

## Causal Relationship Model of Four Noble Truths

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**Abstract:** The objective was to propose the structural model of four noble truths affecting to environmental behavior for global warming alleviation through inspiration of public consciousness. The populations were 37,156 undergraduate student of Mahasarakham University in first semester of academic year of 2012. The Multi-stage simple random sampling technique was employed to collect the sample for 400 undergraduate students. The research instrument was the questionnaire and it was used for data collecting. LISREL was used for model verification. Results illustrated that structural model of confirmatory factors of Four Noble Truths (FNT) was able to explain the variation of endogenous factors of Inspiration of Public Consciousness (INS) to caused Environmental Behaviors for Global Warming Alleviation (BEH) with 89.0 percents as following.

$$BEH = 0.45 FNT + 0.53 INS \dots\dots\dots(1)$$

$$(R^2 = 0.89)$$

Equation (1) factors that had the most effect to Environmental Behaviors for Global Warming Alleviation (BEH) was Inspiration of Public Consciousness (INS) and subsequence was Four Noble Truths (FNT). These were able to explain the variation of Environmental Behaviors for Global Warming Alleviation (BEH) with 89.00 percents.

**Key Words:** Causal Relationship Model / Four Noble Truths / Inspiration of Public/Consciousness / Environmental Behavior

### 1. Introduction

Global warming is known as seriously environmental issues because the rising in the average temperature of Earth's atmosphere and oceans is still rapidly persistent. This result is realized by the national science academies of all the major industrialized countries and is not disputed by any scientific body of national or international standing. Particularly, the majority of scientists specify that the warming in current decades has been caused first and foremost by human being activities that have enlarged the amount of greenhouse gases in the atmosphere such as deforestation, fossil fuel combustion and destroyed biodiversity of ocean by over harvesting fishery (United States National Academy of Sciences., 2008, National Research Council of USA., 2010, & Thiengkamol, 2011e).

Currently, environmental information on climate change with global warming has become hot issue for general people who are directly impacted by the earth quake, flood, and drought, furthermore it also affected to natural system, ecological system, biodiversity loss, new vector of disease born, species migration, and so on. However, the environmental problem can't absolutely separate from individual level. The main of cause is revealed that the people have not enough moral and public consciousness for practicing appropriately environmental behavior including realizing that they take very important parts to adequately take responsibility for conservation of natural resources and environment (Thiengkamol, 2004, Thiengkamol, 2005a, Thiengkamol, 2005b, Thiengkamol, 2011e, Thiengkamol, 2011g, Thiengkamol, 2011h).

The path to the cessation of suffering is the fourth noble truth is middle path the end of suffering that is a gradual path of self-improvement and is described more detailed in the Eightfold Path. It is the middle way between the two extremes of excessive self-indulgence (self-gratification) and excessive self-mortification (simplicity); and it leads to the end of the cycle of rebirth. The last quality distinguishes it from other paths which are merely "wandering on the wheel of becoming", because these do not have a final object. The path to the end of suffering can extend over many lifetimes, throughout which every individual rebirth is subject to karmic conditioning. Craving, ignorance, delusions, and its effects will disappear gradually, as progress is made on the path. Noble Eightfold Path; that is, right view, right intention or right thought, right speech, right action or behavior, right livelihood, right effort, right mindfulness and right concentration or meditation (Wikipedia, 2012).

Thiengkamol stated that if one is really understand Four Noble Truths, one would live with sufficiency way of life by practice his or her daily activity in careful way of natural resources consumption whether in term of food consumption

behavior, energy utilization, waste management, recycling behavior, traveling behavior and knowledge giving behavior to the others. Beside they also concern for every step of living with right view, right thought, right speech, right behavior, right livelihood, right effort, right mindfulness, and right meditation (Thiengkamol, 2009a, & Thiengkamol, 2012e). Particularly, majority of Thai people are Buddhist but because globalization threat during two decades, Thai people also has been trapped the economic development since 1992 of the 7th National Development Plan that government emphasized for economic growth until they faced with economic crisis 1997, therefore they turned back to consider for their root of Buddhism of Middle Paths concept (NESDB, 2004a, NESDB, 2004b, NESDB, 2007, & Thiengkamol, 2007) .

Additionally, the concept of Thai lifestyle with Middle Path of Buddhism was reintroduced to accomplish self-dependent after economic crisis in 1997-1998, particularly, economy sufficiency is aim to living with adequate status according to personal status by adopting the Sufficiency Economy Philosophy from remarks made by His Majesty King Bhumibol Adulyadej throughout his 58 years of the throne (NESDB, 2004a). Sufficiency Economy Philosophy directs the livelihood and behavior of people at all levels, from the family to the community to the country for local and nation development and administration. This perception is identical to "Middle Path" that is one of four Buddhism principles of "Four Noble Truth" for problem solving of Buddhist people. Sufficiency means moderation and reasonableness, together with the need to build a reasonable immune system against shocks from the outside or from the inside. Intellect, consideration, and extreme care should be utilized to assure that all plans and every step of their implementation are based on body of knowledge. Concurrently, they must build up the spiritual underpinning of all people in the nation, predominantly state officials, scholars, and business people at all levels, therefore they are conscious of moral integrity and honesty, for this reason they struggle for the suitable wisdom to live life with tolerance, diligence, self-awareness, intelligence, and contemplation. In conclusion, it should sustain the balance and be ready to manage rapid physical, social, environmental, and cultural changes from the outside world (Krongkaew, 2003, & Thiengkamol, 2007).

Accordingly, Thiengkamol mentioned on public consciousness or public mind based on inspiration from insight and inspiration different from motivation because inspiration needs no rewards. Inspiration of public consciousness or public mind, especially, for natural resources and environment conservation, one doesn't receive any reward, admiration or complement for ones act for natural resources and environment conservation. Inspiration on might occur due to appreciation in a person as role model or idle, events, situations, environment, media perceived such movies, book, magazine, and internet. (Thiengkamol, 2009a, Thiengkamol, 2009b, Thiengkamol, 2011a, & Thiengkamol, 2011e).

It was obviously seen that there was no research done on environmental behavior for global warming alleviation affecting by Four Noble Truths through inspiration of public consciousness covering person as role model, impressive event, impressive environment, and media perceiving (Thiengkamol, 2011i, Thiengkamol, 2011j, Ruboon, et al, 2012, Pimdee, et al, 2012, & Gonggool, et al, 2012). Presently, it is very seldom and there is no research is holistically integrative conduct on four noble truths when it compared with other aspects of relating factors affecting to environmental behaviors.

Therefore, this research was designed to study by covering all factors relating as mentioned above, it would be able to develop a model of environmental behaviors for global warming alleviation that are affected by four noble truths through inspiration of public consciousness.

## **2. Objective**

The objective was to propose the structural model of four noble truths affecting to environmental behavior for global warming alleviation through inspiration of public consciousness.

## **3. Methodology**

The research design was implemented in steps by step as follows:

3.1 The populations were 37,156 undergraduate students of the first semester in academic year 2012 of Mahasarakham University. The Multi-stage random sampling was employed to collect 400 students from different faculties of Mahasarakham University.

3.2 The research instrument was the questionnaire and it was used for data collecting. The content and structural validity were determined by Item Objective Congruent (IOC) with 5 experts in the aspects of environmental education, psychology, social science and social research methodology. The reliability was done by collecting the sample group from 50 undergraduate students of Rajabhat Mahasarakham University which is nearby Mahasarakham University. The

reliability was determined by Cronbach's Alpha. The reliability of four noble truths, inspiration of public consciousness, environmental behavior and the whole questionnaire were 0.954, 0.962, 0.964 and 0.976 respectively.

3.3 The descriptive statistics used were frequency, percentage, mean and standard deviation. The inferential statistics used was LISREL by considering on Chi-Square value differs from zero with no statistical significant at .05 level or Chi-Square/df value with lesser or equal to 2, P-value with no statistical significant at .05 level and RMSEA (Root Mean Square Error Approximation) value with lesser than 0.05 including index level of model congruent value, GFI (Goodness of Fit Index) and index level of model congruent value, AGFI (Adjust Goodness of Fit Index) between 0.90-1.00.

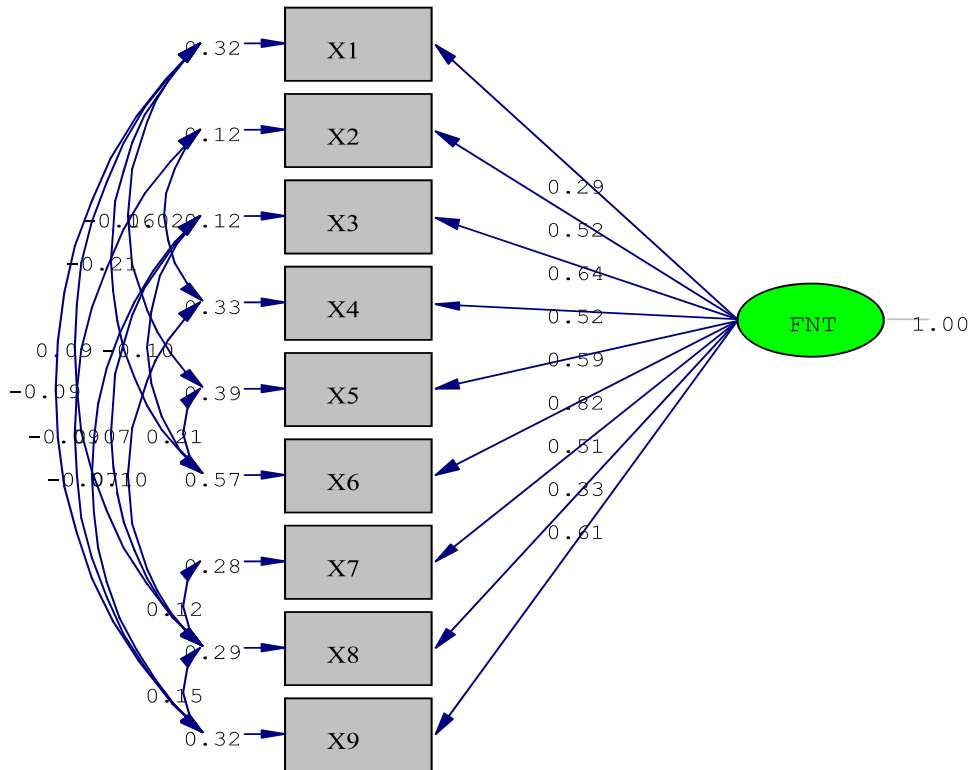
**4. Results**

*4.1 Results of Confirmatory factors of Exogenous Variables*

Results of Confirmatory Factor Analysis of Exogenous Variables of Four Noble Truths (FNT) affecting to environmental Behaviors for global warming alleviation (BEH), were revealed as followings.

Confirmatory Factor Analysis of Exogenous Variables of Four Noble Truths (FNT)

Confirmatory factors of FNT had Bartlett's test of Sphericity of 1877.339 statistically significant level ( $p < .01$ ) and Kaiser-Mayer-Olkin Measure of Sampling Adequacy/MSA) of 0.824. This indicated that components of FNT aspect had proper relationship at good level and it can be used for analysis of confirmatory factors as shown in picture 1 and table 1.



Chi-Square=18.97, df=14, P-value=0.31743, RMSEA=0.035

**Picture 1:** Model of Confirmatory factors of Four Noble Truths

**Table 1** Results of Analysis of Confirmatory factors of Four Noble Truths

Confirmatory factors of Psychological Trait		Weight	SE	t	R <sup>2</sup>
X1	Holistic View FNT	0.28	0.032	18.87**	0.29
X2	Middle Path 1: Right View	0.50	0.026	18.74**	0.56
X3	Middle Path 2: Right Thought	0.55	0.028	16.99**	0.61
X4	Middle Path 3: Right Speech	0.42	0.033	16.77**	0.53
X5	Middle Path 4: Right Behavior	0.67	0.041	15.58**	0.69
X6	Middle Path 5: Right Livelihood	0.81	0.050	16.54**	0.92
X7	Middle Path 6: Right Effort	0.44	0.032	17.84**	0.54
X8	Middle Path 7: Right Mindfulness	0.26	0.031	17.52**	0.29
X9	Middle Path 8: Right Meditation	0.53	0.039	15.57**	0.54

Chi-square = 18.97 df = 14 P = 0.31743  
 GFI = 0.99 AGFI = 0.97 RMSEA = 0.035 RMR = 0.011

\*\* Statistically significant level of .01

From picture 1 and table 1, results of analysis of confirmatory factors of FNT from 9 observe variables were revealed that the model was congruent to empirical data by considering from 1) Goodness of Fit Index (GFI) equaled to 0.99 and Adjust Goodness of Fit Index (AGFI) equaled to 0.97 2) Root Mean Square Error of Approximation (RMSEA) equaled to 0.035 (RMSEA < 0.05) and 3) Chi- Square value had no statistically significant at level of .01, and Chi-Square value was divided by degree of freedom was lesser than or equaled to 5.00 ( $\chi^2 / df \leq 5.00$ ).

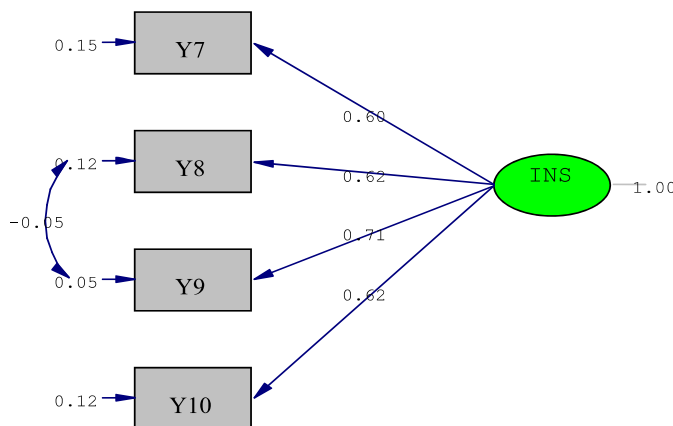
Considering on loading weight of 9 observed variables in model, it was revealed that observed variables had loading weight with 0.28 to 0.81 and had covariate to model of Four Noble Truths (FNT) with 29.00 to 92.00 percents.

4.2 Results of Confirmatory factors of Endogenous Variables

Results of Confirmatory Factors Analysis of Endogenous Variables of Inspiration of Public Consciousness influencing to Environmental Conservation Behaviors was revealed as followings.

Confirmatory Factors Analysis of Endogenous Variables of Inspiration of Public Consciousness (INS)

Confirmatory Factors of Inspiration of Public Consciousness (INS) had Bartlett's test of Sphericity of 1280.480 statistically significant level (p< .01) and Kaiser–Mayer–Olkin Measure of Sampling Adequacy(MSA) of 0.846. This indicated that components of Inspiration of Public Consciousness (INS) aspect had proper relationship at good level and it can be used for analysis of confirmatory factors as shown in picture 2 and table 2.



Chi-Square=1.84, df=1, P-value=0.17496, RMSEA=0.046

**Picture 2:** Model of Confirmatory factor of Inspiration of Public Consciousness (INS)

**Table 2** Results of Analysis of Confirmatory factors of Inspiration of Public Consciousness

Confirmatory factors of Inspiration of Public Consciousness	Weight	SE	t	R <sup>2</sup>
Y7 Person as Role Model	0.67	0.029	20.39**	0.78
Y8 Impressive Event	0.64	0.030	21.04**	0.76
Y9 Impressive Environment	0.55	0.029	22.34**	0.60
Y10 Media Receiving	0.61	0.028	21.69**	0.75

Chi-square = 1.84      df = 1      P = 0.17496  
 GFI = 1.00      AGFI = 0.98      RMSEA = 0.046      RMR = .0030

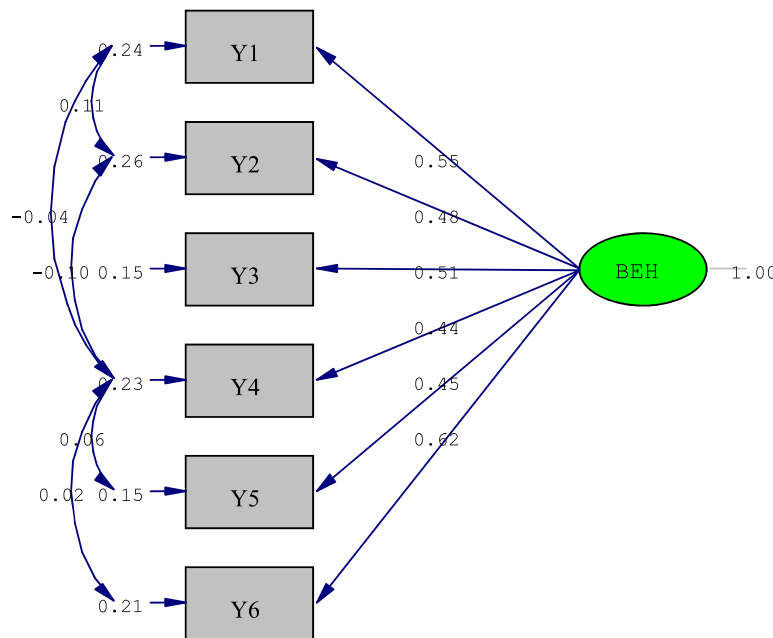
\*\* Statistically significant level of .01

From picture 2 and table 2, results of analysis of confirmatory factors of INS from 4 observed variables was revealed that the model was congruent to empirical data by considering from 1) Goodness of Fit Index (GFI) equaled to 1.00 and Adjust Goodness of Fit Index (AGFI) equaled to 0.98, 2) Root Mean Square Error of Approximation (RMSEA) equaled to 0.046 (RMSEA < 0.05), and 3) Chi-Square value had no statistically significant at level of .01, and Chi-Square value was divided by degree of freedom was lesser than or equaled to 5.00 ( $\chi^2 / df \leq 5.00$ ).

Considering on loading weight of 4 observed variables in model, it was revealed that observed variables had loading weight with 0.55 to 0.67 and had covariate to model of Inspiration of Public Consciousness (INS) with 60.00 to 78.00 percents.

**Confirmatory Factors Analysis of Endogenous Variables of Environmental Conservation Behaviors (BEH)**

Confirmatory Factors of Inspiration of Environmental Conservation Behaviors (BEH) had Bartlett’s test of Sphericity of 1409.304 statistically significant level (p < .01) and Kaiser–Mayer–Olkin Measure of Sampling Adequacy/MSA) of 0.883. This indicated that components of Environmental Conservation Behaviors (ECB) aspect had proper relationship at good level and it can be used for analysis of confirmatory factors as shown in picture 3 and table 3.



Chi-Square=4.94, df=4, P-value=0.29356, RMSEA=0.024

**Picture 3:** Model of Confirmatory factors of Environmental Behaviors (BEH)

**Table 3** Results of Analysis of Confirmatory factors of Environmental Behaviors

Confirmatory factors of Environmental Behaviors		Weight	SE	t	R <sup>2</sup>
Y1	Consumption Behavior	0.55	0.032	14.45**	0.57
Y2	Energy Conservation Behavior	0.48	0.032	13.75**	0.49
Y3	Recycling Behavior	0.51	0.032	18.89**	0.63
Y4	Waste Management Behavior	0.44	0.032	17.78**	0.52
Y5	Travelling Behavior	0.45	0.028	18.51**	0.55
Y6	Knowledge Transferring for Environmental Conservation	0.62	0.028	19.03**	0.65
Chi-square = 4.94		df = 4	P = 0.29356		
GFI = 1.00		AGFI = 0.98	RMSEA = 0.024	RMR = 0.0055	

\*\* Statistically significant level of .01

From picture 3 and table 3, results of analysis of confirmatory factors of Environmental Behaviors (BEH) from 6 observed variables was revealed that the model was congruent to empirical data by considering from 1) Goodness of Fit Index (GFI) equaled to 1.00 and Adjust Goodness of Fit Index (AGFI) equaled to 98, 2) Root Mean Square Error of Approximation (RMSEA) equaled to 0.000 (RMSEA < 0.05) and 3) Chi- Square value had no statistically significant at level of .01, and Chi- Square value was divided by degree of freedom was lesser than or equaled to 5.00 ( $\chi^2 / df \leq 5.00$ ).

Considering on loading weight of 6 observed variables in model, it was revealed that observed variables had loading weight with 0.44 to 0.62 and had covariate to model of Environmental Behaviors (BEH) with 52.00 to 65.00 percents.

#### 4.3 Results of Effect among Variables in Model in Terms of Direct Effect

1) Confirmatory factors of Four Noble Truths (FNT) had direct effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of .01 with effect of 0.45. Moreover, confirmatory factors in aspect of Four Noble Truths (FNT) had indirect effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of .01 with effect of 0.224.

2) Confirmatory factors of Inspiration of Public Consciousness (INS) had direct effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of .01 with effect of 0.64.

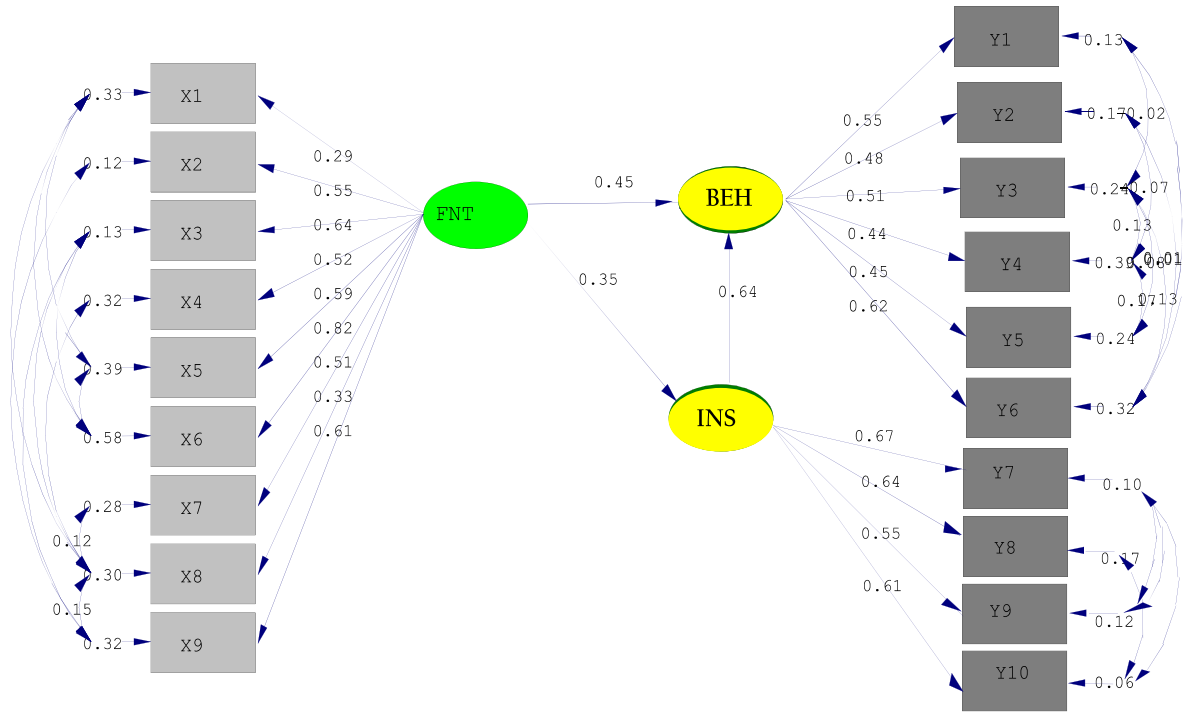
3) Confirmatory factors of Four Noble Truths (FNT) had direct effect to Inspiration of Public Consciousness (INS) with statistically significant at level of .01 with effect of 0.35.

4) Considering on structural model confirmatory factors of Four Noble Truths (FNT) was able to explain the variation of endogenous factors of Inspiration of Public Consciousness (INS) to caused Environmental Behaviors for Global Warming Alleviation (BEH) with 89.0 percents as following.

$$\text{BEH} = 0.45 \text{ FNT} + 0.64 \text{ INS} \dots\dots\dots(1)$$

$$(R^2 = 0.89)$$

Equation (1) factors that had the most effect to Environmental Behaviors for Global Warming Alleviation (BEH) was Inspiration of Public Consciousness (INS), subsequence was Four Noble Truths (FNT). These were able to explain the variation of Environmental Behaviors for Global Warming Alleviation (BEH) with 89.00 percents.



Chi-Square=274.15 df=151, P-value=0.37621, RMSEA=0.023

Picture 5: Model of Direct and Indirect Effect of FNT through INS Affecting to BEH

5. Discussion

The findings indicated that confirmatory factors of Four Noble Truths (FNT) had direct effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of .01 with effect of 0.35, and had in direct effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of .01 with effect of 0.45, in direct effect to Environmental Behaviors for Global Warming Alleviation (BEH) with statistically significant at level of .01 with effect of 0.224. Moreover, Four Noble Truths (FNT) had direct effect to Inspiration of Public Consciousness (INS) with statistically significant at level of .01 with effect of 0.35

It might be concluded that Four Noble Truths (FNT) composing of Holistic View FNT (X1), Middle Path 1: Right View (X2), Middle Path 2: Right Thought (X3), Middle Path 3: Right Speech (X4), Middle Path 4: Right Behavior (X5), Middle Path 5: Right Livelihood (X6), Middle Path 6: Right Effort (X7), Middle Path 7: Right Mindfulness (X8), and Middle Path 8: Right Meditation (X9) affecting to Environmental Behavior for Global Warming Alleviation (BEH) covering of Consumption Behavior (Y1), Energy conservation (Y2), Waste disposal (Y3), Travelling Behavior (Y4), Recycling Behavior (Y5), and Knowledge transferring and supporting for environmental conservation (Y6) (Thiengkamol, 2011g, Thiengkamol, 2011h, Thiengkamol, 2011i, Thiengkamol, 2011j, Thiengkamol, 2012b, Thiengkamol, 2012c, & Thiengkamol, 2012d) .

The exogenous factors of Four Noble Truths (FNT) were able to explain the variation of endogenous factors of Inspiration of Public Consciousness (INS) to caused Environmental Behaviors for Global Warming Alleviation (BEH) with 89.00 percents. The model of FNT affecting to BEH through INS was verified the proposed model was fitted with all observe variables according to criteria of Chi-Square value differs from zero with no statistical significant at .05 level or Chi-Square/df value with lesser or equal to 2, P-value with no statistical significant at .05 level and RMSEA (Root Mean Square Error Approximation) value with lesser than 0.05 including index level of model congruent value, GFI (Goodness of Fit Index) and index level of model congruent value, AGFI (Adjust Goodness of Fit Index) between 0.90-1.00.

Therefore, it might be concluded that Four Nobel Truths play very important roles to create the environmental behavior of consumption behavior, energy conservation, waste management, travelling behavior, recycling behavior, and knowledge transferring and supporting for environmental conservation, therefore Four Nobel Truths should be reintroduced again in the school. However, Four Noble Truths is an essential factor for Thai peoples who are Buddhist;

even through there is few content in curriculum at present when compare to the past 3 decades before, therefore, the young generations should be received more content of Buddhism since the Four Noble Truths principle is pertinent to various principles of sustainable development. These results were congruent to concepts proposed by Thiengkamol (2009a, 2009b, & 2011e).

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