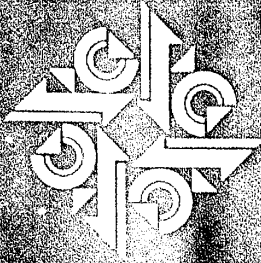


ISBN: 978-979-98815-7-1



3rd BIENNALE ICIAP 2016

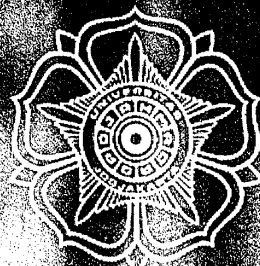
International Conference on
Indonesian Architecture and Planning

“Inclusive Space, Enriching Culture”

Proceeding

Yogyakarta, August 11th - 12th 2016

Organized by Department of Architecture and Planning,
Faculty of Engineering, Gadjah Mada University.



**The 3rd BIENNALE INTERNATIONAL CONFERENCE ON
INDONESIAN ARCHITECTURE AND PLANNING**

Proceedings of the international conference held in Yogyakarta
between 11-12 of August 2016

Editors : Deva Fosterharoldas Swasto, ST., M.Sc., Ph.D., Isti Hidayati, ST., M.Sc

First Edition | 35 copies, August 2016

21 x 29,7 cm; 458 pages

ISBN: 978-979-98815-7-1

All rights reserved.

Published by Department of Architecture and Planning, Faculty of Engineering,
Gadjah Mada University

Apart from brief citations with reference, this publication may not be reproduced by any means without the
permission of the publisher.

Authors are responsible for the quality of the language in their papers.

Organizing Committee

East Wing Building Department of Architecture and Planning
Jalan Grafika No.2 Kampus UGM Yogyakarta 55281 INDONESIA
Phone : +62 274 580092
Fax : +62 274 580583
Email : iciap-ugm@archiplan.ugm.ac.id

3rd Biennale

ICIAP

International Conference on Indonesian Architecture and Planning

Inclusive Space, Enriching Culture

Yogyakarta, Indonesia

August 11-12, 2016

Steering Committee

Prof. Ir. Bakti Setiawan, MA, Ph.D.
Dr. Ir. Laretna T Adhisakti, M.Arch.
Dr. Ir. Achmad Sarwadi, M.Eng
Ir. Ikaputra, M.Eng, Ph.D
M. Sani Roychansyah, ST, M.Eng, D.Eng
Ardhya Nareswari, ST., MT., Ph.D

Scientific Committee

Prof. Ir. Bakti Setiawan, MA, Ph.D
Assoc. Prof. Dr. Shaheed Khan (Curtin University)
Dr. Hélène Njoto (Nalanda-Sriwijaya Center, ISEAS-Yusof Ishak Institute)
Dr. Ir. Laretna T Adhisakti, M.Arch.
Dr. Ir. Achmad Sarwadi, M.Eng
Ir. Ikaputra, M.Eng, Ph.D
M. Sani Roychansyah, ST, M.Eng, D.Eng
Ardhya Nareswari, ST., MT., Ph.D

Organizing Committee

Syam Rachma Marcillia, ST., M.Eng., Ph.D
Deva Fosterharoldas Swasto, ST., M.Sc, Ph.D
Isti Hidayati, ST., M.Sc
Widyasari Her Nugrahandika, ST., M.Sc

Student Assistant

Sita Rahmani, S.T.
Hana Pertiwi
Fadhila Nur Latifa Sani
Putu Sri Ronita Dewi
Diajeng Dwi Putri
Desta Fatika
Adelheid Pasau Tandipayuk
Ajeng Paramastri Santika

FOREWORD

It is with deep satisfaction that I write this Foreword to the Proceedings of the 3rd Biennale ICIAP 2016 (International Conference on Indonesian Architecture and Planning), held in Yogyakarta, Indonesia, 11-12 August 2016.

The high quality of the papers represent the thinking and experience of men and women experts in their particular fields. Their contributions helped to make the Conference as very important scientific event as it has been. The papers contributed the most recent scientific knowledge known in the field of Indonesian architecture and planning. I trust that this will be an impetus to stimulate further study and research in this area.

Thanks to the hard work in preparation and publicity on the part of the organizing committee, we have received over 100 submissions from Indonesia and other countries, such as Japan, India, Austria, and Australia. Manuscripts selected for presentation and publication in the ICIAP 2016 are subjected to a blind review by ICIAP Reviewer Board with the expertise in the field of architecture and planning. As readers may discover, the submissions covers wide array of architecture and planning subjects, in conjunction with the theme of ICIAP 2016, "Inclusive Space, Enriching Culture". I believe that this Proceedings will provide and stimulate further study and research in Indonesian architecture and planning.

Finally, I would like to take this opportunity to say my gratitude to all reviewers, as well as great numbers of staffs, faculties, and student volunteers at the Department of Architecture and Planning, Faculty of Engineering, Universitas Gadjah Mada – Indonesia, for the invaluable efforts, continuous assistance and support.

Dr. Ir. Ahmad Sarwadi, M.Eng
Head of Department Architecture and Planning, Faculty of Engineering,
Universitas Gadjah Mada

INTRODUCTION

This third International Conference on Indonesia Architecture and Planning (ICIAP) is part of a biennale international program at the Department of Architecture and Planning, Faculty of Engineering, Universitas Gadjah Mada. With the focus on the field of architecture and planning subject/discourse in Indonesia, the conference is expected to be able to capture ideas, concepts, methods, or practices that evolve continuously in this field.

We have had two Conferences before, the first ICIAP in 2012 was bringing the theme of "Better Space Better Living", while the second ICIAP in 2014 with theme "Space for The Next Generation". After the successful biennale holds in 2012 and 2014, ICIAP 2016 comes with the main theme of "Inclusive Space, Enriching Culture". Space is believed to be inclusive for all living beings and therefore, in designing and creating space, we need a holistic and dialectic understanding on how culture and pluralism shapes space. ICIAP 2016 aims at bringing together science, research, and practice of how to integrate inclusive idea and culture in Indonesian architecture and planning. It has a specific goal in finding the amalgamation of how to define, design, plan, and create an inclusive space for all, thus enriching the very diverse of Indonesian culture and heritage.

In this third ICIAP, the conference offers main plenary session, panel discussions, and excursion to various architectural and heritage sites. We also had the opportunity to invite ten keynote speakers coming from diverse cultural background that come to share their specialties and experience from broader multi-dimensional aspects of these issues. This year, we had received over 100 abstracts or full papers that have been submitted to the conference. After the screening process, there are 53 papers that have been reviewed and eligible to participate in this event. From various perspectives, these papers have been grouped in several contexts, such as design, urban, traditional and contemporary architecture, educational, socio-cultural, history-heritage, disaster resilient, and green environment contexts.

Finally on behalf of the organizing committee, I would like to thank everyone, especially all the faculties, staffs, students, as well as the study programs at the Department of Architecture and Planning Faculty of Engineering, Universitas Gadjah Mada for supporting our efforts in many ways and with positive participations. And also the members of the scientific and all organizing committee colleagues of the Conference for all the hard works and supports. We are also indebted to all of speakers who have dedicated time to share their invaluable knowledge in this forum and to the entire participants of ICIAP, from the authors, the presenters, as well as the observers who have been during two days conference gave a positive academic atmosphere through related discussions.

Syam Rachma Marcillia, S.T., M.Eng., PhD
Chairperson Organizing Committee of ICIAP 2016

CONTENTS

Foreword

Dr. Ir. Ahmad Sarwadi, M.Eng	iv
Head of Department Architecture and Planning, Faculty of Engineering, Universitas Gadjah Mada	

Introduction

Syam Rachma Marcilia, S.T., M.Eng., Ph.D	v
Chairperson Organizing Committee of ICIAP 2016	

SPEAKERS

A Tale of Two Chinatowns: Expressing Spatial Identity of Ethnic Clusters in Greater Tokyo	2
Shahed Khan	
Plenary Session 1 Note	13
The Architecture of the Affandi Museum: Approaches to a Piece of Art	18
Ulrike Herbig	
Plenary Session 2 Note	28
Plenary Session 3 Note	31

URBAN CONTEXT

Water Bodies in the Urban Environment: a Scale Model Experimental Study	36
Nedyomukti Imam Syafii, Masayuki Ichinose, Wong Nyuk Hien, Steve Kardinal Jusuf, Eiko Kumakura, Kohei Chigusa	
The Usage of Urban Spaces in the Musi Riverside Settlement: Interaction between People Activities and Physical Environment	42
Tutur Lussetyowati, Edy Sutriyono, Ridhah Taqwa, Widya Fransiska FA	
The Formation of Urban Identity of Seturan, Yogyakarta	47
Hana Afifah, Retno Widodo D. Pramono	
Islamic Boarding School District And Its Spatial Interactions in Yogyakarta Urban Fringe Area	54
Benindya Azizza Kartikakirana, M. Sani Roychansyah, Didik Kristiadi	

The Optimal Growth of Shopping Mall in Yogyakarta <i>Rita Aprilia, Winda Widiada, E. Pratiwi</i>	61
Combining the Activity-Space Pattern with Dwellers Perception to Explore the Sense of Place of an Urban Kampung <i>Inayad Adhi Waskita Utama</i>	66
Parallel Session 1 Note Urban Context	80

ENVIRONMENTAL AND GREEN CONTEXT

Urban Farming for Housing Middle and High in the City, is Accurate as the Element Eco Green Settlement ,Today? <i>W Uniek Praptiningrum</i>	86
Placemaking Approach to Vitalize Urban Parks in North Bandung <i>Saiful Anwar, Annisa Safira Riska, Indah Widiastuti</i>	93
The Potential of Urban Vacant Land for Producing Fresh Vegetables in the City of Maribyrnong, Victoria, Australia <i>Sri Tuntung Pandangwati, Ole Fryd</i>	98
The Landscape Open Space Arrangement of Industrial Estates in Gresik <i>Deasy Tuffahati, Bambang Soemardiono, Haryo Sulistyarso</i>	110
Characteristic of Livable Campus Open Space Case Study: Gajah Mada University <i>Dwiyani Kumala Hapsari, Ardhya Nareswari, Ismudiyanto</i>	115
Potential Assessment of Coastal Tourism Area Based on Integrated Coastal Zone Management (ICZM) Approach, Case Study: <i>Sendang Biru Beach</i> <i>Arina Marta Setya Putri, Bambang Soemardiono, Haryo Sulistyarso</i>	126
Parallel Session 1 Note Environmental and Green Context	131
Green Assessment of IEQ for Healthcare Facility in Tropic Region: A Case of Thai Hospital <i>Sutida Sattayakorn, Masayuki Ichinose</i>	135
Recurring Embodied Energy in Life Cycle Building (Case Study: Wall Component in Apartment Building) <i>Sri Novianthi Pratiwi</i>	143
Light Environment and Actual Energy Consumption due to Color Temperature of LED Lighting with Daylighting System <i>Rupa Iketari, Masayuki Ichinose, Akiniro Yoshizawa, Larasuke Tundo, Syoko Arakawa</i>	148

Thermal Environment of the Marathon Course Area at the 2020 Tokyo Olympics Eiko Goto, Yua Sueka Yamada, Nobuyuki Shimizu, Kazuo Nakajima	154
Observational Study on TSV and Thermal Comfort in Office Building of Vietnam Enko Tokuda, Masayuki Ichinose, Nguyen Dong Giang, Rumiko Sasaki	160
The role of openings in the Balai Padang House in Loksado, South Kalimantan Rahmayanti, Ima Defiana, I Gusti Ngurah Antaryama	165
Parallel Session 2 Note Environmental and Green Context	170

ENVIRONMENTAL BEHAVIOUR

Is Teras Cikapundung an Inclusive Space? Nurtati Soewarno, Eka Viridianti	174
The Usage of Retail dan Circulation Spaces in Pasar Beringharjo, Yogyakarta Emmelia Tricia Herliana	178
Street Space and Informality: Towards an Inclusive Community Jimly Al Faraby	191
Study of Pedestrian-friendly Environment in Indonesia Ristya Arinta Safitri	199
Urban Compactness Effects to the Inefficiency Trips in Yogyakarta City, Case Study: Danurejan and Umbulharjo District Lanthika Atianta, M. Sani Roychansyah	205
Parallel Session 1 Note Environmental Behaviour	211

DISASTER RESILIENT

Coping Capacity Index in the Concept of Indonesia Disaster Resilient City: Yogyakarta and Banda Aceh M.A. Marfai, F.K. Shafarani, M.N. Malawani, Suriadi	216
Inclusive Space Interventions to Built Health Environment by Modular Design Ergonomics in Urban Pedestrian focusing on Digital Games as driven Simulation-Walk, A Case of Business District Sudirman until Railways Station Dukuh, Jakarta – Indonesia Nur Istiforini Handayani	221

Community Preparedness on Flood Disaster Prevention in Yogyakarta Ardhya Nareswari	228
Globalization, Growth, Resilience Doddy Adhitya Iskandar	235
Instant Home Packages in Case of Emergency Medy Krisnany S	245
Parallel Session 2 Note Disaster Resilient	253

SOCIO CULTURAL

Study On The Possibility Of Organizational Cooperation Among Building Technical Stakeholders In Bangladesh Rumiko Sasaki, Tsuyoshi Seike, Yongsun Kim	258
Profile of Scavenger Settlement in Lebak Bulus- South Jakarta Tin Budi Utami, Budi Susetyo	262
Public Housing as a Common Space for Its Surrounding: Case of Walk-up Flats in Bantul Regency Deva Fosterharoldas Swasto	270
Parallel Session 3 Note Socio Cultural	278

TRADITIONAL AND CONTEMPORARY ARCHITECTURE

Nahdlatul Ulama's Principle of Dynamic Tradition and Pluralistic Formal Expressions of Nahdliyyin Mosques in Malang, East Java Yulia Eka Putri	282
A Characteristic Study on the Designs and Materials of Talang Mamak Tribe Gun Faisal, Dimas Wihardiyanto	289
Reconstructing Local Architecture: A Field of Today's Contestation in Architecture Yohannes Firzal	296
Behavior and Process of Settling of Kaili Da'a Ethnic At Hamlet of Lekatu, Palu City, Central Sulawesi Zulfitriah Masiming, Soegiono Soetomo, Titien Woro Murtini	301
Omah Dudur in Urut Sewu Region, Grabag, Purworejo, Indonesia Satrio HB Wibowo, Sudaryono, E. Pradipto	308
Parallel Session 3 Note Traditional and Contemporary Architecture	317

HISTORICAL AND HERITAGE CONTEXT

Karsten's Work in Architectural Conservation of Semarang Albertus Sidharta Amijadnan	322
Coastal City of Semarang; From Maritime City into Sustainable City Krisprantono	329
The Meaning of Representation in Local Architectural Elements: The Case of Kraton Yogyakarta Ami Arfianti, Josef Prijotomo, Purwanita Setijanti	335
Implementation Quality Improvement Program in Urban Settlement (P2KP) in Kota Tua Conservation Sub-Area, Kampung Luar Batang Harfa Iskandaria, Karya Subagya	340
The Influence Activities of Traditional Market 'Gang Baru' in the Use of Public Space in Semarang Chinatown Rina Kurniati, Fiton Dwi Setiawan	347
Pathok Negara Yogyakarta as a Cultural Landscape Dwita Hadi Rahmi	356
Parallel Session 3 Note Historical and Heritage Context	362

EDUCATIONAL CONTEXT

The Application of Rapid Visual Analysis (RVS) in the Architectural Design Process as Support Disaster Resilient in Indonesia Livian Teddy, Gagoek Hardiman, Nuroji	368
The Cost and Benefits of Public Open Space (POS): an Evaluation on Yogyakarta's POS Investment Program Pramudita Kumala Ardianti, Retno Widodo D. Pramono	374
The Uncertainty of Interest Rate Variation in Mixed-Use Building NPV Valuation Analysis Eva Evita Chatharina Josephine, Irawan Tani	382
Inter-Actor Collaboration and Innovation Policy for Low Tech Industry: the Case of Batik Industry in Pekalongan Nimas Maringgar, Delik Hudalah	391

Study on Criteria of Essential Facilities in an Alternative Workplace using Factor Analysis Farzan Afli Agimjuma	399
--	-----

Parallel Session 3 Note Educational Context	403
---	-----

UNPRESENTED PAPER

Alun-alun Yogyakarta: A Representative of Sustainable 'Local South' Public Space Which Is Influenced by Westernization' Wahidah Kurniawati	406
The Prospect of Rumah Dome Rural Tourism as Disaster Edutourism Safira Aulia, Widyasari Her Nugrahandika	412
Art and Tourism Role on Kampung Kreatif (Creative Village) Case Study: Kampung Kreatif Dago Pojok, Bandung Stefani Natalia Sabatini, Indah Widiastuti	420
Urban Design Guidelines for Traditional Settlement on Swampy Area A Case Study of Asmat Regency Capital Masterplan, Papua, Indonesia Adi Utomo Hatmoko	426
Changes of Local Settlement Areas based on Local Community Activities Pingkan Peggy Egam, Michael M. Rengkung	432
The Concept of Preservation of Traditional Settlement in Benteng Keraton Wolio Arca (Subdistrict of Murhum, Baubau City) Mimi Arifin, Shirly Wunas, Wa Ode Ramlah Rilani	438

The Usage of Retail and Circulation Spaces in Pasar Beringharjo Yogyakarta

Emmelia Tricia Herliana^{*1}

¹ Lecturer, Program Studi Arsitektur, Fakultas Teknik, Universitas Atma Jaya Yogyakarta

Abstract

Pasar Beringharjo has been a prominently traditional market in Yogyakarta which not only provides daily needs, but also becomes a standard for economic growth in the city of Yogyakarta and a destination for tourism, whether for domestic and international visitors. Retail activities include social and cultural interaction which is related to the culture of Yogyakarta. This research aims to compare dimension of retail and circulation spaces related to the usage of spaces and standard dimension of retail spaces (Panero & Zelnik, 1979; Neufert, 1992; and De Chiara & Crosbie, 2001). According to the research (Herliana, 2015), it has been said that 60 per cent on the usage of retail spaces and 76 per cent circulation spaces have still not conformed with the standard dimension of retail spaces and circulation spaces. The result derived from comparative analysis method between utility pattern of retail and circulation spaces based on six main variables which include dimension of activity zone for sellers, dimension of circulation zone, dimension of shelves, dimension of two ways-display wardrobes, dimension of counter tables, and dimension of hanging merchandises. There is a common behaviour for sellers to display their commodities in all spaces they have in their retail spaces, so that they don't have a space for counter tables. Sellers also use circulation spaces to store the stocks of commodities or sitting in circulation space while offering the merchandises. Sometimes, sellers also sit in low-height-benches while offering their stuffs. However, this phenomenon attracts visitors because it gives a traditional atmosphere.

Keywords: Retail spaces, circulation spaces, standard dimension of retail spaces and circulation spaces.

INTRODUCTION

The proliferation of a city closely related to the economic activities generated by traditional market. In a former Javanese cities, a traditional market as a center for economic activity was an important element which became a whole entity with an open space called 'alun-alun' as a public space, a mosque as a religious center, and a palace as a center of power that had formed a traditional city. Traditional market has a significant role in the city growth as a center of trading for commodity or public service which can stimulate the development of a city. It becomes a place for the exchange of commodities and the exchange of information and knowledge.

The significance of Pasar Beringharjo as a research object is based on the thought that it is a unique cultural setting related to: [1] the history, culture, cosmology, and the structure of Yogyakarta; [2] the role as a center of trading; and [3] a unique character which signify shopping tourism activities surround Malioboro Street and cultural tourism in The Palace of Ngayogyakarta Hadiningrat.

Although there are shopping centers that use latest strategy of displays, such as Malioboro Mall, Galeria, Ambarukmo Plaza, Hartono Mall, etc., but Pasar Beringharjo still attracts visitors to come. The crowds of visitors are often seen in Pasar Beringharjo, particularly in weekends and holidays. Everyday there is crowds of people in the circulation space, particularly at retail spaces which sell batik fabric. Visitors can not choose the stuffs that they want easily because the spaces for them to move are limited. In many cases, there are not enough spaces to display the commodities in retail spaces because the sellers do not have specific storage places, so that they keep stock of commodities also in the retail spaces and use part of circulation spaces to store their stock of commodities. Consequently, visitors are in crowds and have difficulties to see and choose the stuffs.

Based on literature survey, there are four titles of recent research which discuss the trading activity in Pasar Beringharjo, but the research which focuses on the dimension usage of retail and circulation spaces has not yet found. Sari (2009) focused her research on the characteristic of trading activity and the strategy of marketing, which concluded the system of space arrangement based on commodities and the types of marketing strategy based on the characteristic of consumers. Before conducting this research, the

*Corresponding author: Emmelia Tricia Herliana
Lecturer, Program Studi Arsitektur, Fakultas Teknik, Universitas
Atma Jaya Yogyakarta
e-mail: emmelia_tricia@mail.uajy.ac.id

writer had done the research on the elements of urban space structure in Yogyakarta which supports the function of traditional market of Beringharjo (Octavia&Herliana, 2014a:327-348). Afterwards, the writer also conducts a research on a cultural concept (Herliana, 2014b) and Javanese culture (Herliana, 2014c) which were reflected on the activity of trading in Pasar Beringharjo.

This research aims to observe the usage of retail and circulation spaces in Pasar Beringharjo Yogyakarta and compare the standard dimension of retail spaces design (Panero & Zelnik, 1979; Neufert, 1992; and De Chiara & Crosbie, 2001) with the actual dimension used in the retail and circulation spaces in Pasar Beringharjo based on six main variables which include dimension of activity zone for sellers, dimension of circulation zone, dimension of shelves, dimension of two ways-display wardrobes, dimension of counter tables, and dimension of hanging merchandises.

METHOD

Research on the usage of retail and circulation spaces in Pasar Beringharjo Yogyakarta uses comparative method, by comparing design criteria on standard dimension of retail spaces mentioned by Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001) and retail and circulation spaces used in Pasar Beringharjo Yogyakarta.

Figure 1 reveals the research framework, includes determining the research object, background (significance of research object, issues, and theoretical preferences), problem statement, and the objectives. Research method includes preparation phase, data collecting phase, analysis phase, and conclusion phase, which can be seen in Figure 2.

Preparation Phase

This phase includes: [1] determine topic of research, that is "The Usage of Spaces in Pasar Beringharjo Yogyakarta" and title, that is The Usage of Retail and Circulation Spaces in Pasar Beringharjo Yogyakarta; and [2] arrange for the permission from The Municipality of Yogyakarta and The Market Management Office of Pasar Beringharjo Yogyakarta to obtain data.

Data Collecting Phase

In this phase, it is necessary to comprehend the whole actual condition of Pasar Beringharjo by understanding general condition of Pasar Beringharjo and understanding the usage of spaces in Pasar Beringharjo through learning the history of Yogyakarta, in general, and the history of Pasar Beringharjo, specifically, and through understanding and observation of the division of space utilization in Pasar Beringharjo Yogyakarta.

Method of data collecting are literature study, survey, and exploration of the information from The Market

Management Office of Pasar Beringharjo Yogyakarta. Literature study uses related references, particularly design criteria for standard dimension of retail spaces mentioned by Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001). Survey has done by observation, photos documentation, dan sketches of the usage of spaces and measurement using proportion comparison. The information obtained from The Market Management Office of Pasar Beringharjo includes the history of Pasar Beringharjo, Construction Drawing of Pasar Beringharjo, and the module of the usage of retail and circulation spaces.

Analysis Phase

Data analysis has done by comparing standard dimension of retail and circulation spaces mentioned by Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001) and retail and circulation spaces used in Pasar Beringharjo Yogyakarta based on six main variables which include dimension of activity zone for sellers, dimension of circulation zone, dimension of shelves, dimension of two ways-display wardrobes, dimension of counter tables, and dimension of hanging merchandises.

Conclusion Phase

Conclusion is obtained by counting the percentage of the number of variable in retail spaces which shows dimension appropriateness over 50 per cent based on design criteria for standard dimension of retail spaces mentioned by Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001) and the percentage of the number of circulation spaces which the usage suitable with design criterias of the standard dimension.

Population in this research is the seller who legally has a kiosk and pays tax to The Management of Pasar Beringharjo. Sample is chosen based on the zones, that are Pasar Beringharjo Barat, Pasar Beringharjo Tengah, dan Pasar Beringharjo Timur. Pasar Beringharjo Barat has one storey; 5 retail spaces and 5 circulation spaces are chosen to be observed. Pasar Beringharjo Tengah has three storeys. At the first floor there are 4 retail spaces and 4 circulation spaces are chosen to be observed; at the second floor, there are 3 retail spaces and 3 circulation spaces are chosen to be observed; while at the third floor, there are 4 retail spaces and 4 circulation spaces are chosen to be observed. Pasar Beringharjo Timur has three storeys. At each of the floor level, there are 3 retail spaces and 3 circulation spaces are chosen to be observed, so that there are 9 retail spaces and 9 circulation spaces. In sum, there are 25 retail spaces and 25 circulation spaces were chosen as samples.

Table 1 shows the number of retail spaces and circulation spaces which was observed on each floor level in each zone. Observation conducted based on determined variables, that are the width of activity

zones for sellers; the width of circulation spaces; dimension of shelves (maximum-minimum height of shelves and the width of shelves); the width of two ways-display wardrobes, dimension of counter tables

(the width and the height), and dimension of hanging merchandises (maximum height of top hanger, the height of lower hanger, and the width of hanger).

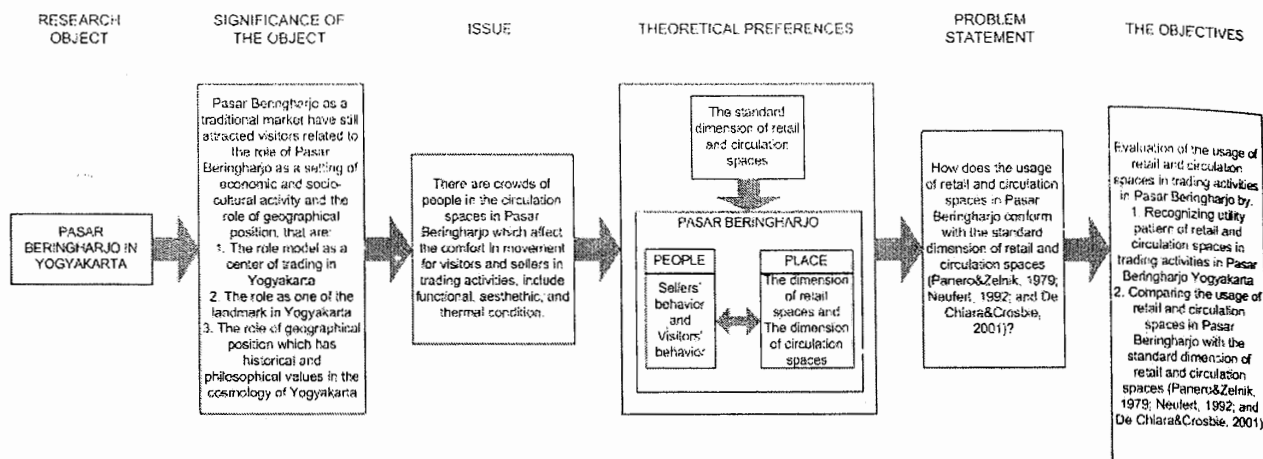


Fig.1. Research Framework
Source: Herliana, 2015

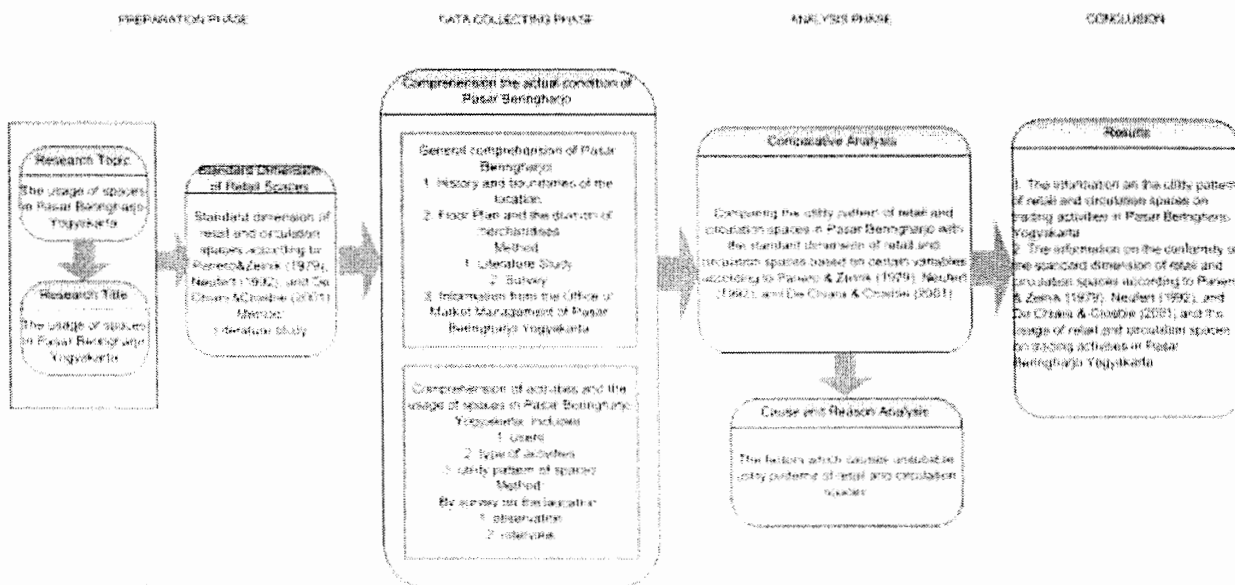


Fig.2. Research Method
Source: Herliana, 2015

Table 1. The number of retail spaces and circulation spaces observed on each floor level in each zone

Number	Zone	Floor level	The number of the observed Retail Spaces	The number of the observed Circulation Spaces
1	Pasar Beringharjo Barat	1	5	5
		2	4	4
		3	3	3
2	Pasar Beringharjo Tengah	1	4	4
		2	3	3
		3	4	4
3	Pasar Beringharjo Timur	1	3	3
		2	3	3
		3	3	3

Source: Herliana, 2015

RESULT

Based on six variable which are describe into twelve variable, 25 samples of retail spaces and 25 points of circulation spaces which are located in Pasar Beringharjo Barat; Pasar Beringharjo Tengah on the first, second, and third floor; and Pasar Beringharjo Timur on the first, second, and third floor; are observed. Data, which is obtained, is compared with design criteria for standard dimension of retail and circulation spaces mentioned by Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001).

Design Criteria for Standard Dimension of Retail and Circulation Spaces

Literature study shows that the standard dimension of retail spaces mentioned by Panero&Zelnik (1992) are similar to De Chiara&Crosbie (2001). Neufert (1992) said different dimensions slightly, but it is not significantly different. Table 2 reveals design criterias for standard dimension of retail spaces and circulation spaces based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001).

Result of Comparison to Standard Dimension

Table 3, Table 4, and Table 5 shows the conformity

of dimension in retail spaces at Pasar Beringharjo Barat, Pasar Beringharjo Tengah, and Pasar Beringharjo Timur, respectively, compare with the standard dimension based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001).

Percentage of standard dimension for each kiosk refers to six variables, which are described into twelve variables, that are: [1] the width of activity zones for sellers; [2] the width of circulation spaces, which is described into first level and second level of public circulation; [3] dimension of shelf, which is describe into maximum-minimum height of shelf and the width of shelf; [4] the width of two ways-display wardrobes; [5] dimension of counter tables, which is describe into the width and the height of counter table, and [6] dimension of hanging merchandises, which is describe into maximum height of top hanger/hanging merchandise, the height of lower hanger/hanging merchandise, and the width of hanger.

The percentage of standard dimension appropriateness for each kiosk is calculated by counting the number of variables which appropriate with the standard dimension divided by the number of variables used in displaying commodities. For example, if the kiosk does not use the strategy of hanging merchandise, consequently, the variable of dimension of hanging merchandise is not counted as a divider.

Table 2. Design Criterias for Standard Dimension of Retail Spaces and Circulation Spaces based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001)

Variables	Panero & Zelnik, 1979 (cm)	Neufert, 1992 (cm)	De Chiara & Crosbie, 2001 (cm)	Standard for optimum dimension (lowest and highest limit)
The width of activity zone	76,2 – 121,9	75 - 125	76,2 – 121,9	75 - 125
The width of circulation zone				
- First level of public circulation	297,2-304,8	260	297,2-304,8	297,2-304,8
- Second level of public circulation	167,6-228,6	180	167,6-228,6	167,6-228,6
Dimension of shelves				
- Lowest height of shelf	37,5	30	37,5	30
- Highest level of shelf	167,6 (Female) 182,9 (Male)	170 - 180	167,6 (Female) 182,9 (Male)	167,6 (Female) 182,9 (Male)
- The width of shelf (minimum)	45,7-55,9	20	45,7-55,9	45,7-55,9
The width of two ways-display wardrobes	76,2 – 91,4	Not mentioned	76,2 – 91,4	76,2 – 91,4
Dimension of counter tables				
- The width of counter table	45,7 – 61,0	37	45,7 – 61,0	45,7 – 61,0
- The height of counter table	88,9 – 91,4	90	88,9 – 91,4	88,9 – 91,4
Dimension of hanging merchandises				
- Maximum height of top hanger	172,7	Not mentioned	172,7	172,7
- The height of lowest hanger	106,7	Not mentioned	106,7	106,7
- The width of hanger	50,8 – 66 (dresses) 71,1 – 76,2 (coats)	Not mentioned	50,8 – 66 (dresses) 71,1 – 76,2 (coats)	50,8 – 66 (dresses) 71,1 – 76,2 (coats)

Source: Herliana, 2016

Table 3. The conformity of dimension in retail spaces at Pasar Beringharjo Barat compare with the standard dimension based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001)

Variables	Standard Dimension (cm)	Kiosk 1	Kiosk 2	Kiosk 3	Kiosk 4	Kiosk 5	Conformity for each variable (%)
The width of activity zone	75 - 125	100	60	60	100	60	40
The width of circulation zone							10
- First level of public circulation	297.2-304.8	270	-	-	-	500	
- Second level of public circulation	167.6-228.6	50	100	80	120	100	
Dimension of shelves							
- Lowest height of shelf	30	0	30	100	30	-	60
- Highest level of shelf	167,6 (Female) 182.9 (Male)	200	160	200	170	-	50
- The width of shelf (minimum)	45.7-55.9	45	55	50	80	-	100
The width of two ways-display wardrobes	76.2 – 91.4	-	-	-	-	-	0
Dimension of counter tables							
- The width of counter table	45.7 – 61.0	-	-	-	80	-	0
- The height of counter table	88,9 – 91,4	-	-	-	90	-	100
Dimension of hanging merchandises							
- Maximum height of top hanger	172,7	200	170	200	-	250	25
- The height of lowest hanger	106,7	90	130	130	-	100	50
- The width of hanger	50,8 – 66 (dresses) 71,1 – 76,2 (coats)	60	60	60	-	60	100
Percentage of standard dimension appropriateness for each kiosk (%)		44,44	62,5	37,5	85,71	50	

Source: Author's Analysis, 2016

Table 4. The conformity of dimension in retail spaces at Pasar Beringharjo Tengah compare with the standard dimension based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001)

Variables	Standard Dimension (cm)	K 1	K 2	K 3	K 4	K 5	K 6	K 7	K 8	K 9	K 10	K 11	Conformity for each variable (%)
The width of activity zone	75 - 125	60	75	60	60	100	60	75	80	100	80	60	54,54
The width of circulation zone													9
- First level of public circulation	297.2-304.8	180	-	240	300	240	240	240	200	300	-	260	22.2
- Second level of public circulation	167.6-228.6	100	100	120	150	150	120	60	80	60	140	60	0

To be continued in page 6

Continuation from page 5

Dimension of shelves													
- Lowest height of shelf	30	40	0	0	30	30	200	90	0	-	0	-	44,4
- Highest level of shelf	167,6 (Female) 182,9 (Male)	250	200	250	180	200	200	200	180	-	160	-	33,33
- The width of shelf (minimum)	45,7-55,9	50	45	60	45	45	50	45	50		50	-	100
The width of two ways-display wardrobes	76,2 – 91,4	-	-	-	-	-	-	-	-	-	-	-	0
Dimension of counter tables													
- The width of counter table	45,7 – 61,0	-	60	100	60	-	-	100	60	100	70	100	37,5
- The height of counter table	88,9 – 91,4	-	100	80	90	-	-	90	100	110	110	50-80	25
Dimension of hanging merchandises													
- Maximum height of top hanger/ hanging merchandise	172,7	-	-	-	170	200	200	200	-	-	-	-	25
- The height of lowest hanger/ hanging merchandise	106,7	-	-	-	-	110	-	-	-	-	-	-	0
- The width of hanger/ hanging merchandise	50,8 – 66 (dresses) 71,1 – 76,2 (coats)	-	-	-	-	60	-	-	-	-	-	-	25
Percentage of standard dimension appropriateness for each kiosk		33,3	42,8		25	88,9	55,6	14,3	44,4	50	40	42,9	0

K=Kiosk

Source: Author's Analysis, 2016

Table 5. The conformity of dimension in retail spaces at Pasar Beringharjo Timur compare with the standard dimension based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001)

Variables	Standard Dimension (cm)	Kiosk 1	Kiosk 2	Kiosk 3	Kiosk 4	Kiosk 5	Kiosk 6	Kiosk 7	Kiosk 8	Kiosk 9	Conformity for each variable (%)
The width of activity zone	75 - 125	60	75	80	70	75	60	75	75	80	66.67
The width of circulation zone											
- First level of public circulation	297.2-304.8	150	100	150	150	150	150	200	-	200	0
- Second level of public circulation	167.6-228.6	-	90	100	100	100	90	80	80	140	0
Dimension of shelves											
- Lowest height of shelf	30	0	-	0	0	50	200	0	0	30	25
- Highest level of shelf	167,6 (Female) 182,9 (Male)	250	-	140	160	150	250	180	160	200	62,5
- The width of shelf (minimum)	45,7-55,9	60	-	45	60	45	100	50	60	45	87,5
The width of two ways-display wardrobes	76,2 – 91,4	-	-	-	-	-	-	-	-	-	0
Dimension of counter tables											
- The width of counter table	45.7 – 61.0	80	100	120	80	45	120	80	80	100	11.11
- The height of counter table	88,9 – 91,4	100	90	90	90	100	100	90	70	80	44.44
Dimension of hanging merchandises											
- Maximum height of top hanger/ hanging merchandise	172,7	-	170	-	-	-	170	200	-	200	50
- The height of lowest hanger/ hanging merchandise	106,7	-	-	-	-	-	-	100	-	-	100
- The width of hanger/ hanging merchandise (dresses)	50,8 – 66	-	-	-	-	-	-	-	-	-	0%
- The width of hanger/ hanging merchandise (coats)	71,1 – 76,2	-	-	-	-	-	-	-	-	-	0%
Percentage of standard dimension appropriateness for each kiosk (%)		14.28	50	50	37.5	62.5	11.11	50	42.85	33.33	

Source: Author's Analysis, 2016

It can be seen on Table 3, Table 4, and Table 5 that the numbers of retail spaces—which are represented by kiosks—which have percentage of standard dimension appropriateness by 50% or over 50% are 10 kiosks (40 per cent of the observed retail spaces). Research result of the observed circulation spaces can be seen in Table

6, Table 7, and Table 8. The tables reveal that 6 points of circulation spaces conform to the standard dimensions. It means that only 24% of the observed circulation spaces which are suitable with the standard design criteria for circulation space.

Table 6. The conformity of dimension in circulation spaces at Pasar Beringharjo Barat compare with the standard dimension based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001)

Number	Circulation Spaces	The width on the As-built Drawing (Dinas Pengelolaan Pasar, 2003) in cm	Standard Dimension of the width on circulation spaces (cm)	The actual usage of the width in circulation space (cm)	Conformity: Yes (√) or No (x)	Necessary Notes
1.	Circulation Space 1	400	297,2-304,8	200	x	On the north and south side of the circulation space is used for displaying the commodities.
2.	Circulation Space 2	400	297,2-304,8	180	x	On the north and south side of the circulation space is used for displaying the commodities, while there are trash bins at the center of the space
3.	Circulation Space 3	175	167,6-228,6	60	x	Circulation space is used for the activity zone of buyers and there are chairs on the east side.
4.	Circulation Space 4	175	167,6-228,6	60	x	Circulation space is used to display the commodities and as the activity zone of buyers.
5.	Circulation Space 5	520	297,2-304,8	400	√	Circulation space is used to display the commodities and as the activity zone of buyers.

Source: Herliana, 2015

Table 7. The conformity of dimension in circulation spaces at Pasar Beringharjo Tengah compare with the standard dimension based on Panero&Zelnik (1979), Neufert (1992), and De Chiara&Crosbie (2001)

Number	Circulation Spaces	The width on the As-built Drawing (Dinas Pengelolaan Pasar, 2003) in cm	Standard Dimension of the width on circulation spaces (cm)	The actual usage of the width in circulation space (cm)	Conformity: Yes (√) or No (x)	Necessary Notes
1.	Circulation Space 1	300	297,2-304,8	200	x	Circulation space is used to display the commodities and as the activity zone of buyers and sellers (there are chairs for sellers who are waiting for buyers and offering their commodities)
2.	Circulation Space 2	170	167,6-228,6	70	x	Circulation space is used to display the commodities and as the activity zone of buyers.
3.	Circulation Space 3	300	297,2-304,8	240	x	Circulation space is used to display the commodities and as the activity zone of buyers.
4.	Circulation Space 4	300	297,2-304,8	80	x	Circulation space is used to display the commodities and as the activity zone of buyers.

To be continued in page 9

Continuation from page 8

5.	Circulation Space 5	300	297,2-304,8	150	x	Circulation space is used to display the commodities and as the activity zone of buyers and sellers (there are chairs for sellers who are waiting for buyers and offering their commodities).
6.	Circulation Space 6	170	167,6-228,6	180	√	
7.	Circulation Space 7	175	167,6-228,6	120	x	Circulation space is used to display the commodities and as the activity zone of buyers and sellers (there are chairs for buyers and offering their commodities).
8.	Circulation Space 8	300	297,2-304,8	280	√	Users of this passage are person who walk into The Market Management Office, so there is only a few people passes by. Although there is different in a floor level (20 cm), but it is suitable with the standard because the space used for column and floor level height.
9.	Circulation Space 9	210	167,6-228,6	180	√	The owners of the kiosks are more relatively organized in arranging their commodities, so that the circulation space is only used to circulate.
10.	Circulation Space 10	170	167,6-228,6	60	x	This passage is used to put seller's chair, stock of commodities, and unused boxes.
11.	Circulation Space 11	170	167,6-228,6	140	√	Although there is different in a floor level (20 cm), but this passage conforms to the standard and is used appropriately.

Source: Herliana, 2015

Table 8. The conformity of dimension in circulation spaces at Pasar Beringharjo Timur compare with the standard dimension based on Panero & Zelnik (1979), Neufert (1992), and De Chiara & Crosbie (2001)

Number	Circulation Spaces	The width on the As-built Drawing (Dinas Pengelolaan Pasar, 2003) in cm	Standard Dimension of the width on circulation spaces (cm)	The actual usage of the width in circulation space (cm)	Conformity: Yes (√) or No (x)	Necessary Notes
1.	Circulation Space 1	300	297,2-304,8	150	x	Circulation space is used to display the commodities and as the activity zone of buyers and sellers (there are chairs for sellers who are waiting for buyers and offering their commodities).
2.	Circulation Space 2	170	167,6-228,6	130	x	This passage seems widely enough although it does not conform to the standard.

To be continued in page 10

Continuation from page 9

3.	Circulation Space 3	300	297,2-304,8	150	x	Circulation space is used to display the commodities and as the activity zone of buyers.
4.	Circulation Space 4	300	297,2-304,8	150	x	Circulation space is used to display the commodities and as the activity zone of buyers.
5.	Circulation Space 5	300	297,2-304,8	90	x	Circulation space is used to display the commodities and as the activity zone of buyers and sellers
6.	Circulation Space 6	170	167,6-228,6	170	√	Although this passage conform to standard, but it seems too narrow while it is used by the person who carried the stock of commodities.
7.	Circulation Space 7	170	167,6-228,6	120-140	x	Circulation space is used to display the commodities and as the activity zone of buyers.
8.	Circulation Space 8	170	167,6-228,6	80	x	Circulation space is used to display the commodities and as the activity zone of buyers.
9.	Circulation Space 9	170	167,6-228,6	80	x	Circulation space is used to display the commodities.

Source: Herliana, 2015

DISCUSSION

According to Green (1986: 12), the retail store has three major design elements, they are display area, service area, and circulation spaces. The relationship or spatial organization of these areas is determined by the same factors that control the layout of any commercial space, i.e. the efficient accommodation of the space requirements of equipment, products, and people. However, differing from other commercial installations, the retail stores must satisfy two other factors, they are visitors must be attracted to come and induced to buy products.

Display areas are the important part of retail store. Display is a strategy which presents the merchandise to the visitors in its favorable light and allows the visitors to evaluate and select products for purchase. Green (1986:23) stated that there are two elements to a display, they are product presentation and product evaluation. The product-evaluation area is a space directly in front of the display or adjacent to it where a customer may review the product, read any information related to the product or have a salesperson explain about the product. If product-evaluation area is required, it will often take up part of the aisle. The amount of the spaces needed varies among different people and cultures. However, if the product-evaluation space is not large enough to provide the zone of psychological protection which act as a buffer against perceived threats, a visitors may become annoyed by the constant passage of other visitors through his or her zone, that he or she will leave the store without buying anything.

Service area can be the activity zone for sellers or storage spaces. Service area are usually designed for maximum efficiency, accessibility, and optimum equipment placement and they are generally located at the back of the store because the area which is close to the front are too valuable as selling space to be used for service activities.

Circulation paths should be simple. Since the assembled merchandise usually offers a wide variety of visual experiences, creating a complicated circulation route is unnecessary. Circulation spaces must be clear enough, so that the visitor focuses on the display. Circulation paths are also the means of emergency path. The width should be proper to fulfill building-code requirements.

It is important that the retail space is designed to allow the visitors to determine easy entry and escape routes. The visitors should be able to sense the layout of the entire retail space, whether if it is small or if it is large. This senses will make the visitors feel secure and may entice him to come. Open and accessible retail spaces can be achieved by providing transparency, that is a good view of the inside of the retail space through the storefront. Transparency can be achieved by maintaining lower display fixtures in the front of the retail space, to allow view into the depth of the retail space.

The usage of retail and circulation spaces on trading activity in Pasar Beringharjo is affected by: [1] the number of users, they are sellers and visitors; [2] method or strategy in offering commodities and the quantity of commodities; [3] pattern of activities.

Users in trading activities who are observed are the

sellers who rent the retail spaces legally and the visitors. In one retail space (kiosk), visitors can be served by one person or more than one person. The person might be not the owner who rent the kiosk, but the person in charge. The number of person who serves visitors will affect on the width of activity space for sellers. If the seller more than one person, they will use circulation spaces as their activity zone. The tendency that occurs in 20 points of the observed circulation spaces (80% of the observed points), there are display of commodities which reduce the width of circulation spaces (Figure 3). Consequently, the activity space for visitors takes place in circulation spaces. Therefore, the width of circulation zones seems discomfort and narrow. If there are a lot of visitors come to one kiosk, the activity zones for visitors could be doubled. It could be not only just one line, but can be two or three lines. In this condition, the visitors find difficulties to pass by.

Method or strategy in offering commodities and the quantities of commodities will also affect the usage of retail and circulation spaces. In the kiosk which sell batik clothes, the commodities are not only kept and arranged in the shelves, but are also hung or even displayed in mannequin, so that it will look as it is wore. However, in retail spaces which sell fabric, bed sheet, bedcover, or blanket; those commodities are fold and arranged in orderly fashion. In the peddler kiosk, the commodities should arranged orderly, grouped with specific criteria, so that they are easy to find. It is different with the kiosk which sells food, such as rice or cooking spices which needs a certain container. Some kiosks have surplus in stocks, so that they are arranged out of the limits of the kiosks, and kept in the circulation zone surrounds (Figure 4). There are also kiosks which have the storage over the kiosks (Figure 5).



Figure 3. Display of commodities reduce the circulation space
Source: Observation result by the author, 2015



Figure 4. Stock of commodities are arranged in circulation space
Source: Observation result by the author, 2015



Figure 5. The storage over the kiosk
Source: Observation result by the author, 2015

The kiosks which sell fruits and vegetables store their commodities on baskets or boxes, but sometimes in disorderly arrangement. Characteristics of commodities will determine the method and strategy in offering the commodities. The method in selling meat and chicken will be different with the method in selling fruits and vegetables. The kiosks which sell meat need table and source of water in order to keep clean, but the ones which sell fruit and vegetable do not need table, but the commodities should be orderly grouped according to their types, so it is easier to choose. The humidity of vegetable and fruit should be maintained to keep them fresh.

Pattern of activity related to human behavior. The behavior of the seller who arranges her/his kiosk well organized will cause the kiosk looks attracted to visit. For example, there is a kiosk which is not orderly arranged because there are boxes surrounds (Figure 6), but there is a kiosk which has the commodities orderly arranged in the shelves or counter table (Figure 7). Different behavior will cause different usage of kiosk. Some sellers choose to stand closer to visitors while offering their stuffs. It means there is no certain activity zone for sellers inside the kiosk. However,

some sellers feel comfortable to serve visitors inside the kiosk.

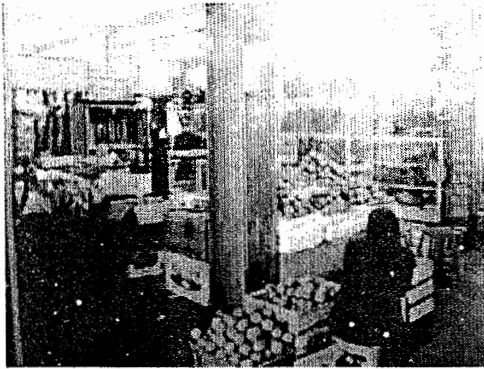


Figure 6. A kiosk which is not orderly arranged
Source: Observation result by the author, 2015



Figure 7. A kiosk which is orderly arranged
Source: Observation result by the author, 2015

Result of the observation of 25 retail spaces and 25 circulation spaces based on six variables, which are describe into twelve variables, shows the percentage of conformity for each variables as in Table 9.

There are 14 kiosks (at 56%) show conformity to standard dimension in the width of activity zone for sellers, whereas only 3 kiosks (at 6%) at the first level of public circulation reveal appropriateness with the standard dimension. In the dimension of shelf, there are 4 kiosks (at 16%) do not use shelf in displaying their commodities. The highest percentage in the variable of the dimension of shelf is shown by the minimum width of shelf, at 66,67% of 21 kiosks, while the least percentage is shown by the lowest height of shelf, at 42,85% of 21 kiosks. In the variable of the width of two ways-display wardrobes, there is no kiosk uses two ways-display wardrobes.

In the variable of the dimension of counter table, 18 kiosks (at 72%) use counter table to display their commodities. Only 4 kiosks of 18 kiosks (22,22%) has the width of counter table conform to standard dimension, while 14 kiosks (77,78%) has the width more than 45,7-61,0 cm. There are 7 kiosks (at 38,89%) conform to the standard dimension of the height of counter table, while 7 kiosks has the height higher than 91,4, and 4 kiosks lower than 88,9. In the variable of the dimension of hanging merchandise, there are only 12 kiosks (48%) use hanging merchandise; 5 kiosks (41,67% of 12 kiosks) sell clothes on hanging merchandise, while 7 kiosks (58,33% of 12 kiosks) sell non-clothes as hanging merchandise. All kiosk which sells clothes as hanging merchandise has a standard width of hanger.

In sum, two variables has the highest percentage of conformity at 56% of 25 kiosks, they are the width of activity zone and the minimum width of shelf. In contrary, the width of two ways-display wardrobe has the least percentage at 0% because there is no kiosk uses two ways-display wardrobes. The second least percentage is the width of circulation zone.

Table 9. The percentage of conformity for each variable

Variables	Standard Dimension (cm)	The number of kiosk which conform to the standard dimension	Percentage of conformity (%)	Notes
The width of activity zone	75 - 125	14	56	
The width of circulation zone		3 kiosk – at first level of public circulation	6	
- First level of public circulation	297,2-304,8			
- Second level of public circulation	167,6-228,6			
Dimension of shelf				There are 4 kiosks do not use shelf.
- Lowest height of shelf	30	9	36	
- Highest level of shelf	167,6	10	40	
	(Female) 182,9			
	(Male)			
- The width of shelf (minimum)	45,7-55,9	14	56	

To be continued in page 13

Continuation from page 12

The width of two ways-display wardrobes	76,2 – 91,4	0	0	There is no kiosk uses two-ways display wardrobes
Dimension of counter tables				
- The width of counter table	45,7 – 61,0	4	16	7 kiosks (28%) do not use counter table, 14 kiosks (56%) has the width more than 45,7-61,0 cm.
- The height of counter table	88,9 – 91,4	7	28	7 kiosks do not use counter table, 7 kiosks have the height higher than 91,4cm, and 4 kiosks (16%) lower than 88,9cm.
Dimension of hanging merchandises				
- Maximum height of top hanger	172,7	4	16	13 kiosks (52%) do not use hanging merchandise, while only 12 kiosks (48%) use hanging merchandise. 8 kiosk (32%) more than 172,7 cm; the number of kiosk which has max height of top hanger more than 172,7 cm is 12 kiosks, that are 66,67% of the number of kiosks which use hanging merchandise
- The height of lowest hanger	106,7	3	12	3 kiosks of 12 kiosks (25%) which use hanging merchandise have a standard height of lowest hanger.
- The width of hanger	50,8 – 66 (dresses) 71,1 – 76,2 (coats)	5	20	All kiosk which sells clothes as hanging merchandise has a standard width of hanger.

Source: Author's Analysis, 2016

CONCLUSION

Result of this research shows that based on six variables, which are described into twelve variables, the observation on 25 retail spaces and 25 circulation spaces in Pasar Beringharjo, which consists of Pasar Beringharjo Barat; Pasar Beringharjo Tengah on the first, second, and third floor; and Pasar Beringharjo Timur on the first, second, and third floor; there are 10 kiosks (40% of 25 retail spaces) which have the percentage of standard dimension appropriateness by 50% or over 50% and 6 points of circulation spaces (24% of 25 circulation spaces) which have conformed to the standard dimension of the width on circulation spaces.

Comparing twelve variables which are observed, two variables has the highest percentage of conformity at 56% of 25 kiosks, they are the width of activity zone and the minimum width of shelf.

REFERENCES

- 1) De Chiara & Crosbie, (2001), *Time-Saver Criterias For Building Types*. Fourth Edition, Mc Graw-Hill Companies, New York: Inc.
- 2) Dinas Pengelolaan Pasar, Pemerintah Kota Yogyakarta, (2003), *Pembuatan Leger Pasar Tersebar Se-Kota Yogyakarta*. Laporan Akhir, PT Tatareka Paradya, Yogyakarta.
- 3) Green. W. R., (1986), *The Retail Store: Design and Construction*, Van Nostrand Reinhold Company, New York.
- 4) Herliana, E. T., (2014a), *Identifikasi Unsur-unsur Struktur Ruang*

- Kota Yogyakarta yang Mendukung Fungsi Pasar Tradisional Beringharjo, *Jurnal Arsitektur Komposisi*, 10 (5): 327-348, [Online]. Tersedia: <http://ft.uajy.ac.id/arsitek/jurnal-arsitektur/>
- 5) Herliana, E. T., (2014b), Penerapan Konsep Kultural dalam *Place Attachment* pada Pedagang dan Pembeli di Pasar Beringharjo dalam *Membaca Ruang Arsitektur dari Masa ke Masa*, ISBN 978-979-21-4046-0, hlm. 111-142, Laboratorium Perencanaan dan Perancangan Lingkungan dan Kawasan, Program Studi Arsitektur, Fakultas Teknik, Universitas Atma Jaya Yogyakarta bekerjasama dengan Penerbit PT Kanisius, Yogyakarta.
- 6) Herliana, E. T., (2014c), Preserving Javanese Culture Through the Exchange of Goods in Pasar Beringharjo Yogyakarta dalam *International Conference Proceeding Arte Polis 5 Reflection on Creativity: Public Engagement and the Making of Place*. Volume 2 ISBN 978-601-70680-2-5, hlm. 337-347, Program Studi Arsitektur, Sekolah Arsitektur, Perencanaan, dan Pengembangan Kebijakan, Institut Teknologi Bandung, Bandung. Tersedia: <http://www.sciencedirect.com/science/journal/18770428/184>
- 7) Herliana, E. T. (2015), *Evaluasi Penggunaan Ruang Kios dan Ruang Sirkulasi pada Kegiatan Jual Beli di Pasar Beringharjo Yogyakarta*, Laporan Penelitian Internal Perorangan, LPPM, Universitas Atma Jaya Yogyakarta, Program Studi Arsitektur, Fakultas Teknik, Universitas Atma Jaya Yogyakarta, Yogyakarta.
- 8) Neufert, E. (1992), *Data Arsitek Jilid 2*, Terjemahan oleh Sjamsu Amril, Penerbit Erlangga, Jakarta.
- 9) Panero, J. & Zelnik, M. (1979), *Human Dimension & Interior Space: A Source Book Of Design Reference*. The Architectural Press Ltd., London.
- 10) Sari, Y., (2009), *Kajian Karakteristik Kegiatan Perdagangan di Pasar Beringharjo Kota Yogyakarta*, Skripsi tidak diterbitkan, Program Studi Pembangunan Wilayah, Fakultas Geografi, Universitas Gadjah Mada.