
The Impact of “Product Planning and Design” and “Sales Ability” on Financial Performance by Taiwan-Listed Construction Companies: an Intervening Variable of Macro Environmental Factors

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Abstract

With the rapid change of the macro environmental factors, the operation and organization of Taiwan's overall construction industry has also been greatly affected. In addition, looking back on the past the companies often encounter the phenomenon of Real Estate Bermuda Effect. Are the key factors for the successful operation of Taiwan's publicly-listed construction companies-good Sales Ability (SA) and Product Planning and Design (PD) can better respond to the above-mentioned adverse environmental changes? This study mainly aims to verify the impact of Taiwan's publicly-listed construction company's Sales ability (SA) and Product planning and design (PD) on Financial performance (FP) by using Macro environmental Factors (ME) as an interference variable. In this study, the population was

sampled by Purposive Sampling and the directors or above as the research interview object. In addition, this study used the database of Taiwan Economic Journal (TEJ) to obtain the company's EPS information, and Linear Structural Equation Modeling (SEM) was used to verify the fitting effect of the Whole model, Structural model and Measurement model.

The results show that Taiwan's publicly-listed construction company's Sales Ability (SA) and Product Planning and Design (PD) , both of which have positive effects on Financial Performance (FP) respectfully, but not significant; however, adding the Intervening variable of Macro Environmental Factors (ME), both has a positive and significant interactive effect on Financial Performance (FP). This means that Macro environmental factors (ME) plays a very important positive impact role in promoting Financial Performance (FP), but Financial Performance (FP) is also affected by the aggregation of other factors such as both of Sales Ability (SA) and Product Planning and Design (PD) which were combined or to be considered at the same time.

This finding can be used at least as a reference for the business decision makers of Taiwan publicly-listed construction companies as sustainable business management and development.

Keywords: Sales Ability (SA), Product Planning and Design (PD), Macro Environmental Factor (ME), Financial Performance (FP)

1. Introduction

1.1 Research-Motivation

The globalization of trade has brought about economic growth, and the scale of enterprises is also increasing. Just as all enterprise organizations want to develop continuously in the market; they try to introduce new products strategically in product planning, with the purpose of market differentiation to compete with existing products, which is expected to create new product value and market development (Tay, 2014). When an enterprise develops a market, it must conduct a series of risk assessments in accordance with the current situation of the overall environment to understand the advantages and disadvantages of the market and potential risks, and then launch corresponding marketing strategies to achieve the expected performance.

In the face of the overall environment and the ever-changing needs of the market, companies have become a global boom through diversified development, and many companies have been working hard to adjust their products and services. Therefore, even with limited resources, more and more companies continue to expand their market share rate by learning relevant strategies and opening direct channels (Kuo, 2020).

Products are not simple things, especially since they embody the complicated feelings of the consumer. When we think of a product, we cannot simply describe it with an adjective but rather many adjectives that form an image or feeling. Because peoples' attitudes toward products are complicated in their meaning and degree, these reasons also add to the

complexity of product understanding and expression of feeling. (Chuang, 2002)

Therefore, in the competition environment of fierce market, the assessment of the overall environment is a test that companies must conduct when conducting any business activities. Construction companies use different methods to enhance the development competitiveness of enterprises, in addition to understanding that changes in the overall environment will continue. The most important thing that affects whether a company makes profits from the environment is the competition between products. However, in addition to the design of the product itself and its value, whether the salesperson has good sales ability and demand intensity of high growth will greatly affect the sales performance and goals of individuals and organizations.

And how can a company's turnover grow steadily and continuously, and stand out/ have outstanding performance among many peers? Sales staff is an important channel to understand customers and market dynamics. Therefore, sales staff must first understand the consumer needs that consumer's value and plan for products. The importance and satisfaction of design features can be strengthened to enhance consumers' purchasing intentions, so that the source of customers will continue to flow, and operating income will continue to grow. Therefore, the main purpose of this study is to verify the impact of the Sales Ability (SA) and Product Planning and Design (PD) of Taiwan's Publicly-listed construction companies on their Financial Performance (FP), with the Macro environmental Factors (ME) as the interference variable. The research visits were made to the directors or above level of the publicly-listed construction companies in Taiwan and used the database of Taiwan Economic Journal to obtain the company's EPS information. In addition, this research model establishes a verification model of "two independent variables, one dependent variable and one intervening variable " in order to better understand the interactive effect of adding the Intervening variable of Macro Environmental Factors (ME) or the influence of each main construct.

Based on the above, this is the main motivation for this research. In addition, this study uses the directors or above of Taiwan publicly-listed construction companies as the research interview object, and mainly aims to verify the impact of Taiwan's publicly-listed construction company's Sales Ability (SA) and Product Planning and Design(PD) on Financial performance (FP), with Macro environmental Factors (ME) as an interference variable by using SEM to verify the established model, and understand the interactive effect of adding the Intervening variable of Macro Environmental Factors (ME) or the influence of each main construct. Finally, this finding will be proposed as a reference for the improvement of financial performance of Taiwan's publicly-listed construction companies. Here is the brief description of the main purposes of this research as follows.

1.2 Research Purposes

(1) Verify and understand whether Sales Ability (SA) of Taiwan's publicly-listed construction companies has a significant impact on Financial Performance (FP)?

(2) Verify and understand whether Product Planning and Design (PD) of Taiwan's publicly-listed construction companies have a significant impact on Financial Performance (FP)?

(3) Verify and understand whether Macro environmental Factors (ME) of the publicly- listed construction companies in Taiwan has a significant impact on Financial Performance (FP)?

(4) Verify and understand whether Macro environmental Factors (ME) and Product Planning and Design (PD) of Taiwan's publicly-listed construction companies have a significant interactive impact on Financial Performance (FP) subject to the existing Sales Abilities (SA)?

(5) Verify and understand whether Macro Environmental Factors (ME) and Sales Ability (SA) of Taiwan's publicly-listed construction companies have a significant interactive impact on Financial Performance (FP) subject to the existing Product Planning and Design (PD)?

2. Literature Review

In order to understand the research overview of the literature related to this study, the related literature of each construct of this research topic are described as follows:

2.1 Sales Ability (SA)

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

Weitz, Sujana & Sujana (1986) pointed out that salesperson have the opportunity to conduct market research on individual customers and to adjust sales information by making the most effective sales strategies for customers and observing how they react to messages, and to call this adaptive sales behavior (ASB), defined as salesperson and the same or different customers in the sales process, according to the sales situation and customer information, which is the ways to develop and adjust sales behavior (Zhou, 2016).

Chen (2006) proposed the classification of Sales Ability (SA), are as follows: (1) Advertising (SA₁); (2) Business Development Ability (SA₂).

Chen & Su (2006) believed that sales performance of sales staff can be measured by adaptive sales and diligent sales, so as to understand whether salespersons can adjust sales behavior or methods based on information such as sales situation and consumer characteristics during continuous interaction with consumers or with different consumers, and step by step understand the sales staff's time spent in sales.

Zeng (2010) believed that people sales is a process of communicating through people in order to persuade others to buy, because the way people sell communicates and the content can be adjusted according to the time and place, and therefore belongs to customized communication.

Ahmad, Mat, Isa, Ismail & Amlus (2012) pointed out that sales performance is a measure of the quality and performance of the company's products sold to consumers. Therefore, sales

performance basically refers to the sales staff in a certain period of time in the sales work and consumers after various activities, to contribute to the enterprise's organizational objectives of the behavior and performance of work results. A successful salesperson only achieves the organization's sales goals, but also takes into account the overall performance of customer relationships (Lai, 2019).

Chu (2014) pointed out that in order to achieve sales goals and create profits, enterprises also emphasize great importance to the sales abilities of sales staff; knowledge of sales includes knowledge of goods, customer and market knowledge, competitors and industry intelligence, company information, sales skills and management knowledge. The importance of the knowledge that a sales ability should have may vary depending on the mix of sales activities he or she is engaged in. Chu (2014) also believed that sales person should have the ability to express, professional knowledge, interpersonal skills, and problem-solving skills.

Synthesis of the above and the classification of Sales Ability (SA) in this study is a reference to Chen (2006) classification and have been revised. Therefore, this study focuses on two sub-constructs of sales capability (SA), namely: (1) advertising (SA₁) and (2) business ability (SA₂).

2.2 Product Planning and Design (PD)

The definition of Product Planning and Design (PD) in this research is "a product designed by a construction company, in addition to the characteristics of land development, the product planners must pass through the market survey to understand the market environment, to realize customer needs and wants, to understand competitors' competitive strategies, to realize external opportunities and risks, as well as market and technological developments" and the above definition is based on a combination of the following documents.

Under the fierce competition between enterprises, construction companies use different ways to enhance the development competitiveness of enterprises, the most important is the competition between products. Consumers' spending power is greatly affected by the environment, which stimulates consumers to consume, and with the change of social structure, consumers' values are usually changed by the change of life patterns, which has a certain impact on the actual needs of consumers. Therefore, it is important to plan and design products for different groups based on their needs preferences.

Product planning refers to the process by which product planners, through research and research, understand the market, understand customer needs, understand competitors, understand external opportunities and risks, and market and technological developments, and develop a vision of products that can seize market opportunities and meet consumer needs, as well as strategies and tactics for implementing that vision (MBA, 2019).

Chen (2006) explored the two sub-constructs of Product Planning and Design (PD), namely: (1) Case Quality (PD₁) and (2) Push Form (PD₂).

He (2014) pointed out that the direction of product planning is comprehensive results after

the analysis of relevant information to find out the pattern of the product and its possible benefits. After reviewing the relevant building codes and risk assessment, the following projects are confirmed and until the architects conduct a precise assessment and plan the design configuration (Lin & Hong, 1997)

1. The classification of products is divided according to the target market as follows:

- (1) Product patterns, shapes, facades and building materials.
- (2) The Ping number of main products.
- (3) Allocation ratio of Ping number.
- (4) Plane layout and movement mode.
- (5) The size and reasonable selling price of each household.
- (6) Proportion of public facilities.
- (7) Analysis of return on investment

2. The classification of products is divided according to the architectural form as follows Zhang (2003):

- (1) Residential: Including single-family houses, double-family houses and multi-family houses/, joint residential, thee typical features are the independent property rights per unit, low density and high privacy.
- (2) Apartments: generally divided into two types: apartments below the fifth floor and apartments above the sixth floor. Generally, apartments below the fifth floor are called apartments, and buildings above the sixth floor are called buildings.
- (3) Community: It is a combination of a group of houses or apartments. Domestic communities are usually assembled with buildings under the same building license. There are also public facilities, such as community roads, atrium landscaping, leisure and recreation facilities, and management facilities.

3. The classification of products according to their usage is as follows:

- (1) Commercial buildings.
- (2) Leisure products.
- (3) Buildings for specific purposes.
- (4) Other (plant/ factory, etc.)

Synthesis of the above and the classification of product planning and design (PD) in this study is a reference to Chen (2006) classification, and have been revised.

2.3 Macro Environmental Factors (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. (3) Operating environment: competitors, customers, labor, suppliers, 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 Macro Environment Factor (ME), which are: (1) the boom cycle (ME₁) and (2) natural and man-made disasters (ME₂).

From the above, the classification of Macro Environment Factor (ME) in this study is based on the classification of Chen (2006).

2.4 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.

Lin (1995) pointed out that the commonly used financial analysis tools are divided into static analysis and dynamic analysis.

1. Static analysis: is a comparative analysis between the items of the financial statements of the same year, the common static analysis methods including common ratio analysis and ratio analysis. (1) Common than analysis: refers to the percentage expression of the financial statements, so as to find the financial position of the enterprise and the internal structure of business results, if the financial statements between enterprises are compared at the same time, more obvious structural differences can be found; (2) Ratio analysis: refers to the calculation ratios of items in the financial statements that are related to each other in order to determine their implied significance, which must be compared with the standards or industry ratios set in the past in order to be meaningful.

2. Dynamic analysis: using items in different annual financial statements to compare and analyze to understand their changes and trends. Common dynamic analysis has percentage analysis of increase or decrease and trend analysis. (1) Percentage increase or decrease analysis: A comparison of the increase or decrease in one of the items in the two financial

statements shows the amount and percentage of the increase or decrease in order to understand the significance of the change; (2) Trend analysis: refers to one of the items in the financial statements of more than three periods, using one of the periods as the basis for calculating the percentage of each period in order to understand the long-term trend of the project (Liao, 2014).

Lii (2004) deemed that financial performance indicators, operational performance indicators, human resources indicators, service quality performance indicators, innovative learning indicators and other five evaluation vectors, in order to recognize the integrity of enterprise process performance evaluation standards and the independence of various indicators concepts: (1) financial performance indicators: the results of the use of enterprise resources, or called efficiency indicators; (2) Operating performance indicators: the results of the business ability or technology of the enterprise or called efficiency indicators; (3) Human resources indicators: the company's use of human resources to achieve results indicators; (4) Quality of service indicators: as an "attitude", is the degree of difference between customer expectations and actual perception of the service, including physical, reliability, responsiveness, trust and care; and (5) innovative learning indicators: the company's long-term change of environment or opportunity success, on behalf of the company's ability to adapt to the future, or learning ability.

Xie (2018) pointed out that financial performance is the correct contribution to the company's operating strategy and whether its implementation and execution are contributing properly to the final operating performance. The financial statement information expresses the enterprise's cost control, asset use management, the effect of the allocation of funds and the composition of shareholders' equity. The embodiment of financial performance can be divided into: (1) profitability, evaluation of enterprise profitability to reflect the net return on capital and capital appreciation, is an important measure of enterprise performance evaluation; (2) Operational capacity, it can measure the ability of enterprise asset management, improve the efficiency of asset use, enhance profitability; and (3) solvency, its strength is the main indicator of the economic strength and financial situation of enterprises, but also to measure whether the operation of enterprises continue to be sound and important basis.

The financial performance (FP) of this study is measured by EPS as a measure of financial performance, and the data on the financial performance of Taiwan-listed construction companies are from the 2019 database of Taiwan Economic Journal (TEJ).

2.5 Correlation Between Two Main Constructs

Regarding the literature on the "two-two relationship" between the main components of this study, so far, the study has not found some supporting literature, in order to make the inference of the hypotheses of this study more rigorous, the use of questionnaire survey method-purposive sampling. In accordance with the above-mentioned research background, purposes, literature review which put forward the following three hypotheses are as below.

Hypothesis 1 (H₁): The sales capability (SA) of Taiwan's publicly-listed construction companies has a significant impact on its financial performance.

Hypothesis 2 (H₂): Product Planning and Design (PD) of Taiwan's publicly-listed construction companies has a significant impact on its financial performance.

Hypothesis 3 (H₃): Taiwan’s publicly-listed construction companies face interference from Macro Environmental Factors (ME) , which has a significant impact on Financial Performance (FP).

Hypothesis 4 (H₄): Macro environmental Factors (ME) and Product Planning and Design (PD) of Taiwan's publicly-listed construction companies has a significant interactive impact on Financial Performance (FP) subject to the existing Sales Ability (SA)?

Hypothesis V (H₅): Macro Environmental Factors (ME) and Sales Abilities (SA) of Taiwan's publicly-listed construction companies has a significant interactive impact on Financial Performance (FP) subject to the existing Product Planning and Design (PD).

3. Research Methods

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

3.1 This Research Framework

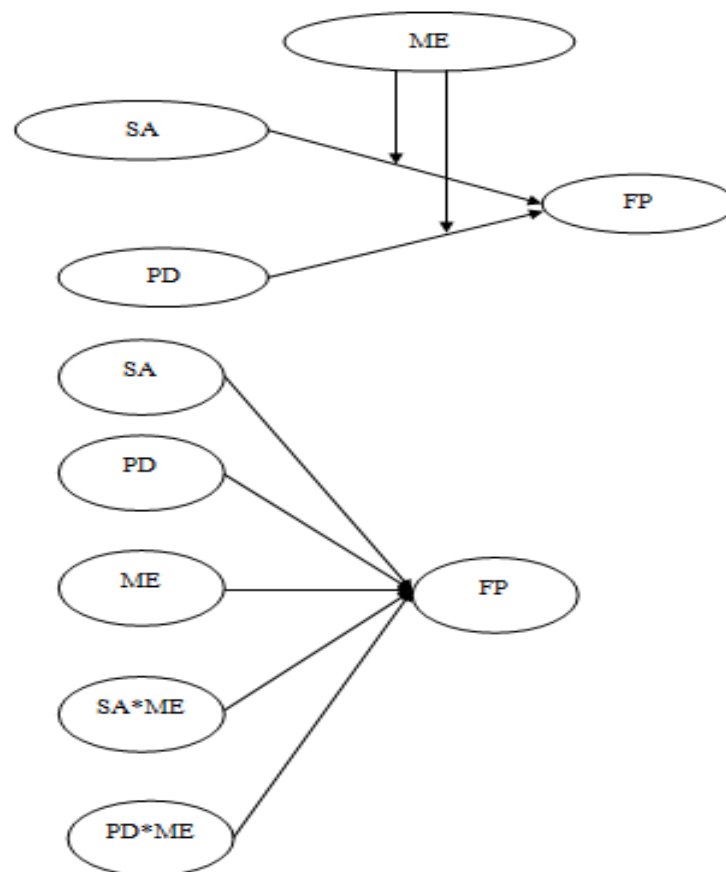


Figure 1. Research Framework

3.2 Questionnaire Design

The questionnaire design of this study is based on each observable composition, using the "double measurement" method. The questionnaire are measured by the Likert-Scale of seven-point, giving a score of 7 to 1 according to the degree of consent and the degree of disagreement, 7 points represent extreme consent, 1 point represents extreme disagreement; the higher the degree of consent the higher the score; conversely, the lower the score (Fritz & Mackinnon, 2007). ; Then, the data of the collected samples are then "centralized/ mean center", i.e. the scores of each topic in the questionnaire are reduced by the sum of their averages to zero, in order to eliminate the co-linearity of the argument, in order to test the interaction between the independent and dependent variables. Here is a mathematical expression of "centralization/Mean center" as follows:

$$\Sigma(X_i - \bar{x}) = \Sigma Y_i = 0$$

In addition, the questionnaire design for the main constructs of this study is outlined below:

(1) The questionnaire design of Sales Ability (SA) refers to the two sub-constructs of Sales Ability (SA) proposed by Chen (2006), respectively as below: (1) Advertising (SA₁) and (2) Sales Development Capability (SA₂), adopting the "Itemed measurement and Dual Measurement" method , and a total of 6 questions.

(2) The questionnaire design of Product Planning and Design (PD, using two sub-constructs, respectively as below: (1) case quality (PD₁) and (2) case form (PD₂) proposed by Chen's (2006) Product planning and design (PD), adopting the "Itemed measurement and Dual Measurement" method , and a total of 6 questions.

(3) The questionnaire design of Macro Environmental Factor (ME) is the classification of Macro Environmental Factor (ME) proposed by Chen (2006), respectively are as below: (1) The climate cycle (ME₁) and (2) natural and man-made disasters (ME₂), adopting the " Itemed measurement and Dual Measurement" method , and a total of 6 questions.

(4) Financial Performance (FP) is measured by EPS as a measure indicator of financial performance-Single Measurement and taken from the 2019 database of Taiwan Economic Journal (TEJ).

3.2.1 Common Method Variation Detection (CMV test)

After using CFA's test comparison method, there is no problem of Common Method Variation (CMV) in this study questionnaire, and the results are shown in Table 1.

Table 1. The results of CMV Test

Model	χ^2	DF	$\Delta\chi^2$	Δ DF	P
Single factor	1336.52	97	895.30	99	0.00
Multifactor	441.22	196			

Source: this study

3.3 Sampling Method

This study adopts Purposive Sampling to sample the population, in order to increase the Content validity and Reliability of the questionnaire, then after the questionnaire design, firstly carrying out the expert questionnaire, and then the pilot test; the inappropriate questionnaire items to be corrected or eliminated, and finally post-test. A total of 400 questionnaires were distributed, with 303 valid recovery questionnaires collected, and the effective recovery rate was 75.75 %. Besides, this study takes the supervisors and above of the publicly-listed construction companies in Taiwan as research interview objects and use the database of Taiwan Economic Journal (TEJ) to obtain the company's EPS information.

3.4 Questionnaire Data and Measurement System

To verify the research framework proposed by this study, the Structure Equation Modeling (SEM) is used to do Confirmatory Factor Analysis (CFA). In addition to the four potential variables (Latent variables) such as Sales Ability (SA), Product Planning and Design (PD), Macro Environmental Factor (ME), and Financial Performance (FP), each of them was divided into the following Observable / Explicit Variables, and each observable variable has several questions to survey. The information from the survey is then processed and the original data file of the questionnaire is established, and as for the construction of the measurement system for this study model, the processing of valid questionnaire is designed in a "Itemed measurement" manner and using "Double Measurement" or "Single Measurement" to run the results.

3.5 Linear Structure Models

The Confirmatory Factor Analysis (CFA) is an analytical method relative to Exploratory Factor Analysis (EFA), which analyzes the validation factors between four non-observable/implicit variables such as Sales Ability (SA), Product Planning and Design (PD), Macro Environmental Factor (ME) and Financial Performance (FP). Diamantopoulos & Siguaw (2000) proposed Linear Structural Equation Modeling (SEM), including Structural modes and Measurement model, which are effective in solving non-observable variables or hidden variables (causality between Latent Variables). In addition, the model validated in this study consists of three parts, namely: (1) verifying the fit effect of the Measurement Model; (2) verifying the fit effect of the Structural model; and (3) verifying the fit effect of Overall SEM model in line with the appropriate indicators.

3.6 Analytic Fit of Measurement Model

The factor load of each Latent/Implicit Variables and the observable /manifest/explicit variable is primarily a linear correlation between the Explicit and Implicit Variables. The closer the vector loading is to 1, the more observable variables are the more measurable the non-observable variants; and the fact that the factor loading of each observable variant in this study ranges from 0.7 to 0.9 indicates good reliability. Therefore, the "observable variables" (i.e. explicit variables) within the "Measurement system" of this model can measure the implicit variables in a moderate way. In addition, the Average Variance Extracted (AVE) is the ability to calculate the variation interpretation of each observable variable by the non-observable (implicit) variant, and if the AVE value is higher, the non-observable variable is the more recessive and convergent. Typically, the AVE value must be greater than 0.5, which denotes the explanatory variation from the observable variable is greater than the measurement error (Fornell & Larcker, 1981).

4. Results and Analysis

4.1 The Results of the Measurement System with Fitness

The verification of intervening variable in this study is firstly done by hierarchical regression analysis as shown in Tables 2 and 3, and then by centralized-mean center, as shown in Table 4.

In addition, Table 4 shows that the AVE in this study is greater than 0.5, which indicates that the observable variable has a high Reliability and Convergent validity.

4.2 Result Analysis of the Path Effect of the Structural Model

The so-called coefficient of determination is also called Squared Multiple Correlation (SMC), which is the degree of interpretation of the "independent variable" of each implicit variable to the "dependent variable" of each implicit variable. In other words, the degree of interpretation of the "independent variable" of each implicit variable to the "dependent variable" of each implicit variable is the R^2 value (Squared Multiple Correlation, SMC). Therefore, from the adjusted R^2 values shown in Tables 2 & 3, it can be known that the independent variables of the implicit variables in this study have sufficient explanatory power for their dependent variables.

Table 2. Hierarchical Regression

Model	R	R Square	Adjusted R Square	Sid. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	0.88 ^a	0.78	0.76	6.91	0.02	179.21	2	97	0.00
2	0.89 ^b	0.79	0.75	6.71	0.04	7.02	1	96	0.00

a. Predictors: (Constant), ME, SA and PD

b. Predictors: (Constant), ME, SA, PD, SA *ME and PD*ME

Table 3. Coefficient of determination

Coefficients of Determination	Adjusted R ²
Sales Ability (SA), Product Planning and Design (PD) and Macro Environmental Factors (ME) to Financial Performance (FP)	0.76
Sales Ability (SA), Product Planning and Design (PD) and Macro Environmental Factors (ME), SA*ME and PD*ME to Financial Performance (FP)	0.75

Source: this research

Note: This Table 3 is extracted from Table 2

Table 4. Judgment Indexes of the Measurement System in the Model

Unobservable Variables (Implicit Variables)	Observable Variable -Centralized Double Measurement	Factor Loading	AVE
SA	SA ₁ C	0.851	0.612
	SA ₂ C	0.862	0.553
PD	PD ₁ C	0.842	0.614
	PD ₂ C	0.853	0.542
ME	ME ₁ C	0.822	0.571
	ME ₂ C	0.813	0.563
SA*ME	SA ₁ ME ₁ C	0.744	0.652
	SA ₂ ME ₂ C	0.771	0.671
PD*ME	PD ₁ ME ₁ C	0.753	0.663
	PD ₂ ME ₂ C	0.722	0.634

Source: this study

4.3 Un-Standardized Results of SEM Analysis

Because the main constructs of this research topic are non-observable variables / implicit variables, it should be more appropriate to consider that the construction model of this study is a more complex-pattern of linear structural equation pattern (SEM) which belongs to "two independent variables, one dependent variable, and one intervening variable". So this study suitably chose M plus software as an analytical tool. The Un-Standardized results of SEM analysis are shown in Figure 2.

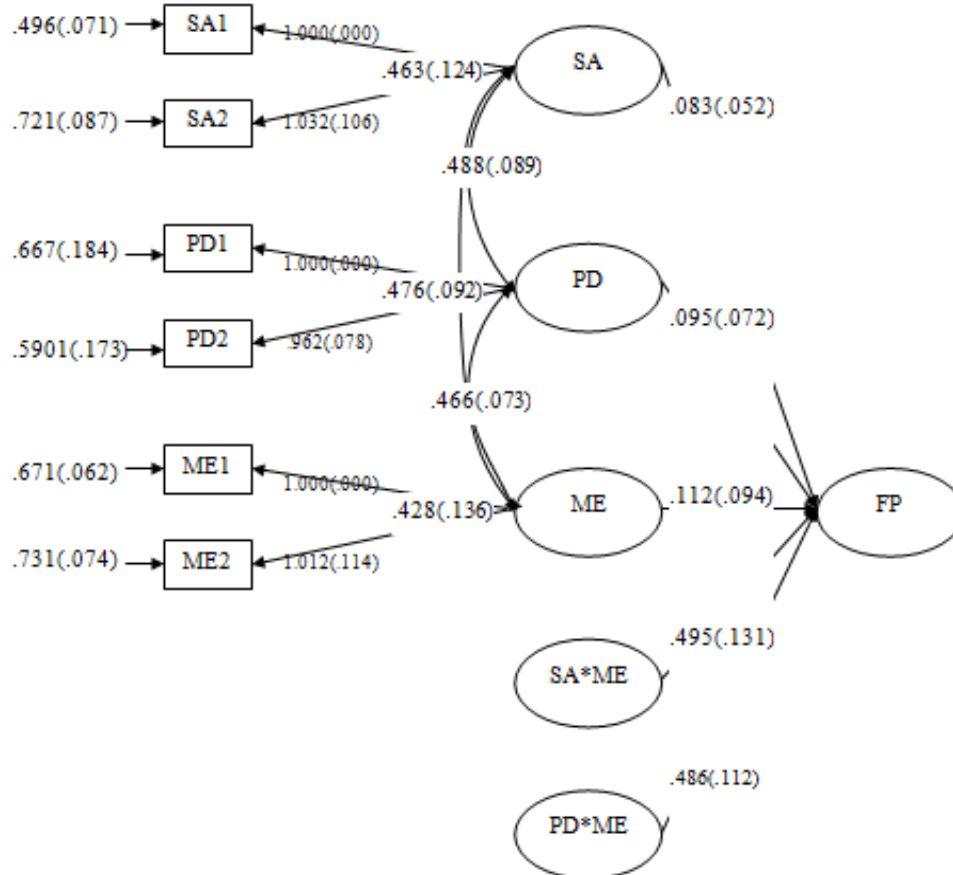


Figure 2. Un-Standardized results of SEM analysis

4.4 The indices of Fit of the Overall SEM Model

The use of Linear Structural Equation Modeling (SEM) as the purpose of mod The established SEM model in this study aims to verify the relationship between observable variables in Structural models, and whether the measurement system has a measure of reliability and the fitting-effect of the Overall SEM model, while measuring the overall allocation of moderate indicators in this study are χ^2 , d.f., GFI, AGFI, NFI, CFI, RMR, RMSEA etc.; usually at $\chi^2/d.f.<5$; $1>GFI>0.9$; $1>NFI>0.9$; $1>CFI>0.9$; $RMR<0.05$; $RMSEA<0.05$ (Bagozzi & Yi, 1988); the Overall model of this study is moderate to “ $\chi^2/d.f.<5$ ” ; in addition, GFI, AGFI, and NFI are all greater than 0.90, while RMR values are less than 0.05, indicating that the overall fit of this study model fits well (goodness-of-fit), as shown in Table 5.

Table 5. The overall model is appropriate for the degree scale

Determination index	χ^2	DF	GFI	NFI	AGFI	CFI	RMR	RMSEA
Fit value	46.91	39	0.91	0.90	0.91	0.90	0.00	0.00

Source: this study

Table 6. Model Results

		Estimate	S. E.	Es t. /S.E.	Two-Tailed P-Value
FP	ON				
	SA	0.083	0.052	1.596	0.211
	PD	0.095	0.072	1.319	0.232
	ME	0.112	0.094	1.191	0.163
	SA*ME	0.495	0.131	3.779	0.001
	PD*ME	0.486	0.112	4.333	0.001

Source: this research

Note: (1) $P < 0.05$ indicates the presence of interaction; (2) Table 5 is an extension of Figure 2

It is known from Table 6 that the path coefficient of SA*ME on FP is 0.495; the path coefficient of PD*ME on FP is 0.486, so it is known that both SA*ME and PD*ME have interactive effects on FP.

Based on the above analysis, the following verification results can be obtained in this study:

(1) The Sales Ability (SA) of Taiwan's publicly-listed construction companies has a positive impact on Financial Performance (FP), but not significant. The coefficient of un-standardized path is 0.083, so it is assumed that H_1 is partially supported. (The hypothesis is partially established)

(2) The Product Planning and Design (PD) of Taiwan's publicly-listed construction companies has a positive impact on Financial Performance (FP), but not significant. The

un-standardized path coefficient is 0.095, so it is assumed that H₂ is partially supported. (The hypothesis is partially established)

(3) The Macro Environmental Factor (ME) faced by Taiwan's listed construction companies has a positive impact on Financial Performance (FP), but not significant. The coefficient of un-standardized path is 0.012, so it is assumed that H₃ is partially supported. (The hypothesis is partially established)

(4) Subject to the existing Sales Ability (SA) of the publicly-listed construction companies in Taiwan, Macro Environmental Factor (ME) has a positive and significant interactive impact on Financial Performance (FP). The coefficient of un-standardized path is 0.495, so it is assumed that H₄ is supported. (The hypothesis is fully established)

(5) Subject to the existing Product Planning and Design (PD) of the publicly-listed construction companies in Taiwan, Macro Environmental Factor (ME) has a positive and significant interactive impact on Financial Performance (FP). The coefficient of un-standardized path t is 0.486, so it is assumed that H₅ is supported. (The hypothesis is fully established)

5. Conclusion and Suggestions

5.1 Research Conclusion

Through the above results and data analysis, the following specific conclusions can be obtained:

5.1.1 In Terms of SEM Model Verification

The linear structural equation modeling (SEM) was constructed in this research, and its Measurement Model, Structure Model and the Overall Model have a good fit-of-goodness, showing that this model fits very good.

5.1.2 In Terms of Practical Verification

(1) Subject to the existing Sales Ability (SA) of the publicly-listed construction companies in Taiwan, Macro Environmental Factor (ME) has a positive and significant interactive impact on Financial Performance (FP).

(2) Subject to the existing Product Planning and Design (PD) of the publicly-listed construction companies in Taiwan, Macro Environmental Factor (ME) has a positive and significant interactive impact on Financial Performance (FP).

(3) From the above, it can be seen that Macro Environmental Factor (ME) has a positive and significant interactive effect and significant interactive and it can promote financial performance to achieve synergic effect. This means that Macro environmental factor (ME) plays a very important positive impact role in promoting Financial Performance (FP), but Financial Performance (FP) is also affected by the aggregation of other factors such as both of Sales Ability (SA) and Product Planning and Design (PD) which were combined or to be considered at the same time. So, this finding has an important practical implication of management.

5.2 Contributions of This Research

This research will combine the related research results of past scholars to model established and verify the fit of the model to understand whether the model has goodness-of-fit effects or not, so the subject of this research belongs to verification of modeling. In addition to the important practical topics of Confirmatory Factor Analysis (CFA), which are worthy of follow-up researchers to continue to conduct further research in this related field. This finding can be used at least as a reference for the business decision makers of Taiwan publicly-listed construction companies as sustainable business management and development; therefore, this research is of great reference value.

5.3 Research Limitations and Recommendations

Because of the large number of the publicly-listed construction companies in Taiwan and the limitation of research resources, so this study uses Purposive sampling, and this is likely to cause the sample bias. Hoping that subsequent researchers can use Stratified Random Sampling to sample the population; in addition, follow-up researchers can consider using M PLUS Mapping, Johnson-Neyman Schema Method, to set the interval of interactive effect, so as to have a deeper understanding of the causal relationship between and among the constructs, and the development trend of the related research topic.

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