

STRATEGIC GUIDANCE FRAMEWORK FOR SUSTAINABLE DEVELOPMENT IN THE CONSTRUCTION INDUSTRY

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ABSTRACT

Objectives: *This research aims to study strategic guidance framework for sustainable development in the construction industry in Thailand.*

Methodology: *This research is to strategic guidance framework for sustainable development in the construction industry by using Qualitative and Quantitative Research to develop structural equation model. A sample group in this quantitative research was 500 entrepreneurs of active construction industry in Thailand which is categorized into small and medium and large industry. Then qualitative research using focus group technique was finally carried out to verify the guidance.*

Findings: *Research results showed that 1) strategic guidance framework for sustainable development in the construction industry consisted of 4 components; organization learning, organization innovation entrepreneurship, and performance organization. Organization learning was noted with the highest level of performance by large and small and medium industries with 4.20 and 4.11 mean, respectively. It was also found in the results that both large and small and medium industries focused on the others at high level., 2) development of structural equation model corresponded to the evaluation criteria and was fit to empirical data with 0.114 of Chi-Square Probability Level, 1.134 of Relative Chi-Square (CMIN/DF), 0.964 of Goodness of Fit (GFI), and 0.016 of Standard Root Mean Square Actual (RMSEA), and 3) hypothesis-tested results showed that entrepreneurship directly effects on organization learning, organization innovation , and organization performance with 0.001, .001, and .001 of statistical significance, respectively while organization learning directly effects on organization innovation with .001 of statistical significance, and the organization innovation directly effects on organization performance with .001 of statistical significance.*

Conclusion: *The strategic guidance framework for sustainable development in the construction industry consisted of 4 components; organization learning, organization innovation entrepreneurship, and performance organization. Organization learning was noted with the highest level of performance by large and small and medium industries according to evaluation weight determination using Likert's scale with 4.20 and 4.11 mean, respectively. It was also found that the development of structural equation model corresponded to the evaluation criteria and was fit to the empirical data with 0.114 of Chi-Square probability level, 1.134 of Relative Chi-Square (CMIN/DF), 0.964 of Goodness of Fit (GFI), and 0.016 of Standard Root Mean Square Actual (RMSEA).*

Keywords: Strategic Guidance Framework, Entrepreneurship, Construction Business Development, Sustainability.

INTRODUCTION

Construction industry plays an important role in national industry and is the tool and indicator for national development. It is high-valued, provides a great amount of employment and income distribution widely to the public, causes high regional value content, greatly invests abroad, and is always the government's key tool for economic encouragement when the country confronts economic crisis. However, there are still a lot of problems and obstacles of construction business like lack of labor and business liquidity, unstandardized work quality, and inefficient project management. Such problems and obstacles lead to a great deal of business closedown or winding-up which can be found from liquidation registration statistics of entrepreneurs in construction business category from Department of Business Development, Ministry of Finance. It showed that considering in 2018 and 2019, there were 2,315 and 1,109 juristic persons who requested for liquidation with 25,900.84 and 26,864.53 million Baht of authorized capital, respectively. As shown in Figure 1, the 2019 authorized capital was 3.72% higher than of which in 2018 (Department of Business Development, 2019).

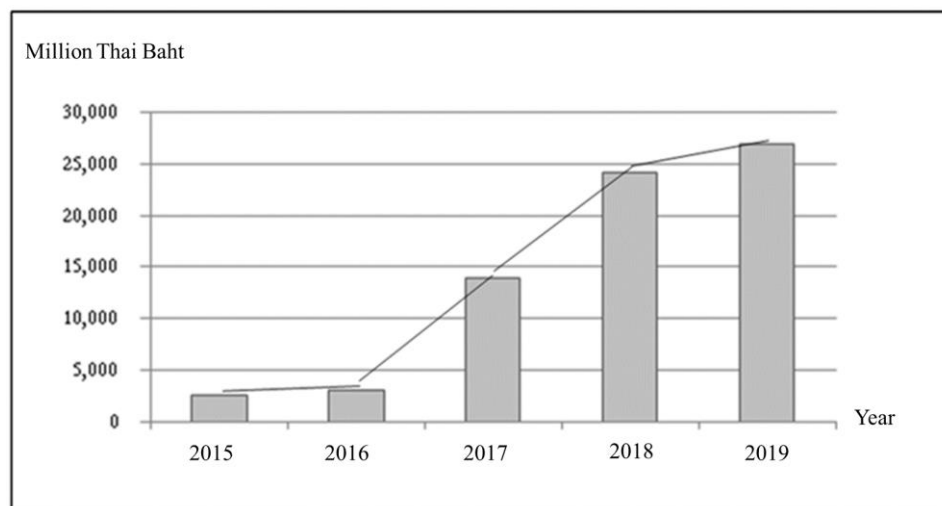


FIGURE 1
AUTHORIZED CAPITAL STATISTICS OF CONSTRUCTION BUSINESS
LIQUIDATION DURING 2015 - 2019

According to liquidation registration statistics of entrepreneurs in construction business category with authorized capital with Department of Business Development, Ministry of Finance, it was found that there are a number of construction companies who had requested for liquidation even both public and private-sector construction projects are expanding. Therefore, it is urgent to find improvement and development guidelines for sustainable construction industry.

Organization learning

Organization learning is the organization that provides channels for internal knowledge transfer among personnels together with learning from external sources and opportunities to find best practices to be developed and set up as organizational core competence and to keep up with the always-changing global society. Concept of organization learning is Chiva's knowledge management

(2017). Nowadays, most organizations emphasize on being builders of channels for knowledge transfer among personnels together with learning from external sources and opportunities to find best practices to be developed and set up as organizational core competence (Malik & Garg, 2020). Resulted from staff's participation on relation between organization learning and work participation, the staffs' work engagement is achieved and connects the organization to be learning source including there is encouragement for personnel's further construction education so that the personnel will have more potential, knowledge, capacity and be able to learn and discover new contents from external sources for keeping up with changes of economy, society, and environment.

Organization Innovation

Organization innovation is knowledge, skill and creativity-mixed process with entrepreneur's managerial ability in order to have competitive advantage and become innovative business. New business platform proposal will benefit and mainly meet consumer's satisfaction, be time-saving and more convenient, and provide higher-quality products. Developing the organization to be innovative, the entrepreneur must know and understand organizational attributes derived from every-level personnel's collaboration. Study of Liu et al. (2017) established the platform of modern organization innovation. To change business dimensions, business innovation is required for competition and effects on innovative business operation. Products and services must be outstanding and alternative for modern business model innovation and inimitable by competitors. Business model innovation is different from production and technology development innovation (Evans et al., 2017) and emphasizes on e-commerce and entrepreneurship firms. In construction industry, continuous technological changes are found including knowledge innovation encouragement, new technological abilities to be used for low-cost construction and progressive innovation, knowledge sharing and learning industry-relating modern technological innovation.

Entrepreneurship

A good entrepreneur who works on construction contract, construction or designed-relating system installation or construction control like buildings, public utilities (water supply, electricity, road, bridge, etc.) or factories in domestic and foreign industrial estates must have leadership following to leadership pattern for construction project (Ismail & Fathi, 2018). Today, higher importance of leadership shows that if a leader is able to think or have innovative process, sustainable construction project development can be achieved. Leadership is considered a factor of construction organization success. Efficient leadership is significant for the company to achieve organizational goals and promote the company's success. Roles of leadership extremely takes part in smooth organizational operations. Without a strong leader, the organization might lose directions for organizational development. Leadership directly effects on efficient staff's engagement. Key success factors for construction organization (Tripathi & Jha, 2018) are ensuring success of the business and being more successful than other organizations which are the construction entrepreneur or top executive's goal as construction business is one of the most risky businesses in the world. Therefore, it is greatly important for the entrepreneurs or top executives of construction organizations to set up the key success factor effecting on construction organization achievement and the most important factor is the entrepreneur or top executive's ability.

Organization Performance

Organization performance is the comparison between input or resource used for goaled achievement according to organizational choices. The performance is considered from quantity or quality of ongoing outcome or resources, comparison between actual outcome from managed process which might be products or services and input for administrative resources. If the input is less than the outcome, it implies that resource-saving is achieved and leads to organizational performance. Moreover, it shows that the organization is able to manage works according to its mission and duties by worthily using various factor resources including manpower, causes the least lost, well follows the objectives, saves time, resources, and manpower, and has management system for production and services. Increasing organizational performance is like the main goal for every-aspect organizational resource development especially firstly human resource. The most important things of the development for organizational performance increase is to connect social responsibility and operational outcomes of organizations in construction industry (Loosemore & Lim, 2017), relations between social responsibility and organization performance by determining strategies of social responsibility as strategic motivations. This starts from social responsibility in integrated construction, connection between social responsibility and economic outcomes which are practically acceptable and cause good relationship in brand loyalty and internal and external stakeholder's participation. The construction carried out under the theoretically integrated framework meets stakeholder's satisfaction for driving business and customer's long-term satisfaction for organizational performance.

Theoretical Concept from Documents and Textbooks Relating to Business Development for Sustainable Construction Industry

Development concept of industrial business by using McKinsey 7-S Framework. Construction industry emphasized organization performance management which came from 7-S factors starting from Strategy, Structure, Share values, Style, Staff, Skills, and Systems. The 7-S framework therefore provided efficient development outcome which led to effectiveness. Concept of creating shared values (CSV) between business and society (Porter & Kramer, 2019) was every stakeholder's sustainable achievement. Thus, concept of business operation, policy making throughout product and service discovery reflected an aspect of systematic sustainable management under Business Model Innovation (BMI). It provided value adding and new prosperity or stakeholders including customers and business organizations to increase economic opportunities by building business-dimensioned changes and participating in technological advanced application promotion (Evans et al., 2017) which was innovation and drives for construction industry under the context of continuous technological changes. A construction expert in managerial level had collected and analyzed information and checked the precision by building structural equation model. The outcome was in accordance with good business innovation platform.

Competition in domestic and international construction business tends to be very high in the future. Sustainability-relating theoretical concept and LEAN management are suitable design and management of process, resource, system and measures leading to customer-fit product delivery with minimum waste or least unnecessary excess. Lost is not assessed from final products, but all activities or processes using resources causing non-value adding cost in the production or construction such as drawing reading mistake, lack of communication, sidetracked work, redundant activities, too fast or too slow inputting resources into production, ordering

unqualified materials, too early work completion, and customer-unmatched products or services etc. Lean management emphasizes on provision of products or services following to customer's demand by understanding production process and its internal losses and continuously getting rid of such losses step-by-step (Bacoup et al., 2018). Concept of modern management (Six Sigma) by Anbari (2018) was about using quality management system in high-quality organizations. Concept of allowing 3.4 units waste per a million-unit production in an industrial system is focusing on everyone's participation from executives to every personnel, reducing mistakes, wastes and correction, and teaching personnel to work with precise and reliable information.

According to the aforementioned reasons, the author is therefore interested in strategic guidance framework for sustainable development in the construction industry by studying the 4 components leading to business development guidelines for construction industry which are organization learning, organization innovation, entrepreneurship, and organization performance to lead to the strategic guidance framework for sustainable development in the construction industry sectors in Thailand.

Objectives

Objective of this study is to develop structural equation model of strategic guidance framework for sustainable development in the construction industry.

Hypotheses

Five research hypotheses were determined by the author according to theoretical principles as follows:

H₁ Entrepreneurship directly effects on organization learning.

Study of Nogueira (2019) shows concept of entrepreneur's learning behavior including their attributes and significant impacts for running business in the future. It was found that the entrepreneur's behaviors help the organization achieve goals from important integration of knowledge accumulation and collaboration which cause potential. It was also found that the most effecting relations on the entrepreneurs are organizational learning and organizational development by the entrepreneurs to become organization learning simultaneously. The organizations that have high-performance work system are able to work better if organizational high-level learning is carried out. Relations between high-performance work system and organizational operational results will be more positive if organizational learning is stronger. The entrepreneurs are media of high-performance relations (Zhu et al., 2018). Therefore, the organization with smart, eager, non power-crazy, and motivating leader will make his staffs encouraged and work efficiently (Sawangrat, 2020).

H₂ Organization learning directly effects on organization innovation.

The study of knowledge management results and organization learning on innovation showed that knowledge management effected on organization innovation. Internal learning also plays an important role in relationship between organizational culture and innovation. These results were practical guidelines for policy maker and manager who determines policy and strategy for sustainability. In addition, the study also provided secured management in policy and strategy determination for sustainability. Innovation helped the organization find creatively-operated,

competitive, and profitable products (Abdi, 2016; Lin & Lee, 2017; Watkins & Kim, 2018). Significant components of knowledge management are man, technology and knowledge process. “*Man*” is considered the most significant component because it is source of knowledge and the one who utilizes and applies such knowledge. “*Technology*” is a tool for the man to find out, store, exchange and easily and rapidly apply the knowledge while “*Knowledge Process*” is the administration in order to transfer knowledge from its source to users for improvement and innovation (Pitakkornrat & Pongsiri, 2020).

H₃ Entrepreneurship directly effects on organization innovation.

The study of Emami & Dimov (2017) found out that the importance of entrepreneur’s operation was opening chances to build new value and innovation levels between faith in opportunity and determination for building new value. The entrepreneur must create value by thinking and building innovation. For experienced entrepreneur, this is considered innovation-related concept. The study of Mrożewski & Kratzer (2017) showed that necessity of being the entrepreneur related and positively connected to innovation. Therefore, the entrepreneur must be creative in order to provide opportunities to a great number of entrepreneurs.

H₄ Organization innovation directly effects on organization performance.

To be able to compete in industrial business, new practice of finding external information and mixing contexts of innovation is one of the practices leading to greater success and different innovation alliance. The study of Rauter et al. (2019) found that the improvement of innovation performance effected on its sustainability and economy. Moreover, innovation operation positively related to innovation performance for sustainability. Goals of economic innovation and sustainability could simultaneously be achieved and confirmed that organization innovation positively related to organization performance. If the organization has innovation, its performance will have good empirical impact. Innovation promotion will most provide opportunities (Shanker et al., 2017).

H₅ Entrepreneurship directly effects on organization performance.

The study of Esubalew & Raghurama (2020) found that entrepreneur’s work performance related to his action. Not only the entrepreneur’s characteristics, but also the relations will help the entrepreneur be able to access operational results. Business will be impacted from the entrepreneur’s professional personal connection. The entrepreneur’s relation is a factor determining business economic performance by competition intensity in the industry and the entrepreneur’s experiences. The results showed that economic performance was resulted from personal resources relations. The entrepreneur took part in performance improvement more than connecting or personal networks. The greater the entrepreneur’s experience in business sector, the more capacity of utilizing advantages from professional network and institutes. This implied the relation between the entrepreneur and organization performance (Hernández-Carrión et al., 2017).

METHODOLOGY

This study was an Inductive Research by using Mixed-Methodology Research and consisted of 3 parts; this paper aims to investigate the relationship between organization learning, organization innovation, entrepreneurship and organization performance by using structural

equation modelling (SEM) to test the conceptual model in construction industry in according to procedure in line with Centobelli et al. (2019); Saris et al. (2007) and Singh et al. (2018).

1. Qualitative research using in-depth interview technique; 9 experts were the population of this research and chosen by purposive sampling. The experts were therefore divided into 3 groups; 3 experts in a group of entrepreneurs, 3 experts in a group of public administrative executives, and 3 experts in a group of academicians.
2. Quantitative research; Population of this research is entrepreneurs of active construction industry in Thailand. Sample size determination was carried out by using criteria of component analysis research or structural equation model. 500 samples were determined in very good level. The samples consisted of 250 entrepreneurs of small and medium construction industry and 250 of large construction industry. Multi-stage sampling was used and consisted of cluster sampling, quota sampling and probability sampling using simple random sampling, respectively. Multivariate Statistical Analysis employed Structural Equations Model (SEM) by AMOS with evaluating the Data-model Fit in 4 levels including (1) Chi-square Probability Level over 0.05, (2) Relative Chi-square less than 2, (3) Goodness of fit Index over 0.90, and (4) Root Mean Square Error of Approximation less than 0.08.
3. Qualitative research using focus group technique was carried out by 11 specialists to verify the model in this research.

RESULTS

Classified by size of construction business, importance analysis results of business development guidelines for sustainable construction industry are as shown below (Table 1).

Table 1 MEAN AND STANDARD DEVIATION OF STRATEGIC GUIDANCE FRAMEWORK FOR SUSTAINABLE DEVELOPMENT IN THE CONSTRUCTION INDUSTRY CLASSIFIED BY SIZE OF CONSTRUCTION BUSINESS						
Overall strategic guidance framework for sustainable development in the construction industry	Small and Medium			Large		
	\bar{x}	S.D.	Significant level	\bar{x}	S.D.	Significant level
Overall	4.15	0.54	High	4.06	0.44	High
1. Organization learning	4.20	0.52	High	4.11	0.44	High
2. Organization innovation	4.18	0.57	High	4.08	0.46	High
3. Entrepreneurship	4.10	0.58	High	4.01	0.48	High
4. Organization performance	4.14	0.60	High	4.01	0.50	High

1. It was found that overall significance of small and medium businesses was high with 4.15 mean value. The significance of organization learning, organization innovation, entrepreneurship, and organization performance were high with the following mean values; 4.20, 4.18, 4.10, and 4.14 respectively. For large businesses, overall significance was found high with 4.06 mean value. The significance of organization learning, organization innovation, entrepreneurship, and organization performance were high with the following mean values; 4.11, 4.08, 4.01 (S.D. =0.48), and 4.01 (S.D. =0.50), respectively.
2. For difference analysis results of levels of significance of strategic guidance framework for sustainable development in the construction industry, when classified by size of industrial business, it was found that they were statistically significantly different overall at 0.05 while for entrepreneur aspect had no statistically significant difference at 0.05.
3. Evaluation results of goodness of fit of the structural equation model of strategic guidance framework for sustainable development in the construction industry showed that 2.281 of Relative Chi-Square (CMIN/DF), 0.607 of Goodness of Fit Index (GFI), and 0.051 of Standard Root Mean Square Actual (RMSEA) were in accordance with the criteria of goodness of fit to model empirical data. However, the Chi-Square Probability Level was 0.000 which was not under the criteria.

The author therefore improves the model by considering Modification Indices (MI) according to the study of Arbuckle (2011). After the completion of model improvement, it was found that Chi-Square Probability Level equaled to 0.114 which was greater than 0.05 and implied that this number has no statistically significance, Relative Chi-Square (CMIN/DF) was 1.134 which was less than 2. Goodness of Fit Index (GFI) was 0.964 which was greater than 0.90 and Standard Root Mean Square Actual (RMSEA) was 0.016 which was less than 0.08. These can be concluded that all 4 statistical values were qualified as shown in Figure 2.

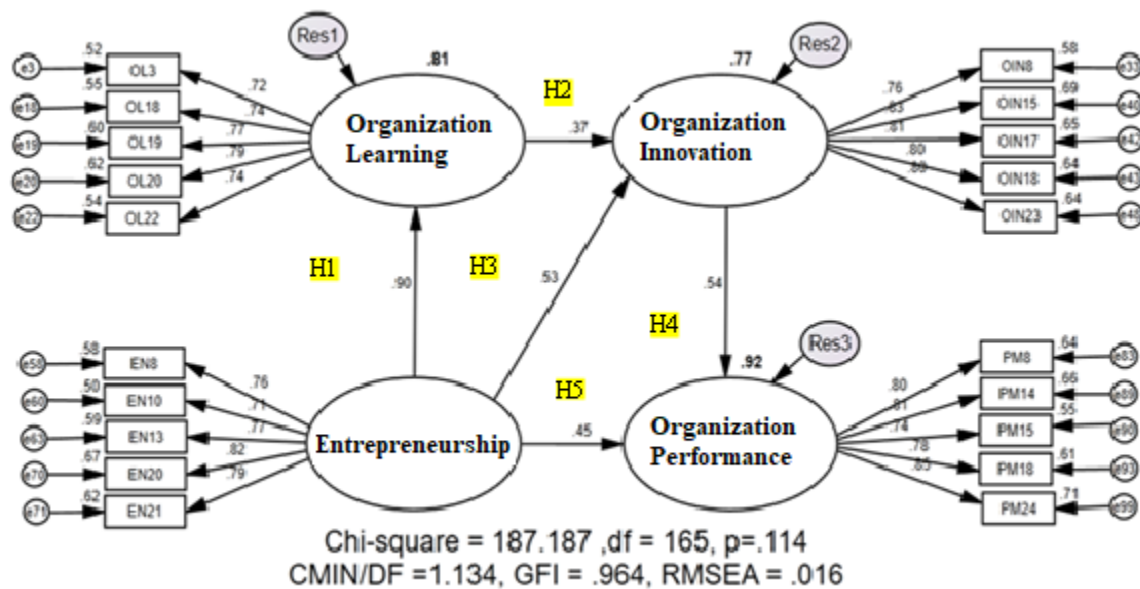


FIGURE 2
STRUCTURAL EQUATION MODEL OF STRATEGIC GUIDANCE FRAMEWORK FOR SUSTAINABLE DEVELOPMENT IN THE CONSTRUCTION INDUSTRY

As shown in Figure 2, analysis results of structural equation model of strategic guidance framework for sustainable development in the construction industry were H1; Entrepreneurship directly effects on organization learning with 0.001 of statistical significance, 0.09 Standardized Regression Weight, 0.81 squared multiple correlation (R^2), and 0.05 variance, H2; organization learning directly effects on organization innovation with 0.001 of statistical significance, 0.37 Standardized Regression Weight, 0.77 squared multiple correlation (R^2), and 0.6 variance, H3; Entrepreneurship directly effects on organization innovation with 0.001 of statistical significance, 0.53 Standardized Regression Weight, 0.77 squared multiple correlation (R^2), and 0.06 variance, H4; organization innovation directly effects on organization performance with 0.001 of statistical significance, 0.54 Standardized Regression Weight, 0.92 squared multiple correlation (R^2), and -0.01 variance, and H5; Entrepreneurship directly effects on organization performance with 0.01 of statistical significance, 0.45 Standardized Regression Weight, 0.92 squared multiple correlation (R^2), and 0.02 variance

Analysis results of Standardized Regression Weight, R-square or Multiple Correlation- R^2 and variance of latent variables effecting on observative variables can be explained as follows:

Entrepreneurship built required organizational behaviors or culture for customer and competitor emphasis including collaboration between companies (EN 20) with 0.82 Standardized Regression Weight, 0.67 R-square or Multiple Correlation-R² and 0.18 variance, opening for all staffs' opinions and suggestions (EN21) with 0.79 Standardized Regression Weight, 0.62 R-square or Multiple Correlation-R² and 0.18 variance, self-working as a role model for staffs (EN13) with 0.77 Standardized Regression Weight, 0.59 R-square or Multiple Correlation-R² and 0.21 variance, encouraging new thinking, action, or creativity to develop the organization (EN8) with 0.76 Standardized Regression Weight, 0.58 R-square or Multiple Correlation-R² and 0.23 variance, organization improvement, funding and collecting production factors for sustainable organization development (EN10) with 0.71 Standardized Regression Weight, 0.50 R-square or Multiple Correlation-R² and 0.30 variance, respectively (Table 2).

Table 2 STATISTICAL ANALYSIS OF STRUCTURAL EQUATION MODEL FOR STRATEGIC GUIDANCE FRAMEWORK FOR SUSTAINABLE DEVELOPMENT IN THE CONSTRUCTION INDUSTRY IN STANDARDIZED ESTIMATE MODE				
Variable	Estimate		R ²	P
	Standard	Unstandardized		
ENTREPRENEURSHIP				
ORGANIZATION LEARNING	0.90	0.81	0.81	***
ORGANIZATION INNOVATION	0.53	0.48	0.77	***
ORGANIZATION PERFORMANCE	0.45	0.44	0.92	***
ORGANIZATION LEARNING			0.81	
ORGANIZATION INNOVATION	0.37	0.37	0.77	***
ORGANIZATION INNOVATION			0.77	
ORGANIZATION PERFORMANCE	0.54	0.58	0.92	***
ENTREPRENEURSHIP				
EN8	0.76	1.00	0.58	
EN10	0.71	0.97	0.50	***
EN13	0.77	0.97	0.59	***
EN20	0.82	1.08	0.67	***
EN21	0.79	0.98	0.62	***
ORGANIZATION LEARNING			0.81	
OL3	0.72	1.00	0.52	
OL18	0.74	1.02	0.55	***
OL19	0.77	1.07	0.60	***
OL20	0.79	1.08	0.62	***
			0.81	
OL22	0.74	0.97	0.54	***
ORGANIZATION INNOVATION			0.77	
OIN8	0.76	1.00	0.58	
OIN15	0.83	1.10	0.69	***
OIN17	0.81	1.08	0.65	***
OIN18	0.80	1.07	0.64	***
OIN23	0.80	1.08	0.64	***
ORGANIZATION PERFORMANCE			0.92	
PM8	0.80	1.00	0.64	
PM14	0.81	0.96	0.66	***
PM15	0.74	0.94	0.55	***
PM18	0.78	0.93	0.61	***
PM24	0.85	1.13	0.71	***

*** Significant level at 0.001

Organization learning emphasizes on construction research and development in order to create commercial innovation to the organization (OL20) with 0.79 Standardized Regression Weight, 0.62 R-square or Multiple Correlation- R^2 and 0.18 variance, participate in opinion or suggestion hearing forum to strengthen knowledge and competitiveness (OL19) with 0.77 Standardized Regression Weight, 0.60 R-square or Multiple Correlation- R^2 and 0.20 variance, build core competence from executive and all staffs' experiences and database, searching, collecting, storing, publishing, exchanging, and sharing (OL18) with 0.74 Standardized Regression Weight, 0.557 R-square or Multiple Correlation- R^2 and 0.22 variance, learn and find new external contents to keep with changes of economy, society and environment (OL22) with 0.74 Standardized Regression Weight, 0.54 R-square or Multiple Correlation- R^2 and 0.20 variance, provide knowledge and aspect sharing among staffs or internal agencies (OL3) with 0.72 Standardized Regression Weight, 0.52 R-square or Multiple Correlation- R^2 and 0.23 variance, respectively.

Organization innovation applied modern technological innovation for hardware and software in product design (OIN15) with 0.83 Standardized Regression Weight, 0.69 R-square or Multiple Correlation- R^2 and 0.14 variance, built organization innovation encouraging staffs to love, engage and be loyal to the organization (OIN17) with 0.81 Standardized Regression Weight, 0.65 R-square or Multiple Correlation- R^2 and 0.16 variance, collaborated with public sectors, research network, and educational institutes for discovering new innovation and technology (OIN23) with 0.80 Standardized Regression Weight, 0.64 R-square or Multiple Correlation- R^2 and 0.17 variance, built culture of organization learning to stimulate everyone's creativity (OIN8) with 0.80 Standardized Regression Weight, 0.64 R-square or Multiple Correlation- R^2 and 0.17 variance, built culture of organization learning to stimulate everyone's creativity (OIN18) with 0.76 Standardized Regression Weight, 0.58 R-square or Multiple Correlation- R^2 and 0.19 variance, respectively.

Organization performance was analyzed that objectives of construction possibilities were reviewed whether they regularly followed to the plan or not (PM24) with 0.85 Standardized Regression Weight, 0.71 R-square or Multiple Correlation- R^2 and 0.16 variance, Information Technology (IT) and suitable construction technology were applied to increase work performance (PM14) with 0.81 Standardized Regression Weight, 0.66 R-square or Multiple Correlation- R^2 and 0.15 variance, continuous process improvement and overall quality management of all staffs' participation were focused (PM8) with 0.80 Standardized Regression Weight, 0.64 R-square or Multiple Correlation- R^2 and 0.17 variance, respectively.

DISCUSSION

Research results showed that overall levels of significance of strategic guidance framework for sustainable development in the construction industry, when classified by size of business, are different with 0.05 statistical significance. Small and medium industrial businesses emphasize on business development guidelines for sustainable construction industry (\bar{X} =4.15) more than the large industrial business (\bar{X} =4.06) (as shown in Table 2). This is in accordance with Tickle Mann and Adebajo (2016) which shows differences in size of organization. Small and medium industrial organizations have gradual internal quality management which effects on organization development. It is different from large organizations who have continuous process improvement, systematic revision and learning, and Best Practice establishment. When individually considering levels of importance of each industrial size, it was found that small and medium business focuses organization learning, organization innovation, entrepreneurship, and organization performance in high level of significance with the following mean values; 4.20, 4.18, 4.10, and 4.14 respectively. For large businesses, it was found that organization learning is

most focused in high level of significance with 4.11 mean followed by organization innovation, entrepreneurship, and organization performance were high with the following mean values; 4.08, 4.01 (S.D.=0.48), and 4.01 (S.D.=0.50), respectively. This corresponds to the study which found that for small and medium industrial business, subcontractors have more flexible and continuous advantage of innovation creativity leading to sustainability. According to the sampling of managers of subcontractors from construction industry in Singapore, it was found that size of organization effects on industry development guidelines which are caused by different factors; purchase process, cost control, determination for behavior changes, education on sustainable construction benefit.

CONCLUSION

Analysis results showed that strategic guidance framework for sustainable development in the construction industry consisted of 4 components; organization learning, organization innovation, entrepreneurship, and performance organization. Like large industries, organization learning was noted with the highest level of performance by small and medium industries, followed by organization innovation, entrepreneurship, and organization performance, respectively.

Hypotheses-tested results to analyze causal impact between latent variables in structural equation model of business development guidelines for sustainable construction industry were found in accordance with the 5 hypotheses; 1) entrepreneurship directly effects on organization learning with 0.001 statistical significance, 2) organization learning directly effects on organization innovation with 0.001 statistical significance, 3) entrepreneurship directly effects on organization innovation with 0.001 statistical significance, 4) organization innovation directly effects on organization performance with 0.001 statistical significance, and 5) entrepreneurship directly effects on organization performance with 0.001 statistical significance.

Suggestions for Further Studies

The author expects further study on strategic guidance framework for sustainable development in the construction industry by focusing on setting organization learning, application of new innovation, improvement for organizational performance, and competitiveness. However, there are still some problems and obstacles on finance and investment. Therefore, operational factor should be analyzed. However, organizational leaders nowadays are challenged by digital technology including digital disruption which is one of changes caused by it. New business platforms by new innovation are able to effect on values of product and service in the industry. Modern technology application for construction management should also be studied with hypothesis test in future studies for sustainability in construction business.

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