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# Footwear Design Strategies for Thai Footwear Industry to Be Excellence in World Market

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**Abstract:** The potential of Thai industrial product design is still inferior to those of leading competitors in world market that give more importance on the design during their product development to increase their competitive edges on commercial scale. The product design is very important part for sustainable growth in this industry. Thus, this research aims at investigating footwear design strategies for Thai footwear industry to be excellence in world market. The research has been designed with the mixed method of both qualitative and quantitative study. The quantitative data were collected through semi-structure interview from 500 designers who presented their designs to join the award competition. The results revealed that the footwear design strategies consisted of 4 factors, i.e. 1) design, 2) market analysis, 3) innovation, and 4) information technology. This paper utilizes the method of Structural Equation Modeling (SEM) to establish a strategies model for competitive advantage in Thai footwear industry. The analysis results indicated that the footwear design strategies model could help make more effective policies and organization strategies for enterprises and designers to develop themselves to be excellence in world market.

**Keywords:** strategies; design; footwear industry; structural equation model; competitive edge

## 1. Introduction

Shoes are one of the 4 basic needs that go together with clothes fashion which makes the shoes market expanding worldwide. Footwear industry is one of the most important fashion products of economic system. The growth rate of footwear industry forecasted by the specialists was at 3.9% in 2013 and became 4.1% in 2014 with the continuous growth at 4.9, 5.2, 5.3, and 5.5% in 2015 to 2018 respectively. Regarding the geographical market share, the 2 biggest players were America and Europe with 38.2 and 38.1% respectively. This follows by Asia Pacific Region with the market share of 19.7%. [1] While the growth rate of world footwear industry including Asia Pacific has been increasing, the manufacturing and export rate of Thailand declines. According to the survey by Thailand Textile Institute in 2014, the export amount was 713.40 Million USD with 3.34% declining growth rate. Sport shoes product 47.84%, sandals 4.98%, and shoes parts decreased 51.64%. Even the biggest exporting market, USA, still declined at 5.08% in 2010.[2] Moreover, the industrial index confirmed the decline of sandal production from 92.25% in 2013 to 77.77% in 2017. This might be the critical situation of Thai footwear industry. [3]

As mentioned above that footwear industry plays an important role in the country economy, it can be categorized in several types such as rubber shoes, plastic shoes, sport shoes, sandals, genuine leather shoes, artificial leather shoes including shoes parts which creates a huge income of the country. According to the analysis, the decline of manufacturing and export result from the weaknesses in competition by The Office of ASEAN Industrial Economics. The weaknesses include the lack of designers and technology in designing especially high skilled designers who are aware of the difference in consumer behavior. [4] This was in line with the report by World Design Rankings [5] that conducted the survey of world industrial design ranking during 2010 and 2017 revealing that

Thailand was ranked the 47th with only 71 points while the 1st rank was USA with the score of 2168. This critical situation is the main obstacle in running the business through high competition in free trade market. The Thai footwear industry cannot survive unless appropriate marketing strategies to increase its competitive edge are set up. This can be achieved by employing product design coping with customer needs together with increasing R&D budget for researching consumer behavior and fashion trends. [6] In addition, the production process technology should be developed whilst the innovation in the organization should be promoted. [7-8] Furthermore, there should be the cooperation of the stakeholders to increase the opportunity in creating innovation from the alliances in order to increase the competitive edge. [9] It is necessary to elevate the personal potential by promoting learning organization. This will result in increasing the number of designers and inventors. [10] To ensure sustainable development, this concept should be embedded in the organization in order to motivate creative ideas in every function resulting in surviving through the significantly increasing critical competition. [11] Thus, this research tries to find footwear design strategies for Thai footwear industry to be excellence in world market.

## 2. Literature review

Designing is outstanding characteristics of all businesses in every aspect including production, services, or marketing. [12] This is not only for the consumer needs but also for offering valued proposal to the customers. [13] It can be the step in business process, starting from the customer needs that the business can response through R&D until getting IT information for the designing. Then, the product will be created through the process of manufacturing and services, passing through selling process, and delivered with added values as required by the consumer. The cost of the designing process is about 5% but can add the product value up to 70%. This investment is minimal when comparing with other costly steps of production. [14] That is to say the designing is very important step in every business especially low investment industry such as footwear industry. Thus, design is needed to add more value to the product. The key of the design success includes creative ideas integrated with form, functions, ergonomic, manufacturability, and marketability. [15] These factors should be aligned with consumer's way of life, fashion, and responding to consumer needs harmoniously. The product should possess its own identity with magnificent attraction based on marketing and production feasibility. With the input of enhancement of advanced technology, the output can be called innovation. [16]

Innovation is the development of idea to link with the marketing factors driving social needs and attracting marketing response idea. Science and technology play the big role in pushing the development to innovation. This process relies on existing scientific foundation capability of the company, i.e. R&D, manufacturing, marketing, and commercial products. Innovation process is a complicated route requiring knowledge transfer of both inside and outside the organization connecting marketing factors with science and technology factors. If this can be accomplished effectively, the organization can pursue successful innovation. [17]

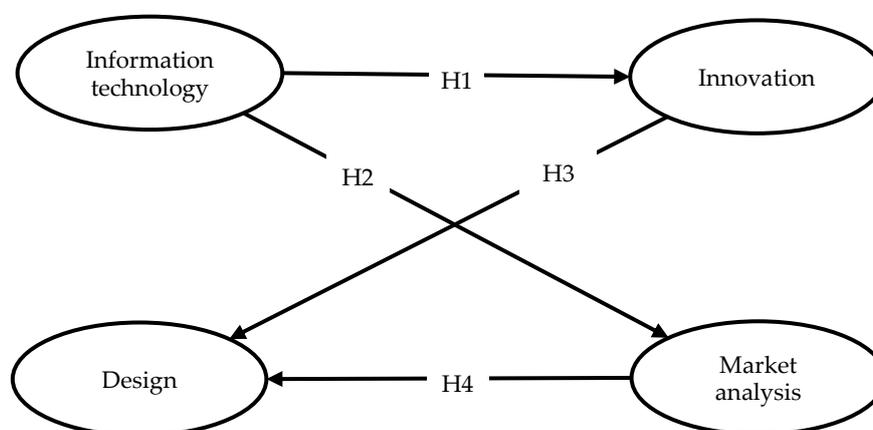
An organization needs to create innovation regularly due to the fact that it is the tool for competitive edge to create good profit to the business and grow the company's market share. However, some administrators have the opinions that it is very difficult to generate sustainable innovation. [18] Therefore, the continuously new product development can reduce marketing risk. Technology change and shortening of product life cycle are obstacles of market competition. It is important for any organization to focus on the effectiveness of the new product development process. [19] When the product is in the stage of declining, R&D is an essential factor to develop new product responding to the consumer needs to bring back the product life cycle to its starting point.

The market analysis is the process to collect data of the target consumer to set up marketing strategy leading to business success. Marketing data are crucial in helping administrators make decision. Accurate marketing information is valuable for any business. To gain the information, it is necessary to analyze the in depth information of the consumer. [20] To set up marketing strategy is very important factor for industrial business to communicate at all levels in the organization to pursue the same operation direction, the same business target, and to specify the company future

direction. Hence, defining marketing strategy must be performed precisely and can be clearly communicated to every level in the organization to create a sense of sharing. Moreover, it can connect with the future marketing plan leading to effectively utilize the organizational resources. [21]

Information technology is also used for information management in the organization to increase its production, reduce cost, and increase the efficiency of industrial operation. In addition, IT is a part of modern way of living which reflects the consumer's attitudes. Entrepreneur has to place importance on IT, computer system development, and communication system for increasing productivity, reducing cost, and more work efficiency which will result in automation system. This will gain efficient total services and also be the communication channel with customers, suppliers, and social communication. In every management system, IT plays the important role in operation and decision; thus, business system requires IT for its operation. [22]

From the concepts and literature review above, the researcher proposes components of footwear design strategies for Thai footwear industry to be excellence in world market as shown in the research framework in Figure 1. The hypothesis can be set up as follows. H1: IT factor has direct influence on innovation factors. H2: IT factor has direct influence on market analysis factors. H3: Innovation factor has direct influence on design factors. H4: Market analysis factor has direct influence on design factor.



**Figure 1.** Framework of the study.

### 3. Materials and Methods

This study has been designed as mixed methodology research of both qualitative and quantitative study. The qualitative data were derived from in depth interview with 9 experts with the required qualifications. The data were then, used to construct questionnaires to ask 500 [23] designers who presented their designs to join the award competition whose names were in the database of Thailand Creative & Design Center (TCDC). The data from the questionnaires were then used to design the structural equation model based on the framework. The SEM Model was then validated for the reliability in the focus group of 7 interdisciplinary experts with the same criteria of the former expert group. They joined the conference to validate and certify the model for the development of the implementation.

#### 3.1. Qualitative research 1

The researcher constructed structure in depth interview in the form of open ended based on the review literatures. They were used to interview 9 experts focusing on footwear design strategies. After deriving the complete contents, the data then were analyzed and arranged into questions in the questionnaire of 5 Likert Scales. [24] The questionnaire was then revised and validated to be the tool for the quantitative research.

### 3.2. Quantitative research

The questionnaire is divided into 4 parts: 1) general information of the designers, 2) general characteristics of the design in organization, 3) strategies in footwear designing (data from qualitative part), and 4) opinions and suggestions. The questionnaire was validated for content validity by 5 experts and then tested for reliability with Discriminant Analysis through SPSS Program. After passing the criteria, the questionnaire was used to collect data from the sample group.

### 3.3. Qualitative research 2

The researcher conducted the 2nd round of the qualitative research by analyzing the quantitative results in focus group with 7 experts who joined the conference to discuss and analyzed several in depth points based on the SEM Model. The data were analyzed through content analysis for the descriptive discussion to develop more complete model.

### 3.4. Assessment of research tools

The analysis of content validity was conducted through Index of Item Objective Congruence (IOC) with the IOC values between 0.6 and 1.0 higher than the set criteria at 0.50.[25] The reliability value of the questionnaire gained from the pilot study of 30 subjects to find the Discriminant Analysis (DA) with the DA values of the checklist items between 0.45 and 1.88 higher than the set criteria at 0.30. [25] The rating scale items were analyzed through Cronbach's Alpha with the reliability value at 0.98 higher than the set criteria at 0.80. [26] It can be concluded that the questionnaire reached very high reliability.

### 3.5. Data Analysis

The data were analyzed with both descriptive statistics and inferential statistics using SPSS Program. Multivariate Statistical Analysis and Structural Equations Modeling (SEM) were conducted through AMOS with the evaluation of data model fit of 4 values, [27] i.e. (1) Chi-square Probability level with  $p$  (CMIN/P) > 0.05 (2) Relative Chi-square (CMIN/DF) < 2 (3) Goodness of Fit Index (GFI) > 0.90, and (4) Root Mean Square Error of Approximation (RMSEA) < 0.08.

## 4. Results

### 4.1. Results of descriptive data analysis

The results of qualitative study through in-depth interview revealed that there were 4 components of design strategies. The information were then used to write 97 questions consisting of 24 items in designing, market analysis, innovation, and 25 items in information technology. It was found that product designers and fashion designers gave the importance on footwear design strategies at high level with the average score of 3.99. When considering on each aspect, it was found that the market analysis was ranked the highest with the average score of 4.02. When considering based on the different groups of designers, it was found that there was statistically significant difference at 0.05. When considering the difference of each aspect, it was found that the design aspect showed the significant difference at 0.05. It is noticeable that product designers paid more importance on design strategies than did the fashion designers. There was no statistically significant difference on market analysis, innovation, and IT as shown in Table 1.

**Table 1.** Descriptive and inferential statistics analysis.

Variables	$\bar{X}$	S.D.	t - Value	p - Value
Overall	3.99	0.49	2.07	0.04*
Design	3.96	0.49	2.55	0.01*
Market analysis	4.02	0.51	1.88	0.06
Innovation	3.97	0.55	1.52	0.13
Information Technology	4.02	0.57	1.74	0.08

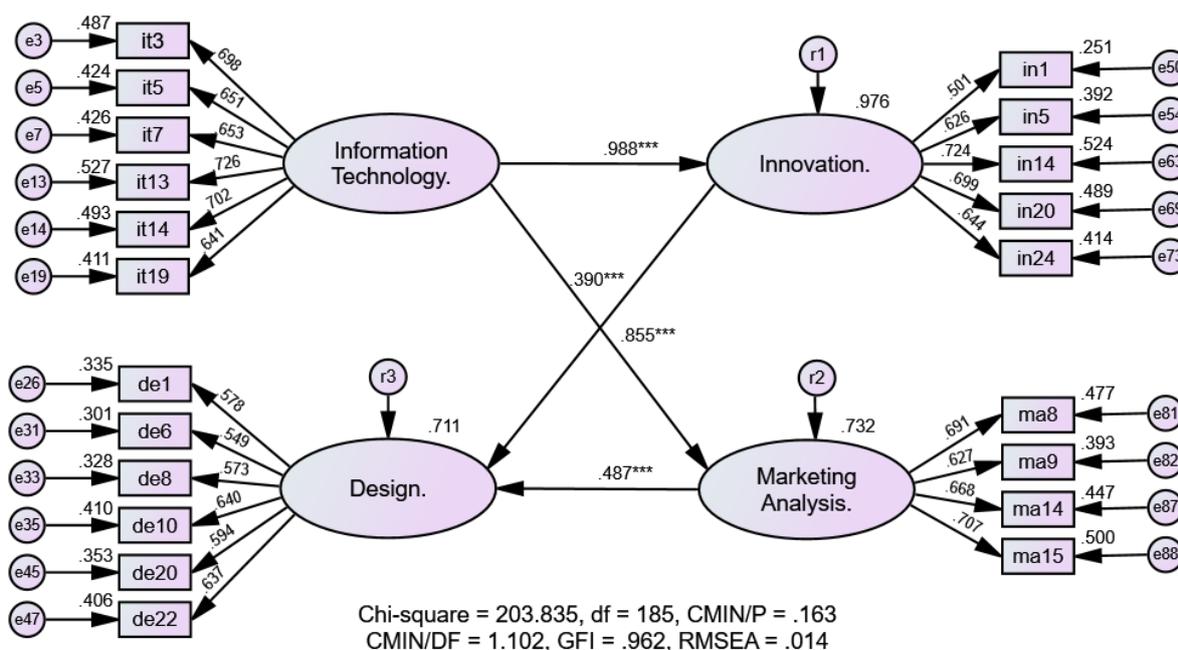
Note: \* p < 0.05.

4.2 Result of structural equation model

Inappropriate empirical data were deleted one by one and then, reprocessing the new model until those four variables passed the set criteria. [27] After the model adjustment, it was found that CMIN/P = 0.163, CMIN/DF value = 1.102, GFI = 0.962, and RMSEA value = 0.014 passing the model evaluation criteria and in line with the empirical data as shown in Table 2 and Figure 2.

**Table 2.** Goodness-of-fit Indices for Structural Model.

Fit Indices	Accepted Value	Model Value
$\chi^2$ (Chi-square)		203.835
df (Degrees of Freedom)		185
Chi-square Probability level with p (CMIN/P)	> 0.05	0.163
Relative Chi-square (CMIN/DF)	< 2	1.102
Goodness of Fit Index (GFI)	> 0.90	0.962
Root Mean Square Error of Approximation (RMSEA)	< 0.08	0.014



**Figure 2.** The final simplified and refined SEM with standardized path coefficients and factor loadings.

4.3 Results of Hypothesis Testing

The empirical data on IT aspect has direct influence on empirical data of innovation aspect and market analysis with the statistical significance at 0.001 with factor loading of 0.99 and 0.86 respectively in line with the hypothesis. The empirical data on innovation has direct influence on the design aspect with the statistical significance at 0.001 with factor loading of 0.39 in line with the hypothesis. The empirical variable on market analysis has direct influence on design variable with the statistical significance at 0.001 with factor loading of 0.49 in line with hypothesis. The final refined SEM with standardized coefficients and factor loadings are shown in Figure 2. Table 4 presents the corresponding standard effort of estimates and  $p$ -values.

**Table 3.** Summary of hypotheses testing results.

	Path	Estimate ( $\beta$ )	S.E.	C.R.	$p$	Result
Innovation	<--- Information Technology	0.99	0.065	10.434	***	Support
Marketing Analysis	<--- Information Technology	0.86	0.059	12.782	***	Support
Design	<--- Innovation	0.39	0.121	3.433	***	Support
Design	<--- Marketing Analysis	0.49	0.098	4.144	***	Support

Note:  $\beta$  = standardized beta coefficients; S.E. = standard error; C.R. = critical ratio; \*\*\*  $p < 0.001$ .

**Table 4.** The standardized regression weights and covariance estimates of the final refined SEM.

	Path	Estimate ( $\beta$ )	S.E.	C.R.	$p$
in1	<--- Innovation	0.501			
in5	<--- Innovation	0.626	0.129	9.938	***
in14	<--- Innovation	0.724	0.134	10.716	***
in20	<--- Innovation	0.699	0.138	10.536	***
in24	<--- Innovation	0.644	0.123	10.091	***
de1	<--- Design	0.578			
de6	<--- Design	0.549	0.106	9.678	***
de8	<--- Design	0.573	0.111	9.985	***
de10	<--- Design	0.640	0.113	10.785	***
de20	<--- Design	0.594	0.103	10.247	***
de22	<--- Design	0.637	0.106	10.747	***
ma8	<--- Marketing Analysis	0.691			
ma9	<--- Marketing Analysis	0.627	0.077	12.382	***
ma14	<--- Marketing Analysis	0.668	0.076	13.111	***
ma15	<--- Marketing Analysis	0.707	0.077	13.766	***
it3	<--- Information Technology	0.698			
it5	<--- Information Technology	0.651	0.064	13.617	***
it7	<--- Information Technology	0.653	0.068	13.661	***
it13	<--- Information Technology	0.726	0.066	15.114	***
it14	<--- Information Technology	0.702	0.061	14.635	***
it19	<--- Information Technology	0.641	0.065	13.422	***

Note:  $\beta$  = standardized beta coefficients; S.E. = standard error; C.R. = critical ratio; \*\*\*  $p < 0.001$ .

#### 4.3 Results of Focus Group Discussion

The researcher conducted the focus group of 7 interdisciplinary experts to confirm the SEM Model resulting that all 7 experts agreed with consensus that the Structural Equation Model of footwear design strategies for Thai footwear industry to be excellence in world market was confirmed.

## 5. Discussion

The empirical variable on IT influences directly on innovation empirical variable at statistically significant level of 0.001. This can be explained that IT contributes directly to more productivity, cost reduction, and higher operation efficiency in business concerning economy, trading, and industry [22] conforming with the study of Valmohammadi; Nieves & Osorio; Ruiz-Torres et al. [28-30] finding that IT influences directly on innovation. IT empirical variable influences directly on marketing analysis empirical variable at the statistically significant level of 0.001. This is because on marketing analysis, it is necessary to use IT in searching data and useful information. Moreover, type of information has direct influence on consumer's attitude [22] in line with the study of Panda & Rath [31] and that of Rahman & Mannan [32] finding that IT data influences directly on marketing analysis. Innovative empirical variable influences directly on design variable at the statistically significant level of 0.001 because innovation and technology acceptance are considered as social behavior due to the fact that there is levels of difference of individual in technology acceptance. [16], [33-34] This is in line with the study of Sarmah, Kamboj, & Kandampully and that of Valaei, Rezaei, & Emami [35-36] finding that innovation influences directly on designing. Empirical variable on marketing analysis has direct influence on design variable at the statistically significant level of 0.001 because during the designing, it is important to consider not only attractive appearance but also user practicality. Designing process requires the analysis on the consumer needs particularly from their feedbacks which can help the designers to create the simulation before the real product [37] in line with the study of Wu et al. [38] and Coudounaris [39] stating that market analysis has direct influence on design.

## 6. Conclusions

It is necessary for enterprises and designers to develop themselves to become learning organization with technology sharing and creative innovation for designer team. With the exchange of knowledge and information, it will help in fulfilling the gap; thus, more complete product can be designed particularly innovative product design. There are other important factors such as production engineering information, marketing communication information easily accessed by the consumer, raw material resources, etc. Thorough market analysis and consumer centric theory are other variables for successful design in commercial scale. Designers and enterprises must place importance on IT due to the fact that IT can help them access up to date information rapidly. They also need to know how to utilize social media to approach the target consumer directly. Moreover, the products must be environmental friendly and social concerns. Finally, designers must be aware that they are only a part in the design strategic process. Hence, they should open for all aspects of information including marketing, technology, innovation, way of life, culture, etc for creating unique product defining its own story together with utility, beauty, need, and art appreciation responding to humankind.

## Appendix

### Measurement of instruments

#### Innovation

- in1 Establish product prototype using modern technology, e.g. 3D printing technology.
- in5 Register a patent of innovative products created by the organization.
- in14 Give a motivation award to anyone in the organization for creating innovation.

- in20 Arrange innovation week in the organization to exhibit the company's products as well as outstanding innovative products from outside to create pride of ownership and inspiration to all employees.
- in24 Cooperate with suppliers to conduct R&D on production raw materials.

#### Design

- de1 Designing should focus on eco products as end results.
- de6 Design products that can create a story to tell consumers.
- de8 Design products to suit with certain attirement.
- de10 Create work using thinking out of the box concept, e.g. different design from the traditional ones.
- de20 Designers and designing process can work and be conducted independently.
- de22 Workplace is arranged to create creative-thinking environment.

#### Marketing Analysis

- ma8 Conduct internal marketing in order to communicate the same product information to all employees; so, they can proudly transfer the information to outsiders.
- ma9 Arrange customer feedback and customer survey regularly.
- ma14 Implement Creating Shared Value (CSV) Concept on marketing operation.
- ma15 Establish marketing team to support designers.

#### Information Technology

- it3 Conduct a membership registration with organizations or associations relevant to designing both in Thailand and abroad.
- it5 Information of designing function must possess security system to protect from data leaking and must be kept confidentially.
- it7 Designers must join training seminar related with shoe and fashion activity at least twice annually to get newly ideas for their product creation.
- it13 Establish a budget for information development.
- it14 Arrange a training course on knowledge and skill enhancement about Information technology for designers.
- it19 Create a working team that can operate anywhere and anytime through utilization of digital organization technology.

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