

Structural Equation Models for Building Awareness and Acceptance of Public Participation in Thailand's Comprehensive Urban Planning Procedures

แบบจำลองการสร้างการรับรู้และการยอมรับต่อกระบวนการการมีส่วนร่วมของประชาชนในการจัดทำผังเมืองรวมและการพัฒนาเมือง

Chaweewan Denpaiboon¹ and Pornchai Jantaworn²

นวีวรรณ เด่นไพบูลย์¹ และ พรชัย จันทร์ถาวร²

Faculty of Architecture and Planning, Thammasat University, Pathumthani 12121, Thailand

คณะสถาปัตยกรรมศาสตร์และการผังเมือง มหาวิทยาลัยธรรมศาสตร์ จังหวัดปทุมธานี 12121

E-mail: denpaiboon_c@yahoo.com¹, jantaworn_p@hotmail.com²

Abstract

A comprehensive planning procedure is the key for urban development. It is considered as a highly concrete approach to enable the enforcement of a comprehensive urban plan, which indicates the future direction of urban development. This study aims to develop Structural Equation Modelling (SEM) to build perception and acceptance in civic society to participate in the comprehensive planning procedure of the SEM technique. Factors were identified that affect the perception and acceptance of public participation in urban planning procedures. The Baan Bueng District of Chonburi Province and the Khok Toom Community in Lopburi Province were selected as case studies because these areas were operating with comprehensive planning procedures at the time of the study. The study argued that planning model combines with participatory approach plays an important role in filling this gap. This method of planning procedures will need to be adapted with existing factors and influences in urban setting. A literature review of these factors was conducted to explain the empirical results that indicated most people lacked a knowledge and access to the information of urban planning to prepare for participation process. This study focuses on those residents who receive information or attitude to accept on a comprehensive urban planning procedures, which SEM is an instrument for analyzing development process in their areas and to participate in a comprehensive plan. From a preliminary analysis of the social-economic group with participation factors. The results showed that there is contras variation in negative with attitudes and accept of the urban planning procedures. In principle of a statistically significant result considering from the group's participants in the planning procedures. The Respondents are volunteer group of community and elderly group, who had less education and unstable career prepared to the working group did not participate in any activities. Hence, people participation is the key in development of urban planning procedures, which stakeholders must participate in order to accept in the urban planning process. This forms of participation process in currently process is currently in progress, is considered at the first stages of participation concept and most abstract, affect in lower perception and acknowledgement of participation. In performing the many tasks required in this process the planning procedure is costly both in terms of

processing time and budget. Local administrative agencies still need concrete decision-making tools and measures to overcome difficulties and obstacles.

Keywords

Structural Equation Modelling: SEM

Perception

Acceptance

Public participation

Comprehensive planning

Urban development

บทคัดย่อ

การดำเนินโครงการทางด้านการพัฒนาเมืองเป็นหนึ่งของโครงการที่มีโครงสร้างชั้บชั้นเพื่อให้สามารถนำไปสู่การบังคับใช้กฎหมายที่เป็นรูปธรรมของกฎหมายด้านผังเมือง เพื่อเป็นกลไกนำไปสู่พัฒนาเมืองในอนาคต โดยงานวิจัยชิ้นนี้จึงมุ่งเป้าเพื่อสร้างแบบจำลองสมการเชิงโครงสร้าง (Structural Equation Modelling: SEM) ของผลที่เกิดจากกระบวนการการมีส่วนร่วมของประชาชนต่อการสร้างการรับรู้และการยอมรับเข้าร่วมในขั้นตอนการดำเนินงานทางด้านผังเมือง โดยการทบทวนวรรณกรรมถึงโครงสร้างปัจจัยด้านต่างๆ ที่มีอิทธิพลและสามารถอธิบายปรากฏการณ์ที่เกิดขึ้น โดยมีพื้นที่ศึกษาในเขตการปกครองที่มีการดำเนินการเพื่อจัดทำผังเมืองรวม ได้แก่ ผังเมืองรวมบ้านบึง จังหวัดชลบุรี และผังเมืองรวมโภคถม จังหวัดพบบุรี โดยรูปแบบการมีส่วนร่วมที่ดังเดิมที่เป็นนามธรรม ส่งผลให้ประชาชนเกิดการรับรู้และการยอมรับต่อผังน้อยลง ในด้านการปฏิบัติงานด้านการวางแผนเมืองที่มีขั้นตอนจำนวนมาก ทั้งยังมีข้อจำกัดทางด้านเวลาและงบประมาณ หน่วยงานปกครองส่วนท้องถิ่นจึงจำเป็นต้องมีอำนาจในการตัดสินใจที่เป็นรูปธรรมผ่านเครื่องมือและมาตรการทางด้านผังเมืองที่เพิ่มประสิทธิภาพการดำเนินงาน ผลการวิเคราะห์เบื้องต้นจากโครงสร้างปัจจัยทางด้านสังคมเศรษฐกิจ พบว่าตัวแปรทางด้านลักษณะสังคมและเศรษฐกิจมีความผูกพันกับทัศนคติและการยอมรับต่อผังเมือง ซึ่งหากพิจารณาจากกลุ่มผู้เข้าร่วมในกระบวนการการผังเมือง ส่วนใหญ่เป็นกลุ่มอาสาสมัครของชุมชนหรือกลุ่มผู้สูงอายุ ซึ่งตัวแปรด้านการศึกษาและความมั่นคงทางอาชีพค่อนข้างน้อยกว่ากลุ่มคนวัยแรงงานที่ไม่ได้เข้าร่วมกิจกรรมใดๆ ผลจากการศึกษาโครงสร้างของปัจจัยที่ได้จากการวิเคราะห์ พบว่า มีความสัมพันธ์เชิงผูกพันและแปรผันกับปัจจัยอื่นๆ กล่าวคือ ประชาชนส่วนใหญ่ยังขาดความเข้าใจในการวางแผนเมืองและไม่สามารถเข้าถึงข้อมูลที่เป็นประโยชน์เกี่ยวกับการเตรียมความพร้อมสำหรับกระบวนการการมีส่วนร่วมในขั้นตอนทำผัง และไม่มีประสบการณ์ในกระบวนการได้ ของการจัดทำผังเมือง ส่งผลต่อความสัมพันธ์และการขาดความครบทราตรีต่อผัง ในทางตรงข้ามกับผู้ที่เคยได้รับข้อมูลมาก่อน หรือกลุ่มที่เห็นว่าการจัดทำผังเมือง ซึ่งเป็นเครื่องมือในการชั้นนำทิศทางการพัฒนาพื้นที่ของตน จะเกิดความครบทราตรีต่อผังเมืองที่ประกาศใช้ ส่งผลต่อการนำไปสู่การเข้าร่วมที่เป็นประโยชน์ต่อการจัดทำผังเมือง โดยมีเป้าหมายเพื่อการทำงานร่วมกันในทุกภาคส่วนอันประโยชน์ต่อการสร้างวิสัยทัศน์ของการพัฒนาเมืองและการยอมรับต่อผังเมืองร่วมกัน

คำสำคัญ

แบบจำลองสมการเชิงโครงสร้าง

การรับรู้

การยอมรับ

การมีส่วนร่วมของประชาชน

ผังเมืองรวม

การพัฒนาเมือง

1. Introduction

Comprehensive urban planning is considered a highly concrete approach that enables the enforcement of a comprehensive urban plan. It is part of a tool where procedures were included in an organizational form and concerned the role of major agents in urban development based on a “command and control” approach in Thailand. Urban planning has changed in accordance with different paradigms. Those in the first paradigm were largely influenced by state planners or experts and officials working on what was perceived as a unitary public interest. This approach centred on the blueprint often referred to as the master plan. It showed a fixed vision of future planning, whereas those in the second paradigm had a flexible plan concerning the overall vision and specific actions. Public-private partnerships became predominant in planning. In the third paradigm, planning had no fixed vision. It is regarded as participatory planning, with the government, the private sector, and civil society all involved in negotiating planning forums, see Figure 1 (Carley & Colleagues, 2001). Considering the case of Thailand, comprehensive urban planning, both at a regional and national level, occurs in a decentralized context where public participatory processes are promoted and critiques still exist. Among those, one form of planning lacks public participation. It was found that civic sector becomes involved in the process just when public hearings occur (Chaweewan, 2012). In addition, planners in Thailand lack of ability to disseminate information that would increase public knowledge and improve the understanding of urban planning work. This results in lower perception and participation by citizens during the comprehensive planning procedure. Consequently, this study aims to develop Structural Equation Modelling (SEM) for increasing perceptions and promoting acceptance in the civic sector to encourage participation in the comprehensive planning procedure. Public participation

and accessibility of information are expected to introduce a structural change in Thailand urban planning policy. There will also be recommendations for reorganizing the all level city planning agency, thereby reducing barriers for operating the comprehensive planning procedures and creating a judicative plan for effective urban development.

2. Literature Review

2.1 *Comprehensive Planning Procedure Implementation in Thailand*

In Thailand, the government recognises active public participation in comprehensive urban planning. The Department of Public Works; Town and Country Planning of the Ministry of Interior; and local municipal and provincial administration organizations are the authorities responsible for preparing comprehensive urban plans. Comprehensive planning procedures were extended from the Land Use Plan included in the Ministerial Regulation volume 414 (1999) and enacted in the City Planning Act of 1975. The comprehensive plan was used as a land management tool alongside the city planning code on land usage. The main purpose of the comprehensive plan and its regulatory framework is to limit control over urban development. However, it is often ineffective due to the excessive bulk of those regulations and their inefficient enforcement; this is exacerbated by the improper use of future land use zoning maps. There are three main instruments of land management: planning, regulation and fiscal tools (Hansasooksin, 2015, p. 105-122). For planning, zoning is presented in the form of a coloured map that segregates land into residential, commercial, industrial, cargo, agricultural, floodway and conservation areas. Each colour is also divided by different densities and land use requirements (Marome, 2013). An evaluation concerning the role and procedures of civic society in an eight-step comprehensive urban planning procedure allowed residents to participate in the

planning process only during a public hearing (2 times) or referendum. This was an ineffective form of communication in the planning process; it caused a lack of perception and acceptance of the public's role in the participatory planning procedure (Pimonsathean, 2000).

2.2 Urban Participation

The voice of the community in decision making process is an important requirement to establish quality products or services that fulfil their needs and demands. Mohamed Anuar and Saruwono (2013) added that the public has the right to know on what is happening in the surrounding environment and the right to get involved in decision making process which particularly affect them in places where they live and work. Participation has a psychological effect on the participants, ensuring a continuing interrelationship between the workings of institutions and the psychological capabilities of individuals interacting with them. (Participation should be active and directed, those who become involved should experience a sense of achievement. Traditional planning procedures should be examined to ensure that participation achieves more than a simple affirmation of the designers or planners intentions. Informing a large audience about proposals, generating interest, securing approval can take the form of a community meeting, also referred to as a public hearing or a public forum. Although referred to as community participation, only the most aggressive personalities tend to participate and often dominate the discussion. (Socrates, 2009) With cities seeking to involve diverse voices in city-making to get beyond "the usual suspects," and how cities in their region are finding new ways to increase civic participation. Faced with this knowledge, cities are struggling to develop new to inform community engagement methods, including those that embrace information and collaborative design methods, to better bring the public knowledge into conversations

on the future of city life. Not all of our engagement in recent decades has been very engaging, while some new methods are bringing key services online to get information, others are as simple as changing the location of council meetings or getting people walking and talking in their neighbourhood's space (Toderian & Glover, 2014).

2.3 Participants of Urban Planning in Thailand

The old planning model that rooted in nineteenth-century concepts of science and engineering, is severely impaired. This is because the conventional concept of planning focuses on professional knowledge to professional knowledge without citizen participation. (Friedmann, 2002) who said that "Planning is that professional practice that specifically seeks to connect forms of knowledge with forms of action in the public domain". In the present, it is generally accepted that urban planning cannot achieve to implement without citizen participation. The citizen participation in urban planning is an important process which provides stakeholders an opportunity to influence decision-making. Therefore, the person who plays a significant role in the planning consists of community and outsider (public and private sector). However, the level of public participation can be divided into five levels as follows: (1) non-participation; (2) Indirect participation (for example, they attend or get some information without giving an opinion); (3) Consultation that enables them to give an opinion at the meeting; (4) Partnership that enables them to negotiate and engage with powerful person; and (5) Citizen control or full managerial power (Arnstein, 1969).

In the process of an urban comprehensive plan in Thailand comprises into 18 stages by law, which can be divided into 2 major operation steps as follows; 1) to study and plan of a physical planning within 1-8 steps and 2) to consider the procedures of regulation and to enforce of urban comprehensive plan from 8-18 steps. The study focuses on the first

stage of operating according to people's participation concerns, which brings to be successful plan. (Figure 1) is the operation is in the early stages of 8 steps focuses on mainly study and consider to a draft of urban comprehensive plan. In these stages of planning provide public hearing into 2 steps in all the different operations of the urban comprehensive plan, which has a procedure of the public took part in laying the physical plan and preparation of a comprehensive plan. The information of comprehensive planning is provided to participants in one way communication for refute, although, it informed in operations process. Unlike the intent of the Act, that aims to make people took part in the laying physical plan and preparation of the comprehensive plan. The public hearing process will be a role of conducting and monitor protection of land use in the area by the regulatory approval of the people. The study showed that the operation is merely a form of one-way communication to the people and understand the draft plan. To attend public hearings within step 4, complaint of changes in ownership of their land within Step 6. The lack of information in creating communication with the community and stakeholder groups in stages of planning need knowledge is on the implementation preparing the plan. This is information of people come out to comment to the complaints of their rights are being deprived. However, it has only group of people who lack of the interest or stakeholders from land use activities that will occur and reclaim (Pimonsathean, 2000; Puchaneyapongsakorn & Khongouan, 2001).

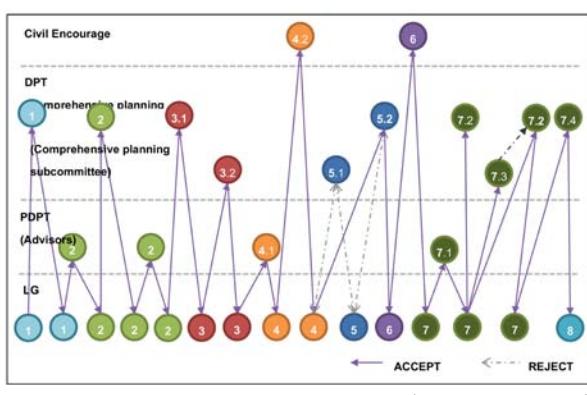


Figure 1. Process and participants in Comprehensive Plan of Thailand.

Remarks:

DPT: Department of Public Works and Town & Country Planning
 PDPT: Provincial of Public Works and Town & Country Planning
 LG: Local government
Stage determine;

1. Survey and scoping area.
2. Analysis and Schematic plan.
3. Planning advisory board (Draft plan);
 - 3.1 Comprehensive planning committee review
 - 3.2 Comprehensive planning subcommittee review
4. Public hearing;
 - 4.1 Provincial advisory review
 - 4.2 Public hearing
5. Planning advisory board (Examination toward of comprehensive plan);
 - 5.1 Comprehensive planning subcommittee review
 - 5.2 Comprehensive planning committee review
6. Public announcement and receiving petition (90 day launch)
7. Examination and investigation of petition
 - 7.1 Provincial advisory review
 - 7.2 Comprehensive planning committee review
 - 7.3 Comprehensive planning subcommittee review
 - 7.4 Comprehensive planning committee review
- 7.5 Intern the result of investigation to petitioner
8. Establish a documents and submit to Ministry of Interior

9-18 Regulation and enforcement state

2.4 Public perception and SEM technique

Legitimacy is a key factor in developing and sustaining policy-citizen partnerships: people are more willing to cooperate with policy making procedures when they believe that agencies and personnel are trustworthy and fair when dealing with members of the public. Given this, the planning process and involved agencies need to be extremely to take information and collaboration sensitive to actions that negatively impact perceived legitimacy (Stewart, Henning & Renauer, 2013).

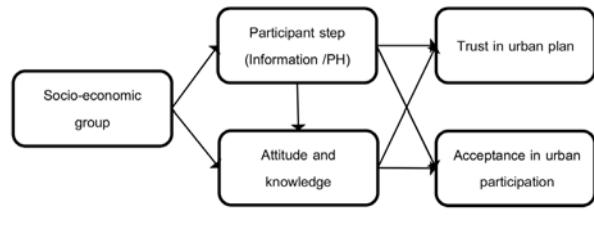
Public evaluation of urban planning gets much attention abroad. Department of city planning in Thailand has adopted a large number of measures to encourage public participation; and other countries, such as Britain, Canada, Japan, etc. have also developed detailed rules for public participation, in order to obtain public information through various channels.

The indicators involved with public evaluation are very complicated, and there are difficulties in data collection and processing. The introduced the idea of path analysis into the study of latent variables and combined it with the factor analysis method, set up an unified and convenient theoretical framework of Structural Equations Model (SEM) (Sun, Mai & Wang, 2013, pp. 2027-2033).

Structural Equation Modeling (SEM) is a statistical methodology that is widely used by researchers in the social, behavioral and educational sciences (Kline, 2005). First introduced in the 1970s, SEM is a marriage of psychometrics and econometrics. On the psychometric side, SEM allows for latent variables with multiple indicators. On the econometric side, SEM allows for multiple equations, possibly with feedback loops. In today's SEM software, the models are so general that they encompass most of the statistical methods that are currently used in the social and behavioral sciences (Westland, 2015).

3. Methodology

This research focused on the process where indicators (i.e., for reinforcing creation-related factors) are identified to generate phenomenal participation in the comprehensive planning procedure. Figure 2 illustrates relationship between variable socioeconomic group and experiences of participants in urban planning activity such as Information, Public hearing (HP). The relationship between two factors has influenced to attitudes, knowledge belief, and acceptance in comprehensive plan as well as recognition in the planning stages.



Note: HP = Public hearing

Figure 2. Assumption of the study.

This is a method of gathering feedback from a group of individuals regarding the following: socio-economic distribution through indirect effected with their perception to participation and trust; their experiences with participating in planning activities; and their attitudes towards and confidence for the comprehensive urban planning process such as 1) attitude that public participation and collaboration are important 2) Attitude towards planning could be managed by capitalism and collaboration and 3) Attitude towards information is important. Then structural equation modelling was constructed to describe the phenomenon of these events through the sample. It identified the structures of factors that positive and negative of directly and indirectly encouraged participation and trust in urban planning and development.

3.1 Participation

Altogether 210 sets of questionnaires were distributed in undergoing stage of comprehensive plan process in a period of our research. We pick up a case study areas of the Baan Bueng District in Chonburi Province and Khok Toom District in Lopburi Province to empirical the model structure. The research samples consisted of 48% males and 52% females. In terms of education level, 75% of the sample population were high-school graduates. More than 50% of individuals earned their living by working in the informal economic sector.

3.2 Criterion variable

The perceived control and psychological distress latent constructs were used to predict worry in the current sample. The AAQ (Hayes, Luoma, Bond, Masuda & Lillis, 2006) was utilized as the criterion variable in the subsequent structural equation model; variables' meanings are described in Table 1.

Table 1. Measurement scale and meaning.

Variables	Meaning and measurement
Personality Factors	
1. Gender	1 = Male, 2 = Female
2. Education	1 = > Secondary school 2 = High school 3 = < Bachelor's Degree
3. Occupancy	Higher numbers presented in variability of security of occupation , If unemployment = 6, worker = 5, informal seller = 4, private company = 3, business owner = 2, official = 1
Attitude and Perception	
4. Engagement	Perception of participation (1 = no/maybe, 2 = yes)
5. Trust	Trust in urban planning as a development guideline of a city (1 = no, 2 = moderate, 3 = trust)
6. Attitude (opinion)	Attitude that public participation and collaboration are important (5 Likert scale)
7. Attitude (people)	Attitude towards planning could be managed by capitalism and collaboration (5 Likert scale)
8. Attitude (knowledge)	Attitude towards information is important (5 Likert scale)
Action and Experience	
9. Information	Have you ever received information about the urban planning process? (1 = no, 2 = yes)
10. Experience	Have you ever received experience in a method of urban planning? (1 = no, 2 = yes)

4. Results

4.1 Mean difference of Model Indicators in Perception and Experience

The following factors were considered in data distribution: attitude, perception and experience in participating in comprehensive planning. The result of indicated average attribution and experience are estimated as shown in table II, closely half of people have perception to participation (engagement = 1.4078) and trust of plan (trust = 2.4011), the average of 5 Likert scale; 2.01 in attitude (opinion) that public participation and collaboration are important , attitude (people) = 3.88 in attitude towards planning could be managed by capitalism and collaboration and attitude (knowledge) = 4.13 in attitude towards information is important. The action and experience indicate average; Information = 1.2045 and Experience =1.1124, its meaning less of people got an information and participants.

Table 2. Variables statistic.

Variables	Mean	S.D.	Min	Max	t/Chi-square
Attitude and Perception					
Engagement	1.4078	.49281	1	2	38.220***
Trust	2.4011	.53577	1	3	59.625***
Attitude (opinion)	2.01	1.197	1	5	22.419***
Attitude (people)	3.88	.940	1	5	55.180***
Attitude (knowledge)	4.13	.817	1	5	67.708***
Action and Experience					
Information	1.2045	.40452	1	2	39.504***
Experience	1.1124	.31670	1	2	46.861***

***P< 0.001

4.2 Bivariate correlations for model indicators

Bivariate correlations were conducted by utilizing model indicators to examine the association between variables. The correlations are presented in table III. As expected, the model indicators were significantly correlated. As such, the model indicators were utilized to create a latent construction for the subsequent structural equation models.

Table 3. Bivariate pearson correlations for model indicators.

Factors	1	2	3	4	5	6	7	8	9	10
1. Gender	-	-	-	-	-	-	-	-	-	-
2. Education	-.120	-	-	-	-	-	-	-	-	-
3. Occupancy	.094	-.387**	-	-	-	-	-	-	-	-
4. Engagement	-.081	.174*	-.319**	-	-	-	-	-	-	-
5. Trust	-.098	-.073	.004	.162*	-	-	-	-	-	-
6. Information	.046	-.195**	.010	.416**	.107	-	-	-	-	-
7. Experience	.013	-.234**	.100	.287**	.286**	.459**	-	-	-	-
8. Attitude (opinion)	-.136	-.114	-.184*	.482**	.105	.319**	.220**	-	-	-
9. Attitude (people)	-.048	.144	.002	.024	-.269**	-.085	-.099	.130	-	-
10. Attitude (knowledge)	-.131	.032	-.067	-.025	-.227**	.070	-.074	.223**	.695**	-

**. P <0.01 , *. P < 0.05

4.3 Structural Equation Model for Public

Engagement in the Comprehensive Plan

According to analysis of the relationship between the variables and the related factors as shown in Figure 3, it can be explained that the parameters of some independent variables show influenced, by which their symbols are either positive or negative values relying on the impact of each variable. After investigating the validity and reliability of the observed variables, the structural equation model was estimated to determine the relationship between demographic factors, attitudes and experiences in participating in the planning procedure. The following hypothesis was proposed:

- The process of perception- and acceptance-building requires delivering information concerning urban planning; this will ensure continuity in implementing the process and secure people's trust in participating in these activities.

- Substantiating the structural model would help identify those who have never been involved or who have information about participating in the activities; this will ensure the continuity of the urban planning implementation process.

The model's global fit indices indicated excellent fit with the observed data $\chi^2 = 191.637$, df = 17, ns. $\chi^2/df = 11.27$, TLI = .615, RMSEA = .204, CFI = .501, and NFI = .527.

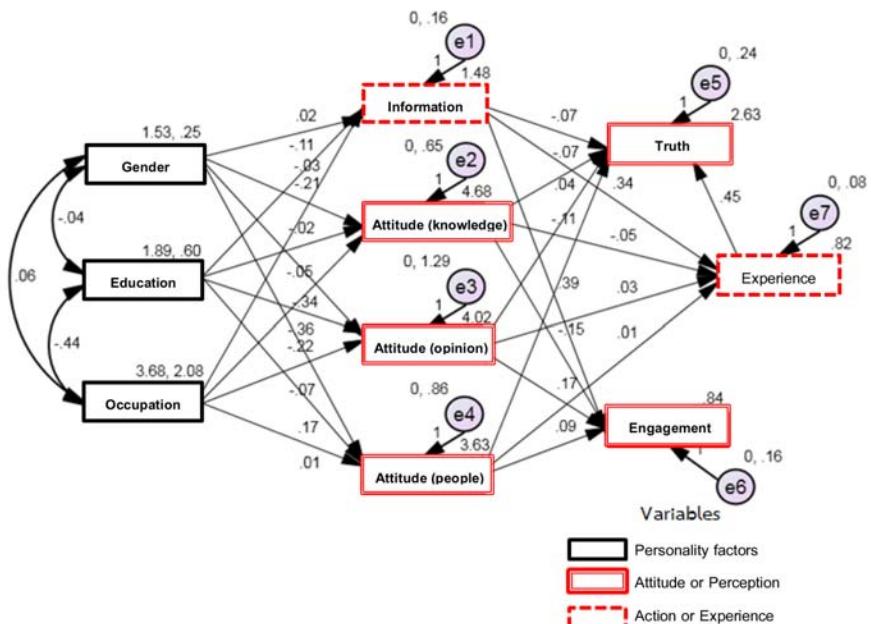


Figure 3. Structural model of trust and engagement building in the public participation process for comprehensive planning procedures.

Figure 3 explains that the socio-economic groups (gender, education and occupation) are indirect effects to perception of participation in reversing negative attitudes and accept of the plan. Considering the base of the group's participants in the plan as volunteer group of community and elders, who are less education and unstable career prepared to the working group who did not participate in any activities. The educational background has a strong relationship with positive of attitudes (e4) towards participant in planning process (e7) but those have received less an information (e1) that make them have less of trust in a plan. On the contrary, those who understand the comprehensive plan contribute to the comprehensive planning procedure. As opposed to those who have information (higher score = .34) of people who participants in planning process, attitude (e4) of the public sector has contributed significantly to the implementation of a comprehensive plan (higher score = .39) to build to trust of comprehensive plan, those are instrumental in guiding the future development of their area to lead to trust of a comprehensive plan and contribute to participants in a comprehensive plan. In conclusion, building perception and acceptance of public participation is significantly required in the civic sector. Increased perception and acknowledgement may be possible by utilizing media to build a body of knowledge about urban planning and create confidence in realizing the effectiveness of the urban development plan in civic participation.

5. Conclusion

The result of a structural equation models was revealed the factor of relationship between personal factors and experiences of participation, get information on city planning, and the knowledge of town planning affect to accept a public participation in comprehensive urban planning procedures. Moreover, it was found that the provision of

information and knowledge is a key to the information received to participate in the planning process as well as links to the faith arising from the civic sector. Hence, public participation is a powerful tool of political principle and practice, and it may also be recognized as a right (i.e., the right of public participation). The terms public participation may be used interchangeably with the concept or practice of stakeholder engagement and/or popular participation in the comprehensive planning process. Increasingly, public participation is encouraged so that the community is involved in all phases of a comprehensive plan; residents should be considered part of evaluate on performances. They can provide and exchange information with government officials that would allow parties to decide whether to expand, modify or eliminate project categories. This process allows the comprehensive plan to evaluate the models underlying policy and project design and for them to be adjusted to fit within city development.

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