

Effectiveness of Building Inspection Policy Implementation in Bangkok, Thailand According to Building Control Act B.E. 2522 (A.D. 1979)

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Abstract - A quantitative research is applied as a main research methodology together with a qualitative research. In a quantitative research, questionnaires are used as a data gathering method from study population which is 140 authorities from Building Control Bureau, Department of Public Works and Town & County Planning, local authorities, owners of the building, personnel building inspectors who have domicile in Bangkok. With Samuel B. Green's formula (1991), a qualitative research adds up completeness of data with an in-depth interview of specialists on building inspection who have at least 10 years of experience or more. The research found that an independent variable in the group as individual poses no obstruction in carrying out a building inspection. An independent variable in the group that implements policy in policy standard, policy resources, communication and law enforcement has a mean ($\bar{x} = 15.275$). A dependent variable in the group of result of building inspection policy to implement within Bangkok Metropolitan area comprise of Building Control Bureau,

Department of Public Works and Town & County Planning, local authorities, building inspectors and owners or tenants of the building has mean ($\bar{x} = 17.65$).

Keywords - Building Inspection, Building Inspection Policy, Policy, Implementation

I. INTRODUCTION

Ministerial Regulations have specified inspectors' qualifications, inspectors' registration and cancellation rules, and building inspection rules B.E. 2548 (A.D. 2005) by virtue of Section 5(2) and (3) and Section 8(13) (14) and (15) and Section 32 bis of Building Construction Control Act B.E. 2522 (A.D. 1979) for life and property safety of the occupied building and public [1, 2].

According to the 1st Amendment of the Building Control Act B.E. 2522 (A.D. 1979), the 2nd Amendment of the 2nd Building Control Act B.E. 2535 (A.D. 1992), the 3rd Amendment of the 3rd Building Control Act B.E. 2543 (A.D. 2000), the 4th Amendment of the 4th Building Control Act B.E. 2550 (A.D.

2007), and Section 32 bis of the 5th Building Control Act B.E. 2558 (A.D. 2015), owner of the following buildings: (1) high-rise building and extra large building and (2) assembly building and building as stipulated in Ministerial Regulation must have engineer inspectors or architectural inspectors, depends on each case, to carry out an inspection of stage and structure of the building, electronic and lighting system, alarming system, fire protection and fighting system, risk protection during chaos, air ventilation, drainage, water purification, mechanic system, or other security systems needed for the protection of health, live, or property, and then report to the local authority. According to procedures, methods and conditions as stipulated in Ministerial Regulation, local authority must consider the report of building inspection referred in the 1st paragraph without delay in order to issue a building inspection certificate.

II. THEORY

The content of building inspection according to Ministerial Regulations No. 33 B.E. 2535 (A.D. 1992) issued under Building Construction Control Act B.E. 2522 (A.D. 1979) and Ministerial Regulations have specified inspectors' qualifications, inspectors' registration, and cancellation rules and building inspection rules B.E. 2548 (A.D. 2005) as follows:

1. The Inspection of Building Strength and Stability.

2. System and Assembled Building Components Inspection.

3. Inspection of System and Equipment Competency of Evacuate Building.

4. Inspection of Building Safety Management System: Section 32 bis of Building Control Act B.E. 2550 (A.D. 2007) and the 4th Amendment of the 5th Building Control Act B.E. 2558 (A.D. 2015) issued on 24 August B.E. 2558 (A.D. 2015) [4]. The reason in declaring this Act is to it is worth to amend the law regarding building control by Minister by the recommendation of building

control committee can issue a Ministerial Regulation. All technical related issue regarding to the construction, adaptation, demolition or moving a building with a rapid change must comply with regulations which issued by the Minister as recommended by Building Control Committee as a procedure in legally and properly construct, adapt or move a building according to international standard which always change due to the development of construction technology. There is also an article which prescribes the owner, tenant or administrator of some types of building must provide an insurance to legally take a responsibility to the third parties' live, body and property so that they can initially reimburse damages in the case that their lives, bodies and properties were damaged from that building. It is also to adapt procedures related to the notification of building construction, adaptation and demolition without submitting a license to be complied with the development of engineering and architectural personnel and organization to facilitate the public. And also amend other related regulations to comply with the abovementioned regulations, thus, this Act is must issued.

III. OBJECTIVES

1. To study the effectiveness of the implementation of building inspection policy according to Building Construction Control Act B.E. 2522 (A.D. 1979) in Bangkok Metropolitan Area.

2. To study individual factors that affect the effectiveness of the implementation of building inspection policy according to Building Construction Control Act B.E. 2522 (A.D. 1979) in Bangkok Metropolitan Area.

3. To study factors of policy implementation which related to the effectiveness.

IV. RESEARCH HYPOTHESIS

Hypothesis 1: A personnel character has a rational relation with the effectiveness of the implementation of building inspection policy within Bangkok Metropolitan Area.

Hypothesis 2: Factors in policy implementation has a rational relation with the effectiveness of the implementation of building inspection policy within Bangkok Metropolitan Area.

V. SCOPE OF THE RESEARCH

This research is to study the effectiveness of the implementation of building inspection policy within Bangkok Metropolitan area. This research, researcher focuses on the study of an independent variable which are personnel factor such as gender, age, educational level, occupation and average monthly salary and factors in policy implementation such as: 1) policy standard; 2) policy resources; 3) communication effectiveness; and 4) law enforcement and a dependent variable which is the effectiveness of the implementation of building inspection policy according to Building Control Act B.E. 2522 (A.D. 1979) within Bangkok Metropolitan area for example high-rise building, extra large building and assembly building. The scope of population and sampling group: Population in this research is comprise of: Personnel of Building Control Bureau, Department of Public Works and Town & County Planning, An individual building inspector, Local authority, Owner or tenant of the building within Bangkok Metropolitan area by using Samuel B. Green's (1991) calculation formula. Total of sampling group is 130 people. For the scope of area, in this study, there are research fields in 6 districts (from 50 districts of Bangkok) where tall buildings are heavily located; Wattana, Bangrak, Sathorn, Pathumwan, Rajadhevi, and PhyaThai.

VI. RESARCH RESULTS

The result of the research on the effectiveness of the implementation of building inspection policy according to Building Construction Control Act B.E. 2522 (A.D. 1979) in Bangkok Metropolitan Area can be concluded as follows:

1. Characteristics of Research Sampling

Sampling groups are personnel of Building Control Bureau, Department of Public Works and Town & County Planning, an individual building inspector, local authority, owner or tenant of the building within Bangkok Metropolitan area. By gender, 62.1% is male and 37.9 is female. By age, 39.3 % is between 31-40 years old. 60 % is by marital status. By educational level, 50% is graduated at bachelor degree. 39.3% is a merchant / private business. 41.45 has an average monthly salary around 30,001-50,000 baht.

- Individual characteristic variable has a significant influence ($F = 25.895$ and $P \leq 0.001$) to Building Control Bureau, Department of Public Works and Town & County Planning which is a dependent variable 53.9% - 51.8%. Variable that has a significant causal relationship between individual characteristic variable and Building Control Bureau, Department of Public Works and Town & County Planning ($\beta_{\text{gender}} = -0.663$, $P \leq 0.001$; $\beta_{\text{status}} = 0.482$, $P \leq 0.001$ $\beta_{\text{occupation}} = 0.177$, $P \leq 0.05$ and $\beta_{\text{monthly salary}} = 0.476$, $P \leq 0.001$).

- Individual characteristic variable has a significant influence ($F = 31.211$ and $P \leq 0.001$) to local authority which is a dependent variable 58.5% - 56.6%. Variable that has a significant causal relationship between individual characteristic variable and local authority ($\beta_{\text{gender}} = -0.602$, $P \leq 0.001$; $\beta_{\text{age}} = 1.072$, $P \leq 0.001$; $\beta_{\text{educational level}} = 1.169$, $P \leq 0.01$; $\beta_{\text{status}} = 0.228$, $P \leq 0.01$ and $\beta_{\text{occupation}} = 0.2296$, $P \leq 0.001$).

- Individual characteristic variable has a significant influence ($F = 84.270$ and $P \leq 0.001$) to building inspector which is a dependent variable 79.2% - 78.2%. Variable that has a significant causal relationship between individual characteristic variable and building inspector ($\beta_{\text{age}} = 0.525$, $P \leq 0.001$; $\beta_{\text{educational level}} = -0.434$, $P \leq 0.001$; $\beta_{\text{status}} = 0.463$, $P \leq 0.001$ and $\beta_{\text{monthly salary}} = 0.279$, $P \leq 0.001$).

- Individual characteristic variable has a significant influence ($F = 139.284$ and $P \leq 0.001$) to owner or tenant of the building which is a dependent variable 86.3% – 85.7%. Variable that has a significant causal relationship between individual characteristic variable and owner or tenant of the building ($\beta_{\text{gender}} = -0.544$, $P \leq 0.001$; $\beta_{\text{age}} = -0.901$, $P \leq 0.001$; $\beta_{\text{educational level}} = -0.282$, $P \leq 0.001$; $\beta_{\text{occupation}} = -0.277$, $P \leq 0.001$ and $\beta_{\text{monthly salary}} = -0.140$, $P \leq 0.001$).

2. Policy Implementation Factor

The second independent variables are policy standard, policy resource, communication, and law enforcement.

- Policy implementation factor has a significant influence ($F = 100.537$ and $P \leq 0.001$) to Building Control Bureau, Department of Public Works and Town & County Planning which is a dependent variable 74.9% – 74.1%. Variable that has a significant causal relationship between policy implementation factor variable and Building Control Bureau, Department of Public Works and Town & County Planning ($\beta_{\text{policy standard}} = 0.700$, $P \leq 0.001$; and $\beta_{\text{communication}} = -1.114$, $P \leq 0.01$).

- Policy implementation factor has a significant influence ($F = 6.732$ and $P \leq 0.001$) to local authority which is a dependent variable 16.6% – 14.2%. Variable that has a significant causal relationship between policy implementation factor variable and local authority $\beta_{\text{policy standard}} = 0.328$, $P \leq 0.001$; $\beta_{\text{policy resources}} = -4.200$, $P \leq 0.001$; $\beta_{\text{communication}} = 4.130$, $P \leq 0.001$; and $\beta_{\text{law enforcement}} = -0.151$, $P \leq 0.05$).

- Policy implementation factor has a significant influence ($F = 6.241$ and $P \leq 0.001$) to building inspector which is a dependent variable 15.6% – 13.1% building inspector ($\beta_{\text{policy resources}} = 2.486$, $P \leq 0.01$; $\beta_{\text{communication}} = -2.256$, $P \leq 0.01$; and $\beta_{\text{law enforcement}} = -0.210$, $P \leq 0.01$).

- Policy implementation factor has a significant influence ($F = 50.364$ and $P \leq 0.001$) to building owner or tenant which is a dependent variable 59.9% – 58.7%. Variable that has a significant causal relationship between policy implementation factor variable and building owner or tenant ($\beta_{\text{policy standard}} = -0.223$, $P \leq 0.001$; $\beta_{\text{policy resources}} = 3.132$, $P \leq 0.001$; $\beta_{\text{communication}} = -3.756$, $P \leq 0.001$; and $\beta_{\text{law enforcement}} = 0.474$, $P \leq 0.001$).

3. Hypothesis Testing Results

- The result of Hypothesis 1 testing shows that personnel characteristics of sampling population such as personnel of Building Control Bureau, Department of Public Works and Town & County Planning, local authority, owner of the building, individual building inspector has a significance influence ($F = 20.905$ and $P \leq 0.001$) to the effectiveness in the implementation of building inspection policy within Bangkok Metropolitan Area which is a dependent variable 48.5% – 46.2%. From a multi regression analysis, variable that has a significant causal relationship between individual characteristic variable and the effectiveness of the implementation of building inspection policy within Bangkok Metropolitan area has a causal relationship to the implementation of building inspection policy within Bangkok Metropolitan area ($\beta_{\text{gender}} = -0.857$, $P \leq 0.001$; $\beta_{\text{age}} = 0.377$, $P \leq 0.001$; $\beta_{\text{educational level}} = 0.325$, $P \leq 0.01$; $\beta_{\text{status}} = 0.512$, $P \leq 0.001$ and $\beta_{\text{monthly salary}} = 0.278$, $P \leq 0.001$).

- The result of hypothesis 2 testing shows that policy implementation factor such as policy standard, policy resource, communication and law enforcement has a significance influence ($F = 23.302$ and $P \leq 0.001$) to the effectiveness in the implementation of building inspection policy within Bangkok Metropolitan Area which is a dependent variable 40.8% – 39.1%. From a multi regression analysis, variable that has a significant causal relationship between individual characteristic variable and the effectiveness of the implementation of

building inspection policy within Bangkok Metropolitan area has a causal relationship to the implementation of building inspection policy within Bangkok Metropolitan area ($\beta_{\text{policy standard}} = 0.4.11, P \leq 0.001$).

VII. RESULTS AND DISCUSSIONS

1. Personal characteristic independent variable are as follow: Sampling group of the (1) Gender: mainly male, has no obstacle to the building inspection and working coordination with all authorities. Female has some obstacles in operating within the area and with the local authority; (2) Age: age of personnel who involves in building inspection is mainly between 31-40 years old; (3) Education: 50.0% is bachelor degree, other are master – doctorate degree; (4) Marital Status: it has pose no obstacle in performing building inspection task; (5) Occupation: 39.3% is merchant/own business; and (6) Sampling group of the population has an average monthly salary around 30,001-50,000 Baht and 41.4% is in quite high level.

2. Independent Variable: factors in implementing the policy are as follow: (1) Policy Standard: the objective of building inspection policy is to clearly carry out and can be used as a guidance in concretely implementing. It should be continuously carried out and be a guidance in following up, evolution. It should also be a policy which make live and property safe after the implementation; (2) Policy Resources: there should be enough number of working personnel to perform task under building inspection policy with proper and enough knowledge, understanding and budget as well as material and equipment to carry out their missions under building inspection policy; (3) Communication: there are explanation on guideline in carrying out building inspection task to working personnel as well as coordination and advertisement; and (4) Law Enforcement: concerned units with building inspection policy should strictly implement building inspection law with a clear punishment procedure on building owner or tenant who are against the law. It found that

personnel are not performing the policy and building owner or tenant has a very limited awareness in building inspection.

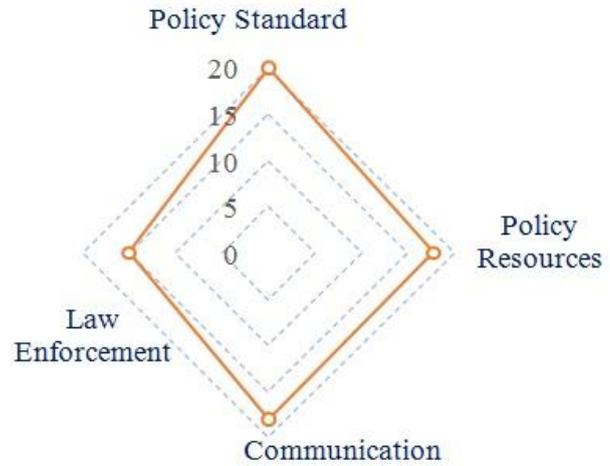


Fig. 1 Shows mean of factors in implementing policy
($\bar{x} = 15.275$)

3. Dependent Variable: the effectiveness of the implementation of building inspection policy are as follows: (1) Building Control Bureau, Department of Public Works and Town & County Planning provides knowledge and training in building inspection issue to related person in the renewal of license to the building inspector on time, facilitates in issuing paper works, publicizes building inspection laws and regulations; (2) Local authority cannot facilitates building owner or tenant in issuing building license on time. It found that there were not enough personnel to perform a service in going over building inspection reports; (3) Building inspections have knowledge and understanding on building inspection and qualifies to be building inspector as required by law. However, there are too limit in number to carry out a building inspection task. It is also found a false building inspection report; and (4) Building owner or tenant cooperate in strictly comply with building control law but have an unclear understanding in building inspection law. There are very few protection and evacuation plans during disaster.

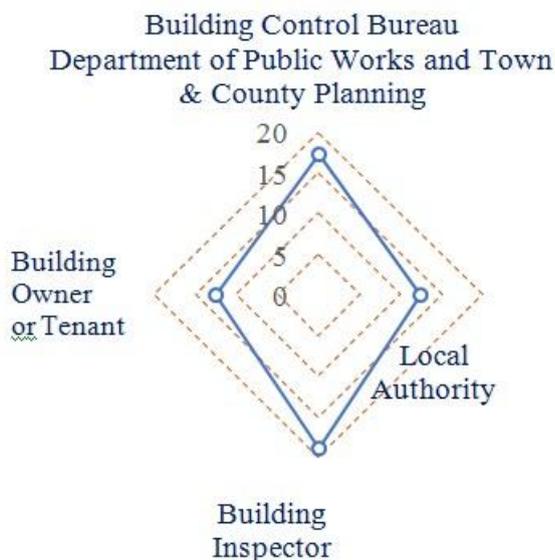


Fig. 2 Shows mean of the effectiveness of the implementation of building inspection policy within Bangkok Metropolitan area
 $(\bar{x} = 17.65)$

VIII. RECOMMENDATION FOR THE EFFECTIVENESS OF THE BUILDING CONTROL POLICY WITHIN METROPOLITAN AREA

1. Policy Standard: a result of the implementation according to building inspection policy should be widely and simultaneously publicized such as an event information board or an announcement through social media.

2. Policy Resources personnel training such as allowing specialized university professors to be a trainer for all concerned trainees with a sufficient budget [3].

3. Communication: a result of the implementation according to building inspection policy should be widely publicized.

4. Law Enforcement: Legal practice guidance should enhance a legal knowledge and understanding to building owner or tenant more.

5. Building Control Bureau, Department of Public Works and Town & County Planning should implement Law on Building Control fairly and equally.

6. Local Authority: there should be enough authority to provide a service in approving building inspection report paperwork and have knowledge in inspecting building inspection report papers and has knowledge in the inspection of building inspection report paper.

7. Building inspector should not fight or compete over a building inspection fee but provide a proper inspection services in term of price and time.

8. Building owner or tenant should be aware of life and procession safety of occupancy or resident of the building. A safety plan and a disaster evacuation drill should be carried out.

REFERENCES

(Arranged in the order of citation in the same fashion as the case of Footnotes.)

[1] Department of Public Works and Town & Country Planning. (2009). "Gathering Subjects of Consulting about Laws of building Control 2008". (1st Edition), Bangkok: Bangkok Block.

[2] Uakarn, C. (2014). "The Core Competency Development of Thai Engineers to Accommodate the ASEAN Economic Community in 2015". Kasem Bundit Journal, Vol. 15 No. 1, January-June.

[3] Uakarn, C. and et al. (2015). "Curriculum Development of Building Inspectors According to Building Control Act B.E. 2522 (A.D. 1979) Using Delphi Technique". International Journal of the Computer, the Internet and Management, Vol. 23 No. 3, September-December.

[4] Royal Thai Government Gazette. (2015). "Building Control Act B.E. 2522 (A.D. 1979)". Book 132 Sec 82 A., 27 August 2015.