

**INFLUENCE OF URBAN DESIGN PRINCIPLES
AND PHYSICAL ELEMENTS ON URBAN
DESIGN QUALITY IN MERDEKA SQUARE,
MEDAN, INDONESIA**

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AND PHYSICAL ELEMENTS ON URBAN
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MEDAN, INDONESIA**

by

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**PENGARUH PRINSIP-PRINSIP REKABENTUK BANDAR DAN
ELEMEN-ELEMEN FIZIKAL TERHADAP KUALITI REKABENTUK BANDAR DI
DATARAN MERDEKA, MEDAN, INDONESIA**

ABSTRAK

Kualiti rekabentuk bandar penting dalam bandar sejak dari bermulanya proses pembangunan. Kualiti rekabentuk bandar mampu mewujudkan bandar yang menarik, sesuai untuk didiami, mampan dan memiliki cita rasa. Faktor-faktor yang mempengaruhi kualiti rekabentuk bandar ialah prinsip-prinsip rekabentuk bandar dan elemen fizikal bandar. Prinsip-prinsip rekabentuk bandar dapat dijadikan sebagai pedoman untuk mewujudkan kualiti rekabentuk bandar. Kualiti rekabentuk bandar dapat diukur melalui persepsi masyarakat dan penilaiannya akan bergantung kepada objek dan karakteristik masyarakatnya. Objektif kajian ini ialah untuk mengetahui penerapan prinsip-prinsip rekabentuk bandar pada elemen fizikal bandar dan pengaruhnya terhadap kualiti rekabentuk bandar. Kajian ini dijalankan di pusat kota Medan, Propinsi Sumatera Utara, Indonesia. Populasi kajian ialah pelawat yang menggunakan laluan pejalan kaki pada hari bekerja dan hujung minggu di kawasan kajian dengan jumlah sampel sebanyak 397 respondents. Kajian ini menggunakan kaedah kualitatif dan kuantitatif dan dijalankan dengan teknik pemerhatian, temubual separa berstruktur dan tinjauan dengan borang soal selidik. Pemerhatian dijalankan untuk mendapatkan penerapan prinsip-prinsip rekabentuk bandar pada elemen fizikal bandar. Kemudian penerapan tersebut dianalisis dengan pengiraan aritmetik mudah dan dibentuk menjadi soalan pada borang soal selidik. Borang soal selidik dijalankan untuk mendapatkan persepsi responden mengenai penerapan prinsip-prinsip rekabentuk bandar pada elemen fizikal bandar dan kualiti rekabentuk bandar. *Partial Least Square* (PLS) analisis digunakan untuk mengetahui pengaruh prinsip-prinsip rekabentuk bandar pada elemen fizikal bandar sebagai pembolehubah tak bersandar terhadap kualiti rekabentuk bandar dan penerapan rasa pada elemen fizikal sebagai pembolehubah bersandar. Temu bual separa berstruktur dijalankan untuk memperoleh penjelasan dari pihak terkait, iaitu pemerintah Kota Medan mengenai

kualiti rekabentuk bandar. Hasilnya digunakan untuk mengesahkan hasil analisis statistik. Dari hasil analisis diperoleh bahawa penerapan prinsip-prinsip rekabentuk bandar pada elemen fizikal terjadi secara terancang dan tidak terancang. Penerapan tersebut dapat dibahagi pada fizikal dan non fizikal. Prinsip-prinsip yang termasuk pada penerapan fizikal ialah kepelbagaian, skel, sambungan dan kesesuaian visual. Sementara itu, penerapan non fizikal ada pada prinsip rasa dan keselesaan. Hasil kajian menunjukkan bahawa penerapan prinsip skel, sambungan, keselesaan dan kesesuaian visual pada elemen fizikal didapati mempengaruhi kualiti rekabentuk bandar, sementara itu, penerapan rasa pada elemen fizikal dipengaruhi oleh kualiti rekabentuk bandar. Kajian ini memberikan sumbangan kepada bidang ilmu rekabentuk bandar kerana membangunkan dua model (model matriks dan model kualiti rekabentuk bandar) dan menggunakan dua kaedah (kaedah kualitatif dan kuantitatif). Hasil penemuan dari kajian ini diharapkan dapat memberikan gambaran mengenai prinsip rekabentuk bandar, elemen fizikal bandar dan kualiti rekabentuk bandar secara lebih terperinci.

INFLUENCE OF URBAN DESIGN PRINCIPLES AND PHYSICAL ELEMENTS ON URBAN DESIGN QUALITY IN MERDEKA SQUARE, MEDAN, INDONESIA

ABSTRACT

Urban design quality is important in urban area since development process begins. Urban design quality contributes to an attractive urban area, suitable place to live, sustainable and has a sense. The factors that influence urban design quality are urban design principles and urban physical elements. Urban design principles can be used as guides to realize urban design quality. Urban design quality can be measured by people's perception and the measurement will depend on the object and community characteristics. Research objectives are to identify application of urban design principles on physical elements and their influences on urban design quality. This research was performed in central of Medan city, North Sumatera Province, Indonesia. Research population are visitors who use pedestrian walkways during working days and on weekend within the study area with a total sample of 397 respondents. This research uses qualitative and quantitative methods and is performed with observation technique, semi-structured interview and questionnaire survey. Observation was conducted to find application of urban design principles on physical elements. Then, the application was analyzed with simple arithmetic calculation and formed into questions on questionnaire form. The survey with questionnaire was performed to get the perception of respondents about application of urban design principles on physical elements and urban design quality. Partial Least Square (PLS) analysis was used to analyze the influence of urban design principles on physical elements as independent variables and urban design quality and application of sense on physical elements as dependent variables. Semi-structured interviews were conducted to find the explanation from stakeholders, namely Medan City government officers about urban design quality. The results are used to confirm with the statistical analysis results. From the analysis results, it is found that the application of urban design principles on physical elements occur as deliberately planned or unplanned. The application can be divided into physical and nonphysical entities. The principles which

are included in physical application are: diversity, scale, connectivity and visual appropriateness. While, non physical application consists of sense and comfortability. The results show that the application of Scale, connectivity, comfortability and visual appropriateness on physical elements influence urban design quality, meanwhile, application of sense on physical elements is influenced by urban design quality. This research contributes to urban design knowledge because it develops two models (matrix model and urban design quality model) and uses two methods (qualitative and quantitative method). The findings of this research provide an overview of urban design principles, urban physical elements and urban design quality in more detail.

CHAPTER 1

INTRODUCTION

1.1. Introduction

This chapter contains problem statement, research questions, research objectives, hypotheses, research scope, methodology, significance of the research and an overview of each chapter.

There are various opinions about urban quality, quality of life, quality of place, quality of community, urban environmental quality and urban design quality. Every quality has a mutual relationship. Quality of life consists of health, physical environment, natural resources, personal development and security (Mitchell et al, 2001 in Kamp, et al, 2003). Good quality of place describes good quality of life (Parfect and Power, 1997 in Chapman and Larkham, 1999). A quality of place makes a city more attractive for its residents (Trip, 2007).

Environmental quality can be defined as the addition of the quality of life concept broadly, and as basic quality such as health and safety in combination with other aspects such as comfort and attractiveness (RIVM, 2002 in Kamp, et al, 2003). The concept of urban environmental quality and related terms such as livability, quality of life and sustainability, formed a central issue in urban development. Environmental quality and quality of life are related and refer to people, environment and the relationship between them. The relationship between environmental quality and quality of life is causative with three approaches, namely economics, sociology (normative) and psychology (subjective) (Kamp, et al, 2003).

Urban design quality is also related to urban design in which there are principles and physical elements. Urban design elements can create poor quality, damage or high quality in urban areas (Parfect and Power, 1997 in Chapman and Larkham, 1999). Urban design usually tend to underline the visual aesthetics, physical and the attributes of streets and building as symbolic, that create the form and influence the quality of life in cities without referring to environmental, social, economic and political consideration (Madanipour, 1996, 1997; Schurch, 1999 in Kashef, 2008). It means, urban design usually, only focuses on the physical consideration. Whereas, non physical considerations are also important in urban design to create a place with distinct beauty and identity.

1.2 Problem Statement

Urban quality has become prominent in the planning and design professions (Chapman and Larkham, 1999). Urban quality is increasingly considered important for long-term urban competitiveness. Some urban quality elements are related to urban design and activity of people (Trip, 2007). Urban design quality is a part of urban quality. Urban areas continue to be developed and may attract many people to come and do their activities. For now, urban design quality is one thing that must be considered in urban design to create a livable and sustainable place. Sustainable place is where people want to live and work for now and future (Dempsey et al, 2011). Urban design quality is important in developing process (Rowley, 1998), makes a city become livable (Conroy and Beatley, 2007), is important to make a better place for people (Behzadfar and Saneei, 2012), makes sustainable development (Punter, 2011) and can produce a sense of place (Jivén and Larkham, 2003; Li, 2010). Based on Clemente, et al. (2011), urban design quality influences

active travelling and leisure. Urban design quality is important to an active life and related to urban physical characteristics such as street width, sidewalk width, traffic volume, building height and weather.

Based on previous studies, there is a relationship between urban design quality and urban design including urban design principles and physical elements. According to Handy et al. (2002), 'urban design' usually refers to the design of the city and the physical elements within it. While, according to Spreiregen (1965), the proper application of urban design elements may be thought of as principles. It means that urban design principles may be applied on urban physical elements.

According to Kumar (2002), there are one or two design principles being consistently applied throughout in Canada to form urban design regulation. Then, the regulation serves to form the physical and visual quality in urban areas. In his research in Canada, he found that there are three principles that influence the urban design regulation, they are: historic preservation, human scale and pedestrian-oriented development, but the regulations depend on the provincial planning statutes. The summary of his research is that urban design principles can influence urban design quality in physical and visual effects. It means that urban design principles may be applied on urban physical elements. Then, the application can influence urban design quality. This relationship may be studied to find which principle influence urban design quality. Kevin Lynch (1960) stated that urban visual quality in the United States focused on a specific visual quality, namely: legibility of the cityscape. The legibility part can be identified and managed to rationalize patterns. Legibility is used to make urban area more easily identified. It means that legibility as a part of sense has a relationship with urban design quality.

More research on urban design principles, urban physical elements and urban design quality were conducted in Europe and The United States of America, very few conducted in Indonesia, especially in Medan city. Rowley (1998) studied about urban design quality in the United Kingdom. Researches by Trip (2007 and 2008) conducted in Netherland focus on diversity that influences urban quality. Clemente et al (2011) made a research on urban design qualities in The United States that involved human scale as an urban design quality indicator. Miles and Song (2009) made researches about connectivity and related it to physical characteristics in urban area. Lynch (1981) studied about sense that is influenced by physical elements in urban area such as building, signage and monument that become an identity of the city. Studies about urban comfortability which can influence urban form and quality were conducted by Kumar (2002) in Canada. Taylor (2009) studied about visual appropriateness of urban area consists of colour, style and texture. Lynch (1960) has studied urban physical elements and divided it into five elements of the image of the city.

From some previous studies about urban design, there are relationships between urban design principles and urban physical elements. Handy et al (2002) argues that scale which is one of urban design principles refers to three dimensional space. It means that scale has a relationship with the space as a physical element. Study about the relationships between urban design principles and physical elements had been done also by Smith et al (1997) and Elshater (2012). Studies on the assessment of urban physical elements were performed by Zhang and Lin (2011) who studied the resident's assessment on visual elements in the suburban community's neighborhood in Taiwan. The objective of the study is to find the perception from the residents

about the visual appropriateness of the physical elements in the study area in terms of colour, texture, ornament, arrangement, etc.

Previous studies have linked urban quality, quality of community or urban design quality with urban design principles and physical elements. Some studies focus only on one or two principles. While in research by Smith et al (1997), they referred to six urban design principles based on theory by Lynch (1981) and physical elements based on some previous researches. A matrix was developed to examine the relationship between urban design principles and urban physical elements and the result found were the strengths and weaknesses relationship between the principles and physical elements. From their research, the physical qualities are connectivity, character and diversity. The social qualities are mobility, livability and personal freedom.

Rowley (1998) studied urban design quality in the United Kingdom where he identified 50 urban design indicators which are grouped into four considerations: functional and social use considerations; natural environment and sustainability considerations; visual considerations; and considerations relating to the quality of the urban experience. Several urban design quality approaches from previous studies are similar, but Rowley's (1998) research scope is more complete.

There are no researches that study urban design principle, physical element and urban design quality completely and simultaneously. Some studies focus on urban design quality, some studies focus on the relationship and application of urban design principles on physical elements and other studies focus on one or two urban design principles and the influence on urban design quality. Therefore, there is a need to

research about application of urban design principles on physical elements and the influence on urban design quality.

1.3 Research Questions

Research questions of this research, are:

1. What are the factors that determine urban design quality?
2. What are the important urban design principles that influence urban design quality?
3. How are urban design principles applied on physical elements
4. How do urban design principles and physical elements influence urban design quality?

1.4 Research Objectives

Research objectives of this research are:

1. To identify the application of urban design principles on physical elements in cities.
2. To analyze the application of urban design principles on physical elements and the influence on urban design quality.

1.5 Research hypotheses

There are six urban design principles that are applied on physical elements and may influence or influenced by urban design quality. The six principles are: diversity, scale, connectivity, sense, comfortability and visual appropriateness. Influence of urban design principles and urban physical elements on urban design

quality is based on previous study stated by some researchers. It will be used to formulate hypotheses of this research. The hypotheses in this research, are:

Hypothesis 1: Diversity is a key element of urban quality (Trip, 2007).

Hypothesis 2: Human scale influences urban design quality (Kumar, 2002; Ewing and Handy, 2009; Clemente, et al, 2011).

Hypothesis 3: Connectivity influences urban design quality (NewUrbanism, 2005; Punter, 2007; Miles and Song, 2009).

Hypothesis 4: Comfortability influences urban design quality (Kumar, 2002; Lenzholzer, 2012).

Hypothesis 5: Visual appropriateness influences urban design quality (Punter, 2007).

Hypothesis 6: Sense depends on urban quality (Lynch, 1981).

1.6 Research Scope

Research scope consists of urban design principles, urban design physical elements and urban design quality. Explanation of each research scope is discussed below:

1. Urban Design Quality

There are few researches about urban design quality that are associated with urban design principles. Previous researches only study urban quality, urban design quality or urban design principle and relate it to physical elements. Cook (1980) in Rowley (1994) and Rowley (1998) studied urban design quality that is divided into four considerations. This research will use considerations of urban design quality based

on Rowley (1998), because his study about urban design quality is more complex. However, the considerations that are related to urban design principles that will be studied in this research are three. The considerations are functional and social use considerations, visual considerations and the quality of the urban experience considerations.

2. Urban design principles

This research will identify urban design principles that are most frequently studied which influence urban design quality in previous studies . There are six principles that have been selected. The principles are: diversity, scale, connectivity, sense, comfortability and visual appropriateness. Each of these principles will be discussed in more detail.

3. Urban physical elements

Some researchers have studied about the urban design elements in urban areas. In urban design there are physical and non physical elements. This research will focus to identify physical elements based on a concept from Kevin Lynch (1960) about the image of the city. They are path, edge, district, node and landmark. Each element will be explained in more detail based on another study about the physical elements in urban areas.

1.7 Research Limitation

This research is about the application of urban design principles on physical elements, and the application will be analyzed to determine its influence on urban design quality. The research was conducted in Medan City. Location of study area

focuses on Merdeka Square and four main streets around the zero points of Medan City which is a central and most highly visited. The observation will be performed before the questionnaire survey is developed by researcher. Then, the calculation of population will be done in the study area. Population for questionnaire survey is visitors who come to the study area for one week from morning until afternoon (work hours), during weekday and weekend, who are walking on a pedestrian walkway. Sample size refers to the formula with a confident level of 5%.

The questionnaire survey will be performed during weekdays and weekend from morning until evening, and selected respondents are visitors who want to participate in this survey. To facilitate respondents in answering the question, researcher will assist the respondents in clarifying questions that were not understood. Then, researcher will conduct a semi-structured interview in BAPPEDA of Medan city (Badan Perencanaan dan Pembangunan Daerah or Urban Planning and Development of Medan city) with the appropriate stakeholders, namely, the Head of BAPPEDA of Medan City and staff of BAPPEDA with planning and architectural background.

1.8 Research Methodology

This research is a correlational research which explains the relationship pattern between two or more variables (Groat and Wang, 2002: 206). The research was conducted using qualitative and quantitative methods and the study area is in Merdeka Square, Medan city, Indonesia. The result from qualitative method can describe and explain the link pattern (Mishler, 1990 in Jabareen, 2006). Quantitative method related to the nominal and the final product is a statistic, a replica and cumulative findings (Vanderstoep and Johnston, 2008: 167). The research methods used are as follows:

1. Qualitative Method

Qualitative method is used to describe the relationship between variables and especially focuses on character and predictive power from each relationship (Groat and Wang, 2002). The technique in this research is conducted by observation and semi-structured interview. The stages in this method are:

a. Develop a matrix, based on literature that is related to urban design principles and urban physical elements. In the matrix, urban design principles are placed horizontally and physical elements vertically. Then the measurement refers to two-point measurement which describes the condition of each principle. 'X' symbol indicates no relationship between urban design principles on urban physical elements.

b. Data collection performed in two ways, namely, observation and semi-structured interview.

- Observation

Observation in study area is performed by referring to aerial view map, photographic documentation and measuring the application of urban design principles on physical elements in the study area by using matrix.

- Semi-Structured Interview

Interview conducted to stakeholders that are relevant to the research. The aim of the interview is to get the conformity with the questionnaire findings about the influence of urban design principles and physical elements on urban design quality.

c. Analyze the result of observation and interview. The observation result will be analyzed with simple arithmetic calculation (similar to research by Smith et al (1997) and Elshater (2012)). The aim of this technique is to find the application of

urban design principles on urban design physical elements. Then, the physical elements and application of urban design principles on physical elements will be shown in the map. An example of the mapping technique is by Kevin Lynch's research about the image of the city in three cities in The United States, Boston, Jersey and Los Angeles (Groat and Wang, 2002). Mapping in this study is used to describe more clearly the physical elements in the study area, which refers to the five elements of the image of city from Kevin Lynch (1960), a path, edge, district, node and landmark. Application of urban design principles on each physical element is marked on the map that have been made. Then, the urban design principles that are applicable on physical elements will be transformed into a question in a questionnaire form. The interview result will be used to support the finding of a questionnaire survey.

2. Quantitative Method

Quantitative method is done by using questionnaires to obtain the statistical result. The objective of this method is to analyze the influence of urban design principles and physical elements on urban design quality. Population and sample are obtained based on previously acquired data. A data collection process was performed in the following ways:

- a. A primary survey conducted with questionnaires is divided into three parts. Part A is about respondent background. Part B is about assessment of the application of urban design principles on physical elements. Part C is about urban design quality. Respondents are visitors who visited the four streets around Merdeka Square, namely: Balaikota Street, Bukit Barisan Street, Stasiun Street and Pulau Pinang Street. Respondents are the pedestrians who use the pedestrian walkway on both sides of the four streets in the study area.

- b. Data and information analysis will be done statistically by using descriptive analysis with SPSS software and Partial Least Square (PLS) analysis with SmartPLS software to find the influence of urban design principles and physical elements on urban design quality.

1.9 Significance of The Research

This research will use a matrix model to find application of urban design principles on urban physical elements by qualitative method. Then, survey with questionnaire will be performed to measure urban design quality by quantitative method. This research will examine the urban design quality based on the considerations from Rowley (1998). Urban design principles and physical elements are selected from several previous studies. From previous studies, there are six urban design principles that are most frequently studied in urban design context. The six urban design principles which have been selected, are: diversity, scale, connectivity, sense, comfortability and visual appropriateness. Each principle will be explained in more detail. The physical elements that will be studied are the five elements as disclosed by Lynch (1960).

This research will develop a framework in a matrix form that links between urban design principles and physical elements. The matrix will be used to examine the application of urban design principles on physical elements with observation technique. The result of the matrix is used in two ways, first to find the application of urban design principles on physical elements, second to provide questions for survey with questionnaire form. A questionnaire will be developed and the questions about the application of urban design principles on physical elements are based on the matrix result and previous research. Whereas the questions about urban design

quality will refer to the previous research about urban design quality. The aim of the questionnaire result is to find the influence of urban design principles and physical elements on urban design quality using quantitative method.

Research findings are expected to give contribution to urban design knowledge. This research will develop two new models to measure urban design quality. First, matrix models to measure application of urban design principles on urban physical elements. Second, model of the influence of application of urban design principles on urban physical elements on urban design quality. This research will develop a new method to measure urban design quality by qualitative and quantitative method to obtain the research objectives. This research will give contribution on urban design knowledge and practical field. The result of this research will be applicable to other study areas, such as, housing area, suburb, Central Business District, etc.

1.10 Structure of Thesis

This thesis has several chapters. Chapter 1 discusses problem statement, research questions, research objectives, research scope, research limitation, research methodology and the overview of the following chapters.

Chapter 2 discusses literature review, namely theory and previous studies about the urban design quality, urban design, urban design principles and urban design physical elements. This chapter also discusses the relationship between urban design principles, urban design physical elements and urban design quality, theoretical framework and conceptual framework.

Chapter 3 discusses the methodology, research process that explains the research method used, research framework, data and data collection technique including population and sample, pilot test and pre test, data distribution and analytical tool.

Chapter 4 discusses the reasons for the study area selection including Medan City background, history of Medan City, Medan City structure plan and background of study area.

Chapter 5 discusses the analysis of the data that have been collected by observation, findings about the influence of urban design principles and physical elements on urban design quality which was analyzed with statistical analysis and findings from semi-structured interview.

Chapter 6 discusses conclusion on all of the research findings, contribution for knowledge and recommendation for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter will discuss urban design, urban design quality, urban design principles, physical elements and the relationship between urban design principles, physical elements and urban design quality. The urban design field has gained attention at the present time. Various disciplines influence urban design field, such as architecture, urban planning, landscape planning, economic, social and environmental planning. Urban design not only focuses on physical problems, but also on non-physical problems. Urban design quality will be studied in more detail to find factors which can determine the quality of city. The urban design principles and physical elements will also be discussed in more detail.

2.2 Urban Design

2.2.1 Definition

Urban design is a profession between architecture and urban planning field (Koray, 1999; Urban Design Guideline of Baton Rouge City, USA, 2009) and landscape architecture field (Kashef, 2008). Urban design is a practical art and become essentially aesthetics in an urban environment (Taylor, 1999). Urban design has an important contribution in the making of a city and become an effective tool which can be used to develop place-based vision and strategy (Madanipour A., 2006). Urban design is based on multidisciplinary knowledge. According to Trieb/Markelin (1976) in Poerbo (2001), urban design is a field of expertise that

exists where city planners were ignoring the physical form of the city. Since 1930s, city planners have focused on social problems, not physical nature.

Urban design teaching is generally regarded as the additional knowledge of various design fields (Kreditor, 1990 in Kashef, 2008). Teaching and research in urban design is built with the agreement between the technical guidelines and development issues (Madanipour, 1996 in Kashef, 2008). The urban design field not only studies about the physical form aspects, but also perceives non physical aspects such as social, economy and politics.

Based on Webster (2010), urban design had existed since the Renaissance era and had various scales, such as an individual site, road, neighborhood and overall urban infrastructure project. Urban design becomes an important issue because of its greater benefits. Based on Greed and Robert (1998), urban design study is offered in universities and is related to urban physical forms, buildings and a space between them. Study about urban design describes the relationship between urban physical form and product of the social strength. Physical character focus on public circumstances and associates with interaction between public and private development and affects urban form. In research by Handy et al (2002), “Urban design” usually refers to the design of city and physical elements within it, including both their arrangement and appearance, and concern with the function and appeal of public spaces.

In urban design, the profession such as architects, civil engineers, physical planners, public artists and others, contributes to design the physical form of people settlement. Urban design described as a teaching of built environment design disciplines help realize the public and individual needs in urban area. Urban design

produces and shapes space in several activities and also known as the human production of space (Childs, 2010). Urban design is not regarded as a profession and not an academic discipline. There is a trend to incorporate urban design as a boundary between architecture, urban planning or the difference between them (Koray, 1999). Many urban design theories assign urban design as an addition of architecture, planning or among them.

Based on Planning commission (2009) about urban design guideline of Baton Rouge City in USA, urban design is the discipline through which planning and architecture can create or renew a sense of local pride and identity. It can enhance the visual image and quality of neighborhoods by providing a three-dimensional physical form to policies described in a comprehensive plan. Urban design plans generally used for specific project and short time.

Based on Poerbo (2001), urban design can be divided into urban design process, urban design products, aspects that must be considered in urban design and the characteristics of urban design. Urban design products consist of landscape, buildings, street furniture, procedures of physical objects and human activity that form the environment. Urban design aspects can be divided into three-dimensional and non-visual aspect (social, politics, economy and others). In Boyko, et al (2006), urban design process is developed into four stages and each stage has a transition stage. Stage one is creating teams, appraising the situation and forming goals, with transition stage of continuing to understand the context. Stage two is designing and developing with transition stage of continuing to think about alternatives. Stage three is evaluating, selecting and creating a plan with transition stage of re-creating a plan. Stage four is implementing, monitoring and following up with transition stage of

continuing the process. In Kozlowski and Huston (2008), urban design master plan is important and good urban design normally include heterogeneous mixed-income communities in development. Innovative and sustainable urban design may reduce relative price falls of property.

According to Behzadfar and Saneei (2012) in urban design context there are morphological dimension, social dimension, visual dimension, functional dimension and temporal dimension. The morphological dimension is related to layout and the arrangement of urban form and space such as land uses, building structures, street pattern, physical and visual permeability, visual aesthetics and proportion. The social dimensions are security, safety, identity and social justice. The visual dimensions are aesthetic and visual proportion. The functional dimensions are resilience, vitality, security, hierarchy and diversity. Then the temporal dimensions are identity, sense of place and personalization.

Based on Elshater (2012), the urban design dimension is divided into six: perceptual dimension, functional dimension, morphological dimension, temporal dimension, behavioral settings and environmental dimension. The perceptual dimension consists of visual quality, legibility and identity, beautiful image, meaning and urban aesthetics. The functional dimension namely place, community, context and permeability. The morphological dimensions are a spatial form generation and spatial hierarchy. The temporal dimension is a sequential movement.

Carmona et al (2003) in Kashef (2008), divided urban design into three approaches that have been widely recognized in the architectural literature. They are:

1. The visual-artistic that developed an understanding of perceptual and psychological aspect in urban areas.
2. The socio-spatial or social usage approach emphasized historical, typological, social and morphological aspect.
3. The holistic approach to the activity concerned with creating livable/sustainable built environments.

From previous studies, urban design field involves several professions such as architect, urban planner, landscape architect, economist, social expert and author. Urban design focuses on physical and nonphysical aspects. Based on Poerbo's (2001) study, physical aspects are related to three-dimensional form in urban area and non physical aspects are related to social, economic and environment. The urban design plan is used to design urban area and will be different from one area to another.

2.3 Urban Design Quality

Quality indicates the specific emotional and human intellectual effect, that can be acquired from the formal qualities, functional qualities or quality of meaning (Khademi and Rafieijozm, 2009: 85 and Ablaghi and Poorjafari, 2007 in Behzadfar and Saneei, 2012). The definitions of quality can be divided into three dimensions, namely the quality that refers to excellent level of something, the notion of a benchmark that reflects excellence and the characteristics or features of something (Carmona and Sieh, 2004). The quality in urban design that will be studied in this research is associated with the characteristics of urban design principles and physical elements. According to Lehman and Fryd (2008), urban quality development and

management has linkage between practice (business, civil, society and governance) and theory (research and education).

Urban quality is often associated with urban design quality and urban environmental quality. Based on Parfect and Power (1997, p. 135) in Chapman and Larkham (1999), the essential element in urban environmental quality can not be readily measured or identified, because it can be a combination of ‘sense of place’ factors such as legibility, collective memory and historical continuum issues, include inclusiveness and diversity. Inclusiveness is consistently promoted as a feature of quality of the built environment (Kitchen and Schneider, 2002; Barton et al., 2003; Burton and Mitchell, 2006; Lock, 2003 in Dempsey, 2008). This suggests that there is a link between urban design quality and urban design principle, namely sense, inclusiveness and diversity.

Urban design quality focuses on urban ambience, including thermal and microclimate comfort, which is obtained from perception of observer or people about relationship between urban form, people’s activities and normal phenomena (Dupagne and Hégron, 2002 in Osmond, 2005). Urban design quality consists of physical entities, activities and the perception of the environment. Clear spatial-physical characteristics are important to create environmental quality (Pakzad, 2007 in Behzadfar and Saneei, 2012). Urban design quality is important to create a better place for people (Behzadfar and Saneei, 2012). According to Tibbalds et al (1993) in Chapman and Larkham (1999), there are eight urban environmental quality in London city, which are: human scale and compactness; structure, legibility and identity; cleanliness and safety; urban management; visual richness; activity and mixed use; public space and special space; and movement and pedestrian

friendliness. Visual attractiveness as the environment characteristics have a positive impact on quality of life and resident satisfaction in an area (Cullen, 1961; Howard, 1898; Taylor, 1998; Abercrombie, [1933] 1998) in Dempsey, 2008).

In a study by Wey (2011), about the built environment design elements for urban renewal, the urban design criteria can be divided into physical dimension and non-physical (psychological) dimension. The physical dimensions are traditional neighborhood structure, street scale, green transportation, open space, connectivity and quality architecture. While non-physical dimensions are aesthetic qualities, pedestrian walkability and sustainability. His study links between urban design criteria and urban design dimension namely, land and architecture use planning; traffic and parking space planning; open space and planting design standard; and urban renewal unit planning and design zoning bonus standard. The relationship between urban design criteria as a need of citizen and urban design dimension as alternative technical requirements is developed in the matrix model. The objective of the model is to find the relationship between urban planning, urban design principles and the built environment in the urban renewal area.

Based on Jenks and Burgess (2000), urban area may have a problem. Urban area that has high densities will generate greater viability for public transport, service provision, healthcare and education. According to Jones (2000), large cities in developing countries have similar development with most cities in developed countries. However, there are some differences, namely income structure and scale of change.

Based on Zaman, Lau and Mei (2000), local context is related to sustainability in urban area. According to Dempsey, et al (2011), sustainable communities are places

where people want to live and work, for now and future. Sustainable community relates to social interaction, participation in the community, community stability, sense of place and safety and security. Based on Burgess (2000), sustainable urban development can be realized by applying compact city concepts. Cultural factors influence sustainable urban development and will vary between developing countries. Based on Jenks and Burgess (2000), intensification of low-density areas and good public transportation are important to achieve sustainable development.

According to Dieleman and Wegener (2004), urban sprawl is related to land use and transport (also related to mobility of households). There are eight dimensions of urban sprawl, namely: density, continuity, concentration, clustering, centrality, 'nuclearity, mixed uses and proximity. Urban sprawl may cause the loss of open space, increasing travel distance and declining inner cities. Based on Kyvelou and Filho (2006), management and urban space quality are contributed by urban expansion and lifestyles change. Urban architectures and development should refer to the climate. Sustainable architecture may reduce the problem that is relate to climate on the building, such as reducing heat loss by good organization of space and others.

In a research by Punter (2011) about urban design and the English urban Renaissance, there are four groups of English urban livability indicators and trends, namely environmental quality, place quality in physical aspects, place quality in functional aspects and safer places. The environmental quality consists of noisier-quieter, dirtier-cleaner, more or less congested and better or worse by building quality. Place quality in physical aspects consists of qualities of the built environment product, levels of abandoned land, quality of parks, and quality of the public realm. Place quality in functional aspects are pedestrian quality, public transport quality and vitality and survival of services. Safer places are divided into

crime level and anti-social habit. The measurement uses five keys, namely poor or worsening trend, good or improving, unclear trend, unable to make an assessment and insufficient data. The summary of his research is that quality of place will increase if the cleanliness of air, street and open space has improved. The urban design quality is important to make a better place and sustainable development.

The criteria for urban environment quality are accessibility, transportation (including mobility, safety and protection of pedestrian by separating lines for pedestrian and vehicle), good waste and pollution management and design that considers micro climate (Blumenfeld, 1969). There are an important entities to get a good architecture concept, namely order, unity, balance, symmetry, scale, proportion, rhythm, contrast and harmony. This concept can be used to analyze the aesthetic quality of urban form (Moughtin, 1992). From the human's perspective, livability and quality of place are cohesive to the environment (Pacione, 2003 in Kamp et al, 2003). The measurement of quality does not depend on the object, but refer to the perception of the people about the object. It means different culture and habit can affect different perception on urban design quality (Kamp et al., 2003).

According to Li (2010), the community environmental quality is divided into the community material ecological environment and the community humanistic environment. The community material ecological environment consists of natural ecological resources such as river, old trees and the like, and the man-made ecological resources such as building view, building forms and colour. The humanistic environment quality relates to science, culture and arts. This quality can strengthen the sense of assumption of environment quality. Based on Jivén and Larkham (2003), the quality of the environment can describe the atmosphere of a

place. The intangible quality can influence the experience and reaction to a place. The identity of groups is related to the form and history of a place that can produce a sense of place.

According to Beatley (2000), principles of New Urbanism and sustainable communities are almost the same. New Urbanism projects tend to reduce ecological impacts and promote an ecologically sustainable lifestyle. Conserving land, other resources and sustainable lifestyles can influence qualities in cities that create highly livable and interesting urban spaces. While, in Conroy and Beatley (2007), the quality of cities can make the cities become popular and livable, not just suitable to live but for doing business also. Based on Ouf A. (2008), the urban heritage can influence urban quality. Physical disregard of urban heritage can decrease urban quality. Upgrading urban life cycle to be more economically and socially functional may increase the urban quality. It shows that urban heritage has a relationship to urban quality.

According to Whitehead et al (2006), the improvements of urban quality can affect business location choices. There are two characteristics of urban quality, namely physical and social characteristics. Components of urban quality that affect a business location are urban quality characteristic in physical and social aspect, such as pedestrianisation, public realm, urban land-use, urban transport, public transport accessibility, local air quality, landscape, townscape, heritage and the like. Their research focused on the improvements of pedestrianisation and public transport that can affect the business location from three points of view, namely for shoppers, workers and business. In Zhang and Guldman (2010), environmental quality is important and being a main factor to make a location decision for households and