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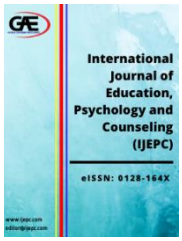

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ASSESSMENT OF INTANGIBLE HUMAN ELEMENTS OF SOLDIERS IN PREPAREDNESS TOWARDS MILITARY COMBAT READINESS

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Abstract:

The hybrid synchronization of tangible military logistics provides the formulae for military preparedness in anticipation of combat duties common for militaries globally. The military combat readiness is formulated with a mathematical formula for the tangible military logistics requirements at all times. Situational Forces Scoring (SFS) provides the quantitative numerical measurement for military combat readiness preparedness in anticipation for operational duties in logistics and manpower planning. In addition to identifying and measuring the intangible human components of soldiers in the areas of morale, quality of life, and military psychological aspects, this study will consists of four antecedents for each domain. This quantitative research was conducted with 2466 military personnels working in operational areas throughout Malaysia. PLS-SEM provided the statistical validation of the model with the data (n = 2466). The outcomes of the statistical analysis shows that the R2 value of 62.9% of intangible human elements is explained by exogenous variables of morale, quality of life, and psychological. Results indicate that morale (β= 0.578) has the highest direct effect on the measure of combat readiness as compared to psychological (β= 0.171) and quality of life (β= 0.091). The morale variable of soldiers provides the platform for high performance in combat duties. The results of this research indicate that the

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morale of soldiers must be consistently reinforced so that individual soldiers provide the dimensions for collectively team performance in the Malaysian Armed Forces during combat duties. Efforts to effectively improve quality of life and psychological problems should also be emphasized with greater emphasis on improving overall unseen combat readiness. Many defence and security agencies will benefit from this research as they can adopt this research model for their operational prepardness and readiness in their organizations.

Keywords:

Combat Readiness; Military Psychological Factors; Quality Of Life; Morale;

Introduction

Malaysia is aware that pursuing self-reliance, which is at the core of its military strategy, is the best way to protect its national interests and national security (Malaysian Defence White Paper (2020). Every security force in the globe must be operationally ready for its personnel to be ready for all duty, both domestically and abroad. Soldiers must be prepared for combat duties at all times which requires them to be mentally and physically fit whereby the tangible factors must be synchronized with the intangible human elements (Kwong et.al, 2014) for operational duties. For combat activities to be intensified and deployed, different militaries use different quantitative formulae to measure combat preparedness (Goyne,2022). Alongside tangible variables like weaponry, logistics, labour, and other supplemental elements, it is necessary to measure intangible elements. Soldiers provide the most important tangible force in ensuring operational preparedness and they is a need for the measurement of the intangible human elements in every soldier so that their performance is combat duties is exemplary (Meijer, 1998).

The combined hybrid of the two domains will offer a thorough evaluation of battle preparedness. A military group's operational preparedness and training time allocation are correlated, especially when additional training time is allotted or provided for the operational unit (Meijer, 1998). According to their situational awareness presumptions and configuration of the current scenario in that country, a military force's readiness and capacity to fulfil any mission given in any situational conditions and surroundings at a particular time are generally characterised (Yurechko,2007). The readiness of the team and the battle scenario are related to the soldier's military training in both individual and group settings. It was based on the combat effectiveness and battle-worthiness of the troops (forces), on an accurate understanding of their commanders, staff, and political organisations, on the fast and timely preparation for upcoming operations, and on the anticipation of potential situation changes (Meijer, 1998). In peacetime, the level of combat readiness would guarantee a swift transition of personnel (forces) to a war alert condition and a planned launch of military operations, and in a time of war, the capacity to carry out the instant execution of a given combat task Shamir (2020). In order to conduct preventive and remedial actions after determining the score of a person, a unit, or an organisation, this research will quantify the intangible battle readiness components into an instrument assessment measurement. As a result of this research, all Malaysian security agencies will have access to a systematic model and framework assessment tool. This tool will be able to assess the combat readiness of intangible elements for units that will be deployed in combat zones, humanitarian assistance like assistance for natural disasters, peacekeeping operations like the current military deployment in Lebanon, and operations for national security.

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Currently, the application for measuring combat readiness is in a piecemeal state; therefore, logistics and human intangible elements must be quantified in order to complete the measurement assessment tool for measuring combat readiness prior to operational requirements at any given time. The goal of this study is to close the assessment gap that currently exists in security forces, and to do so, it will present a methodical paradigm and design an assessment tool to identify the intangible human component of combat preparedness in all security forces. The goal of this study was to develop an instrument that could be validated and relied upon to assess psychological, quality-of-life, and morale in order to assess individual readiness for other defence and security organizations besides military forces in Malaysia to work cohesively and effectively.

Literature Review

The modern technical development of the Malaysian Armed Forces and sustained commitment to bolstering the national defence are reflected in the Malaysian National Defence Policy (Malaysian National Defence Policy,2014). Military readiness serves as the foundation of national policy strategy and is a significant source of national power (Creswell,2014). The five pillars for Malaysia's Armed Forces development are demonstrated in five ways: jointness, interoperability, technology-based, capable of concurrent operation in two theatres, and mission-oriented (Defence White Paper,2020). A military force that is prepared for all possibilities in responding to threats is necessary for future defensive posture. In order to ensure the country's security, sovereignty, and economy, the military's combat readiness is important (Defence White Paper,2020). Measurements of material readiness, personnel preparedness and numbers on standby duty, and features of troops' individual and collective training make up the military's combat readiness component (De Both, 1984). A balanced equation of battle logistics involving manpower, ammunition, soldier training capacities in diverse combat convention scenarios, and additional military responsibilities such as the United Nations peacekeeping force is necessary to ensure that soldiers are prepared for operational and combat tasks. It is crucial to train the soldiers before going on international combat missions so that the training will meet the standards required, particularly in the measuring of both the tangible and intangible components of combat preparedness (Kwong et.al.2017). To fully ascertain a soldier's readiness for battle, additional ineffable human attributes must be quantified, including but not limited to morale, leadership, community spirit, quality of life, and psychological factors (Inderjit, 2014).

Combat Readiness

The combat preparedness component evaluates the readiness of materials, personnel readiness (including the number of personnel on standby and their readiness status), and the training aspects of soldiers, including both individual and collective training (De Both, 1984). Particularly when additional training time is allocated or granted to the operational unit, operational readiness is proportional to the amount of training time a military unit operates (Meijer, 1998).As stated by Yurechko (2007), in order to achieve success, armed forces must be consistently maintained and capable of deploying with a high state of readiness, thereby thwarting adversary attempts to exploit surprise. According to the North Atlantic Treaty Organization (2013), combat consists of "the organization of personnel and the storage of equipment and supplies in a manner planned to conform to the anticipated tactical operation of the organization embarked," with each item being stored in a way that enables its unloading when required. "Capability to generate, deploy, and sustain combat-capable armed forces" is a common definition of readiness as it pertains to the United States (Herrera, 2020). The

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maintenance of battle preparedness is influenced by complex psychosocial interactions and significant human variables (Meijer & de Vries, 2005). A numerical value or percentage (quantitative) and a variety of verbal adjectives (qualitative) are utilized to denote the degree of combat readiness (Nunnally & Bernstein, 1994). According to a predetermined set of regulations, such variable measurements must be assigned a number. Hair et al. (2011) published. As a result of distinct operational requirements that influence each military's process, doctrine, and regulation framework, a universally accepted measurement model and instrument for combat readiness do not exist (Nkewu, 2014). Margaret (2017) defines the present doctrine of preparedness as "the capability of military forces to engage in combat and successfully complete designated missions." "A gauge of the force's condition prior to D-Day" and "a force's capability to engage in combat with minimal or no advance notice" are the definitions of preparedness, according to Richard Betts. Betts (1995) states:

Theoretically defining and conceptualizing combat readiness from a variety of perspectives has historically been the objective of numerous militaries. In practice, this is contingent upon their military doctrine, procedures, and public declarations concerning the preparedness of their armed forces for combat. The readiness and capacity of a military force to accomplish any objective in any given environment and under any conditions is generally defined as such within the Russian Armed Forces (Yurechko, 2007). The readiness of the team and the circumstance of the battleground are interdependent on the soldier's individual and collective training. Yurechko (2007) asserts that military forces must be consistently maintained and capable of deploying at a high level of readiness, successfully executing mission-critical offensive operations, and repelling adversary ambush exploitation. However, it is imperative to quantify the percentages of combat readiness in order to address deficiencies and mobilize a more formidable force for engagements in combat.

Situational Force Scoring (SFS) is a quantitative metric that augments the readiness score through the incorporation of factors such as the topography of the battlefield, combat demands, and imbalances or deficiencies in combined arms (Allen, Patrick, Wilson, 1987). In order to conclusively assess the combat readiness of a unit in preparation for combat activities, a combination of numerical scores for tangible and intangible factors is ultimately necessary. Allen (1992) defines Situational Force Scoring (SFS) as a technique that employs battle models equipped with numerical scores to calculate force ratio, attrition, and movement in order to present an accurate depiction of ground soldiers engaged in close combat. SFS offers an alternative method for calculating figures based on fluctuating data, as opposed to modifying the scoreline to account for variations in terrain or environment, types of battles, or combined deficiencies or imbalances of military forces engaged in combat duties. For instance, infantry deployed in fortified defenses across mountainous or urban terrain can be quite effective against armor. However, this comparative effectiveness is disregarded in overall combat models, which fail to consider this particular circumstance. The combat preparedness component evaluates the readiness of materials, personnel readiness (including the number of personnel on standby and their readiness status), and the training aspects of soldiers, including both individual and collective training (De Both, 1984). Particularly when additional training time is allocated or granted to the operational unit, operational readiness is proportional to the amount of training time a military unit operates (Meijer, 1998). The maintenance of battle preparedness is influenced by complex psychosocial interactions and significant human variables (Meijer & de Vries, 2005).

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Situational Force Scoring (SFS) is a method employed by the Malaysian Army to assess combat readiness. The objective is to fulfil the concrete demands of personnel, military forces, combat logistics (including armament), training, and an additional quantitative indicator of support necessary to accomplish particular mission prerequisites pertaining to both tangible and intangible aspects of combat readiness (Malaysian Army, 2011). One advantageous aspect of this measuring instrument is its quantifiable nature, which enables defense management to strategize and decompose the percentage prerequisites in numerical and percentage in terms, thereby assessing the unit's readiness for combat obligations. Regrettably, this approach fails to consider the intangible human elements that manifest when an individual combatant assumes combat responsibilities with a team.

Based on the studies and research done on identifying instruments to measure combat readiness, there were different models developed for measuring different specific aspect of combat readiness. The varying models used are in view that military forces are required to operate in different operations that are diverse and multi-spectrum in nature. It is also because of the many diverse meanings of combat readiness being used. **Table 1** shows some of the models that have been developed to measure specific aspects of combat readiness.

Table 1: - Models Developed For Measuring Specific Aspect Of Combat Readiness.

Type of Combat ReadinessModel	**Focus of the Model**
Peace Support OperationModel (Bester & Stanz, 2007)	The peace support operation model of combat readiness focuses on psychosocial dimension and material dimension. The domains of the model are confidence and social trust, worries and concern as well as morale. The sub-domains of morale are cohesion, *esprit de corps*, general willingness, discipline and common goals.
Counter-terrorism Operation Model (Filjak & Denacic, 2005)	The counter-terrorism operation model involves the construct of "classic" psychological combat readiness involves terrorism fighting readiness. The itemsfactor structure are grouped into three factors namely, information availability, fighting readiness estimation and prediction of terrorism fighting success.
Quality of Life Model (Andrews & Withey, 1976; Blishen and Atkinson, 1980; Wolosin, Wilcove & Schwerin, 2003; Campbell, Converse & Rodgers, 1976; Nkewu, 2014)	The quality of life model looks into quality of life assessments that combine both themeasures of relationships of domains and the perceived quality of life. Its domains involve financial situation, job and neighbourhood satisfaction, housing, health, friendships, marriage, family life, amount of education and savings, personal life, relations with other people, economics (income and living standard), the local area (safety, security), the larger society and others (religions, faith, personal growth, autonomy, environmental mastery, confidence, morale, cohesion and unit discipline.
Human Dimension Model (Goyne, 2004; Johnston et al., 2002; Murphy & Farley, 2000)	The human dimension model involves a theoretical model integrating scales to measures constructs rather than individual items measuring opinions. The factors being measured involve cohesion, organizational commitment, psychological well-being, satisfaction and quality of life.

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Morale Measurement Model (Fils, 2006; Shamir et al., 2000; Siebold & Manning, 1999)	The morale measurement model uses a standardized sociological survey instrument.The domains of the model include satisfaction with the mission, morale level, discipline and intercultural relationships, soldiers‟ experience, leader‟s tenure, leader‟s confidence in the unit, soldiers‟ confidence in the leader, unit discipline, *espirit de corps* and unit cohesion.
Hierarchical LinearModeling (Griffth, 2002)	The hierarchical linear model involves a multilevel analysis of cohesion's relation tostress, well-being, identification, disintegration, and perceived combat readiness.

The Intangible Human Elements Of Combat Readiness

Military Psychological Factors

According to Isaeva (2020), military psychology encompasses the investigation, formulation, and implementation of psychological principles and empirical evidence in order to comprehend, forecast, and counteract actions exhibited by friendly and hostile forces, as well as civilian populations. Military personnel, similar to the general population, are susceptible to psychological issues. However, it is both compulsive and erroneous for them to seek medical attention for mental health concerns, given their sworn status as combatants (Matthews, 2014). Soldiers have a tendency to evade seeking medical assistance, despite being aware that they may be experiencing psychological issues related to mental health (Vogt D, 2011). The stigma associated with mental health assistance, particularly in the military, is comfortingly correlated with ego and personal and interpersonal variables (Corrigan PW, 2004). By investigating potential obstacles that may prevent individuals from seeking psychological assistance, military researchers can equip personnel with the knowledge and skills necessary to perform combat operational duties prior to and after military service.

Quality Of Life

Definitions of quality of life have often been used synonymously with other subjective concepts encompassing tangible and intangible elements, including life satisfaction, well-being, contentment, and good life (Cheng, 1988; Diener, 1984; Rice, 1984). Defined in terms of well-being, contentment, and standard of living, the notion of quality of life is contextual and individual in nature (Campbell et al., 1976). Frequently, an individual's quality correlates with their capability. Studies indicate that quality of life is an additional intangible element of combat power that influences an individual's preparedness for battle. Several domains are examined in quality of life research, including housing, finances, health and personal safety, family life, relationships with superiors, subordinates, and colleagues, the neighborhood community, the workplace environment, and career advancement (Verwayen, 1980; Zapf, 1980; McKennell, 1978). The working environment is a significant determinant of combat readiness, according to studies on work quality and quality of life (Campbell, 1976; Andrews & Withey, 1976; Flanagen, 1978; Bestuzhey-Lada, 1980; Murrell et al., 1983; Glatzer, 1987; Rath & Harter, 2010). Soldiers are incentivized to enhance their work efficacy in the performance of military duties due to the fact that such an environment fosters a sense of accountability, discipline, and mental and physical prowess (Rath & Harter, 2010).

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Morale

Morale is considered a three-dimensional factor output due to the fact that it impacts the inputs, expectations, interactions, and performance of individuals. Productivity is substantially influenced by morale (Smith, K.R., 1976). Morale is defined as "the mental, emotional, and spiritual state of a unit" by US Military Leadership (1993). Van Dyk (2015) summarizes morale as "The confident and positive frame of mind and motivation existing in an individual, endurance and readiness for total commitment to the common goal pursued by a group, particularly in the face of difficult and complex conditions, i.e., at the time of proceeding military operations (warfare)" . As it influences individual inputs, expectations, interactions, and performance, morale has been recognized as a three-dimensional factor output that has a significant impact on productivity (Smith, K.R., 1976). Soldiers are frequently compelled to prioritize their mission over their moral obligations when performing military duties that could potentially cost them their lives. One could argue that the definition of morale has been a consistent collection of words that describe an individual's enthusiasm, drive, and other fundamental qualities with which they identify as a member of a group or team. As per the definition provided by Baynes (1987), morale can be described as "the eagerness and determination with which an individual participates in the designated undertakings of a collective entity." Morale was defined by Manning (1991) as an outcome of cohesion and esprit de corps. Morale is defined by Britt, Castrol, and Adler (2006) as "the degree to which an individual soldier is motivated, dedicated, and enthusiastic about achieving the mission objectives of the unit amidst demanding circumstances."

The Theoretical Framework for intangible combat readiness is showed in Figure 2 where the dependent variable is intangible combat readiness and the independent variables are morale, quality of life and military psychological factors.

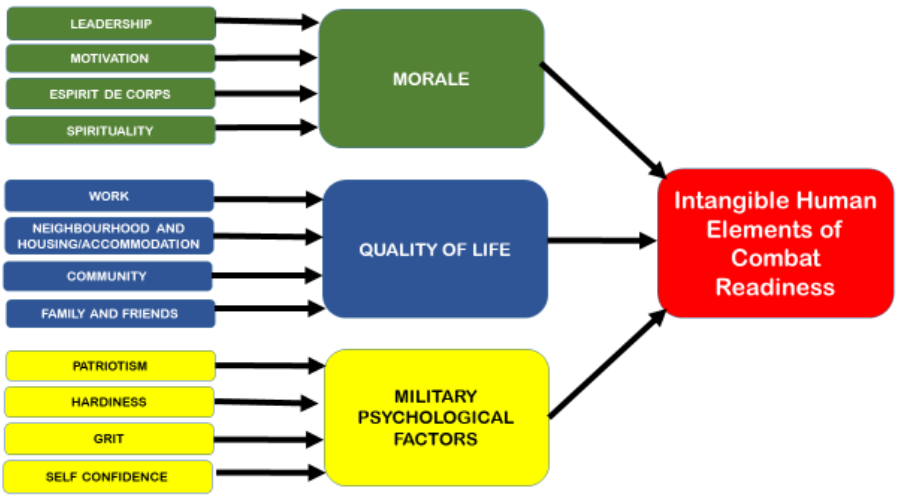

Figure 2: The Theoretical Framework of Intangible Human Elements of Combat Readiness

Research Methodology

Quantitative research was applied for this research with respondents from major operational military units in the Royal Malaysian Navy (RMN) and Royal Malaysian Air Force (RMAF) including in Sabah and Sarawak. The survey research involving cross-sectional studies

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employing a questionnaire to collect data for the development of a mathematical model to quantify combat preparedness was chosen for the study. Considering the population size of the examined RMN and RMAF populations is known, the sample size for this study was calculated using Krejcie and Morgan's (1970) formula: n = 2466. The questionnaire consisted of four sections. It includes scales measuring the three dimensions of intangible human combat preparation, with four antecedents for each domain. The morale domain comprises a total of 26 components with antecedents namely leadership, motivation, spirit de corps, and spirituality. Work, neighbourhood/accommodation, community, and family/friends are the antecedents of 25 elements in the quality-of-life domain. The psychological domain comprises of 30 items with antecedents including patriotism, tenacity, self-perception, and self-assurance. Using the Partial Least Square (PLS) technique, the PLS route model was estimated. After model estimate, the Smart PLS programme gave results in the modelling window (Hair et al., 2014). The findings of the PLS-SEM are the outer loadings and outer weights for the measurement models (Quality of Life, Morale, Psychological Factors), the path coefficient for the structural model relationships, and the R^2 values of the endogenous variables (Intangible Combat Readiness).

Research Results And Discussions

Table 1 illustrates the descriptive scores for each of the six domain items of intangible combat readiness based on the responses from 2,466 respondents. Also, the table presents the range, mean, standard deviation, and the measure of skewness as well as kurtosis for every item in combat readiness. The range and mean in Table 1 show the data collected are normal. Hair et al., 2014 pointed out that the general statistic measure of skewness ranges from -3.0 and 3.0 whereby the measure between -1.0 and 1.0 is considered normally distributed. Table 1 shows the measure of skewness for all items fall between -.681 and -.891 which is an indication of normal distribution. The negative skewness values indicate a clustering of scores at the high end (right-hand side of the graph). Nevertheless, the data are normal which does not hinder the assessment of the parameters' significances. Table 1 also shows Kurtosis readings ranging from .385 to .795 indicating the distribution is having a normal peak or mesokurtic. The general guideline for Kurtosis advocated by Hair et al. (2014) is from -1 to +1. The results with the distributions based on the guidelines of skewness and kurtosis are considered normal.

Table 1 - Descriptive Statistics For Combat Readiness

	N	Min	Maxi	Mean	Median	Std. Deviation	Variance	Skewness	Std. Error of Skew-ness	Kurtosis	Std. Error of Kurtosis
CR1	2466	1	5	4.23	4.00	.777	.604	-.879	.049	.787	.099
CR2	2466	1	5	4.28	4.00	.742	.551	-.887	.049	.795	.099
CR3	2466	1	5	4.32	4.00	.717	.514	-.801	.049	.385	.099
CR4	2466	1	5	4.30	4.00	.744	.554	-.891	.049	.746	.099
CR5	2466	1	5	4.16	4.00	.759	.576	-.681	.049	.449	.099
CR6	2466	1	5	4.09	4.00	.812	.660	-.745	.049	.588	.099

PLS algorithm was used for estimating the PLS path model stated above. SmartPLS Program provides results in the modeling window after the estimation of the model (Hair *et al*., 2014). The PLS-SEM results are the outer loadings and outer weights for the measurement models (morale, quality of life, psychological and combat readiness), the path coefficient for the structural model relationships, and the R^2 values of the endogenous variables (combat readiness). The results of the path model of combat readiness are as shown in Figure 3.

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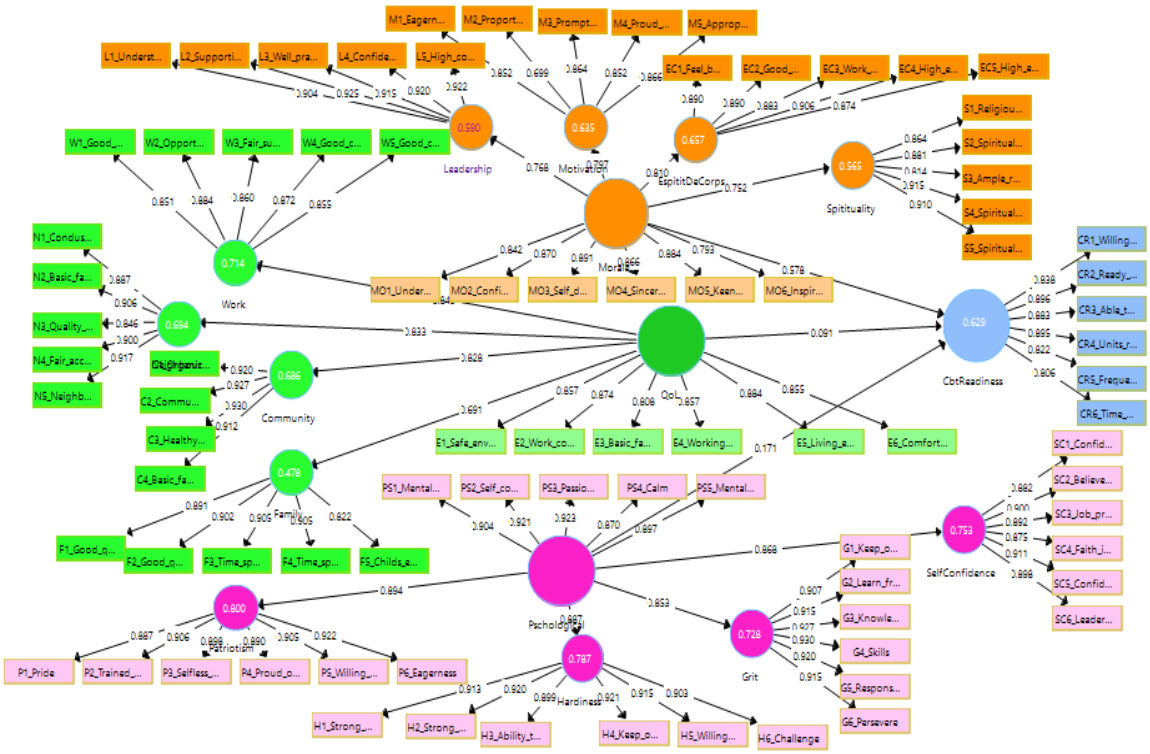

Figure 3 - PLS Algorithm Of Combat Readiness Model

The outer loadings are associated with results for the relationships in the reflective models of the morale, quality of life, and psychological variables. The outer loadings for the morale, quality of life, and psychological constructs and its indicator variables are as presented in **Table 2**. The indicator items show good loading values (>0.70). The indicators below the factor loadings of 0.7 were deleted except for those items whose inclusions did not affect the AVE (Hair *et al*., 2014).

Table 2 - Outer Loadings Of Indicator Variables

Dimension	Items	Loading	Remarks
Morale	MO1	0.842	Accepted
	MO2	0.87	Accepted
	MO3	0.891	Accepted
	MO4	0.866	Accepted
	MO5	0.884	Accepted
	MO6	0.793	Accepted
Leadership	L1	0.904	Accepted
	L2	0.925	Accepted
	L3	0.915	Accepted
	L4	0.92	Accepted
	L5	0.922	Accepted
Motivation	M1	0.852	Accepted
	M2	0.700	Accepted
	M3	0.864	Accepted
	M4	0.852	Accepted

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	M5	0.866	Accepted
Espirit De Corps	EC1	0.89	Accepted
	EC2	0.89	Accepted
	EC3	0.883	Accepted
	EC4	0.906	Accepted
	EC5	0.874	Accepted
Spirituality	S1	0.864	Accepted
	S2	0.881	Accepted
	S3	0.814	Accepted
	S4	0.915	Accepted
	S5	0.91	Accepted
Quality of	E1	0.857	Accepted
Life	E2	0.874	Accepted
	E3	0.808	Accepted
	E4	0.857	Accepted
	E5	0.884	Accepted
	E6	0.855	Accepted
Work	W1	0.851	Accepted
	W2	0.884	Accepted
	W3	0.86	Accepted
	W4	0.872	Accepted
	W5	0.855	Accepted
Neighbourhood	N1	0.887	Accepted
	N2	0.906	Accepted
	N3	0.846	Accepted
	N4	0.9	Accepted
	N5	0.917	Accepted
Community	C1	0.92	Accepted
	C2	0.927	Accepted
	C3	0.93	Accepted
	C4	0.912	Accepted
Psychological	PS1	0.904	Accepted
	PS2	0.921	Accepted
	PS3	0.923	Accepted
	PS4	0.87	Accepted
	PS5	0.897	Accepted
Patriotism	P1	0.887	Accepted
	P2	0.906	Accepted
	P3	0.898	Accepted
	P4	0.89	Accepted
	P5	0.905	Accepted
	P6	0.922	Accepted
Hardiness	H1	0.913	Accepted
	H2	0.92	Accepted
	H3	0.899	Accepted
	H4	0.921	Accepted
	H5	0.915	Accepted
	H6	0.903	Accepted

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Grit	G1	0.907	Accepted
	G2	0.915	Accepted
	G3	0.927	Accepted
	G4	0.93	Accepted
	G5	0.92	Accepted
	G6	0.915	Accepted
Self Confidence	SC1	0.882	Accepted
	SC2	0.9	Accepted
	SC3	0.892	Accepted
	SC4	0.875	Accepted
	SC5	0.911	Accepted
	SC6	0.898	Accepted

The estimations for the paths between the latent variables in the structural model are reported as standard coefficients (Hair *et al*., 2014). The path coefficients, Beta (β) of the variables in the combat readiness model are as presented in **Table 3**. The results show that the construct of morale has the strongest effect on combat readiness (β = 0.578), followed by psychological (β = 0.171) and quality of life (β = 0.091). The three constructs explain 62.9 % of the variance of the endogenous construct (combat readiness, R^2 = 0.629) as indicated by the value in the ellipse. The size of the path coefficients with standardized values above 0.20 indicates that the relationships of morale and combat readiness are significant (Hair *et al*., 2014).

Table 3 - Path Coefficients, Beta (β) Of The Variables In The Combat Readiness Model

Variable	Combat Readiness
Morale	0.578
Quality of life	0.091
Psychological	0.171

Additional to the coefficients obtained from the estimations of the partial regression models in the structural model, the outputs included the R^2 values of each endogenous latent variable in the structural model. These R^2 values represent the amount of explained variance in the construct. The R^2 value of 0.629 for the construct of combat readiness indicates that 62.9% of combat readiness is explained by exogenous variables of morale, quality of life, and psychological. R^2 values of 0.629 are considered high in the discipline such as organizational behaviour. In comparison, for successful driver studies such as scholarly research that focuses on marketing issues, researchers expect much higher values of 0.75 and above (Hair, Ringle, & Sarstedt, 2011; Henseler *et al*., 2009).

The results of the bootstrapping *t* values >1.96 (p=0.05) indicate the significance of the relationships between the exogenous variables (morale, quality of life, and psychological) and the endogenous variable (combat readiness). The *t* value of 19.360 between morale and combat readiness indicates a significant relationship between the two variables. There is also a significant relationship between quality of life and combat readiness with t = 3.966. Also, there is a significant relationship between psychological with combat readiness whereby the *t* value is 9.941.

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The descriptive analysis shows the suitability of the data collected as shown in Table 2 below. The 5 % Trimmed Mean statistics show that the two mean values obtained for all the items in the command climate measurement model are not very different indicating that there is no requirement to investigate the data points. The histograms of all the domains show scores that are reasonably normally distributed. The Q-Q Plots also show reasonably straight lines that suggested a normal distribution of the data. Similarly, the detrended normal Q-Q Plots that were obtained by plotting the actual deviation of the scores formed straight lines with no real clustering of points indicating the normal distribution of data. The analysis output obtained using the IBM-SPSS indicates that all the items of the dimensions of the morale variable have correlation coefficients > 0.3, indicating that the data are suitable for further analysis (Pallant, 2015). The hypothesized relationships among the constructs of morale, quality of life, and psychological with combat readiness were obtained by running the PLS-SEM algorithm in obtaining the estimates for the structural relationships (i.e. path coefficients). The results of the PLS-SEM algorithm are as presented in **Figure 4**.

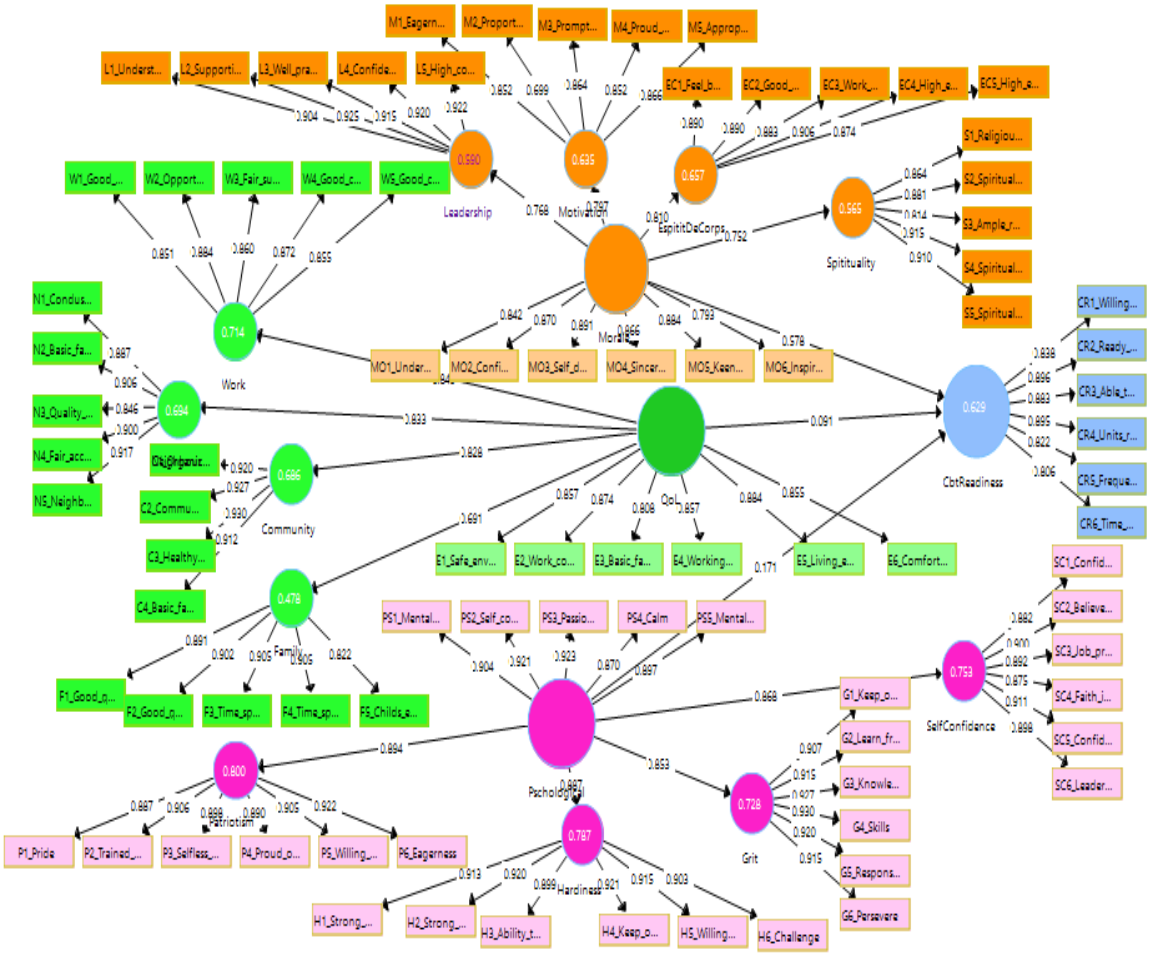

Figure 4- PLS-SEM Algorithm for Structural Model of Combat Readiness

The estimated path coefficients, β, obtained indicate standardized values between -1 and +1 representing negative and positive relationships. The results of the path coefficients indicate that morale (β = 0.578), quality of life (β = 0.019), and psychological (β = 0.171) have positive relationships with combat readiness. Hair *et al*. (2014) pointed out that values that are close to

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+1 or -1 are almost always statistically significant. On the other hand, very low values close to 0 are usually non-significant (not significantly different from zero). The ultimate test to determine the significance of the coefficients was conducted using bootstrapping. The results of the bootstrapping are indicated in **Figure 5**.

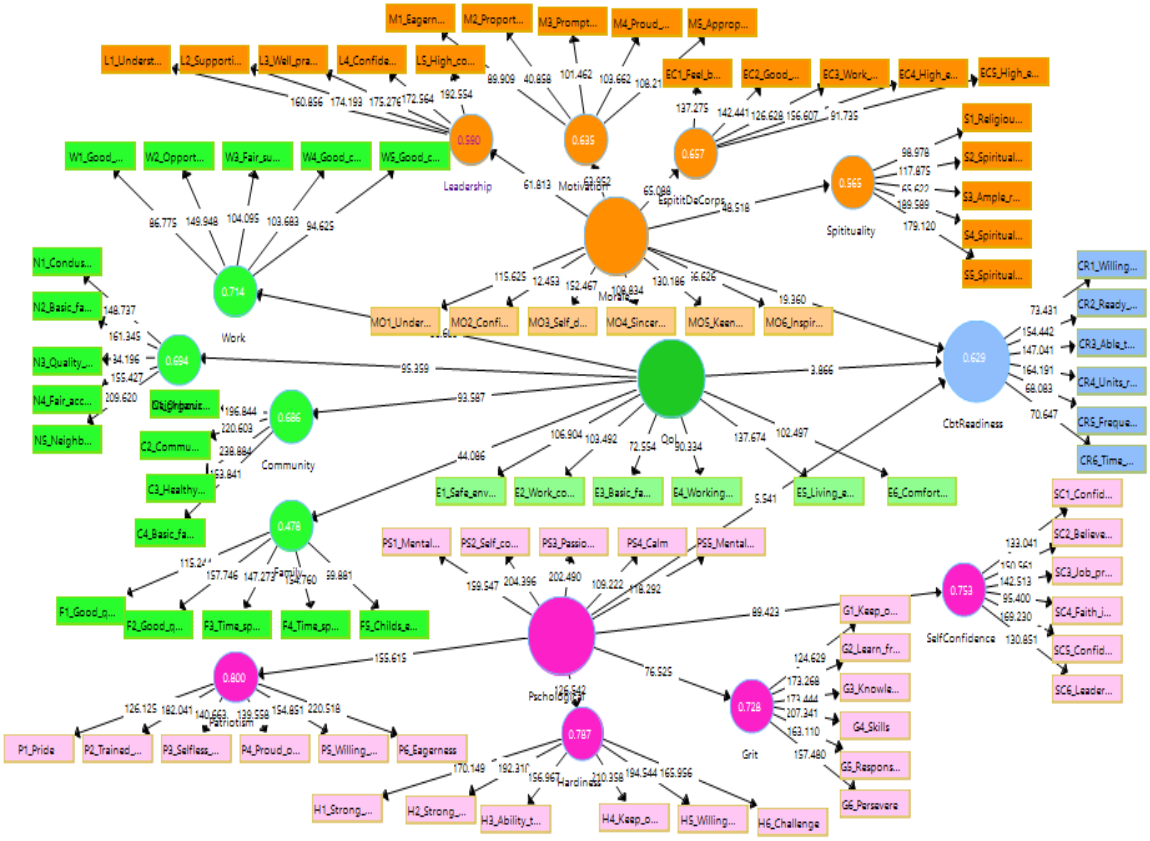

Figure 5 - Bootstrapping Results Of The Structural Model Of Combat Readiness

Hair *et al*. (2014) said bootstrapping provides the standard errors and computes the empirical *t* values that determine whether the coefficients are significant. The coefficient is significant at a certain error probability (significance level) if the empirical *t* value is larger than the critical level (1.96 for a significance level of 5%). Based on these criteria, the truncated results in **Table 4** indicate that the relationships between morale with combat readiness, quality of life with combat readiness, and psychological with combat readiness are significant at a level of 5% probability of error as all the *t* values are >1.96 threshold value. Amongst the three predictive constructs, morale (β = 0.578) has a better effect in predicting combat readiness compared to the quality of life and psychological.

Table 0 – Significance Testing Results Of The Structural Model Path Coefficients

	Path Coefficients	***t* Values (>1.96)**	***P* Values**	**95% Confidence Intervals**	**Significance (*p*<0.05)?**
Morale -> Cbt Readiness	**0.578**	**19.36**	**0**	**[0.517,0.634]**	**Yes**
Morale -> *Espirit De Corps*	0.81	65.088	0	[0.784,0.834]	Yes
Morale -> Leadership	0.768	61.813	0	[0.742, 0.791	Yes
Morale -> Motivation	0.797	63.952	0	[0.77, 0.819	Yes

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Morale -> Spirituality	0.752	48.518	0	[0.717, 0.778]	Yes
Psychological -> Cbt Readiness	**0.171**	**5.541**	**0**	**[0.116, 0.235]**	**Yes**
Psychological -> Grit	0.853	76.525	0	[0.829, 0.872]	Yes
Psychological -> Hardiness	0.887	126.542	0	[0.872, 0.9]	Yes
Psychological -> Patriotism	0.894	155.615	0	[0.883, 0.905]	Yes
Psychological -> Self Confidence	0.868	89.423	0	[0.847, 0.884]	Yes
QoL -> Cbt Readiness	**0.091**	**3.866**	**0**	**[0.046, 0.138]**	**Yes**
QoL -> Community	0.828	93.587	0	[0.808, 0.843]	Yes
QoL -> Family	0.691	44.086	0	[0.659, 0.722]	Yes
QoL -> Neighbour	0.833	95.359	0	[0.816, 0.849]	Yes
QoL -> Work	0.845	96.609	0	[0.828, 0.861]	Yes

The PLS-SEM algorithm default report on **total effects** presented in **Table 5** shows the findings that morale (0.5784) has the strongest total effects on combat readiness compared to psychological (0.171) and quality of life (0.091).

Table 5- Results Of Total Effects On Combat Readiness

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Morale -> Combat Readiness	0.578	0.577	0.03	19.36	0
Psychological -> Combat Readiness	0.171	0.173	0.031	5.541	0
QoL -> Combat Readiness	0.091	0.091	0.024	3.866	0

Coefficient of Determination (R^2 Value). The coefficient of determination (R^2 value) was used to measure the combat readiness's predictive accuracy as reflected in **Table 6**. This predictive accuracy was calculated based on the squared correlation between the specific combat readiness construct's actual and predicted values. The coefficient represents the exogenous latent variables' (morale, quality of life, and psychological) combined effects on the endogenous latent variable (combat readiness). However, Hair *et al*. (2014) pointed out that there are no rules of thumb for acceptable R^2 values which depend on the model complexity and the research discipline. Nevertheless, R^2 value ranges from 0 to 1 with higher levels indicating a higher level of predictive accuracy. The R^2 value of 0.627 of combat readiness indicates that 62.7% of combat readiness is predicted by the constructs of morale, quality of life, and psychological.

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Table 6- Coefficient Of Determination Of Combat Readiness

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Combat Readiness	0.629	0.63	0.017	37.947	0

The importance-performance matrix analysis (IPMA) was used to extend the results of PLS-SEM by taking the performance of each construct to conclude its performance and the relative importance of constructs in explaining other constructs in the structural model. The extension builds on the PLS-SEM estimates of the path model relationships and adds dimension to the analysis that considers the latent variables' average values (Hair *et al*., 2014). IPMA contrasts the combat readiness structural model total effect (importance) and the average values of the latent variable scores (performance) to highlight significant areas for improvement for the morale, quality of life, and psychological aspects to improve combat readiness.

Based on the results of the PLS path model for combat readiness, the relative importance of the different constructs on combat readiness is reflected in **Table 7**. The results show that morale (β= 0.578) has the highest direct effect on the measure of combat readiness as compared to psychological (β= 0.171) and quality of life (β= 0.091). The results of the total effect indicate that the construct of morale on combat readiness is substantially higher than the other two constructs. Based on these results, it can be seen that morale plays an important role in enhancing combat readiness. Practically, the results indicate that increasing the amount of effort in enhancing the morale of its personnel will certainly improve the combat readiness of the Malaysian Armed Forces.

Table 7- Total Effects On Combat Readiness - Standardized

	CR	C	E	F	G	H	L	M	N	P	SC	S	W
Cbt Readiness (CR)													
Community© Espirit De Corps(EC)													
Family(F)													
Grit(G)													
Hardiness(H)													
Leadership(L)													
Morale	**0.578**		0.81				0.768	0.797				0.75	
Motivation(M)													
Neighbour(N)													
Patriotism(P)													
Psychological(PO)	**0.171**				0.853	0.887				0.894	0.868		
QoL (E)	**0.091**	0.828		0.691					0.833				0.845
Self Confidence(SC)													
Spirituality(S)													
Work(W)													

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The results of the combat readiness structural model are based on the rescaled data. The target latent variable/construct, combat readiness, has a value of 78.846. Contributing towards the score of combat readiness are the scores of morale with a value of 83.909, quality of life with a value of 82.093, and psychological with a value of 82.929. Thus, the relative performance of the three exogenous constructs is headed by morale and followed by psychology and quality of life. Based on the output of the IPMA, the relative importance and performance of the different constructs on combat readiness are summarized in **Table 8**.

Table 8 - Relative Importance And Performance Of The Different Constructs On Combat Readiness Model

	Importance (Total Effects)	Performance (Index Values)
Morale	0.578	83.909
Quality of life	0.091	82.093
Psychology	0.171	82.929

The data allow for the creation of an IPMA representation of combat readiness in the form of a graph as shown in Figure 6. The IPMA of combat readiness reveals that the morale

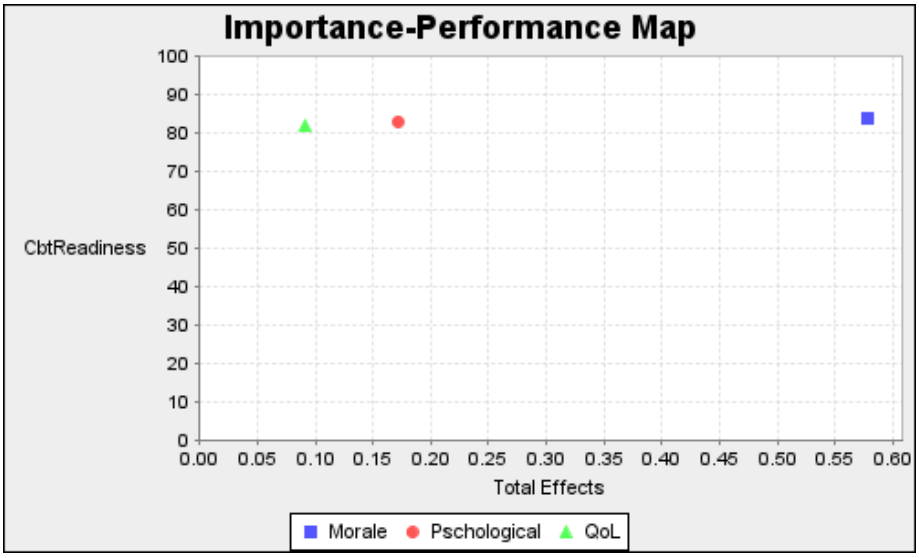

Figure 6 - Graphical IPMA Representation Of Combat Readiness Model

construct is of primary importance for establishing combat readiness. The psychological and quality of life's importance are slightly lower than that of the construct of morale. It can be seen from the graph that all the three constructs of morale, psychological, and quality of life constructs show almost equal performance (Y-axis – Performance) in their contribution towards combat readiness at over 80 percent on the scale. However, the IPMA of the combat readiness model provides additional information that though morale, quality of life, and psychological provide an almost equal performance towards the combat readiness in the Malaysian Armed Forces' organizations, the effects of the three constructs differ as seen in their coordinates along the X-axis (Importance – Effect).

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Conclusion

According to this study on intangible human combat readiness, the domains of intangible human elements with four antecedents are Morale (Leadership, Motivation, Esprit de Corps, and Spirituality), Quality of Life (Work, Neighborhood/Accommodation, Community, and Psychological Factors), and Morale (Work, Neighborhood/Accommodation, and Spirituality) (Patriotism, Hardiness, Grit, Self Confidence). These quantitative studies illustrate the presence of military troops from operational units of the Royal Malaysian Navy and Royal Malaysian Air Force in Malaysia. The model was then statistically validated using the data (n = 2466) using PLS-SEM. The bootstrapping results demonstrate that the correlations between the exogenous factors (morale, quality of life, and psychology) and the endogenous variable are statistically significant (combat readiness). The t value of 19.360 between morale and combat preparedness implies that there is a substantial association between the variables. t = 3.966% indicates a substantial correlation between quality of life and battle readiness. In addition, the t value of 9.941 indicates a considerable link between psychological and combat fitness. The results indicate that morale has the greatest impact on battle readiness (= 0.578), followed by psychological (= 0.171) and quality of life (= 0.010) variables. As illustrated by the value within the ellipse, the three constructs account for 62.9% of the variance of the endogenous construct (combat readiness, R2 = 0.629). The R^2 value of 0.629 for the notion of intangible combat preparedness suggests that external variables of morale, quality of life, and psychological explain 62.9% of intangible combat readiness. In a discipline such as organisational behaviour, R^2 values of 0.629 are regarded as high. The IPMA of combat readiness demonstrates that the construct of morale is of the utmost importance for establishing intangible battle preparedness. The psychology and quality of life are slightly less important than the morale construct. Morale has a greater impact on the Malaysian Military Forces than quality of life and psychological well-being. In order to improve intangible battle preparedness, the Malaysian Armed Forces must maintain the performance of the morale, quality of life, and psychological domains. Meanwhile, efforts must be made to increase the effectiveness of quality of life and psychological matters by placing greater emphasis on enhancing total combat readiness. This research is important because it offers the Malaysian Armed Forces with a measurement tool for implementing preventive and corrective measures based on their individual and collective team scores prior to engaging in operational or combat activities.

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