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## Application of Sun Tzu Art of War strategies in different stages of organizational life cycle: A study in Malaysian manufacturing organizations

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### ABSTRACT

The resurgence of the interest in the investigation on the likelihood of the ancient war strategy, Sun Tzu Art of War (STAW) in improving the competition position of business organisations is reaching a new height both locally and internationally. This is evident by the number of literatures that has attempted to identify the measurement dimensions of STAW for business applications. The focus of these literatures however, was mainly on the theoretical perceptions and arbitrary assumptions with not much statistical substantiation. Therefore, this study's objective is to operationalize the time-tested Sun Tzu Art of War strategies for business applications. The study also examined the possible emergence of factors that may arise at the different stages of the life cycle of the organization. The study was performed on the Malaysian manufacturing companies, involving 167 Small Medium Enterprises and 133 Multinational Corporations. From an extensive literature review, four dimensions namely: Employee Motivation, Situation Appraisal, Strategic Planning and Leadership were established to represent Sun Tzu Art of War strategies in Malaysian Manufacturing Industries. The hypothesized relationships of the dimensions were then, tested using Structural Equation modelling technique (SPSS and AMOS). The results indicates that the theoretically developed measurement dimensions of STAW are significantly and positively associated with the construct Sun Tzu Art of War strategies. Academically, this research contributes to the knowledge on Sun Tzu Art of War strategies for business applications by providing an empirical and statistical evidence on the development of the critical factors for the manufacturing organisations in Malaysia. This study will also provide an impulsion for business operators to understand the role of Sun Tzu Art of War strategies in organizations in attaining business sustainability. Hence, the dimensions developed in this study, which is not studied in many past researches will provide a direction for Malaysian business operators towards effectively managing their business operations.

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## INTRODUCTION

Around the globe, manufacturing organizations have increasingly taken a centrestage in catapulting the economic transition of a country. This is due to their ability to generate income and job creations during the times when the economies are with plagued sluggishness. However, sustaining a competitive advantage on a prolonged basis has always been a force to be reckoned with for many manufacturing organizations. Gibb (2005), in his research, called for a focus on a unique contribution in order to sustain an excellence in business operations. As such, this study aims to identify the critical success factors of an effective strategy and its application in different stages of life cycles in manufacturing organizations in Malaysia. Like many other studies, studies of business excellence in manufacturing organizations spring forth because of two pertinent factors: the external and the internal factors of the organization. In most of the studies that examine the external factors, consistently, the prime focus has been the examination on the role of the government in providing a conducive environment for the organizations to thrive. In the second group of studies that concerns itself with the internal factors of the organization, the studies explore the predictors of organizations, examining the critical success factors and organizational variables. This goes in congruence with the suggestion by Covin and Slevin (1991, p. 15), which says that the organizational variables could possibly affect an organization's ultimate performance. The organizational variables referred to here are the resources and competencies, (such as financial resources, building and equipment, skill human resources, the manufacturing flexibility and the ability to produce and market new products in a timely order) the organization's culture and also the manner in which the organization system is structured. All of these, according to them, have the possibility to strengthen the

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likelihood of the organization to succeed. The word Strategy originated from the Greek word "Strategos" and it was extensively used during the 18<sup>th</sup> century. It was largely seen as the "art of arrangement" of the militaries. Carl von Clausewitz, who is also known as the 'father of western strategic study, defined the military strategy as "the employment of battles to gain the end of war." The decision to have a business strategy in place comes about during the process of the organization being maneuvered in meeting the environmental demands while simultaneously maximizing the internal structure and processes. (Croteau and Bergeron, 2001). The three approaches used to identify business strategies are: textual, multivariate or typological (Hambrick, 1980). Among the three, the application of typological approach is given prominence by various literatures as it gives a clear understanding of the strategic direction and strategic reality of an organization. The several much quoted typologies are Ansoff and Stewart (1967); Freeman (1974); Porter (1980:1985); Miles and Snow (1978) and the most popular typology among all is by Miles and Snow's (Zahra and Pearce, 1999; Smith *et. al.*, 1989) which has a record of been quoted more than 650 times (Social Sciences Quotation Index, 1989 – 2000). The reason for the popularity of Miles and Snow's typology is the concurrent attention paid on the structure and the relevant processes required for the recognition of a business strategy (Croteau and Bergeron, 2001). It takes into consideration the multifaceted aspects of an organization – the environmental adherence processes, the structure of the organization, the attributes of the products, the market in which its competing, the technology, as well as the management characteristics (Smith *et al.*, 1985)

There has been vast number of researches conducted examining the relationship between business strategies and the performance of the organizations. This is done based on the premise that the strategic orientation of an organization may well be a critical feature that determines the final outcome of business results. Examples of few studies are: Miller (1987), in which, the author found a positive relationship between business strategy and organizational performance under numerous situations. Parnell *et al* (1996), Zahra and Covin (1993) and Venkaraman (1989b) also found numerous factors in business strategy to be positively associated with organizational performance. Strategy formulation and execution has commanded substantial attention from many writers of Sun Tzu Art of War (Giles, 1910; Candela, 1998; Zhan, 2002; Somerville, 2003). Sun Tzu was regarded as the 'father of Eastern military strategy'. Sun Tzu's military strategy gained influence to a large extent in the Chinese, Vietnamese, Korean and Japanese war tactics not only historically but also in modern war. As opposed to the Western tactics, the Eastern military strategy focuses more on being unpredictable by tricking and fooling the enemy. Sun Tzu's philosophy says that the main aim of a war is to not to win all the battles that was undertaken but to subdue the opponents without a fight. His principle swirls around quickness in executing strategies, agility in deployment of resources and deception in one's movement. Sun Tzu said: *War is such that the supreme consideration is speed. This is to take advantage of what is beyond the reach of the enemy, to go by way of routes where he least expects you, and to attack where he has made no preparations* (Ames, 1993, p. 157). To put it succinctly, Sun Tzu's typology also encompasses Miles and Snow's typology propounds on the importance of being swift, adaptable and deceptive in the movement in order to succeed.

The equivalence of a battlefield and operating a business in a competitive environment is sustaining a competitive advantage not just for survival but also to be in the lead. Essential elements in attaining the competitive advantage stems from the diligent execution of managerial actions (Ndofo *et. al.*, 2011) and the effective deployment of the resources across the life cycle of the organization (Sirmon *et. al.*, 2011). In a start-up phase, for instance, when establishing the viability of the organization in the marketplace becomes the priority (Miller and Friesen, 1984), business organizations need to identify, build up, and attain resources that will lead to the sustenance of the organization. As the organization moves into the growth phase, it needs to prepare itself from aggressive onslaught of other competitive players in the market. When the organization began to move into growing at a declining stage, the focus will now shift towards increasing the efficiency of the ongoing operations as well as moving towards being more innovative in order to create new areas of growth (Miller and Friesen, 1982). In the event, the organization is unable to lengthen its maturity phase, either through business diversifications or through other new opportunities; the decline stage would then, be imminent. Given the fact that all organizations' aim is to survive and thrive in all the phases, the execution of appropriate strategies would then, become a vital criterion for the organization.

### **Research Gaps:**

Although there are many researches, books and articles that have been written on the parallelism of the ancient art of war to modern business application, there still an apparent lack of empirical research that aptly translates STAW strategies for business applications (Lo *et al.*, 1998). Mc Neilly, (1996), in his research examined the thirteen original chapters and subsequently abbreviated them into six succinct principles fitting into modern business conditions. Two other researches that attempted to translate the art of war for business application are: Wee *et al.* (1991), where they condensed the chapters and infuse them into the strategic management process and (Ko and Lee, 2000) on the decision-making environment. These studies are not empirical in nature as the translations are made rather arbitrarily and they can be considered as descriptive studies, hence leaving an unfulfilled void. As a result of the rigid force-fitting STAW chapters into business

application, the fine-tuned adoption of the detailed strategies is lost in the process. Therefore, the gap that justifies this study is that there is a lack of an empirically tested STAW model which can be applied for business applications. Hence, there is need to develop measurement dimensions for Sun Tzu Art of War strategies that are applicable to the Malaysian manufacturing organisations.

#### **Objectives of the Study:**

Essentially the objective of the study is to operationalize the constructs that represent STAW for business applications. This study is aimed to fill the research gap by selecting a set of appropriate critical success factors that can be used to represent STAW strategies for business application. Specifically, the objectives are:

- 1) To empirically explore all the relevant literatures on STAW and its linkages with business operations; and
- 2) To develop a set of measurable dimensions that characterizes STAW strategies for business applications.

#### **Literature Review:**

##### **Sun Tzu Art of War – Background:**

Written in Chinese characters, some 2500 years ago, Sun Tzu Art of War consists of 6200 short words (Ames, 1993). Sun Tzu, was the most reputed and admired army general in the early Chinese history, is best reminisced for the world's original soldierly treatise, *The Art of War*. Sun Tzu's principles which are carefully crafted as strategies and tactics are used to wage a war during the Age of the Warring States" in China (McNeilly, 1996). There were some difficulties encountered when the translation of Sun Tzu's work was carried out as the precise meanings and the projected inferences of his thoughts were diluted due to the complexity of the Chinese language, the writing pattern and the culture itself (Low and Tan, 1995) As a result of this scarcity, there exists a risk of losing or misinterpretation of the scripture's intended message. One of the writers who have provided a wholesome translation on Sun Tzu is Ames (1993). This study, hence has adopted the translated version from Ames.

The Art of War or "Bing Fa", in Chinese terms literally means "Soldier doctrine". One of the fundamental view that Sun Tzu upholds is that the world is a complete holistic entity operating with inter-linked interdependent systems within which, it must be preserved. It is with this in mind, in the warring states in China; Sun Tzu developed his doctrine by outlining the specific strategies and the appropriate tactics. This is also very much a practice in business operating entities, where the pursuit of a single common mission, is viewed as the main aim while harmoniously coordinating the various supply chain elements in the operation. It is for this reason, perhaps, in recent times, Sun Tzu's Art of War has gained momentum and has become relevant and 'in-fashion' for many business entrepreneurs and operators Lee *et al*, (1997); (1998); Lee and Ko, (2000). All throughout history, the discussion on Sun Tzu's work, revolves around his doctrines, principles, the key ideas and his philosophies that were deployed to overcome the psychological obstacles, the environmental disharmony, personal disagreement and organizational contention (Lo *et al.*, 1998). STAW does not only provide direction on execution of general strategies, but looks at the appropriate behavior and the demeanor of a leader and their relationship with their subordinates (Lo *et al.*, 1998). Based on the original Chinese writings of the 13 chapters, and few other writers, Low and Yeo (1992), summarized the main precepts of the chapters to suit business applications (Table 1).

**Table 1:** Sun Tzu's Art of War's main precepts

No	Chapter translation	Other translations	Main Precepts
1	Calculations	Planning	Analyzing the conflict
2	Challenges	Waging war	Estimating the cost
3	Plan of attack	Strategy	Developing an error-free strategy
4	Positioning	Depositions	Positioning yourself for triumph
5	Directing	Forces	Positioning your opponent for defeat
6	Illusion and reality	Opportunities	Using camouflage
7	Engaging the force	Manoeuvre	Manoeuvring for advantage
8	The nine variations	Variations	Spontaneity in the field
9	Moving the force	Marshes	Confrontation in the field
10	Situational positioning	Terrain	Positioning during confrontation
11	The nine situations	Battleground	Mobilizing during confrontation
12	The fiery attack	Incendiarism	The decisive thrust
13	The use of intelligence	Espionage	The information advantage

Source: Low and Yeo (1992)

According to them, the working definition of STAW which can be deduced from all the precepts would be "Maintenance of a strategically advantageous position with innovation, will, speed, flexibility, accuracy and precision and strong alliance against a competing force".

### ***Sun Tzu In Business Management Application:***

The literatures written on Sun Tzu for business application, predominantly covers the various facets of the marketing and product strategies, (Marber *et al.*, 2002), take over and direct attack strategies (Griffith, 1963; MacDonald and Neupert, 2005) and advertising strategies (Hawkins and Rajagopal, 2005). Some of the research's focus is only on the application of various marketing tactics in battling the competitors (Kolar and Topirisc, 2007), strategic planning and organisational positioning (Lee *et al.*, 1997; 1998), organisational SWOT analysis and application of Balanced Scorecard (Lee and Ko, 2000; Chih 2003), and nurturing of the environment for decision making (Ko and Lee, 2000). One of the pioneer writers of Sun Tzu who critically examined the structured world's oldest military art of war that are applicable for business is Mc Neilly (1996). He says that Sun Tzu Art of War strategies, in practice, helps improve one's skills of negotiation, while developing the self-discipline at the same time. Just like in the war, all these are necessary skills required of a business in order to be aware of the obstacles that hinder the opportunities (Wing, 1988). Sun Tzu views having full knowledge of the internal possessions and resources and knowing your own strengths as one of the prime most important factor. This is the most repeatedly communicated terms in Sun Tzu literatures. In every business organizations, the resources entails assets that are both tangible and intangible, human resources as well as material resources that are owned, managed and manipulated with the application of value-enhancing (Barney, 1991; Wernerfelt, 1984). Prahalad and Hamel (1990) outlined three different tests that are used to identify a core competence: (1) it offers a potential accessibility to wide range of markets, (2) it has the relevance to the key buying criteria of the existing and potential customers; and (3) it does not provide an easy path for the competitors to imitate. An organization possessing these three criteria coupled with diligent deployment of the various vital organizational resources will provide a unique collaboration that enables the organization to surpass the closest competitors.

The ultimate goal in a battlefield, according to Sun Tzu is to win. Sun-Tzu said: "*Warfare is a great matter to a nation; it is the ground of death and of life; it is the way of survival and of destruction, and must be examined. Therefore, go through it by means of five factors; compare them by means of calculation, and determine their statuses.*" Sun Tzu said that in preparing for a war, one need to make preparation in many aspects. They are: the availability of weaponries, the readiness and preparedness of the armies, the understanding and knowledge of the terrains, and the logistical supports. Drawing from the war analogy, businesses' preparation would then, entails the internal and external factors such as the onslaught of the competitors, the culture of the organization, the role of the stakeholders and the availability of resources *etc.* (Wu *et al.*, 2004). The suitability of the application of STAW strategies for overall business operations (Ko and Lee, 2000, Wee *et al.*, 1991; and McNeilly, 1996) and decision-making (Ko and Lee, 2000) has been an established fact. This is because the brutality of the competition in the business operations in this century is of no difference in that of the battlefield. In the battlefield, inadequate planning will result in the loss of the troops, military equipment and the battle itself (Wee *et al.*, 1991). Similarly, in business environment, history has shown that there were many businesses, had the same fate due to ill prepared planning. Many have slipped into premature decline stage with massive loss of resources and capital.

Lo *et al.*, (1998) construed the military terminologies in equivalence to the business environment. They are: "battlefield" as the "marketplace," "general/commander" as the "manager or management," "military warfare" as the "competition," "army/troops" as "employees," "enemy" becomes the "competitors." Mc Neilly's, (1996) condensed the 13 chapters and formed the following:

- (1) Win all without fighting – capturing the market without destroying it.
- (2) Avoid strength, attack weakness – strike at competitors' weak point
- (3) Deception and Foreknowledge – maximize the power of market intelligence.
- (4) Speed and preparation" – In an unavoidable battle, move swiftly to overcome competition
- (5) Shape your opponent – strategize to understand the competitors' strengths and weaknesses.
- (6) Character-based leadership – emphasizes the importance of effective leadership

In their book, Wee *et al.*, (1991) modelled Sun Tzu's Art of War strategies resembling the contemporary strategic management process. Wee *et al.* (1991) proposed five categories that can be formulated from STAW principles. They are (1) Situation appraisal; (2) Formulation of goals and strategies; (3) Evaluation of strategies; (4) Implementation of strategies; and (5) Strategic controls. Using the 5 strategic platforms, they anecdotally justified how the proposed framework could be used for business applications. The work of Wee *et al.*, however, is based on conceptualization with no empirical endorsement validated.

The eventual goal of any business organizations is to sustain their competitive advantage. To achieve this, the top management of the organization will not only have to take into consideration various factors which are both internally and externally induced but also examined the various stages of the life cycles of the organization. Understanding the risks and opportunities inherent in the different stages of life cycle will allow the organization to execute the appropriate strategies successfully.

***Application of Sun Tzu in different stages of organizational life cycle :***

Consistent with Sun Tzu's philosophy which says that there are no such fixed strategic advantages or competitive positioning in all cases that can be relied upon to achieve victory (Ames, 1993), the appropriateness of the Sun Tzu strategies is elaborated further in the different stages of the organization's life cycles namely; start-up, growth, maturity and decline stages of an organization.

***In the Start-up Stage:***

According to Sun Tzu, 'he who first occupies the field of battle to await the enemy will be rested; he who comes later and hastens into battle will be weary' (Ames, 1993). In other words, the enemy should be shaped by you and not be moved by him. This speaks volume in the start-up stage of businesses. Establishing the viability of a business is the primary objective during the start-up phase (Miller and Friesen, 1984). This is the stage that needs resource-deployment and structuring skills to support the business objectives, obtaining of financial resources (Jawahar and McLaughlin, 2001) and hiring as well as training of employees (Rutherford, *et al.*, 2003). During this phase, the critical resources may be acquired by forging alliance with other players. Organizations therefore, need to be creative, flexible and agile by adapting to various situations and competitive contexts (Cainarca, *et al.*, 1992).

***In the Growth Stage:***

Managing an organization that is preparing to glide itself into the growth stage requires enhanced managerial skills (Gilbert, *et al.*, 2006; Lumpkin and Dess, 2001). This is because, somewhere in the competitive environment, there will always be another business, which is trying to capture one's market share. Sun Tzu's famous statement that says "Know *your enemy and know yourself, in a hundred battles, you will never peril*", clearly explains the importance of knowing one's strength and weaknesses. In the growth stage, organizations need to formalize their procedures and managerial hierarchical levels to effectively manage the current process as well as overcoming the initial inadequacies or weaknesses. The hiring process and employment, too will grow in tandem with the organizational growth, hence employees need to be sufficiently trained by the organization. (Rutherford *et al.*, 2003). Thus, it is in this phase that the managers of the organization sharpen their skills in building relationships with various stakeholders such as investors, shareholders, suppliers, creditors and trade channels (Jawahar and McLaughlin, 2001) to foster continuous growth. All these activities will allow the organization to mobilize and leverage its resources to achieve competitive advantage (Sirmon *et al.*, 2010). Hence, by capitalizing on their strengths and addressing their weaknesses, organizations will be able to seize the opportunities and manage the threats in order to stay competitive in the business markets.

***In the Mature Stage:***

Organizations approaching maturity stage will have to aggressively pursue innovative strategies in order to maintain their competitive advantage. This is also to mitigate the negative effects of the heightened effect of the competition from the market place (Agarwal and Gort, 2002). Hence one of strategies would be to hire experienced human resources to execute the innovative strategies. As such, in the mature stage, it is important for managers to orchestrate their resources to achieve a balance between innovation and efficiency. Organizations at this phase, may employ both exploration and exploitation strategies simultaneously (Ireland *et al.*, 2003). In exploration strategy, the organization recognizes the new techniques to diversify the offerings of their products or identify new market for the existing products. In exploitation strategy, the organization puts in higher efforts in increasing their efficiency in their existing operations. Sun Tzu recognizes this by saying that "if one seeks to be victorious, he must modify his tactics according to the enemy situation" (Khoo, 1992, pg 137). This means, one should be able to not only anticipate but also being ready to ever-adapting to the changing and volatile circumstances.

***In the Decline-Stage:***

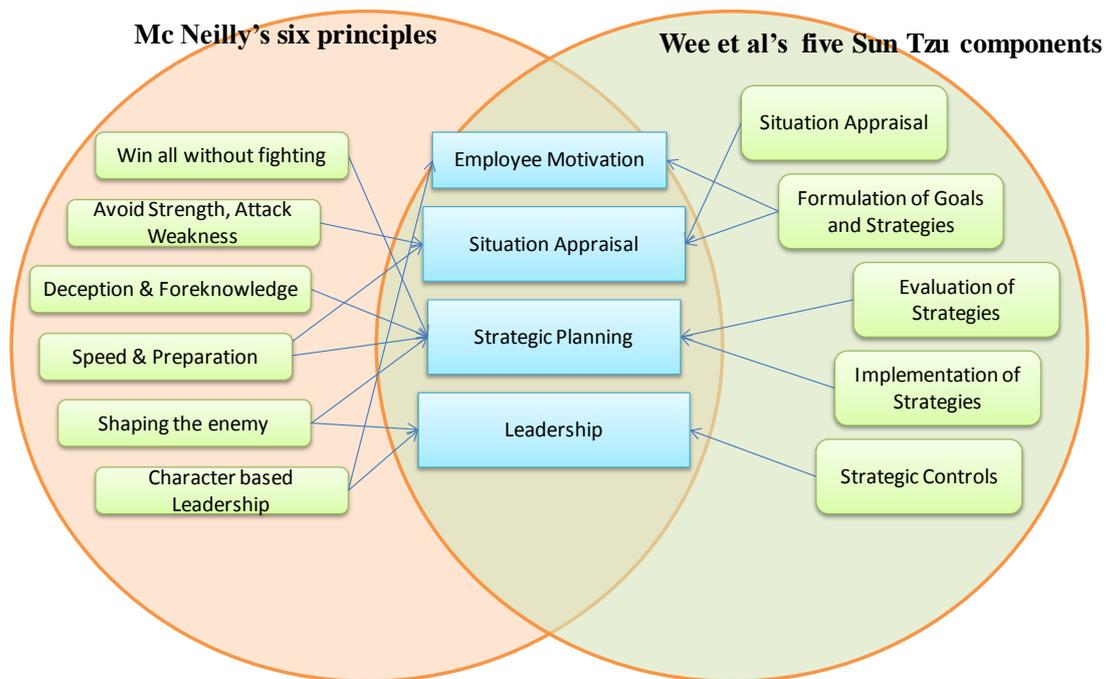
This stage will see organizations making drastic decisions on their position in the market place. Many organizations will resort to conserve their resources to ensure survivability. This stage also will see some organizations actively divest some of their competencies and stick to their core competencies as part of value creation for the organization. Similarly in the warzone, according to Sun Tzu, when the number of casualties began to rise, the only other strategy would be then, is to withdraw. He further says that, "should our force seems to be much weaker than of the enemy's, then confrontation should be avoided, failing which, we would only ended up being captured by the stronger force" (Khoo, 1992). In business, divestments are executed as part of their strategies to avoid losing strengths along with the weaknesses (Nixon *et al.*, 2004).

From the above, conclusion can be drawn that just like application of strategies in the battlefield, strategic actions and tactics are important to an organization at each stage of the organization's life cycle. Therefore,

understanding the necessary needs and action plan for success in each stage of the organization's life cycle is important to sustain a competitive advantage for the organization.

### **Conceptual Framework:**

To explore how STAW strategies application fits into the business and corporate management, the following proposed conceptual framework has been formulated. It juxtaposes critical factors derived from the studies carried out by Wee *et al.* (1991) which are: Situation Appraisal, Formulation of Goals and Strategies, Evaluation of Strategies, Implementation of Strategies and Strategic Controls and Mc Neilly (1996)'s six principles, namely (1) Win All Without Fighting (2) Avoid Strength, Attack Weakness (3) Deception and Foreknowledge (4) Speed and Preparation (5) Shaping the Enemy (6) Character-Based Leadership:



**Fig. 1:** Sun Tzu's Art War for Business Management

The reason for the selection of both these studies is the different polarities of their coverage: the aspects focused by Mc Neilly's are as a result of loosely translated factors that are suitable for direct application and Wee *et al.*'s aspects, on the other hand, are from the refined version that are watered down to suit the modern strategic application procedural method. Based on both their study, this study developed four dimensions.

### **Employee Motivation:**

Sun Tzu said: "Treat your men as you would your own beloved sons. And they will follow you into the deepest valley" (Giles, 1910, pg 121) Corporate mission and strategies in business organization must be designed to create a sense of pride, belonging and purpose in the personal mission of the employees in order for them to work towards the shared goal. Undeniably, business organizations need to motivate their ranks. Many organizations do this by giving material rewards such as a raise, a yearly bonus or rewards of recognition such as promotions and/or delegated responsibility. The most undisputable way to ensure a successful and a sustainable business is by having unified and cohesive groups of employees striving towards the same goal and motivated by the same factors (Brunetti, 2001).

### **Situation Appraisal:**

Sun Tzu states that awareness of the 'terrain' and 'weather' is imperative for the troop. Being aware of this information, along with the capabilities of the opponent would be vital in heading a victorious campaign. This reiterates Sun Tzu's point of "knowing the enemy." He said that "To understand and defeat your competition, you must do a very deep level of research and analysis". Corporate managers and strategists must go deeper and try to determine the competitors' strategies and plans in order to obtain a complete understanding of the environment which they are competing in. By understanding this, a more effective business plan can be created, taking into consideration the trends and demographical target within that environment.

**Strategic Planning:**

Strategy can be viewed as building defenses against the competitive forces or as finding position in the industry where the forces are weakest (Montgomery and Porter, 2009). One of the reasons researchers have noted, is that the manufacturing companies often fail to adapt their strategies to the unique environments of emerging markets and the result of this “misfit,” has led them towards failure (Dawar and Chattopadhyay, 2002). Sun Tzu says, “*If one knows the place and the time of the coming battle, his troops can march a thousand li and fight on the field*”. Hence, managers should have high degree of flexibility to cope with the uncertainty changing in the environment to alter the strategies in order to be competitive. “Doctrine” is perhaps the most crucial factor, according to Mc Neilly (1996).

**Leadership:**

Leadership is considered as one of the most important fundamental elements in the Art of War. Exceptional leaders will be able to unite his forces, set directions and lead his people to victory. Ames (1993) wrote that Sun Tzu once quoted, ‘*the side that has superiors and subordinates united in purpose will take the victory*’. The same principle applies in the business world as capable leaders will lead his or her company to success whereas poor leaders will stifle his or her organizations (Heine, 2008). Leadership is more about developing vision and strategies than trying to motivate and inspire the subordinates to follow and achieve them (Yukl, 2006). In order to spur the employees to work towards greater heights, business leaders need to lead with action not just by words. According to Sun Tzu, ‘*when orders are consistently trustworthy and observed, the relationship of a commander with his troops will be satisfactory*’ (McNeilly, 1996).

**Research Methodology:**

A cross-sectional email survey was performed on the sampled manufacturing organizations. The results are based on the 300 completed email survey responses. To obtain an adequate number of responses, a total of 960 questionnaires were e-mailed to business organizations. The list organizations were obtained from the list published by FMM and SME Corp. The sampling frame were also inclusive of the MITI quality management award winners and as well as the finalists. The questionnaire received 339 returns. Upon eliminating the outliers, 300 usable questionnaires, which represent a response rate of 31%.

**Instrument Development:**

The focus of this study is to develop an instrument that measures the top managers’ perception on STAW strategies in manufacturing organizations in Malaysia. A total of twenty scaled questions were formulated to measure five dimensions for STAW using five-point interval scale questionnaire. The measures uses Likert-Style Rating Scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. The respondents were required to indicate their degree of agreement or disagreement with the attitude statements developed for this study.

**Data Analysis and Assessment of Model:**

The inferential statistics used for this study are correlations and Structural Equation Modeling (SEM). To begin with, the Exploratory Factor Analysis (EFA) and Reliability test was performed. Using the SPSS correlation property, the variables were tested for multicollinearity. As the main objective of the study is to examine the extent of the items’ linkage to the underlying factors, the Principle Component Analysis with Promax Oblique Rotation was carried out. According to Malhotra (1999), the oblique rotation should be performed when there is a possibility of strong correlation among the factors within the population or even when some degree of were expected among variables (Hair *et al.*, 2010). As recommended by Pallant, (2001); Hair *et al.*, (2010), the factor loading of 0.5 was used as a lower cut-off value as per recommendation. The aptness of factor analysis is determined by examining the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. A reading of 0.60 or above is needed for KMO to be valued as a good factor analysis (Tabachnick & Fidell, 2001). A for the reliability, a value of 0.70 Cronbach Alpha would be required although, according to Hair *et al.*, (2010) the level of 0.60 level can be used in exploratory study.

Secondly, using the software AMOS, the adequacy of factor models was tested by performing the Confirmatory Factor Analysis procedure. Various fit indices were examined. Finally, the multi-factor measurement model adequacy was evaluated, particularly examining the cross loadings and correlation between the subscales. A value exceeding 0.85, indicates that between the two constructs there is a presence of multicollinearity, hence, in this case one of the two constructs must be eliminated from the model (Hair *et al.*, 2010).

**Results:****Exploratory Factor Analysis:**

There are 20 observed variables (F1 to F5, G1 to G5, H1 to H5 and J1 to J5) which measures four latent variables for STAW. They are Employee Motivation, Situation Appraisal, Strategic Planning, and Leadership. Table 1 below shows the summary of the measured constructs. Three observed variables (F5, H3, and J4) were deleted due to their poor loading on the respective constructs.

**Table 1:** Components of STAW strategies

Observed Variables	Latent Variables	The original Observed Variables	Eliminated Variables	The remaining Observed Variables
F1 to F5	Employee Motivation	5	F5	4
G1 to G5	Situation Appraisal	5	Nil	5
H1 to H5	Strategic Planning	5	H3	4
J1 to J5	Leadership	5	J4	4
Total		20	3	17

The remaining 17 items in STAW strategies were factor analyzed using the PCA method. As per Pallant (2001)'s recommendation, the cut-off value of 0.5 was used for factor loading and the extracted results showed that all items loaded on their hypothesized factor. Four factors with eigenvalues of greater than 1.0, were extracted and the total variance explained was 61% in the 17 items.

The KMO value was 0.863, indicating sufficient inter-correlations. The Bartlett's Test of Sphericity was significant [ $\chi^2$  (136)=2548.73,  $p < 0.001$ ]. The diagonals of the anti-image correlation matrix were all over 0.6, supporting the inclusion of each item in the factor analysis and therefore it is clear that factor analysis is suitable for this data set. The Cronbach Alpha values were more than 0.7 indicating that the measure was reliable.

#### **Confirmatory Factor Analysis (Single Factor Model):**

The CFA is used for scales validation to measure a specific construct and also to establish the validity of a single factor model that contains a closest fit to the data (DeCoster, 1998). In this study, the adequacy of the model was confirmed by fulfilling the requirement on reliability, convergent validity, and discriminant validity by examining the Factor Loadings, the Average Variance Extracted (AVE), the Composite Reliability and the Goodness of Fit.

#### **ST1 - Employee Motivation:**

The initial model which consisted of five observed variables (F1 – F5) had one variable (F5) removed in the EFA process due to poor loading. In CFA, the single factor model was found to be acceptable. The minimum factor loading is 0.75, indicating convergent validity. The chi-square/df is less than 3, all other fit indices are more than 0.90, the RMSEA is less than 0.08, indicating data fit. The regression weights, it is evident that the extracted value from square multiple correlation and standardized regression estimates revealed that all indicators of the construct Employee Motivation were reliable and valid and remained for further analysis. The AVE is 0.63, which is more than the cut-off 0.50 and the Composite Reliability value is 0.87, which is more than 0.70, indicating that the model was fit.

#### **ST2 - Situation appraisal:**

All the five variables from the initial model of five observed variables (G1 to G5) were retained as all of them met the acceptance value of 0.3 and above. In CFA, the single factor model was found to be acceptable. The minimum factor loading is 0.743, providing convergent validity. The chi-square/df is less than 3, all other fit indices are more than 0.90 and the RMSEA is less than 0.08, indicating data fit. The regression weights for Situation Appraisal Concept show that all of the items loaded well on the hypothesized factor, indicating a support for the convergent validity. The AVE is 0.67 which is more than 0.50 and the Composite Reliability value is 0.91, which is more than 0.70, indicating that the model was fit.

#### **ST3 – Strategic Planning:**

The observed variable H3 was omitted from the initial five indicators' construct of Strategic Planning. In CFA, the single factor model was found to be acceptable. The minimum factor loading is 0.67, indicating the presence of convergent validity. The chi-square/df is less than 3, all other fit indices are more than 0.90, and the RMSEA is less than 0.08, indicating data fit. The AVE and Composite Reliability values are 0.55 and 0.82 respectively, meeting the desired level, lending support for convergent validity of the measure.

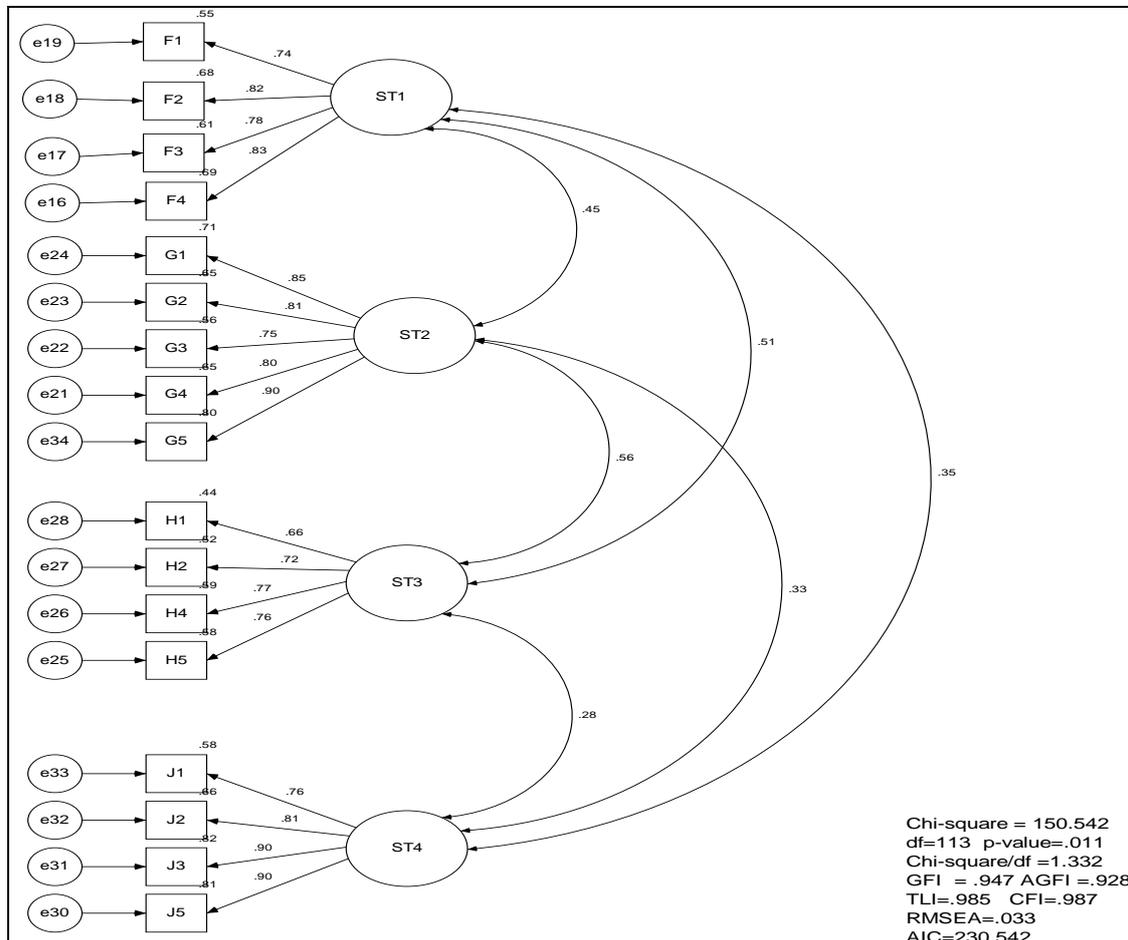
#### **ST4 – Leadership:**

After dropping item J4 from the initial model, in CFA, the single factor model was found to be acceptable. The minimum factor loading is 0.76, indicating the presence of convergent validity. The chi-square/df is less than 3, all other fit indices are more than 0.90 and the RMSEA is less than 0.08, indicating model fit. All

indicator variables were statistically valid. The AVE value is 0.72, which is more than the cut-off point of 0.50. The Composite Reliability value is 0.78, which is more than 0.70, lending support for convergent validity.

**Testing of multi-factor model for SCA:**

The multi-factor model of STAW, comprising of Employee Motivation, Situational Appraisal, Strategic Planning and Leadership, was examined. The path diagram is shown in Figure 2 and the correlation values for the subscales are presented in Table 2.



**Fig. 2:** Multi-Factor Model for STAW strategies

The multi-factor model for STAW shown in Figure 2 was found to be acceptable. The chi-square/df is less than 3, all other fit indices are more than 0.90, the RMSEA is less than 0.08, indicating model fit.

**Table 2:** Covariance and Correlation between Subscales of SCA

			Covariance	S.E.	C.R.	P	Correlation
ST1	<-->	ST2	.750	.126	5.971	***	.447
ST1	<-->	ST3	.671	.114	5.908	***	.507
ST2	<-->	ST3	.813	.123	6.593	***	.562
ST3	<-->	ST4	.388	.101	3.851	***	.277
ST1	<-->	ST4	.574	.117	4.907	***	.353
ST2	<-->	ST4	.580	.121	4.777	***	.326

Based on the correlation coefficients between the subscales, presented in Table 2, the highest value is 0.56 which is less than the required 0.85. Thus, there is no serious problem of multicollinearity between the subscales. The lowest correlation value is between ST3 and ST4 (r =0.28). This value is slightly lower than the usually acceptable value of 0.3. However, ST3 and ST4 do correlate adequately with other subscales in the model thus both the observed variables were not omitted. The results show that there is adequate convergent validity in the subscales and discriminant validity between the subscales. The overall model fit indices indicate a

reasonable level of multi-factor model fit. Thus, it reasonable to believe that a second order factor model exist for the subscales of STAW.

### **Conclusion:**

The main objective of this study is to develop a set of dimensions that speaks of Sun Tzu Art of War for business applications in the Malaysian manufacturing industries. As led by the impressions from the literature review, theoretically, there are vast similarities between the strategy employed during the war and strategies executed in the business organizations. This is because the common denominator between the two platforms is either to win or to survive. This similarities and complementarities permit business managers to formulate the framework of strategy with ease within the context of business to enhance the performance of their organization. In making comparison between war and business further, this study has explicitly examined the organization's stage of life cycle as a means of extending the knowledge on the varieties exists in the different phases of an organization.

The results show that the measurement dimensions of STAW are significantly and positively linked with the construct 'Sun Tzu Art of War strategies. From the academic perspective, this research provides a quantitative measurement scale that represents STAW strategies. In this regard, this study describes how various factors arise at different phases of life cycle at the corporate level as well at the business levels which requires a unique set of critical factors that aptly represent the art of war. The different stages of organizational life cycle affect the relative importance of different strategic actions, suggesting variance in the managerial actions to manage the organizations' resources throughout the period of the organizations' existence.

Hence, one of the major contributions of this study to business world is the extension of the art of war to form a comprehensive framework termed STAW strategies for business. Secondly, this study also explains how the various factors are considered in different stages of the organizations' life cycle. With this contribution, it is hoped that this study will open the pathway to spur the interest of many other researchers in the area of strategy to further conduct more confirmatory studies in different business areas in Malaysia and other countries. Practically, the trail that was created by this study presents a significant set of guidelines and process for the managers and practitioners formulate a set of measurement criterion for strategy execution based on the ancient art of war for their organization. In summing up, it can be said that the objective of this study which is to offer a measurement criterion for STAW strategies for Malaysian manufacturing organizations has been achieved. It can, then be concluded that this study extends our understanding on the application of STAW strategies to business. Additionally, this effort also provides a road map for the future research works.

### **Research Limitations and Future Research:**

This research was performed by way of cross-sectional design which captured the perceptions of managers of the manufacturing organizations at a point in time. Cross-sectional data also does not seize the evolutionary alterations of opinions or perceptions over a period of time that may influence the hypothesized relationships. As such, the dynamism of critical factors would be best captured by a longitudinal study which is designed to be performed a number of times over a longer time frame. The main reason for carrying this study cross-sectionally is the cost and time factors. However, since the research offers a robust footing for future research, it can be transformed to be a longitudinal study.

Another avenue for future research is that, the research may also be directed towards understanding the more dynamic method of investigating the impact of business rivalry on STAW strategies. It would be very interesting to observe the manner in which the competitive environment coupled with the management of scarce resources and the execution of agile strategies impress and impact upon each other each other over time in business organizations.

It would also be interesting to observe how the strategies differ in each stage of the business life cycle stage. For instance, given that the focus of the organization and the resources available to the organization in start-up phase can differ from the focus and the availability of the resources to a mature organizations, there would be a need for a research to observe and understand how leaders and managers of the organization formulate their strategies differently from one stage to the other. This is because, for business organizations to succeed, it requires a smooth transitioning between the stages. The efficient decoupling of existing performance and resources structures with development of another appropriate supply chain systems plays an important role as this will allow for fluidity in all strategic aspects such as accumulating, acquiring as well as divesting of resources decisions. Future researches that is able to capture this unique dynamics in organizations in the different life cycles would be able to shed some further light on application of STAW strategies in business organizations.

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