goals that the study sought to investigate. In this chapter, we revisit the research objectives that were initially delineated at the commencement of the study and proceed to assess the degree to which they have been accomplished. This chapter presents a comprehensive and succinct

summary of the study's primary contributions to the domain of contract management and delineates potential avenues for future research through a thorough examination of the research objectives. The forthcoming chapter will additionally examine the ramifications of the study's findings on theory and practice and propose suggestions for enhancing contract management practices within the Royal Malaysian Navy (RMN).

The current study encompasses four distinct research aims. The main aim of this study was to evaluate the level of achievement in terms of logistical support components and effective contract management procedures in the Royal Malaysian Navy (RMN). Moreover, the primary objective of this study was to examine the association between several factors pertaining to logistical aid, including financial assistance, support from leadership, adherence to contractual obligations, technological support, and effective management of contracts inside the RMN. The main aim of this study is to investigate the influence of logistical support factors on the effective management of contracts in the Royal Malaysian Navy (RMN). The other main aim of this study is to investigate the moderating impact of contracting officer competency on the efficacy of contract management inside RMN. The research objectives were developed to gain a comprehensive understanding of the several factors that impact the effectiveness of contract management methods within the RMN. Furthermore, the aims were to ascertain particular aspects of these procedures that could potentially derive advantages from improvements or alterations. The primary objective of this study is to contribute significantly to the field of contract management and provide practical recommendations for enhancing contract management procedures inside the RMN.

The successful attainment of the research objectives delineated in this study holds significant importance for the Material Department at the Naval Headquarters, as it will aid in the development of a more pertinent, logical, and proficient strategy for overseeing and administering contracts related to the acquisition of supplies, works, and services within the RMN. The objective of this study is to enhance the operational effectiveness of the Material Department in its oversight and control of the assets and infrastructure of the RMN, which include the administration of contracts. The study's findings can contribute to policy decisions and the establishment of best practices for contract management in the RMN by offering a thorough understanding of the factors that influence effective contract management practices. The examination of the study and the subsequent analysis of the study findings will serve to emphasize the primary advancements made by the research and offer pragmatic suggestions for enhancing contract management practices within the RMN. These ideas have the potential to enhance the efficiency and efficacy of contract management practices in RMN, resulting in improved procurement outcomes, enhanced asset management, and more optimal resource allocation within the RMN.

The research objectives of the study can be concisely summarized as follows: (1) To identify the descriptive level of logistical support factors (financial support, leadership support, contract compliance and technological support), contracting officer competency and contract management; (2) To analyse the relationship between logistical support factors of financial support and contract management; (3) To determine the relationship between logistical support factors of leadership support and contract management effect of contracting officer competency on effective contract management within the RMN; (4) To identify the relationship between logistical

support factors of contract compliance and contract management; (5) To determine the relationship between logistical support factors of technological support and contract management; (6) To rank the most contributing logistical support factor between financial support, leadership support, contract compliance and technological support with effective contract management; (7) To measure the contracting officer competency has moderating effect towards relationship between logistical support factors and effective contract management; and (8) To create an optimal procurement and effective contract management procedures toward effectiveness of RMN fleet operations. Achieving these research objectives holds great significance in improving the effectiveness of the Material Department's operations in oversight and supervision of the assets and infrastructure of the RMN, including contract management. The findings of this research possess the capacity to make a valuable contribution to the formulation of policies, influence the development of effective contract management strategies within the RMN, and improve the overall effectiveness and efficiency of contract management practices in the RMN. Consequently, these improvements may lead to enhanced procurement outcomes, improved asset management, and more effective allocation of resources within the RMN.

The next section discusses the overview of the study.

### **5.3 Overview of the Study**

The effective management of contracts is a critical component of organizational success, particularly for the Royal Malaysian Navy (RMN) Material Department responsible for managing the RMN's assets and infrastructures. The objective of this study was to ascertain the elements that influence the efficacy of contract management

within the RMN, while also examining the impact of logistical support factors and the competency of contracting officers on the improvement of efficiency and effectiveness in contract management practices. The study's findings have significant implications for the RMN's procurement process, asset management, and infrastructure development, as well as for policymakers and practitioners involved in contract management practices. This chapter provides an overview of the study, including the research objectives, the research design and methodology, and the scope of the study.

According to this study, the effective management of contracts in the procurement of assets and infrastructures is essential for the Royal Malaysian Navy (RMN) to achieve its goal of becoming a world-class navy. Hence, the primary objective of this study was to ascertain the determinants influencing the efficacy of contract management and offer empirical substantiation pertaining to the practices of contract management within the RMN. The study's findings are crucial for designing the acquisition of RMN assets and infrastructures, given the financial resources allocated to the RMN. Effective contract management practices are essential to ensure that every asset is well-managed and operated, meeting the RMN's maritime function, which is to float, move, and fight. The study's practical implications extend to policymakers and practitioners involved in contract management practices, providing them with essential considerations for enhancing the RMN's procurement process, asset management, and infrastructure development. Furthermore, the study's results have significant implications for the RMN's overall performance, particularly the Material Department responsible for managing the RMN's assets and infrastructures.

In Chapter Two of the study, the literature on effective contract management towards logistical support factors was extensively reviewed. The review focused on identifying factors that could potentially affect the effective management of contracts. The criteria encompassed in this study were financial assistance, leadership support, contract compliance, and technology support. The literature analysis indicates that extensive research has been conducted on logistical support variables. However, the findings have exhibited inconsistencies and are subject to ongoing debate. To bridge this existing knowledge gap, the researcher built a comprehensive research model that draws from foundational theory and relevant existing models. The objective of this study was to examine the correlation between logistical support elements as predictor variables and the effectiveness of contract management as the outcome variable. Furthermore, the study examined the moderating role of the contracting officer's ability in the association between logistical support parameters and contract management effectiveness. The incorporation of this moderating variable was crucial in ascertaining the extent to which the contracting officer's competency influenced the association between logistical support parameters and contract management efficacy.

The development of a theoretical framework in Chapter Two was imperative to establish a full comprehension of the variables that influence the efficacy of contract management in the RMN. As previously noted, there is a dearth of scholarly research concerning the impact of the moderating variable on the efficacy of contract management in relation to logistical support variables. Hence, the theoretical framework endeavors to address this deficiency by proposing a model that integrates the moderating influence of contracting officer competence on the efficacy of contract administration. The construction of this model was informed by foundational theories

and relevant models, facilitating the identification of key components within the logistical support aspects that impact the success of contract management. The theoretical framework comprises four primary components: financial support, leadership support, contract compliance, and technology support. The identification of these components is crucial to ensuring the effective management of contracts in the RMN, as they require sufficient assistance. In general, the theoretical framework provides a foundation for the empirical examination of the study model, facilitating the exploration of the interplay between logistical support elements, contracting officer ability, and contract management efficacy.

To achieve the objectives of the study, the researcher employed an exploratory, descriptive, and contextual quantitative study. The research encompassed the dissemination of surveys, references to existing data sources, contractual papers, and directions for contract management, together with circulars pertaining to financial matters from the Treasury and Armed Forces Council Order. The major instrument employed for data collection was a questionnaire disseminated to the Supply & Secretariat officers in the RMN. These individuals were responsible for overseeing the contract management inside the RMN. In conjunction with the poll, the researcher consulted secondary sources, including proprietary data and circulars pertaining to finance from the Treasury and the Armed Forces Council Order. To confirm the comprehensiveness of the data, the researcher additionally obtained data from the contract agreements and contract handling instructions. In this study, a variety of data collection approaches were utilized to obtain extensive and precise data that would be valuable in attaining the study's aims.

Following data collection, the researcher used a variety of statistical tests to evaluate the data to test the hypotheses and investigate the connection between contracting officer competency, logistical support elements, and efficient contract management. The most recent version of SPSS, Version 25, was used for the analysis, enabling both descriptive and inferential analyses. The study employed ANOVA, Pearson Correlation, and Multiple Regression as statistical tests. The researcher additionally employed SEM, which was applied using SmartPLS Version 3. With the use of this program, all of the proposed hypotheses were tested and the link between the various study variables was examined. The study's results for the hypotheses are presented in Chapter Four, and a detailed discussion of these findings is provided in the following section. The findings of this study should advance our understanding of efficient contract management and logistical support elements. They will also have significant real-world ramifications for the Material Department at Naval Headquarters, which oversees contracts and RMN assets.

In order to address the study inquiries and evaluate the proposed hypotheses, the investigators employed statistical inference techniques during their investigation. The researchers employed statistical analyses, including ANOVA, Pearson correlation, and multiple regression, to examine the association and impact of logistical support elements, contracting officer ability, and effective contract management. The study employed ANOVA to assess the disparities in the average scores of the study variables, and Pearson correlation analysis was used to investigate the association between effective contract management and logistical support. Furthermore, regression analysis was employed to assess the magnitude and nature of the association between two variables, as well as to generate forecasts regarding this association. By conducting

these analyses, researchers were able to derive significant conclusions and infer important implications from the findings of the study. This section provides a comprehensive analysis of the study's findings.

The primary objective of this study was to examine the many elements that impact the successful management of contracts within the Royal Malaysian Navy (RMN). This study investigated the correlation between logistical support components, including financial support, leadership support, contract compliance, and technology support, and the efficacy of contract management. The study also examines the moderating impact of contracting officer ability on the association between logistical support parameters and the effectiveness of contract management. The study employed a quantitative research methodology, utilizing questionnaires, references to secondary data, and contract papers as data collection instruments. The data were analyzed using SPSS and SmartPLS software. Various statistical tests, including ANOVA, Pearson Correlation, and Multiple Regression, were employed to examine the hypotheses. The objective of this study is to provide assistance to the Material Department at the Naval Headquarters by proposing a more pertinent, logical, and proficient strategy or approach for the control and management of contracts.

The next section discusses the discussion of the study results.

#### **5.4 Discussion of the Study Results**

The focal point of the analysis in this research is the examination of the eight hypotheses that were subjected to testing. The initial first four hypothesis investigated the correlation between logistical support parameters and efficacy of contract management

within the RMN. The findings of the study indicate that there is a notable and favorable impact of logistical support variables on the efficacy of contract management. The primary factors that exert the most influence on the efficacy of contract management are technology support, with contract compliance and leadership support following closely. The second hypothesis investigated the impact of logistical support elements on the efficacy of contract management. The findings indicate a statistically significant and positive relationship between the logistical support variables and the effectiveness of contract management. The third hypothesis investigates the potential influence of contracting officer ability as a moderator on the association between logistical support elements and the effectiveness of contract management. The findings indicate that contracting officer ability has no moderating influence on the connection between logistical support factors and effective contract management. The fourth hypothesis investigates the direct impact of contracting officer competency on the effectiveness of contract management. The findings indicate that the level of competency exhibited by contracting officers has a notable and favorable impact on the effectiveness of contract management. These findings are consistent with prior research demonstrating the significance of logistical support variables and the competence of contracting officers in the realm of efficient contract administration. The second four hypothesis (H5 to H8) investigated the moderating variable influence of contracting officer competency (COC) factors on the association between FS, LS, CC, and TS and effective contract management (ECM). The results of the SM-Partial Least Squares (PLS) path coefficient analysis indicated that only one of the second four proposed hypotheses that is H8, demonstrates a significant and positive effect. Specifically, the finding shows an increase in contracting officer competency strengthens the relationship between efficient contract management and technology support.

#### **5.4.1 The Level of Achievement of Logistical Support Factors and Effective Contract Management**

Efficient contract administration within the defense industry is of utmost importance, and its interdependence with logistical support components is crucial. The Royal Malaysian Navy (RMN), being a defensive organization, places significant reliance on several logistical support components, including transportation, storage, inventory management, and repair, to enable the seamless execution of its activities. Nonetheless, the degree of attainment of these variables may have a substantial influence on the efficacy of contract management inside the RMN. Hence, it is necessary to examine the degree of attainment of logistical support components and their influence on the efficacy of contract management to gain a more comprehensive comprehension of the interconnection between these elements within the context of the RMN. This section conducts a comprehensive examination of the extent to which logistical support variables contribute to the attainment of effective contract management in the Royal Malaysian Navy (RMN).

In the previous chapter, the first research question of this study, "What is the descriptive level for logistical support factors (financial support, leadership support, contract compliance and technological support), contracting officer competency toward effective contract management?" was addressed (Azizi, Hassan, Akanmu & Melan, 2019). The results indicate that many logistical support elements affect the efficacy of contract management inside the RMN. These aspects include financial, leadership, contract compliance, and technical support (Azizi et al., 2019). According to Azizi et al. (2019), the research revealed that the degree of accomplishment of logistical support aspects in the RMN is moderately satisfactory, suggesting that there is potential for

enhancing the efficacy of contract management in the defense sector. The findings of this research offer significant perspectives on the present condition of contract management within the RMN and can contribute to the formulation of approaches aimed at enhancing the efficiency of contract management procedures in the defense sector.

This section presents a comprehensive summary of the assessment conducted on logistical support components and the implementation of effective contract management practices within the Royal Malaysian Navy (RMN). The findings indicate that the effectiveness of contract management in RMN is heavily influenced by the performance level of logistical support elements, such as financial support, leadership support, contract compliance, and technological support. This study's findings provide useful insights into the current status of effective contract administration in the military industry, highlighting the importance of acquiring logistical support to ensure the smooth operation of the industry.

#### **5.4.2 The Relationship Between Logistical Support Factors and Effective Contract Management**

The efficacy of contract management within the defense sector is contingent upon a range of logistical support elements, encompassing financial backing, leadership endorsement, adherence to contractual obligations, and technology assistance. The success of contract management is influenced by several logistical support factors. Therefore, it is imperative to understand the correlation between these parameters and the efficacy of contract management. The objective of this section is to examine the correlation between logistical support factors and the efficacy of contract management

within the Royal Malaysian Navy (RMN), with the intention of ascertaining the importance of these aspects within the military sector. Through an analysis of the interplay between these variables, this research endeavors to offer valuable insights into potential solutions that might be employed to enhance the efficacy of contract management within the defense sector.

The main aim of the second research inquiry in this study was to investigate the relationship between logistical support characteristics and effective contract management inside the RMN. This study incorporates many logistical support components, including financial aid, leadership support, contract compliance, and technological support. This study deeper into the analysis of the relationship between logistical support components and contract management effectiveness. The examination was divided into four specific areas for a more comprehensive understanding. The aforementioned domains, including financial support, leadership support, contract compliance, and technological support, were investigated to determine the relationship between these factors and the effectiveness of contract management inside the RMN. By conducting a thorough analysis of this link, this study makes valuable contributions to the comprehension of key factors that are crucial for attaining effective contract administration in the defense industry.

#### **5.4.2.1 Financial Support**

The provision of financial assistance plays a pivotal role in the logistical support aspect that affects the efficacy of contract management within the defense sector. Financial support includes providing sufficient financial resources to facilitate the execution of procurement and contract management procedures. Financial assistance plays a crucial

role within the Royal Malaysian Navy (RMN), as it is important for the successful execution of contracts within budgetary limitations, while also adhering to the prescribed standards of quality. The proficient administration of financial resources guarantees that procurement and contract management procedures are in accordance with the goals of the defense sector. Hence, the present section concentrates on the significance of financial assistance in guaranteeing efficient contract administration within the RMN. The objective of this study is to offer a comprehensive analysis of the extent of financial assistance and its correlation with contract management efficacy in the defense sector.

The importance of financial support (FS) and effective contract management (ECM) has been explored in this study, and the findings indicate that there is no significant relationship between the two variables. The t-value for the FS and ECM relationship was found to be 0.858, and the p-value was  $>0.05$ , indicating that the likelihood of obtaining a t-value of 0.858 or higher was greater than 0.05. The regression weight for FS in predicting ECM was also not significantly different from zero at the 0.05 level, indicating that financial support did not have a significant impact on effective contract management. These findings are consistent with those of Girth and Lopez (2019), who suggested that financial support may not be directly related to contract management effectiveness, as it also depends on how the administration manages the funds. Despite this, financial support remains a crucial factor in the overall success of procurement and contract management processes in the defence industry, as it enables the necessary resources to be allocated to achieve effective contract management.

In summary, the study found that financial support does not have a significant relationship with effective contract management in the RMN. The regression weight for financial support in forecasting effective contract management was not significantly different from zero at the 0.05 level, suggesting that financial support alone may not be enough to ensure effective contract management in the defence industry. The literature supports this finding, as Girth and Lopez (2019) also found that financial support is not the main determinant of contract management effectiveness and that effective contract management ultimately depends on how it is managed by the administration.

#### **5.4.2.2 Leadership Support**

Effective leadership plays a crucial role in ensuring the success of contract management. Leaders who demonstrate strong dedication to ensuring the successful and efficient execution of contracts have the potential to greatly improve the effectiveness of contract management systems. This study examines the correlation between leadership support and the efficacy of contract management in the Royal Malaysian Navy (RMN). This study aimed to assess the impact of leadership support on the efficacy of contract management processes within the defense sector. The research findings of this study might offer valuable insights into the significance of proficient leadership in guaranteeing the achievement of contract management in RMN.

This study employed structural equation modelling to examine the association between leadership support (LS) and effective contract management (ECM) within the Royal Malaysian Navy (RMN). The findings indicated a statistically significant positive correlation between LS and ECM. The obtained t-value of 2.314 and p-value of 0.021 provide evidence to support the conclusion that the regression weight for LS in

forecasting ECM is statistically significant at the 0.05 level. The path coefficient associated with LS was 0.256, suggesting a moderate positive correlation between LS and ECM. This implies that the involvement and endorsement of leadership are crucial factors in guaranteeing the successful implementation of contract management inside the RMN. These findings align with prior studies that have demonstrated the significance of leadership support in the efficacy of contract management procedures within organizational contexts (Mat, Zabidi, Yusof, Salleh, Mohammed, & Yusof, 2020). The implementation of proficient leadership can significantly contribute to the efficient and effective execution of contract management procedures, ultimately resulting in enhanced performance and outcomes. Hence, it is imperative for firms to offer robust leadership backing to their contract management teams to guarantee the efficacy of their operations.

In summary, this research study revealed a statistically significant positive correlation between leadership support and the successful management of contracts inside the RMN. The t-value obtained for the relationship between leadership support and effective contract management was 2.314, with a corresponding p-value of 0.021. These results suggest that the path coefficient for leadership support in predicting effective contract management was both statistically significant and substantially different from zero at a significance threshold of 0.05. The path coefficient yielded a value of 0.256, suggesting a positive correlation between leadership support and contract management effectiveness. This finding implies that the provision of leadership assistance plays a pivotal role in guaranteeing contract management efficiency within the defense sector. These results align with prior scholarly works that emphasize the significance of leadership support in enhancing the performance of contract management (Azizi et al.,

2019).

#### **5.4.2.3 Contract Compliance**

Contract compliance is an essential aspect of effective contract management in any organization, including the defence industry. It involves ensuring that all parties involved in a contract adhere to the terms and conditions stipulated in the agreement. The failure to comply with these terms and conditions can result in legal disputes, financial losses, and damage to the reputation of the contracting parties. Therefore, it is crucial to investigate the relationship between contract compliance and effective contract management to identify the factors that can enhance compliance and improve contract management outcomes in the defence industry. In this section, we examine the relationship between contract compliance and effective contract management in the Royal Malaysian Navy (RMN) by analysing the results obtained from the Structural Model Assessment.

This study examines the correlation between contract compliance (CC) and effective contract management (ECM), revealing a statistically significant and favorable association between these two variables. The t-values for the CC and ECM were calculated to be 2.495. The corresponding p-value was 0.003. This p-value suggests that the likelihood of achieving a t-value as extreme as 2.495 by random chance alone is less than the commonly accepted significance level of 0.05. In addition, the path coefficient for the variable CC in predicting ECM was shown to be statistically significant at the 0.05 level. This implies that adherence to contractual obligations has a substantial influence on the efficient administration of contracts. The observed path coefficient of 0.252 suggests that enhancing contract compliance may result in

commensurate enhancement of the efficacy of contract management inside the RMN. The aforementioned findings align with prior research that has emphasized the need to adhere to contractual obligations in order to achieve effective contract administration (Umar, Zawawi, & Abdul-Aziz, 2019).

The findings of the study highlight the importance of contract compliance in the effective management of contracts in the defence industry. The positive and significant relationship between contract compliance and effective contract management suggests that non-compliance with contractual obligations can lead to poor management outcomes, including cost overruns, schedule delays, and quality issues. This is especially relevant in the defence industry, where contractual obligations are often complex and involve high-stakes projects with significant consequences for national security.

The study's results have implications for the way the defence industry approaches contract management. It suggests that organizations should prioritize ensuring that contracts are complied with, rather than solely focusing on the management of contracts. This can be achieved through robust contract administration processes, regular monitoring and reporting of contract performance, and effective communication between all stakeholders involved in the contract. By prioritizing contract compliance, organizations can enhance their ability to achieve successful outcomes in contract management, including cost-effective delivery, timely completion, and high-quality performance.

Overall, the study's findings reinforce the importance of contract compliance in effective contract management, especially in the defence industry. The results suggest that organizations should place greater emphasis on ensuring contractual obligations are met, rather than solely focusing on managing contracts. Doing so can lead to better outcomes in contract management and enhance the ability of the defence industry to deliver critical projects that meet national security needs.

#### **5.4.2.4 Technological Support**

The advent of technology has brought about a significant transformation in various aspects of our lives, including lifestyles, professional endeavors, and social interactions. The advent of various technological advancements, such as cell phones, computers, advanced robotics, and artificial intelligence, has brought about a significant transformation in all facets of human existence, including the realm of corporate operations. The concept of technological assistance encompasses the utilization of technology to augment and facilitate many business functions, such as customer service, supply chain management, inventory control, and financial management. Through the utilization of technology, organizations have the potential to enhance their operational effectiveness, diminish expenditures, and enhance the quality of services rendered to their clientele. The significance of technological support has witnessed a notable rise in the contemporary business environment, and enterprises that neglect to adopt technology face the potential consequences of lagging behind their rivals.

This study investigated the association between technological support (TS) and effective contract management (ECM), revealing a statistically significant and favorable link between these two variables. Statistical analysis yielded a t-value of

4.647 and a p-value of 0.000, suggesting a significant association between the variables. This result indicates that the likelihood of obtaining a t-value equal to or greater than 4.647 by random chance is below 0.05. This suggests that the observed association between the two variables is statistically significant.

Furthermore, the path coefficient for technological support in predicting effective contract management was found to be significantly different from zero at the 0.05 level, indicating that technological support has a direct and meaningful impact on effective contract management. The positive path coefficient value of 0.309 further provisions the idea that there is a positive relationship between the two variables, suggesting that higher levels of technological support are associated with more effective contract management.

The findings of the study have significant implications for organizations involved in contract management. By investing in technology and providing adequate technological support, businesses can improve their ability to manage contracts effectively, leading to better outcomes such as cost savings, timely delivery, and higher quality performance. These findings underscore the importance of keeping up with the latest technological advancements and incorporating them into contract management processes, ensuring that businesses can remain competitive and meet the evolving needs of their customers. Overall, the study highlights the critical role of technological support in achieving effective contract management and underscores the need for organizations to prioritize this area in their business strategy.

### **5.4.3 The Effect of Logistical Support Factors and Effective Contract Management**

The previous chapter addressed the third study question, which pertains to the impact of logistical support variables on effective contract management. The findings of the study clarified the influence of logistical support components and effective contract management within the Royal Malaysian Navy (RMN) framework. The research question's findings were examined using the effect size measure within the Statistical Package for the Social Sciences (SPSS). The findings are expounded upon through an examination of many factors such as financial aid, backing from leadership, adherence to contractual obligations, support in terms of technology, and the competence of contracting officers.

The research findings indicate that financial support has no significant impact on the effectiveness of contract management, as evidenced by a small effect size of 0.005. Leadership support for effective contract management exhibits a minimal effect size of 0.022. Additionally, it is worth noting that the effect size pertaining to contract compliance in relation to successful contract management is rather minor at 0.042. Furthermore, the presence of technology assistance and the level of competency exhibited by contracting officers both have a moderate effect on the effectiveness of contract management. The effect sizes for technological support and contracting officer competency were 0.114 and 0.124, respectively.

### **5.4.4 The Moderating Effect of Contracting Officer Competency and Effective Contract Management**

The preceding chapter addressed the study topic pertaining to the moderating effect on

contracting officer competency and effective contract management. The analysis of the findings of this research topic was conducted through the utilization of Structural Model Assessment Moderation Analysis. The study's results indicate that the level of competency of contracting officers has a moderating impact on the relationship between logistical support variables and the effectiveness of contract management in RMN.

In moderation analysis,  $R^2$  change is important. For financial support with contracting officer competency, it is not supported for effective contract management. It also happened to leadership support with contracting officer competency and contract compliance with contracting officer competency towards effective contract management which is not supported. However, technological support with contracting officer competency is supported towards effective contract management. Therefore, the hypothesis is supported by what has been hypothesized before the analysis.

This situation raises the question why three other logistics support factors such as financial support, contract compliance and leadership support were found not supported for effective contract management. While the technology support factor was found to support effective contract management. In reality, this happens because the issue of competency is actually an individual issue. An organization really needs competent employees or individuals in an effort to ensure that the objectives and direction of the organization are carried out by competent staff. A maritime defence organization such as RMN is actually highly dependent on the competency knowledge, experience and academic ingenuity of its officers. But all this will only be achieved if RMN is able to have a group of officers who possess all these qualities. As mentioned before, competency belongs to the individual. Without good competency, of course it

cannot be intertwined with the other three logistics support factors, namely financial support, contract compliance and leadership support. RMN leadership's effort to reveal an effective contract management situation is unlikely to be achieved if it is managed by incompetent officers. This is what happened in RMN where there were several incidents such as delays in refit program, delays in procurement of spares and components, integrity issues and incomplete deliveries as stated in the previous chapter. Rendon (2015), stated the attainment of individual competency in contract management duties and activities is crucial for achieving better success.

### **5.5 Contributions of the Study**

The contributions section is crucial in research as it provides a summary of the study's significant contributions to various areas of interest. In this case, the study focuses on the procurement and contract management of assets and infrastructures in the defence industry, particularly in the Royal Malaysian Navy. The contributions of the study can provide a foundation for future research and help inform the management of contracts in the defence industry. The study's contributions are important not only for academic researchers but also for practitioners in the field, as they can benefit from the study's findings and recommendations. Therefore, this section aims to summarize and emphasize the significant contributions of the study to the literature, theory, methodology, and managerial practices.

The present investigation has produced significant advancements in the realm of procurement and contract administration in the defense sector. This study contributes to the existing body of literature on procurement and contract management in the defense industry by examining the relationship between logistical support variables and

contract management effectiveness. The findings of the study also make a theoretical addition by highlighting how the competency of contracting officers moderates the relationship between logistical support parameters and contract management effectiveness. Furthermore, this work makes a methodological contribution by utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM), a technique that has been underutilized in prior research within the defense industry. The practical ramifications of this study offer valuable insights for practitioners engaged in procurement and contract management in the defense industry. Hence, the findings of this study have substantial implications for scholars and professionals engaged in the field of procurement and contract management within the defense sector.

#### **5.5.1 Theoretical Contributions**

In this section, the theoretical contributions of the current study will be discussed. This section highlights how the study adds to the existing body of knowledge in the field of procurement and contract management in the defence industry. The theoretical contributions are important as they provide a basis for future research and help to advance the field. This section is critical for academic researchers who are interested in understanding the theoretical underpinnings of procurement and contract management in the defence industry.

The present work makes noteworthy theoretical contributions towards enhancing the comprehension of effective contract management and logistical support components within the defense industry. This study aims to address the existing empirical gap in understanding the moderating influence of COC characteristics on the relationship between logistical support factors and effective contract management (FS, LS, CC, TS

with ECM, and PLS) within RMN. By identifying these factors, this study contributes to the academic literature on contract management. The results of this study have the potential to contribute to future research by establishing a theoretical framework for investigating the efficacy of contract management and logistical assistance in many domains within the defense industry. Moreover, this study makes a valuable contribution to the advancement of theoretical knowledge regarding the determinants that impact contract management efficacy. This contribution has the potential to enlighten and guide future investigations in diverse contexts beyond the military sector.

This study makes significant theoretical contributions by employing a paradigm that explores the relationship between logistical support factors and effective contract administration. Specifically, it investigates contracting officers' competence as a key determinant of successful contract management. This study adds to the existing scholarly literature by addressing a gap in our empirical knowledge regarding the moderating impact of COC characteristics on the association between FS, LS, CC, and TS with ECM. Furthermore, the inclusion of the concept of the Contracting Officer Competency (COC) as a moderating factor in examining the association between Effective Contract Management (ECM) and Financial Support (FS), Leadership Support (LS), Contract Compliance (CC), and Technological Support (TS) introduces a fresh viewpoint on the effectiveness of contract administration in the defense industry. This research also offers valuable insights into the significance of regular monitoring and performance evaluation at predetermined intervals when assessing performance, namely in the areas of transactions, processes, and regulatory compliance, as suggested by Chapelle (2019). This study's theoretical contributions establish a fundamental basis for future research endeavors in the realm of procurement and contract management

within the defense sector.

In summary, the present study makes noteworthy theoretical additions to the existing literature by elucidating the elements that influence the efficacy of contract management in relation to the logistical support aspects inside the RMN. The study framework elucidates the role of many components of logistical support variables that contribute to the successful administration of contracts, specifically focusing on the competency of contracting officers. This study identified a gap in the existing literature and incorporated the concept of COC as a moderating variable in the relationship between ECM and FS, LS, CC, and TS. The aforementioned contributions hold significant value in terms of providing insights for future research pertaining to the role of the COC in the realm of successful contract management and the many elements associated with logistical assistance.

#### **5.5.2 Methodological Contributions**

In this section, the methodological contributions of the current study will be discussed. The methodological contributions include the research design, data collection, data analysis, and results interpretation. The study's methodology is essential as it provides a foundation for future research in the field of procurement and contract management, particularly in the defence industry. Moreover, the study's methodology can be used as a guideline for conducting similar studies in other industries or contexts. Therefore, this section is critical for both academic researchers and practitioners who are interested in the field of procurement and contract management.

The methodological contributions of the present study are of great significance, notably in the identification of logistical support parameters that have an impact on the effectiveness of contract management within the defense industry. This study emphasizes the significance of incorporating contracting officer competency as a moderating variable when examining the connection between logistical support parameters and contract management effectiveness. This contribution is of utmost significance, as it demonstrates that the efficacy of contract management is contingent upon not only logistical support aspects but also the proficiency of the contracting officer in overseeing the contract. Procurement skills are necessary qualities for procurement practitioners to possess in order to ensure procurement performance in their respective organizations (Ismail Abdi Changelima, 2022). Moreover, this study presents a theoretical framework that can be utilized by future researchers to examine the efficacy of contract management in various industries. As Carter et al. (2012) noted, identifying logistical support factors can lead to cost reductions, improved quality, and delivery improvements in products, services, or business processes. Therefore, the current study's methodological contributions provide a valuable approach to managing contracts that can lead to improved ROI for the RMN and other industries.

In summary, the current study contributes methodologically by identifying the logistical support factors that affect effective contract management through contracting officer competency. It highlights the importance of identifying these factors to reduce costs, improve quality, and achieve better delivery of products and services. Procurement process is risk prone and the effect of risk surrounding each procurement process on procurement performance differs (Nyamah, et. al., 2022). Additionally, it emphasizes the significance of binding contracts in providing a good return on

investment to the government. The study's contributions to the methodology of procurement and contract management can inform future research in this field and aid practitioners in improving their procurement and contract management practices.

## **5.6 Implications**

The implications section of this study is crucial in highlighting the practical and theoretical implications that arise from the findings. The implications are relevant to both academic researchers and practitioners in the procurement and contract management of assets and infrastructures in the defence industry. The study's implications are discussed in terms of their contributions to the literature, theory, methodology, and managerial practices. The practical implications of the research findings include providing guidance to practitioners involved in procurement and contract management of assets and infrastructures in the defence industry. Furthermore, the theoretical implications of this study include providing a better understanding of the relationship between logistical support factors and effective contract management. The methodology implication of the study is that it provides a framework for researchers who are conducting similar studies in the future. Finally, the managerial implication of the research is that it provides the RMN and other stakeholders with valuable insights into improving their contract management processes.

To summarize, this section has examined the possible practical and theoretical consequences of the research findings for academic researchers and practitioners engaged in the procurement and contract management of assets and infrastructure within the defense industry. The study's implications have been thoroughly examined with regard to their contributions to the existing body of literature, theoretical

frameworks, research methodologies, and practical applications in management contexts. This research emphasizes the significance of logistical support aspects and the competency of contracting officers in achieving efficient contract management. Additionally, the study offers practical suggestions for improving the efficacy of the contract management process within the Royal Malaysian Navy. The results of this study have the potential to make a valuable contribution to the current body of literature on efficient contract management. Furthermore, these findings can serve as a solid basis for future research in this particular field of study.

#### **5.6.1 Practical Implications**

The present study has significant practical implications for professionals engaged in procurement and contract management in the defense industry. This study presents empirical findings that highlight the significance of identifying logistical support elements that impact the efficacy of contract management, specifically in relation to the competence of contracting officers. Consequently, professionals may employ the results of this study to formulate optimal strategies in the fields of procurement and contract administration. Practitioners can enhance their contract management performance by directing their attention towards logistical support factors, including financial support, leadership support, contract compliance, and technological support. This strategic approach has the potential to yield improved efficiency, cost-effectiveness, and favorable outcomes in the procurement process. The results of this study can also provide valuable insights for practitioners in the defense industry, shedding light on the significance of investing in the competence of contracting officers to enhance the relationship between technology support and efficient contract administration.

The applied suggestions of the current study are crucial for procurement and contract management practitioners in the defence industry, particularly in the framework of the Royal Malaysian Navy (RMN). The study's findings highlight the importance of identifying logistical support factors that affect effective contract management through contracting officer competency. Based on these findings, it is recommended that the RMN and other defence organizations explore contract management issues in the public sector to identify factors that have influenced the identified state of contract management. By doing so, they can address challenges and improve contract management practices to ensure better cost-effectiveness, quality, and delivery of products and services. The study's framework can provide a basis for the government and stakeholders to implement effective contract management practices in defence organizations like the RMN. Therefore, this study's practical implications can inform the development of best practices for procurement and contract management in the defence industry, particularly in the context of the RMN.

Additionally, the current study yields several practical implications that may be derived to enhance the efficacy of the contract management process in RMN. First, it is imperative to allocate adequate financial resources to facilitate the implementation of efficient contract management inside the RMN. First, even though the finding shows that there is no significant association between financial support and effective contract management, but it is understood that in any organization, financial support has its own place in determining the direction and the well-being of the organization. A budget often plays multiple roles in an organization, and there have been several attempts to generate an understanding of the multiple purposes of budgeting (Knardal, & Bjørnenak, 2020). It is only that this study seems to be conducted at the government organization (non-profit

organization) whereby financial has always been accepted as fluctuating and well accepted variable. Therefore, it is imperative to allocate adequate financial resources to facilitate the implementation of efficient contract management in the RMN. Hence, it is crucial for the RMN Material Department to secure sufficient budget allocation to facilitate the procurement and contract management process. Budgetary allocation ought to encompass funds for the integration of training and development initiatives aimed at enhancing the competencies and expertise of contracting officers and other workers engaged in the procurement process.

Secondly, the RMN need to strengthen leadership support for effective contract management in the RMN. The study found that leadership support significantly influences effective contract management. Therefore, the RMN Material Department should promote a culture of accountability and transparency in contract management. The leadership should encourage teamwork and collaboration between the different units and personnel involved in the procurement and contract management process. Additionally, the leadership should ensure that the contracting officers have the necessary authority and resources to carry out their duties effectively.

Thirdly, the RMN need to enhance technological support for effective contract management in the RMN. The study findings suggest that technological support significantly influences effective contract management. Therefore, the RMN Material Department should invest in modern and efficient procurement and contract management systems to facilitate the process. The department should consider adopting electronic procurement systems, which can improve transparency, efficiency, and accuracy in the procurement process. Lastly, the RMN need to ensure contracting

officer competency in the RMN. The study findings indicate that the competency of the contracting officer significantly affects effective contract management. Therefore, the RMN Material Department should provide regular training and development programs to enhance the skills and knowledge of contracting officers. The department should also establish a comprehensive system of performance evaluation and accountability for contracting officers to ensure that they meet the necessary standards.

In summary, the practical implications of the current study relate to the importance of identifying logistical support factors that affect effective contract management through contracting officer competency in the defence industry. The findings of this study can inform the development of best practices for procurement and contract management practitioners in the defence industry. The study's practical implications can help in developing an effective framework for the government and stakeholders to implement better contract management practices in defence organizations like the RMN. It also highlights the significance of exploring contract management issues in the public sector to identify factors that influence effective contract management.

### **5.6.2 Theoretical Implications**

The current study has significant theoretical implications for procurement and contract management theories in the defence industry. By identifying the moderating impact of contracting officer competency on the association between logistical support factors and effective contract management, the study has expanded the understanding of the factors that influence contract management in the defence industry. The findings of the study may help to refine existing theories and frameworks related to procurement and contract management in the defence industry. Moreover, the study contributes to the

development of new theories and frameworks that may explain the complexities and dynamics of procurement and contract management in the defence industry. Therefore, the current section will discuss the theoretical implications of the study findings in more detail.

The current study's theoretical implications are significant in highlighting the importance of exploring the factors that affect effective contract management in the defence industry, specifically in the RMN. The study's framework contributes to the existing literature by explaining the relationship between logistical support factors, contracting officer competency, and effective contract management. The literature review indicates that most of the studies in this area have been focused on the commercial sector, and there is a need to develop procurement and contract management theories that are more relevant to the defence industry. The findings of this study can serve as a basis for developing such theories and frameworks. It is also worth noting that the effective management of assets and inventory is a critical aspect of defence procurement and contract management, and the current study's findings can help to ensure that the public sector, such as the RMN, is consistent with the government's requirements in this area. Therefore, the theoretical implications of this study are significant, as they contribute to the development of procurement and contract management theories in the defence industry and ensure that the government's requirements are met.

In summary, the theoretical implications of the current study are significant as they contribute to the development of procurement and contract management theories in the defence industry. The study's framework explains the relationship between logistical

support factors, contracting officer competency, and effective contract management in the RMN, highlighting the importance of exploring the factors affecting the effectiveness of contract management in the defence industry. The study provides a foundation for future research in this area and demonstrates the need to develop procurement and contract management theories that are specific to the defence industry. The findings of this study have implications for both academic researchers and practitioners involved in procurement and contract management, and they offer valuable insights into how to effectively manage contracts in the defence industry.

The next section discusses the recommendations.

### **5.7 Recommendations**

In this section, it provides recommendations for the Royal Malaysian Navy (RMN) Material Department and other stakeholders involved in the procurement and contract management of assets and infrastructures. The recommendations are aimed at enhancing the effectiveness of the contract management process in the RMN by addressing the logistical support factors and contracting officer competency. These recommendations are based on the research findings and are intended to provide practical guidance for improving the management of contracts in the RMN.

In light of the results obtained from this study, it is imperative to provide suggestions for prospective investigations to advance our comprehension of proficient contract administration within the Royal Malaysian Navy (RMN) milieu. A potential area for further investigation could involve broadening the sample size and scope of the study to encompass a more extensive and heterogeneous variety of participants, such as

seamen and engineering officers. This approach would yield a more thorough comprehension of the patterns and determinants that impact the efficacy of contract management in RMN, potentially uncovering novel insights or factors that were not previously acknowledged in the present investigation. Furthermore, future studies should prioritize the investigation of the efficacy of targeted training programmes or interventions designed to enhance logistical support factors and contracting officer proficiency within the RMN. Additionally, the role of technology and digital platforms in augmenting the efficiency and effectiveness of contract management processes should be examined.

In addition to expanding the sample size to include a larger number of participants from the RMN, future studies may also benefit from including samples from other regular forces in the defence industry, such as the Malaysian Army and Royal Malaysian Air Force. This is because these forces may have unique perspectives and methods for effective logistical support in the management of contracts. By including samples from other regular forces, researchers may be able to identify commonalities and differences in the way contract management is approached in the Malaysian armed forces, leading to a more comprehensive understanding of the factors that contribute to effective contract management. Moreover, it may provide a benchmarking opportunity for the RMN to learn and improve its contract management practices by comparing and contrasting its practices with those of other regular forces.

In addition to including a larger sample and other regular forces, future studies should also employ both quantitative and qualitative approaches to provide a more comprehensive understanding of effective contract management in the defence

industry. While quantitative research provides a general idea or hypothesis, qualitative research allows for a deeper exploration of the issue at hand. By combining these two approaches, the research can obtain a more holistic and nuanced understanding of effective contract management in the RMN and other branches of the Malaysian armed forces. Furthermore, a mixed-methods approach allows for the validation and triangulation of findings from different data sources and methods, enhancing the credibility and rigour of the research. It is recommended that future studies in this area adopt a mixed-methods approach to provide a more comprehensive understanding of effective contract management in the defence industry.

The last research objective of this study is; to create an optimal procurement and effective contract management procedures towards the effectiveness of RMN fleet operations. For that purpose, some of the recommendations and approaches that have been mentioned above need to be followed up with a more compelling action or implementation in order to create a complete and powerful contract management integration that covers every aspect of enhanced contract management. In the contract promulgation process, for example, the introduction of some good practices into contract clauses such as mandating the establishment of a secretariat such as the Contract Management Office (CMO) in both contracting parties establishment is seen to be able to help regulate the management of the contract between them. This secretariat can function as a good control mechanism for both parties where all matters such as quality control of spare parts, delivery service, service after sale, schedule of payment and other issues can be resolved through this platform.

Apart from the CMO clause, another approach that is considered practical to implement is to include elements of Project Management Review (PMR) throughout the contract. This element is the main link between the two contracting parties. All disputes, ambiguities and incomplete contract phrases can be resolved through PMR where both contracting parties will meet up and discuss directly and transparently to resolve all contract issues. In this way, contract management will be smoother and perfect after all the interests of both parties have been properly taken into account.

At the tactical level, i.e. at the contract execution level, a good approach such as the introduction of the Supply Working Group (SWG) is able to manage the contract more effectively because this working group is located at the site and experiences the contract implementation process. They understand the real situation better and are able to find a solution and suggest the best solution to a problem to the contracting parties. In the context of logistics support and fleet operations, all recommendations, observations and improvement actions initiated by the Supply Working Group are able to provide early information to the engineering division and seaman division to plan the mission and fleet readiness in accordance with the capabilities of the current logistics support contract. Consequently, the mission plan and fleet show of present throughout Malaysian waters will be well planned and effective. The result of this practice will certainly give a good ROI to the country's maritime defence and will then be a good deterrent to neighboring countries.

In addition, the good practice being practiced by the Materiel Division at the Naval Headquarters, which is to hold a Value Management Lab (VM Lab) at every government procurement, is a method that has a very positive effect on the control of

government expenditure, especially when a contract is to be established. It is in line with what has been emphasized by Carter et. al (2012) emphasizing the process of ensuring that all parties to a contract are aware of their responsibilities and that they must be fulfilled effectively and efficiently to get the most out of the money that has been spent. The implementation of VM Lab needs to continue to ensure the government expenditure will always perfectly managed. Apart from the VM Lab, the Materiel Division also held a Mid Term Review (MTR) which aims to review and report to the RMN management on the RMN's expenses performance of each half term to the current year. This practice is very crucial and useful for RMN in determining the direction and identifying weaknesses in spending the allocated operating budget.

In summary, based on the findings of the study, recommendations were made to improve the effectiveness of the contract management process in the Royal Malaysian Navy (RMN). These recommendations include enhancing the logistical support factors and contracting officer competency, improving communication between the RMN Material Department and contractors, providing regular training to contracting officers, and strengthening contract compliance. Additionally, suggestions were made for future studies to cover a larger sample size, include other regular forces in the defence industry, and employ both quantitative and qualitative approaches to provide comprehensive data about effective contract management in the defence industry.

To achieve the goal of establishing a standard optimal procurement and contract management procedures toward proficient and productive asset management and inventory control, ensuring a clear and comprehensive path toward enhancing effectiveness of fleet operations within the defence industry, some practical

implementations such as the insertion of CMO and PMR in contract clauses are able to produce a very positive impact and effect in determining the success of a contract. In addition, with the insertion of the CMO and PMR, it will be amplified at the tactical level by establishing a SWG with the aim of supervising the contract implementation by reporting all problems and solutions to both contracting parties. By doing so, there will be transparency and cooperation among the contracting parties. Finally, the implementation of the contract runs well and effectively and at the same time meet the needs of customers and stakeholders.

## **5.8 Conclusion**

This chapter provides a summary of the entire research study, including the research problem, objectives, methodology, results, and recommendations. The research problem was identified as the lack of effective contract management in the Royal Malaysian Navy (RMN) and the need to address logistical support factors and contracting officer competency. The research objectives were to determine the relationship between logistical support factors, contracting officer competency and effective contract management in the RMN. The study used a quantitative approach with data collected through questionnaires, secondary data, and contract documents. Statistical tests such as ANOVA, Pearson Correlation and Multiple Regression were used to analyze the data, and the results showed a positive relationship between logistical support factors, contracting officer competency and effective contract management in the RMN. Based on the findings, recommendations were made to improve the effectiveness of the contract management process in the RMN, and suggestions for future studies were also provided.

Chapter Five of this dissertation serves as the conclusion and final chapter of the study. It aims to provide a comprehensive summary of the entire dissertation, starting from the introduction in Chapter One to the results in Chapter Four. The chapter focuses on linking and concluding all the arguments, propositions, citations, readings, surveys, and observations from the previous chapters. Notably, there are no new sources introduced in this chapter, and all the results are aligned with the research methodology presented in Chapter Three. The chapter also seeks to answer the research questions presented in Chapter One, which have been addressed and concluded in Chapter Four. In essence, Chapter Five provides a final synthesis of the entire study, highlighting the key findings and implications for the Royal Malaysian Navy and the wider defence industry.

The findings of the study indicated that the moderating impact of COC characteristics had a significant influence on the association between logistical support factors and effective contract management. Specifically, the results from the PLS path coefficient revealed that only one of the four proposed hypotheses was significant and had an impact. This hypothesis suggests that contracting officer competency can improve the association between technological support and effective contract management. The other three hypotheses, which propose that COC characteristics would moderate the relationship between financial support, logistical support, and communication support with effective contract management, were not supported by the study. Overall, these findings provide important insights into the factors that affect effective contract management in the Royal Malaysian Navy, and they have implications for the development of strategies and policies aimed at improving the management of contracts in this organization.

The current study effectively accomplished its research objectives, which involved assessing logistical support aspects and efficient contract administration within the Royal Malaysian Navy (RMN). Furthermore, the primary objective of this study is to examine the correlation between various logistical support aspects, including financial, leadership, contract compliance, and technology support, and the successful administration of contracts inside the RMN. Moreover, this study aimed to investigate the influence of logistical support elements on the efficacy of contract management in RMN. Additionally, it explores the potential moderating effect of contracting officer competence on the effectiveness of contract management inside the RMN. The present study utilized a quantitative research methodology to generate comprehensive data that contributes to the current knowledge base on contract management in the defence sector. The study's findings provide useful insights into the impact of logistical support variables and the competency of contracting officers on the effectiveness of contract management in RMN. Furthermore, the study successfully identified crucial aspects that necessitate attention to enhance the efficacy of contract management operations within the RMN.

Overall, this study makes a valuable contribution to the current body of literature by offering empirical evidence on the efficacy of contract management and the influence of logistical support variables on its outcomes. This study contributes to the existing theoretical framework by providing empirical evidence that highlights the moderating role of contracting officer expertise in the association between logistical support parameters and contract management effectiveness. The research study has made progress in terms of approach by employing a mixed-method research design and integrating structural equation modelling (SEM) with partial least squares structural

equation modelling (PLS-SEM). This study makes a valuable managerial contribution by offering practical suggestions to improve the efficiency of contract management within the RMN. This was achieved via the identification and examination of logistical support variables and the competency of contracting officers. The research also emphasized the significance of implementing a proficient procurement and contract administration procedure within the defence sector, as it might exert a substantial influence on the overall operational efficacy of the organization.



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## APPENDICES

### Appendix A: Questionnaire



#### Northern University of Malaysia

#### **Relationship Between Logistical Support Factors and Effective Contract Management in The Royal Malaysian Navy**

This research aimed to determine the relationship between logistical support factors (i.e. financial support, leadership support, contract compliance and technological support) and effective contract management. Moreover, the study also wanted to examine the moderating effect of contracting officer competency on the relationship between logistical support factors and effective contract management. In addition, this research also want to study the most influenced factor of logistical support such as financial support, leadership support, contract compliance and technological support on the effectiveness of contract management. Therefore, the respondents should answer the questions sincerely. Respondents' information will be kept confidential and all the answers will be report in general.

*Penyelidikan ini bertujuan untuk menentukan hubungan di antara faktor sokongan logistik (iaitu sokongan kewangan, sokongan kepimpinan, pemuatan kontrak dan sokongan teknologi) dan pengurusan kontrak yang berkesan. Selain itu, kajian ini juga*

*ingin mengkaji kesan penyederhanaan kecekapan pegawai kontraktor terhadap hubungan di antara factor sokongan logistic dan pengurusan kontrak yang berkesan. Di samping itu, penyelidikan ini juga ingin mengkaji factor sokongan logistic seperti sokongan kewangan, sokongan kepimpinan, pematuhan kontrak dan sokongan teknologi yang paling banyak mempengaruhi keberkesanan pengurusan kontrak. Oleh itu, responden harus menjawab soalan dengan ikhlas. Maklumat responden akan dirahsiakan dan semua jawapan akan dilaporkan secara umum.*

Thank you. Terima kasih.

Sincerely, *Ikhlas*,

**AZIZI BIN AHMAD SARKAWI**



**SECTION A: DEMOGRAPHIC**  
**BAHAGIAN A: DEMOGRAFI**

Please tick (✓) your answer in the provided box.

Sila tanda (✓) jawapan anda di dalam kotak yang disediakan.

- |                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Which branch are you? / <i>Anda dari cawangan mana?</i></p> <p>A. Eksekutif (Pelaut) <input type="checkbox"/></p> <p>B. Bekalan &amp; Urusetia <input type="checkbox"/></p> <p>C. Kejuruteraan <input type="checkbox"/></p> <p>D. Lain-lain <input type="checkbox"/></p>                                                                                                                                             | <p>4. Gender/ <i>Jantina</i></p> <p>A. Male/ <i>Lelaki</i> <input type="checkbox"/></p> <p>B. Female/ <i>Perempuan</i> <input type="checkbox"/></p>                                                                                                                                                                                                                                                                                                                                      |
| <p>2. What rank are you?/ <i>Apakah pangkat anda?</i></p> <p>A. Laksma ke atas <input type="checkbox"/></p> <p>B. Kepten TLDM <input type="checkbox"/></p> <p>C. Komander TLDM <input type="checkbox"/></p> <p>D. Leftenan Komander TLDM <input type="checkbox"/></p> <p>E. Leftenan TLDM <input type="checkbox"/></p> <p>F. Leftenan Madya TLDM <input type="checkbox"/></p>                                              | <p>5. Age/ <i>Umur</i></p> <p>A. Below 20 years old/ <i>Bawah 20 tahun</i> <input type="checkbox"/></p> <p>B. 21 years old to 30 years old/ <i>21 tahun ke 30 tahun</i> <input type="checkbox"/></p> <p>C. 31 years old to 40 years old/ <i>31 tahun ke 40 tahun</i> <input type="checkbox"/></p> <p>D. 41 years old to 50 years old/ <i>41 tahun ke 50 tahun</i> <input type="checkbox"/></p> <p>E. More than 51 years old/ <i>Lebih daripada 51 tahun</i> <input type="checkbox"/></p> |
| <p>3. How long are you in service?/ <i>Berapa lamakah anda berkhidmat?</i></p> <p>A. Less than 5 years/ <i>Kurang daripada 5 tahun</i> <input type="checkbox"/></p> <p>B. 6 years to 10 years/ <i>6 tahun ke 10 tahun</i> <input type="checkbox"/></p> <p>C. 11 years to 15 years/ <i>11 tahun ke 15 tahun</i> <input type="checkbox"/></p> <p>D. 16 years and above/ <i>16 tahun ke atas</i> <input type="checkbox"/></p> | <p>6. Qualification/ <i>Kelayakan</i></p> <p>A. SPM and below/ <i>SPM dan kebawah</i> <input type="checkbox"/></p> <p>B. Diploma/ <i>Diploma</i> <input type="checkbox"/></p> <p>C. Degree/ <i>Sarjana Muda</i> <input type="checkbox"/></p> <p>D. Master/ <i>Sarjana</i> <input type="checkbox"/></p> <p>E. Doctor of Philosophy/ <i>Doktor Falsafah</i> <input type="checkbox"/></p>                                                                                                   |

**SECTIONB: VARIABLES****BAHAGIAN B: PEMBOLEH UBAH**

Please tick (✓) your answer in the provided box according to your preference.

Sila tanda (✓) jawapan anda di dalam kotak yang disediakan mengikut pilihan anda.

|                                                         |                                      |                            |                         |                                            |
|---------------------------------------------------------|--------------------------------------|----------------------------|-------------------------|--------------------------------------------|
| Strongly<br>Disagree/<br><i>Sangat Tidak<br/>Setuju</i> | Disagree/<br><i>Tidak<br/>Setuju</i> | Neutral/<br><i>Neutral</i> | Agree/<br><i>Setuju</i> | Strongly<br>Agree/<br><i>Sangat Setuju</i> |
|---------------------------------------------------------|--------------------------------------|----------------------------|-------------------------|--------------------------------------------|

| NO. | FINANCIAL SUPPORT/ SOKONGAN KEWANGAN                                                                                                                      | 1 | 2 | 3 | 4 | 5 |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1.  | Procurement contract planning based on approved budget<br><i>Perancangan kontrak perolehan berdasarkan anggaran bajet yang diluluskan</i>                 |   |   |   |   |   |
| 2.  | Poor planning leads to budget deficits<br><i>Gagal merancang membawa kepada defisit belanjawan</i>                                                        |   |   |   |   |   |
| 3.  | Procurement contract process begins with planning<br><i>Proses kontrak perolehan bermula dengan perancangan</i>                                           |   |   |   |   |   |
| 4.  | Contract needs assessment is undertaken<br><i>Penilaian keperluan kontrak dilakukan</i>                                                                   |   |   |   |   |   |
| 5.  | Market capability analysis is carried out<br><i>Analisis keupayaan pasaran dijalankan</i>                                                                 |   |   |   |   |   |
| 6.  | Funds availability before procurement begin<br><i>Ketersediaan dana sebelum perolehan dilaksanakan</i>                                                    |   |   |   |   |   |
| 7.  | Procurement planning helps in resource allocation<br><i>Perancangan perolehan membantu dalam peruntukan sumber</i>                                        |   |   |   |   |   |
| 8.  | Procurement planning helps to achieve value for money<br><i>Perancangan membantu mencapai nilai tambah perolehan</i>                                      |   |   |   |   |   |
| 9.  | Procurement planning results into compliance to set procedures<br><i>Perancangan perolehan membantu pematuhan prosedur ditetapkan</i>                     |   |   |   |   |   |
| 10. | Without budgeting procedures, it would be difficult to come up with a procurement plan.<br><i>Tanpa anggaran, sukar untuk membuat rancangan perolehan</i> |   |   |   |   |   |

| NO. | LEADERSHIP SUPPORT/ SOKONGAN<br>KEPIMPINAN                                                                                                                                                                                                                             | 1 | 2 | 3 | 4 | 5 |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1.  | Top management supports procurement planning activities for contract management<br><i>Pengurusan atasan menyokong aktiviti perancangan perolehan untuk pengurusan kontrak</i>                                                                                          |   |   |   |   |   |
| 2.  | The top management ensures that only competent staff is involved in final procurement planning for contract management<br><i>Pengurusan atasan memastikan bahawa hanya kakitangan yang kompeten yang terlibat dalam perancangan perolehan untuk pengurusan kontrak</i> |   |   |   |   |   |
| 3.  | The top management regards procurement function important<br><i>Pengurusan atasan menganggap fungsi perolehan penting</i>                                                                                                                                              |   |   |   |   |   |
| 4.  | The management ensures that only what is in the master procurement plan is procured.<br><i>Pihak pengurusan memastikan bahawa hanya apa yang dirancang dilaksanakan perolehan.</i>                                                                                     |   |   |   |   |   |
| 5.  | The management ensures that the policies and procedures in place followed<br><i>Pihak pengurusan memastikan bahawa polisi dan prosedur dipatuhi</i>                                                                                                                    |   |   |   |   |   |
| 6.  | Leadership and top management support procurement planning for contract management<br><i>Kepimpinan dan pengurusan atasan menyokong perancangan perolehan bagi pengurusan kontrak</i>                                                                                  |   |   |   |   |   |
| 7.  | Leadership as internal mechanism that ensures conformance to procurement policy and procedure<br><i>Kepimpinan sebagai mekanisme dalaman yang memastikan pematuhan terhadap polisi dan prosedur perolehan</i>                                                          |   |   |   |   |   |
| 8.  | Conflicts of interest are quickly declared by members of staff<br><i>Sekiranya berlaku konflik berkaitan kepentingan akan dimaklumkan oleh anggota</i>                                                                                                                 |   |   |   |   |   |
| 9.  | Strict codes of conduct ensure purchasing procedures are followed<br><i>Prosedur perolehan yang ketat dipatuhi</i>                                                                                                                                                     |   |   |   |   |   |
| 10. | There's confidentiality in dealing with supplier information<br><i>Kerahsiaan maklumat pembekal diuruskan dengan baik</i>                                                                                                                                              |   |   |   |   |   |

| NO. | CONTRACT COMPLIANCE/ KEPATUHAN<br>KONTRAK                                                                                                                                                                                                                                                        | 1 | 2 | 3 | 4 | 5 |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1.  | There is internal anticorruption mechanism in place<br><i>Terdapat mekanisme pencegahan rasuah dalaman organisasi</i>                                                                                                                                                                            |   |   |   |   |   |
| 2.  | Effective procurement auditing procedure is followed<br><i>Prosedur pengauditan perolehan yang berkesan dipatuhi</i>                                                                                                                                                                             |   |   |   |   |   |
| 3.  | Application of sustainability principles in procurement being obey (eg. Contract Specifications, Tender Selection Criteria)<br><i>Penerapan prinsip kelestarian dalam perolehan dipatuhi (contoh; Spesifikasi Kontrak, Kriteria Pemilihan Tender)</i>                                            |   |   |   |   |   |
| 4.  | Penalty for non-compliance implemented as in contract document<br><i>Penalti kepada ketidakpatuhan dilaksanakan seperti dalam dokumen kontrak</i>                                                                                                                                                |   |   |   |   |   |
| 5.  | I ensure that goods/services are delivered as per specifications made<br><i>Saya memastikan bahawa barang / perkhidmatan dihantar mengikut spesifikasi yang dibuat</i>                                                                                                                           |   |   |   |   |   |
| 6.  | I ensure that materials deliver from the contract has the quality can never be doubted<br><i>Saya memastikan bahawa produk yang dihantar mempunyai kualiti yang tidak dapat diragui</i>                                                                                                          |   |   |   |   |   |
| 7.  | Contractor supply delivery as promised time and quality<br><i>Penghantaran bekalan mengikut masa dan kualiti yang dijanjikan memastikan pengurusan kontrak yang kompeten</i>                                                                                                                     |   |   |   |   |   |
| 8.  | Contractor with effective and efficient supply chain are more competence in deliver their contract output<br><i>Kontraktor yang mempunyai rantai bekalan yang berkesan dan cekap lebih cekap dalam menghasilkan output kontrak mereka</i>                                                        |   |   |   |   |   |
| 9.  | I believe a long-term strategic partnership as well as a positive relationship with the contractor are essential for successful contract compliance.<br><i>Saya percaya perkongsian strategic jangka panjang serta hubungan positif dengan kontraktor sangat penting untuk pematuhan kontrak</i> |   |   |   |   |   |

| NO. | TECHNOLOGICAL SUPPORT/ SOKONGAN<br>TEKNOLOGI                                                                                                                                                                                      | 1 | 2 | 3 | 4 | 5 |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1.  | Technology transfer improves knowledge and management of government procurement.<br><i>Pemindahan teknologi meningkatkan pengetahuan dan pengurusan perolehan kerajaan</i>                                                        |   |   |   |   |   |
| 2.  | I can find quickly the information that I need using technology<br><i>Saya mendapat dengan cepat maklumat yang saya perlukan dengan menggunakan teknologi</i>                                                                     |   |   |   |   |   |
| 3.  | Technology used in performing my job provide information in managing procurement contract<br><i>Teknologi yang digunakan dalam melaksanakan tugas saya memberikan maklumat dalam menguruskan kontrak perolehan</i>                |   |   |   |   |   |
| 4.  | The necessary information is easily available in the procurement contract supporting system<br><i>Maklumat yang diperlukan mudah didapati dalam system sokongan kontrak perolehan</i>                                             |   |   |   |   |   |
| 5.  | The necessary information provided by the procurement contract supporting system can be effectively utilise<br><i>Maklumat yang diperlukan oleh sistem sokongan kontrak perolehan dapat dimanfaatkan dengan berkesan</i>          |   |   |   |   |   |
| 6.  | The information from the procurement contract supporting system have a lot of consistency<br><i>Maklumat dari sistem sokongan kontrak perolehan sangat tepat dan konsisten</i>                                                    |   |   |   |   |   |
| 7.  | Sound procurement systems enhance accountability in procurement<br><i>Sistem perolehan yang baik meningkatkan kebertanggungjawaban dalam perolehan</i>                                                                            |   |   |   |   |   |
| 8.  | Technology as a tools assist in decision and policy making in contract management<br><i>Teknologi sebagai alat membantu dalam membuat keputusan dan membuat dasar dalam pengurusan kontrak</i>                                    |   |   |   |   |   |
| 9.  | Technology give the information integrity required to develop compliance and procurement management practices.<br><i>Teknologi memberikan integrity maklumat yang diperlukan untuk amalan pematuhan dan pengurusan perolehan.</i> |   |   |   |   |   |
| 10. | I rely heavily on the procurement process in the appropriate system, which follows the procurement guidelines<br><i>Saya sangat bergantung kepada proses perolehan dalam sistem agar ianya menepati garis panduan perolehan</i>   |   |   |   |   |   |

| NO. | CONTRACTING OFFICER COMPETENCY/<br>KOMPETENSI PEGAWAI KONTRAK                                                                                                                               | 1 | 2 | 3 | 4 | 5 |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1.  | Organization deploys staff based on skills<br><i>Organisasi menjawat kakitangan berdasarkan kemahiran</i>                                                                                   |   |   |   |   |   |
| 2.  | I have adequate skills<br><i>Saya mempunyai kemahiran yang mencukupi</i>                                                                                                                    |   |   |   |   |   |
| 3.  | I have knowledge on procurement rules and regulations<br><i>Saya mempunyai pengetahuan mengenai peraturan dan undang-undang perolehan</i>                                                   |   |   |   |   |   |
| 4.  | Organization sponsors staff for training<br><i>Organisasi menaja kakitangan untuk latihan</i>                                                                                               |   |   |   |   |   |
| 5.  | Training has improved my knowledge skills and experience<br><i>Latihan telah meningkatkan kemahiran dan pengalaman pengetahuan saya</i>                                                     |   |   |   |   |   |
| 6.  | Training and Effective Procurement personnel development are in place<br><i>Latihan dan pembangunan personel yang terlibat dengan perolehan dilaksanakan secara berkesan</i>                |   |   |   |   |   |
| 7.  | I have professional procurement qualifications<br><i>Saya mempunyai kelayakan melaksanakan kerja-kerja perolehan profesional</i>                                                            |   |   |   |   |   |
| 8.  | I kept good procurement record keeping<br><i>Saya menyimpan rekod perolehan dengan baik</i>                                                                                                 |   |   |   |   |   |
| 9.  | I find a systematic procurement system enables me to accomplish my work efficiently<br><i>Saya dapati system perolehan yang sistematik membolehkan penyelesaian kerja saya dengan cekap</i> |   |   |   |   |   |
| 10. | I always monitor the delivered items and cross-checked with item specifications<br><i>Saya selalu memantau barang yang dihantar dan semak dengan spesifikasi item</i>                       |   |   |   |   |   |

| NO. | EFFECTIVE CONTRACT MANAGEMENT/<br>PENGURUSAN KONTRAK BERKESAN                                                                                                                                                                                                     | 1 | 2 | 3 | 4 | 5 |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|
| 1.  | Our organisation performed excellent contracting, which resulted in higher-quality services<br><i>Organisasi kami melaksanakan pengurusan kontrak yang baik, serta menghasilkan perkhidmatan berkualiti tinggi</i>                                                |   |   |   |   |   |
| 2.  | All of our procured products and services are delivered on time as a result of effective contract management practises.<br><i>Semua produk dan perkhidmatan yang dipesan dihantar tepat pada waktunya hasil daripada amalan pengurusan kontrak yang berkesan.</i> |   |   |   |   |   |
| 3.  | We receive fewer complaints from users as a result of more effective contract management.<br><i>Kami menerima kurang aduan daripada pengguna hasil daripada pengurusan kontrak yang berkesan.</i>                                                                 |   |   |   |   |   |
| 4.  | Wastages and damages has been reduced efficiently with good contract management<br><i>Pembaziran dan kesilapan telah dikurangkan dengan pengurusan kontrak yang baik</i>                                                                                          |   |   |   |   |   |
| 5.  | Operating costs have been reduced with proper contract management<br><i>Kos operasi telah dikurangkan dengan pengurusan kontrak yang teratur</i>                                                                                                                  |   |   |   |   |   |
| 6.  | Every contract has a proper payment system in place.<br><i>Setiap kontrak mempunyai maklumat system pembayaran yang tepat</i>                                                                                                                                     |   |   |   |   |   |
| 7.  | Corruption prevention measures are being implemented in our organisation.<br><i>Langkah-langkah pencegahan rasuah dilaksanakan di organisasi kami</i>                                                                                                             |   |   |   |   |   |
| 8.  | The contract document serves as the primary source of information for effectively managing the contract.<br><i>Dokumen kontrak berfungsi sebagai sumber maklumat utama untuk mengurus kontrak dengan berkesan.</i>                                                |   |   |   |   |   |
| 9.  | Sufficient written procurement procedures and checklist are used in the contract management<br><i>Prosedur perolehan dan senarai semak yang terkini digunakan dalam pengurusan kontrak</i>                                                                        |   |   |   |   |   |
| 10. | Organisation never missed deadline for schedule procurement<br><i>Organisasi tidak pernah terlewat untuk perolehan berjadual</i>                                                                                                                                  |   |   |   |   |   |

**SECTION C: OPEN-ENDED QUESTIONS**  
**BAHAGIAN C: SOALAN TERBUKA**

1. In general, how significant or important is your job?

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2. Overall, how well does the technology meet your needs?

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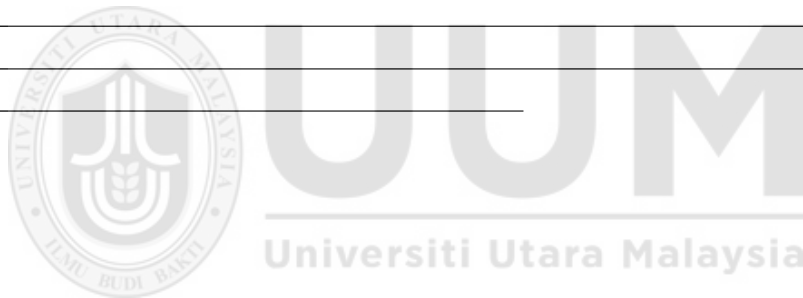
3. Compared to other agencies, how effective is our implementation on contract management?

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## Appendix B

### Respondent's Demographic Profile

#### Which branch are you?

|                              | Frequency | Percent | Valid Percent | Cumulative Percent |
|------------------------------|-----------|---------|---------------|--------------------|
| Valid Supply and Secretariat | 203       | 99.5    | 99.5          | 99.5               |
| Engineering                  | 1         | .5      | .5            | 100.0              |
| Total                        | 204       | 100.0   | 100.0         |                    |

#### What rank are you?

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Admiral and above | 2         | 1.0     | 1.0           | 1.0                |
| Capt                    | 9         | 4.4     | 4.4           | 5.4                |
| Cdr                     | 49        | 24.0    | 24.0          | 29.4               |
| Lt Cdr                  | 78        | 38.2    | 38.2          | 67.6               |
| Lt                      | 50        | 24.5    | 24.5          | 92.2               |
| Lt Dya                  | 16        | 7.8     | 7.8           | 100.0              |
| Total                   | 204       | 100.0   | 100.0         |                    |

#### How long are you in service?

|                         | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------|-----------|---------|---------------|--------------------|
| Valid Less than 5 years | 19        | 9.3     | 9.3           | 9.3                |
| 6 years to 10 years     | 35        | 17.2    | 17.2          | 26.5               |
| 11 years to 15 years    | 33        | 16.2    | 16.2          | 42.6               |
| 16 years and above      | 117       | 57.4    | 57.4          | 100.0              |
| Total                   | 204       | 100.0   | 100.0         |                    |

### Gender

|       |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------|-----------|---------|---------------|--------------------|
| Valid | Male   | 132       | 64.7    | 64.7          | 64.7               |
|       | Female | 72        | 35.3    | 35.3          | 100.0              |
|       | Total  | 204       | 100.0   | 100.0         |                    |

### Age

|       |                              | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|------------------------------|-----------|---------|---------------|--------------------|
| Valid | 21 years old to 30 years old | 34        | 16.7    | 16.7          | 16.7               |
|       | 31 years old to 40 years old | 97        | 47.5    | 47.5          | 64.2               |
|       | 41 years old to 50 years old | 54        | 26.5    | 26.5          | 90.7               |
|       | More than 51 years old       | 19        | 9.3     | 9.3           | 100.0              |
|       | Total                        | 204       | 100.0   | 100.0         |                    |

### Qualification

|       |                      | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------------------|-----------|---------|---------------|--------------------|
| Valid | Diploma              | 13        | 6.4     | 6.4           | 6.4                |
|       | Degree               | 117       | 57.4    | 57.4          | 63.7               |
|       | Master               | 72        | 35.3    | 35.3          | 99.0               |
|       | Doctor of Philosophy | 2         | 1.0     | 1.0           | 100.0              |
|       | Total                | 204       | 100.0   | 100.0         |                    |

### Reliability Test

| Variables                      | Cronbach Alpha's<br>value Pilot Study | Cronbach Alpha's<br>value Actual Study |
|--------------------------------|---------------------------------------|----------------------------------------|
| Financial Support              | 0.953                                 | 0.885                                  |
| Leadership Support             | 0.912                                 | 0.911                                  |
| Contract Compliance            | 0.820                                 | 0.833                                  |
| Technological Support          | 0.933                                 | 0.940                                  |
| Contracting Officer Competency | 0.877                                 | 0.887                                  |
| Effective Contract Management  | 0.826                                 | 0.909                                  |

### Normality Test

#### Descriptives

|                   |                                  | Statistic             | Std.<br>Error |
|-------------------|----------------------------------|-----------------------|---------------|
| Financial Support | Mean                             | 4.4721                | .02923        |
|                   | 95% Confidence Interval for Mean | Lower Bound<br>4.4144 |               |
|                   |                                  | Upper Bound<br>4.5297 |               |
|                   | 5% Trimmed Mean                  | 4.4888                |               |
|                   | Median                           | 4.5000                |               |
|                   | Variance                         | .174                  |               |
|                   | Std. Deviation                   | .41742                |               |
|                   | Minimum                          | 3.50                  |               |
|                   | Maximum                          | 5.00                  |               |
|                   | Range                            | 1.50                  |               |
|                   | Interquartile Range              | .80                   |               |
|                   | Skewness                         | -.293                 | .170          |
|                   | Kurtosis                         | -.998                 | .339          |

|                     |                                  |             |        |        |
|---------------------|----------------------------------|-------------|--------|--------|
| Leadership Support  | Mean                             |             | 4.2549 | .03941 |
|                     | 95% Confidence Interval for Mean | Lower Bound | 4.1772 |        |
|                     |                                  | Upper Bound | 4.3326 |        |
|                     | 5% Trimmed Mean                  |             | 4.2781 |        |
|                     | Median                           |             | 4.1000 |        |
|                     | Variance                         |             | .317   |        |
|                     | Std. Deviation                   |             | .56283 |        |
|                     | Minimum                          |             | 2.80   |        |
|                     | Maximum                          |             | 5.00   |        |
|                     | Range                            |             | 2.20   |        |
|                     | Interquartile Range              |             | .90    |        |
|                     | Skewness                         |             | -.239  | .170   |
|                     | Kurtosis                         |             | -.777  | .339   |
| Contract Compliance | Mean                             |             | 4.3077 | .03504 |
|                     | 95% Confidence Interval for Mean | Lower Bound | 4.2386 |        |
|                     |                                  | Upper Bound | 4.3768 |        |
|                     | 5% Trimmed Mean                  |             | 4.3304 |        |
|                     | Median                           |             | 4.3333 |        |
|                     | Variance                         |             | .250   |        |
|                     | Std. Deviation                   |             | .50045 |        |
|                     | Minimum                          |             | 2.33   |        |
|                     | Maximum                          |             | 5.00   |        |
|                     | Range                            |             | 2.67   |        |
|                     | Interquartile Range              |             | .78    |        |
|                     | Skewness                         |             | -.423  | .170   |
|                     | Kurtosis                         |             | .047   | .339   |

|                                |                                  |             |        |        |
|--------------------------------|----------------------------------|-------------|--------|--------|
| Technological Support          | Mean                             |             | 4.3917 | .03629 |
|                                | 95% Confidence Interval for Mean | Lower Bound | 4.3201 |        |
|                                |                                  | Upper Bound | 4.4632 |        |
|                                | 5% Trimmed Mean                  |             | 4.4187 |        |
|                                | Median                           |             | 4.3000 |        |
|                                | Variance                         |             | .269   |        |
|                                | Std. Deviation                   |             | .51831 |        |
|                                | Minimum                          |             | 2.90   |        |
|                                | Maximum                          |             | 5.00   |        |
|                                | Range                            |             | 2.10   |        |
|                                | Interquartile Range              |             | 1.00   |        |
|                                | Skewness                         |             | -.275  | .170   |
|                                | Kurtosis                         |             | -.887  | .339   |
| Contracting Officer Competency | Mean                             |             | 4.1480 | .03791 |
|                                | 95% Confidence Interval for Mean | Lower Bound | 4.0733 |        |
|                                |                                  | Upper Bound | 4.2228 |        |
|                                | 5% Trimmed Mean                  |             | 4.1648 |        |
|                                | Median                           |             | 4.0000 |        |
|                                | Variance                         |             | .293   |        |
|                                | Std. Deviation                   |             | .54152 |        |
|                                | Minimum                          |             | 2.30   |        |
|                                | Maximum                          |             | 5.00   |        |
|                                | Range                            |             | 2.70   |        |
|                                | Interquartile Range              |             | .77    |        |
|                                | Skewness                         |             | -.147  | .170   |
|                                | Kurtosis                         |             | -.183  | .339   |

|                               |                                  |             |        |        |
|-------------------------------|----------------------------------|-------------|--------|--------|
| Effective Contract Management | Mean                             |             | 4.1525 | .03938 |
|                               | 95% Confidence Interval for Mean | Lower Bound | 4.0748 |        |
|                               |                                  | Upper Bound | 4.2301 |        |
|                               | 5% Trimmed Mean                  |             | 4.1719 |        |
|                               | Median                           |             | 4.1000 |        |
|                               | Variance                         |             | .316   |        |
|                               | Std. Deviation                   |             | .56240 |        |
|                               | Minimum                          |             | 2.60   |        |
|                               | Maximum                          |             | 5.00   |        |
|                               | Range                            |             | 2.40   |        |
|                               | Interquartile Range              |             | .90    |        |
|                               | Skewness                         |             | -.238  | .170   |
|                               | Kurtosis                         |             | -.474  | .339   |

### Percentiles

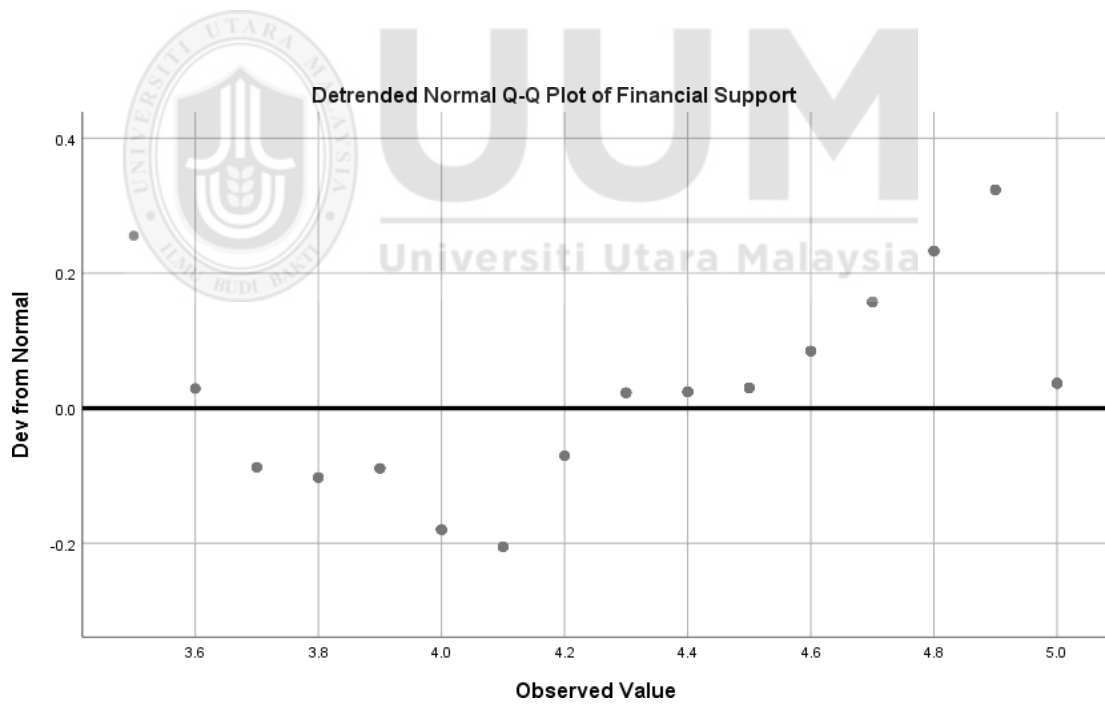
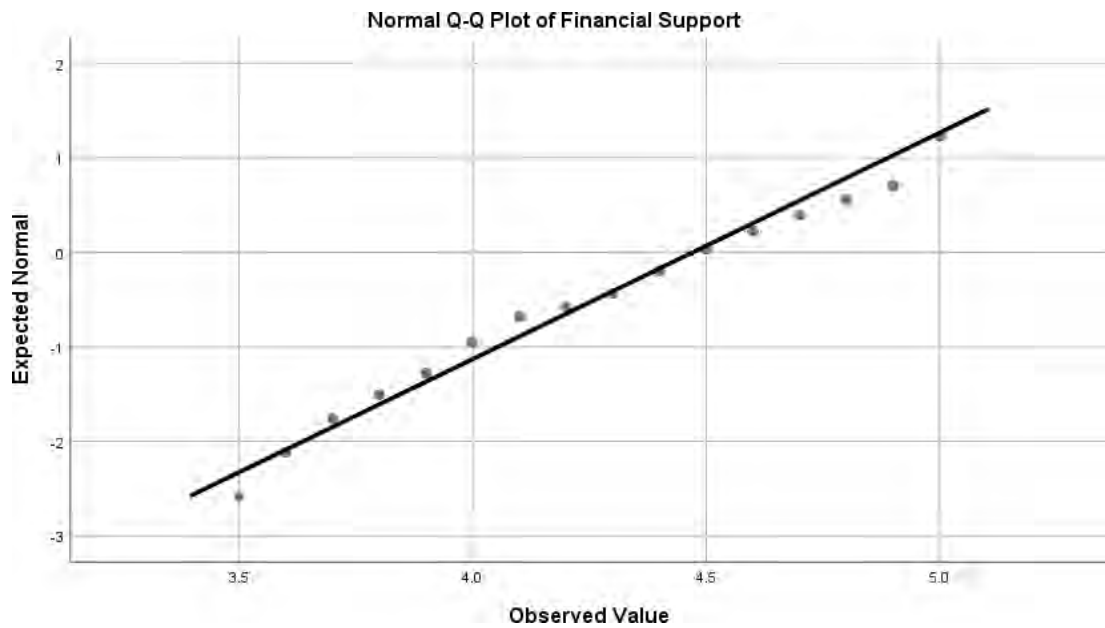
|                                |                                | Percentiles |        |        |        |
|--------------------------------|--------------------------------|-------------|--------|--------|--------|
|                                |                                | 5           | 10     | 25     | 50     |
| Weighted Average(Definition 1) | Financial Support              | 3.7250      | 3.9000 | 4.1000 | 4.5000 |
|                                | Leadership Support             | 3.2000      | 3.5000 | 3.9000 | 4.1000 |
|                                | Contract Compliance            | 3.5556      | 3.7222 | 4.0000 | 4.3333 |
|                                | Technological Support          | 3.6000      | 3.8000 | 4.0000 | 4.3000 |
|                                | Contracting Officer Competency | 3.2000      | 3.5000 | 3.8250 | 4.0000 |
|                                | Effective Contract Management  | 3.2000      | 3.4000 | 3.8000 | 4.1000 |

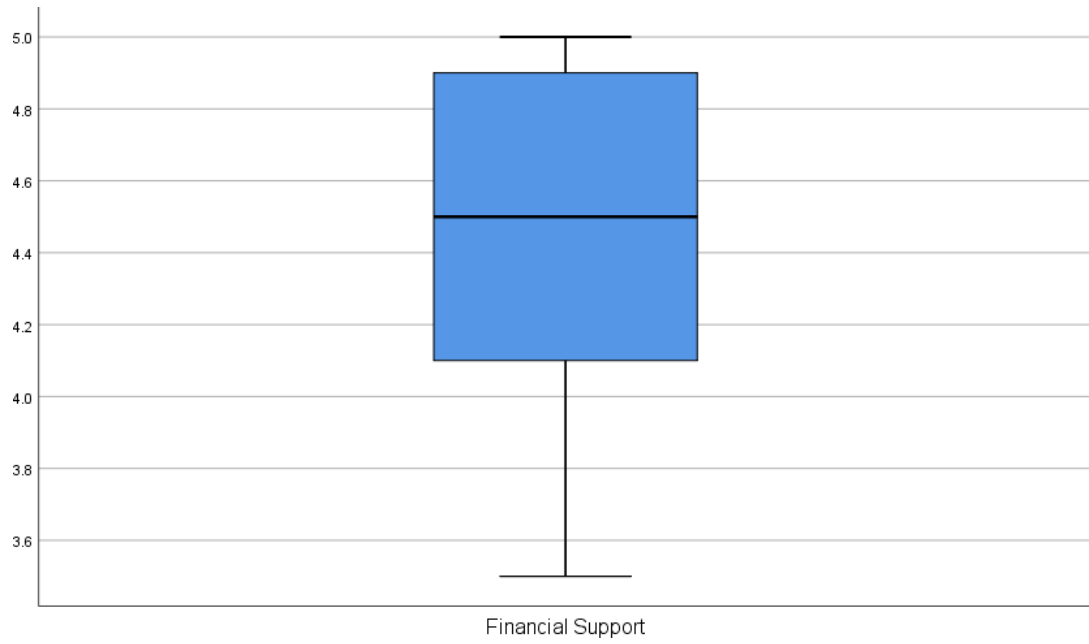
|                |                                |  |  |        |        |
|----------------|--------------------------------|--|--|--------|--------|
| Tukey's Hinges | Financial Support              |  |  | 4.1000 | 4.5000 |
|                | Leadership Support             |  |  | 3.9000 | 4.1000 |
|                | Contract Compliance            |  |  | 4.0000 | 4.3333 |
|                | Technological Support          |  |  | 4.0000 | 4.3000 |
|                | Contracting Officer Competency |  |  | 3.8500 | 4.0000 |
|                | Effective Contract Management  |  |  | 3.8000 | 4.1000 |

### Percentiles

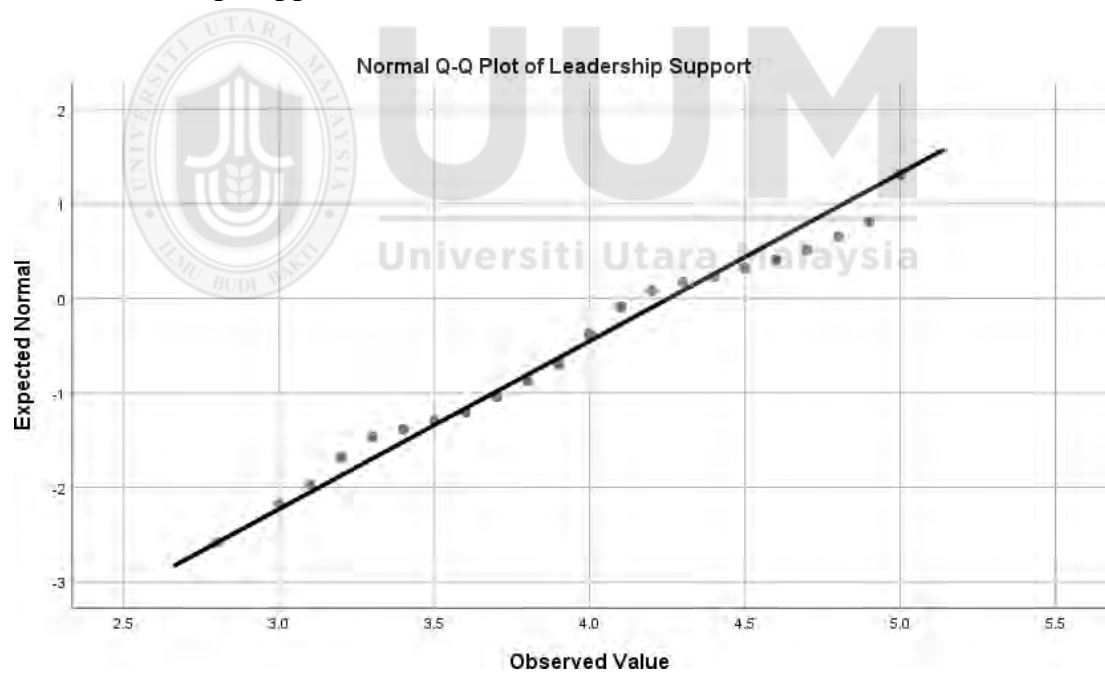
|                                |                                | Percentiles |        |        |
|--------------------------------|--------------------------------|-------------|--------|--------|
|                                |                                | 75          | 90     | 95     |
| Weighted Average(Definition 1) | Financial Support              | 4.9000      | 5.0000 | 5.0000 |
|                                | Leadership Support             | 4.8000      | 5.0000 | 5.0000 |
|                                | Contract Compliance            | 4.7778      | 5.0000 | 5.0000 |
|                                | Technological Support          | 5.0000      | 5.0000 | 5.0000 |
|                                | Contracting Officer Competency | 4.6000      | 5.0000 | 5.0000 |
|                                | Effective Contract Management  | 4.7000      | 5.0000 | 5.0000 |
| Tukey's Hinges                 | Financial Support              | 4.9000      |        |        |
|                                | Leadership Support             | 4.8000      |        |        |
|                                | Contract Compliance            | 4.7778      |        |        |
|                                | Technological Support          | 5.0000      |        |        |
|                                | Contracting Officer Competency | 4.6000      |        |        |
|                                | Effective Contract Management  | 4.7000      |        |        |

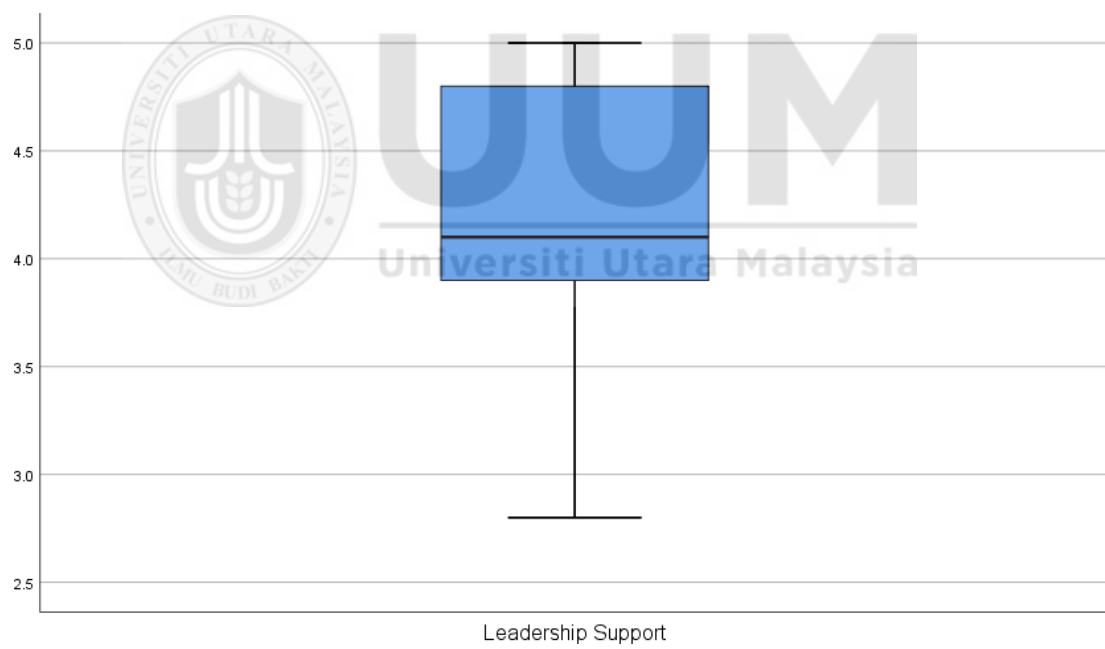
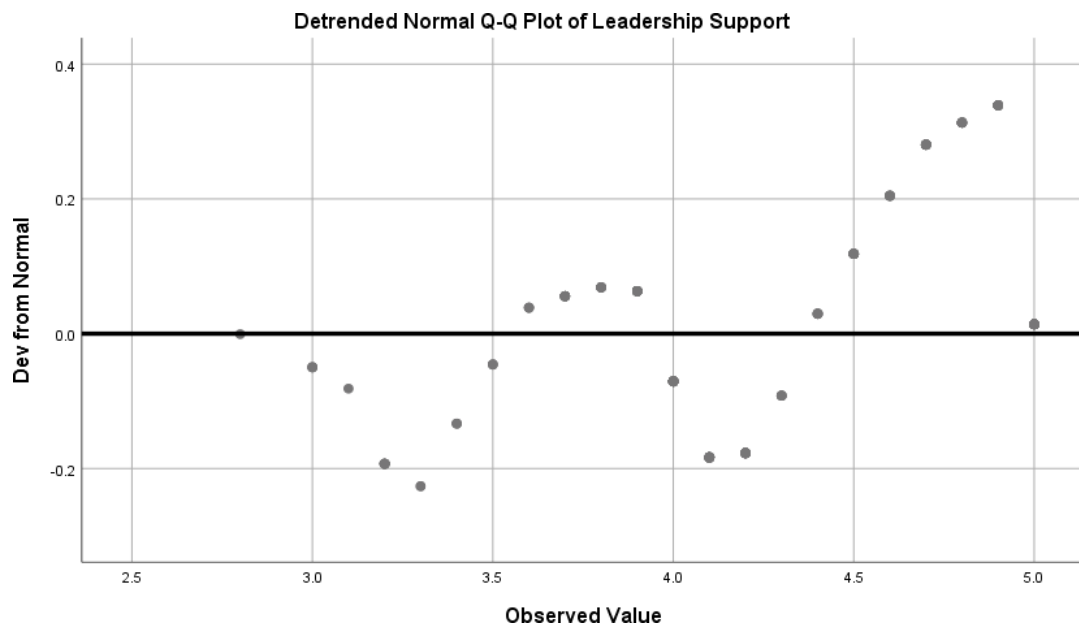
## Financial Support



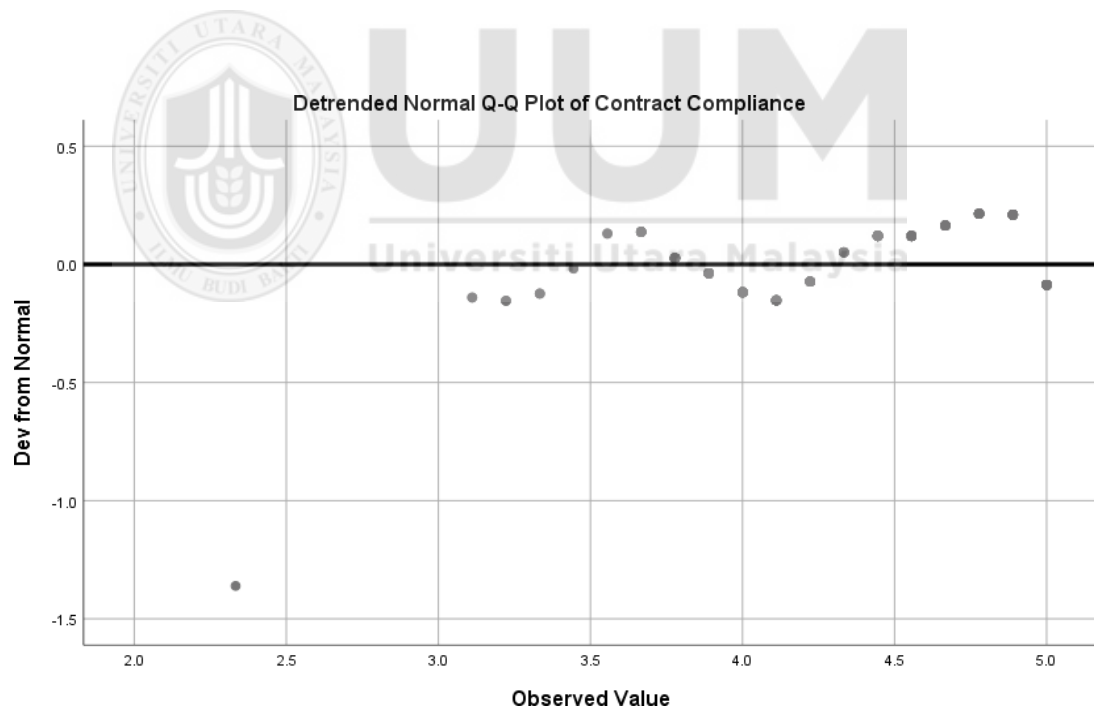
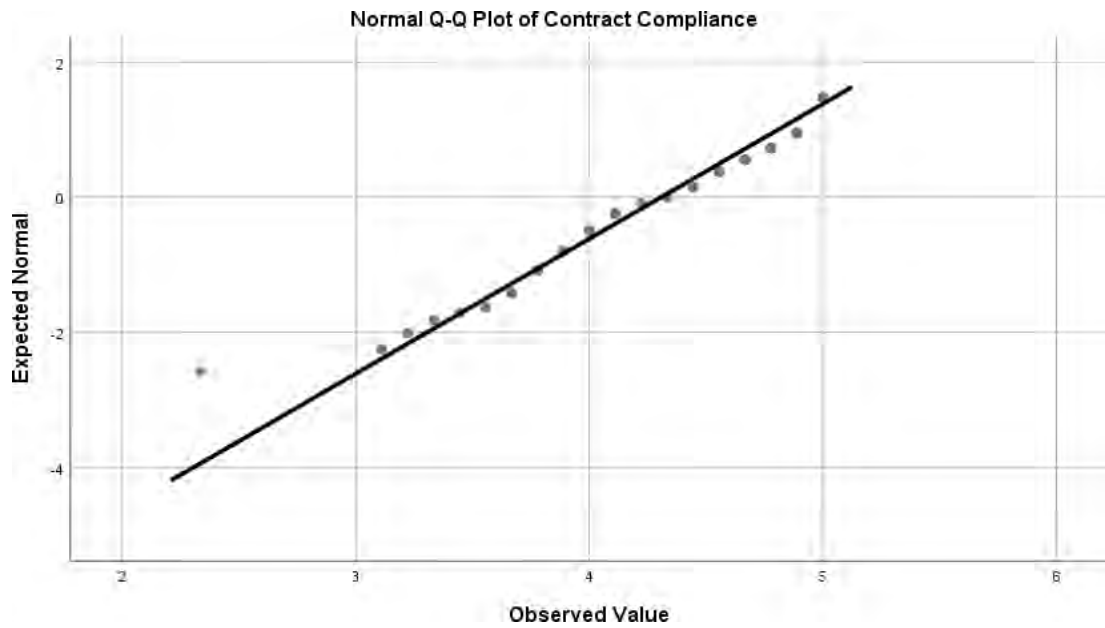


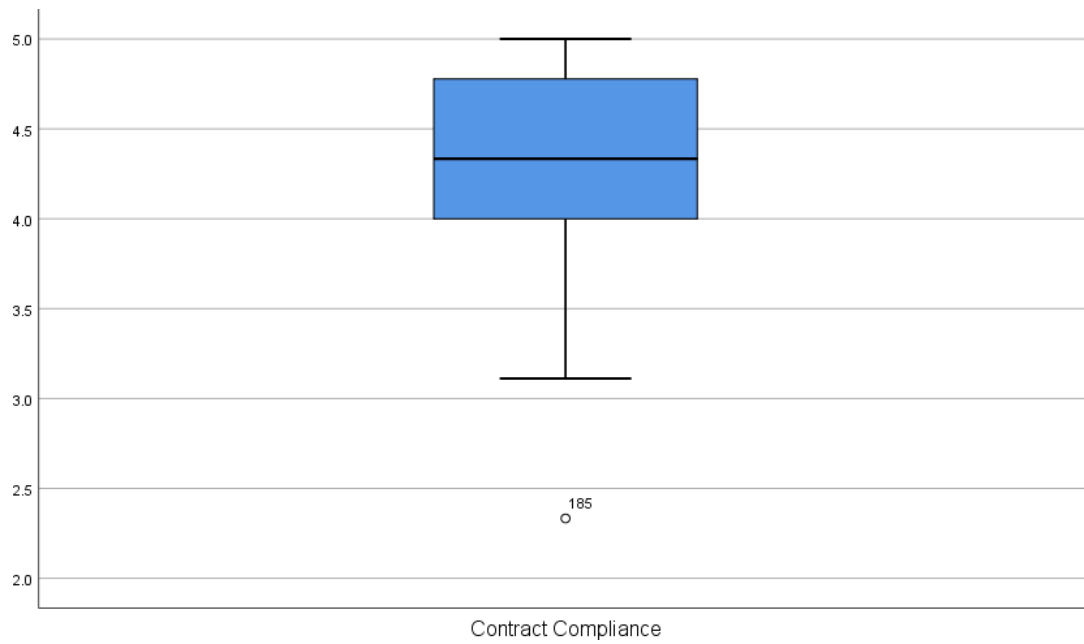
### Leadership Support



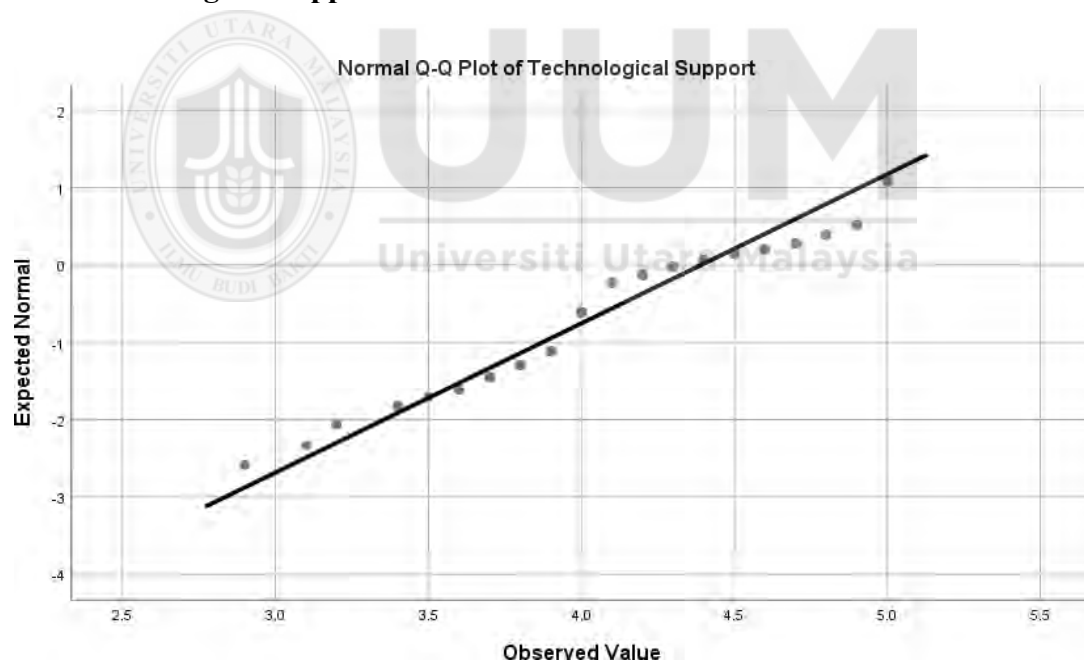


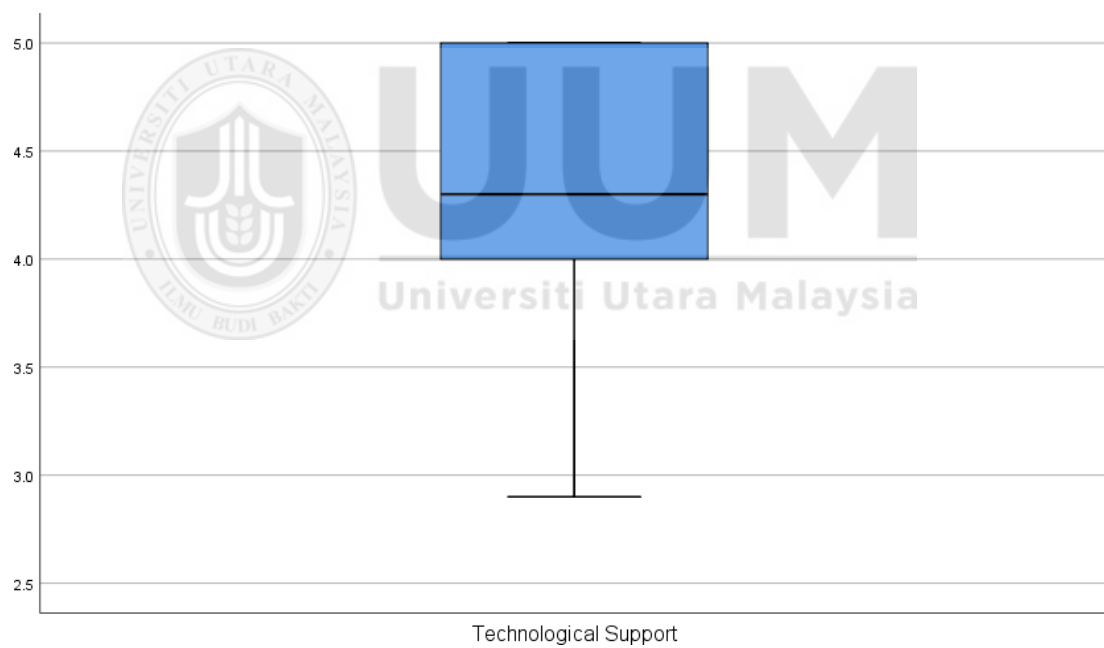
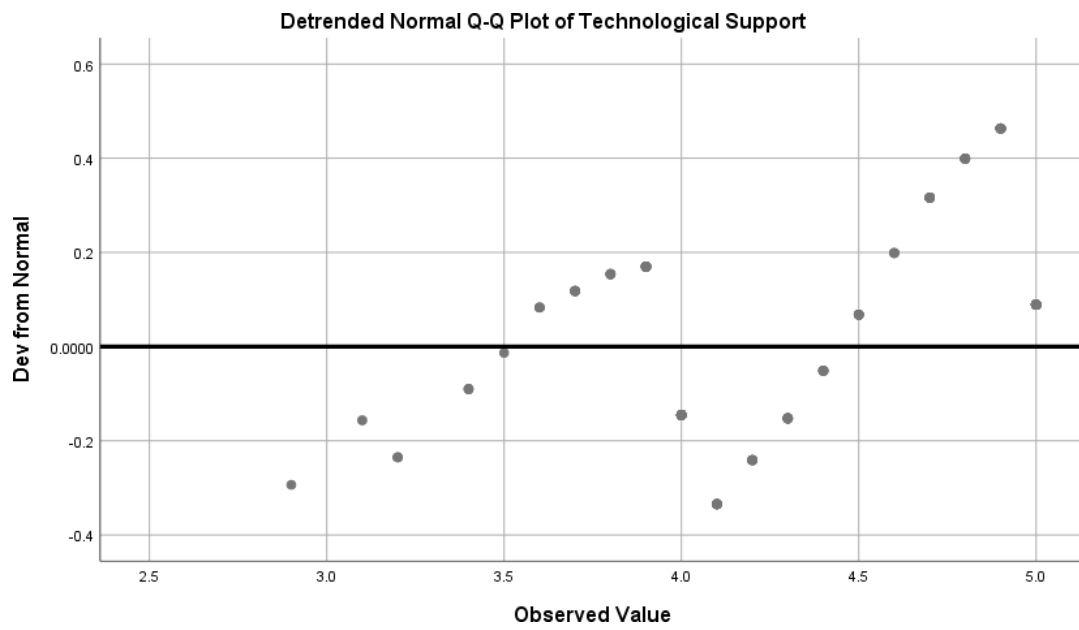
## Contract Compliance



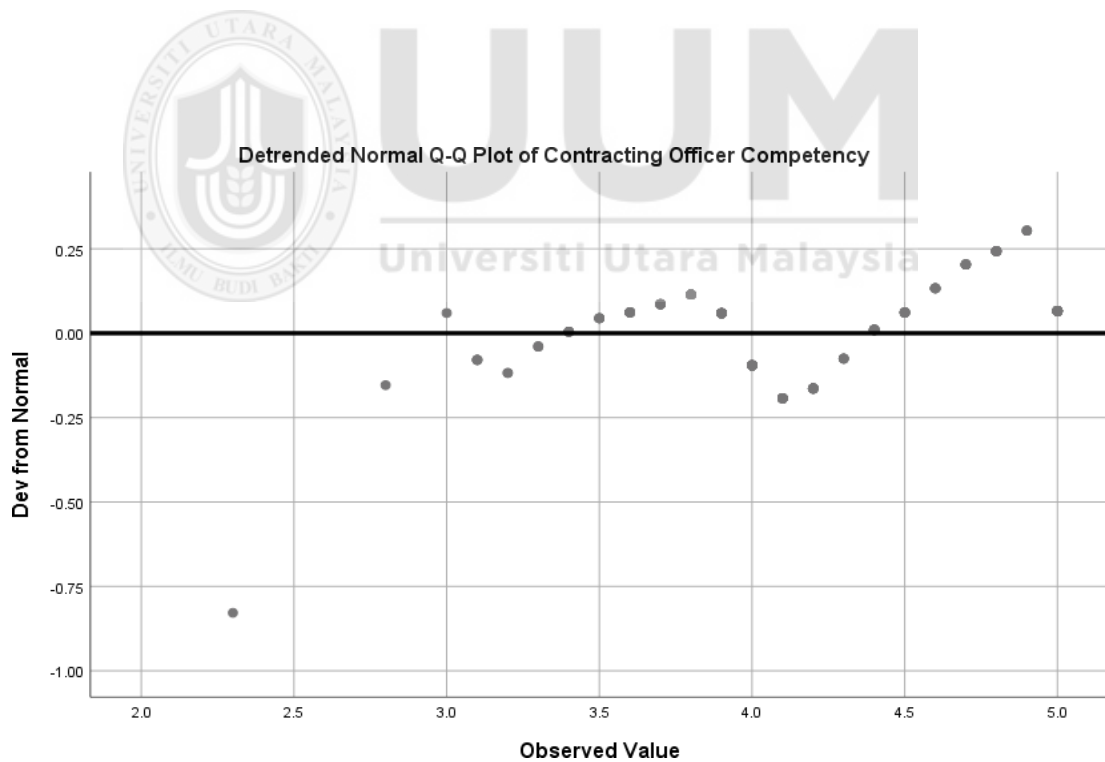
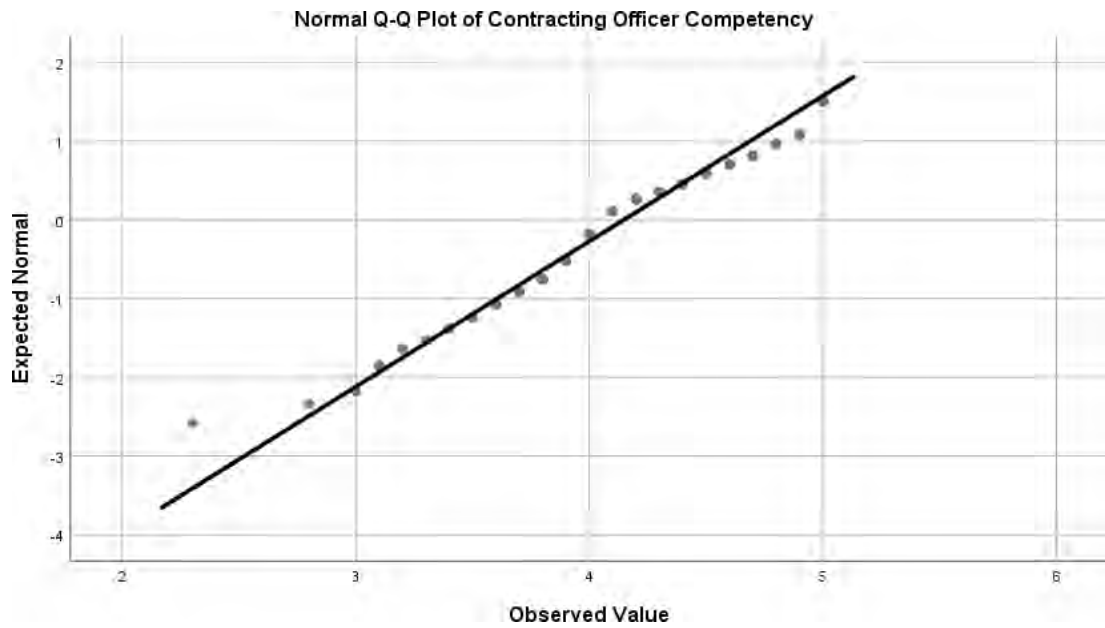


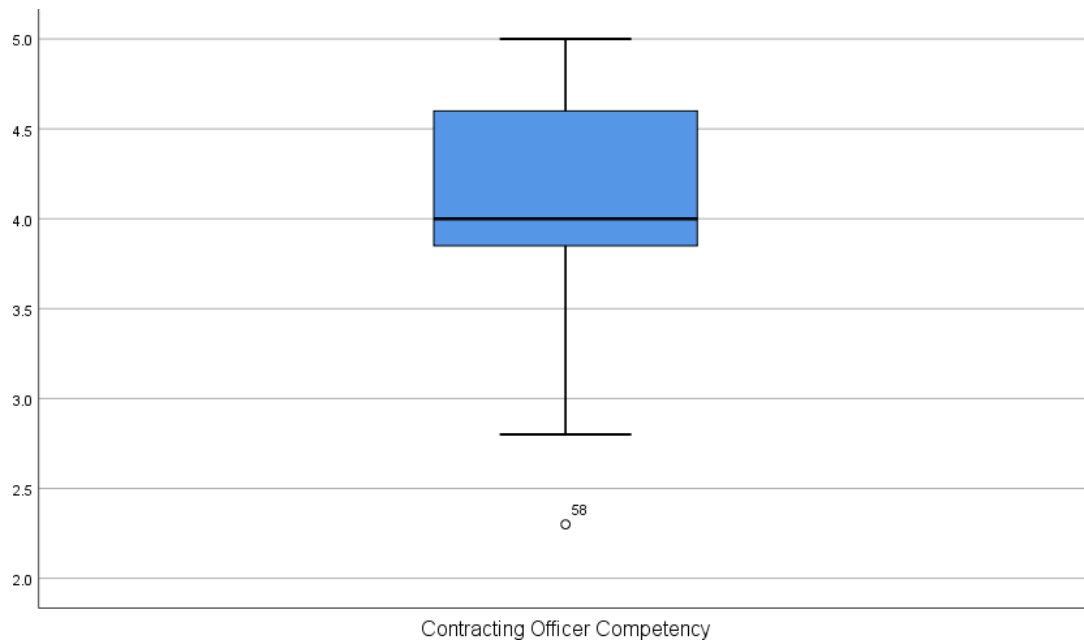
## Technological Support



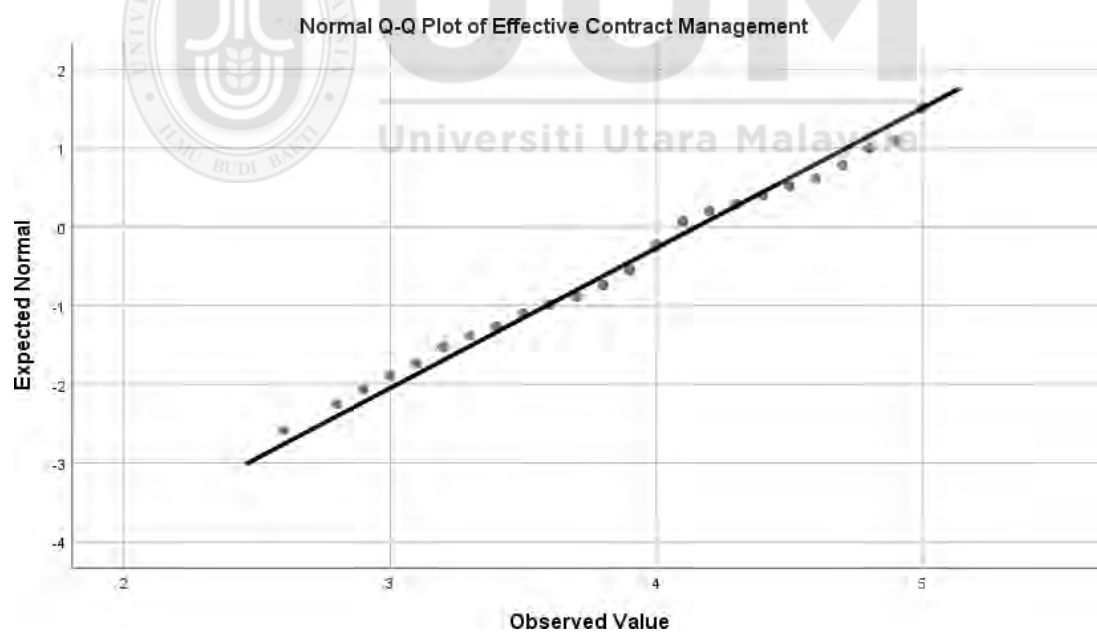


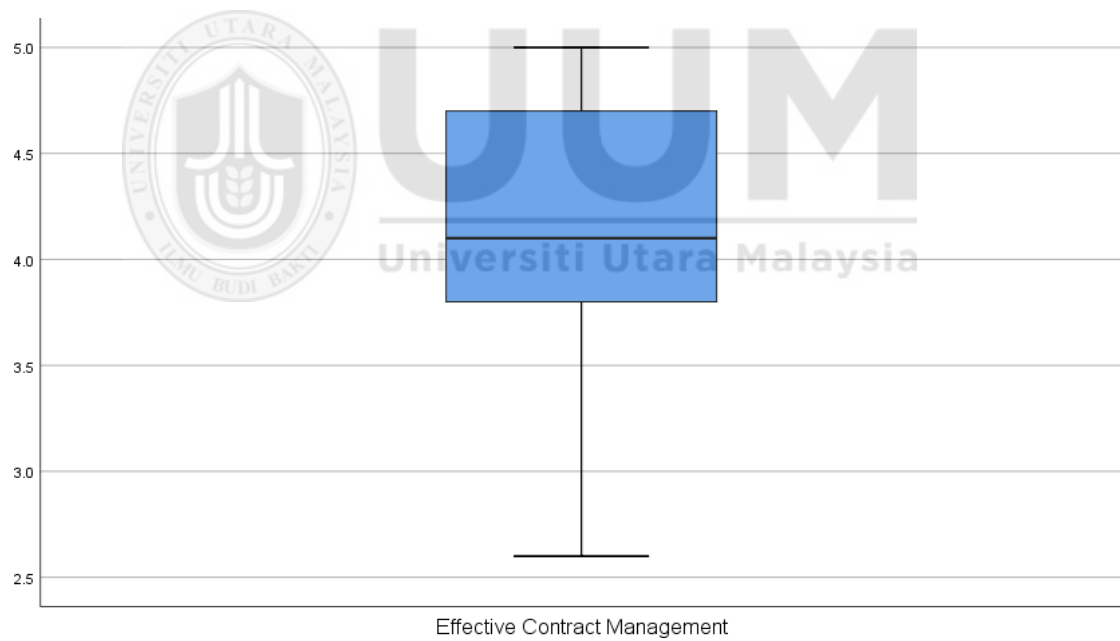
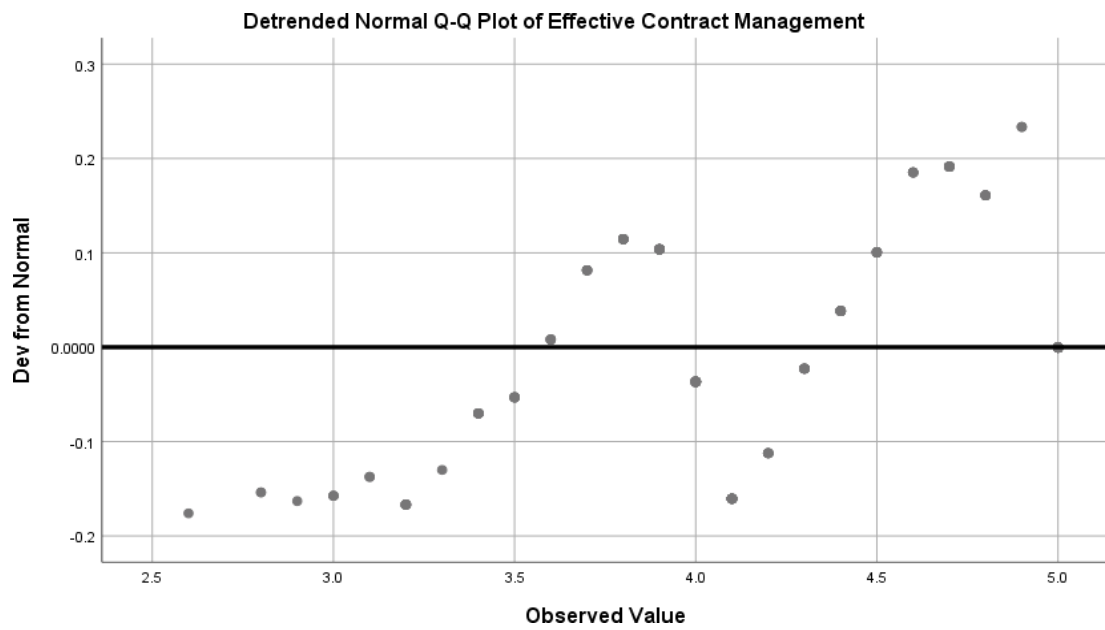
## Contracting Officer Competency





## Effective Contract Management





## DESCRIPTIVE ANALYSIS AND FREQUENCY

### Financial Support

|       |          | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Moderate | 5         | 2.5     | 2.5           | 2.5                |
|       | High     | 199       | 97.5    | 97.5          | 100.0              |
|       | Total    | 204       | 100.0   | 100.0         |                    |

### Leadership Support

|       |          | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Moderate | 25        | 12.3    | 12.3          | 12.3               |
|       | High     | 179       | 87.7    | 87.7          | 100.0              |
|       | Total    | 204       | 100.0   | 100.0         |                    |

### Contract Compliance

|         |          | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|----------|-----------|---------|---------------|--------------------|
| Valid   | Moderate | 19        | 9.3     | 9.4           | 9.4                |
|         | High     | 184       | 90.2    | 90.6          | 100.0              |
|         | Total    | 203       | 99.5    | 100.0         |                    |
| Missing | System   | 1         | .5      |               |                    |
| Total   |          | 204       | 100.0   |               |                    |

### Technological Support

|       |          | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Moderate | 12        | 5.9     | 5.9           | 5.9                |
|       | High     | 192       | 94.1    | 94.1          | 100.0              |
|       | Total    | 204       | 100.0   | 100.0         |                    |

### Contracting Officer Competency

|           | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------|-----------|---------|---------------|--------------------|
| Valid Low | 1         | .5      | .5            | .5                 |
| Moderate  | 32        | 15.7    | 15.7          | 16.2               |
| High      | 171       | 83.8    | 83.8          | 100.0              |
| Total     | 204       | 100.0   | 100.0         |                    |

### Effective Contract Management

|                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid Moderate | 35        | 17.2    | 17.2          | 17.2               |
| High           | 169       | 82.8    | 82.8          | 100.0              |
| Total          | 204       | 100.0   | 100.0         |                    |



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## CORRELATIONS

Correlations

|                               |                     | Effective Contract Management | Financial Support | Leadership Support |
|-------------------------------|---------------------|-------------------------------|-------------------|--------------------|
| Effective Contract Management | Pearson Correlation | 1                             | .570**            | .683**             |
|                               | Sig. (2-tailed)     |                               | .000              | .000               |
|                               | N                   | 204                           | 204               | 204                |
| Financial Support             | Pearson Correlation | .570**                        | 1                 | .665**             |
|                               | Sig. (2-tailed)     | .000                          |                   | .000               |
|                               | N                   | 204                           | 204               | 204                |
| Leadership Support            | Pearson Correlation | .683**                        | .665**            | 1                  |
|                               | Sig. (2-tailed)     | .000                          | .000              |                    |
|                               | N                   | 204                           | 204               | 204                |
| Contract Compliance           | Pearson Correlation | .665**                        | .592**            | .717**             |
|                               | Sig. (2-tailed)     | .000                          | .000              | .000               |
|                               | N                   | 204                           | 204               | 204                |
| Technological Support         | Pearson Correlation | .669**                        | .584**            | .647**             |
|                               | Sig. (2-tailed)     | .000                          | .000              | .000               |
|                               | N                   | 204                           | 204               | 204                |

|                               |                     | Contract Compliance | Technological Support |
|-------------------------------|---------------------|---------------------|-----------------------|
| Effective Contract Management | Pearson Correlation | .665**              | .669**                |
|                               | Sig. (2-tailed)     | .000                | .000                  |
|                               | N                   | 204                 | 204                   |
| Financial Support             | Pearson Correlation | .592**              | .584**                |
|                               | Sig. (2-tailed)     | .000                | .000                  |
|                               | N                   | 204                 | 204                   |
| Leadership Support            | Pearson Correlation | .717**              | .647**                |
|                               | Sig. (2-tailed)     | .000                | .000                  |
|                               | N                   | 204                 | 204                   |
| Contract Compliance           | Pearson Correlation | 1                   | .650**                |
|                               | Sig. (2-tailed)     |                     | .000                  |
|                               | N                   | 204                 | 204                   |
| Technological Support         | Pearson Correlation | .650**              | 1                     |
|                               | Sig. (2-tailed)     | .000                |                       |
|                               | N                   | 204                 | 204                   |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## REGRESSION

**Model Summary<sup>b</sup>**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .763 <sup>a</sup> | .583     | .574              | .36691                     |

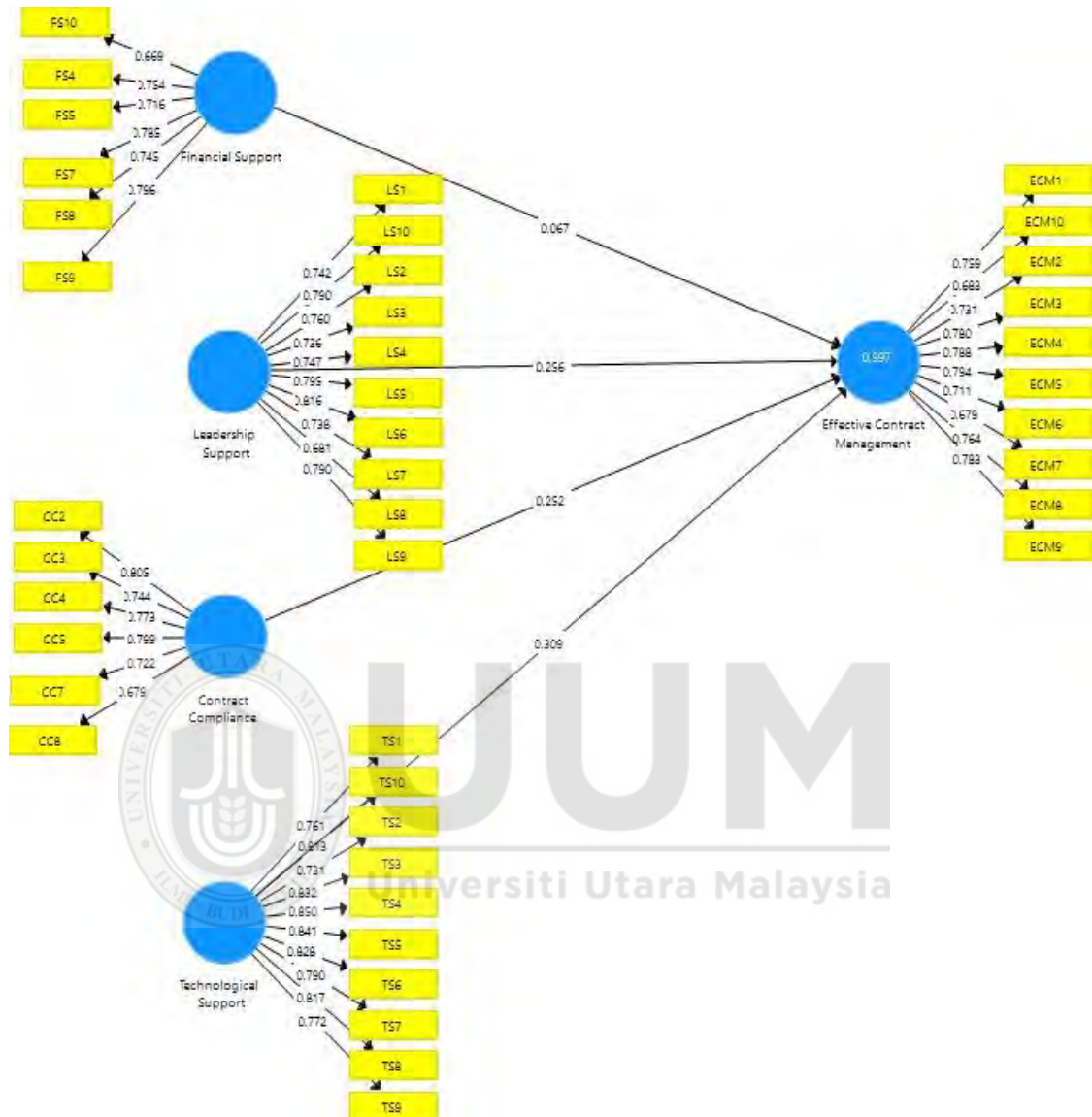
**ANOVA<sup>a</sup>**

| Model        | Sum of Squares | df  | Mean Square | F      | Sig.              |
|--------------|----------------|-----|-------------|--------|-------------------|
| 1 Regression | 37.419         | 4   | 9.355       | 69.487 | .000 <sup>b</sup> |
| Residual     | 26.790         | 199 | .135        |        |                   |
| Total        | 64.209         | 203 |             |        |                   |

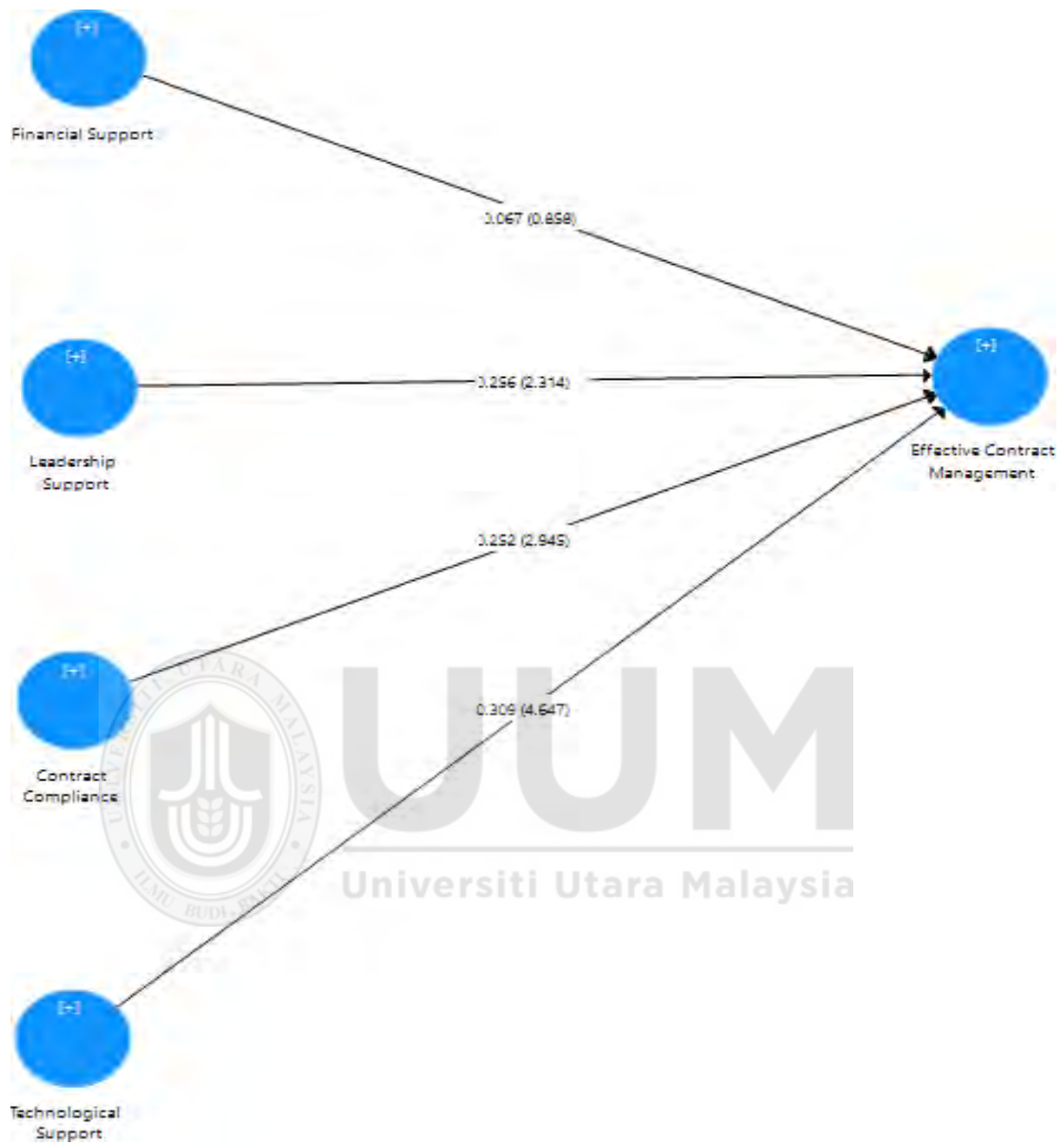


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## MEASUREMENT MODEL



## STRUCTURAL MODEL



## MODERATING EFFECT

