The Influence of Sales Ability (SA) and Boom-Changing of Macro Environmental Factor (ME) on Financial Performance (FP): Meta-Analysis

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Abstract

The main purpose of this study is to understand the impact of Sales Ability (SA) and Boom-Changing of Macro Environmental Factor (ME) of the publicly-listed Aconstruction companies in Taiwan on Financial Performance (FP). The data collection is based on past research by scholars at home and abroad countries and the collected data are analyzed by adopting Meta-Analysis. The results of this study found that (1) Sales Ability (SA) of Taiwan's publicly-listed construction companies has a positive impact on Financial Performance, but not significant; and (2) the boom-changing of Macro Environmental Factor (ME) encountered by Taiwan's publicly-listed construction companies has also a positive impact on Financial Performance, but not significant. The results of this study can be used as a reference for the management implications of decision makers of Taiwan's publicly-listed construction companies.

Keywords: Sales Ability, Macro Environmental Factor, Financial Performance

1. Introduction

Looking back on the past literature, the business boom cycle is closely related to the financial indicators of enterprises, and the indicators of financial performance are affected by the macro boom cycle in different industries. Economic uncertainty deepened the recession and slowed the recovery resulting from the financial tsunami, which not only hit industries but also indirectly affected the economy (Liu, 2013).

And the enterprise's operating performance and the macro environmental market climate has a very close relationship, as far as sustainable management is concerned, construction operators in order to use funds efficiently, their project investment must consider the external environment and internal conditions of the impact of changes, carefully measure risk and reward in order to make a detailed decision. Do good jobs of market segmentation, select target markets, avoid competition, strengthen their core competitiveness and as a solid and unbreakable barrier to entry, with the concept of target marketing, which is mutually echoing, and good market segmentation, if combined with their core competitiveness that will bring considerable profits (Li, 2015).

In today's society in Taiwan, housing issues are more and more attention, so many large housing agencies in recent years rapidly rise, and not only how to grasp the source of customers to become the biggest problem of companies, but also have tried to find out the important variables affecting customer choice (Zhong, 2005). Therefore, whether the sales staff has good sales ability and high growth demand intensity will have a significant impact on the sales performance and objectives of individuals and organizations.

The sales pattern of high-priced products such as real estate is different from that of ordinary goods. In high unit price, highly involved in product transactions, sales staff should be effective and easy to have a decisive factor. Salesmen and consumers have certain skills, rhythm and modes of operations in communication and negotiation, but in addition to these professional modes of operations, sales staff and customers have certain personality traits, gender, but also have a considerable degree of impact on the effectiveness of communication (Sun, 1999).

Moreover, performance is a very important basis for studying organizational behavior, whether it is the establishment of organizational culture, knowledge management, service innovation, etc., the ultimate goal is to improve the performance of the organization, especially sales staff is the main source of revenue and cost generation of commercial organizations. How to improve the performance of sales staff has always been a concern of the industry and academia. (Chen & Su, 2006).

Therefore, in a highly competitive market, sales staff in addition to facing changes in the macro environmental factors, in the face of many competitors and consumer demand, only to put forward products that meet customer needs, and customer satisfaction, in order to achieve sales performance.

From the above, Meta-Analysis is used as a research tool and is expected to understand the impact of changes in Sales Ability (SA) and Macro Environmental Factor (ME) on Financial Performance (FP) of Taiwan's publicly-listed construction companies, which is the main purposes of this study.

2. Literature Review

This study is to understand the correlation between the research results of past scholars and the subject of this study; from the literature review to develop the research hypotheses and establish the research framework based on its theory and related research explained below respectively.

2.1 Sales Ability (SA)

The definition of Sales Ability in this study is "the enterprise formulates an efficient marketing strategy so that the marketing expertise of the enterprise directly affects the customer's desire to buy", and the above definition is based on the following literature.

Crosby, Evans & Cowles (1990) considered the behavior of relationship sales to be a behavioral tendency in the sales process to establish, maintain, and develop a buy-to-sell relationship. In addition, salesperson engaged in sales-friendly behaviors (e.g., close contact, mutual contact, willingness to cooperate, etc.) has a significant effect on the quality of relationships between customer perspectives (Zhou, 2016).

Chen (2006) proposed the classification of Sales Ability (SA), including: (1) advertising (SA_1) and (2) business promotion ability (SA_2).

Lin, Tang, , Liu & Shen (2011) pointed out that sales staff with service-oriented personality traits can better meet the comprehensive expectations of consumers for emotional feelings and demand when they are serviced, thus providing customers with higher service value and creating higher sales performance.

Xu (2014) proposed that Sales Ability contains three sub-constructs: (1) to promote the perspective customers; (2) Initial interview and understanding of customer needs; and (3) delivery of proposals and recommendations.

Lai (2019) believed that there are many factors that affect sales performance, whether it is the personality traits of the salesperson himself, the salesman's sales skills and

expertise, the interpersonal relationship of sales staff's workplaces, the philosophy of company's own management system and sales outcomes will affect the sales performance of the salesperson.

Synthesis of the above, and the classification of Sales Ability (SA) in this study refers to Chen, Hsin Lung's (2006) classification. Therefore, this study focuses on two sub-constructs of Sales Ability (SA), namely: (1) advertising (SA_1) and (2) business promotion ability (SA_2).

2.2 Macro Environmental Factor (ME)

The definition of Macro Environmental Factor (ME) in this study is "the concept of a cycle of economic fluctuations and the consideration of natural and man-made disasters (i.e. Earthquakes, the prevalence of New corona virus (COVID 19) outbreaks, etc.", and the above definition is based on a combination of the following literature

Pearce & Robinson (2000) divided the external environment into (1) macro-environment: economic, social, political, scientific and technological, environmental ecology; (2) Industrial environment: barriers to entry, supplier bargaining power, alternatives, existing competitors; and (3) Operating environment: competitors, customers, labor, suppliers, and lenders. The cognition of the environmental level, with the uncertainty of the environment and the expansion of the influence organization strategy, the environmental level also relates to the relationship from the perceptive, task and organizational, relationship so that the environmental impact is closely related to the business operation, and is more important, especially the formulation and selection of the business strategy.

Chen (2006) proposed the classification of the Macro Environmental Factor (ME), namely: (1) the boom cycle (ME_1) and (2) natural and man-made disasters (ME_2).

Lin (2007) deemed that the Macro environmental factor that has an indirect impact on the operation of the enterprise, and is therefore also known as the indirect environment. These include: demographic, economic, socio-cultural, political-legal, scientific and technological and natural environments.

In the light of the above, the classification of the Macro Environmental Factor (ME) in this study is based on the classification of Chen (2006).

2.3 Financial Performance (FP)

The conceptual definition of Financial Performance in this study refers to "the measurement of financial performance in terms of earnings per share (EPS) of a listed company", and the above definition is based on the following literature.

Xu (1998) pointed out that the information provided in the financial statements can be used to measure operational performance, and the commonly used financial statement analysis methods can be divided into three categories:

(1) Co-comparison analysis: using the concept of "vertical analysis" as 100% of the total or total sub-items, and then the ratio of each subject to the total item in each sub-item, or the ratio of the total amount, is analyzed and judged to help determine the proportion changes and trends of each subject.

(2) Comparative analysis of the increase or decrease amount and ratio: Using horizontal analysis, the same items in different years are compared to understand the changes in the increase or decrease and the trend of the changes. Generally based on a certain year (quarter) as the base period, calculate the change amount of each period and the base period, that is, the change ratio, to measure the increase or decrease between the various accounts is reasonable, and to assess the financial performance of the enterprise.

(3) Financial Ratio Analysis: Ratio Analysis (Ratio Analysis) converts two or more meaningful related accounts in the financial statements into specific ratios for comparison, makes judgments about their ratios, and understands the meaning of other expressions to show the operating performance of an enterprise on a particular project and to quickly understand the state of the company's financial changes, yet various financial ratio calculations include assets, liabilities, profit and loss, turnover ratios, etc.; , the result is multiplied by 100, expressed as a percentage, and because it is fairly easy to calculate, the financial ratio analysis method is most widely used by the public (Chen, 2013).

Chen. (2013) believed that the various financial ratios calculated from the financial statements can be used as a basis for judging a company's ability to operate and its financial structure.

Chen (2019) pointed out that the measurement of a company's financial performance is often divided into the following methods: based on the stock market-based and accounting-based measures. The former is based on the views of shareholders and the return rate of investors, while the latter is the use of the company's surplus to reflect the company's financial position.

The measurement of financial performance (FP) in this study is based on EPS as a measure indicator of financial performance, taken from 2019 database of Taiwan Economic Journal (TEJ).

2.4 Impact of Sales Ability (SA) on Financial Performance (FP)

Ku (2003) believed that sales staff can effectively carry out sales work, depending on their ability and willingness. "The general sales able person must have poor sales performance if he or she has sufficient ability to perform the sales work but has no sales motivation and will to do so, and on the other hand, if the sales able person has sufficient will to do the sales work but does not have the ability to do so, his sales

performance must not meet the requirements." Therefore, in order for sales to be effective, sales people must be able to have considerable sales ability and motivation in the willingness to execute. Sales staff to effectively carry out their sales tasks, to achieve performance goals, the ability should include the following: communication skills, negotiation and negotiation skills, professional and technical skills, interpersonal skills, problem-solving skills, rich knowledge of commodity sales and friendly service attitude.

Su (2015) pointed out that the marketing expertise of enterprises will directly affect the customer's desire to buy, coupled with after-sales service; this will further affect the purchase rate of consumers.

The research results of Lee (2017) showed that the program structure of individual sales ability has two constructs, namely: customer management and sales skills, both of them have a positive and significant impact on performance, which in turn is conducive to performance improvement.

From the above-mentioned literature, this study is based on the integration of the secondary data related to this research theme proposed by past scholars, and the hypothesis is as follows:

Hypothesis 1 (H_1): The Sales Ability (SA) of Taiwan's publicly-listed construction companies has a significant impact on Financial Performance (FP).

2.5 Impact of Macro Environmental Factor (ME) on Financial Performance (FP)

Regarding the literature on the impact of Macro Environmental factors (ME) on Financial Performance (FP) in this study, Chen (2012) pointed out that the marketing strategy of construction projects in the bottom-point of economic fluctuation cycle can be tailored to provide a highly customer-specific service to meet the individual needs of consumers in order to finally improve sales performance, while Chen (2013) found that the "comprehensive score of the business climate response signal", the "consumer confidence index", the "total consumer price index" and the "total consumer price index". The four Macro economic factors have a positive and significant impact on the financial performance of banks.

From the above-mentioned literature, this study is based on the integration of the secondary data related to this research theme proposed by past scholars, and the hypothesis is as below.

Hypothesis 2 (H_2): Taiwan's publicly-listed construction companies encounter the boom-changing of Macro Environmental factor (ME), which has a significant impact on Financial Performance (FP).

3. Research Methods

Based on the above research motivation, purposes and literature review, the research hypotheses are introduced and the conceptual research framework of the following research model is established, as shown in Figure 1.

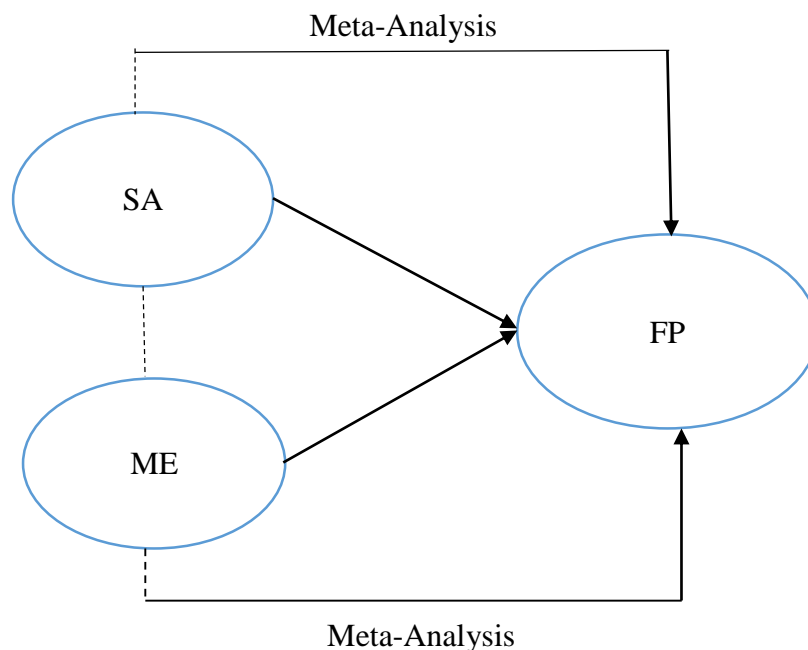### 3.1 Research Framework

Meta-Analysis

SA

ME

FP

Meta-Analysis

Figure 1 Research Framework

3.2 The Data Collection and Research Method Briefly Described

This study is based on the integration of the secondary data related to this research theme proposed by past scholar and the financial data collected in this study comes from the 2019 database of Taiwan Economic Journal, TEJ. This study adopts Meta-Analysis as a research method (Sec. 3.3), the software is used as Stata. Besides, this study hypothesizes that the estimated parameters are consistent with Normal Distributions (N.D.), and that Random effects are better than Fixed Effects when their heterogeneity (standard error) are large, so this study uses Random Effects to compare multiple effects.

3.3 The theoretical basis of Meta-Analysis (Michael, Larry, Julian and Hannah, 2009)

1. The Highlight of Der Simonian & Laird Method (Random effect method)

(1) For binary or continuous outcomes

(2) Effect size q_i for study *i* could be In(OR),In(RR),RD, difference in means or standardized mean difference.

(3) Note that the effect sizes for OR and RR are logged.

(4) Assumption that there is a single true answer that all studies are trying to estimate is relaxed.

(5) Now assume that each study has a different true answer that they are trying to estimate.

(6) Assume true effect sizes θ_i have normal distribution with mean θ and variance τ^2.

(7) τ^2 is the between-study variance.

(8) Between study variance:

$$\tau^2 = \frac{Q - (k-1)}{\sum_i w_i - \left[\dfrac{\sum_i w_i^2}{\sum_i w_i}\right]}$$

Where:

w_i are weights from the fixed effect inverse-variance method

Q   is the heterogeneity test statistic form before (either form inverse-variance method or Mantel-Haenszel method)

K   is the number of studies, and

τ^2 is set to zero if Q<k-1

(9) Random effect pooled estimate is weighted average:

$$\theta_{DL} = \frac{\sum_i w'_i \theta_i}{\sum_i w'_i}$$

(10) Weights used for the pooled estimate are similar to the inverse-variance, but now incorporate a component for between-study variation:

$$w'_i = \frac{1}{SE(\theta_i)^2 + \tau^2}$$

(11) When there is little heterogeneity, so Q is smaller than k-1, $\tau^2=0$ and the weights are the same as the inverse-variance method.

(12) When $\tau^2 > 0$ the weights are smaller and more similar to each other than in a fixed effect model.

(13) Because the weights are smaller, the sum of weights will be smaller, and the so the SE will be bigger, CIs wider, and p-values less significant.

(14) Small studies will have relatively greater influence.

(15) Advantages:

    a.   As widely applicable as the inverse-variance fixed effect model

    b.   Incorporates heterogeneity into the model

2. Confidence interval for pooled estimate

A 95% CI for the pooled estimate θ is:

θ**-(1.96*SE(θ)) to** θ**+(1.96*SE(θ))**

For ratios, θ is the log-transformed estimate.

3. Test for overall effect

Overall significance test for whether the pooled estimate is significantly different from zero (no effect): $z = \dfrac{\theta}{SE(\theta)}$

Look up z in tables of the normal distribution to get the p-value.

For ratios, θ is the log-transformed estimate.

4. Test for heterogeneity

(1) Look up Q in tables of the chi-squared distribution on k-1 degrees of freedom. The null hypothesis is that the true effect size is the same for all studies.

(2) A statistically significant result means that there is strong evidence against there being one common effect size, so we take it that there is heterogeneity.

5. Getting Data into Stata

(1) Easier to enter into Excel then cut & paste into Stata's data editor

(2) Ensure each numeric column contains only numbers

(3) Leave cells empty if data missing

(4) One row per study

4. Results and Analysis

Random Effects analysis is carried out through Meta-Analysis, as shown in Table 1:

From the above-mentioned literature analysis, the two hypotheses are partially supported as below.

Hypothesis 1 (H_1): Sales Ability (SA) of the publicly-listed construction companies in Taiwan has a positive impact on Financial Performance (FP), but not significant.

Hypothesis 2 (H_2): the boom-changing of Macro Environmental Factor (ME) faced by Taiwan's publicly-listed construction companies has also a positive impact on Financial Performance (FP), but not significant.

Table1: Random Effects

	%
Study	WMD (95% CI) Weight
Ku (2003)	4.21 (3.91, 4.51) 19.14
Su (2015)	4.14 (3.84, 4.44) 19.16
Lee (2017)	4.33 (4.03, 4.63) 20.59
Chen (2012)	4.42 (4.12, 4.72) 20.43
Chen (2013)	4.43 (4.13, 4.73) 20.68
Overall (I-squared=40.3%, p=0.00)	4.03 (3.73, 4.33) 100.00
NOTE: Weights are from random effects analysis	
Scale Range	3 4 5 6

Table 1 show that Overall's I-squared is 40.3% (less than 50%) and p-value is 0.00, which indicates that the independent variables of this study model have a positive effect on the dependent variable, but are not significant. In other words, the results of this study show that (1) Sales Ability (SA) of Taiwan's publicly-listed construction companies has a positive impact on Financial Performance (FP), but not significant;   and (2) the boom changing of Macro Environmental factors(ME) faced by Taiwan's publicly-listed construction companies has also a positive impact on Financial Performance (FP), but not significant.

It is worth noting here, without interference between variables, only the domestic and foreign literature on the main constructs of this study which are Sales Ability (SA), Macro Economic Factor (ME) and Financial Performance (FP) etc., this research adopts Meta-Analysis to integrate testing by using Random Effects to compare various effects to understand the influence of the two independent variables on the dependent variable respectively.

5. Conclusions and recommendations.

5.1 Conclusion.

The results of this study show that (1) Sales Ability (SA) of Taiwan's publicly-listed construction companies has a positive impact on Financial Performance (FP), but not significant, and (2) the boom-changing of Macro Environmental Factor (ME) encountered by Taiwan-listed construction companies has a positive impact on Financial Performance (FP), but not significant. This means that financial performance is affected not only by changes in Sales Ability and Macro Environmental Factor, but also may be affected by other factors such as Land Development Capacity, Product Planning and Design, etc. which is worthy of being discussed in the future research direction.

5.2 Contribution to this study

This study Integrates the research results of different scholars over the past years and draw conclusions by adopting Meta-Analysis which is a quantitative, formal study that obtains previous research results through a systematic process, and uses these studies as ontological analysis to reach conclusions. The results of the integrated analysis of Meta-Analysis can obtain more accurate estimation results than the individual studies, that is, the test of the heterogeneity and variability between the various studies is also an important output result.

The results of this study can be used as a reference for the management implications of decision makers of Taiwan's listed construction companies.

5.3 Future research direction

As mentioned earlier, this study is based on the past domestic and foreign literature, Meta-Analysis is adopted to understand the Taiwan's publicly-listed construction company's Sales Ability (SA) and Macro Environmental Factor (ME) changes on Financial Performance (FP); it is recommended that follow-up researchers may also consider trying to use other research methods, such as Confirmatory Factor Analysis (CFA) to verify that whether there are differences in the fit-of-goodness of different constructs or models.

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