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**The 4<sup>th</sup> STOU Graduate Research Conference**

**Strategic Risk Management Implementation and Organizational Environment  
of Road Safety in Thailand**

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**Abstract**

Accidents on the road are one of the highest causes of death and injury worldwide. The report of the World Health Organization shows that 1.24 million people were killed on the world's roads and another 20 to 50 million were injured by road traffic crashes in 2010 (World Health Organization, [http://www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2013/en/index.html](http://www.who.int/violence_injury_prevention/road_safety_status/2013/en/index.html), 24.11.2012). In response to these tragedies, the United National General Assembly announced a Decade of Action for Road Safety. The strategies of the Decade (2011-2020) aim to reduce the increasing trend in road traffic fatalities and injuries in the member countries including Thailand, so this study is specifically aimed at strategic risk management of road safety in Thailand. The Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior specifically are the government organizations whose missions support the road safety strategies to achieve the target.

The objectives of this study are to study strategic risk management implementation of road safety in the Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior; to study the organizational environment in Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior; to study the relationship between organizational environment and strategic risk management implementation of road safety in Thailand, and to search for an operational approach for the implementation of strategic risk management.

This study found that the action plans in programs were taken by project teams to take advantage of scope. Budgets allocated resources to run the project by financial resources. Also, an evaluation was implemented as performance assessment with efficiency of process for appraising the achieved objectives.

Organizational environment is concerned with the relationship between the internal and external environment. The internal environment reflected the organizational capabilities to achieve the desired goal. Organizational structure represented the functions of management in departmentalization and involved project teams and scope in programs. Also, departmentalization had resulted in efficiency of process in evaluation. Organizational resources, which were the organization's assets, especially financial resources, were the direct effect of budgets and information resources which were useful and meaningful for efficiency of process in evaluation.

Also, the results revealed that informal groups were not recognized on organization charts and not officially created to serve an organizational purpose. Incorporation of a road safety office could be set up. Specialists were employed in the organization and taken a roll in the formal group to help them be more effective in managing risk. The budget process of overfunding or underfunding always seemed to be significant problems of risk management. The Thai government had declared a Decade of Road Safety to be the national policy of risk management and budgets should be allocated directly for the deployment of resources to achieve specific targets.

As a result, organizations that are accountable should focus on budgeting. Further researches may investigate the financial measures for evaluating projects of road safety programs that could generate resources for the monitoring of these programs.

**Keywords:** Strategic Risk Management Implementation, Organizational Environment

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## Introduction

The World Health Organization in collaboration with the World Bank issued a report on the prevention of injuries of road accidents in 2013 and claimed that an injury from road accidents was one of the most serious types of accidents for public health. If no serious actions are taken regarding this situation by the year 2030, road accidents will be the first overall cause of death for people in the world, especially in poor countries and medium income countries. Therefore, the strategies of action for road safety took place on 19-20 November 2009 by the United Nations in Moscow, titling the year 2011-2020 as the “Decade of Action for Road Safety” that aimed to reduce death rate 10 people per 100,000 people on the year 2020.

Thailand had also realized those serious road accidents were the country’s main problem for over years especially during holiday seasons. In 2012, a report of the Department of Disaster Prevention and Mitigation, Ministry of Interior showed the number of road accidents was 54,156; 7,579 deaths; 20,987 injuries; 490 million bath lost and destruction of 54,051 vehicles. However, Thailand had approved the strategy of the Decade of Action for Road Safety on 29 June 2010, to be the master plan of road safety management with cooperation in each government organization, especially the Royal Thai Police and the Department of Disaster Prevention and Mitigation, Ministry of Interior. This study is specifically aimed at strategic risk management of road safety in Thailand focusing on the missions of the Royal Thai Police, which are; 1. To represent a good example in road safety for the public, such as, wearing helmet while riding a motorcycle, as well as providing knowledge of local traffic law to people for their own responsibilities. 2. To establish policies and procedures for police officers and other officers that involve serious rigorous and all area over time especially the motorcycle riders must wear helmet and the car users must use seat belt and stop using mobile phone. On the missions of Department of Disaster Prevention and Mitigation, Ministry of Interior, which are; 1. To coordinate and integrate the various sectors for implementing road safety practices. 2. To develop the capacity for managing the prevention and relief of road safety.

The purpose of this study is specific to strategic risk management implementation of road safety to determine a successful approach under the appropriate organizational environment of four objectives: 1) To study the strategic risk management implementation of road safety in Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior. 2) To study the organizational environment in Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior. 3) To study the relationship between the organizational environment and strategic risk management implementation of road safety in Thailand. 4) To search for an operational approach for the implementation of strategic risk management.

The scope of the area in this study is aimed at two areas which were divided by the characteristics of two organizations: 1) the Royal Thai Police and 2) the Department of Disaster Prevention and Mitigation, Ministry of Interior. The area of study of the Royal Thai Police is based in Bangkok and the area of study of the Department of Disaster Prevention and Mitigation is based in Bangkok and the 18 zones of the Disaster Prevention and Mitigation Regional Center.

The research population in this study was chosen only in these two organizations with two levels of management: the administrative level and the operational level. For the Royal Thai police, the researcher's aims deal only with the officers in the strategy division who are the policy makers and operational officers. In the Department of Disaster Prevention and Mitigation, the researcher's aims deal only with the officers in Bangkok and the 18 zones of Disaster Prevention and Mitigation Regional Center.

### **Conceptual Framework**

To determine a successful way of strategic risk management implementation of road safety that Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior, the researcher has designed a strategic risk management implementation as dependent variables, while the organizational environment represents independent variables. These variables are related to the operation approach to achieve the strategy of road safety.

Initially, the conceptual framework is built on the literature review. The research studied the paradigm of road safety in the world as a guide for world co-operation on implementation of world road safety. These conceptual developments of strategic risk management implementation are regarded as essential to the strategic risk management implementation conceptual framework between the years 1940-2013. Since 1940s, strategic risk management implementation has been a process of an action plan for an organization to achieve organizational goal by 4 steps; selecting strategy, scanning the organization's internal and external environments, turning strategy into action as strategy implementation and evaluate and control. (Thompson and Martin, 2005, pp. 8-10, p. 691) Beginning in 2000, strategic risk management implementation has developed from short-term plans to long term performance and expanded the approach not only to financial, but also including investment, business and political risk. Finally, strategic risk management implementation has been designed to integrate the approach as an on-going operational process involving organizing, resourcing and change management in a dynamic environment. Therefore, the researcher has selected only four dependent variables to describe the elements of strategic risk management implementation of road safety: programs, budgets, performance and evaluation.

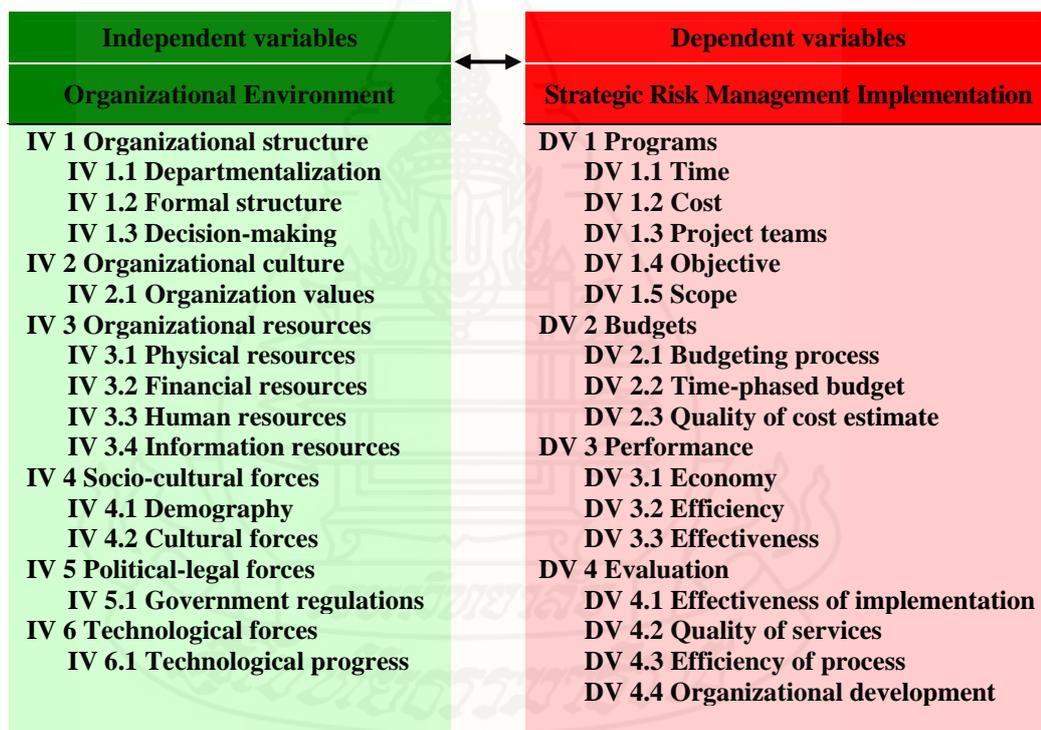
The long history of an organization perspective has been evidenced in ancient Egypt, Greece and Chinese times by organizing the actions of people to build cities and societies or do battle. By 1920, organization had become a general term of medium-sized social system in the state, army and a commercial enterprise. Until 1946, the organizational study had been started by the publication of Max Weber's treatise on regional organization and authority. At the present, the study of this information has provided an understanding regarding the approach about how organizations dynamically interact with individuals and groups within an environment.

As the scope of this study, the researcher has studied the conceptual development of organizational environment in strategic risk management implementation from the years 1967 - 2013. Organizational environment in strategic risk management implementation defines an open system composed of sub-systems within and beyond boundary environments that function together to achieve targets.

There are six selected variables that concern the environment of this study, including three internal environment variables within the organization boundary: organization structure, organization culture and organization resources (Wheelen and Hunger, 2012, p. 146). There are also three external environment variables outside the organization boundary: socio-culture forces, political-legal forces and technological forces.

To summarize, the target of reducing the death rate in road safety problems are seen as an operational approach in the strategic risk management implementation of the Royal Thai Police and the Department of Disaster Prevention and Mitigation, Ministry of Interior. By and what way these two organizations will achieve their target and how it will be defined is the conceptual framework of this study. See Model 1

**Model 1 Strategic Risk Management Implementation and Organizational Environment**

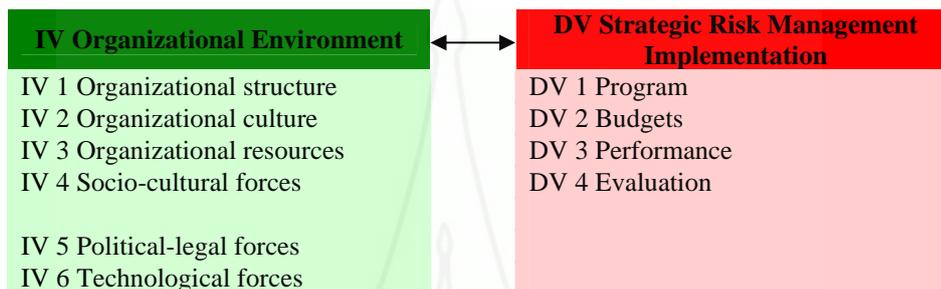


Reviewing the conceptual development in strategic risk management implementation and organizational environment and relevant research findings, this researcher has designed a research hypotheses that the organizational environment independent variable **Organizational structure<sup>IV1</sup>**, **Organizational culture<sup>IV2</sup>**, **Organizational resources<sup>IV3</sup>**, **Socio-cultural forces<sup>IV4</sup>**, **Political-legal forces<sup>IV5</sup>** and **Technological forces<sup>IV6</sup>** are conditions related to the dependent variable **Program<sup>DV1</sup>**, **Budgets<sup>DV2</sup>**, **Performance<sup>DV3</sup>** and **Evaluation<sup>DV4</sup>**.

This model will develop the conceptual between organizational environment and strategic risk management implementation into **holistic hypotheses** as follows:

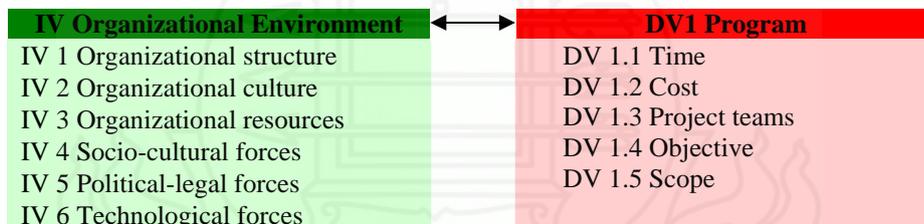
Holistic hypotheses are **Organizational environment<sup>IV</sup>** composed of **Organizational structure<sup>IV1</sup>**, **Organizational culture<sup>IV2</sup>**, **Organizational resources<sup>IV3</sup>**, **Socio-cultural forces<sup>IV4</sup>**, **Political-legal forces<sup>IV5</sup>** and **Technological forces<sup>IV6</sup>** related to **Strategic risk management implementation<sup>DV</sup>** composed of **Program<sup>DV1</sup>**, **Budgets<sup>DV2</sup>**, **Performance<sup>DV3</sup>** and **Evaluation<sup>DV4</sup>**. See Model 2.

**Model 2 Hypotheses of Independent Variables from IV 1-6 with Dependent Variables from DV 1-4**

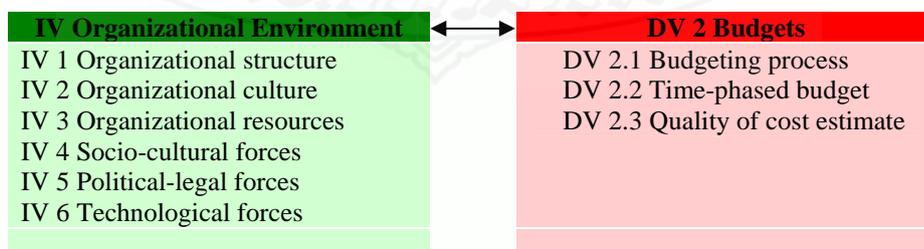


Next, the relationship between each independent variables of organizational environment to dependent variables of strategic risk management implementation in indices of strategic risk management implementation will be shown. The researcher has designed the hypotheses in detail from hypotheses 1 to 4 as follows:

**Model 3 Hypotheses of Independent Variables from IV 1-6 with Dependent Variable 1**

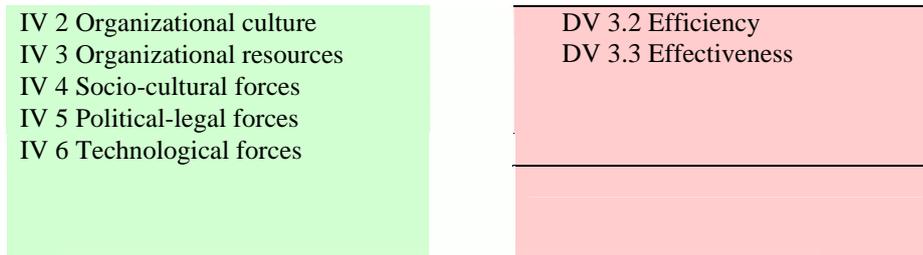


**Model 4 Hypotheses of Independent Variables from IV 1-6 with Dependent Variable 2**

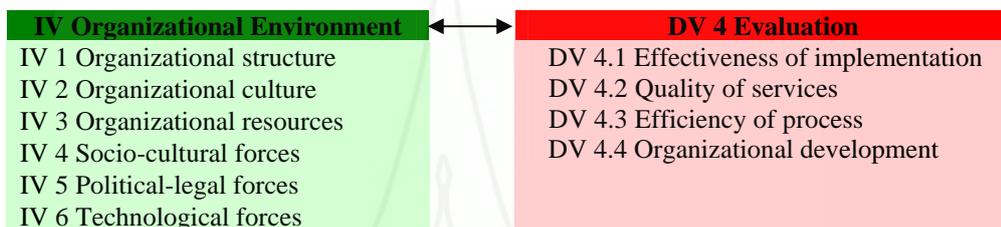


**Model 5 Hypotheses of Independent Variables from IV 1-6 with Dependent Variable 3**





**Model 6 Hypotheses of Independent Variables from IV 1-6 with Dependent Variable 4**

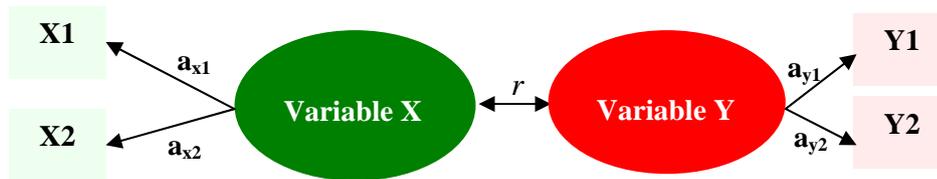


### Research Methodology

Using a qualitative approach, the researcher reviewed documents about the paradigm development of organizational environment and strategic risk management implementation and in-depth interviews with executive level officers in departments who are involved with strategic risk management implementation of road safety. Its results conducted found not only variables to indices, but also found each indicator that had become criteria values by using the abstract subject of variables that are the observation survey and using indices which are semi abstract and concrete in the interview.

In the quantitative, the researcher has applied the concrete subject of indicators to the questionnaire as a tool of this study which are designed as closed questions. Questionnaires were sent to two organizations from February to April 2014. Questionnaires returned 935 copies, but only 524 returned questionnaires were valid. The index of item variable congruence techniques (IVC) has been applied for testing the validity of the questionnaire. (Jirakraisiri, 2013, pp. 109-351). Generally, the score of the index of item variable congruence should be above 0.7 which would determine that the questionnaire is congruence and content validity. As a result, all dependent variables show high congruence, which is 0.958. Also the result of all independent variables shows high congruence, which is 0.964. The statistics for analyzing these data of variables are percentage, mean, and standard deviation. Especially, in describing mean, the researcher divides the data into five scales.

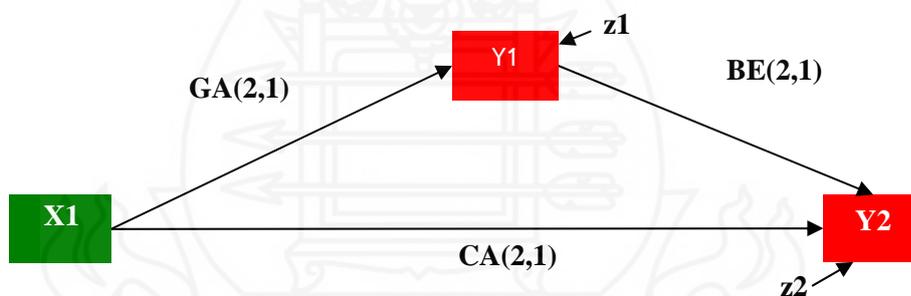
To study the relationship between organizational environment and strategic risk management implementation with holistic hypotheses has been tested by canonical correlation analysis that in the general form of canonical analysis is expressed as follows:



$X1(i)$  = variable in X set  
 $Y1(i)$  = variable in Y set  
 $a_x(i)$  = Standardized canonical coefficients of variable in X set  
 $a_y(i)$  = Standardized canonical coefficients of variable in Y set  
 $r$  = Canonical correlation

**Testing hypotheses** by canonical correlation provides a level of correlation between independent variables and dependent variables and a sequence of important indices which affects the relationship of both variables. The researcher developed a model for strategic implementation of road safety which enhances the efficiency of road safety management in Thailand. This model also transfers new knowledge for managing road safety projects in other countries. The path analysis model is a suitable regression analysis for creating a model and forming a structural equation model to identify direct and indirect effect among variables in the model. The analysis includes standard regression analysis and multiple regression analysis with significance at .05. The result leads to a path diagram which is shown in Model 7.

#### Model 7 Path Coefficient Theory



Source: Saris and Stronkhorst. (1984), pp. 321-332.

#### Research Results and Discussion

Regarding the research population, most respondents are male (54.2%) and female (45.8%) who work in the Department of Disaster Prevention and Mitigation, Ministry of Interior (92.9%), Royal Thai Police (4.2%) and other (2.9%). Those with positions at the operational level are 64.1% and 35.9% at the administrative level which have experienced working for over sixteen years (39.5%) and between 6-10 years (25.6%).

The framework of this study concerns the dependent variables of strategic risk management implementation that effects road management in programs, budgets, performance and evaluation. And also the independent variables of organizational environment affect road safety, which compose of organizational structure, organizational culture, organizational resources, socio-culture forces, political-legal

forces and technological forces. The research questions are centered on these variables and tested by those respondents.

From the results of the quantitative analysis, it could be concluded on the objectives of the study by means to measure central tendency and standard deviation to measure dispersion of the score spreading out from the center are as follows:

1. **First objective:** the strategic risk management implementation of road safety in the Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior concerns activities and choices in the operation process of actions to be taken in the strategy plan. The results found average moderate level of means in the variable and indices of strategic risk management implementation. Variables are: **Programs**<sup>DV1</sup>, **Budgets**<sup>DV2</sup>, **Performance**<sup>DV3</sup> and **Evaluation**<sup>DV4</sup> which those are composed of: 1) **Programs**<sup>DV1</sup> represent the activities that are limited by indices: **Time**<sup>DV1.1</sup>, **Cost**<sup>DV1.2</sup>, **Project teams**<sup>DV1.3</sup>, **Objective**<sup>DV1.4</sup> and **Scope**<sup>DV1.5</sup>. 2) **Budgets**<sup>DV2</sup> allocate resources (in numerical terms) to run the project that are required indices: **Budgeting process**<sup>DV2.1</sup> by whom, **Time-phased budget**<sup>DV2.2</sup> for work package and **Quality of cost estimate**<sup>DV2.3</sup>. 3) **Performance**<sup>DV3</sup> is an output of activities that provides the basis for continual improvement to judge performance by indices: **Economy**<sup>DV3.1</sup>, **Efficiency**<sup>DV3.2</sup> and **Effectiveness**<sup>DV3.3</sup>. 4) **Evaluation**<sup>DV4</sup> will yield appraisal of the achieved objectives on performance that requires indices: **Effectiveness of implementation**<sup>DV4.1</sup>, **Quality of services**<sup>DV4.2</sup>, **Efficiency of process**<sup>DV4.3</sup> and **Organizational development**<sup>DV4.4</sup>.

2. **Second objective:** the organizational environment in the Royal Thai Police and Department of Disaster Prevention and Mitigation, Ministry of Interior concerns the relationship between the internal and external environment whose function it is to achieve targets that interact with their environment. The results found average moderate level of means in variables and indices of organizational environment. Variables are: internal environment composed of **Organizational structure**<sup>IV1</sup>, **Organizational culture**<sup>IV2</sup> and **Organizational resources**<sup>IV3</sup> and external environment: **Socio-cultural forces**<sup>IV4</sup>, **Political-legal forces**<sup>IV5</sup> and **Technological forces**<sup>IV6</sup> which are characteristics composed of: 1) **Organizational structure**<sup>IV1</sup> identifies the formalize pattern of interaction and also indicates responsibility and hierarchical relationship in indices: **Departmentalization**<sup>IV1.1</sup>, **Formal structure**<sup>IV1.2</sup> and **Decision-making**<sup>IV1.3</sup>. 2) **Organizational culture**<sup>IV2</sup> deals with an index of **Organization values**<sup>IV2.1</sup> that is a common set of beliefs to guide the behavior of an organizational member. 3) **Organizational resources**<sup>IV3</sup> are an organization's assets using the indices: **Physical resources**<sup>IV3.1</sup>, **Financial resources**<sup>IV3.2</sup>, **Human resources**<sup>IV3.3</sup> and **Information resources**<sup>IV3.4</sup>. 4) **Socio-cultural forces**<sup>IV4</sup> concerns with a society's attitudes and cultural values in indices: **Demography**<sup>IV4.1</sup> and **Cultural forces**<sup>IV4.2</sup>. 5) **Political-legal forces**<sup>IV5</sup>: **Government regulations**<sup>IV5.1</sup> is an index that an organization must recognize. 6) **Technological forces**<sup>IV6</sup>: **Technological progress**<sup>IV6.1</sup> is an index that is a combination of knowledge, skills, equipment, etc. to be used.

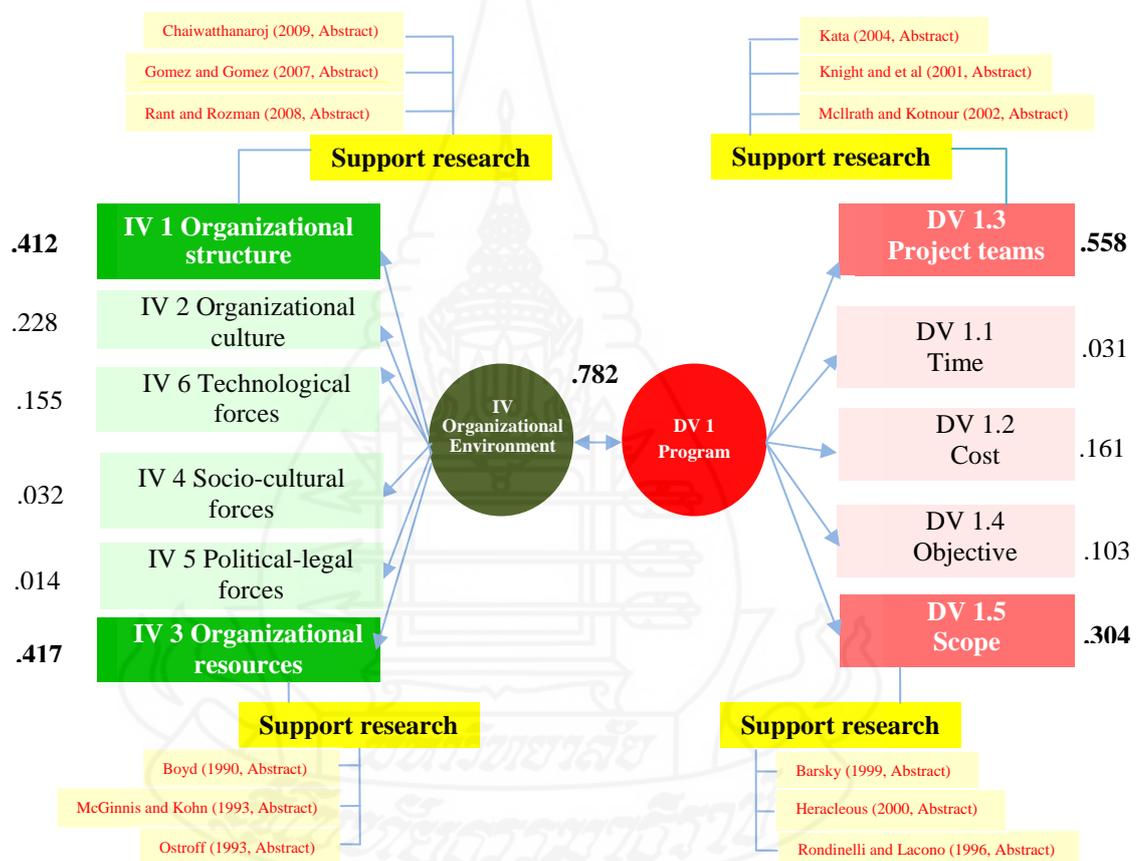
3. **Third objective:** the relationship between organizational environment and strategic risk management implementation of road safety.

Hypothesis 1-4 and holistic hypothesis are tested by canonical correlation analysis to provide a level of correlation between organizational environment variables and strategic risk management implementation variables and a

sequence of important indices that affects the relationship of both variables. These show the model of path diagram and consider the significant is at  $p < 0.01$ . The results of hypothesis show as follows:

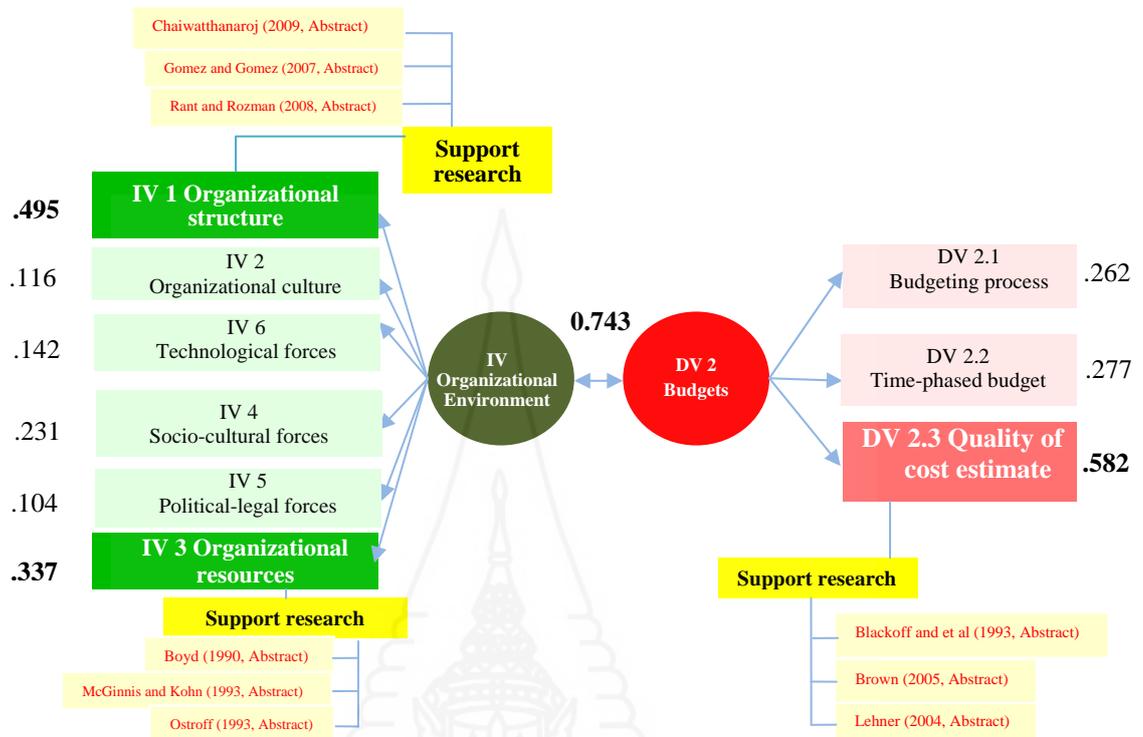
From Model 8, Hypothesis 1 is acceptable that **Organizational environment<sup>IV</sup>** relates to **Programs<sup>DV1</sup>** at higher positive value ( $r = 0.782$ ) in the component of **Organizational structure<sup>IV1</sup>** and **Organizational resources<sup>IV3</sup>** that relate to **Project teams<sup>DV1.3</sup>** and **Scope<sup>DV1.5</sup>**.

**Model 8 Relationship between Organizational Environment and Program (Hypotheses 1)**



From Model 9, Hypothesis 2 is acceptable that **Organizational environment<sup>IV</sup>** relates to **Budgets<sup>DV2</sup>** at higher positive value ( $r = 0.743$ ) in the components of **Organizational structure<sup>IV1</sup>** and **Organizational resources<sup>IV3</sup>** that relate to **Quality of cost estimate<sup>DV2.3</sup>**.

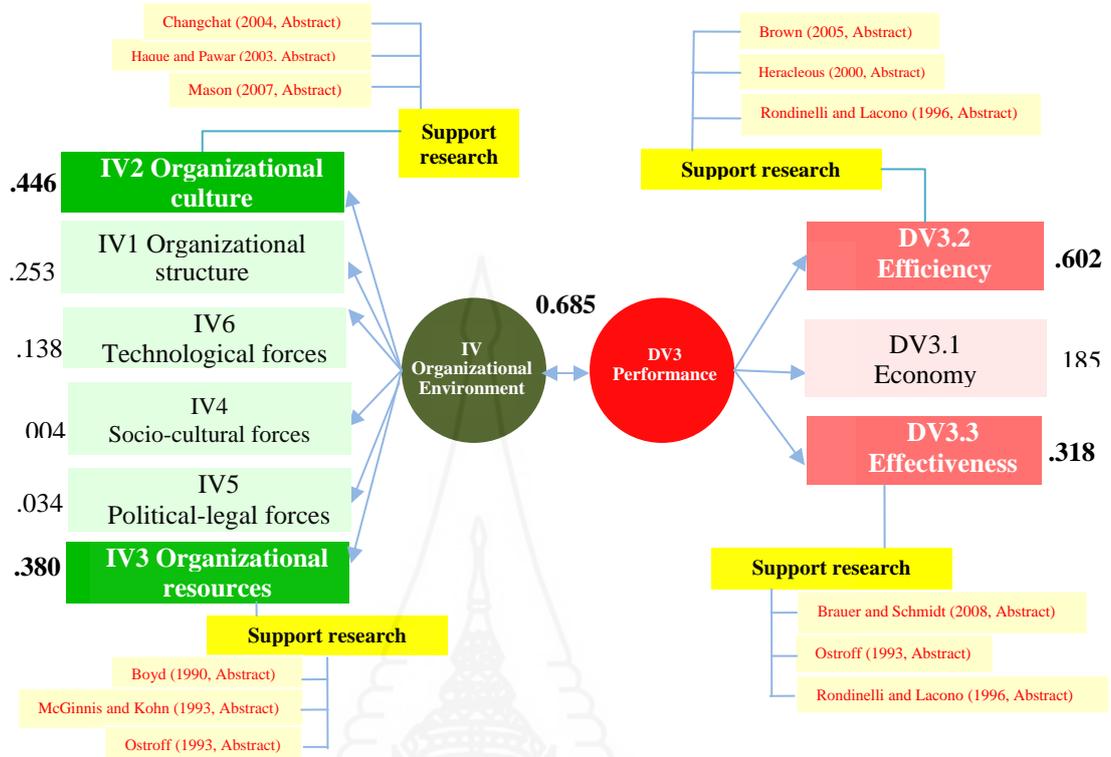
**Model 9 Relationship between Organizational Environment and Budgets (Hypotheses 2)**



From Model 10, Hypothesis 3 is acceptable in that **Organizational environment<sup>IV</sup>** relates to **Performance<sup>DV3</sup>** at higher positive value ( $r = 0.685$ ) in the components of **Organizational culture<sup>IV2</sup>** and **Organizational resources<sup>IV3</sup>** that relate to **Efficiency<sup>DV3.2</sup>**, and **Effectiveness<sup>DV3.3</sup>**.

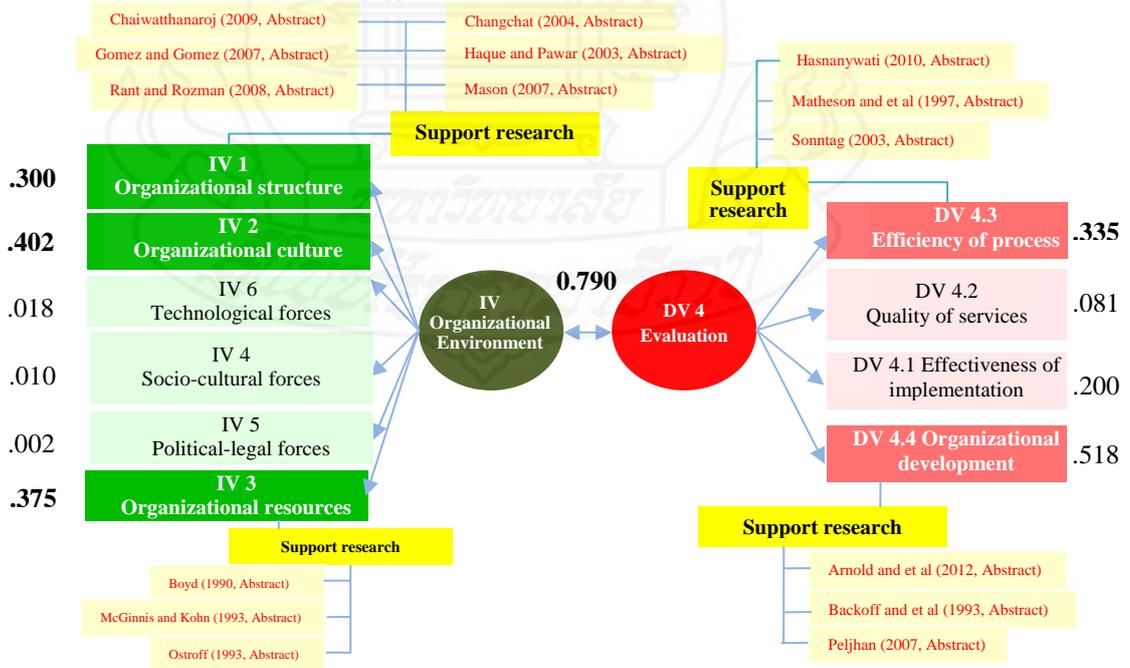
**Model 10 Relationship between Organizational Environment and Performance (Hypotheses 3)**

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 The 4<sup>th</sup> STOU Graduate Research Conference



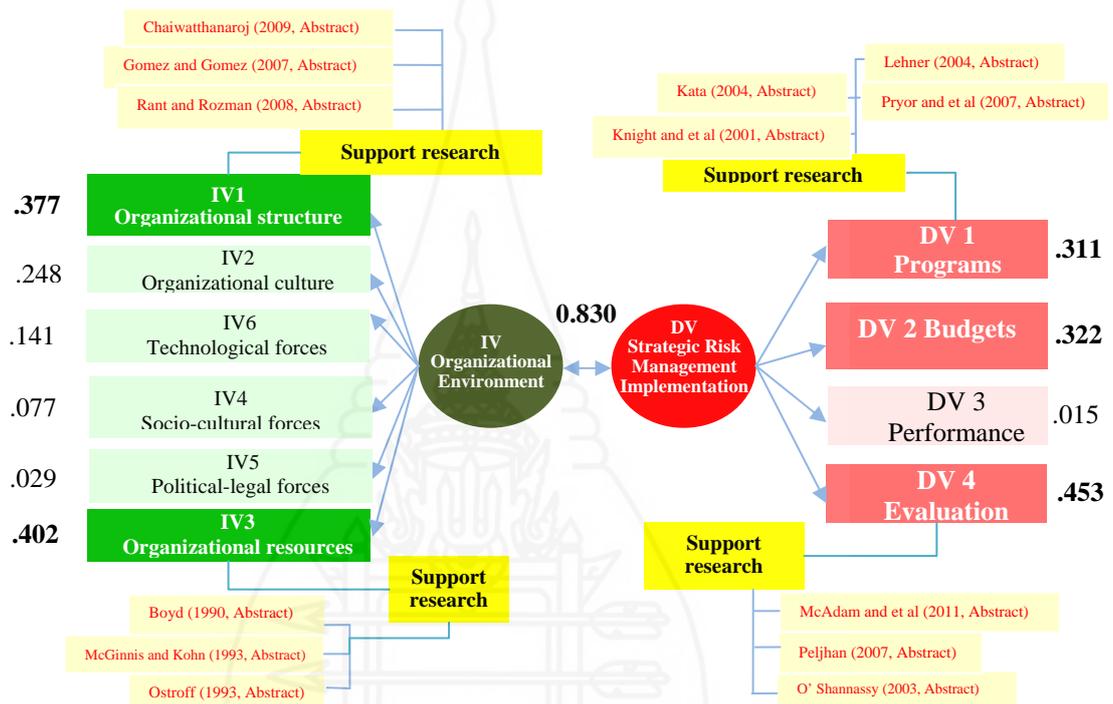
From Model 11, Hypothesis 4 is acceptable in that **Organizational environment<sup>IV</sup>** relates to **Evaluation<sup>DV4</sup>** at higher positive value ( $r = 0.790$ ) in the component of **Organizational structure<sup>IV1</sup>**, **Organizational culture<sup>IV2</sup>** and **Organizational resources<sup>IV3</sup>** that relate to **Efficiency of process<sup>DV4.3</sup>** and **Organizational development<sup>DV4.4</sup>**.

Model 11 Relationship between Organizational Environment and Evaluation (Hypotheses 4)



From Model 12, Holistic Hypothesis is acceptable that **Organizational environment<sup>IV</sup>** related to **Strategic risk management implementation<sup>DV</sup>** at higher possible value ( $r = 0.830$ ) in the components of **Organizational structure<sup>IV1</sup>** and **Organizational resources<sup>IV3</sup>** that is related to **Programs<sup>DV1</sup>**, **Budgets<sup>DV2</sup>** and **Evaluation<sup>DV4</sup>**.

**Model 12 Relationship between Organizational Environment and Strategic Risk Management Implementation (Holistic Hypotheses)**



4. **Fourth objective:** an operational approach for the implementation of strategic risk management.

Regarding the results by canonical correlation analysis of testing the core hypotheses depicted the relationship between organization environment and strategic risk management implementation and found that there are two independent variables of organizational environment: **Organizational structure<sup>IV1</sup>** and **Organizational resources<sup>IV3</sup>** related to strategic risk management implementation at a higher positive value ( $r = 0.830$ ) in the component of **Programs<sup>DV1</sup>** by indices of **Project teams<sup>DV1.3</sup>** and **Scope<sup>DV1.5</sup>**, **Budgets<sup>DV2</sup>** by an index of **Quality of cost estimate<sup>DV2.3</sup>** and also **Evaluation<sup>DV4</sup>** by indices of **Efficiency of process<sup>DV4.3</sup>** and **Organizational development<sup>DV4.4</sup>**.

#### **Path Analysis Results of Organizational Environment and Strategic Risk Management Implementation Model**

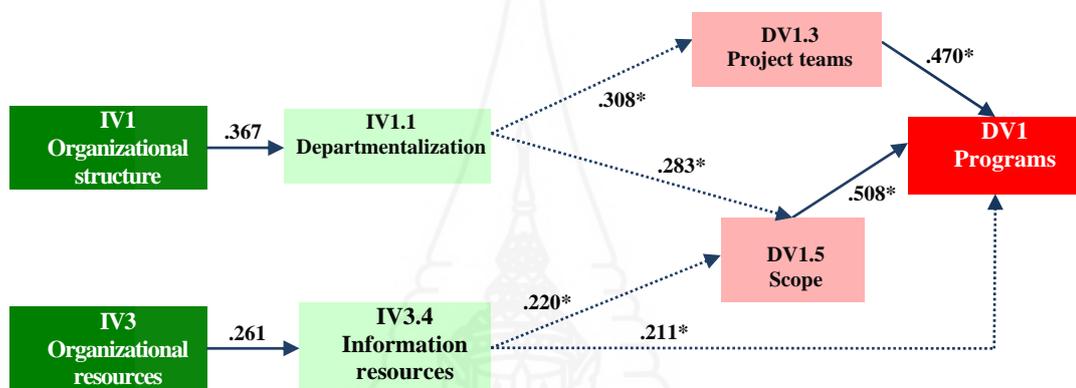
To determine the direction of relationship between independent variables and dependent variables, this research can be explained by path analysis. This analysis uses multiple regression analysis with significance at .05 for creating a model and forming a structural equation. Results from the multiple regression analysis found

three structural equation models that were applied for specifying the relationship of the variables to the appropriate model as follow:

### 1. Structural Equation Model of Programs

Model 13 shows the results from path analysis which examined the direction of **Organizational environment<sup>IV</sup>** and **Programs<sup>DV1</sup>**. Two indices of **Organizational structure<sup>IV1</sup>** and **Organizational resources<sup>IV3</sup>**: **Departmentalization<sup>IV1.1</sup>** and **Information resources<sup>IV3.4</sup>** associated with two indices of **Programs<sup>DV1</sup>**: **Project teams<sup>DV1.3</sup>** and **Scope<sup>DV1.5</sup>**.

Model 13 Structural Equation Model of Programs<sup>DV1</sup>



\* Statistic significance 0.05

### 2. Structural Equation Model of Budgets

Model 14 shows the results from path analysis which examined the direction of **Organizational environment<sup>IV</sup>** and **Budgets<sup>DV2</sup>**. The index of **Organizational resources<sup>IV3</sup>** is **Financial resources<sup>IV3.2</sup>** which are associated with **Budgets<sup>DV2</sup>**.

Model 14 Structural Equation Model of Budgets<sup>DV2</sup>

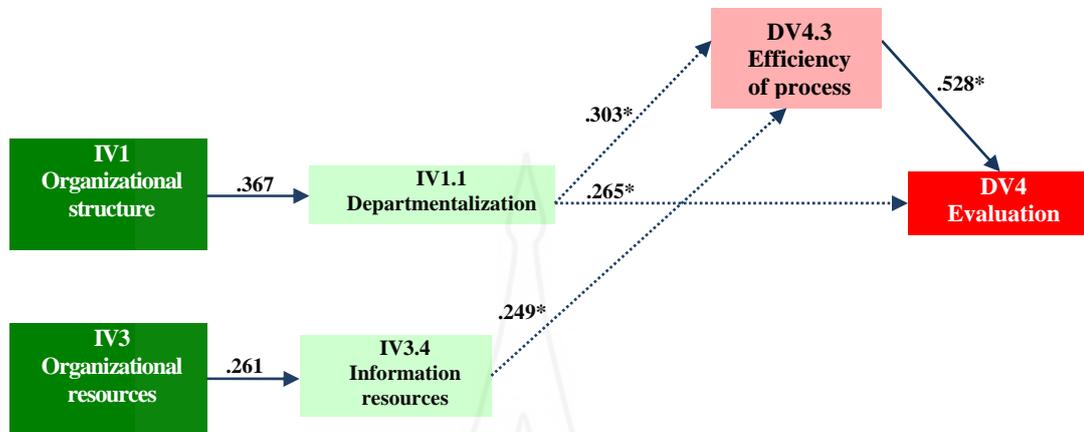


\* Statistic significance 0.05

### 3. Structural Equation Model of Evaluation

Model 15 shows the results of path analysis which examined the direction of **Organizational environment<sup>IV</sup>** and **Evaluation<sup>DV4</sup>**. Two indices of **Organizational structure<sup>IV1</sup>** and **Organizational resources<sup>IV3</sup>** which are **Departmentalization<sup>IV1.1</sup>** and **Information resources<sup>IV3.4</sup>** associated with **Efficiency of process<sup>DV4.3</sup>** and indices of **Evaluation<sup>DV4</sup>**.

**Model 15 Structural Equation Model of Evaluation<sup>DV4</sup>**

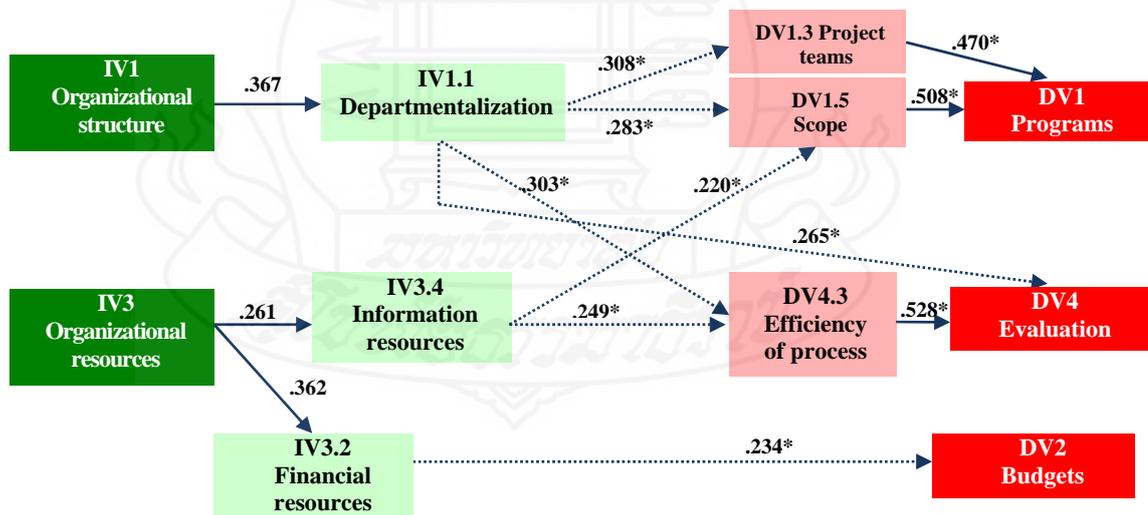


\* Statistic significance 0.05

**4. Hypothesized Model**

Moreover, those three structural equation models were processed to identify direct and indirect effects among 5 variables: **Organizational structure<sup>IV1</sup>**, **Organizational resources<sup>IV3</sup>**, **Programs<sup>DV1</sup>**, **Budgets<sup>DV2</sup>** and **Evaluation<sup>DV4</sup>**. See Model 16.

**Model 16 Causality in the Hypothesized Model of Relationship among Variables**



\* Statistic significance 0.05

..... Indirect way of relation  
 ————— Direct way of relation

Model 16 describes the direct and indirect causal relationship between **Organizational environment<sup>IV</sup>** and **Strategic risk management implementation<sup>DV</sup>** as follows:

The **Organizational environment<sup>IV</sup>** concerns the relationship between the internal and external environment. The internal environment within an organization views the organizational capabilities to achieve the desired goal, while **Organizational structure<sup>IV1</sup>** represents the functions of management in **Departmentalization<sup>IV1.1</sup>** and involves **Project teams<sup>DV1.3</sup>** and **Scope<sup>DV1.5</sup>** in **Programs<sup>DV1</sup>**. Also, **Departmentalization<sup>IV1.1</sup>** groups people together working in work units that have resulted in **Efficiency of process<sup>DV4.3</sup>** in **Evaluation<sup>DV4</sup>**.

However, **Organizational resources<sup>IV3</sup>** which are the organization's assets, especially **Financial resources<sup>IV3.2</sup>**, are the direct effect of **Budgets<sup>DV2</sup>** and **Information resources<sup>IV3.4</sup>** which are useful and meaningful for **Efficiency of process<sup>DV4.3</sup>** in **Evaluation<sup>DV4</sup>**.

### 5. Integrated model in Social Science

The injury from road accidents is one of the most serious types of accidents for public health risk events and is usually caused by human error, accident, or natural phenomena. Risk management becomes an essential topic aimed at reducing system errors, operational malfunctions and uncontrolled human behavior. Risk management is expanded to include other risk transfers and risk control strategies into strategic risk management which is a more comprehensive approach (National Association of College and University Business Officers, NACUBO, 2000, p. 12). These developments are related to the aims of improving processing efficiencies and operating effectiveness to corporate performance. (Anderson and Schroder, 2010, pp. 78-80) with regards to the **strategic risk management implementation<sup>DV</sup>** conceptual framework between 1940-2013, the integrated operational process involves organizing resourcing and change management. (Suksiwong, 2011, p. 55).

In summary from Model 16, a social science model has been placed into the integrated model to indicate variables that show the causal relationship (direct and indirect effects) between **Organizational environment<sup>IV</sup>** and **Strategic risk management implementation<sup>DV</sup>** of the road safety scheme to achieve the target of WHO (that death rate 10 people per 100,000 people by the year 2020) and also will be presented for approval of the project of road safety scheme.

### Model 17 Integrated Model in Social Science



### Strategic Implementation Risk Management

In order to implement strategic risk management, it requires **Programs**<sup>DV1</sup> as the action plans are taken by **Project teams**<sup>DV1.3</sup> to take advantage of **Scope**<sup>DV1.5</sup>, **Budgets**<sup>DV2</sup> allocated resources to run the project by **Financial resources**<sup>IV3.2</sup>. Also **Evaluation**<sup>DV4</sup> is used to be the performance assessment with **Efficiency of process**<sup>DV4.3</sup> to appraise the achieved objectives.

**Organizational environment**<sup>IV</sup> concerns the relationship between the internal and external environment. The internal environment within an organization views the organizational capabilities to achieve the desired goal, **Organizational structure**<sup>IV1</sup> represents the functions of management in **Departmentalization**<sup>IV1.1</sup> and involves **Project teams**<sup>DV1.3</sup> and **Scope**<sup>DV1.5</sup> in **Programs**<sup>DV1</sup>. All so **Departmentalization**<sup>IV1.1</sup> groups people together working in work units that have resulted in **Efficiency of process**<sup>DV4.3</sup> in **Evaluation**<sup>DV4</sup>.

However, **Organizational resources**<sup>IV3</sup>, which are the organization's assets, especially **Financial resources**<sup>IV3.2</sup>, are the direct effect of **Budgets**<sup>DV2</sup> and **Information resources**<sup>IV3.4</sup> which are useful and meaningful for **Efficiency of process**<sup>DV4.3</sup> in **Evaluation**<sup>DV4</sup>.

#### Research Suggestion and Further Research

1. Regarding traffic accidents, the majority of accidents were caused mainly by motorcycles rather than other vehicles. This data is supported by the Department of Disaster Prevention and Mitigation, Ministry of Interior report published in 2012 listing 7,597 deaths, 20,987 injuries, 4.9 million baht lost, destruction of 19,523 motorcycles and 16,654 cars. The target to reduce the death rate from accidents should focus on motorcycles and focus on three methods for accident prevention: legal, humanitarian and economic arguments, respectively.

2. With tasks and responsiveness on road safety programs by the committee who comes from different ministry organizations, specific teams for specific purposes could be set up as informal groups. However, informal groups are not recognized on organization charts and are not officially created to serve an organizational purpose. Incorporation of a road safety office could be set up and be used as specialists who are employed in the organization and who take a roll in the formal group to help them be more effective in managing risk.

3. Budgets always play an important role in the entire process of strategic risk management implementation. A budget is a plan for allocating resources and it is also a monitoring and controlling program. The activities of a program are supported by allocating resources that can be a measured as an activity of outcomes to measure the difference between the actual and planned uses of resources. Generally, the outcomes of the allocation budget do not satisfy the director of the organization who is under budget constraints. The budget process of overfunding or underfunding always seems to present possible problems of risk management. The Department of Disaster Prevention and Mitigation, Ministry of Interior occasionally has these problems in ways that the budget is used to carry out road safety programs without government support. As the Thai government has declared a Decade of Road Safety

to be the national policy of risk management, budgets should be allocated directly for the deployment of resources to achieve specific targets.

Regarding this suggestion on budget, further research will investigate the finance measures for evaluating projects of road safety programs that can generate resources for the adequate monitoring of these programs.

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