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Signage System of Malls in Surabaya: Universal interior design applications and suggestions for solution

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Abstract

The signage system as one of the elements of a direction guide in public facilities is also an element that needs to be studied and applied with universal design approach. Surabaya, as one of the largest cities in Indonesia with many public facilities particularly malls truly needs to consider universal design applications. The purpose of this research is to study, identify problems of the application of signage systems as well as to produce alternative solutions to those problems with an approach to universal design in the shopping centres around Surabaya. Qualitative research is used for the study and production of solutions. The design thinking method is used in this research.

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Keywords: Signage system; universal design; design thinking

1. Introduction

1.1. Signage system of public space-building

Signage system is an important part of the completeness of the information and guidance needs in the space-building, especially in public space-building. A signage system is an information system focussing on visual instructions. These visual instructions are generally in the form of typographical elements which are signs consisting of pictures, maps, arrows, codes, colours, pictograms and others. The signage system is used to guide a user's journey in a public facility environment whether inside or outside the building. Following the signage system is generally termed as way-finding, way-signing or sign-posting. The

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collection of inter-correlated signs that are coherent and own a particular purpose could be considered a signage system.

Although signage, way finding and orientation in complex buildings is an important criterion for environmental behaviour, research on the subject remains limited and the issue is not considered sufficiently during the design process. This article examines the user's experiences (by the researchers) in shopping malls to get the information and guidance or direction from the applied signage system. The experiences discussed in term of universal design.

Signage system in public space-buildings are applied various kinds of signs to provide information as well as directions to a particular location. Signage system usually consists of several applied signs designed in accordance with the characteristic of unity with the space-building characteristic. Applied signs can be texts and symbols with elements of form, colour, texture, and light those are diverse. Signs can also be applied to two –dimensional, three-dimensional, and digital form. In public space-building such as malls, signage system is used to provide clear information and guidance or direction to find the location of intended activity to visitors (users) independently.

Signage system facilities are required to be used by all visitors in the public space-buildings, including the mall. It is because the mall is a public space-building with most public characters inside. Mall is a public facility with a variety of commercial activities, social, recreational, relaxation, exercise, and even worship can be done in the mall. This means that the mall can be visited by anyone with no exception at all to do a variety of activities.

The physical environment in buildings and public spaces are media (facilities) to accommodate the activities that apply to the public. This obviously requires the applied consequences of physical space-building facilities which are universal, or inclusive; these are the physical space-building facilities that could be used by everyone as *civitas-space* buildings. Physical space-building facilities with a universal approach (inclusive) as a consequence of these public space buildings have not become commonly applied in Indonesia. Many of the physical space building designs that are mostly applied have not considered the needs of the certain sides that have physical limitations, the range of certain age, and also the difference between the sexes equally. The paradigm stating applied universal or inclusive design is an expensive application causes insufficient efforts for the application and development of the universal or inclusive design. Whereas the universal applied design will indirectly ease all users of the facility without exception. Thus, productivity of all users can be improved to produce investment if it experiences degradation in age or physic. This paper mainly discussed about the diverse of visual ability as part of physical ability, so the objects of applied physical facilities on public space-building (mall) discussed is signage system. The application for completeness universal signage system is also necessary to accommodate visitors who have the limitation ability other than visual ability (eg. auditory).

Besides the development of legislation and public awareness of the facilities and universal design, access for user groups with special needs also receive less attention in the world of design practitioners. Although the standard rules of construction applications have stated about the applied design facility that can be accessed universally, universal design concepts and methods are not (yet) generally taught in design school. The head and manager of design studies program is often lacking in awareness, sensitivity, information and skills to teach students about disability issues, minimum versus optimum standards, and the state of the art in accessible design (Greer, 1987). It also includes the lack of learning about the signage system on a public space-building with universal design approach.

Therefore, we are doing the studies of applied signage systems on the public space-buildings (in this discussion is the mall) in terms of universal design. The Identification of mapping the applied facilities will be equipped with proposed solutions of universal design that can be applied to any malls. Surabaya, was chosen as a model city for applied research object and universal design solutions as fairly representative as big cities in Indonesia, which is trying to develop public facilities (including the mall).

1.2. Problem, purpose, and objective

The signage system as one of the main elements in public facilities is also elements that need to be studied and applied with universal design approach. Surabaya, as one of the largest cities in Indonesia with many public facilities particularly shopping centres truly needs to consider universal design applications. How the signage system of malls in Surabaya have been applied and the solutions to the existing designs become the issues (problems) of this research paper.

The purpose of this research is to study, identify problems of the application of the signage system as well as to produce alternative solutions to those problems with an approach to universal design in the shopping centres around Surabaya.

The objective of this research is determined the mapping of applied signage system on malls in Surabaya and proposed a design solution with universal design approach. Applied mapping and proposed design solution can be a suggestion that can be followed up with community services agenda.

2. Universal Interior Design: Signage System and It's Parameter

Universal design is a design approach for products and elements of building-space facilities that could be used by every person without exception. This approach is truly needed particularly in public building facilities so that every user can perform his activities independently, easily and optimally. Unfortunately, physical building-space facilities with a universal (inclusive) approach as a consequence of a public building-space has not yet become a basic application in Indonesia. The signage systems as part of the spatial elements in public facilities are also elements that need to be studied and applied with universal design approach.

A good design and a design that is equipped with the attention to the issues of the users can be a key in solving the problem of universal design. These human factors issues are related to human physical conditions in the use of the design product, and have become standard principles in universal design approach. The principles of universal design by Story (1998: 34-35) are as follows:

- Equitable Use: The design is useful and marketable to people with diverse abilities.
- Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.
- Simple and Intuitive Use: Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
- Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
- Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- Low Physical Effort: The design can be used efficiently and comfortably and with a minimum of fatigue.
- Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

In all public space-buildings and, where appropriate, especially in interior environments, signage system should be provided to enable people to clearly understand the layout and function of a space-building or environment and to find their way around independently. Signage and information should be usable and informative to everyone and include information in visual, tactile, and audible formats. It should be simple and easy for everybody to understand..

Checklist signage system parameter for universal design in this paper will be adopted from Building for Everyone: A Universal Design Approach, booklet 4 (www.universaldesigns.ie). Belows are checklist

entrance and circulation parameter for universal design that has been simplified and adjusted to the needs of research at malls in Surabaya:

Checklist Signage and Information Parameter for Universal Design in Surabaya's Malls

- All signage is clear, consistent, and easy to understand.
- Provide maps, plans and models for larger buildings, including tactile information.
- Select a letter size to suit the viewing distance.

Checklist Information Signs System Parameter for Universal Design in Surabaya's Malls

- An aid to overall orientation within a site or building.
- Examples include maps, diagrams and directory signs.

Checklist Directional Signs System Parameter for Universal Design in Surabaya's Malls

- Provide directional guidance within a site or building.
- Signs include arrows.

3. Methodology

Qualitative research is used for the study and production of solutions. Design thinking become the chosen approached methodology that will be applied in this study with adopting design thinking from some of the literature (Riverdale & IDEO, 2011:4; Lockwood, Thomas, 2010:50; Tim Brown, 2009:16; Ambrose, Gavin and Harris, Paul, 2010:12; Lawson, Bryan, 2005) and adjusted with the research's steps. The design thinking method is used in this research with the following work sequences:

- Exploration is comprehension and empathy as the mall's visitors to observe and documentation to the object of signage system.
- Identification is definition, selection and synthesis problems in visual and physical approached on signage system.
- Ideation is idea and creation as designer to give alternative's design solution for signage system with approach to universal design principal
- Visualization is model by drawing sketches as alternative media communication design for signage system.
- Evaluation and Persuasion are presentation and feedback for perfection in alternative design solution on signage system.

For this research, there are 15 malls that have been selected as the research objects. Selection of the objects was under consideration of mall diversity, location distribution, establishment distribution, and the popularity of malls.

4. Findings

Surabaya, as one of the major cities in Indonesia with a lot of shopping center public facility, need to pay attention to universal design application. The malls in Surabaya itself, has a unique definition and its own characteristics. Here is a short description of the uniqueness of these malls. Marina Plaza, the plaza formerly known as Fountain Court is an exclusive shopping center in the South Surabaya and also has sports facilities such as a swimming pool. Royal Plaza is a family mall concept to provide all the needs of the family in one place. Surabaya Town Square (or commonly abbreviated SUTOS) is a mall that was founded in 2008 and consists of 4 floors with tenants - tenants who are known as large companies both nationally and internationally. Then there is also Tunjungan Plaza (or commonly abbreviated TP) which is a largest shopping center in Surabaya, as well as the most popular plaza in the city of Surabaya, was founded in 1986 and has four main buildings are interconnected (Tunjungan Plaza East, Center and West). THR Mall is a Computer Sales PC / Notebook is the most complete in Surabaya is located in Jalan

Kusuma Bangsa. Pakuwon Trade Center and Supermal Pakuwon Beautiful is a shopping center located Jl. Raya Puncak Indah Lontar 2 West Surabaya with the concept of "one stop servicing all matters". Ciputra World Surabaya is a superblock built by Pt. Ciputra Surya Tbk which is in the area of Jl. Mayjend. Sungkono, Surabaya. Superblock has 2 towers used for apartments by the name of The Via & The Vue (V2), have 1 mall a number of floors 6 floors and currently they are also building hotel Ciputra. Grand City Surabaya is the largest shopping center in Surabaya, and also have the Grand City Convention and Exhibition Hall with area of 21.000 square meters. Pasar Atom and Pasar Atom Mall Surabaya located North Surabaya region with a land area of over 6 acres. Pasar Atom is a shopping center with its distinctive interesting icons where the visitors do not just come for window shopping rather than shopping buyers, where they come to shop. The average rate of visits per day is 20,000 to 30,000 people per day for weekday and more than 50,000 people per day to weekend. Galaxy Mall was established in the East Surabaya. This mall consists of 5 floors with tenants - tenants who are known as large companies both nationally and internationally. Surabaya Plaza shopping center in Surabaya is located in the heart of the city, located adjacent to Submarine Monument and very close to the Surabaya Plaza Hotel. Previously, or Delta Plaza or Surabaya Plaza is the location of the historic Hospital Dr. Soetomo time. However, now converted into a shopping center that has 6 floors with a magnificent building features spacious flats parking both below and above. WTC Surabaya is located adjacent to the Delta Plaza, is well known as a shopping center mobile phone (cell phone). City of Tomorrow (CITO) is a shopping center located at the entrance and adjacent to the city of Surabaya Juanda airport.

Exploration of the signage system of malls in Surabaya has been done by observation and documentation. Researchers apply as a visitor or user of the facilities, so it can be more objective in the process to find and use the entrance and circulation as needed. Here is the documentation of the exploration facility entrance and circulation on the mall in Surabaya:

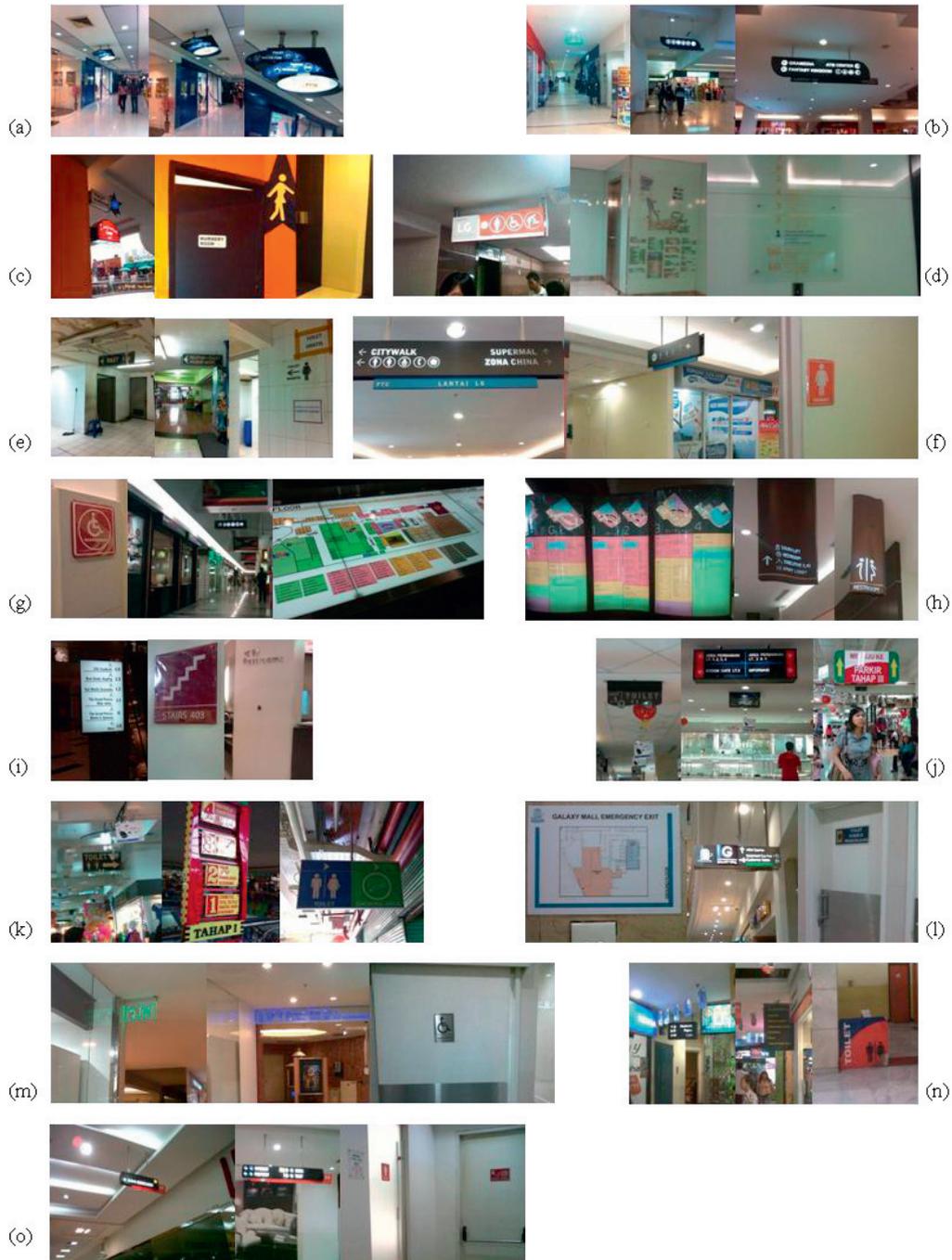


Fig. 1. Documentation of signage system of malls in Surabaya (a) Plaza Marina; (b) Royal Plaza; (c) Surabaya Town Square; (d) Tunjungan Plaza; (e) Hi-Tech Mall; (f) Pakuwon Trade Centre; (g) Supermall; (h) Ciputra World; (i) Grand City; (j) Atum Mall; (k) Pasar Atum; (l) Galaxy Mall; (m) Plaza Surabaya; (n) World Trade Centre; (o) City of Tomorrow.

The observations and repeated observations in documentation file produce identification in physical condition at signage system facilities of the mall in Surabaya. Observations of applied visual and physical signage system facilities of malls in Surabaya proposed with the checklist table using parameters that have been adjusted as follows:

Table 1. Checklist of Signage and Information Parameter for Universal Design in Surabaya’s Malls

	Plaza Marina	Royal Plaza	Surabaya Town Square	Tunjungan Plaza	Hi-Tech Mall	Pakuwon Trade Center	Supermall	Ciputra World	Grand City	Atum Mall	Pasar Atum	Galaxy Mall	Plaza Surabaya	World Trade Center	City of Tomorrow
All signage is clear, consistent, and easy to understand.	■	■	■	■	□	■	■	■	■	□	□	■	■	■	■
Provide maps, plans and models for larger buildings, including tactile information.	□	□	□	■	□	□	■	■	■	□	□	■	□	■	□
Select a letter size to suit the viewing distance	■	■	■	■	□	■	■	■	■	□	□	■	■	■	■

Table 2. Checklist of Information Signs System Parameter for Universal Design in Surabaya’s Malls

	Plaza Marina	Royal Plaza	Surabaya Town Square	Tunjungan Plaza	Hi-Tech Mall	Pakuwon Trade Center	Supermall	Ciputra World	Grand City	Atum Mall	Pasar Atum	Galaxy Mall	Plaza Surabaya	World Trade Center	City of Tomorrow
An aid to overall orientation within a site or building.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Examples include maps, diagrams and directory signs	□	□	□	■	□	□	■	■	□	□	□	■	□	■	□

Table 3. Checklist of Directional Signs System Parameter for Universal Design in Surabaya’s Malls

	Plaza Marina	Royal Plaza	Surabaya Town Square	Tunjungan Plaza	Hi-Tech Mall	Pakuwon Trade Center	Supermall	Ciputra World	Grand City	Atum Mall	Pasar Atum	Galaxy Mall	Plaza Surabaya	World Trade Center	City of Tomorrow
Provide directional guidance within a site or building.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Signs include arrows	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Notes:

- : applied and as universal design’s criteria
- : applied, not the same with universal design’s criteria
- : No application

The results' of applied visual and physical signage and information checklist suggests that aspects 'all signage is clear, consistent, and easy to understand' and 'select a letter size to suit the viewing distance' are aspects that has been applied optimally in most mall. Aspects that have been widely applied but not optimal to universal design standards are 'provide maps, plans and models for larger buildings, including tactile information'. Malls which have applied all aspects of universal design signage and information criteria optimally are Tunjungan Plaza, Supermall, Ciputra World, Grand City, Galaxy Mall, and World Trade Centre. Mall with all aspects of universal design entrance criteria but not optimally applied are Hitech Mall, Atum Mall, dan Pasar Atum.

The results' of applied visual and physical signs system checklist suggests that aspect 'an aid to overall orientation within a site or building' is aspect that has been applied optimally in most mall. Aspect 'examples include maps, diagrams and directory signs' has not been optimally applied (about 70% of the mall in this research). Malls which have applied all aspects of universal design visual and physical signs system optimally are Tunjungan Plaza, Supermall, Ciputra World, Galaxy Mall, World Trade Centre.

The results' of applied visual and physical directional signs system checklist suggests that all aspects ('provide directional guidance within a site or building' and 'Signs include arrows') are has been applied completely in all malls. The result of the checklist suggests that signs to guide and direct visitors toward the desired objects have been implemented on all the malls. The applications data collected only from and as the existing, and continued associated with the results of another checklist to meet the criteria to be classified as universal design.

At this stage, the identification of visual and physical application in signage system produced a map of universal design issues. This map of issues will be followed up in the discussion and analysis for the proposed solution to the universal design approach.

5. Discussion and Analysis

The stage of discussion and analysis stated with a assumption of the same stage with ideation and visualization in design thinking stages. The last process was the visualization with the sketches design as the media of design solutions alternative and also as the evaluation results on the existing applied signage system. At this stage, all the physical mapping applied signage system sorted and responded according to the characteristics of the problem. Applied visual and physical problems signage system related to universal design approach is the application of universal design approach but not optimal.

Research has been done on the signage system of malls in Surabaya conducted from the researchers' perspective as mall visitors. Observations conducted by researchers' direct experience as mall visitors who look or find the signage system of malls. Constraints due to the not optimally or not exist applied universal design at the signage system are the findings based on the orientation of the users' orientation (as the main target of mall users). The process is also part of the post occupancy evaluation of the malls. The result could be one of the considerations for the development of visual and physical signage system of malls.

The signage system objects under study are limited to objects as signs in interior of space-building (malls) ranging from entrance, information facility, to specific signs scattered in interior of malls. The specific signs are the signs for information and also direction to the particular location are required and can be followed independently by the visitors.

Problems on the object space-buildings that have applied visual and physical signage system with universal design approach but not optimal solved by given the design's solution with adjustment and following the criteria of universal design. Adjustment of universal design criteria performed primarily in terms of the visual and physical of the signage system. The visual adjustment of the signage objects related with colour, dimensions, brightness, clearness, aesthetical of the design, etc. The physical

adjustment of the signage objects related to the setting location, proportion, dimension, texture, textile, and interface experiences. Other adjustments made to the signage system, such as unify all the sign object in a harmonious conceptual visual design.

Here are some examples of design solutions with a sketch directly on the pictures in the signage system that have problems by not optimally applied universal design:



Fig. 2. Sketches of universal design solutions on multiple objects of signage systems do not conform to the criteria of universal design

The proposed design of the universal design approach is presented directly on the image documentation applied object. Directly sketch solution on that object is the principle of universal design's solution as ideas that can be developed in more detail if it will continue in practice improvement activities, adjustments and additions to the object. Details that can be developed on objects of signage system are related especially to the visual elements and effects. The physical aspects of signage system which are related with shape, dimension / size, material, and technology can be developed customized to the universal design approach. Details adjustment will affect to the achievement of optimization applied at signage system in accordance with the criteria of universal design.

The data findings of applied visual and physical signage system identified in the previous checklist, then attempted to compare and analyze the data description of the identity of each mall in Surabaya. The result is that the mall had been built (over 10 years) has many problems of applied visual and physical signage system with universal design approach. While the mall which still relatively new (about 5 years) have the applied signage system with a good approach of universal design. Correlation can be stated is that the old malls do not have an attention by applying the entrance and circulation facilities with universal design approached yet. Malls that are relatively new already have an orientation and concerned with universal design's issues applied in the signage system.

In addition, the findings of applied signage system that complies with the standards of universal design or not, can be correlated with the target market in each mall. Malls which have a target market of middle to upper was more concerned applying the signage system with universal design approach. Although the mall is old establishment, but because it has targets middle to upper market and is ideally located in the center of city, the mall development progressing and regularly follow the trends and issues of ecology and social-design, including the universal design.

6. Conclusion and Recommendation

The conclusion from the research with the interior universal design approached in the object of entrance and circulation facility, are as follows:

- Applied visual and physical signage system on malls in Surabaya with universal design approach still has many problems, especially in the aspect of provide maps, plans, models (including tactile information), and examples (including maps, diagrams and directory signs).
- Malls in Surabaya which still lack in visual and physical applied signage and information with universal design approach are Hi-Tech mall, Atum Mall, and Pasar Atum.
- Design solution with universal design approach that can be offered for signage system on objects that have applied universal design but not optimal) are the customization design with universal design standards, particularly in terms of visual and physical aspects.

Recommendations for further similar research is continuing research of '*Kajian dan Usulan Solusi Universal Design pada Bangunan Ruang Fasilitas Publik di Surabaya*' ('A Universal Interior Design Study and Suggestion for Solution on Space-Building of Public Facilities in Surabaya'), with the object of commercial public space-building facilities (other than signage system), and non-commercial space-building facilities. Some of non-commercial public space-building facilities are transportation service space-building (airport, train station, bus station), cultural and conservation space-building (museum, art gallery), information space-building (city library, tourism information centre), and recreational space-building (city park, zoo) in Surabaya. That public space-building research, complementary research of public space-building in Surabaya as a whole, so that the applied physical mapping with universal design approach will be completed. The mapping of the universal design visual and physical problem on public facilities in Surabaya can be follow up with the community service activities involving design faculties, design students, and industries.

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