

# ISIDC 2019

## International Service Innovation Design Conference

Hosted by Korea Institute of Design Promotion(KIDP)

### AGENDA

Future Service Design Education Direction  
for the 4th Industrial Revolution

July 30th, 2019 (Tuesday)

#### Venue

Korea Institute of Design Promotion (KIDP)  
Design Research Center  
Yangsan City, South Korea

[www.isidc.org](http://www.isidc.org)

#### Editor-in-Cheif

Dingbang Luh

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Seongil Park  
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# WELCOME SPEECH

## ISIDC 2019

### International Service Innovation Design Conference

July 30<sup>th</sup>, 2019(Tue)



**Juhyun Eune**

President  
Korea Institute of Design Promotion (KIDP)

It is a great honor to be able to host the '2019 International Service Innovation Design Conference (ISIDC)' in Korea. And I deeply welcome everyone present here today despite Korea's hot summer weather. And I would like to express my deepest gratitude to Dr. Kazuo Sugiyama from Oriental Consultants, Distinguished Professor Dingbang Luh from Guangdong University of Technology, Dean Kunpyo Lee from Hong Kong Polytechnic University, Professor Juyoung Chang from Dongseo University and President Kisik Park of the Busan Economic Promotion Agency.

The 2019 ISIDC is organized to promote the service industry through a design oriented integration of industries and to discover what the future service industry will be like in the future. As the Yangsan Design Research Center of KIDP has contributed to revitalizing the local community using service design, I believe that having the ISIDC at Yangsan instead of Seoul is of great value to us.

The Yangsan Design Research Center has continuously carried forward advanced researches on design to propose future visions and provided creativity education to teenagers, the driving force of the future. The center is considered to be a national-level future design center established to collect, share and utilize design information from around the world.

The 2019 ISIDC is the first international event to be held at the Yangsan Design Research Center. Hence, it will become a foundation to globally promote the center and enable the center to unfold various activities in collaboration with relevant research centers and educational organizations.

It is my belief that service design is a meaningful tool that allows designers to contribute to social innovation. I hope that this event will provide an opportunity for you to prepare for the fourth industrial revolution and become a starting point for more in-depth studies on the future of service design. I also wish that ISIDC become a valuable venue for everyone present to communicate and empathize through service design.

KIDP will also do its utmost to promote service design and support ISIDC to become a leading design event in Asia. We will also strongly support ISIDC to become an Asian sprit.

I once again thank everyone who took time off from their busy schedule to participate in the ISIDC and wish for the best in all you do.

Thank you.

# OPENING SPEECH

## ISIDC 2019

### International Service Innovation Design Conference

July 30<sup>th</sup>, 2019(Tue)



#### Dingbang Luh

Chair, International Service Innovation Design Association  
Chair professor, Guangdong University of Technology, China

The first series of events that emphasize on service design in Europe – Service Design Network (SDN) – was established in 2006. SDN is mainly initiated by design experts and managers from industries. International Service Innovation Design Conference (ISIDC) was started by Professor Kazuo Sugiyama in 2008. ISIDC is the first academic conference focusing on service innovation design in Asia. While ISIDC has been held every other year since 2008, there has been no specific team or organization in charging of the events.

Thanks to Professor Sugiyama for this leadership and thanks to all ISIDC organizers and participants for their dedicating contributions and continuous supports, ISIDC sustains and has developed into a new era on October 18, 2018. During the 6<sup>th</sup> ISIDC hosted by National Chonbuk University in South Korea, delegates from major Asian countries and regions discussed and decided to establish an association responsible for ISIDC events, namely International Service Innovation Design Association (ISIDA).

Since the founder of ISIDC is from Japan, we tried to call it in Japanese. For there is no direct wording, 'ISIDA' can thus be pronounced as 'Ishida', in which, 'ishi' means 'stone' and 'da' indicates 'field'. "ISIDA" can therefore be interpreted as "a wise field full with precious stones", in

which, service is the “field” we are working on and the “stones” refer to the innovations to be developed through design.

Starting from August 2017, I was invited by Service Science Society Taiwan (S3TW) established in 2011) and Society for Serviceology (SfS), Japan founded in 2012, to organize a joint international conference for the two academic research societies, namely Joint International Conference of Service Science and Serviceology 2018 (December 11-13, 2018). According to its website, the SfS “explores scientific systematization of services and promotes technological developments for solutions of industrial issues”. SfS put ‘service’ and ‘technology’ into one term, with an emphasis on systematization and technology for service applications. Based on its homepage, S3TW positions itself as “a key driver of global service science and the leader of service innovation”, focusing on service science and service innovation. Some S3TW board members are from Industrial Technology Research Institute (ITRI). In 2011, ITRI formed a special task group that integrates design thinking and scientific aesthetics into advanced technology. On February 14, 2014, Taiwan Dechnology Institute was officially established and the term “dechnology” was coined for promoting future design, technology strategy design and service design, and the notion of “Design X Technology” was proposed for value-adding and innovation.

As the first ISIDA chair, I started to think that we should have our own value proposition and vision towards service research and development. It can be noticed that ISIDA members are mainly from design fields, which is unique to all of the above mentioned institutes. Inspired by “dechnology” and “serviceology”, the new terminology “designology” came into my mind and today I would like to introduce the new concept to ISIDA members and ISIDC participants and audiences.

The meaning of “designology” can be understood through two kinds of splits or combinations.

- (1) “Design-ology”, that gives design a meaning to ology. According to the Cambridge Dictionary of the United Kingdom, the word “-ology” means “the scientific study of a particular subject.” In essence, design is a scientific process of exploring, discovering, creating and applying knowledge. “Design-ology” can fully reflect that design is a kind of value-adding and value-creation method of knowledge economy.
- (2) “De-sig-nology”, is pronounced as “the significant knowledge”, which can be seen as a noun, with preposition “emphasis (de)”, middle adjective (significant) representing the “important” or “meaningful”, and ended by the homology with the “knowledge”. “De-sig-nology” thus indicates “technical methods for generating knowledge of importance or meaning in life or science”.



Knowledge can be categorized into explicit knowledge and tacit knowledge. Since we focus on service innovation design research, tacit knowledge is thus more concentrated. By integrating the above two combinations of ideas, we can get the definition of designology as: *"a series of scientific processes for generating knowledge of value and meaning in life or work"*.

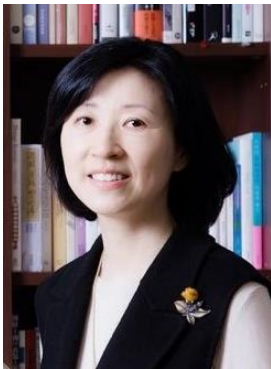
ISIDA is a R&D-oriented academic association. With designology as core notion for service innovation design, let us collaboratively work together for advancement of design knowledge and service science and technology. On behalf of ISIDA, I express my sincere gratitude to professor Juyoung Chang, President of KIDP, Juhyun Eune and those who have devoted their dedication in making all these possible. Last but not the last, in order to make ISIDA "a wise field full with precious stones", we need your participation and collaboration. Let's work together wisely to turn stones into treasures and wealth for sustainable economy, environment and ecology.

# OPENING SPEECH

## ISIDC 2019

### International Service Innovation Design Conference

July 30<sup>th</sup>, 2019(Tue)



#### Juyoung Chang

Director

The Asia Design Center for the Future at Dongseo University

Hello designers, students, and scholars from Japan, China, Malaysia, Thailand, Korea and to all who are attending. My name is Chang Juyoung, and I am the Director of the 'Asia Design Center for the Future' at Dongseo University. It is my pleasure and privilege to welcome all of you to this year's ISIDC. I would like to give special thanks to the founder of ISIDC: Dr. Kazuo SUGIYAMA, president of KIDP: Dr. Ju-Hyun EUNE, the Dean of School of Design at Hong Kong Polytechnic University: Kun-Pyo LEE, the President-CEO of BEPA: Ki-Sik PARK, and the President of ISIDC: Professor Ding-Bang LUH. I also would like to take a brief moment to recognize our co-hosts and sponsors. This conference is co-hosted by KIDP(Korea Institute of Design Promotion), ISIDA, & JDP and is organized by BK21 & 'Asia design center for future' of Dongseo University in South Korea.

ISIDC is Asia's first conference in service design and was initiated by a group of multidisciplinary scholars. ISIDC, as a Service Design Global Conference, has served as a platform for exchanging knowledge within service design and service innovation studies aimed toward both academics and industry practitioners. The council first hosted its conference in Dongseo University 11

years ago in 2008 and has propelled service design education and design thinking for service innovation ever since.

This year the conference will focus on 'The Direction of Future Service Design Education in the 4th Industrial Revolution' as its central theme of discussion. In the era of the Fourth Industrial Revolution, we are holding this discussion to ponder the direction of Service Design Education in strengthening the abilities of future global designers.

As you may know, we are in a world of transition. In an era characterized by low growth, aging societies, and turbulence, the younger generations should learn design thinking to convert the coming crises into meaningful productive opportunities. Service design strives to be an agent of change working toward a better world, and I believe service design has the power and potential to do much more. It's time to reflect in order to find solutions that could not be designed before. It's time to innovate and shape for sustainable futures. Together we can create a future we all want to be a part of. Equipping students with an innovative and forward-thinking vision should thus be a primary goal for us as educators.

Once again, I would like to thank everyone's participation in today's conference. I hope it provides a meaningful and enjoyable experience for everyone in attendance.

Together, we can create the change we want to see.

# KEYNOTE SPEECH

## ISIDC 2019

International Service Innovation Design Conference

July 30<sup>th</sup>, 2019(Tue)



### “Design education in the era of AI”

#### Kunpyo Lee

Dean, School of Design, The Hong Kong Polytechnic University  
Chair Professor of Industrial Design

Alex Wong Siu Wah Gigi Wong Fook Chi Professor  
in Product Design Engineering

What should we teach in the future? : Some speculative thoughts on future of design education. Within the relatively short history of design we have had some lessons learned on how designers cope with new paradigms, and once again, with a new paradigm upon us, all design related stakeholders need to revisit these lessons for opening the next chapter of design's evolution. The new design paradigm brings lots of new possibilities, but at the same time poses a critical risk of making the existing disciplines, methods, and skills obsolete. However, the obsolescence of some old design practices is unavoidable and we need to actively explore new design methods and processes rather than trying to stick to outdated ones. ‘Service Design’ and ‘Experience Design’ has been major keywords leading design education, research, and practice for the last few decades. However the type of experience users are having now is very different from the experience user used to have previously. Users are now interacting with complex systems rather than single product and they no longer just click but begin to talk. AI is rapidly replacing traditional designers’ core competencies and generating new types of design problem like conversational UI. Big Data has tremendous potential to understand people, which may be able to substitute current way of qualitative user-centered design methods. In this keynote speech, some speculative thoughts on future design education including UX and

service are proposed by the comparative review of major components of design education including design methods, processes, and users over the past design paradigms. In additions, some example work, namely Design 3.0 of new vision for future design education will be shared.

# KEYNOTE SPEECH

## ISIDC 2019

International Service Innovation Design Conference

July 30<sup>th</sup>, 2019(Tue)



**“ The importance of proximity between manufacturing and service businesses in the Industry 4.0 paradigm ”**

**Kisik Park**

President & CEO  
Busan Economic Promotion Agency (BEPA)

Industry 4.0, defined as a combination of manufacturing and ICT, is a crucial concept driving Germany's "The Fourth Industrial Revolution," which is currently leading structural innovation in global industries.

Industry 4.0, which is based on Cyber-Physical Systems (CPS), Internet of Things (IoT) and cloud computing technology, encompasses all the processes of development-production-provision-use-recycling of products tailored to customers' needs by expanding manufacturing flexibility.

Thus Industry 4.0 is a cross-enterprise ecosystem strategy. Hence corporations involved in the value chain seek to expand into new areas, by close collaboration in sharing each other's technologies and resources.

The purpose of this presentation is to analyze various studies associated with Industry 4.0 and provides insights into the direction of practical cooperation that enables manufacturers and service companies to create new value.

The presentation consists of 4 chapters as follows.

- (1) Industry 4.0 overview(concepts, features, coverage and status, and the like.) and core strategies(communication, convergence, collaboration, integration)

- (2) Industry 4.0 and Servitization
- (3) Importance of proximity in the Industry 4.0 frame
- (4) Roles of service design for enhancing connectivity between manufacturing and service industries

This presentation might provide a modest possibility to create a variety of academic research models and creative business models by approaching Industry 4.0 from a service design perspective.

# ISIDC 2019

International Service Innovation Design Conference

## SESSION SCHEDULE

July, 30<sup>th</sup>, 2019(Tuesday), Korea Institute of Design Promotion (KIDP)

Session / Time		Morning Session	
Session 1.		Product Service System / Session Chair : Prof. Kenta Ono	
10:00~11:30	1	<i>A Study on the Design of Rural Housing Service Based on Healthcare</i> :Byeol Kim, Kwangsoo Cho, Changsoo Lee, Cheonbuk National University	
	2	<i>Analysis of Design Status and Improvement plan of Agricultural Product Farm Stand through Field Survey</i> : Eunyoung Ha, Kwangsoo Cho, Aeeun Seo, Hyesung Chae, Cheonbuk National University	
	3	<i>Analysis of Critical Design Variables Based on The Affective User Perception : A Case Study of Older Adult Reclining Chair</i> : Hana Hapiz, Yuhanis Ibrahim, University Malaysia Kelantan	
	4	<i>Service Scenario Development for Customized Evacuation Route Guidance Service in Regular Building</i> : Sangki Lee, Taewan Kim, Korea Institute of Design & Promotion(KIDP)	
	5	<i>How can LEGO and mix objects as prototyping tools benefit co creation processes in service innovation?</i> : Siti Salwa Isa, Abu Ali, Wan Zai yanaMohd Yusof and Andre Liem, Universiti Teknoli MARA, Malaysia(UiTM)	
VR Room			
Session 2.		Service design Method & Pedagogy / Session Chair : Prof. Kwangsoo Cho	
10:00~11:30	1	<i>Investigating designers meaning making techniques in design activities to Improve product development</i> : Abu Ali, Siti Salwa Isa, Wan Zai yanaMohd Yusof and Andre Liem, Norwegian University of Science and Technology	
	2	<i>Business Enhancement for Industrial Design Firms through Convergence of 3D Printing Industry</i> : Sangmin Yeom, Dasol Kim, Jinryeol Lee, Chosun University	
	3	<i>Design Process for Animation Production in Education</i> : Fauzi Naeim Mohamed, University of Kuala Lumpur	
	4	<i>A study on the 3D Printing Convergence Industry Demand and Suggestion of Policy Support for Design Firms</i> : Danbi Go, Eunkyeong Na, Jinryeol Lee, Chosun University	
	5	<i>4 Levels of Mass Art Customization</i> : Wang Qian, Watanabe Makoto, Ono Kenta, Liu Junzhe, Chiba University	
Ideation Room			



<b>Session 3.</b>		<b>Service design Case study / Session Chair : Prof. Shah Nor bin Basri</b>
10:00~11:30   Design Seminar Room	1	<i>A Holistic Approach on Designing a Service for Healthy Food Conscious</i> : A. Zuhairi A. Majid, M.Fazrul Rosdi, Universiti Sains Malaysia
	2	<i>Safety Service Design Case Study for Factory</i> : Giyong Jang, Jihyang Kim, Sungpil Lee, Backstage. Ltd
	3	<i>The Effect of Material and Texture on Human Perception of a Robot Through Touch</i> : Nor Hidayu Mohd Salimi, Mastika Mustafa, University of Kuala Lumpur
	4	<i>Study on Design of Female Breast Measuring Stick</i> : Dingbang Luh, YuLin Zhao, Guangdong University of Technology
	5	<i>Hotel security service system designed for women traveling alone</i> : Dingbang Luh, Hong Jiao Wang, ChiHua Wu, Guangdong University of Technology
11:30~13:00		<b>Lunch Break</b>
13:00~13:10		<b>WELCOME SPEECH.</b> Juhyun Eune (President, KIDP)
13:10~13:20		<b>OPENING SPEECH.</b> Dingbang Luh (President, ISIDA)
13:20~13:30		<b>OPENING SPEECH.</b> Juyoung Chang (Director, Asia Design for Future, Dongseo University)
13:30~14:00		<b>KEYNOTE SPEECH.</b> Kunpyo Lee (Dean, School of Design, Hongkong Polytechnic University) <i>"Design education in the Era of AI"</i>
14:00~14:30		<b>KEYNOTE SPEECH.</b> Kisik Park (President, Busan Economic Promotion Agency, BEPA) <i>"The importance of proximity between manufacturing and service industries in the Industry 4.0 paradigm"</i>
14:30~15:00		<b>Break</b>
Session / Time		<b>Afternoon Session</b>
<b>Session 4.</b>		<b>Regional Revitalization 1 / Session Chair : Prof. Jinryeol Lee</b>
15:00~16:30   VR Room	1	<i>The Aesthetics Traditional Retailers in Conscious Decision in color placement at Kuching Old Heritage Street trails, Sarawak, Borneo</i> : Ahmad Azaini Manaf, Sungpil Lee, Universiti of Malaysia, Sarawak
	2	<i>The Comparative Analysis of the Physical Comfort Factors from Two Generations' Point of Views</i> : Siti Aisyah Muhammad <sup>1</sup> , Sung Pil Lee <sup>2</sup> , Universiti Malaysia Kelantan
	3	<i>Study on the Design of City Metro Security Inspection System Service</i> : Nor Hidayu Mohd Salimi, Mastika Mustafa, University of Kuala Lumpur
	4	<i>Social issue which technology make our lives self-reliant</i> : Kenta ONO, SHIDA Tatsuihiro, Fukuo AKIYAMA, Takeshi MINEMOTO, Chiba University
	5	<i>Research on The Elements Of Community-oriented Service Design Toolkit</i> : Tao Chen, Juyoung Chang, Dongseo University

Session 5.		Regional Revitalization 2 / Session Chair : Prof. Fauzi Naeim Mohamed	
15:00~16:30	Ideation Room	1	<i>Service Design Case Study for traditional Fish Market</i> : Jihyang Kim, Giyong Jang, Sungpil Lee, Backstage, Ltd
		2	<i>App of smart tourism to cities for Muslim travelers: Comparative analysis of Mobile marketing applications in South Korea and Thailand</i> : Sonina BenGhida, Sabrina BenGhida, Pukyung National University
		3	<i>Service design approach for a better architectural quality and enhanced user experience: Henri Ciriani Museums:</i> : Sabrina BenGhida, DjamilBenGhida, Pukyung National University
		4	<i>Factor Analysis from Semantic Differential on the Public Perception of Public Art: Case Study of Malaysia National Monument</i> : Yuhanis Ibrahim, Universiti Malaysia, Kelantan
		5	<i>The Implementation of Projection Mapping on Creative Institution Building for Urban Regeneration:</i> : Tengku Fauzan Tengku Anuar, Sathis Rao S/O Chiniah, Siti Aisyah Muhammad, Universiti Malaysia, Kelantan
Poster Session			
15:00~16:30	Exhibition Hall	1	<i>. A study on the Application of Contemporary Design of Chinese Characters Calligraphy : Focus on 'Zhangfa ', A Traditional Chinese Calligraphy</i> : Qi Yaxuan, Juyoung Chang, Dongseo University
		2	<i>Case Study of Unstaffed Convenience Store Service Model</i> : Zhang Feng, Sungpil Lee, Seongil Park, Dongseo University
		3	<i>Research on Cultural Identity of Contemporary Chinese Design –Analyzed from foreign perspective</i> : Huang JunXiang, Juyoung Chang Dongseo University
		4	<i>Developing Service Quality Evaluation Model of University Dormitory in Korea</i> : Zhang Hequan, Sungpil Lee, Communication University of Zhejiang
		5	<i>Research on Children Experience Elements in User Experience Design</i> : Xian Yan, Juyoung Chang, Dongseo University
		6	<i>Service Model Research of Bicycle-sharing based on Mobility-as-a-Service (MaaS)</i> : Z Wang Yang, sungpil Lee, Seongil Park, Dongseo University
		7	<i>A Development of Children’s Arts Experience Program of China : Experience Design Approach</i> : Woolahm Yoon, Junguk Go, Dongseo University
		8	<i>The study on self improvement of design centered startup</i> : Hyunjeong Kim, Junguk Go, Dongseo University
		9	<i>Research on Service Design of Shared Taxi Security</i> : Yin Jing Jing, Sungpil Lee, Dongseo University
		10	<i>The Umbrella Rental Research on Service Design Model of Sharing Economy</i> : Xuan YaoWei, Sungpil Lee, Dongseo University

16:30~16:45	Break
<b>Session 6.</b>	
<b>Student workshop review / Session Chair : Prof. Dingbang Luh</b>	
16:45~18:00	15 min each include Q&A
18:00~20:00	<b>Farewell Dinner</b>

# A Study on the Design of Rural Housing Service Based on Healthcare

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Byeol Kim<sup>1</sup>, Kwangsoo Cho<sup>2</sup>, Changsoo Lee<sup>3</sup>

<sup>1,2</sup> Dept. of Industrial Design, Chonbuk National University 567 Baekje-daero, Deokjin-gu,  
Jeonju-si, Jeollabuk-do 561-756 Republic of Korea

<sup>3</sup> Agricultural Environment Department, National Academy of Agricultural Science, 166  
Nongsaengmyeong-ro, Iseo-myeon, Wanju-gun, Jeollabuk-do 55365 Republic of Korea

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\*Corresponding author: Kwangsoo Cho([thinkkwang@nate.com](mailto:thinkkwang@nate.com))

The study was a collaboration between Chonbuk National University and Rural Development Administration, Republic of Korea (A study on the Establishment of Senior Friendly Rural Communal Housing Space Based on Healthcare) made in 2019

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## Abstract

### Background

Currently, Korea is aging rural steep rate compared to the safety and convenience of secure and safe for the elderly, health, elderly-friendly living environment which is considered a priority, are insufficient. Thus there is a need for a new residential environment of elderly-friendly to improve the quality of life of the rural elderly. Particular interest in health is increasing as life expectancy increases. Health maintenance in the treatment of heart health awareness, prevention-oriented, live longer, and the importance of health changes to live as health care is increasing from, the health care It has emerged as a new trend in housing. To provide a residential plan for health care functions currently considering the user's preferences and activity in the rural elderly side, based on a need to establish physical, social, service design. Service design reflect the economical characteristics of the rural elderly in rural residential area.

### Methods

First, divide the area to obtain information about the rural to the user, do a competitor analysis, market environment-related technology, press releases, design, word of mouth, etc. We are conducted to analyze the situation and the issues identified. Second, it draws out the problems to be solved in the categories classified through the issue extraction and third, we set up an idea strategy based on specific user richness and needs in line with ideas. Fourth, we confirmed the actual conditions through actual field visits and finally suggested the design by reflecting the results of the field survey to the ideas.

## Results

The categorization through the situation analysis is a significant health, environment, safety, physical and economic divided. Accordingly, the healthcare-based rural housing space is largely classified into the following five directions: waste problem, mold, disaster safety, and physical health. Five design proposals have been proposed that reflect the physical characteristics of the elderly and reflect differentiation according to the spatial characteristics of the rural areas. Each of these five design proposals is based on living patterns and problems that are experienced when elderly people live in rural residential areas, and they have a commonality that differentiates them in terms of reflecting space and user characteristics.

## Conclusion

This study proposes a design based on the idea and the results of the field survey through the analysis on the situation of the residential healthcare space in rural areas and the analysis of the user in order to increase the possibility of realizing the resident welfare due to the aging population of rural areas.

## Keywords

Service Design, Rural elderly-friendly living space, Rural Health Care

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# Analysis of Design Status and Improvement plan of Agricultural Product Farm Stand through Field Survey

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Eunyoung Ha<sup>1</sup>, Kwangsoo Cho<sup>2</sup>, Aeeun Seo<sup>3</sup>, Hyesung Chae<sup>4</sup>

<sup>1,2,3</sup> Dept. of Industrial Design, Chonbuk National University 567 Baekje-daero, Deokjin-gu, Jeonju-si, Jeollabuk-do 561-756 Republic of Korea

<sup>4</sup> Agricultural Environment Department, National Academy of Agricultural Science, 166 Nongsaengmyeong-ro, Iseo-myeon, Wanju-gun, Jeollabuk-do 55365 Republic of Korea

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\*Corresponding author: Hyesung Chae ([aidang@korea.kr](mailto:aidang@korea.kr))

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## Abstract

### Background

Farm villages of our country entered the super-aged society and incomes of farm families are reducing because of the reduction of agricultural productivity and opening of the market. For the measure of farm villages' economic stabilization policy, interests in farmers' market are increasing. Local governments actively support farm stand, that is the basic selling method of farmers so as to increase incomes of farm families through vitalization of origin direct dealing. However, existing avenue stands of agricultural specialty products spoil the beauty of the road because of the indiscreet negligence of sales facilities during the period other than operation period as well as safety problems are raising as reasons of traffic jams and traffic accidents. Therefore, it is necessary to identify problems at the site from various angles and seek solutions from the design side.

### Methods

The research contents are as follows. First, law related to the agricultural product farm stand was reviewed and the definition and scope of the agricultural product farm stand was established. Second, the main items of agricultural product farm stands were selected. Third, considering the main items, 10 agricultural product farm stands were selected for each region for the analysis of street stall design status. Fourth, the problem of the design of agricultural product farm stands was derived to present an appropriate improvement plan.

## Results

Surveys and analyses showed that issues on agricultural product farm stands were first, lack of safety for agricultural product farm stands second, inefficient utilization of space third, lack of consideration on the features of different items fourth, imprudent installation of advertisements that hamper road-side scenery and fifth, lack of sanitarness drop in consumer reliability. Improvement plans were found to be first, development of safety manual for installation and sites for agricultural product farm stands second, development of standardized sales facilities for efficient spatial utilization third, modular farm stand for agricultural product fourth, unity installation of advertisement that improve road-side scenery and fifth, continuous hygiene control and gain consumer trust by improving service level expertise.

## Conclusion

In this study, design problems were derived to establish empirical grounds for improvement in terms of design experts, operators, and consumers to improve the sales environment for operators and consumer services. In addition, it is expected that it will be used as basic data for problem solving in development of agricultural product farm stands.

## Keywords

Agricultural Product, Farm Stand, Design, Field Survey

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# Analysis of Critical Design Variables Based on the Affective User Perception: A Case Study of Older Adult Reclining Chair

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Hana Yazmeen Hapiz<sup>1</sup>

<sup>1</sup> Universiti Malaysia Kelantan, Malaysia

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\*Corresponding author: Hana Yazmeen Hapiz([hana@umk.edu.my](mailto:hana@umk.edu.my))

\*Advisor : Yuhanis Ibrahim ([yuhanisibrahim@umk.edu.my](mailto:yuhanisibrahim@umk.edu.my))

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## Abstract

### Background

The number of older adults in Malaysia is projected to double to 5.8 million, or 15.3% of the total population by 2030. In the longevity economy, older adults claim they want to be able to remain in their own home as they age; this will require more robust and adaptable transit options, as well as innovative supportive environment. Declining bodily function is associated with the restorative benefits of sitting, which contributed to the formation of embedded daily routines. The objective of the study is to analyse the relationship between affective older adults satisfaction with their reclining chair.

### Methods

Affective user satisfaction is considered as one of the most important factors in designing consumer products. The perception about a product is the determining factor for the emotions evoked in the consumer that affect the extent of the pleasure. Semantic Differential (SD) method is used in order to examine the evaluation of reclining chair samples with dissimilar affective properties. In the SD questionnaire, 13 image-word pairs are employed for the evaluation of elderly reclining chair, which are presented to 20 subjects.

### Results

The results indicate that the property 'sturdy' is utterly effective in consumers' perception. The effects of the other affective properties are discussed as well as the classification of the recliner characters with respect to the adjectives.

### Conclusion

Methods for interpreting the findings are discussed for practical



applications in designing chairs for the older adults. Given the substantial number of the older adults population in Malaysia, this study will help designers and manufacturers to understand their needs and thus design sensibly for older adults.

#### Keywords

Older Adults, Semantical Differential, Reclining Chair

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# Service Scenario Development for Customized Evacuation Route Guidance Service in Regular Building

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LeeSangKi<sup>1</sup> KimTaeWan<sup>2</sup>

<sup>1</sup> 16, Busandaehak-ro, Mulgeum-eup, Yangsan-si, Gyeongsangnam-do, Republic of Korea

<sup>2</sup> 16, Busandaehak-ro, Mulgeum-eup, Yangsan-si, Gyeongsangnam-do, Republic of Korea

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\*Corresponding author: LeeSangKi ([lsk9214@kdp.or.kr](mailto:lsk9214@kdp.or.kr))

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## Abstract

### Background

According to data from the Korea National Emergency Management Agency in 2018, a total of 505 fires have been reported in Korea over the past five years, with an average of 101 fires occurring annually and the trend of steady growth or inability to effectively cope with them. The stage of fire disaster is the fourth stage of prevention, preparedness, response, and restoration, and various technological developments such as applying intelligent IoT-linked detector products to fire today, but most studies have only been conducted on a limited basis, considering human preventive measures and physical evacuation routes of buildings, resulting in a rapid increase in human casualties as the service has not been provided in the stage of preparation and response to the disaster's psychological situation.

### Methods

This study was conducted for three months on a typical building in the form of an office building for work (less than 20 stories). In selecting a research target, it was selected as a research target for buildings that were aged into general buildings, which were difficult to access fire trucks in case of fire, and which were always occupied by office residents and building managers. Specific research methods were conducted in the stages of excavation, definition, development, and delivery by applying the design thinking process.

### Results

Based on the aforementioned ideas in daily life and ideas to be provided in the event of fire, the Commission conducted the Analytical Hierarchy Process (AHP) with the service beneficiaries at the center. In organizing the Cano questionnaire, the survey was conducted on 10 ideas presented during the fire immediately after the fire and during the evacuation, and seven other questions were selected, excluding questions that showed the quality characteristics of the survey were indifferent, according to the opinion of the expert group that only the idea of fire

except for daily life can be carried out. The ideas priority of the results of the Cano survey is 119 on fire occurrence notification and information on ignition floors/ 119 on initial detection of fire, or on automatic transmission of fire to the manager/ on automatic transmission of fire occurrence situations to his or her family or designated acquaintances/ on emergency situations/ on request for rescue via location transmission / on emergency situations / on easy-to-recognize voice and visual aids / location / on fire escape. Prior to the selection of priority among the final images selected through the KANO survey, the importance of assessment attributes was calculated for the groups of experts, which were specifically designated as reduction of escape time, safe evacuation, psychological stability, and firefighting and reduction of casualties. A suitable idea for this was the shortest escape route of the fire squad / information of fire generation and fire level, the time and distance left until the evacuation completion site is reached, and the location of fire safety products (e.g. fire extinguishers, gas masks, etc.) / the real-time information/pressure situation of fire escape using the easy-to-recognise voice and visual elements.

In addition, to share the results of the aforementioned service quality assessment and the overall assessment by layer with the group of experts who participated in the development of this service scenario and to finally select ideas, the meeting was divided into fire response, fire prevention and daily services, taking into account the effectiveness of investment and technical implementation from the service provider's perspective. Ideas that were deemed useful from the supplier's point of view were prioritized. First, specific results of fire response services included information notification or misalertation, second, fire escape instructions were provided as voice or visual elements, and third, providing time and distance information remaining until the evacuation completion site, and finally, guidance on the shortest peak fatigue/evasion path according to the location. In addition, the results of specific elicitation of fire prevention and daily service were evaluated by requesting receipt of inconvenience and inquiries through the app / Push notification of environmental information such as weather, indoor and outdoor drying indexes and fine dust / information on fire escape instructions / recording and checking of the period of use of fire facilities / inspection / simulated fire drills / completion work checklist / office security management / removal of expenses / building patrol.

## Conclusion

The final purpose of this study was to develop a service scenario to enable building residents to effectively evacuate a building within Golden Time without any assistance in the stage of response and preparedness in

the event of a fire. Since there are no related development cases, the research team collected opinions from expert groups and compiled 14 issues from the point of view of building owners and managers, and selected 10 of the 14 significant questions to evaluate customer service quality, and conducted a comprehensive assessment (AHP) and cost assessment on 7 questions excluding 3 questions of indifference. In conclusion, the selected idea was analyzed and it was easy to imagine that there was no information on how to deal with a fire if it was not a customer who experienced a fire and that there would be unimaginable human or physical damage in a fire due to the low level of interest in various fire behavior policies and information encountered in everyday life. Therefore, it is believed that the evacuation route guidance service presented through this study should be sought to provide a more intimate and intimate life-like function with the usual building residents, and further excavate and develop the functions that were not derived from this study through continuous technological advancement.

#### Keywords

Regular building, Fire evacuation, Self-Customized, Service Quality, Satisfaction Attributes, Positioning Analysis, Analytical Hierarchy Process

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# How can LEGO and mix Objects as prototyping tools benefit co creation processes in service innovation?

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Siti Salwa Isa<sup>1</sup>, Abu Ali<sup>2</sup>, Wan Zaiyana Mohd Yusof<sup>3</sup> and Andre Liem<sup>4</sup>

<sup>1,2,3</sup> Jabatan Seni Reka Perindustrian, Fakulti Seni Luksi & Seni Reka, Universiti Teknologi MARA, Malaysia

<sup>1,2,4</sup> Department of Design, Norwegian University of Science and Technology, Norway

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\*Corresponding author: Siti Salwa Isa ([sitisalwa@uitm.edu.my](mailto:sitisalwa@uitm.edu.my))

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## Abstract

### Background

Within the context of service innovation approach, physical prototypes are used to enrich self-reflection and communication activities, with or without the participation of stakeholders, especially when it concerns designer – client relationships. This study is aim to argue how physical prototypes can be used to achieve more impactful service innovation that can be subject to further testing and verification.

### Methods

This study took place in a design jams environment conducted for 2 days, where 80 participants from diverse backgrounds took part. The main purpose of using this method, is to examine the level of credibility of LEGO and mix objects as prototyping tools, specifically, in enhancing creativity processes as part of development activities.

### Results

The result demonstrates using LEGO and mix objects as a tools for prototyping are the appropriate tools for generating ideas in a fast and affordable manner, bringing abstract ideas to a more concrete level. Structured step by step methodological approaches in service innovation can be developed by involving LEGO and mix objects in physical prototyping especially during the early development process involving interpreters and stakeholders.

### Conclusion

To conclude, this research tries to comprehend how LEGO and mix objects can act as efficient prototyping tools in co-creation among the stakeholders and are the best techniques in mining the best element in design prospects in service innovation activities.

Keywords

Co-creation, prototyping tools, prototypes, LEGO

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# Investigating designers meaning making techniques in design activities to improve product development

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Abu Ali<sup>1</sup>, Siti Salwa Isa <sup>2</sup>, Wan Zaiyana Mohd Yusof<sup>3</sup> and Andre Liem<sup>4</sup>

<sup>1,2,3</sup> Jabatan Seni Reka Perindustrian, Fakulti Seni Luksi & Seni Reka, Universiti Teknoli MARA, Malaysia

<sup>1,2,4</sup> Department of Design, Norwegian University of Science and Technology, Norway

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\*Corresponding author: Abu Ali ([abuali@uitm.edu.my](mailto:abuali@uitm.edu.my))

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## Abstract

### Background

Meaning making is a collaboration of strategy that involves many people in the design process where they learn collectively, make meaning of the situation in hand and deal with complex situations. However, many activities that designers do such as critique session, test with the mock-up, and observe user experiences are quite universal, and thus it would be inappropriate to claim these as meaning making techniques because some of these activities could be valued for other fields. Hence, this research aims to explore how designers manipulate objects and influences to create meaning in their design activity. In this case, this paper seeks to address the following questions:

RQ 1 : What is the design process that Industrial designer involves with and how does the meaning is developed?

RQ 2: How the designer manipulated the design elements to create the design and meaning-making.

### Methods

The researcher used qualitative approach face to face interview for this research because it articulates this study on focusing the analytical disclosing of the meaning-making in the design process of the designer. The Data of this research taken from the face-to-face interview of 13 designers from various background such as of product design, automotive and furniture design fields.

### Results

The result shows that designers who were involved in participatory design contributes to creative meaning making in the design process, as compared to the designer who works alone. Meanwhile in the design process, designers understand that organizing the elements of design and

arrangement with the principle of design will produce the best design. The reflections of experiencing and observation with the objects revealed the way designers transmit the meaning on their previous experience and background of their design practice to design process.

#### Conclusion

It can be concluded that experience and a more active observation with an object in design practice contribute to the better idea in the meaning-making process.

#### Keywords

meaning making, design activities, design development

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# Business Enhancement for Industrial Design Firms through Convergence of 3D Printing Industry.

Sangmin Yeom<sup>1</sup>, Dasol Kim<sup>2</sup>, Jinryeol Lee<sup>3</sup>

<sup>1,2</sup> Graduate School of Design&Creative Engineering, Chosun University, 309, Pilmun-daero, Dong-gu, Gwangju, Republic of Korea

<sup>3</sup> School of Informatics&Product design, Chosun University, 309, Pilmun-daero, Dong-gu, Gwangju, Republic of Korea

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★ Corresponding author: Jinryeol Lee (bayhunt@chosun.ac.kr)

Following are results of a study on the "Leaders in INdustry-university Cooperation +" Project, supported by the Ministry of Education and National Research Foundation of Korea

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## Abstract

### Background

The South Korean government has formed four major promotion strategies and 12 major policy tasks that will be pursued from 2017 to 2019 to implement the 3D printing industry promotion and vision. In addition, the majority of firms are engaged in manufacturing and commercialization by developing and selling their own products to clear the petty condition of industrial design firms. However, due to the various characteristics of small production, limitations such as initial cost of mass production, lack of technical and professional personnel are evident, resulting in difficulties in corporate growth. By reducing waste of raw materials and reducing production time through additive manufacturing, 3D printing technology is suitable for flexible manufacture system and is more efficient than conventional manufacturing technologies. Accordingly, this study aims to present a plan for revitalizing the business using 3D printing to overcome the petty condition of industrial design enterprises.

### Methods

The study was carried out in three stages to present 3D printing convergence business activation solution to overcome the petty condition of industrial design firms. First, 56 papers on 3D printing and design industry, and policy trends were analyzed. It then examined the possibility of industrial use of 3D printing by deriving Keywords for corporate demand survey. Second, through Keywords derived earlier, the design firm's demand item for the 3D printing industry were constituted and identified the needs of 101 response companies out of 437 populations associated with the activation method. Third, it defined and proposed how

to promote 3D printing convergence business activation solution that ingrafts the needs of design firms, and presented specific cases.

## Results

As a way to overcome the petty condition of industrial design firms, 'CRTS' was proposed as follows. Based on the analysis results obtained from Keywords and 101 demand survey response firms derived from the analysis results of the previous 3D printing purpose-oriented utilization range analysis, the areas of customizing prototyping, Rapid prototyping, Test prototyping, and Sustainable prototyping were organized to provide more specifically. And 'CRTS' is an abbreviation for the first letter of English in each field. First of all, the customizing prototyping field is mainly a business method suitable for flexible manufacture system and can diversify some of the original idea products or products produced mainly in small quantities. It is also optimized for creating custom-made design products tailored to individual users' needs. Rapid prototyping is a specialized field for rapid prototyping, a feature of 3D printing. In general, it is an appropriate business method for producing single-unit models and sculptures rather than mass production, and maximizes the efficiency of the time and cost involved in making them. Test prototyping field is a business activation solution that eliminates difficulties in production stage by verifying form, function, and method of production in advance during early stage of production of product design. Industrial design firms compare and test products using 3D printing in the initial verification phase of production, which lowers the probability of failure in the product shipment phase. Finally, the Sustainable Prototyping field is a business activation solution that prints some parts of a product. It is suitable for the manufacture of some of the discontinued products that are no longer available when parts that make up the product are damaged, when periodic replacement of high-consumption parts is required.

## Conclusion

In this study, as a way to overcome the petty condition of industrial design firms through Keywords derived from literature research and to reflect Needs of enterprises derived from 3D convergence industry related enterprise demand survey, suggested that business activation solution. There were three main suggestion in this process. First, the scope of use of 3D printing, which had been classified as an existing industrial sector, was reconstructed from a use-oriented industrial design perspective. In addition, we found customizing, rapid, test and sustainable a necessary activation measure for industrial design firms. Second, specific cases in these four areas were reviewed to confirm their applicability. Finally, policies that

reflect the actual needs and needs of firms will be needed. According to the results of this study, more specific measures will be needed to boost the business of industrial design firms using 3D printing.

Keywords

3D Printing, Overcoming the petty condition of Industrial design firms,

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## Design Process for Animation Production in Education

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Fauzi Naeim Mohamed

Animation Section, Universiti Kuala Lumpur– Malaysian Institute of Information Technology,  
1016, Jalan Sultan Ismail, 30250, Kuala Lumpur, Malaysia

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\*Corresponding author: Fauzi Naeim ([naeim@unikl.edu.my](mailto:naeim@unikl.edu.my))

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### Abstract

Understanding animation pipeline is very important, but for students in the universities, can be full of trial and error. The basic idea of animation production – from pre-production, production, to post-production – usually helps the students to grasp the different phases involved in the creative process. However, lack of time-management and research skills, insubstantial visualization, or just simply laziness in doing design and creative writings, hamper the quality of submission of design report and animation works. What can we do to alleviate this problem? Unlike professional animation industry, most university students *need* to write their progress of creating animation from basic concepts to storyboards, up to post-production and final exhibition of the animations. I argue here that students have weak grasp in animation pipeline, and extensive understanding of visualization progress and creative writings will boost efficient time in delivering project. In the paper, I will relate the design process involved in the making of animation through years of personal experience supervising final year projects with the help of selected reports written by animation students from University of Kuala Lumpur. I conclude several obstacles, and how to overcome the challenges presented. The findings will benefit production designers, art practitioners, particularly students and lecturers who are involved in the process of designing animation from scratch.

### Methods

The scope of the paper works describes only animation process, with emphasis on those taking degree-level programme. To create further challenge, the design process assume not a group project (as usually conceived in many animation programmes) but instead for one individual. The methods to writing this paper are threefold. First, I will define the design process in animation production and the strategy involved. Second, I will describe the problems that are faced by students and lecturers, with emphasis on the creative process of articulating design and writings. Third,

I will summarize the issues of design process. I will design a table that corresponds to the animation pipeline, and suggest ways and best practices to efficient animation production for university student.

#### Initial Conclusion

From my experience, many students are unable to design quality reports since most lack the ability to understanding and articulating design process as form of writings. Creative writings can help in describing design process. If thumbnails, storyboard proposal, layout drawing and character design are the main phases of pre-production level, the glue to these design are creative writings. I conclude with suggestions for final year animation students to be trained in: a) research design process first rather than simply design character, b) students to have fundamental creative writings in *combination* with studio production.

#### Keywords

Design process, Animation pipeline, Creative works

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# A study on the 3D Printing Convergence Industry Demand and Suggestion of Policy Support for Design Firms

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Danbi Go<sup>1</sup>, Eunkyeong Na<sup>2</sup>, Jinryeol Lee<sup>3</sup>

<sup>12</sup> Design Major, Graduate School of Design&Creative Engineering, Chosun University, 309, Pilmun-daero, Dong-gu, Gwangju, Republic of Korea

<sup>3</sup> School of Informatics&Product design, Chosun University, 309, Pilmun-daero, Dong-gu, Gwangju, Republic of Korea

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\*Corresponding author: Jiae Han (jjilion@chosun.ac.kr)

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## Abstract

### Background

3D printing is being activated in many ways due to global interest and the influence of the 4th Industrial Revolution era. Therefore, it is predicted that 3D printing industry will greatly expand from equipment and technology to design and service field. So, Korea Government has formed its vision of becoming a global leader in 3D printing in 2019. However, the current policy is insufficient to reflect the demand for fields demanded by design companies and for each stage of design companies' growth, as well as the establishment of systematic support policies for companies. Therefore, the need for support policy directions is increasing with design companies' preferences in the 3D printing sector and demand in each stage of design companies' growth. Accordingly, the purpose of this study is to examine the link between design and 3D printing industry, and to identify the needs of design companies and the demands of each stage of design companies' growth, and to present operational methods and systematic support directions for 3D printing policies in the field of design.

### Methods

The research method consisted of theoretical consideration, demand analysis, and direction presentation. First, we conducted a theoretical study on the 3D printing industry promotion plan and support policy status promoted by the government. Second, we analyzed the 3D printing industry field in the design, analyzed the results of the demand survey. Finally, specific systematic support directions are presented by dividing the design companies' growth stages according to the results of the demand survey.

## Results

The current policy of the 3D printing industry is focused only on the system of the manufacturing sector, which has limitations in analyzing the 3D printing field related to design. Hence, the 3D printing industry was reorganized into the appropriate 3D printing industry, and the 3D printing industry's preferences and requests were different depending on the company's growth phase. In response, support policy directions were presented by identifying demand by design companies in each 3D printing field and demand by companies' growth stage. Start-up companies will support prototyping & testing and design change support programs, growth companies will support advices for design improvement, mature companies will support marketing, promotion and test certification of products. Therefore, it will improve the quality of products of companies and secure capabilities in the 3D printing convergence industry and contribute greatly to improving their sales.

## Conclusion

3D printing is being activated in many fields and Korea Government presents 3D printing policy. However, it is not known that the current 3D printing industry policy reflects the demand for fields demanded by design companies and for each stage of design companies' growth, and no systematic support has been established. The policy focused on the manufacturing sector system was reorganized into a classification system for the design sector, and the survey was conducted on design companies. According to the survey, the 3D printing industry's preferred and requested fields vary depending on the company's growth stages. In response, the company identified the demand for 3D printing and the demand for each growth stage of the design company and presented the direction of support policies.

## Keywords

3D printing, 4th industrial revolution, design company, demand survey, convergence industry, policy support

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## 4 Levels of Mass Art Customization

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Wang Qian<sup>1</sup>, Watanabe Makoto<sup>2</sup>, Ono Kenta<sup>3</sup>, Liu Junzhe<sup>4</sup>

<sup>1</sup> Graduate School of Science and Engineering, Chiba University, 1-33, Yayoicho, Inage-ku, Chiba-shi, Chiba, Japan, Industrial Design Insititute, Nanjing University of the Arts, No.74 Beijing West Road, Nanjing, Jiangsu, China

<sup>2,3</sup> Graduate School of Science and Engineering, Chiba University, 1-33, Yayoicho, Inage-ku, Chiba-shi, Chiba, Japan

<sup>4</sup> College of Furnishings and Industrial Design, Nanjing Forestry University, No.159 Long Pan Road, Nanjing, China

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\*Corresponding author: Watanabe Makoto ([m.watanabe@faculty.chiba-u.jp](mailto:m.watanabe@faculty.chiba-u.jp))

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### Abstract

#### Background

With the emergence of new manufacturing technologies such as computer numerical control (CNC), 3D printing and the emergence of business-to-consumer (B2C), and customer-to-customer (C2C) electric business platforms, the mass production and mass sale of personalized art products has been possible. Since the Industrial Revolution, art has been impacted by mass production, and personalized art has become a luxury in the modern life ultimately. And nowadays, mass art customization can bring such a luxury into people's life in a low-cost and efficient way, increasing the artistic experience of consumers.

#### Methods

Through comparative analysis of case studies, this paper classifies 4 levels of mass art customization systems, explains how the four different levels relate to each other. It shows us two projects of Chinese lantern handicraft customization service using the methodology of mass art customization system construction. It concludes with a methodology for building a mass art customization system.

#### Results

Mass art customization services can be divided to 4 levels (ranked from low to high): Recommend, Assemble, Transform, and Create. The differences of these 4 levels of mass art customization are individualization and consumer involvement. The level of system can be changed by adjusting the degree of individualization and consumer involvement.



## Conclusion

This article has viewed the trend of future consumer needs for personalized art products, defined “mass art customization”. It has classified the 4 different levels of mass art customization, summarized the differences of these 4 levels were on the degree of individualization and consumer involvement and illustrated how the 4 different levels relate to each other. Finally, this paper has discussed the level of system can be changed by adjusting the degree of individualization and consumer involvement by introducing practical configuration of two mass art customization systems.

## Keywords

Mass art customization; mass customization; art product; CNC; 3D printing; traditional handicrafts

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## 1. Introduction

With the emergence of new manufacturing technologies such as computer numerical control (CNC), 3D printing and the emergence of business-to-consumer (B2C), and customer-to-customer (C2C) electric business platforms, the mass production and mass sale of personalized art products has been possible. Since the Industrial Revolution, art has been impacted by mass production, and personalized art has become a luxury in the modern life ultimately. Due to the popularity of new manufacturing technologies, such as CNC and 3D printing, mass art customization can bring such a luxury into people's life in a low-cost and efficient way, increasing the artistic experience of consumers.

The concept of mass customization, emerged in the late 1980s, can be viewed as a natural follow-up to the processes that are becoming increasingly flexible and optimized in terms of quality and costs.[2] However, the existing related researches about mass customization have been focusing on the industry.

The methodologies of mass customization cannot be applied in customizing art products, because art products need to embody the personal view of an artist, but the methodology of mass customization cannot achieve this goal. In the following chapter, artistic product customization would be described, which applies the new manufacturing technology called “mass art customization”.

## 2. Method

Through comparative analysis of case studies, this paper classifies 4 levels of mass art customization systems, explains how the four different levels relate to each other. It shows us two projects of Chinese lantern handicraft mass art customization using the methodology of mass art customization system construction. It concludes with a proposed methodology for building a mass art customization system.

## 3. Result

Through an analysis of current examples, we can divide art customization services into four levels according to the degree of customization (ranked from low to high): Recommend, Assemble, Transform, and Create. Each level possesses different strategies and processes. Some cases may involve several levels that provide customized services.

**Recommend:** In the Recommend level, a large number of multiple-specification, mass-produced products are prepared in advance. The options are established according to the consumer's requirement categories. This can lead the consumer to regard their product selection as one that was expressly produced for them. For example, the art prints website offers numerous options such as holiday, gifts, stationery, art, home, digital, and many other sub-options.

**Assemble:** In the Assemble level, the product is presented by assembling the parts selected by the consumer. In order to reduce costs, the system will provide various modular parts for selection by the consumer. For example, in custom decorative-painting services, the consumer is required to select multiple options such as frame, mounting method, hook, package, etc. In 3D-printing services of necklaces, the consumer must select size, material, modular decoration, and combination method. This type of customization service typically utilizes an online 3D-interactive interface to simulate the 3D image of customized products.

**Transform:** In the Transform level, the consumer inputs the required content by typing text, uploading pictures, and uploading 3D models. Afterwards, the system will transform the consumer's input into art work. Simple content such as text and patterns can be transformed and simulated in the 3D interactive interface in real-time. However, complex content requires more time for transformation. For example, some art apps use artificial intelligence (AI) to match historic paintings with modern photos. To generate an image, it takes approximately three to five minutes to complete.

**Create:** In the Create level, the product design is usually executed manually.

The required content provided by the consumer to the artist can be text, photo, 3D models, or other forms. In the Create level, the artist is the one who selects the content according to his artistic concept. For example, in custom family portrait services, the artist may change the background color used in family photos to express an artistic concept.

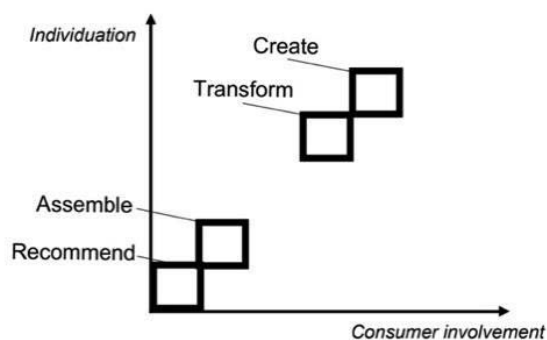
〈Table 1〉 4 levels of mass art customization

Level	Strategies	Process	Sample
Create	Develop	Consumer gives required content, system develops.	Custom family portrait on canvas from family photo, custom logo print from words: Etsy.com
Transform	Change form, style	Consumer gives required content, system transforms.	Custom necklace from name: Annezelliengold.twikit.com. Use artificial intelligence (AI) to match historic paintings with modern photos: Pikazo app, Prisma app.
Assemble	Provide options	System provides parts options and combination method options.	Custom 3D printing necklace, ring, figurine, decorative painting: personalcreations.com
Recommend		System provides category options.	Order art prints: minted.com

Figure1 illustrates how the four different levels relate to each other, depicting different degrees of individualization and consumer involvement at each level. The Recommend level has the lowest degree of Individualization and consumer involvement. The Assemble level has a higher degree of Individualization and consumer involvement than the Recommend level. These two levels provide options for consumer selection. In essence, consumers make their choices from the established range of options presented by the system. They cannot express additional

requirements or preferences. The Transform level allows users to input more complex requirements actively. The system then transforms the consumer's requirements according to the artistic concept of the artist and the conditions of production. In the Create level, the consumer will have difficulty imagining what product will be presented by the artist according to the requirements they inputted. A Create system provides a certain charm beyond the other levels because it can guide consumers to experience unpredictable art. In this regard, the relationship between the Create level and traditional custom art is the closest.

〈Figure1〉 Comparison of different mass art customization levels



We launched two projects to increase consumer involvement and improve user experience of Qinhuai Lantern products. (Figure 2) To be specific, one is the home decoration project for adults and the other one is the handmade project for children. By investigating the process of producing Qinhuai Lantern, we found that the most time-consuming and difficult step is making frame. If mechanized production can be realized, the problem of high cost of manual processes and unstable quality can be largely solved. After learning the artistic features of the Qinhuai lanterns from craftsmen, we considered that 3D printing technology is very appropriate for Qinhuai Lantern with complex frame. Apart from that, we helped craftsmen to produce and sell the Qinhuai lantern products, observed and interviewed customers, and then realized that traditional Qinhuai lantern is not appropriate for present home environment. Based on the results of this investigation, we decided on a strategy and level of customization. In our investigation of the home decoration project, we discovered that adult consumers were very sensible in purchasing decorations. When they decide on customizing a product, it means that they recognize the artist's concept. If they are dissatisfied with the customized products, they will not pay. Consumers desire customized products to express their own artistic tastes, but most consumers have no

professional training. The Assemble level is suitable for this project because the consumer involvement is not high, and consumers don't require a high degree of art individualization in this project. The system provides four kinds of 3D-printing product parts for consumer selection and combination according to their home environment. In the investigation of the children handmade project, we discovered that children were eager to create their own unique lanterns and parents wanted to develop their children's creativity. Therefore, the Transform level is appropriate for this project. At first, the system requires a child to draw an animal. Afterwards, the system customizes material packaging according to the pictures drawn by the child. Finally, the child finishes the lantern by himself. Both projects passed user testing and received sponsorship from investors.



Figure 2: Two project of Chinese lantern handicraft mass art customization

#### 4. Conclusion

This article has classified the 4 different levels of mass art customization, summarized the differences of these 4 levels were on the degree of individualization and consumer involvement and illustrated how the 4 different levels relate to each other. Finally, this paper has discussed the level of system can be changed by adjusting the degree of individualization and consumer involvement through description of the design process of two project.

The theory proposed in this paper can be used in the early development stages of the mass art customization industry. The theory proposed in this paper is also useful for developing artist-related product system or service systems, because some art forms are invisible. This study is inappropriate to the function value based customization system. However, current mass art

customization services have not yet built a certain scale of industry, future developments in this industry have not yet been finalized.

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# A Holistic Approach on Designing a Service for Healthy Food Conscious

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A. Zuhairi A. Majid<sup>1</sup>, M. Fazrul Rosdi<sup>2</sup>

<sup>1,2</sup> Product Design, School of The Arts, Universiti Sains Malaysia, Penang, Malaysia.

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\* Corresponding author : A. Zuhairi A. Majid(zuhairi.majid@usm.my)

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## Abstract

### Background

This study is looking at specific consumers in Malaysia that are looking for healthy food in their daily life. The lack of healthy choices food not being provided is the main issue in this study. A smart way of providing healthy foods and beverages are the main concern for this research that resulting in an excellent experience to the consumer.

### Methods

A set of questionnaires was constructed through an analysis of keywords from literature reviews. Quantitative analysis was used to get a brief of descriptive analysis from a survey. The service design process was applied once the criteria gathered from the analyzed survey. The criteria were also leading to a precise system mapping for new customer experience. A service blueprint is essential in the process of creating the whole new concept of healthy food service kiosk.

### Results

A smart and innovative are designed to hold a position at the top of the food chain. *Gourmet Daily* vending kiosk was created to accomplish our goal which is to provide healthy snacks, foods, and drinks to the public.

### Conclusion

Indirectly the service will educate the public to become more health conscious. The machine is not only full stacked of foods and drinks but also provides nutritional and allergen information prior to purchase that is accessible to the public. There is also a search function that allows users to search for products that suit their requirement.

### Keywords

Service, Innovation, Healthy Food, System Mapping, Service Blueprint

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## Safety Service Design Case Study for Factory

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Giyong Jang<sup>1</sup>, Jihyang Kim<sup>2</sup>, Sungpil Lee<sup>3</sup>

<sup>1</sup> Researcher, Backstage Co., Republic of Korea

<sup>2</sup> Senior Researcher, Backstage Co., Republic of Korea

<sup>3</sup> Associate Professor, College of Design, Service Design Route, Dongseo University, Republic of Korea

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\*Corresponding author: Giyong Jang ([gyjang@backstage301.com](mailto:gyjang@backstage301.com))

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### Abstract

#### Background

The concern of safety accidents continues to emerge as our society becomes more advanced. Records show that the number of accidents in the industrial estate has been decreasing gradually over the past five years, but it is not enough because the nature of the industrial estate has a high level of potential to cause large-scale accidents. Since manufacturing workers are always at risk, accident prevention measures are required to be provided. Common causes of safety accidents include inadequate training, poor handling of hazardous materials, defects in machinery and the inappropriate use of personal protective equipment (PPE). This study is intended to provide the guideline for a safer working environment to reduce the safety accident in the industrial workplace through service design and research methods. The research project and the case study have been conducted with the metal manufacturing company located in Yang-san, Korea.

#### Methods

First, divide the area to obtain information about the rural to the user, do a competitor analysis, market environment-related technology, press releases, design, word of mouth, etc. We are conducted to analyze the situation and the issues identified. Second, it draws out the problems to be solved in the categories classified through the issue extraction and third, we set up an idea strategy based on specific user richness and needs in line with ideas. Fourth, we confirmed the actual conditions through actual field visits and finally suggested the design by reflecting the results of the field survey to the ideas.

#### Results

The categorization through the situation analysis is a significant health,



environment, safety, physical and economic divided. Accordingly, the healthcare-based rural housing space is largely classified into the following five directions: waste problem, mold, disaster safety, and physical health. Five design proposals have been proposed that reflect the physical characteristics of the elderly and reflect differentiation according to the spatial characteristics of the rural areas. Each of these five design proposals is based on living patterns and problems that are experienced when elderly people live in rural residential areas, and they have a commonality that differentiates them in terms of reflecting space and user characteristics.

#### Conclusion

This study proposes a design based on the idea and the results of the field survey through the analysis on the situation of the residential healthcare space in rural areas and the analysis of the user in order to increase the possibility of realizing the resident welfare due to the aging population of rural areas.

#### Keywords

Service Design, Rural elderly-friendly living space, Rural Health Care

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# The Effect of Material and Texture on Human Perception of a Robot Through Touch

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Nor Hidayu Mohd Salimi<sup>1</sup>, Mastika Mustafa<sup>2</sup>

<sup>1,2</sup> Universiti Kuala Lumpur, 1016 Jalan Sultan Ismail, 50250 Kuala Lumpur, Malaysia

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\*Corresponding author: Nor Hidayu Mohd Salimi ([nhidayu@unikl.edu.my](mailto:nhidayu@unikl.edu.my))

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## Abstract

### Background

Studies on robot companion aims to help human interact with a robot and have a better acceptance of a robot to help them in many ways. In the context of nurturing love, comfort and safety, contact comfort of the material plays a greater role compared to the function. This study explores the effect of human perception towards robot material and textures through human touch and interaction.

### Methods

All statistical analyses were conducted using analysis of variance (ANOVA) with robot material and texture as independent variables. We executed a 2 (elasticity: elastic vs. non-elastic) x 2 (roughness: rough vs. soft) within participants experiment ( $N=24$ ). Participants were exposed and listened to a robot that each requested to touch them. Participants were also told that they could touch the robot as many times as they can during each experiment.

### Results

Participants evaluated that a robot with rough texture was perceived as more anthropomorphic than a robot with soft texture. On the other hand, a robot with elastic material and rough texture were perceived as more likeable than a robot with non-elastic material and soft texture. Result also shows that a robot with rough texture as more intelligent than robot with soft texture. Other attributes that might affect the result were the presence of the robot's voice.

### Conclusion

The appearance of robot companion should be put into consideration on the task of which to be performed. Study shows that robot with different task might appear differently due to its significance of social interaction

with human; robot companion that serves as a house helper might not need to appear as social as robots that were needed for therapy.

#### Keywords

Robot material, Robot texture, Human perception, Elasticity, Roughness, Likeability, Anthropomorphism.

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# Study on Design of Female Breast Measuring Stick

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Ding-Bang Luh<sup>1</sup>, Yu-Lin Zhao<sup>2</sup>

<sup>1</sup> School of Art and Design Guangdong University of Technology 729 DongFeng Dong Street, YueXiu District, GuangZhou City, GuangDong Province, China

<sup>2</sup>School of Art and Design Guangdong University of Technology 729 DongFeng Dong Street, YueXiu District, GuangZhou City, GuangDong Province, China

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\*Corresponding author: Yu-Lin Zhao ([512080653@qq.com](mailto:512080653@qq.com))

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## Abstract

### Background

In recent years, with the rapid development of the underwear market, underwear has attracted more and more people's attention. According to studies in different countries, 80 to 85 percent of women wear the wrong bra. When underwear of underwear inn choose and buy, underwear inn clerk can recommend underwear according to the size of fluctuation breast normally. With the development of human body research, a growing number of scholars have pointed out that this size classification prevents many women from choosing the right bra for themselves. In this study, the service design thinking was applied to analyze the whole process of shopping in lingerie store and optimize the contact points in the service. The purpose of this study is to introduce and design a new measuring ruler for measuring the important parts of the chest related to bra making. It can overcome the shortage of existing measuring tools, more comprehensively reflect the measurement parameters of body parts involved in bra making, so as to help the underwear shop staff recommend suitable bras for customers and improve the comfort of bras.

### Methods

Firstly, through literature review and questionnaire survey, this paper analyzes the reasons why women cannot buy bras of the right size, and puts forward the core problems: there is no suitable breast measurement tool; Secondly, existing chest measurement tools and materials, including bra products, are reviewed. Introduce the technology to analyze the measurement needed for bra production (measurement of girth, distance, surface radians, thickness and width, and measurement of small shoulder width and shoulder Angle), as an ideal size comparison, and compare with existing bra products. The measurement tools are classified and their current is analyzed, the size of the measuring tools can be measured and the

size of the measuring tools cannot be measured, finally, the design of a new measuring ruler is put forward.

#### Results

The purpose of this study is to design a female chest gauge to maintain the advantages of the existing measuring tools and to solve the problem that it can not measure the size. By studying the new design ruler, we can directly measure the circumference, distance, small shoulder width, shoulder angle and shoulder width of the chest, and indirectly measure and measure the size of the surface. A great progress in chest measurement technology.

#### Conclusion

Based on the service as a starting point, the study analyzed the needs of users, and integrated the service design concept into the design of chest gauge, so that women can choose underwear conveniently and effectively, and improve the comfort of underwear for women.

#### Keywords

chest measurement , measurement tool , measuring stick design

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# Hotel security service system designed for women traveling alone

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Ding-Bang Luh<sup>1</sup>, Hong-Jiao Wang<sup>2</sup>, Chi-Hua Wu<sup>3</sup>

<sup>1,3</sup> School of Art and Design Guangdong University of Technology 729 DongFeng  
Dong Street, YueXiu District, GuangZhou City, GuangDong Province, China

<sup>2</sup> Major of Industrial Design Engineering School of Art and Design Guangdong  
University of Technology 729 DongFeng Dong Street, YueXiu District, GuangZhou  
City, GuangDong Province, China

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\*Corresponding author: Hongjiao Wang ([1047958379@qq.com](mailto:1047958379@qq.com))

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## Abstract

### Background

As women's participation in the workplace increases, the chances of going to work in the field are also increasing. More and more women need to get out of their "families" and participate in social production and public affairs. According to thepaper.cn, 47% of business people in China make business trips one to two times a month on average. Women account for 42% of modern business travel. In addition to passive business travel, the number of solo women staying in hotels on leisure trips is also noteworthy, with the report showing that more than 50% of women worldwide have chosen to travel alone. Regardless of whether they are active or passive, women are faced with the need to stay alone in hotels, and the survey shows that the proportion of personal safety accidents in hotels is as high as 34.7%. Hotel safety is directly related to the personal safety of women, which is the basis of good service experience. Therefore, this study designed a hotel safety service system for women traveling alone. As a preventive design study, the design of a visual and perceivable complete security system for hotel services can enhance the personal safety factor and psychological security of lone female hotel guests.

### Methods

In this study, various research methods such as interview and questionnaire analysis are adopted to classify the common and dangerous hotel scenes. These included: an attack on a hallway, a stalking house, indoor violence, a lift ride, and a friend visit. And the use of the user story map, customer history map and service blueprint,

summarize the existing hotel service process problems, from which to find opportunities for design research.

#### Results

In this study, the elevator face recognition system, statistical identification system for the number of people entering the room, rescue word alarm system and intelligent door defense system were proposed to enhance the safety factor of women living alone in the hotel. Hotel security for a complete set of system design, can be the first time the occurrence of dangerous situation to inform the security personnel, prevent the occurrence of dangerous.

Finally, the simulation demonstration is used to illustrate the new security system, and hotel employees are invited to test the feasibility and effectiveness of the scheme.

#### Conclusion

Through the investigation of the existing hotel security mode and related security patents, it is found that the results of this study have strong practicability and patentability, providing an effective solution for the existing hotel security problems, and substantial help for the future hotel security facilities and service management system.

#### Keywords

Traveling alone for women's safety, hotel service, system design

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# The Aesthetics Traditional Retailers in Conscious Decision in color placement at *Kuching Old Heritage Street trails*, Sarawak, Borneo.

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Ahmad Azaini Manaf<sup>1</sup>, SungPil Lee<sup>2</sup>,

<sup>1</sup> Design Technology Department, Faculty of Applied and Creative Arts, Universiti of Malaysia, Sarawak

<sup>2</sup> Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

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\*Corresponding author: Azaini Manaf ([amaazaini@unimas.my](mailto:amaazaini@unimas.my))

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## Abstract

### Background

The purpose of this paper is to discuss color identity, and its significant role in cultural identity among street retailers in Old Heritage Street Kuching. The impact of color is significant for tourists and acknowledged within the urban spaces and marketing perspective. The outcome of this paper is to reveal insights about the behavior of retailer pattern on color representations and conscious decision in placements among them. In addition, the paper also proposes an alternative framework for marketers and local government in recommended color guidelines.

### Methods

#### Design/methodology/approach

The study takes approach by Kobayashi's color image scale due it's highly adaptable for diverse culture and environment. This is to analyze the retailer's decision on color-conscious in creating product placement and inhouse display in retail property.

### Results

The findings reveal that the results from color image scales evidences by N=40 research within the same area, with over observation of 1000 digital photos captured around the area of Old Heritage Street. The images This is to analyze the retailer's decision on color placement and retail property. The results display similarity among attributes in Image Scale: *Colorful*, *Calm*, *Natural* with similar composition of over 40 different samples.



### Conclusion

Similarity of color usage traders and retailers has similar trends with shop to shop with similar products and handicrafts placement in point-of-purchase (Product Display). Indeed, the arrangement of products were not representing any cultures nor placement decision by the retailers. However, the products and handicraft placement in point-of-purchase of all influences by next door competitors. Interestingly, in opposite, there are no color restrictions by the local authorities in applying paints on the heritage buildings. Therefore, the results spark potentials in creating sustainable framework for the area, produce long term benefits to the tourists, retailers and communities alike.

### Keywords

Color Image Scale, Application, Retail, Traders, Color Placement, Decision, Kuching Old Heritage.

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# The Comparative Analysis of the Physical Comfort Factors from Two Generations' Point of Views

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Siti Aisyah Muhammad<sup>1</sup>, Sung Pil Lee<sup>2</sup>

<sup>1</sup> Faculty of Architecture and Ekistics, Universiti Malaysia Kelantan, 16300 Bachok, Kelantan, Malaysia

<sup>2</sup> Graduate School of Design, Dongseo University, 47, Jurye-ro,

Sasang-gu, Busan, Republic of Korea

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\*Corresponding author: Siti Aisyah Muhammad ([aisyah@umk.edu.my](mailto:aisyah@umk.edu.my))

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## Abstract

### Background

This research intentionally explores the prospective customers expectation about the physical comfort factors of the coffee shop. Cambridge Dictionary has defined comfort as something that makes a person's life easy and pleasant; the pleasant and satisfying feeling of being physically or mentally free from pain and suffering, or something that provides this feeling, while physical means something existing as or connected with things that can be touched and seen ([www.dictionary.cambridge.org](http://www.dictionary.cambridge.org)). Therefore the physical comfort factor is described as something visible factor of pleasant and satisfying the customers and users. For example the study by Sulek and Hansley (2004) about the physical comfort factors of a restaurant were the atmosphere and the fairness of the seating procedures. This research has selected the coffee shop as the subject of study to examine the physical comfort factors from the perspectives of two groups of age of the prospective customers namely the group of age 18–29 years old and 30–49 years old.

### Methods

Based on the objectives of research, the survey to achieve the prospective customer will be constructed according to the common physical environment at the coffee shop. The component attributes of the coffee shop physical comfort factors will be gained after the Exploratory Factor Analysis (EFA) using Principle Component Analysis (PCA) and Hierarchical Cluster analysis have been evaluated. The components that derived from the previous researchers and precedent studies about the retails, upscale restaurant, hotel and other service businesses, and several visual constructs were structured in a Likert scale survey and distribute to the prospective customers of a coffee shop. Prospective customer involves in stimuli the experiences of visiting coffee shops and similar cafe, and

stimuli the expectation of the best coffee shop should become according to their preferences. The collective responds of the preferences by the prospective customers will be analyzed to find the highest factors of physical comfort influenced them. There were constructs developed in the questionnaire to be measured and clustered using SPSS 25 and specifically using Principle Component Analysis (PCA) and Hierarchical Cluster analysis.

## Results

The findings indicated that the two generations have preferred different attributes of physical comfort factors of a coffee shop. Results showed that the group of age 18 to 29 years old preferred to spend at a coffee shop with variety seat and table while the group of age between 30 to 49 years old more consider about the cleanliness of the area. After narrowed the Hierarchical Cluster, both generations clustered the comfort factors namely Facility, Layout, Atmosphere and Decoration. It also indicated the physical comfort factors for a coffee shop are much influenced by the physical attributes such as the furniture layout such as the counter and its function, the segregation of private seats and also the shared table between customers. As mentioned earlier, the human factor namely the age of generations have resulted the preferable attributes of the physical comfort factors. The energetic group of 18–29 years old like to stay individually and with groups of people therefore they preferred variety seats and cheerful environment. The group of 30–49 years old however concerned about the hygienic such as the space cleanliness, tidiness and provided hand-wash basin. The summary of the attributes from the physical comfort factors are classified as: Facility (parking, variety, hygiene); Layout (Counter, movable); Atmosphere (Lighting, Aroma); and Decoration (Aesthetic, Artificial).

## Conclusion

Researches argued that there was direct connection between the physical environment and customer satisfaction<sup>131)132)</sup>. Chang (2000) suggested that perceived physical environment was a direct indicator of customer satisfaction that associated with positive approach behavior. In addition, Wakefield and Blodgett (1996) studied the effects of layout accessibility, facility aesthetics, electronic equipment, seating comfort, and cleanliness on the service-scape and it turned out that physical

environment significantly affected customer satisfaction. In fact, Mattila and Wirtz (2001) indicated that the top three reasons for customers to patronize their target restaurants in the casual dining sector were food quality, service, and atmosphere. Voss and Zomerdijs (2007) has proposed experiential innovation journey for a service process. Thus, the further research about the impact of physical comfort factors and the prospective customers should be done to find more analytical studies about potential service business and design. Taking a coffee shop as the case study, this research proposed the idea of emphasizing the relationship between the physical comfort factors and prospective customers' expectation on the customers' preferences in visiting the coffee shop. Furthermore, nowadays there is a trend in coffee shop design to provide an alternate space for customers to feel the space as more than a place to drink. Understanding the factors that involve the consideration of the customers may increase the possibility of best practice in design. The implication of findings contribute to determine the understanding of the preferred physical comfort factor a coffee shop and to help in creating a coffee shop that customer expected to be served and selected. As a designer, architect and innovator this findings expose the factors of physical comfort from two perspectives of generations and potentially to be part of design considerations.

#### Keywords

Comfort, Physical environment, Coffee shop, Design

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# Study on the Design of City Metro Security Inspection System Service

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Ding-Bang Luh<sup>1</sup>, Xin-Yue Bo<sup>2</sup>,

<sup>1</sup> School of Art and Design GuangDong University of Technology 729 DongFeng Dong Street, YueXiu District, GuangZhou City, GuangDong Province, China

<sup>2</sup> Major of Industrial Design Engineering School of Art and Design Guangdong University of Technology 729 DongFeng Dong Street, YueXiu District, GuangZhou City, GuangDong Province, China

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\*Corresponding author: Xin YueBo ([13069610122@163.com](mailto:13069610122@163.com))

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## Abstract

### Background

City metro, as the most frequently used means of transportation in China, facilitates the public in transportation. However, a serious social phenomenon has derived — subway passengers flow congestion in queuing up. Relevant literature shows that the unreasonable design of security inspection system in the subway station is an important factor leading to queuing congestion in addition to the excessive population of China and the concentration of public working hours. Little effect has been achieved through the existing security inspection and flow diversion methods, such as the flow-limiting outside the station, the operation of the channel for passengers without carrying bags and the increase in the number of security inspection equipment. The difference in the speed between the manual inspection channel and the machine transmission inspection channel still exists, leading to congestion in queuing up. Based on the service design concept, this study proposes an optimal design of the subway security inspection system targeting the time difference between manual inspection channel and machine inspection channel, with a purpose to alleviate the queuing congestion in the subway station and to better allocate transportation resources, shorten travel time and improve urban operation efficiency.

### Methods

The research process is mainly divided into three stages with the security inspection system of a subway station in Guangzhou of China as the data collection site. First, the inconveniences in the security

inspection for passengers were obtained through Interview Survey and Observational Survey to understand the whole process; Second, the passengers' needs in the entire process was analyzed directly through user Experience Travel Journey Method to find out the service gap in the security inspection process. Third, demand analysis was transformed based on the principle of user demand, and a new security inspection service system was established using the Service Blueprint and a design plan was proposed.

**Results** The subway security service system provided by this study incorporates current technological developments, including the motion line design of the security inspection channel and the product concept design of the security inspection facilities. Firstly, in order to facilitate passengers carrying different sizes of goods to enter the security inspection channel, three topdown, small to large transmission gates are set up in the new security inspection facility, which connect three channels of different lengths that small and medium and large-sized luggage can be transmitted at the same time to save time and space costs. Secondly, the motion line of the security inspection channel is designed by integrating the layout of security inspection entrance, the security inspection channel and the subway entrance. The security inspection channel is divided into a manual inspection channel and machine inspection channel. After the passenger enters the security inspection entrance, those without carrying bags can directly enter the subway entrance through the manual inspection channel, and those carrying the bag enter the manual inspection channel after going through the machine inspection channels of different lengths according to the size of their bags, thus the time difference between passing through the two different channels can be shortened so that passengers can reach the security inspection exit at the same time.

## Results

In this study, the elevator face recognition system, statistical identification system for the number of people entering the room, rescue word alarm system and intelligent door defense system were proposed to enhance the safety factor of women living alone in the hotel. Hotel security for a complete set of system design, can be the first time the occurrence of dangerous situation to inform the security personnel, prevent the occurrence of dangerous.

Finally, the simulation demonstration is used to illustrate the new security system, and hotel employees are invited to test the feasibility

and effectiveness of the scheme.

#### Conclusion

This study analyzes user needs from the perspective of service design, integrates service design concept into the design of security system, and improves tourists' travel experience. First, this research is based on the existing technology to provide subway security service system, practical. Second, after consulting the patent, the service system of this research has patent-ability, intend to apply for a patent.

#### Keywords

Subway Queuing Congestion, Security Inspection System, Service Design

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## Social issue which technology make our lives self-reliant

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Kenta ONO<sup>1</sup>, SHIDA Tatsuhiko<sup>2</sup>, Fukuo AKIYAMA<sup>3</sup>, Takeshi MINEMOTO<sup>4</sup>

<sup>1</sup> Department of Design, Graduate School of Engineering, Chiba University, 1-33, Yayoi-cho, Inage-ku, Chiba-shi, Chiba-ken, Japan

<sup>2,3</sup> Department of Design, Division of Creative Engineering, Graduate School of Science and Engineering, Chiba University, 1-33, Yayoi-cho, Inage-ku, Chiba-shi, Chiba-ken, Japan

<sup>4</sup> Global Center for Social Innovation –Tokyo, 1-280, Higashi-Koigakubo, Kokubunji-shi, Tokyo, Japan

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\*Corresponding author: Kenta ONO ([k-ono@faculty.chiba-u.jp](mailto:k-ono@faculty.chiba-u.jp))

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### Abstract

Today, most of the social problems which developed countries are faced with are largely due to the dilution of the community. we think dilution of the community is the critical cause, and they are considered to be caused by self-reliance by technology. Therefore, the purpose of this study was to clarify how much our life has been self-relied by technology through the experimental survey. In the survey we sent three groups (Non-tech, Analog, Digital group) with different levels of available technology to Kuala Lumpur, and we analyzed the difference in their behavior. We found it that there was a big difference between the Digital group and other groups at the planning stage, in the travel stage there was much difference between the Non-tech group and other groups. Self-reliance by technology definitely makes our lives more convenient and more comfortable, and it is certain that the degree of self-reliance is increased higher and higher in the future. However it is also certain that the self-reliance has an adverse effect on the dilution of the community, it is necessary to design a new solution using the results obtained from this research.

### Background

Today, most of the social problems which developed countries are faced with (loneliness death, withdrawal, elderly providing care for the elderly, and so on) are largely due to the dilution of the community.

With regard to loneliness in particular, in 2018 the post of the Minister for Loneliness was newly established in the UK. According to the data from the



British Red Cross, about 9 million people are suffering from loneliness in the UK, and not only the mental condition is adversely affected, but productivity declines and absences when employees suffer from loneliness. As a result, the company's loss is estimated at £2.5 billion a year and the economic loss of the entire UK amount to £32 billion (2016 Emily Singer). In this research, for these social problems that are expected to become more and more serious in the future, we think dilution of the community is the critical cause, and they are considered to be caused by the nature of self-reliance by technology. Therefore, the purpose of this study was to clarify how much our life has been self-relied by technology through the experimental survey.

#### About self-reliance caused by technology

We have been working on projects under the name "Reciprocal Design Project (2018 Kenta ONO)" since 2013, intending to solve the problem of community dilution by design.

While promoting the project, we focused on self-reliance caused by technology as the cause of the dilution of the community. (We think that "technology makes people misunderstand that they can do anything by themselves" is a more accurate description, but since it is redundant, hereinafter, it's called "self-reliance by technology" or "self-reliance caused by technology").

Naturally, self-reliance by technology is always a good thing. By the electric wheelchair, the elderly people who cannot go out alone are enabled to go out alone. By using the ride-sharing service and the map app, people can go to places in a foreign country where it has been difficult to go because they cannot speak the local language.

In this way, self-reliance by technology is a wonderful thing, and it is certain that self-reliance by technology will make our lives more convenient and more comfortable, and the degree of self-reliance will increase more and more in the future.

However, on the other hand, there are also problems that arise as a result of self-reliance by technology. The first problem is the reduction of opportunities to rely on others or be relied on by others. For example, by installing a delivery box in each apartment, the delivery company can freely decide the delivery route without worrying about the time a client is staying at home and also be released from the most inefficient operation, re-delivery. On the other hand, the client has the freedom to go out, without worrying about the delivery time. When he comes back home, the package will have been appropriately placed in the delivery box. Of course, the

delivery box definitely makes our lives more convenient and more efficient but, at the same time, it is becoming difficult to express one's appreciation, for example, "I can receive the package safely, because there is a person who has delivered it to me," which is what we did in the past, when we received it by hand.

Another very significant problem is becoming too reliant on technology, which appears to be an illusion. If we really could do it alone, it would probably not be a big problem. However, in the previous case of the delivery box, some people are involved in the development and production of delivery boxes, while others are also involved by installing the boxes at your apartment. Therefore, we think that we can do it alone, even though we cannot do anything at all. It is possible to imagine that someone delivered it because the package is in the delivery box, but when the autonomous car is introduced in the future, we will understand less and less, and we will not do anything by ourselves, even if many people are involved in the development and manufacture of autonomous vehicles.

However, self-reliance is an essential nature of technology, and its development and expansion cannot be stopped in the future. In order to consider its countermeasures, it is necessary to properly understand the current state of self-reliance through technology, particularly in terms of how much technology makes us self-reliant, to determine the solution to these serious problems. Hence, this is the objective of this research.

## Survey on the self-reliance of technology

### The method

We conducted an experimental survey to understand the current state of self-reliance through technology.

The task of traveling was given to three groups with different levels of technology utilization, and we analyzed on the level of technology and level of self-reliance through technology.

The following describes the tasks, the groups, and the technical constraints that each group should meet.

### Group

Each group has two members, who were divided into the following three groups according to the level of technology they can use:

#### Group 1: Non-technology (Non-tech Group)

The group cannot use not only digital technologies, such as smartphones and the Internet, but also analog information media, such as guidebooks, at all. However, they are allowed to use maps and brochures that can be

obtained free of charge locally.

Group 2: Analog Technology (Analog group)

The group can only use analog information such as guidebooks and maps. Typical travel behavior about 30 years ago before the spread of the Internet and mobile phones is assumed.

Group 3: Digital Technology (Digital group)

A group can use any of the technologies currently available, such as smartphones and the Internet. It is assumed that normal travel behavior is currently being conducted.



〈Figure 1〉 Three Groups according to the level of available technology

Task

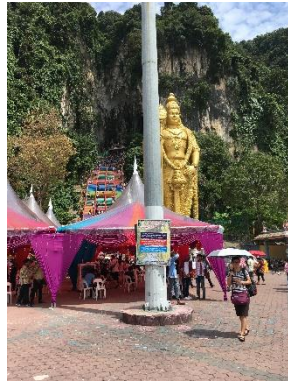
The task is to plan and carry out a two-night, three-day trip, subject to the technical constraints placed on each group.

The destination is Kuala Lumpur because no member of all three groups had ever been there in the past and the ordinary Japanese people have very little prior information.

The actions are free as long as the technical constraints are followed, but the following two common actions should be carried out.

Common act 1: Visit Batu cave

Common act 2: Eat "nasi lemak"



〈Figure 2〉 Batu cave



〈Figure 3〉 Nasi lemak

The order of the tasks is not particularly limited.

The reason for giving common actions is to compare easily between groups.

#### Method of Recording

Each team always carries video recording equipment and records as much as possible during travel planning and actual traveling. Besides, each team carried a GPS logger and recorded the routes on which they moved. Furthermore, in order to grasp the degree of satisfaction of each action, an action recording sheet (Fig. 4) was prepared and evaluated before and after every action.

場所	写真撮影	カメラ	メモ	28
日付・時刻・場所: 11/10 Masjid Jamak JR				
やったこと (何をしたか): バト、まじり行方を聞く				
所要時間: 2分				
使ったもの (道具・材料・機材): なし				
経過観察	道案内の地図・道・道案内の看板 / バト・マシンの内側・道案内の看板			
<p>バト・マシンの電車の使い方を聞いた。乗換案内を教えてくれると思っていたが、バト・マシンの電車のホームを教えてくれた。結局乗換案内は路線図で確認した。</p>				
<p>結果: 路線図で乗換案内/バトを確認</p>				
<p>何を思った・感じたか (思ったこと)</p> <p>乗換案内の地図を使い教える</p>				
<p>100 0 100</p> <p>路線図を見てもわからないのか... と思った。</p> <p>結局自分たちで路線図を見た。</p> <p>水辺の人はあまり見えていない</p>				

〈Figure 4〉 Action recording sheet

The period of the survey

On November 1, 2018, participating members were invited to the instruction for explaining about the survey.

In order to unify the survey environment, such as weather and events to be held in Kuala Lumpur, we decided to travel in Kuala Lumpur for all of the two days of the weekend on November 24 (Sat) and 25 (Sun).

The travel planning period was from November 2 of the next day of the instruction to the last day of the travel period.

### **How to describe the result of the survey**

Figure 5 shows the behavior of each team, with the time axis taken vertically.

The behavior is classified into the following nine actions, "Move", "Walk Around", "Eat & Drink", "Shopping", "Talk", "Search", "Enjoy", "Sleep", "Do Others". Furthermore, we focus on only unself-concluded actions, except for self-concluded action where the action itself is a goal and another action cannot be substituted for it, such as "Move," "Eat & Drink," "Shopping," "Enjoy," "Sleep." We divided those unself-concluded actions into two types of action. One is an action to search a proper destination or goal, which we call "Destination Searching Action" and is indicated by a red circle. Another is an action to search a proper way or means to achieve a destination or goal, which we call "Means Searching Action" and is indicated by a green circle.

For example, even if it is the same action of "Talk", the talk "Is there something interesting near here?" is "Destination Searching Action", as this action of "Talk" is to search for a destination. Another talk "How can I go to KL Sentral Station?" is "Means Searching Action", as this action of "Talk" is to search a way to achieve the destination of "KL Sentral Station". Moreover, in this research, we focused on self-reliance by technology. Therefore, we focused on communication with people in particular and divided it into two types, light communication and deep communication, according to the amount of exchange.

For example, ordering food at restaurants, taking immigration, and other passive communications are classified as light communication and are shown in the small human-shaped icon. Asking the local people about interesting places to visit and other active communications are classified as deep communication and are shown in the big human-shaped icon.

### **The results of the survey**

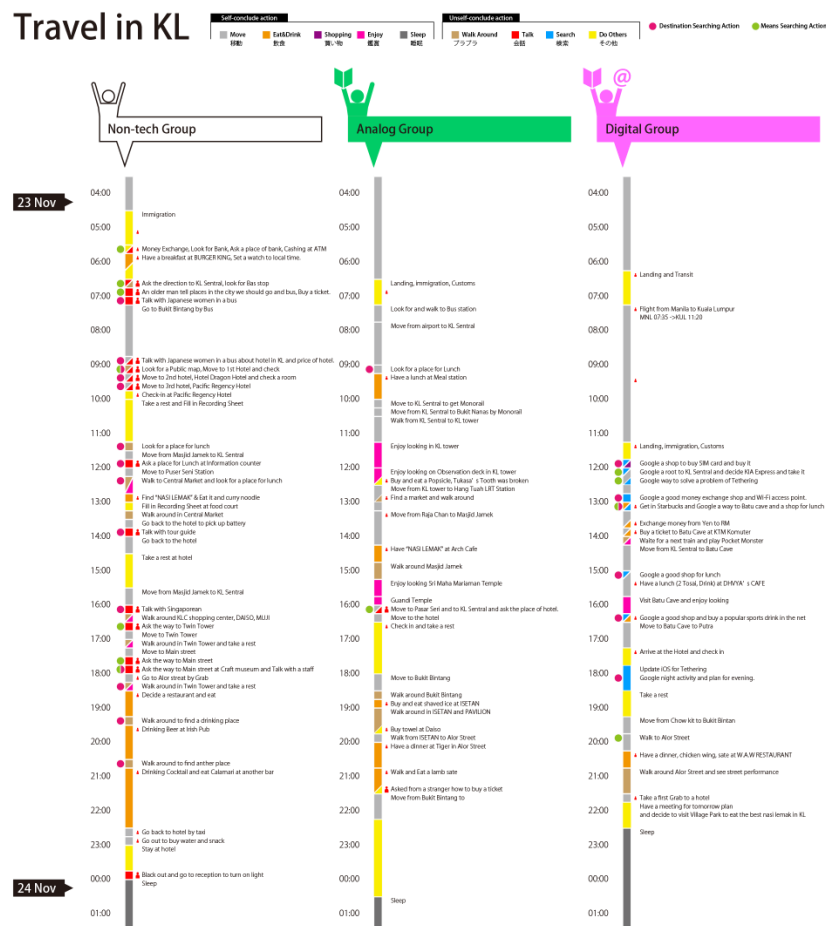
We explain the results and findings obtained from the survey.

## Travel planning stage

In the travel planning stage, the most significant difference is that the non-tech group and Analog group had more communication with others than the Digital group because they went to a travel agent and purchased a ticket and consulted with the staff because they could not use the Internet. On the other hand, since the Digital group can use the internet, they were able to enter the dates and destinations on the airline ticketing site, as we usually do, and bought the most reasonable tickets, taking into account the flight schedule and price without visiting a travel agent.

About the hotel, the non-tech group decided to search for a hotel after arriving in Kuala Lumpur, and the Analog group made arrangements for the hotel within the same time as the travel agent had.

The Digital group made reservations from the hotel reservation site as we usually do.



〈Figure 5〉 Action line of each groups

About the travel planning, the non-tech group had nothing to do because they could not obtain any information in Japan. The Analog group, on the

other hand, could use the guidebook, and they could list down the places to visit and create a travel plan. As the Digital group could use the Internet, they could also make a selection of the places they wanted to go to and create a rough travel plan.

In the travel planning stage, we found that the Digital group has achieved complete self-reliance by technology, and the self-reliance by technology level for the Non-tech group and Analog group is quite low because they had to go a travel agency for tickets and hotel arrangements and communicate with the staff.

During the traveling in KL

Figure 2 summarizes the behavior of each group during the travel period. The first and foremost point is the number of communications with others. The non-tech group has a total of 73 times (43 light communications and 30 deep communications), while the Analog group has a total of 36 times (30 light communications and 6 deep communications) and the Digital group has a total of 32 times (26 times for light communication and 6 times for deep communication).

There is no significant difference in the number of light communications among groups, such as ordering at a restaurant and going through immigration, but regarding deep communication, there is a significant difference between the Non-tech group and the Analog-Digital group.

In more detail, most of the deep communication by the Non-tech group is having conversations with strangers to search for a destination, while the Analog group and Digital group have few deep communications to search for a destination because they had already listed up places they wanted to go before traveling and when on the move, they could search for a destination by guidebook or smartphone.

However, even in the Non-tech group, they had many conversations with others for destination searching in the first day, but after the second day, as they had decided places to go by the first day of communication, therefore the number of deep communication to search for a destination was reduced.

In addition, it can be seen that the Non-tech group has many conversations with others for searching, especially on the first day. The reason is they did not know the route to go there, even if they decided the destination and lost their way many times and asked people for directions. From the above, we found that the difference between the Non-tech group and the Analog group is significant, but the difference between the Analog group and Digital is relatively small compared to the planning travel stage

from the viewpoint of self-reliance by technology.

However, it turned out that there is a difference between the place of visits of the Analog group and the Digital group from the viewpoint of self-reliance by technology.

The Analog group decides actions according to the recommended course on the guidebook, but if they find a recommended place to eat on the guidebook near the place where they are now, they go into the shop. If there are no shops listed on the guidebook, they will walk around to search for nice shops, and they will choose a shop in hopes of accidental encounters. The Digital group, on the other hand, always uses the Internet to check whether there are high-rated restaurants near the place where they are now and selects the one with the highest rating.

Moreover, even if they find a restaurant that looks nice accidentally, they check the rating of the shop on the Internet in front of it, and they only decide to enter if the rating is higher than a certain degree.

In other words, as the level of self-reliance through technology is becoming higher, we tend to choose an action to eliminate contingency as much as possible. Hence, it can be said that it becomes difficult to have disappointing results that betray our expectations, but it also becomes difficult to obtain wonderful experiences that surpass our expectations.

We found a similar tendency for a tourist spot. Regarding the common act 1: Visit Batu Cave, the Non-tech group got a great impression when they saw the scene on the spot because they had no advance information, but the Analog group had already checked and looked at it on the guidebook before visiting the site, and the Digital group had already searched "Batu Cave" on the Internet and viewed various photos. Therefore, even if they saw the real thing on site, it is difficult to give them a great impression that surpasses their expectations.

#### **Discussion after the survey**

After returning back to Japan, all members discussed this experimental survey. Before conducting the survey, we expected that there was a big difference between the Digital group and other groups. Although there was a big difference between the Digital group and other groups at the planning stage, in the actual travel stage, the places they visited are different. However, it turned out that there was not much difference in terms of the level of self-reliance by technology between the Analog group and the Digital group.

Moreover, the difference between the Non-tech group and other groups is that the Non-tech group did destination searching by communicating with



local people, whereas the Analog group searched a destination by a guidebook at the planning stage and the Digital group searched a destination on the Internet.

The satisfaction of the Non-tech group was high at the time of returning to Japan, but it was observed that the satisfaction level was decreased by sharing information with other groups.

The reason is that the Non-tech group members thought that they made the best choice by communicating with local people at that time, but after sharing information with other group members, satisfaction seems to have decreased because they realized that there were better options they could not obtain in Malaysia.

### Conclusion

In this study, three groups (Non-tech, Analog, Digital group) with different levels of available technology they can use were sent to Kuala Lumpur to understand the current status of self-reliance by technology, and we analyzed the difference in their behavior.

Digital group did not have deep communication with other people at the travel planning stage and traveling stage and found that they could travel without any communication with local people. The Analog group, since the public transportation is developed in Kuala Lumpur, hardly had deep communication with local people while traveling, and we found the level of self-reliance by technology while traveling is almost the same as the Digital group.

To reiterate, self-reliance by technology definitely makes our lives more convenient and more comfortable, and it is certain that the degree of self-reliance is increased higher and higher in the future. However it is also certain that the self-reliance has an adverse effect on the dilution of the community, it is necessary to design a new solution using the results obtained from this research.

### Acknowledgement

This research was partially supported by Global Center for Social Innovation—Tokyo, Hitachi, Ltd. and the Ministry of Education, Science, Sports and Culture, Grant-in-Aid for Scientific Research (B), 2016–2018 (Grant Number: JP16K00699)

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### Keywords

self-reliance, community, technology,

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# Research on The Elements Of Community-oriented Service Design Toolkit

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Tao Chen<sup>1</sup>, Ju-young Chang<sup>2</sup>

<sup>1</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

<sup>2</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

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\* Corresponding author: Ju-young Chang(jychang@gdsu.dongseo.ac.kr) Chen Tao (sifenxayct@sina.com)

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## Abstract

### Background

In the current trend of pursuing innovative social design, design and social change are in a connected world in transition to sustainable development. Everyone—whether you want to or not—must constantly design and redesign your way of being. Many of these projects are converging here, and are creating greater social change; The role of the design specialist (or institution) is to nurture and support these individual or collective projects, and the social changes that they cause.

Among them, the community as a basic unit in a distributed elastic system serves as a dialogue bridge between local residents and design experts. At the same time, as a local place for project practice, the community has the characteristics of localization and openness. Trust based on common living space is conducive to collaborative contact between residents, design experts, and residents, so as to carry out social innovation project experiments. Although design ability is a universal human ability, it needs systematic training to play its role. In reality, such training is not common. Therefore, with the help of the designed tool elements, the public can actively and effectively participate in the design process. This paper aims to construct the multi-faceted value and uniqueness of tool elements in service design through the research of community-oriented service design, which is suitable for the active participation of the majority of residents in the distributed flexible community.

### Methods

The research methods in this paper are mainly literature investigation and research combined with IDEO case analysis.

Based on theories such as "Regional Revitalization", "5 principles of Service

Design", "Combination of Module", "Eco Services", "Service Innovation Design" and "User Experience Design", etc. like research support. Research on community-oriented service design tool attributes. Among them, "community-oriented" is defined and explained, and the foothold and uniqueness of this concept in service design are analyzed. In addition, this paper classifies and studies the attributes of community-oriented service design toolkit, and summarizes the tool elements that are suitable for community service design -based platforms to facilitate residents' participation in the design goals.

### Results

Through the research of this paper, the elements of the community-oriented service design toolkit are preliminarily obtained, and the particularity and necessity of these elements are summarized. Combine with the case study, analyze and summarize the characteristics of community-oriented service design and the practicality of the toolkit. Finally, assess the value of the use of community-oriented service design tool elements.

### Conclusion

Through the research on the elements of community-oriented service design toolkit, the characteristics of community service design and the necessary elements to promote users to participate in community services are summarized.

The value of this paper is reflected in guiding the residents in the community to design and how to solve their real needs and problems in life through the above research. Due to the uniqueness of each community and residents, through the research summary of service design tool elements, these elements are applicable to specific problems in the distributed elastic community, with good replicability and relevance, and finally empower the community and empower individuals through service design. This paper has important practical value for improving the enthusiasm and operability of residents in the community to participate in the design of innovative services in the region.

### Keywords

Community-oriented, Service Design Toolkit Elements, Replicable and Associated, Enabling Communities

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## Service Design Case Study for Local Fish Market

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Jihyang Kim<sup>1</sup>, Giyong Jang<sup>2</sup>, Sungpil Lee<sup>3</sup>

<sup>1</sup> Senior Researcher, Backstage Co., Republic of Korea

<sup>2</sup> Researcher, Backstage Co., Republic of Korea

<sup>3</sup> Associate Professor, College of Design, Service Design Route, Dongseo University, Republic of Korea

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\*Corresponding author: Jihyang Kim ([kimjh@backstage301.com](mailto:kimjh@backstage301.com))

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### Abstract

#### Background

The traditional market, which was the center of commerce among the ordinary people in the past, has not been able to correspond to the rapidly changing era. In fact, the sales of traditional markets are continuously decreasing. After the appearance of large-scale marts and internet shopping malls, new kinds of services are regularly introduced according to consumer needs, and competition for customer satisfaction is overheated. However, new services adopted by traditional markets focus on improving facilities such as installing arcades, reforming toilets and securing parking spaces. Measures applied to traditional markets have concentrated on modernization without consideration of the local context, resulting in a deterioration of the inherent identity of the traditional market. Therefore, this study aims to develop the service concept and the business model for the traditional market become a tourist attraction by utilizing the internal resources of the market while maintaining the local identity through the service design and research method targeting the fish market in Busan.

#### Methods

For the method of the service design, the study was conducted using the double diamond process. The study planned out a four-step strategy to develop the concept and the business model for the traditional market to become a tourist attraction. In the first stage of understanding, basic research was carried out through desk research. The regional investigation, age-specific customer behavior, business area, and relative sales analysis, and overseas case studies were performed and a separate field survey was executed to examine the floating population of visitors and the surrounding environment. In the second stage of defining, touring maps of the market used by the interested parties (local residents, domestic tourists, and overseas tourists) were created to determine the bounce rate of the market

based on each category and the customer requirements were identified through in-depth interviews. In the third stage of developing, the study established strategic goals for the traditional markets by drawing positional maps. Furthermore, the study designed a Mandal Art through group workshops to derive new concepts and ideas based on customer requirements in the market. Afterward, the study conducted the evaluation of the interested parties' satisfaction on the derived ideas using the KANO Model questionnaires and selected the strategic priorities through the calculation of PCSI (Potential Customer Satisfaction Index). In the final phase of delivering, the ideas that were deemed as the priorities were created into scenarios and business models to be more specific and the annual road map of tourist attraction services for the traditional market was presented through feasibility analysis.

## Results

Ultimately, based on the eight design directions, the study proposed 10 new concept ideas for the traditional market. First, there were problems such as non-hygienic packaging containers, poor portability of purchased products, and inferior package identity. To solve these problems, the study proposed a package development that can pack the marine products in a hygienic manner using market-specific CI. Second, the idea of smart ordering system using kiosk was introduced to solve problems such as the lack of menu boards in food stores of the market, low credibility due to excessive touting, and the poor communication with foreigners. Third, the study suggested the necessity of an entrance facade to reestablish the unclear identity of the regional market. Fourth, in order to improve the low reliability due to the stores not showing the origins of their products or not having the menu board, the study derived the service idea of using augmented reality for the stores provide information related to the sales products. Fifth, the study proposed the service idea of establishing online shopping malls for the stores to secure online customers and recreate their products to be more premium. Sixth, the study suggested the service idea for the market to hold a festival program that can provide enjoyable entertainment for visitors including various foods within the market. Seventh, the study proposed the idea of standing restaurants for customers who want to taste the products at their freshest conditions and customers who are uncomfortable with enjoying foods in the alleyways of the market. Eighth, the study presented the design idea of product origin notation for customers who have lost confidence in the products in the market and those who regard product information as crucial.

Ninth, for the customers who require a rest area when using the market, and customers who want to take a photo to commemorate their visit, the study suggested the idea of utilizing a Waterfront Space. Lastly, the study conveyed the idea of adopting an online platform by recruiting supporters to publicize and guide major events in the market for customers who wish to receive information through SNS and blogs.

### Conclusion

This study was conducted to explore the ways of changing the traditional market into a tourist attraction by investigating the physical characteristics of the traditional market, which is relatively small compared to the large commercial areas in the city and has inadequate facilities. To do this, the study examined the needs of merchants and customers who make up the market through the analysis of relevant data, field surveys, and in-depth interviews that were conducted in the Busan Jagalchi Market, which was considered to be in close relation to the geographical characteristics of the region.

However, most of the projects that aim to improve the environment of traditional markets have shown shortcomings in their solutions due to presenting the same, repetitive ideas and executing them for only a temporary time. It is necessary to improve the system to create an ecosystem that allows the merchants to circulate their business in a self-sustainable manner by identifying services which can accommodate the local characteristics rather than pursuing the services provided by large commercial areas. Although this study may have limitations in such regard, it has demonstrated the significance of exploring the ways to improve the traditional market, considering the unique identity of the local market, through various research methods of literature study, field survey and questionnaires with both domestic and foreign people.

### Keywords

Service Design, Design Research, Business Model

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# App of smart tourism to cities for Muslim travelers: Comparative analysis of Mobile marketing applications in South Korea and Thailand

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Sonia BenGhida<sup>1</sup>, Sabrina BenGhida<sup>2</sup>

<sup>1</sup> Sociology Department, McGill University, 845 Sherbrooke St, Montreal, QC H3A 0G4, Canada

<sup>2</sup> Mass Communication Department, Pukyong National University, NamGu, Yongso-ro, 45  
building C25, 343, Busan, South Korea

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\*Corresponding author: Dr Sonia BenGhida ([benghison@gmail.com](mailto:benghison@gmail.com))

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## Abstract

### Background

Muslim customers are one of the fastest developing market segments. Many countries started a so called "Halal Tourism App" to complement the efforts being made by the Tourism Authority and publicize Muslim-friendly products and services on a national and local level. As the Muslim travel market continues to grow and evolve, the Halal tourism business sets the stage for the next phase of Muslim tourism development in Korea in this unique travel segment. South Korea has developed good resources and travel guides that cater to Muslim preferences by listing a few Halal restaurants, nearby prayer facilities, etc. According to the data analytics, the year 2019 is marked by a higher score to South Korea as a tourist destination for Muslims, allowing it to enter the top 10 among non-OIC destinations for the first time.

### Methods

This paper reviews recent trends on mobile technology in the tourism targeting Muslims and compares mobile application market in Korea and Thailand. Currently, there is only one main phone application, the HHWT Travel Planner App, that is serving Muslims traveling to Seoul! I will compare this application with the "Halal Route App" launched in Thailand to list the differences in their services, sales and marketing strategies. Comparative research methods are used to identify, analyse and explain similarities and differences between two phone applications. A preliminary analysis identifies and describe the data gathered to the companies, their web strategy and positioning. A second analysis observe the main characteristics of the applications including the content, the structure, the functions, and the interface.



## Results

Both applications use the same the way of conceiving, structuring and presenting content to the Muslim user. Both of the applications organise their content into sections, corresponding to the main typologies of sections in traditional media.

While it is clear that both mobile apps are a viable path forward to leverage digital tech as a way of remaining competitive in the Muslim tourism marketplace, these tourism apps still need improvement in implementation and operation to truly be a strong value added service.

## Conclusion

This paper explains the slow development of mobile commerce in Muslim tourism, and provides a basis for understanding future market developments. It also gives a further evidence of the complex interdependency between technological and market evolution.

## Keywords

Mobile Technology; Smart Tourism; Content Analysis; Comparative Analysis; Halal Tourism

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# Service design approach for a better architectural quality and enhanced user experience: Henri Ciriani Museums.

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Sabrina BenGhida1,djamilBenGhida2

1 Mass Communication Department, Pukyong Natinal University, Busan, South Korea

2 Gregotti Associati International, Milano, Italy

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\*Corresponding author: Dr Djamil Ben Ghida ([xdezipn@naver.com](mailto:xdezipn@naver.com))

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## Abstract

### Background

The rapid digital advancement in the last two decades has helped many fields to overcome the level of complexity to usability, making our life, as users, easier. Our erroneous perception of humanization of this technology has been generated by involving all our senses in our daily digital practices. The user-centered experience and the natural human relations were the focal point of the evolving technology resulting to the easiness in which we are using it today. In this context, the evolution of marketing has made a great contribution, in a cause-and-effect relationship. In addition to the traditional four 4Ps of marketing, now we have the relational marketing and the redevelopment of the design processes concepts in different areas which has redefined the relationship between product/service and the user.

### Methods

I am using a case study as a research method, taking example the two different museums designed by Henri Ciriani in France.

### Results

In this context, my research paper presents how Henri Ciriani used service design to create a user complex experience in his museums which appear to be simple but emphasized the architectural quality of his projects. The service design is used to improve the quality and interaction between the service provider and the service user, then the architectural quality: interior finishes, light, ventilation, layout of spaces, acoustics, etc. The user experience has to be based on a long-term human/emotional relationship.

### Conclusion

User experience is not that easy to define, but by focusing on the definition of user experience to only those types of human behavior that we can control, we can develop easy-to-use, efficient, and pleasing site offerings that always

keep leads and customers returning for an encore. Hence, the design process needs to be an iterative process keeping the channel of constant feedback from consumers always open. This strategy seems to be embodied in Henri Ciriani's concept in order to maintain customer satisfaction long into the future.

#### Keywords

Henri Ciriani; Museum; Experience design ; Le Corbusier

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# Factor Analysis from Semantic Differential on the Public Perception of Public Art: Case Study of Malaysia National Monument

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Yuhanis Ibrahim<sup>1</sup>

<sup>1</sup> Universiti Malaysia Kelantan

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\*Corresponding author: Yuhanis Ibrahim ([yuhanisibrahim@umk.edu.my](mailto:yuhanisibrahim@umk.edu.my))

\*Advisor : Prof Sung-Pil lee ([Sungplee@gdsu.dongseo.ac.kr](mailto:Sungplee@gdsu.dongseo.ac.kr))

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## Abstract

### Background

This study attempts to address factors that contribute to outline public art factors assessment, memorial monument specifically. Memorial monuments hold significant and rich message whether the intention of the art is to mark and commemorate important event or to inform younger generation about past. Public monument should relate to the public and raise awareness about the significant issue. Therefore, by investigating the impact of the existing public memorial art will hopefully shed some lights to the upcoming public art projects' stakeholders to ensure the lucid memorial message is delivered to the public directly. Public is the main actor as public is the fundamental purpose that the art was created. Perception is framed as one of the reliable evaluation tools to assess the public art impact factors. The Malaysia National Monument was selected to be the case study for the investigation.

### Methods

The public's perceptions were gathered using a questionnaires that involved (n=115) participants to attain keywords, and next Semantical Differential Methodology (SDM) was adopted to evaluate the perceptions about the memorial monument. These perceptions were then measured with Reliability Factor and then were factorised using Factor Analysis of Principal Component Analysis (PCA) method to acquire concise factors for the monument assessment. The result revealed that there are four factors that influence public's perception on the monument which are: aesthetic, audience, topology, and public reception.

### Results

*Meaningfulness* factor loadings (greater than 0.5) Items loading high on one factor and loading low on other factor can be uniquely assigned to

each factor. The keywords Patriotic (PAT), Memorable (MEM), Historical (HIS), and Monumental (MON) are loading high on this factor. *Sociableness* has two keywords, which are Open/Sacred (OPN), and Agreeable/ Controversial (AGR) and they are all on loading high on factor 2. *Familiarity* covers the 15.342% of the total shared variance. It consists of two pairs of adjectives: Famous/ Unknown (FAM) and Accessible/ Restricted (ACC). *Appropriateness*, which consists of Modest/ Kitsch (MOD) and Heroic/ Discourage (HER) are loading high on factor 4, demonstrates 12.617% of the total shared variance

#### Conclusion

The study concludes by proposing the factors for public memorial art assessment for the next future public memorial projects especially in Malaysia that consists of the 10 keywords, PAT, MEM, HIS, MON, OPN, AGR, DAM, ACC, MOD and HER.

#### Keywords

Factor Analysis, Public Art, Public Perception, Semantical Differential Methodology.

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# The Implementation of Projection Mapping on Creative Institution Building for Urban Regeneration

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Tengku Fauzan Tengku Anuar<sup>1</sup>, Sathis Rao S/O Chinniah<sup>2</sup>, Siti Aisyah Muhammad<sup>3</sup>

<sup>1,2</sup> Faculty of Creative Technology and Heritage, University Malaysia Kelantan, Bachok, Kelantan, Malaysia

<sup>3</sup> Faculty of Architecture and Ekistics, University Malaysia Kelantan, Bachok, Kelantan, Malaysia

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\*Corresponding author: Tengku Fauzan Tengku Anuar ([tengkufauzan@umk.edu.my](mailto:tengkufauzan@umk.edu.my))

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## Abstract

### Background

The creativity becomes more wide in this world as well it creates its own magical aspires filled world. So as the flow go on with that field, the institutions which offered the creative courses become the platform to teach the students who are studying the creative courses at the institutions. However, the need of creative environmental design is not comply in some institutions compare to the well-developed institutions in creativity.

### Methods

So to overcome it before evolves take place, there methods was suggested by the researcher, it is to apply an illustration on the creative institutions buildings. This method overall polish away the lack of creative in an institution. More probably it can apply by using the projection mapping idea on the institution building. This research mainly based on the objectives where it starts with the role of that institution management on the initiative to improve the creativity in that campus. Besides that, it also determine the effects that will occur when applying this method on the creative institutions. By then, it studies about the comfortable environment for the students and staffs those in that creative institution. This study actually to create a creative environment for the creative institutions students and staffs. The survey has been made to examine the effectiveness of Projection Mapping on Creative Institution Building in University Malaysia Kelantan from 150 students and staffs and also some interview session with the selected expert in this field.

### Results

The result shows that this projection mapping idea brings a lot of benefits for the students and staffs. Especially it creates a comfortable surroundings

for the students and staffs of the institution in learning creative courses process. Hence, the apply of creative environmental design on the creative institutions is necessary to make the students and staffs able to go on in their studies and working environment effectively. This statement proved by 83% of respondents include students and staffs agreed with the exist of creativity after project the projection mapping onto the mockup building that the researcher has done.

#### Conclusion

By then the connection where it stimulate to the creativity, made a wonderful difference to generate new ideas for the human. These things only happen when the surrounding of the human in creative node. Moreover the innovative environment also important in helping the human to stay freedom in relieving expression, learn with fun, develop emotions, improve the ability of thinking, reduce stress, improve skills and focusing mind and finally the result will create them to be in creative mindset. At last but not least, rather than the management of the institution, the students, staffs and the rest people also have their own responsibilities in waking up the creativity on the institution. So this case study not only for merce the creativity with creative institutions, and also to revive the target people' mild of creativity influence by the environment.

#### Keywords

Implementation, Projection Mapping, Creative Institution Building, Urban Regeneration

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# A study on the Application of Contemporary Design of Chinese Characters Calligraphy : Focus on ' Zhangfa ', A Traditional Chinese Calligraphy

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Qi Yaxuan<sup>1</sup>, Ju-young Chang<sup>2</sup>

<sup>1</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro,  
Sasang-gu, Busan, Republic of Korea

<sup>2</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro,  
Sasang-gu, Busan, Republic of Korea

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\*Corresponding author: Ju-young Chang ([jychang@gdsu.dongseo.ac.kr](mailto:jychang@gdsu.dongseo.ac.kr))

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## Abstract

### Background

Typography, which is defined as to control the shape and arrangement of the type, aims to efficiently communicate information and knowledge to recipients. In modern times, where the importance of visual images is emerging, Chinese characters have infinite potential as typography objects. But, young Chinese designers do not fully utilize the linguistic potential of Chinese.

The purpose of this study is to explore the direction of improving modern Chinese typography design through the “Zhangfa (章法; the norms of a sentence)” of traditional Chinese calligraphy. In the research, we will explore the development direction of modern Chinese typography, looking at the trends of western typography design.

### Methods

The “Zhāngfǎ” of Chinese calligraphy refers to the style of controlling the relation between strokes and strokes of letters, the lines and lines in calligraphy works, which is one of the three main elements that constitute the style of Chinese calligraphy, along with the style of strokes and the structuring method. Zhangfa has three characteristics: visual re-appearance of text, objective information delivery, and creation of formal beauty through the creator's intuition. Focusing these three aspects, we will consider how to develop the typography design of Chinese characters by referring to the typography of the West.

### Results

The epochal turning point of typography was the emergence of futurism and dadaism, which was the influence of the avant-garde art movement. Avant-garde, an art movement that took place in Europe in the early 20th century, rejected existing artistic practices and pursued originality and innovation. As one of the



innovative ways, they used the type in a way that deviates from the existing character arrangement. This is linked to “visual re-appearance of text,” one of the characteristics of Zhangfa.

Secondly, avant-garde's typography had a problem with poor legibility. After World War II, in the 1950s, demand for highly readable typography and layouts grew, and for this purpose, an international typographic style emerged, which focused on objective information delivery. International typographic style removes decorative or expressive elements. It enhanced readability by establishing strict regulations for type size and typeface, introducing a guide-line grid, and pursuing immorality and objectivity.

Finally, postmodernism typography emphasizes the creation of formal beauty through the subject and intuition of the creator. At this time, typography actively pursues to function as artistic expression beyond the function of information delivery. The author's subject matter is considerably more emphasized than the previous period in visually transforming and creating letters.

#### Conclusion

As we saw in the avant-garde movement, the Chinese character typography design will be able to lead an artistic creation by bold variations in the size of characters in Chinese characters, horizontal text development dislocation, and character form deformation to suit the purpose of the creator.

Second, it is possible to supplement 'objective information delivery', one of the characteristics of Zhangfa, by referring to international typographic style. Chinese characters with many strokes and complexity vary widely in readability depending on the size of letters. To solve this problem, it is necessary to produce and apply typographic designs of various thicknesses that can be utilized depending on the size of the letter, and adjust the intervals according to the size of the letter.

Third, it should be noted that the pursuit of innovation based on the writer's individual's unique perspective. This can lead to the need for Chinese typographers to pursue a qualitative leap in artistic aspects. Since meaningful artistic intuition is expressed through the self-consciousness of the creator, it is most important that typographers who use Chinese as the target text have self-consciousness of an artist. Through this, we will be able to discover the artistic possibilities of the Chinese language and achieve heavy use through the meeting of Chinese tradition and Western design trends.

#### Keywords

Chinese Character Design, Zhangfa, Calligraphy, Chinese Calligraphy

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## Case Study of Unstaffed Convenience Store Service Model

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Zhang Feng<sup>1</sup>, Lee Sung-Pil<sup>2</sup>, Park seongil<sup>3</sup>

<sup>1</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

<sup>2</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

<sup>3</sup> Design Major, Busan Economic Promotion Agency, Busan, Republic of Korea

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\*Corresponding author: Lee Sung-Pil ([sungplee@gdsu.dongseo.ac.kr](mailto:sungplee@gdsu.dongseo.ac.kr))

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### Abstract

#### Background

The unstaffed convenience store is considered as a product service system. In the existing market environment, it is characterized in that the user can complete the selection, settlement, and purchase at any time in the convenience store without having a salesperson. However, as the number of users has increased rapidly in China, its service experience quality and users' satisfaction have continued to decline.

#### Methods

Summarizing a method of research. In this paper, based on customer journey map and business model canvas, the service experience of users using unstaffed convenience store is analyzed from the perspective of service design, and the focus is on the potential pain points of users in the process of using unstaffed convenience store, so as to design optimization plans to effectively improve users' satisfaction.

#### Results

According to the survey results, optimization plans are proposed in the self-purchasing stage and the entering-leaving stage of the unstaffed convenience store, bringing a new service experience. The optimizations made in the purchase phase are as follows: one, add videos to introduce the shopping process and operation in the store; two, offer video call service; three, recommend optional shopping bags according to the size of the object. As for the entering-leaving stage, the users can set the door-opening time by themselves, which reflects the new concept of meeting the needs of control. This optimized experience makes humanized, subconscious interaction possible.

## Conclusion

Summarizing a conclusion of research. In this study, new plans were proposed from the perspective of service design to improve the pain-points encountered in the unstaffed convenience store service process, so as to provide users with a better service experience. In this paper, business model canvas method was used to carry out the improved research on unstaffed convenience stores. By means of plotting and comparing the business canvases of Amazon Go (the United States) and BingoBox (China), the business model canvas of unstaffed convenience stores was re-rendered in combination of the in-depth interviews with users and the service pain-points presented in the customer journey map.

## Keywords

Unstaffed Convenience Store, Customer journey map, business model canvas

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# Research on Cultural Identity of Contemporary Chinese Design

## –Analysed from foreign perspective

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Huang JunXiang<sup>1</sup>, Ju-young Chang<sup>2</sup>

<sup>1</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

<sup>2</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

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\*Corresponding author: Ju-young Chang ([jychang@gdsu.dongseo.ac.kr](mailto:jychang@gdsu.dongseo.ac.kr))

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### Abstract

#### Background

Five thousand years of Chinese history contains a rich traditional culture, but why is Chinese design not as classic as foreign design? At present, the designer is live in a highly modern, and information society, and which is also age with the new materials and the new technology emerging ceaselessly. New ideas, new concept and the inburst of various foreign artistic ideological trends have brought unprecedented impact on Chinese traditional culture. Traditional culture is very important for Chinese design to be based on the world design. Completely deviate from the tradition culture is obviously unadvisable. It is necessary to face up to the inheritance, so if we just simply imitate or simply misappropriate western designs, we will lose our national identity. Everything is based on tradition. If Chinese design wants to find its own way, it must be based on tradition. In this situation, we attach importance to how to combine traditional culture with modern design.

#### Methods

This research aims to explore the essence of Chinese traditional culture and combine traditional cultural elements with contemporary design subtly. First of all, by looking up relevant domestic and foreign literature, and focusing on the most important news media in the United States, to understand the foreign viewpoint on Chinese design in recent five years. Classify and analyze the design evaluations in these different directions, and then, reflect on the existing issues of Chinese design and come to a conclusion.

### Results

Through the literature analysis of foreign literature search and news interviews, it is found that China's design has the following problems: Although it has strong production awareness, it lacks brand awareness; the loss of traditional culture and craft spirit; China lacks leading designers , especially It is a world-class master. The above may be the reason why Chinese design has no style.

### Conclusion

This paper focuses on guiding designers to attach importance to traditional culture and apply culture to contemporary design. The design style of a country originates from its culture. A designer who does not use the essence of traditional culture and does not understand his own country's culture cannot design products with Chinese style. Only when designers master the real cultural characteristics can they design works with soul and form a design style with Chinese culture.

### Keywords

Traditional culture of China, Famous foreign designer, Chinese design, Chinese characteristic, Design style

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# Developing Service Quality Evaluation Model of University Dormitory in Korea

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Zhang Hequan<sup>1</sup>, Lee Sung-Pil<sup>2</sup>

<sup>1</sup> Design Major, Communication University of Zhejiang, 998, Xueyuan street,  
Hangzhou, Zhejiang, China

<sup>2</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro,  
Sasang-gu, Busan, Republic of Korea

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\*Corresponding author: Lee Sung-Pil ([sungplee@gdsu.dongseo.ac.kr](mailto:sungplee@gdsu.dongseo.ac.kr))

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## Abstract

### Background

Many researchers argues that "student dormitory" gathers various living facilities provided by the higher learning institutions, so the service quality of dormitory refers to the significant part to evaluate the overall service of school. Dormitory is the significant part of university service system and administrators pay more and more attention to its service quality; good dormitory service quality becomes the major competitive power of university; it is the theme we should consider that how to measure the service quality of dormitory. In the previous study, researchers understand, evaluate and determine the key factors of house under different background with lot of researches, such as hotel, apartment and so on. Among the issued literatures of house, there is few empirical researches on service quality evaluation of student dormitory. The primary objective of this paper was to determine evaluation component on dormitory service quality (DSQ) in higher educational institutions in South Korea.

### Methods

First of all, using KJ method to find the basic behavior of today's college students in the dormitory life, and identify the impact of the quality of student life specific point. KJ method refers to a tool of quality management submitted by Kawakita Jiro of Japan. The KJ method refers to a method that manages thoughts in some certain ways, grasps the essence and finds the new solutions for the problems. And then, with reference of existing literature of service quality and its constituent elements, we created 15 evaluation of DSQ items. Secondly, after factor analysis 4 evaluation dimensions were found out that can be applied in DSQ. Factor analysis is a data reduction technique that uses correlations between data

variables. It assumes that some underlying factors exist that explains the correlations or interrelationships among observed variables.

### Results

The results of the study show that, the theoretical model subimitted in the thesis is tested by statistical analysis, it proves to measure dormitory service quality effectively and it has good applicability in dormitory background. The model contains five evaluation factors and they are: 1) Core facilities: core facilities mainly refer to the service provided by dormitory to meet the most basic living conditions for university students. 2) Supplementary facility: the dimension refers to the facility that is able to improve core service quality. 3) Accessibility: the dimension can well explain the convenience extent of dormitory. 4) Management and supporting system: the dimension describes various rules and regulations of dormitory, all systems guarantee to realize the normal function of dormitory. 5) Attitude and behavior: the dimension shows the work staffs' attitude and behavior when contacting with students

### Conclusion

Students are hoping eagerly that they are able to receive high service quality from the supplier and also that the university administrators carefully consider that what kind of dormitory conditions can promote the learning and growth of its students. Service quality evaluation component was developed in this study that is not only able to help administrators to analyze, measure, control and evaluate the status of service quality conveniently and exactly, but also promote and guarantee the overall administration of service quality effectively.

### Keywords

Service quality, Dormitory, Evaluation model

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# Research on Children Experience Elements in User Experience Design

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Xian Yan<sup>1</sup>, Ju-young Chang<sup>2</sup>

<sup>1</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

<sup>2</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

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\*Corresponding author: Ju-young Chang ([jychang@gdsu.dongseo.ac.kr](mailto:jychang@gdsu.dongseo.ac.kr))

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## Abstract

### Background

The social user group is complicated, while the understanding of user group is the focus of research on user-centered design (UCD). Children (pupils) are a unique user group, which is obviously different from adults no matter in psychological development level or physical development level. Therefore, based on the hypothesis that children experience elements are different from adult experience elements, this research aims to identify key elements in the process of children's experience and put forward a theoretical framework of children experience elements.

### Methods

Based on Schmitt's user experience system, children's psychological and physical development theories are summarized and analyzed from a perspective of psychology, so as to conclude children's demand elements. Then after interviewing child psychology experts and education experts, experience elements with the characteristics of children are collected and the key children experience elements are presented in the form of Personas.

### Results

Research results show that children (pupil) experience elements include safety, usability, accessibility, emotionality, edutainment, interestingness and sociality.

### Conclusion

In this research, a new model of children experience elements is proposed, which emphasizes on the core elements of formative experience exclusively



owned by children users and integrates the theory of children's psychological cognition and the theory of user experience. Based on the existing adult user experience model, it adds special needs of children. This new model is conducive to designers' taking children's experience elements into full consideration in the child-centered design process, so that their design outcomes can be applied to children's products or services and improve children's satisfaction degree and the vitality of products.

#### Keywords

user experience design, children users, experience elements

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# Service Model Research of Bicycle-sharing based on Mobility-as-a-Service (MaaS)

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Z Wang Yang<sup>1</sup>, Lee Sung-Pil<sup>2</sup>, Park seongil<sup>3</sup>

<sup>1</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

<sup>2</sup> Design Major, Graduate School of Design, Dongseo University, 47, Jurye-ro, Sasang-gu, Busan, Republic of Korea

<sup>3</sup> Design Major, Busan Economic Promotion Agency, Busan, Republic of Korea

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\*Corresponding author: Lee Sung-Pil ([sungplee@gdsu.dongseo.ac.kr](mailto:sungplee@gdsu.dongseo.ac.kr))

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## Abstract

### Background

Mobility as a Service (MaaS) is a new concept intelligent mobility. It offers transformative mobile solutions to solve the problem "how to delivery and consumption of transport (or mobility)?" MaaS not only satisfies fast, reliable, convenient and personalized travel demand but also it has a high degree of flexibility to adapt to travel trends. MaaS mainly focuses on the different design methods and provide personalized service for different types of passengers. Based on the concept of MaaS, the research puts forward a new service model to make the travel modes become more various and flexible. The service model is so convenient that many people choose it instead of personal vehicles to complete your daily commute. The purpose of this research is to build a traditional community system, which lets human-centeredness integrate into intelligent mobility, and let bicycle-sharing of mobility service make new relationship with users and play a positive role in their society life.

### Methods

MaaS-based bicycle-sharing adopts one platform to combine multi-model transportation to satisfy the user demand of travel from A to B and offer users with demand-orientation tariff option and travel option of personalized and customized service. It aims the seamless connection between short-distance travel and long-distance commute and optimize the rapid transfer between the first/last-mile and before long-distance to satisfy users' commute need: the travel route plan, the value package and the match of a series of trip modes.

## Results

From the perspective of intelligent mobility, based on the travel modes of MaaS, this research uses business model canvas, the service blueprint and service story board to build a new bicycle-sharing system mode, namely MaaS-based bicycle-sharing. The new mode aims to solve the service defect of bicycle-sharing in "Multi-modal Traffic Transfe" and "Integrate into Public Transportation". Then, the research adopts a survey to make assessment of the service content experience, and through customer journey map to find mood swings of users when they use MaaS-based bicycle-sharing.

## Conclusion

The research shows that the service model of MaaS-based bicycle-sharing is in accordance with the habit of the millennial generation. On the one hand, the travel mode of MaaS bicycle-sharing offers flexible and convenient travel experience for users. A research about promoting bicycle-sharing use in 139 cities, shows that it is rather helpful to promote the public bicycle use when the bicycle can be easily connected with other travel modes. On the other hand, the bicycle-sharing with the concept of MaaS offers book tickets, combined travel and travel information feedback. It would plays an important transit role in the travel. In addition, the bicycle-sharing with the concept of MaaS is helpful to achieve the sustainable travel, resulting in reduction of private car travel and more travel opportunities to suburbs.

## Keywords

Bicycle-sharing; Mobility-as-a-Service; Service model; Travel experience

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# ADCF

## Asia Design Center For Future

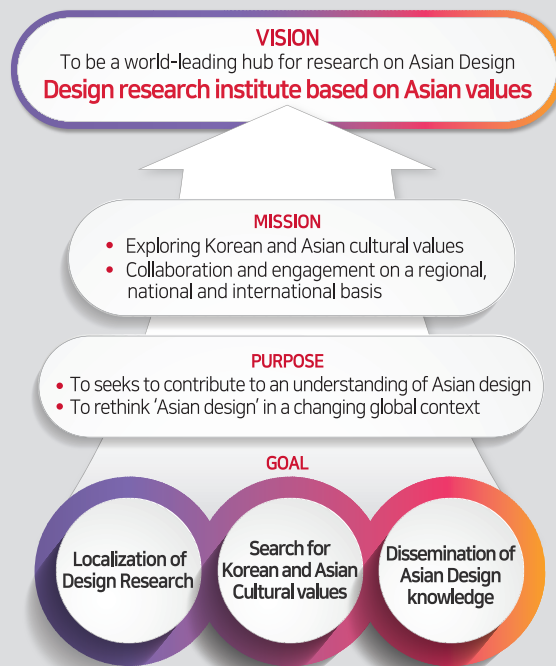
ADCF is situated right in the heart of a cultural Asian city :  
Busan, Korea and is based at Dongseo University.

### Vision & Goal

#### Exploring Korean and Asian cultural values

Collaboration and engagement on  
a regional, national and international basis

ADCF aims to offer a different approach to contemporary design education in Korea, which has typically focused on Western design methodologies and theories. The ADCF instead seeks to localize the subject of research and scholarship to that of the East Asian region, explore Korean and Asian culture within the narrative of humanities and the arts, construct, create and disseminate Asia-specific design knowledge, and improve Asia's design education through regional and global joint collaborations.



- A. To establish a cultural identity in design research
- B. To localize design education and research
- C. To explore Korea and Asia specific cultural values within the context of universal values
- D. To share and disseminate Korean and Asian cultural values
- E. To contribute to the expansion of Korean & Asian design research.

“Design research institute based on Asian values”

The Asia Design Center for Future (ADCF) will take the lead in the development of creative designs that harmonize Asian and Korean traditions with modern cultures through a lens of de-westernized Asian culture, and locality-oriented design research