
A study of strategy implementation as expressed through Sun Tzu's principles of war

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Keywords

Strategic management, Strategic planning

Abstract

In currently facing dynamic environments, the tools of strategic management appear to be more and more important in improving the quality of decision-making. Among the great Chinese wisdoms, Sun Tzu's, *The Art of War*, is probably the oldest military book in Chinese with principles which Sun Tzu advocated, still very valuable in business operations today. Thus, this study tends to evaluate the relationships among Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control through an empirical study. Furthermore, how the levels of adoption on Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control impact on a firm acquiring its key success factors is also verified. The results show that the adoption levels of Sun Tzu's principles on situation appraisal, strategy implementation, and strategic control are highly interrelated. The adoption levels are positively related to the firm acquiring its key success factors, as well.

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Introduction

Business managers are facing dynamic environments yet today and are encountering more and more difficulties in their decision-making. In order to formulate suitable strategies, they must consider all aspects of dynamic environments and situations which they encounter. Generally speaking, there are two approaches to consider in competitive decision-making – the science and the art. It seems easier to apply the scientific approach in strategic decision-making, but research literature tends to indicate that to make the strategies more effective, application of the art approach may be the essential one. Sun Tzu's, *The Art of War*, is probably the oldest military book in Chinese, and the principles which Sun Tzu advocated continue to be very valuable in many business operations at present. When business managers take the principles of *The Art of War* into consideration in strategic decision-making, they will create numerous strategies and methods in solving countless problems.

A Chinese saying, “the marketplace is a battlefield,” (Tung, 1994) reflects that it is really difficult for business managers to operate their corporate in marketplaces. Sun Tzu advocated that when countries prepare for warfare, they must consider many things, such as the weapons, the armies, the terrain, the logistic supports, and more. In the business world, we must also check many factors in competition, such as the culture, the stakeholders, the resource owned, the policies, and so forth.

Although we know that it would be useful to adopt Sun Tzu's principles in competing, what we are interested in is which of Sun Tzu's principles are exactly implemented in the true world. Knowing whether or not the firms really get the key success factors just because they follow Sun Tzu's principles is also the focus of this study. Therefore, this research information is to collect the principles extracted from *The Art of War* and to make it more distinct.

To evaluate these issues, we need to critically review the existing literature and verify whether Sun Tzu's principles of war really help a firm to acquire its key success factors. Among others, Wee *et al.* (1991) proposed a strategic management model, called Sun Tzu's Art of War model which examines a systematic way in understanding which business practices are capable of being described and understood in the language of war.

According to Wee *et al.* (1991), some principles of Sun Tzu are found to be more relevant to marketing and management than others. First, before fighting, one must make a detailed plan. In the beginning of the classic, Sun Tzu emphasizes:

Therefore, to gauge the outcome of war we must appraise the situation on the basis of the following five criteria, and compare the two sides by assessing their relative strengths. The first of the five criteria is the way (tao), the second is climate, the third is terrain, the fourth is command, and the fifth is regulation (Ames, 1993, p. 103).

Second, when we have finalized the corporate strategy, we must make it work. In Sun Tzu's opinion, it is preferred that fighting be avoided. If the campaign is unavoidable, it is important that one should play on the other's invulnerability. Therefore, if we want to get the best performance of a combat mission, we must follow the principles of swiftness, adaptability, deceptiveness, and so forth. In the implementation of strategy, Sun Tzu comments:

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).

The place we have chosen to give the enemy battle must be kept from him. If he cannot anticipate us, the positions the enemy must prepare to defend will be many. And if the positions he must prepare to defend are many, then any unit we engage in battle will be few in number (Ames, 1993, p. 125).

Third, when the strategy is made and implemented, there will be many changes. During warfare or in business competition, we all face dynamic environments with the extent of enormous changes. Thus, we sometimes have to correct the strategy in order to fit the situation. If we want to react to changing situations, we must make mends to do so. Sun Tzu mentions:

Unless you know the intentions of the rulers of the neighboring states, you cannot enter into preparatory alliances with them; unless you know the lay of the land (hsing) – its mountains and forests, its passes and natural hazards, its wetlands and swamps – you cannot deploy the army on it (Ames, 1993, p. 161).

Thus, the reason the farsighted ruler and his superior commander conquer the enemy at every move, and achieve successes far beyond the reach of the common crowd, is foreknowledge (Ames, 1993, p. 169).

From what has been said, we know that the principles of Sun Tzu's, *The Art of War*, can be applied in today's business operations. What Sun Tzu advocates in the conditions of war can also be essential in acquiring competitive advantages in business competition. Wee *et al.* (1991) made a comprehensive evaluation on the consensus between the principles of war and the principles of business operations. Wee *et al.* (1991) suggests that

Sun Tzu's principles of war can be divided into the following four categories:

- (1) Situation appraisal;
- (2) Formulation of goals and strategies;
- (3) Evaluation of strategies;
- (4) Implementation of strategies; and
- (5) Strategic controls.

Although Wee *et al.* (1991) has proposed a conceptual framework to identify how Sun Tzu's principles of war are applied in present day business operations, their work still lacks the following components. First, Sun Tzu's principles of war have been conceptualized without further empirical validation. The conceptual constructs, as illustrated by Wee *et al.* (1991), should be further operationalized. Second, upon explaining the concepts and principles of Sun Tzu, Wee *et al.* (1991) only used specific case studies and case examples; more large scale statistical validations remain absent. Third, as the conceptual "war mode" has elaborated on many examples to explain how the principles of war can be consistent with the principles of business operations, the model did not illustrate whether the adoptions of Sun Tzu's principles of war can result in acquiring firm key success factors (KSFs).

Based on these earlier research motivation and background, the research objectives of this study are as follows:

- (1) To evaluate which principles of Sun Tzu's, *The Art of War*, can be applied in real business enterprises when business managers formulate their competitive strategies.
- (2) To investigate how the levels of adoption on Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control impact on firm's acquiring its key success factors.

Literature review

Sun Tzu (named Sun Wu) was born in the state of Ch'i at the end of the Chinese Spring and Autumn period (551-479 BC). He is as contemporary as Confucius and Lao Tzu. Although the details of Sun Tzu's life are nearly lost, Sun Tzu's work, *The Art of War*, is still fundamental in classical military literature. Sun Tzu's, *The Art of War*, is the oldest military classic in Chinese literature; outside China, it seems to be one of the most revered and well known military texts. The first western translation appeared in French and was published in Paris around 1772. Not until 1905, did the first English translation appear. Although it was complete about 2,500 years ago, the book remains a compulsory text in major military schools around

the world, and its influence on today's military thinking is undisputed.

Strategic management is a process that combines interrelated activities – strategic analysis, strategy formulation, strategy implementation, and control (Hill and Jones, 1998) based on this process framework. This study would like to explore the relationships between Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control.

The relationships among Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control

Strategic marketing is the essence of each successful firm (McComb, 2001). At the beginning of strategic marketing, one firm analyzed the firm's macroenvironment, the industry in which the firm operates, as well as the inside of the firm (Attaran and Grijalva, 2001; Wright *et al.*, 1994). Therefore, the firm is able to find out their strengths and weaknesses, and also their opportunities and threats outside. Through the SWOT analysis, one firm formulated its strategies (Hill and Jones, 1998; Quazi, 2001; Wright *et al.*, 1994). Furthermore, the firm could generate the ability to compete in today's dynamic environment only through effective implementation. Fennelly (1998) also addressed that through strategic management, all firms scan the environment, develop and implement strategies to react to this environment, and seek strategic control system (performance-related information) to feed back to the process of formulation and implementation of strategy. Concerning strategic control is one of the most important mechanisms in strategic management, Rowe (1994) has addressed that strategic control is an ongoing process used to adopt implementation in responding to changes in the internal or external environment. Based on these studies, it is expected that in a thorough strategic management process, all three components of the strategic management: situation appraisal, strategy implementation, and strategic control are highly interrelated, and essential to the survival of the company.

Sun Tzu argued that before deciding how to attack (or defend), one has to evaluate:

- “Which general would be most responsible?”
- “Which troops would be the strongest?”
- “Which army has the best trained officers and men?”
- “Which army executes the law and instructions most effectively?”
- “Which army best administers rewards and punishments?”
- “Which ruler possesses the most moral influence?”

- “Which army would be the most capable in obtaining the advantages of climate?”
- “Which army is most capable of obtaining the advantages of terrain?” (Wee *et al.*, 1991)

In other words, before implementing the strategy, one has to evaluate the field situations:

- the way (tao),
- climate,
- terrain,
- command, and
- regulation.

Thus, Sun Tzu's principles of war are consistent with the essentials of the strategic business management. According to these literatures, the hypotheses advocated in this research are as follows:

- H1. The degree of the adoption of Sun Tzu's principles of situation appraisal will directly impact on a firm's adoption of Sun Tzu's principles of strategy implementation and strategic control.

The relationships among Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control, and its KSFs

Ganuge (2001) has addressed that a firm which needs success must consider the three KSFs:

- (1) listening to the client's needs;
- (2) assessing the environment; and
- (3) coaching the personnel involved.

However, it is said that success factors could change as the environment and strategies change (Prince, 1998; Saad, 2001), and under such conditions they flexibly respond to changes in the environment acting as one of the most essential KSFs for any firm (Liu, 1998; Taudes, 1998). Wing and Perry (2001) however, proposed that the ability to scan the environment, identify new markets and execute strategy changes are the KSFs that would make the firm succeed. According to this literature, we know that the ability to scan the environment can become one of the KSFs in making firms succeed, which Sun Tzu has advocated. Sun Tzu's, *The Art of War*, proposes that before setting up for war, one should consider these five factors and seven dimensions (Lin, 1994; Wee *et al.*, 1991; Wong *et al.*, 1998). The five factors are “the way (tao), climate, terrain, command, and regulation” and the seven dimensions are “Which ruler has the way (tao)? Which commander has the greater ability? Which side has the advantages of climate and terrain? Which army follows regulations and obeys orders more strictly? Which army has superior strength? Whose officers and men are better trained? Which side is more strict and impartial in

meting out rewards and punishments?” Through the assessment of these factors, we could build a strong organization, and predict the firm’s success or failure against competitor’s strengths and weaknesses. If we get relative advantages from the situation appraisal, we may formulate the goals and strategies to offend the competitors; if not, we will find the way to defend ourselves invincibly. Thus, it is proposed that the higher level of the adoption of Sun Tzu’s principles of situation appraisal will have more influences on generating KSFs.

In addition, strategy implementation is the process of transforming strategic intentions into actions. In strategy implementation, the Mckinsey 7-S framework is usually adopted to be analyzed (Peters and Waterman, 1982). The Mckinsey 7-S framework considers the coordination of strategy, share value, structure, system, staff, style and skill. In Sun Tzu’s, *The Art of War*, it also mentions the following factors in supporting strategy implementation:

(1) *Swiftness*:

That a bird of prey when it strikes can smash its victim to pieces is due to its timing (Ames, 1993, p. 120).

If battle is protracted, your weapons will be blunted and your troops demoralized. If you lay siege to a walled city, you exhaust your strength. If your armies are kept in the field for a long time, your national reserves will not suffice (Ames, 1993, p. 107).

It is believed that as a firm’s strategy implementation is swifter than its competitor, pioneer status and innovation can materialize (Kotler, 1997).

(2) *Adaptability*:

“Surprise” and “Straightforward” operates give rise to each other endless just as a ring is without a beginning or an end and who can exhaust their possibility (Ames, 1993, p. 120).

Thus one’s victories in battle cannot be repeated – they take their form (hsing) in response to inexhaustibly changing circumstances (Ames, 1993, p. 126).

There are commands from the ruler not to be obeyed (Ames, 1993, p. 135).

Raymond *et al.* (2001) addressed that in the present dynamic environment, firms should continuously innovate to distinguish themselves from the competitors, and make a quick response to their changes.

(3) *Deceptiveness*:

Thus, the expert at getting the enemy to make his move shows himself (hsing), and the enemy is certain to follow. He baits the enemy, and the

enemy is certain to take it. In doing so, he moves the enemy, and lies in it for him with his full force (Ames, 1993, p. 120).

At first be like a modest maiden, and the enemy will open his door; afterward be as swift as a scurrying rabbit, and the enemy will be too late to resist you (Ames, 1993, p. 162).

In a challenger’s strategy, if one firm wants to challenge the leader in the industry, one may attack the strong side to tie up the defender’s troops, launching the real attack at the side or rear getting the more competitive advantage (Kotler, 1997).

(4) *Available means*:

He who uses fire to aid the attack is powerful; he who uses water to aid the attack is forceful. Water can be used to cut the enemy off, but cannot be used to deprive him of his supplies (Ames, 1993, p. 166).

Porter (1980) provides the tools and techniques for the firm to compete in the industry finding competitive edges: overall cost leadership, differentiating, and focusing. He also advocated that through the analysis of the value chain, the firm can also create and sustain a competitive advantage in its industry (Porter, 1985).

(5) *Anticipation*

To be able to take the victory by varying one’s position according to (yin) the enemy’s is called being inscrutable (shen) (Ames, 1993, p. 127).

The appropriate season is when the weather is hot and dry; the appropriate days are those when the moon passes through the constellations of the Winnowing Basket, the Wall, the Wings, and the Chariot Platform (Ames, 1993, p. 165).

Boney (1995) pointed out that if the firm needs to survive, it must restructure in anticipation of competition, and if it does not, it is “putting their heads in the sand” and may not survive. According to this literature, we know that Sun Tzu’s principles in strategy implementation are associated with gaining the KSFs of the firm.

Furthermore, the strategic control system monitors the execution of the strategy. While the environments changing, the strategy changes to adapt these changes. Hence, if one wants to know exactly what is different or what has been done, he or she must depend on strategic control. Strategic control is the essential part of any strategy.

In Sun Tzu’s, *The Art of War*, he mentions that to acquire information and to prevent the leakage of information are essential:

Unless you know the intentions of the rulers of the neighboring states, you cannot enter into preparatory alliances with them (Ames, 1993, p. 161).

From the inference above, it is proposed that the level of adopting Sun Tzu's principles in terms of situation appraisal, strategy implementation, and strategic control, can affect the acquiring KSFs for a firm's success.

H2. The degree of the adoption of Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control will directly impact on a firm's obtaining its key success factors.

Research design and methodology

Construct measurement

The following four major variables were operationalized in this study:

- (1) Sun Tzu's principles of situation appraisal;
- (2) Sun Tzu's principles of strategy implementation;
- (3) Sun Tzu's principles of strategic control; and
- (4) key success factors.

The research variables for the constructs of situation appraisal, strategy implementation, and strategic control were selected from Wee *et al.* (1991). Eight variables were selected for the construct of situational appraisal, 12 were for strategy implementation and nine were for strategic control. Respondents were asked to indicate the level of adoption for their firms, on each of the above items. Seven-point rating scales were developed for measuring the opinions of respondents on all items listed. The anchor point "1" is representing that these items were "nearly none to be adopted," with "7" representing that these items were "nearly always being adopted". For the construct of KSFs, 17 items were selected from Vasconcellos and Hambrick (1989) and Aaker (2001). Seven-point rating scales were developed for measuring the opinions of respondents on all items listed in this section. The anchor point "1" is representing the respondents' firm which performs "relatively worse" than the main competitor; and "7" is representing the respondents' firm which performs "relatively better" than the main competitor.

The conceptual model

Drawing upon the earlier literature, the interrelationships among Sun Tzu's principles of situation appraisal, strategy implementation, strategic control, and KSFs are shown in Figure 1.

Questionnaire design and sampling plan

Based on this discussion, a 55-item survey questionnaire was developed to obtain responses from high, middle, and low level managers/

supervisors about their opinions on these variables. The questionnaire of this study consisted of seven parts: situation appraisal (eight items), strategy implementation (12 items), strategic control (nine items), KSFs (17 items), the information of firms (four items) and the information of respondents (five items). The questionnaire was pretested through a pilot study by EMBA students in one of the most top-ranked universities in Taiwan. Questionnaire items were revised based on results of the pilot study before they were put into final form. The contents of the questionnaire are shown in Table I.

A sampling plan was developed to ensure that larger corporations in Taiwan were included in this study. This study selected the largest corporations in Taiwan as samples. According to the "The Largest Corporations in Taiwan (2001)" published by China Credit Information Service, Ltd. (CCIS), the top 100 firms of manufacturing and the top 100 firms of services were selected. Then, the target populations were the high, middle, and low level managers/supervisors of these 200 firms. In total, 1,000 questionnaires were mailed.

Research analysis and results

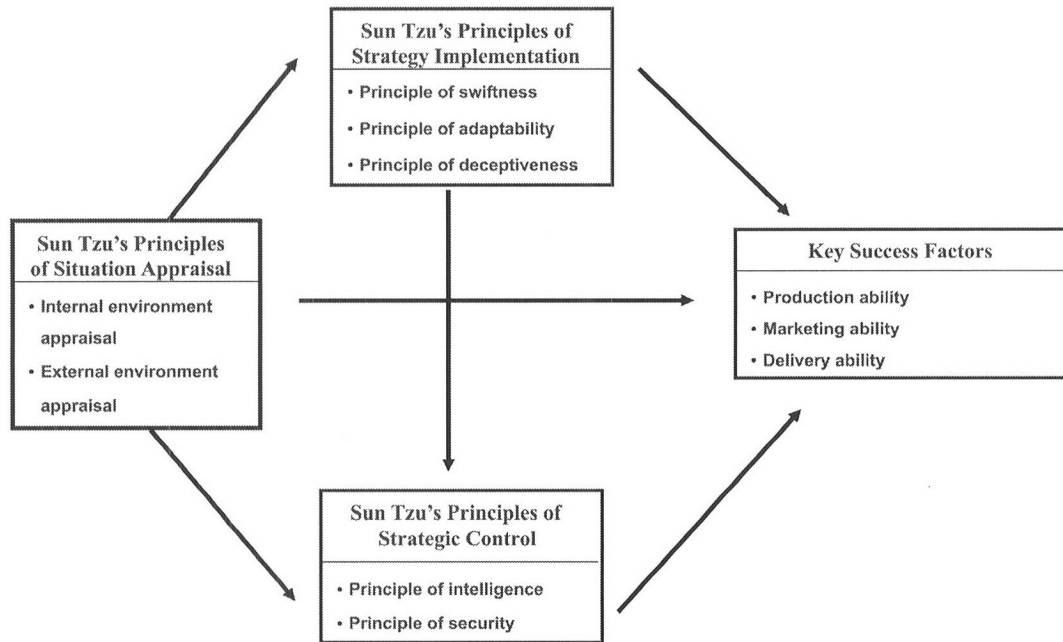
Characteristics of respondents

Preliminary analyses were conducted in this section to provide information about response rates and characteristics of the respondents and the sample firms. The data were gathered over a 3-month period, beginning in the middle of January 2002 and ending in the middle of April 2002 and included one pilot test and one final survey. In the final survey, a total of 1,000 survey questionnaires were mailed to respondents. With follow-up telephone calls, 221 questionnaires were answered. A total of 203 questionnaires were usable, and 18 questionnaires were unusable. The response rate was approximately 20.3 percent. Among the respondents, 19.7 percent of respondents were high-level managers, 31 percent were middle-level supervisors, 23.6 percent were low-level directors, and 25.6 percent were among others.

Reliability tests

To verify the dimensionality and reliability of the constructs of this study, coefficient α analysis was conducted to purify the questionnaire item. Coefficient (Cronbach) α measured the internal consistency of each identified dimension. The selected criteria were: the coefficient α is greater than 0.5, and the item-to-total correlation value is greater than 0.5.

Figure 1 The conceptual model of the study



As shown in Table I, the item-to-total and α coefficients are all significantly high rated. Thus, we conclude that the factors identified in Table I for each construct are valid, and factors, rather than variables, as the unit of analysis in the following sections will be used.

Interrelationships among situation appraisal, strategy implementation and strategic control

To evaluate the interrelationships between situation appraisal and strategy implementation, between situation appraisal and strategic control, and between strategy implementation and strategic control, three sets of canonical analysis were conducted, respectively. The results are shown in Figure 2.

Regarding the interrelationships between situation appraisal and strategy implementation, firms scanning the internal and external environments will emphasize on swiftness, adaptability, and deceptiveness in strategy implementation ($CANR^2 = 0.674$, $F = 50.261$, $p = 0.000$, $RI = 41.49$ percent). It also shows that situation appraisal consists of internal and external environment appraisal with an explained variance amounting to 52.76 percent. Strategy implementation includes swiftness, adaptability, and deceptiveness with an explained variance amounting to 41.49 percent. Inferred from the above results, it is clear that interrelationships do exist between the factors of situation appraisal and strategy implementation.

Regarding the interrelationships between situation appraisal and strategic control, it is shown that firms scanning the internal and external environments tend to adopt security in strategic control ($CANR^2 = 0.360$, $F = 24.951$, $p = 0.000$, $RI = 17.73$ percent). It also shows that situation appraisal consists of internal and external environment appraisal with an explained variance amounting to 28.34 percent. Strategic control only includes one factor, security, with an explained variance amounting to 17.73 percent. From these results, it is clear that interrelationships do exist between the factors of situation appraisal and strategic control.

Regarding the interrelationships between situation appraisal and strategy implementation, firms adopting swiftness, adaptability, and deceptiveness in strategy implementation, will emphasize intelligence and security ($CANR^2 = 0.411$, $F = 30.783$, $p = 0.000$, $RI = 24.13$ percent). It also indicates that strategy implementation is composed of swiftness, adaptability, and deceptiveness with an explained variance amounting to 29.10 percent. Strategic control includes intelligence and security with an explained variance amounting to 24.13 percent. From these results, it is clear that interrelationships do exist between the factors of strategy implementation and strategic control. These results seem to suggest that firms taking a higher level of adoption on Sun Tzu's principles of situation appraisal tend to perform better on strategy implementation and strategic control.

Table I Factor patterns and coefficient alpha analysis of research construct

Variables	Factor and item	Item-to-total zcorrelation	Cronbach's α
Situation appraisal	<i>Internal environment appraisal</i>		0.867
	SA1. The leader is wise and capable, and able to gain the moral support of his subordinates so much so that they will be willing to accompany him through the thick and thin of battles	0.626	
	SA2. The managers have the characteristics of wisdom, integrity, humanity, courage and discipline	0.700	
	SA3. The main points of management are effective policies, programs, operating procedures, channels of communication, lines of authority, and responsibility	0.697	
	SA4. The company has its relative strengths in terms of resources, such as manpower, management, money, machines, materials, methods of production (including technology), and markets served. These variables from the company's competitive edges are advantages to being big and strong	0.630	
	SA5. With well-trained personnel, the firm engages in more activities with greater confidence	0.673	
	SA6. The company has a more effective disciplinary procedure and reward and punishment system, therefore it is more geared towards higher performances and in a stronger position to compete	0.695	
	<i>External environment appraisal</i>		0.668
	SA7. The firm takes into account the various changes in the business and economic environment just outlined and adapt its strategies accordingly	0.503	
	SA8. Where the firm is located and positioned in the marketplace is one important fact when the firm considerate its competitive competence	0.503	
Strategy implementation	<i>Swiftness</i>		0.886
	SI1. Attacking at the most appropriate and suitable moment	0.752	
	SI2. Attacking in the correct timing to make our force to exploit the advantages of the situation	0.775	
	SI3. Achieving synergy of actions to overwhelm the enemy and to deny the enemy the benefit of time to develop effective defenses and retaliatory measures	0.805	
	SI4. Aiming to complete the whole campaign within the shortest time possible	0.679	
	<i>Adaptability</i>		0.919
	SI5. Being flexible in our actions with respect to strategic and tactical variations in order to gain maximum advantage of changing circumstances	0.785	
	SI6. Constantly searching for new and innovative ways of meeting the challenges offered by the ever-changing circumstance	0.802	
	SI7. Being very responsive to changes in situations, as well as able to take preemptive action	0.857	
	SI8. Concerning about changes in the environment in the implementation of strategies	0.828	
SI9. Anticipating the reaction of competitor so that men and resources can be accurately deployed for the decisive win	0.693		
<i>Deceptiveness</i>		0.881	
SI10. Achieving distinct advantages in combat through the use of baits, which can bring the competitor to where you want to fight	0.713		

(continued)

Table I

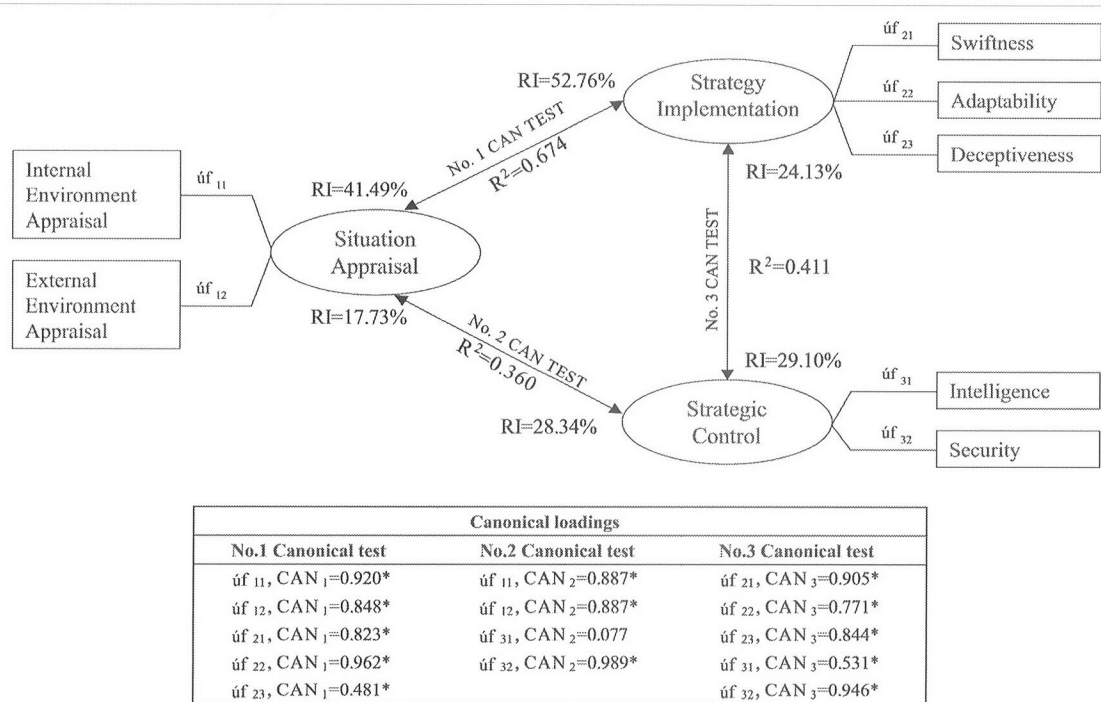
Variables	Factor and item	Item-to-total zcorrelation	Cronbach's α	
Strategic control	SI11. Confusing the competitor about your real intention and lower the defenses of the enemy and indirectly encourage his arrogance	0.821	0.839	
	SI12. By surprising competitors, the firm catches the competitor off guard and unprepared	0.777		
	<i>Intelligence</i>			
	SC1. Using inside agents (i.e. the employees or important people in enemy's organization) to spy on the state of affairs of inside agents' firm and to sow discord among loyal official, as well as between such officials and the leader	0.565	0.867	
	SC2. Using double agents (i.e. the intelligence agent from enemies) to know the competitor's secrets, to recruit and communicate with the other types of agents, and to assist in the infiltration of the competitor with other spies	0.739		
	SC3. Using doomed agents (i.e. our employees who likes to spread news) to spread fabricated information on the company that we leak out to the competitors to mislead them	0.736		
	SC4. Using living agents (i.e. our employees worked in the enemy's firm for a period then come back) to observe the competitor's movement, to understand their strengths and weaknesses, to pilfer their plans and state secrets, and to smuggling relevant information out of the competitor's territory	0.667		
	<i>Security</i>			
SC5. Knowing that at a strategic level, the strategic plan should be guarded with utmost security	0.743			
SC6. Taking active measure to protect secrets and not to leave them to some third party	0.796			
SC7. Using strong and punitive deterrents for those who disclose corporate secrets	0.685			
Key success factors	SC8. Putting its competitors into a more difficult guessing game by being adaptable and flexible in the use of strategies	0.658	0.890	
	<i>Production ability</i>			
	KSF1. Image (goodwill, prestige, and attitude in the minds of the customers)	0.572		
	KSF2. Product research and development (activities directed towards modifying improving, adding new features to, and developing new products)	0.692		
	KSF3. A variety of products	0.609		
	KSF4. Process research (engineering activities directed toward efficiencies in the way the products are manufactured)	0.752		
	KSF5. Technical skills of manufacturing workforce (technical skills and level of expertise of workforce in the manufacturing plant)	0.727		
	KSF6. Quality control (ability to maintain uniformly high level of output quality)	0.801		
	KSF7. Purchasing (ability to obtain access to low-cost or reliable sources of inputs)	0.626		
	KSF8. Labor relations (few stoppages and interruptions in plant production; low level of turnover, lateness and absenteeism)	0.546		

(continued)

Table I

Variables	Factor and item	Item-to-total zcorrelation	Cronbach's α
	<i>Marketing ability</i>		0.774
	KSF9. Marketing ability (ability to persuade customers, knowledge of marketing and buyer behavior)	0.654	
	KSF10. Advertising and sales promotion	0.550	
	KSF11. Service (installation, coaching the customers in using the product, and repairs)	0.628	
	<i>Delivery ability</i>		0.717
	KSF12. Distribution (transportation, warehousing, and expediting) (ability to maintain low distribution costs and to assure that deliveries are made on the right dates and in the right quantities)	0.559	
	KSF13. Location of manufacturing facilities (efficient proximity to market; to transportation means; or to raw materials and labor)	0.559	

Figure 2 Canonical relations among situation appraisal, strategy implementation, and strategic control



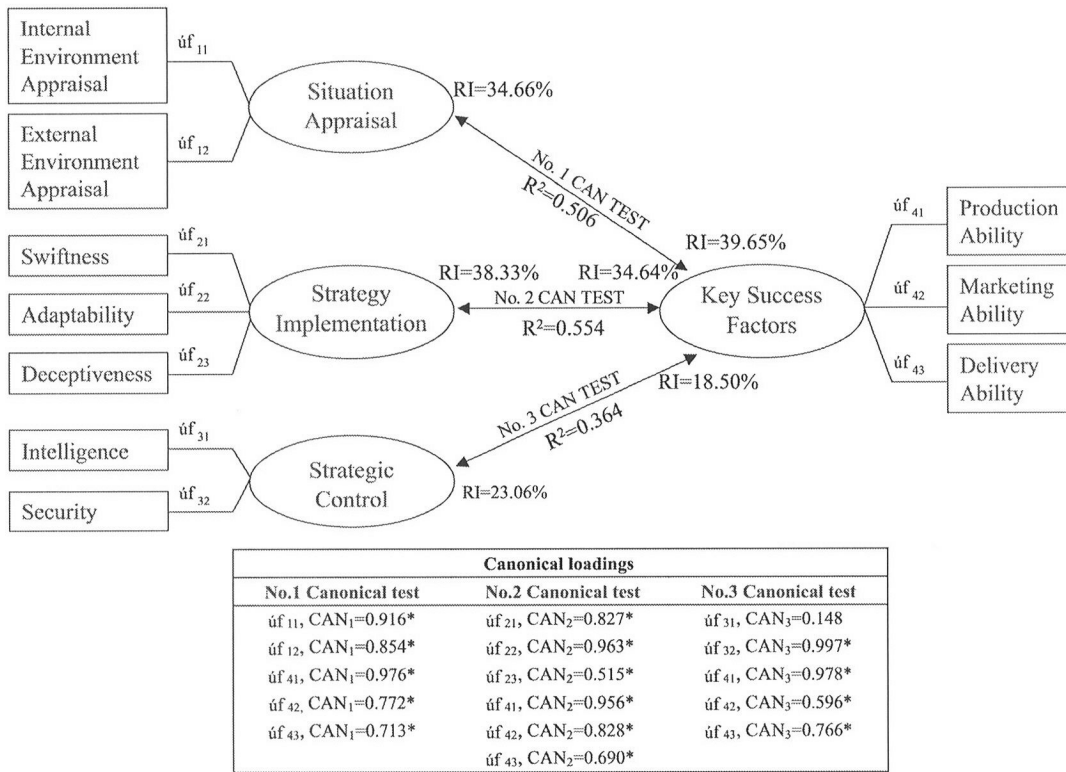
These above results have performed some managerial implications. As Sun Tzu advocated that before fighting, one should evaluate the internal and external environments (five criteria and seven dimensions) in order to know his relative strong points in strategy implementation. Also, after one uses situation appraisal, they will encounter some changes. They will then need to use strategic control to get their information to respond for these changes. Furthermore, these three kinds of variables will influence each other. From this discussion, we can conclude that *H1* is supported.

The interrelationships among situation appraisal, strategy implementation, strategic control, and KSFs

To evaluate the interrelationships between situation appraisal and KSFs, between strategy implementation and KSFs and between strategic control and KSFs, three sets of canonical analyses were conducted, respectively. The results are shown in Figure 3.

Regarding the interrelationships between situation appraisal and KSFs, firms scanning the internal and external environments will lead to higher production, marketing, and delivery ability

Figure 3 Canonical relations among situation appraisal, strategy implementation, strategic control, and KSFs



(CAN $R^2 = 0.506$, $F = 28.273$, $p = 0.000$, $RI = 34.66$ percent). It also shows that situation appraisal consists of internal and external environment appraisal with an explained variance amounting to 39.65 percent. KSFs include production, marketing, and delivery ability with an explained variance amounting to 34.66 percent. It is clear that interrelationships do exist between the factors of situation appraisal and KSFs.

Regarding the interrelationships between situation appraisal and KSFs, it is shown that the interrelationships between strategy implementation and KSFs are positive and significant. Firms adopting swiftness, adaptability, and deceptiveness in strategy implementation will possess the production, marketing, and delivery ability to succeed (CAN $R^2 = 0.554$, $F = 21.663$, $p = 0.000$, $RI = 38.33$ percent). It also indicates that strategy implementation is composed of swiftness, adaptability, and deceptiveness with an explained variance amounting to 34.64 percent. KSFs consist of production, marketing, and delivery ability with an explained variance amounting to 38.33 percent. From these results, it is clear that interrelationships do exist between the factors of strategy implementation and KSFs.

Regarding the interrelationships between strategic control and KSFs, it is shown that the

interrelationships between strategic control and KSFs are significant. Firms adopting security in strategic control will keep production, marketing, and delivery ability as their KSFs (CAN $R^2 = 0.364$, $F = 20.560$, $p = 0.000$, $RI = 23.06$ percent). It also shows that strategic control includes only one factor, security with an explained variance amounting to 18.50 percent. KSFs consist of production, marketing, and delivery ability with an explained variance amounting to 23.06 percent. Inferred from these results, it is clear that interrelationships do exist between strategic control and KSFs.

These results seem to suggest that firms taking a higher level of adoption on Sun Tzu's principles of situation appraisal, strategy implementation, and strategic control tend to perform better on KSFs. These results have performed some managerial implications. Wing and Perry (2001) proposed that the ability to scan the environments would produce the KSFs to make the firms succeed. Some other scholars also addressed that strategy implementation and strategic control will lead to the KSFs (Bamber *et al.*, 1999; Farrell and DeRose, 2000; Grundy, 1996; Pavetti *et al.*, 2001; Rousseau and Rousseau, 1999/2000). These statements are the same with the analysis results of this study. Therefore, $H2$ is supported.

Conclusions and suggestions

The major objective of this study was to test the relationships between the principles of Sun Tzu's, *The Art of War*, and its KSFs. Empirical tests were implemented to verify whether Sun Tzu's principles of war could be adopted and put into the real business practices – situation appraisal, strategy implementation, and strategic control. The empirical validations concluded the following results:

First of all, it is indicated that there were significant interrelationships between Sun Tzu's principles of situation appraisal and of strategy implementation. In line with the results of Fennelly (1998), he addressed that through strategic management, all firms scan the environment, develop and implement strategies to react to its environment, and seek strategic control system (performance-related information) in order to feed back to the process of formulation and implementation of strategy. This study suggests that if firms thoroughly scan the internal and external environments, they will be able to emphasize more on swiftness, adaptability, and deceptiveness in their strategy implementations. Sun Tzu advocated that one should consider the internal and external environment factors before waging in war. These factors include moral influence, generalship, climate, terrain, doctrine, strengths, training, and discipline and are relevant to the SWOT analysis. After assessing the internal and external factors, one can determine whether or not to attack or defend. If one determines to attack their competitors, they must make the swift actions, keep flexible, and do deceptive activities to confuse the competitors. We can understand the meanings of strategy implementation from Sun Tzu's well-known sayings:

In war prize the quick victory, not the protracted engagement (Ames, 1993, p. 109).

For gaining strategic advantage in battle, there are no more than "surprise" and "straightforward" operation. They produce inexhaustible possibility (Ames, 1993, p. 119).

At first be like a modest maiden, and the enemy will open his door; when ready, seem unready; when nearby, seem far away; and the enemy will be too late to resist you (Ames, 1993, p. 162).

The results of this study also show that there were significant interrelationships between Sun Tzu's principles of situation appraisal and strategic control, which includes intelligence and security. Sun Tzu advocated that one should check the internal and external environment factors before setting up the fight, simply meaning that one must

know the information of oneself, the competitor, and the environment. After confirming whom to fight with, and where to fight, one will seize the information by any method keeping others from knowing their organization activities. As Sun Tzu said:

Unless you know the intentions of the rulers of the neighboring states, you cannot enter into preparatory alliances with them; unless you know the lay of the land (hsing) – its mountains and forests, its passes and natural hazards, its wetlands and swamps – you cannot deploy the army on it; unless you can employ local scouts, you cannot turn the terrain to your advantage (Ames, 1993, p. 161).

Between Sun Tzu's principles of strategy implementation and strategic control, the interrelationships were also significant. It was mentioned that one should be swift, adaptable, and deceptive in strategy implementation, but one should acquire a wealth of information in order to make them be flexible in their actions during competition. Hence, one should not only seize the information from one source, but also keep the secrets from being disclosed. Sun Tzu stated that one can get information by espionage, however, in today's business operation practices, this may be considered as unethical and illegitimate. If there were such espionage activities, they must be kept secretive, as it goes without saying that "keep secrecy" is very important. As Sun Tzu said, "Where a matter or espionage has been divulged prematurely, both the spy and all those he told should be put to death".

In addition, the results of the canonical analysis indicate that Sun Tzu's principles of situation appraisal, strategy implementation and strategic control had significant influences on KSFs. As mentioned in earlier researches (Wing and Perry, 2001), the ability to scan the environments will produce the KSFs to help the firms succeed. Some other scholars also addressed that strategy implementation and strategic control have led to the KSFs (Bamber *et al.*, 1999; Farrell and DeRose, 2000; Grundy, 1996; Pavetti *et al.*, 2001; Rousseau and Rousseau, 1999/2000). These statements conclude similar results as compared to the results in this study.

These results show that if firms highlight on scanning internal and external environments, maintain swiftness, adaptability, and deceptiveness in strategy implementation, while using strategic control with security and intelligence, they will obtain the KSFs – such as production, marketing, and delivery ability. The results are clear in Sun Tzu's, *The Art of War*. He advocated that one will know which KSFs to focus on by using situation appraisal:

He who knows the enemy and himself will never in a hundred battles be at risk; He who does not know the enemy but knows himself will sometimes win and sometimes lose; He who knows neither the enemy nor himself will be at risk in every battle (Ames, 1993, p. 113).

In strategy implementation, swiftness, adaptability, and deceptiveness will lead the firms to succeed. In Sun Tzu's words:

Therefore, in warfare rely on deceptive maneuvers to establish your ground, calculate advantages in deciding your movements, and divide up and consolidate your forces to make your strategic changes (Ames, 1993, p. 130).

Thus, advancing at a pace, such an army is like the wind; slow and majestic, it is like a forest; invading and plundering, it is like fire; sedentary, it is like a mountain; unpredictable, it is like a shadow; moving, it is like lightning and thunder (Ames, 1993, p. 130).

As far as strategic control is concerned, it also has a significant impact on KSFs. It is important to have the information or security of competitors in order to know others' relative strengths; we can then imitate or learn from them. It is also necessary to keep others from knowing our KSFs, so that we can keep core competence for a longer period of time.

Although these research results are interesting, several limitations do exist in this study. These limitations suggest areas and directions for future research. The translated meanings of principles of the Sun Tzu's, *The Art of War*, the collection of research data, and the analysis methods all serve to temper the results of this study.

First, Sun Tzu's, *The Art of War*, was written in classic Chinese, and it is not possible to translate Sun Tzu's principles in vernacular perfection. Therefore, some of the meanings may be misinterpreted or possibly missed. Owing to the constraints of time and versions of *The Art of War* availability, this study adopts the translation version from Ames (1993). The exact, correct translated meaning may need further validation.

Second, this study collected the research data through mailed questionnaires. It takes time and effort to receive the answers from the respondents. Meanwhile, so many mailed questionnaires were sent to large firms that the pleasure to respond to the questionnaires was low. The respond rate was low, therefore, showing results with difficulty in testing the hypotheses.

Third, some earlier studies on Sun Tzu's, *The Art of War*, tended to adopt qualitative methods, with very few cases in their analyses. Although the empirical validation in this study has made a breakthrough to this existing literature, the results still need to be replicated in a more general setting

in order to establish external validity of these conclusions.

Finally, there are many great Chinese scholars – Confucius, Mencius, Lao Tzu, Zhuang Tzu, and so forth. They also developed many great thoughts; some of these thoughts continue to be very useful in our business operations. Therefore, future research can take these thoughts as research variables and compare them to mental philosophies in our real world business settings.

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Further reading

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