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***Research paper***

# The Conceptual Framework of Community Resilience of the Flat Residents

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**Abstract**

The government, non-government organizations and community leaders in some countries were challenged to design and implement policies, programs and systems that could help local communities to overcome various threats. Changes of situation in the community, such as relocation, was considered a threat. In Indonesia, especially DKI Jakarta, in order to implement the Urban Environment Management Program, the government relocated the community who occupied illegal land to simple rental flat (rusunawa). People who were impacted by this policy had to adjust themselves to the new environment to make living, and some other chose to stay in a modest flat. The concept of community resilience has been an interesting issue as it dealt with the ability of something, someone or even society in overcoming difficulties, to recover and return to normal conditions at the right time. This study was done to propose a conceptual framework for community resilience for the residents of modest rental flats and to determine a standard method to examine the community resilience among residents of modest rental flat who were impacted by the relocation policy. Literature review was done to obtain secondary data and relevant scientific literature. In addition, observations were done to several modest flat which were established prior to the relocation policy (Marunda, Rawa Bebek and Kapuk Muara Penjaringan). To measure the strength and direction of the independent variable's contribution to the dependent variable, Variance Based Structural Equation Modeling was administered using the Smart-PLS program. The proposed conceptual framework for community resilience among the residents of modest flat covered 8 (eight) aspects, namely: 1) economy; 2) social; 3) culture; 4) human resources; 5) ecology; 6) physical; 7) politics and government and 8) technology. Those aspects should be taken into consideration in order to increase the capacity of modest apartment to stay. For the government or policy makers and information planners, the proposed framework can be used as an input for policy making, determining the priority scale, fund allocation and the enhancement of the sustainable flat housing development programs.

***Keywords***: *Resilience; community; residents; modest rental flat.*

## 1. Introduction

Continuous population growth in urban areas might trigger disaster [1]. Vulnerability that occurs in big cities / megacity is caused by unplanned urbanization process [2], resulting in the loss of governability [3]. In Indonesia, DKI Jakarta makes a real example of a city that faces this problem. The ever-increasing population and land use for uncontrolled settlements have decreased in environmental capacity, resulting in illegal settlements established in awful areas with high density and shabby housing conditions.

Since 2013, the government of DKI Jakarta has begun to take control upon those who lived in illegal land and moved them to modest rental flat. This was intended to structure the urban areas regarding to the fact that the community had limited funds for adequate housing. Besides, this action is also a part of modernization [4]. Modest rental flat refers to low-cost vertical houses for rent such as the ones in Marunda (North Jakarta), Rawa Bebek (East Jakarta) and Kapuk Muara Penjaringan (North Jakarta). The community generally refused to be relocated because that they had been living in the land for decades and they lacked of fund to pay for the rent of more decent housing, fear if losing their livelihoods. In addition, poverty also prevents them from being able to rent modest flat units. Moreover, complicated requirements for in loan application and the size of the house which is considered too small for family with more than 4 (four) people also become sensible constraints. Besides, most of Indonesian citizens do small business activities (carpentry), agriculture / agriculture or traders. Hence, they need to have space to run their business in their house or in the surrounding environment [5] [6] [7].

After being relocated to a modest flat, residents still have to deal with the adjustments to several aspects related to their daily lives. Some of them complained about expensive electricity bill, and they thought that the facilities provided by the Government for economic empowerment in the form of kiosks and canteens on the ground floor of the flat could not meet their expectation. Moreover, some families who were not fishermen or those who worked as freelancers had to lose their job, business. The transportation-free policy was also considered inadequate. They also believed that the social relationship in the new community was not pleasing. According to data from the DKI Jakarta Housing and Settlement Office, by June 2017, the total arrears in modest flat rentals up to June 2017 had reached Rp. 32 billion [8].

The relocation policy raises a variety of controversial issues, especially among the affected communities. Regarding to this fact, it is considered important to assess the community resilience among modest rental flat residents (rusunawa). This research explores various aspects to analyze the resilience of modest flat residents, involving several aspects; economic, social, cultural, human re-

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sources, ecological, physical, government and political aspects, and technology.

## 2. The Basic Idea of Community Resilience

The term community refers to certain people who live within certain geographical boundaries and are involved in social interaction, have one or more psychological bound to one another and to the place where they live [9]. Society is a group of people who share certain traditions, habits and feelings or people who identify themselves with specific territories, their own identity, the shared-values, and common interests to achieve balance and satisfying life [10]. As a part of social system, society consists of systematically-arranged elements, in which each element shares certain relationship pattern such as the pattern of family relations, economy, government, religion, education, and society [11].

The term resilience refers to the process of learning to adapt into certain changes and uncertainty, maintaining diversity for reorganization and renewal, combining various kinds of knowledge and creating opportunities for self-organization [12]. Resilience is also considered a system that can be created when other subsystems and variables support the system. In the context of a system, relationship is important as relationship determines the resilience of the system itself [13].

In 1980, people who worked in the field of engineering began to use the term resilience to refer to physical infrastructure resilience after a disaster. Since then various definitions have emerged, associating engineering with ecology, or ecology with behavior. In 2000, a concept of resilience was proposed as an act that is intentionally carried out to improve the capacity among individuals, community, and through government/ non-government institutions to face various changes [14].

Community resilience as the ability to anticipate risks, limit impacts, and rise again quickly through survival, adaptation, evolution, and growth in the face of changes [15]. Community resilience has several characteristics; Be knowledgeable, a resilient community has the ability to assess, estimate, manage, and monitor any possible risk within the community; be organized, a resilient community has the capacity to identify problems, and solve them based on the scale of priority; be connected, a resilient community establishes strong internal and external interaction with actors who can provide support for the resilience of the community such as family, friends, spiritual groups, and the government; be endowed, a resilient community lives in a decent housing, transportation, has access to electricity, water and sanitation system where the community is able to maintain, repair if damages occur, and do renovation; they also have the access to economic opportunities. Resilient communities have a variety of employment opportunities, various income, as well as a variety of financial services facilities from financial institutions; and they are able to manage their natural assets and resources in addition to having the ability to protect, enhance, maintain and mobilize natural and community resources [16].

Community resilience has become a multifaceted field of study that continuously develops in various fields of scientific disciplines. In short, resilience theory discusses the strengths shown by people and systems in overcoming difficulties [17].

Communities can also be defined as groups of people who live in the same area or face the same risk. Although this definition is important in the discussion on community resilience regarding to various risks, there are other aspects that need to be taken in to consideration including interests, values, activities, and social structure. People who live in the same area might have different level of wealth, social status, and activities [18].

Based on a comprehensive literature review on resilience from various scientific disciplines, such as organizational theory, political science, economics and a particular foundation in ecology, this study proposed a model to allow the community to evaluate and plan their resilience based on the analysis of the available resources (performance, redundancy and diversity) and adaptive capacity (institutional memory, innovative learning and connectedness) [19].

Several challenges occur in measuring the community resilience; to whom and to what the resilience is measured, besides challenges related to the measurement of community resilience capacity. Community resilience can be viewed in a single interrelated capacity to absorb, anticipate and adapt to various types of shocks and pressures [20].

There are two potential weaknesses in the attempt to identify community resilience. The first weakness deals with the fact that the identification often raises questions about priorities and which communities should be the focus of research. Secondly, it is considered difficult to determine theoretical policies and accountability of several indicators. This occurs since various issues develop in an everchanging society (increasingly diverse society), high immigration rate, and obvious cultural gaps between individuals and groups of people [21].

In Indonesia, the enactment of the Law Number 24 of 2007 concerning disaster management, substantially resilience focuses on achieving the objectives which deal with how to reduce or avoid human, social, economic, environmental as assets of the community, and the state from any loss of property and disaster [22].

## 3. Method of the Study

The method used in this study is to measure the level of community resilience with the literature review. In addition, observations were done to several modest flats which were established prior to the relocation policy (Marunda, Rawa Bebek and Kapuk Muara Penjaringan). To measure the strength and direction of the independent variable's contribution to the dependent variable, Variance Based Structural Equation Modeling was administered using the Smart-Partial Least Square (PLS) program. With the PLS program a measurement model analysis is conducted with the aim of selecting measurable variables that can be used as indicators of each research latent variable, and the structural model shows the strength of estimation between latent variables. The latent variable that is formed in PLS program, the indicator is in the form of reflective, where the indicator is manifestation of the construct [23].

## 4. The Concept of Community Resilience

This section shows some concepts of community resilience based on various background events as shown in table 1.

**Table 1:** Concepts of community resilience

| Author/International Organisation | Events | The Concept of Community Resilience |
|---|---|---|
| Lauritzen S. 2016 [24] | Climate change that is rapidly increasing in some regions of the world | The ability of the community can be improved through sustainable life approach using five types of available capital, namely nature, financial, human, social and physical |
| Damayanti S & Marfai, M.A. 2011 [25] | Flood in Sukoharjo Village | The resilience value is strongly influenced by human capital, flood characteristics (duration, intensity, and frequency), and economic capital |
| Godschalk D.R, 2003 [26] | The threat of natural disasters and terrorism | Propose a sustainable mitigation policy system for community resilience |
| Normadin J.M. et al, 2007 [27] | Increases in population density and community dependence on technical and social systems | Community resilience analysis was carried out in four different but interdependent vectors, namely urban metabolic flow, social dynamics, built environment and government networks |
| Danar O.R & Pushpalal D. 2014 [13] | Relocation after experiencing a tsunami disaster | The concept of resilience is discussed through cultural, economic and policy dimensions |

| | | |
|---|---|---|
| Southwick, S.M, et al, 2014 [28] | | In defining community resilience, it is important to determine whether resilience is being seen as the nature, process, or outcome. Resilience can change over time |
| Longstaff, P. H., et al, (2010) [19] | | Assessing community resilience can be done by assessing five systems in a community; ecology, economy, physical infrastructure, civil society, and government. |
| Atreya, A. & Kunreuther, H. 2016 [29] | Flood and storm disasters in New Olleans city | The community resilience framework covers several aspects, namely financial, natural, physical, social and political, which are reflected in the scale of strength, speed, redundancy and resource approach. |
| Blakeley R. 2016 [30] | New Zealand | Assess the resilience of the community by using social security, economic resilience, infrastructure resilience, environmental resilience, cultural capital, and governance approaches |
| Barrow Cadbury Trust. 2012 [31] | Marginal communities in the United Kingdom | Resources that indicates the social resilience, namely natural resources, built resources, financial resources, cultural resources, political resources, human resources, and social resources |
| Schwind, K. 2009 [32] | Communities that affected by the climate and energy crisis | Communities are regarded resilient if all their human rights are fulfilled including the needs of food, housing, education, health, social services, and employment opportunities |
| Mankiw, N.G. 2003 [33] | The condition after a disaster or changing situation | Technology plays an important role in economic growth besides capital and human resources |
| UNESCAP, 2016 [34] | | Communication Information Technology (ICT) has an important and integrated role as it has become a necessity in every aspect of life. |
| Khalafzai A.K & Nirupama N. 2011 [35] | | ICT also enhances the economic activities through training and citizen involvement in online trading |
| Yee. L. 2015 [36] | | Focusing on utilizing ICTs to improve operational efficiency; using innovative materials and designs; and using advanced communication methods to increase boosts up community involvement |
| Kiefer J.J, et al, 2008 [37] | | Several requirements have been proposed to understand the level of technology use to improve the community resilience, which includes availability, affordability, accessibility, and acceptability in measuring community resilience |

# 5. Classification of community resilience aspects

Based on the insights of previous research, the conceptual framework of community resilience of the flat resident puts into account several aspects namely:

## 5.1. Economy Aspect

Economy consists of some dimensions; welfare, economic activities, and financial institutions. The welfare dimension deals with the level of community welfare which can be evaluated through some indicators; level of income, household spending [19], savings and insurance registry [29], and asset possession [31]. Dimensions of economic activities reflects the economic activities of community, consisting of three indicators; availability of business opportunities, availability of employment, and the availability of additional income. While financial institution shows the availability and accessibility of financial institutions around the residence [16].

**Table 2:** Construct variable of community resilience of the flat residents seen from the aspect of economy

| Indicator | Sub Indicator |
|---|---|
| Dimensions of Welfare | |
| Main Job | Before and after relocation |
| Working duration | Before and after relocation |
| Average monthly income | Before and after relocation |
| Average monthly spending | Before and after relocation |
| Savings | Have savings |
| | Ability to make savings |
| Insurance | Have insurance |
| | Ability to pay for insurance |
| Physical Assets | Types |
| | Amount |
| Dimensions of Economic Activities | |
| Knowledge about various jobs around the flat | The identified jobs |
| Do business | Easiness in running business |
| Easiness to get job | Easiness to work |
| Dimensions of Financial Agencies | |
| Commercial Banks | Number of banks nearby |
| | Level of demand upon bank services |
| | Easiness to access capital aid |
| Cooperatives | Number of cooperatives nearby |
| | Level of demand upon cooperation |
| | Easiness to access capital aid |

## 5.2. Social Aspect

Civil society refers to formal and informal modes of social organization that conducts collective action outside the authority of the government, and social empowerment exists in the society. Social capital reflects the network and connectedness which are the factors supporting people's trust and ability to work together and expand their access to broader institutions, such as political or citizenship organizations [19]. the security factor [38]. Transfer of place to live results in an adjustment to the new social environment. Community resilience from the social aspect focuses on how citizens are involved in a new environment [30] [16] and formation of community leaders [31]. To assess the community resilience of residents of modest flat from the social aspect, two dimensions can be used; social organization and connectedness. The dimension of social organization explains the diversity of social organizations in the new environment [19] and the level of community involvement [30]. The dimension of connectedness forms community leaders [31], the adaptability with the local community [16], and the level of environmental security [30].

**Table 3:** Construct variable of community resilience of the flat residents seen from social aspect

| Indicator | Sub Indicator |
|---|---|
| Dimensions of Social Organization | |
| Involvement in organization | Types of organization |
| | Duration of membership |
| | Activeness |
| | Suitability of the organization |
| Dimensions of Connectedness | |
| Public Figure | Trusted public figure |
| Association | Comfort in social interaction |

| | |
|---|---|
| Openness | The level of community openness |
| Security | The security around the settlement |

### 5.3. Cultural Aspect

Within the concept of community resilience, culture is an important aspect to measure the resilience of a society after facing a difficult situation. Cultural aspect is interpreted as the way people understand the world and how they behave toward it, such as the formation of influential actors in a society for certain matters, and the level of creativity and innovation within a community [31]. Cultural aspect also pictures out new habits, and the level of comfort in a new environment [30]. The suitability of new social and cultural values with the socio-cultural values among communities who move to a new environment also should be taken into consideration [16]. Regarding to the opinion of some experts, culture within the context community resilience consists of two important dimensions in evaluating the culture; new habits, to understand the habits as a proxy in adaptation, and suitability and comfort to determine the level of suitability towards the lifestyle in apartments and the level of comfort.

**Table 4:** Construct variable of community resilience of the flat residents seen from the cultural aspect

| Indicator | Sub Indicator |
|---|---|
| Dimensions of new habit | |
| New Habit | New habit |
| | Types of the habit |
| Dimensions of value suitability and comfort | |
| Life style suitability | The suitability of lifestyle in flat |
| Comfort | The level of comfort in flat |

### 5.4. Human Resource Aspect

Educated people have more adequate knowledge about adaptation and how to improve community resilience which affect their attitudes and preparedness. A well-educated community tends to be able to look ahead with all the predetermined plans. Education may have the potential to generate new ideas and skills. In the concept of research, education is defined as the level of formal educational background of new flat residents [39].

Besides education, human capital refers to human skill or expertise to do a job obtained though practices. To assess the achievements a community, it is necessary to agree upon an idea related to additional income and motivation addition to income from the main occupation [29]. The indicators of additional income indicators and motivation are included in the economic aspects. Since the indicators are rather related to empowerment, researchers include the indicators into the aspect of human resources within the dimension of creativity. The more creative a person with adequate educational background and skills, then the more likely he is to get additional income or have better motivation to earn additional income. The dimensions of education in human resource aspect investigate educational background of flat residents. The skill dimension describes the type of skills and experience possessed by the residents. The dimension of creativity measures the level of creativity and motivation of the residents in earning additional income.

**Table 5:** Construct variable of community resilience of the flat residents seen from human resources

| Indicator | Sub Indicator |
|---|---|
| Dimensions of Education | |
| Education | Level of Education |
| Dimensions of Skill | |
| Skill mastery | Types of skill |
| | Duration of skill mastery |
| Additional Income | Having additional income |
| | Types of additional income |
| | Working duration |
| | Process of job seeking |
| | Earned income |
| Dimensions of creativity | |
| Willingness to earn additional income | Willingness |
| | Types of the expected jobs |
| | Easiness in doing additional work |

### 5.5. Ecological Aspect

Ecological aspect is a combination of biological and physical elements within the environment where a community live [19]. Ecological aspect explains the quality of natural resources in the modest flat, the distribution of facilities, diversity of resources, and the usefulness of the resources. Equity and diversity dimensions reflect the level of equity and diversity in the supply of water, electricity, food, employment, housing and transportation [32]. Furthermore, the quality and usefulness of natural resources are standardized based on SNI 03-7013-2004 [40].

**Table 6:** Construct variable of community resilience of the flat residents seen from ecology aspect

| Indicator | Sub Indicator |
|---|---|
| Dimensions of water quality | |
| Water | Quality |
| | Supply |
| Hygiene and community health | Management of wastewater |
| | Waste management |
| Dimensions of utilization | |
| Participation | Level of participation in waste management |
| Dimensions of diversity | |
| Variety of water resources | Water resources variety |
| Types of water resources | Types of water resources |
| Dimensions of equity | |
| Distribution of clean water supply | Level of distribution |

Objectives in the ecological aspect variable refer to the quality of natural resources to determine the water quality, cleanliness, wastewater and wastewater management. The dimension of usefulness shows the level of resource utilization. Diversity dimension describes the level of diversity of clean water resources and waste management. Furthermore, the dimension of equity evaluates the level of equity among residents in obtaining clean water supply and waste management.

### 5.6. Physical Aspect

Physical infrastructure refers to the substructure or foundation established to provide goods and services [19]. Physical aspects also refer to infrastructural items such as electricity, water, and transportation, as well as the environment around a community including residential, commercial and public buildings [29].

The relocation policy carried out by the government puts physical aspects as the major concern, in which the government guarantees a better residential location than the previous one. However, the government has not yet guaranteed that the new location inhabited by the residents has been well-integrated with public facilities and transportation. Therefore, assessment on the community resilience becomes relevant if it is correlated with the physical aspects of this study.

Seen from physical aspect, community resilience is measured from the number of available facilities at the new place [32] and comfort [29]. Within the Indonesian National Standard, regulations have been made regarding to the required physical infrastructure facilities that must be integrated into residential areas [40].

The physical dimension presents the number of physical facilities available around the flat such as facilities for education, health, worship, trade, recreation, transportation, and government services [40] [32]. Whereas, physical quality dimension shows the affordability of public facilities and the physical quality nearby [29].

**Table 7:** Construct variable of community resilience of the flat residents seen from physical aspect

| Indicator | Sub Indicator |
|---|---|
| Dimensions of physical facility integration | |
| Government facility and public facilities | Distance |
| | Mileage |
| | Availability of transportation |
| Learning facilities | Distance |
| | Mileage |
| | Availability of transportation |
| Health care facilities | Distance |
| | Mileage |
| | Availability of transportation |
| Worship facilities | Distance |
| | Mileage |
| | Availability of transportation |
| Trade center | Distance |
| | Mileage |
| | Availability of transportation |
| Recreational facilities | Distance |
| | Mileage |
| | Availability of transportation |
| Dimensions of the physical facilities quality | |
| Affordability | Education |
| | Health |
| | Worship activities |
| | Workplace |
| | Market |
| | Recreational places |

## 5.7. Political and Government-Related Aspects

Political capital is able to influence decision making within a community and it affects the process of external resources achievement and utilization to promote resilience. People assume that government officials are the ones who account for the problems that occur. On the other side, communities are often neglected, while they are actually important political constituents. This sentiment closely relates with the excessive focus on the management of personal assets and negligence upon the management of public properties such as parks, rivers, sidewalks and so on [29]. In the reform era, through the implementation of direct election, huge changes started to occur, and political attitudes were shifted (4).

To improve the community resilience, mentoring programs, program quality, and government preparedness [19], ease of communication with the government, program suitability, and citizen representation in the government [32], as well as government commitment to program implementation should be enhanced [31].

Based on the previous description, the resilience of communities who live in modest flat can be measured from the dimensions of the program to find out data related to the existence, quality, readiness, and community involvement in the programs conducted by the government and the management institutions. Furthermore, the dimensions of aspiration, shows the suitability of the program and the level of community's satisfaction towards the program.

**Table 8:** Construct variable of community resilience of the flat residents seen from the political and government aspects

| Indicator | Sub Indicator |
|---|---|
| Dimensions of program | |
| Rental cost payment smoothness | Smoothness of rental cost payment |
| Program availability | DKI Provincial Government and institutions |
| Program quality | DKI Provincial Government and institutions |
| Program commitment | DKI Provincial Government and institutions |
| Involvement of the society in the program | DKI Provincial Government and institutions |
| Dimensions of aspiration | |
| Program suitability | DKI Provincial Government and institutions |
| Satisfaction | DKI Provincial Government and institutions |
| Communication | DKI Provincial Government and institutions |

## 5.8. Technological Aspect

Community resilience, especially in the context of community recovery process, requires energy security. Energy becomes a vital concern as it drives modern life. Besides the importance of massive energy supply, efficient use of energy is also a crucial factor in the implementation of various strategies in energy management system. Therefore, the well-established energy management system is expected to support the community resilience [41].

In addition to energy and technology, in the context of ICT, the existence of online discussion forums among communities using various communication networks such as social media help the communities solving various problems that occur. Besides offering social media, within a proper direction by the government institutions, the use of ICT will be able to improve communities' skills and can be used as a social empowerment media to increase the community welfare [34]. ICT enhances economic activities through training and involvement of the community in running online trading facilitated by community online forum that give trainings and economic empowerment programs, such as Community Technology Learning Centers (CTLC) [35].

In terms of urban environment facilities and infrastructure, technology plays a crucial role in disaster mitigation or risk management within a community. This risk management deals with security and safety when disasters occur (fire, earthquake) as it provides early warning system and clear evacuation signs [37].

It has been explained in the previous section that there are several proposed requirements in understanding the level of technology use for community resilience, including availability, affordability, accessibility, and acceptability in measuring community resilience.

**Table 9:** Construct variable of community resilience of the flat residents seen from the technology aspect

| Indicator | Sub Indicator |
|---|---|
| Dimensions of availability | |
| Electricity | Gen set ownership in every house |
| | Ownership of power-saving gadgets (LED lamp) |
| | Save the energy program |
| Availability of household fuel energy sources | Gas pipe network |
| Availability of online transportation | Availability of *gojek, grab, etc* |
| Community participation in online groups | Existence of whatsapp/facebook group |
| Availability of technology for disaster mitigation | Evacuation simulation |
| | Sign for evacuations |
| | Siren |
| | CCTV |
| | SMS notification |
| Dimensions of affordability | |
| Ownership of IT support | Handphone |
| | Smartphone |
| | Computer/laptop |
| Dimensions of accessibility | |
| Ability to operate IT | Handphone |

| Indicator | Sub Indicator |
|---|---|
| Dimensions of availability | |
| | Smartphone |
| | Computer/Laptop |
| Disaster mitigation | Easiness to access for disaster and evacuation sights |
| | Easiness in hearing the siren |
| Dimensions of Acceptability | |
| Utilization of IT | Online trading |
| | Transportation |
| | Community forum |
| | Community and developer forum |
| | Evacuation simulation |
| | Evacuation signs/guide |
| | Siren |
| | CCTV |
| IT Utilization Intensity | Online trading |
| | Transportation |
| | Community forum |
| | Community and developer forum |
| | Evacuation simulation |

A structured hypothesis model was proposed in this study to assess the community resilience among the residents of modest flat as shown in Fig. 1. below.

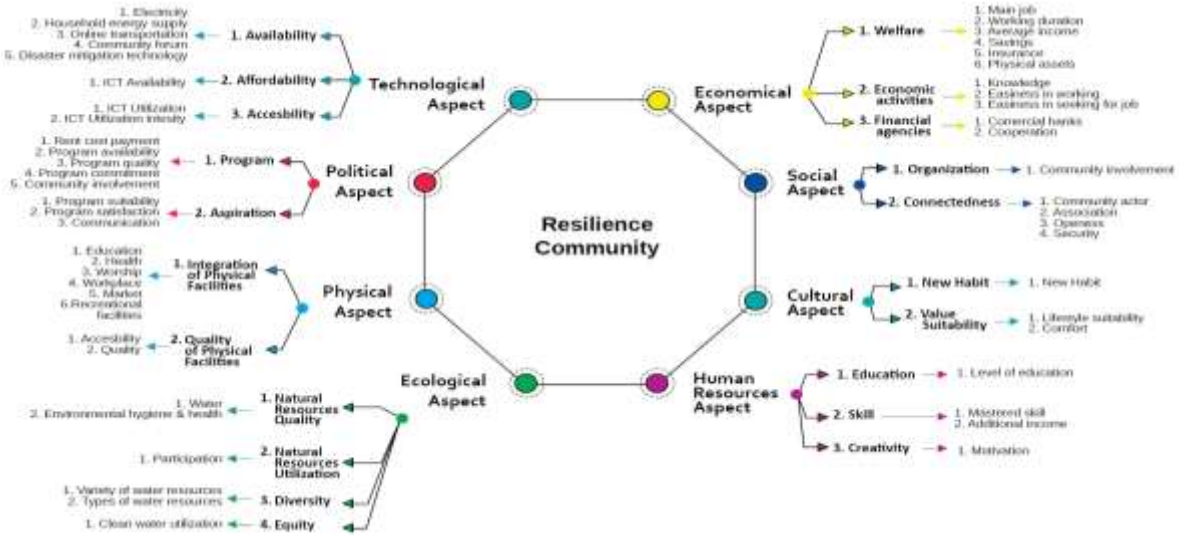


**Fig. 1:** Structure Hypothesis Model

## 6. Conclusion

A conceptual framework for assessing the community resilience among residents of modest rental flat has been proposed in this study. The framework regards several aspects which include economic, social, cultural, human, ecological, physical, political and governmental aspects, as well as technology. The framework has been regarded important to propose as it will give valuable insights for regional government in policy making, determining the priority level of government programs, fund allocation and program development in order to improve the community resilience of the residents of modest rental flat and the enhancement of the sustainable flat housing development programs.

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