KITCHEN-RELATED LIFESTYLE DESIGN:
AN INVESTIGATION OF CULTURAL AND SOCIAL ISSUES OF KOREAN
KITCHEN DESIGN

A Thesis
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ABSTRACT

The evolution of a kitchen from a space traditionally used primarily for cooking and eating to an environment that reflects complex socio-cultural patterns today is based on the changing needs and preferences of its users. Due to technological changes and urbanization in Korea as well as in the whole world, the kitchen has become the principle space for the family to communicate, gather, and share. These changes require us to understand not only the primary functions of a kitchen environment, such as preparing, serving food, and eating, but also its role as a space for social and value of life for families. Furthermore, introduction of advent home appliances and digital culture reduced work of the housewife, therefore more women work outside of home, which also has an effect on society. The purpose of this study is to develop new paradigms for future Korean kitchen environments that incorporate modern requirements, seeking universal vision for future in the Korean society. The modern requirements should respond to cultural and social vision of requirements based on human-oriented design and perceived values for users, especially on kitchen appliances. Korean kitchen was slowly developing until the beginning of 19th century. However the influence of western buildings and living styles after the
Korean War gave fast-paced changes in development of traditional Korean kitchens. Korean kitchens have become more open space for whole family members, which are similar to American kitchens. Nevertheless this fast economic growth and construction boom led to imprudent introduction of western culture to Korean society. The results of the influence were first, uniformity of space, second, unsuited kitchen appliance and third, no inclusion of social vision or cultural preferences.

To identify today's prevailing preferences, this study consists of three research parts. Part 1 is a literature review, Part 2 involved everyday people who use kitchen and interior designers in the existing market. In order to investigate the Korean kitchen by generation, Parts 2 and 3 were conducted by quantitative research through 120 surveys, followed by qualitative research in Korea through 30 interviews and 8 focus groups of 3~5 people per group. To investigate the use of kitchen appliances and future trends in kitchen design worldwide effects on regional groups, Part 3 was held in 4 different cities, which were New York City NY, Columbus OH in US, Seoul and Ulsan in Korea. Total of 50 people were involved in part 3 surveys that consisted of 10 people from each city. Also Part 3 covered 4 family interviews and focus groups, 2 families from Seoul and 2 families from Ulsan to investigate the use of kitchen appliances and people's attitude on trends of perceived values by regional groups.
The result of this study will provide guidelines for future Korean kitchen design to address the formation of emerging lifestyle groups, to entice a new market for both Korea and international, as well as to support the incorporation of culture differentiated society, especially the treatment and behave of kitchen appliance. Furthermore this suitable result such as embracing the new social vision and developing universally will lead the new vision of values in their life.
Dedicated to my beloved family
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CHAPTER 1

INTRODUCTION

1.1 Background issues

A history of the kitchen began along with that of human kind. The kitchen is the most effective space and has been influenced by different cultures of society. As time has passed, kitchen space needs have changed, as have its organizational and cultural requirements. Furthermore, the introduction of different styles and artifacts have affected and kitchen space. In this study, cultural differences, the perceived values, regional and generational preferences and its effects on Korean kitchens has yet to be investigated. In addition, American kitchen organization and style were compared with the Korean kitchen.

The end of 1960's was a time of much change in Korea. As this time, many different influences, culturally and technologically, arose from western civilization. That stimulated the break with existing social structures. These sudden technological changes, along with a more forward urbanization, caused rising
problems in the Korean society, including a shortage of housing, traffic jams and environmental problems. Moreover, urbanization proliferated the extinction of traditional values in the Korean society by people's negligence of established societal codes and structure hierarchy. However it also fostered the growth of Korean industry and society. This state of confusion gave rise to public discussion within the Korean society, but individuals began to acquire their own way to adapt to western civilization.

From this period, the Korean economy and industry grew significantly, which created a housing construction boom. In fact, the housing construction boom was the Korean government's solution to settling social problems, especially with the shortage of housing.

The Korean government gave careful consideration and acted affirmatively to the western idea of clean and simply shaped housing. It decided to destroy the traditional Korean, old and humble houses to make place for new apartments as soon as possible.¹ This fast growth created extensive problems such as fraudulent work and uniformity of the environment.

As the economy grew at an even faster pace, it, also, led to a different social involvement of women in the Korean society. Nowadays, "working mother" is a very accepted term in the Korean society. After the 1998 "Seoul Olympic Games", the Korean economy leapt to great success. Many foreign, artistically knowledgeable sources were introduced to the Korean society.

especially related to food. In fact, the Korean Food Research Institute (KFRI) has publicized in 1998 that the size of the restaurant industry had increased. In 1996 the size of restaurant industry was 17 trillion, in 1998 it became 23 trillion, and in 2000 they had prospered up to 30 trillion.²

Also according to Korea National Statistical Office (KNSO) the “eating out habit” was 30.3% in 1994 and, in 1995 it became 33.3%, also in 1996 increased to 35.2%, and in 1997 had increased to 38.1%.³ As part of this change, more housewives worked less at home and women’s participation in the workforce increased. This change influenced the eating habits of many households in the Korean society. Moreover, people did not have enough time to cook as much or people preferred to eat out rather than cook elaborate meals at home. Furthermore the changing economy influenced the provision of improved medical services and better nutrition. That led to a rapid increase of the elderly population in Korea. The following figure shows the detail of the increase in the elderly population in Korea.⁴

² the Survey of Restaurant Industry of Korea, Korean Food Research Institute, (1998), <http://www.monthly.foodbank.co.kr/>
The Korean society used to perceive that the kitchen to be only a woman's space. However, urbanization in the society broke this stereotype and, today, the kitchen is considered a space for the entire family.\(^5\) Today, as a result, a kitchen should be universally designed to be able to be used by any generation. The introduction of new technologies enabled designers to reflect on and incorporate users needs making it possible for all users to operate

appliances conveniently. Nowadays, the kinds of kitchen spaces allow the placement of various appliances in any kind of configuration. Examples of these options can be found widely advertised but they do not support remaining and reinstated interests in cultural values, as most appliances are adapted from other cultures without taking Korean condition into consideration. In Korea, most designers have tried to take this matter into consideration. Much of it, however, was because of an imprudent introduction of western culture to the Korean society. That fostered individual and personal expectations rather established intrinsic values.

Based on the above-mentioned issues, there is a need to develop an understanding of the factors at work in today's Korean environment, especially because the kitchen has become a central space where most Korean family members spend most of their time.

1.2 Objective

In order to serve this study, the objectives are established as the following:

1) To develop new paradigms for a suitable kitchen design for future Korean kitchen environments that incorporate modern requirements, but seek a universal vision for the Korean society. The new paradigm shall respond to cultural and social visions and is based on human-oriented design requirements and the perceived values for the users with a specific emphasis on kitchen appliances.
2) To identify generational differences and its impact on kitchen design along with behavior and sociological issues of specific importance to the organization, equipment and style.

1.3 Research Methodology

This study focused on identifying aspects of cultural, generational, and regional behavior in kitchen spaces with an investigation of kitchen appliances. Research methodology was utilized to investigate this study. Both Koreans and Americans were involved in this study for cultural and generational aspects of their kitchen. Each country was studied in two cities (Seoul and Ulsan in Korea and New York City and Columbus in America) for learning about the regional aspect.

In this study, there were two main methodologies set to collect both quantitative and qualitative data which were surveys, observation by filming, interviews and focus groups.

The Phase One Research: Involved 200 people from Korea and there was no limitation on age, gender, region and whether they use the kitchen or not. Out of 200 participants 30 participants did interviews along with site survey (to determine the actual condition of their kitchen). From these 30 participants were also involved in focus group. 8 focus groups were held which was consisted of 3–5 people per group. To investigate and understand real life in the kitchen, two selected families were observed by filming during 24 hours. In order to investigate the real-world opportunities of the kitchen design, in-depth
expert interviews were also held. Three interior designers participated in this expert interview section.

The Phase Two Research: It consisted of an in-depth survey, in-depth interviews and an in-depth focus group. Survey and interview participants were total of 50 people, 30 people from Korea, (15 from Seoul city and 15 from Ulsan city), and 20 people from America (10 from New York City NY, and 10 from Columbus OH). In order to get the regional perspective on kitchen appliances, 4 families participated in a small focus group. The details are discussed in the Chapter 3. Research Methodology. Also, all research materials are shown in the Appendix.

1.4 Hypotheses

In order to define this study, the hypotheses are established as following:
1) Modern environments should be able to reflect cultural traditions even in a highly functional space such as the kitchen environment.
2) Needs in the kitchen are different by generation.
3) The trend and perceived value for kitchen appliances are based on the regional group.
4) Younger generations will be interested in embracing new culture or technology more than the older generations. On the other hand, the older generation would prefer traditional things more than younger generation.
1.5 Anticipated Results

This study will provide evidence and guidelines for future Korean kitchen design. It will have implications for the international market as well as developing countries.

1. The result of this study will expose new possibilities and recommendations for future Korean kitchen environments that would be utilized in a way that is convenient for all age groups, especially in the treatment and behavior of kitchen appliances. The results of the study will also influence the future kitchen design marketplace in Korea and the international market for kitchens.

2. This study will help designers provide people with better kitchen, dining spaces and kitchen appliances by addressing problems of cultural differences.

3. This study will provide guidelines for future Korean kitchen design to address the formation of emerging lifestyle groups, to entice a new market in both Korea and worldwide, as well as to support the incorporation of a culture-differentiated society.

4. The examples will be developed based on the findings that will allow people interested in buying a kitchen become familiar with issues of universal design and options they might have to incorporate traditional elements with modern requirements.
CHAPTER 2

SOCIOLOGICAL ISSUES: IN KOREAN KITCHEN

2.1 Introduction to Sociological Issues

In Korean society there are diverse factors or reasons that are beneficial and others are harmful influence to Korean society. These reasons include: 1) fast economic growth, 2) the female status becoming elevated and being more involved in the society, 3) the digital culture being introduced to Korean society, 4) imprudent introduction of different western culture affecting Korean society in many different ways, 5) increase of the elderly population and increase in the number of people educated or experienced from overseas, 6) as a developed society, expectations on perceived value have increased. According to the Hakuhodo research firm, in Korea and Thailand, which have overcome economic crisis, and main land China, which is now experiencing unprecedented growth,
consumers are full of energy and report that during the last (2002) year their lifestyles have improved.8

These factors influencing the structure and population of the society created problems but no concerns have been voiced relative to residence, specifically, relative to the kitchen. Due to improvement in people’s quality of life, the kitchen drew attention. Today, the kitchen space has become an important space in residential areas. It, also, has been the most functional and sensitive space in every culture.

2.1.1 Study of Current Korean’s life style

According to the Hakuhodo Global Survey Studies, 16,000 Consumers in 21 Cities, Asian Consumers Overcoming Economic Crisis research, energetic, forward-looking consumers in these Asian markets give products made in Japan high marks for quality and style, but also give high marks for stimulating market activity to Korean products, whose growing market presence is striking. Both Japan and Korea are seeing growing influence on the youth culture throughout the region. The best lifestyles of the Seoul dweller prefer “Enjoyment” and “Positivity” for their lives more so than in other cities.7

In addition, the population of people who have experienced foreign cultures or have been educated outside of Korea has been increasing as shown

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below (refer to Figure 2.1) in this chart the Chinese study-abroad students are marked followed by Korean. The people who had experiences with different cultures brought back to their country what they has learned or they are looking for similar options which they had experienced in other culture.

Figure 2.1: Number of study abroad student in U.S.A (Source: IMD, World Competitiveness Yearbook 2003, Institute of International Education)
As the quality of lives improve, the average housing area owned by Seoul residents increase, as did the house completion rate increases. Seoul is much more densely populated than other any city. As a result, the Korean government proposed a solution, to build a new apartment town outside of Seoul called Kyoungki Province. Because of the close distance to Seoul and being new and clean apartments, since 1990, Seoul has become less populated and Kyoungki Province has experienced an extremely fast growth in population. The details are following:

Figure 2.2: Population of Seoul (Source: Korea National Statistical Office (KNSO), 2002)
Figure 2.3: Population of Kyoungki Province (Source: Korea National Statistical Office (KNSO), 2002)

In addition, people started paying more attention to their health, trends, quality of life, and children’s education. Therefore, places that are near major schools, and department stores started booming impressively.

2.1.2 Current kitchen user's behaviors

The economical growth and the improved quality of life lead to a shift from a traditional life style to a modern life style. However, the traditional minds and Korean thoughts still remain in the current society. Some examples include, 1) Housekeeping, like cooking, cleaning even taking care of children are the
women's duties. 2) Korean people prefer to eat Korean food even though many different foods are available in the current society. According to foodbank Korea, the food preferences of Korean people for Korean food were higher than other kinds of food. Also according to Hanssem co.Ltd., most of them were still having rice for breakfast and 25% of them were using serving tables instead of dining tables. And the office-going hours and bed times of the wives of newly married households were the same as those of husbands, but the wives woke up in the morning and came home from work 1 hour earlier than the husband. This demonstrates that wives tend to stay at home longer than husbands to secure more time for housekeeping.

However, compared with the past, the family members today are involved more and spend more time in the kitchen together.

2.1.3 Universal Design in Kitchen

The definition of universal design for the kitchen is kitchen design for all ages, sizes, and abilities. And according to Center for Universal Design "Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"(Ron Mace). Universal design was introduced to Korea in 1998 at 1st International Universal Design Conference in Korea. After that there have been

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8 The food preferences of Korean people. Monthly *foodbank*, (April1999), <http://www.monthly.foodbank.co.kr>
many investigations regarding universal design and how interior design students are educated about it. However, current homes do not possess universal design aspects. Moreover, not many people in Korea know about what universal design is. Traditionally, in Korea different generations coexist in the same house. This is true still today in many households. Three generations may share one household. Most homes are designed to fit a “standard” person. Each of us has a unique profile consisting of height, age, ability, strengths, weaknesses, and preferences. Although as a result, many of us struggle to reach or operate sink fixtures, cabinets, and appliances.\footnote{Universal Design, General Electric. (2005). \textltt{http://www.geappliances.com/shop/design/universaldesign.htm}}

According to The Center of Universal Design there are 7 principles for universal design:

1) Equitable Use: The design is useful and marketable to people with diverse abilities. 2) Flexibility in Use: The design accommodates a wide range of individual preferences and abilities. 3) Simple and Intuitive: Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level. 4) Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities. 5) Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions. 6) Low Physical Effort: The design can be used efficiently and comfortably and with a minimum of fatigue. 7) Size and Space for Approach
and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.¹²

The table shown below (refer to Table 2.1) displays summary of one of the universal design studies by the Rhode Island School of Design (RISD).

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<td>Between 1993 and 1998 more than a hundred students at the Rhode Island School of Design participated in the school's Universal Kitchen project, with the ambitious goal of creating a kitchen that works better for all users, regardless of age or degree of physical mobility. The kitchen was reorganized with all the main cooking functions collected together on an island. &quot;The island has a sink, a work surface, cook tops, dishwashers, and ventilation,&quot; says project director Jane Langmuir. &quot;It moves up and down automatically and can be set at any height. The refrigeration components are directly behind the island, so you can literally stand on a dime and just pivot and prepare a huge meal.&quot;</td>
</tr>
</tbody>
</table>

Table 2.1: Universal design study summary by the Rhode Island School of Design (RISD) (Source: quoted from the 'Metropolis' magazine, April, 2004)

Also from the GE Living Center is a summary of considerations for universal design of a kitchen:

- Generous clear floor space (minimum 30" x 48") at each appliance and work station
- Wide work aisles - 42" to 48" recommended. If an island is included in your plan, make sure this does not interfere with movement between work stations, that it does not impede access to any part of the kitchen, and that it is large enough to be truly usable
- Maximize easily reachable storage; don't rely on upper wall cabinets to store frequently used or essential items
- Cabinet hardware that doesn't require grasping, twisting or finger dexterity
- Roll-out shelves, full-extension drawer slides and roll-out accessories for easier access
- Pull-out auxiliary work surfaces at strategic locations, such as under an oven
- Built-in step stool to help reach upper cabinets
- Some sit-down work areas, such as baking center or computer work station
- Varied countertop heights: some at sitting height (approximately 30"), some at standard height (36"), some higher (42" to 45"), for stand-up work and taller people
- Dishwasher raised 6" to 9" above floor level, for easier loading/unloading
- Built-in cooktop and wall oven(s), with their greater installation flexibility
- Countertop materials and colors that provide good contrast while working, and clearly define the counter top edge
- Single-lever or lever handle faucets
- Provision for future knee space under sink and cooktop
- Provision for adjusting the height of the sink and cooktop in the future.

Table 2.2. General Electric (GE) universal design kitchen: Living center (Source: http://www.geappliances.com/shopdsn_cntr/universaldesign.htm)
2.1.4 History of The Korean Kitchen. Study of kitchen space and kitchen appliances of Korean kitchen

Until the 18th century, most cultures went their own way to fit their own culture system into their lives. Between the 19th century and the 20th century the Asian culture began to assimilate into and to import from western culture. As a result of introduction of the western culture to Asia, Asian people developed cultural interests. Accepting a different culture takes a long time, especially in the Korean culture.

The Korean kitchen history started from 4~5 thousand years ago in the Neolithic Age. At that time, the living room and the kitchen shared the same space. The kitchen was centrally located in the living room. The depth of the kitchen was approximately 8 inch and the diameter was approximately 20 inch. They laid stone or clay for preventing spread of fire. The Figure 2.4 shown below explains this at that time of residence.

---

Figure 2.4: Image of Neolithic Age of residence (Source: Kuangun Kim, The Korean kitchen. (Seoul: Daewonsa Press, 1997), 9.)

During the Bronze Age and the Iron Age, the shape of a house became a tetragon or rectangular form a round shape. From this time on, the kitchen space moved to the side of the wall. Stating in the 4th century, the kitchen came to form the decent shape. Goguryeo mural paintings in about 8th century confirmed that the kitchen and room became divided in two.
Figure 2.5: Goguryeo period mural paintings in about 8th century (Source: Kuangun Kim, *The Korean kitchen*, (Seoul: Daewonsa Press, 1997), 11.)

This mural painting (refer to Figure 2.5) demonstrates that the kitchen space was not shared with the house. The reason of kitchen became an independent space was to keep out the food smell and to keep fires away from the house. These kinds of floor plans were kept up until the Joseon period (14th century -19th century) from 4th century.

Being a paternal society, the duty of utmost importance for a Korean wife was 1) to give birth to a son. In the Joseon period (1392–1910), they regarded the
birth of a son as a fulfillment of an obligation of a descendant to the ancestors, and 2) to take care of all the house duties.

In fact, traditional Korean society has the notion that determines distinction between the genders. Because of this, when men and women met, they tried to avoid facing each other. In the nobleman’s house, even husband and wife were using separate rooms unless they were doing sexual activity for reproduction. Figure 2.6 clearly shows how these effects the organization of the spaces. Thus, traditionally women dominated the kitchen because men hardly cooked or washed the dishes. However, in the commoner’s house, the tradition of distinction between man and woman was not as strict as that of a nobleman’s.
Figure 2.6: Floor plan of Residence of Queen Sunjeonghyo (Source: A village of traditional houses in the Namsan Valley, (Seoul: Hyunmon Publishing, 1998), 22.)
This residence (refer to Figure 2.6) was built in the year of 1906. This house consists of three parts which are the shrine was built in upper terrace and main house divided in two that women’s quarters and men’s quarters.\textsuperscript{14}

In addition, the traditional Korean kitchen was always connected to a room and was built 60-90 cm below the level of the room because the kitchen-heating furnace (fire place) was the source of heating for the room. The ‘Ondol’ is a traditional Korean heating system called ‘Gudeul’. Granite blocks are placed on the floor and are used to make fire in the fireplace, which is comprised of a cooking stand, fire pots, cauldrons, flues, and a chimney called ‘Butumak’.\textsuperscript{15} As blocks are heated up by making fire in the fireplace, rooms are able to receive heat without excessive humidity. The ‘Ondol’ can be traced back to the prehistoric times, as the cooking stand is presented in the Goguryeo mural paintings (refer to Figure 2.5).

\textsuperscript{15} Kuangun Kim, The Korean kitchen, (Seoul: Daewonsa Press, 1997), 40.
Women had to constantly bend down to cook and to work around the kitchen. Because of the way a traditional house was built, frequent up and down movement was unavoidable while women used the kitchen. For example, women had to step up the kitchen stairs, come out into the courtyard, and then had to take another several steps to the living room. It was such an inconvenience to carry the food tray or table from the kitchen to a room.

In the 'Joseon' period (1392–1910), successful efforts had been made to maintain stable agricultural production and a feudal class society through a New Confucian, family-centered ideology and values. In traditional Korea, houses
were built and classified according to the dweller's social status, natural
surroundings, period of establishment, and climate.

During the Korean War, (from 6.25. 1950 to 7.27.1953), many different
cultures flourished in the Korean society, mostly due to the American military and
introduced the first refrigerator to Korea. It was such a sensational influence on
Korean society, especially in their eating habits. People could store food longer
and keep food fresher. The introduction of the westernized home was new to the
Korean people as well, especially to housewives. The new westernized home
included a new kitchen which was organized differently, forcing efficient work
habits for the housewives at that time. Kitchen floor was on the same level as
other rooms. The heating system under the floor still existed and the kitchen
stared to become a shared space, along with others spaces. The apartment
concept was introduced to the society at that time as well. The kitchen shown in
Figure 2.9 is slightly lower than the main living room level. For the heating
system, they started to use briquettes instead of wood. Along with these changes
imported from other cultures, there was an improvement in the workload of the
housewives and a positive affect on their eating habits, as well. The following
three pictures also show the evolution of the Korean kitchen.
Figure 2.8: The image of mid 20c. Kitchen (Source: Younghwan Kang, *The House and Society*, (Seoul: Woojin Press, 1993), 67.)

Figure 2.9: The full size model of late 20c. Kitchen (Source: 2005 Living Fare in Korea, 2005)
The change from a kitchen being located outside the house to becoming the center or "the heart" of the house in the 21st century manifested a shift in the social structure of the family. Nowadays, the kitchen is located at the center of the home where all family members are able to share and communicate. These types of kitchens, and new appliances, forced a new way of efficient and convenient living. As mentioned before, the economic growth also led to higher expectations and increased needs. New appliances were also developed that satisfied the need of the housewives with regard to design and efficiency. For
example, Korean people traditionally utilize the 'Soy Jar'\textsuperscript{16} for storing food, especially 'Kim chi'\textsuperscript{17}.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{kimchi_refrigerator}
\caption{The image of traditional 'Soy Jar' and current 'Kim chi Refrigerator'}
\end{figure}

\textsuperscript{16} Soy Jars of fermented food such as soybean sauce, soybean paste, thick soy paste mixed with red pepper, Kim chi, salted fish for Kim chi, and powdered red pepper.

\textsuperscript{17} Kim chi is a fermented dish made of a spicy mixture of salted and seasoned vegetables, which includes slices of radish, powdered red pepper, green onions, garlic, and so on. Koreans use a variety of vegetables with which to make Kim chi; there are over 200 kinds of Kim chi.
'Soy jar' is a large ceramic jar placed nearest to the kitchen to preserve, or store certain seasonings (it's usually outdoor and sometimes under the ground). The 'soy jar' for Kim chi is usually buried underground to attempt to keep fresh for a longer period of time. The Korean earth temperature at end of November is 5 degrees C. and, from the beginning of December to the end of February, the earth temperature maintains 0 degrees C. ~ -1 degrees C. As the society became urbanized and led to more apartments housing being built people didn't have enough space for this 'soy jar'. The new technology invented the 'Kim chi refrigerator', which mimics the functions 'soy jar' with additional features are in it. It has been ten years since the 'Kim chi refrigerator' was introduced to Korean society. The combination of culture, along with new technology has impacted the Korean culture. It has allowed for more efficient options to the Korean lifestyle.
CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Methodology

In order to understand and to define the ideal life style design of the kitchen, in this research, there were two main research phases. Quantitative and qualitative data such as surveys, observation by filming, interviews and focus groups were utilized. Table 3.1 shown below lists the strategy plan for the research. The first phase covered current and future kitchen problems and needs, as well as cultural and generational effects on kitchen design. The second phase focused on kitchen appliances in order to understand future trends and perceived value in kitchen appliances and any effects by regional groups. The collected information was organized, summarized, and analyzed. Graphs were done to draw the overall picture of this study.
### Table 3.1: Strategy plan for research

<table>
<thead>
<tr>
<th>Phase One</th>
<th>July 1st 2004 – September 2nd 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>Interview</td>
</tr>
<tr>
<td>Interview with designers</td>
<td>Focus group</td>
</tr>
<tr>
<td>Observation by filming</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase Two</th>
<th>December 3rd 2004 – March 10th 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td>Interview</td>
</tr>
<tr>
<td>Focus group</td>
<td></td>
</tr>
</tbody>
</table>

### 3.2 Phase One Research

In this first phase, surveys, observations, interviews with users, interviews with designers, and focus groups were conducted. The methods were applied in order to study the generational aspects of the everyday kitchen, universal design problems, mini-kitchen preferences, the use of kitchen spaces and needs, and cultural aspects such as traditional housing, food preferences and influence of
digital culture in kitchens. There were a total of two hundred participants involved in phase one.

3.2.1 The Stakeholders

The survey, interviews and focus groups involved a total of 200 people from Korea. There were no restrictions on gender, region, generation and whether they use the kitchen or not. To investigate and understand real life in the kitchen, two standard families were observed over 24 hours by videotaping them in the kitchen. Three interior designers also participated for this expert interview section. The Table 3.2 shown below lists the stakeholders for this Phase One.

<table>
<thead>
<tr>
<th>Survey</th>
<th>No restriction by gender, generation, region, and whether they use of kitchen or not</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation by Filming</td>
<td>2 normal families</td>
</tr>
<tr>
<td>Interviews</td>
<td>2 normal families</td>
</tr>
<tr>
<td>Interviews with Interior Designers</td>
<td>Total 30 people participated</td>
</tr>
<tr>
<td>Focus Group</td>
<td>No restriction by gender, region, and whether they use of kitchen or not</td>
</tr>
<tr>
<td></td>
<td>Total 30 people participated (8 groups with 3–5 people per group)</td>
</tr>
</tbody>
</table>

Table 3.2: Phase One Research Stakeholders
3.2.2 Survey

To acquire insightful information regarding kitchen design, the first phase survey provided information within a wider scope. The objectives of the first surveys were:

1) To study current and future kitchen spaces, their issues and needs
2) To define cultural and generational effects on kitchen design.

The first phase survey involved 140 people from Korea with no restrictions on gender, generation, region and whether they use the kitchen or not. Questionnaires were created in order to understand people's current and future needs with regard to the kitchen space. Via a pilot test, the questionnaires were revised and modified with the assistance of Dr. Elizabeth Sanders\textsuperscript{18} and Professor Heike Goeller\textsuperscript{19} at The Ohio State University. The survey included five main parts, which are as follows:

1) Current kitchen: who uses the kitchen, attitude related to the current kitchen, universal design and needs in the current kitchen.
2) Current and future kitchen: what types of activities are performed and what they anticipate their needs to be in the future regarding the current and future kitchen.
3) Future kitchen: what they anticipate needing in the future kitchen.

\textsuperscript{18} Dr. Elizabeth B.-N. Sanders, in Professor at the Ohio State University, Design Researcher and President, MakeTools (Additional information available at: \url{http://www.maketools.com} and \url{http://design.osu.edu/dept_people_faculty.html})

\textsuperscript{19} Professor Heike Goeller is Associate Professor at the Ohio State University, M.F.A. Interior Architecture Staatliche Akademie der Bildenden Kuenste Stuttgart, Germany; Interior Design: space-related human behavior and environmental factors, space semantics, and interior identity, (quoted from the faculty introduction page of the Department of Industrial, Interior, and Visual Communication Design at the Ohio State University. Additional information available at: \url{http://design.osu.edu/dept_people_faculty.html})
4) Mini-Kitchen: is there a preference for a mini-kitchen.
5) Personal data: this included age, gender, marital status etc.

3.2.3 Observation by Filming

To investigate and understand the natural behavior of people in the kitchen, an observation method was applied. For this section, two families were selected and a camcorder was set up in their homes for 24 hours in order to observe their natural life in the kitchen.

Figure 3.1: Some photographs taken by camcorder in order to observe natural life in the kitchen.
3.2.4 Interviews with Kitchen Users

With reference to this interview section, 30 individuals participated, along with site surveys. This data was collected in order to gain information regarding the actual condition of their current kitchens. The interviews were conducted at the residences of the participants with regard to the site survey. There were no restrictions on gender, generation, region, and whether they utilize their kitchens.

The objectives of these interviews were:

1) To examine in detail, current kitchen problems and needs.
2) To gather data concerning the current kitchens' conditions.

In this section, the camcorder, digital camera and checklist were used to gather data. Each application was used as follows:

- Camcorder: to document and gather information during the interview.
- Digital Camera: pictures were taken of the participants. These pictures were later presented in the focus group.
- Checklist: To ensure that the session was on the right track.
3.2.5 Focus Group

In order to gain a perspective and preferences for future kitchens, the focus group research method was applied. 30 participants were involved in the focus groups, with 3~4 people per group. One 11x17 inch sheet of white paper, a pen, two sheets of stickers, a camcorder and digital camera were the research
tools used. Camcorder was used to document the entire discussion. Participants received an image tool kit in order to create and express their "dream kitchen". At the finish of this exercise, the group discussed their ideas about future kitchen design.

Figure 3.3: Tool kit for Phase One focus group
Figure 3.4: Sticker (contains: traditional, kitchen appliances, and food components) for Phase One focus group tool kit
Figure 3.5: Sticker (contains: organization, style, and activity components) for Phase One focus group tool kit
3.2.6 Interviews with Current Interior Designers

In order to investigate the real-world opportunities of kitchen design, in-depth expert interviews were held. Three interior designers participated in this expert interview section. One 11x17 inch of white paper, pen, two sets of stickers, camcorder and digital camera were the research tools utilized.
3.3 Phase Two Research

In order to investigate the perceived value and trends of kitchen appliances by region and by cultures both Koreans and Americans were involved in this phase. To achieve greater depth of investigation, the Phase Two Research probed further, using surveys, interviews and focus groups. The
research was conducted in two cities in each country (Seoul and Ulsan in Korea and New York City and Columbus in America).

3.3.1 The Stakeholders

According to the Phase One Research results, married women the 20–40 years old age group used the kitchen the most. Therefore, the Phase Two Research was restricted to married women between the ages of 20 and 50. Also for the regional aspect, participants were limited to Seoul, Ulsan, New York City, and Columbus. The interview section was conducted with 20–40 years old married women in either Seoul or Ulsan. In the focus group part I selected 4 typical families (2 families from Seoul city and 2 families from Ulsan city). The participants were selected randomly to avoid biased information, but the restrictions were applied. Table 3.3 summarizes the stakeholders who were involved in the Phase Two Research.
| Survey           | • Restriction to woman  
|                 | • Restriction on age: between age 20~50  
|                 | • Limitation on region:  
|                 | Korea (Seoul and Ulsan)  
|                 | America (New York City and Columbus)  
|                 | • Total 50 people participated:  
|                 | Korea: 30, America: 20  
| Interviews      | • Only married woman  
|                 | • Age 20~50  
|                 | • Limitation on region:  
|                 | Seoul and Ulsan  
|                 | • Total 4 house wives participated  
| Focus group     | • Normal 4 families participated  
|                 | • Limitation on region:  
|                 | 2 families from Seoul city in Korea  
|                 | 2 families from Ulsan city in Korea  

Table 3.3: Phase Two Research Stakeholders

3.3.2 In-depth Survey

In Phase Two Research, survey participants were a total of 50 people, 30 people from Korea (15 from Seoul, 15 from Ulsan), and 20 people from America (10 from New York City, New York, and 10 from Columbus, Ohio). The objectives of this second survey were the following:

1) To study regional aspects on kitchen appliance ownership plus usage.
2) To define the kitchen appliance effect to kitchen users.
3) To investigate perceived value and trends in kitchen appliances.
The Phase Two survey questionnaires were created in order to understand the effects to peoples' expectations and perceived value of kitchen appliances in current and future kitchens and to define trends and perceived values of kitchen appliances by region.

The survey had two main parts, which were the following:

1) Kitchen appliances: who operated them and how often, when are kitchen appliances purchased, and what information was considered when purchasing them.

2) Personal data: information regarding age, occupation, incomes, etc.

3.3.3 In-depth Interviews

To obtain more insightful information about kitchen appliance, the in-depth interview research method was applied. A total of 4 homemakers participated in these interviews. A digital camera, camcorder and checklist were the research tools used in documenting the interviews. The objectives of the interviews were the following:

1) To study and to examine in detail their current and future kitchen appliances, how they are related to their lifestyles, and why specific kitchen appliances are owned.

2) To define cultural and regional impacts on owning and using of kitchen appliances.
3.3.4 Focus Group

In order to get the regional impacts on kitchen appliance 4 families participated in the focus groups. Among the 4 families, 2 families were from Seoul and 2 families from Ulsan. The 2 family members were together at the same time in a group. One 11x17 inch sheet of white paper with time line printed on it, a pen, two sets of stickers, and digital camera were the research tool used to gather the data. The participants created their future kitchen with appliances on the time line using a pen and stickers. They wrote and draw on it or they used stickers. Along with creating the timeline about future kitchen appliances, a discussion was held.
3.4 Data Analysis

The numerical data were organized, summarized, and visualized in the Microsoft Excel Program to draw the overall picture of the results. Photographs (from interviews and focus groups), and checklists (from interviews and focus groups) were analyzed using the Microsoft Excel Program, Word, and Apple
computer imovie. The Apple computer imovie program was also used to summarize and visualize the data collected through observation studies by video recording the activities of the typical day.
CHAPTER 4

ANALYSIS AND RESULTS OF THE FIELD RESEARCH

4.1 Introduction

Kitchen appliances and the kitchen environment should be designed taking into consideration cultural needs. Nowadays the kitchen is the heart of a home and all activities in the kitchen, such as cooking, eating and even playing, is possible. This study was a comparison of the Korean and American kitchen spaces as well as the kitchen environment. The study was restricted to the organization of kitchens and focused on appliances to show different cultural and generational needs and preferences that exist. The design should reflect those differences. The quality of life improved as a result of increased expectations of perceived values and is affected by regional trends. To confirm these assumptions, the phase one and phase two research were conducted as follows: The phase one focused on responses from Korea and the phase two on responses from Korea and America. The results of these were compiled, analyzed, discussed and compared in this chapter.
4.2 Conclusion of Phase One Research

4.2.1 The stakeholders

In this 1st phase, a total of 200 South Korean people participated. There was no restriction on gender, age, residence or occupation. Table 4.1, which follows, show more details on the 1st phase participants.

<table>
<thead>
<tr>
<th>Number of participant</th>
<th>200 participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male: 12%</td>
</tr>
<tr>
<td></td>
<td>Female: 88%</td>
</tr>
<tr>
<td>Age</td>
<td>10-19: 7%</td>
</tr>
<tr>
<td></td>
<td>20-29: 12%</td>
</tr>
<tr>
<td></td>
<td>30-39: 26%</td>
</tr>
<tr>
<td></td>
<td>40-49: 26%</td>
</tr>
<tr>
<td></td>
<td>50-59: 26%</td>
</tr>
<tr>
<td></td>
<td>60 and over: 3%</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single: 21%</td>
</tr>
<tr>
<td></td>
<td>Married: 78%</td>
</tr>
<tr>
<td>Housing type</td>
<td>Apartment: 84%</td>
</tr>
<tr>
<td></td>
<td>House: 16%</td>
</tr>
</tbody>
</table>

Table 4.1: The Phase One Research participants
4.2.2 Who uses the Kitchen

According to the 1st survey, out of 200 participants, most of wives use the kitchen. Also, other family members often use the kitchen. However, most of them were female family members. As mentioned in Chapter 2 (the South Korean kitchen history), the kitchen space was used to be operated by females only. Other research demonstrated, and attempted to prove, that since women were increasingly more involved in society, the amount of their household chores decreased. But this research shows that the house chores still remained women’s duties. Many kitchen appliances were invented for the convenience of working mothers, singles, and elderly. However, most of the ideas for the design of the kitchen appliances in Korea tended to imitate other cultures. Today, because of the urbanization and technological development, Koreans became busier with work. “Working mother” became a common term in Korean society. Therefore, due to this busy lifestyle, the aspect of most importance became their families. Everyone began trying to spend more time as a family unit. They, also, began to redefine their values as priorities for their lives. As depicted in Figure 4.1, when questioned about when they most ate meals with their family at home, the most often, and 69% of participants responded that dinner was number one followed by 27% opting for breakfast.
Figure 4.1: Percentages of the most time family are together for meals

<table>
<thead>
<tr>
<th>When do you eat meals the most with your family at home?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. : Best time we can be together is dinner. But sometimes my husband comes home very late that many times I eat dinner with my children and my husband eat at work.</td>
</tr>
<tr>
<td>B. : Because both of us are busy and we don’t have children we prefer eating meal together in the morning.</td>
</tr>
<tr>
<td>C. : We always try eating meals with family together as much as we can. But that is not easy. Because children have their own schedule such as they have to go to institute for study and my husband come home very late usually that we try eating meals with family during the weekend. Since the weekend starts Friday we could spend time as a family more during the weekend and also most of the time we eat out.</td>
</tr>
<tr>
<td>D. : Because both of my parents are working my grandmother makes breakfast and dinner for us. Anyway, our family get together dinner time most.</td>
</tr>
<tr>
<td>E. : Dinner. My children are very young I have to wake up early for my husband to prepare breakfast. And I spend most time with my children and cook for dinner for my family.</td>
</tr>
<tr>
<td>F. : Since I’m single and living alone, I don’t have to worry about when I eat, where I eat. But I am really concerned about my health so that I try to eat right and I try not to skip breakfast at least.</td>
</tr>
<tr>
<td>G. : Dinner. But most of the time we are distracted by TV at dinner.</td>
</tr>
</tbody>
</table>

Table 4.2: The summary of interviews with everyday kitchen users regarding meal times with the family
According to the interview summary, many families tried to spend time together, but due to a busy lifestyle, it was becoming more difficult for the families to spend time together. At mealtimes they could get together, which was one of the most important moments for the family. Nevertheless, many things such as television and computer, caused distractions. Some housewives expressed concerns about this television matter. Most of them responded that they tried to discourage their children from watching TV while dining. The eating time was not long enough to talk and to share things with family.

Figure 4.2: Teenager eating dinner while playing an Internet game.
Computers, and especially the Internet connection, have brought fundamental changes to society and to households. The photo above (refer to Figure 4.2) could be explained with two assumptions.

1. There is the possibility that some families lacking communication between parents and the children.
2. Some teenagers would rather play computer games than to communicate with their family.

As depicted in Figure 4.1, when questioned, 69% of the people surveyed responded that dinner was the time the family gets together most often. 27% responded that breakfast was the time that the family ate meals together. In conclusion, mealtime is considered to be the most important time for family to share time together, especially as they experience a busy life style.

Another point to consider: in former days Koreans' work schedule, was to work 5 days a quarter of work on Saturday, followed by 1 day and a quarter days off. Since, around the 2000, the Korean government had a 5 workdays week with 2 days off. That influenced life style changes in Korean society. People seemed to have more time to spend with their families, which has rewarded the restaurant and travel industry. Eating out on the weekend is considered, for most, quality family time. Moreover, families have more time to spend at home together. This factor alone, is an important matter to consider when it comes to the kitchen design, which is "the heart of the home".
4.2.3 Kitchen Space Satisfaction

According to 1st survey 46% responded that they are satisfied with their current kitchen, 52% responded that they were not satisfied. 70% of participants wanted to have a new kitchen, and 28% of them said they were satisfied with their current kitchen.

![Pie chart showing kitchen space satisfaction](image)

Figure 4.3: Current kitchen space satisfaction
2. Do you want a new kitchen?

- Yes: 28%
- No: 2%
- Not Answer: 70%

Figure 4.4: Interest in getting a new Kitchen

3. How long have you lived in this place?

- 1-3 years: 56%
- 4-6: 13%
- 7-9: 12%
- 10-19: 14%
- 20+: 2%
- Not Answer: 2%

Figure 4.5: Percentage of years lived in current household
As depicted in Figure 4.5, when questioned about how long they had been living in their current household, 56% of participants responded 1–3 years, 13% responded 4–6 years, 12% said 7–9 years, 3% responded 10–19 years, and 2% of participants said that they lived their place for over 20 years.

56% of the people lived there only 1–3 years and most of them lived in recently built apartments, but they are not satisfied their current kitchen. This is evidence of the need for improvement in current kitchen design.

4.2.4 The activity in kitchen and dining

The activities that people participate in their current kitchen are fundamental information to obtain in order to shape the definition of future kitchens and appliances design for Korea.

![Pie chart showing percentage of extra space in the kitchen](image)

Figure 4.6: Percentage of extra space in the kitchen
39% of the participants have a space in the kitchen for other tasks such as paying bills, reading books, working on the computer, and so on. However, according to the interviews and site surveys, most of them used a dining table or a small side table when they performed these other tasks.

The following Figure (refer to Figure 4.7) compares current and future activity in the kitchen.

![Figure 4.7: Comparison of current and future activities in the kitchen](image)

57
According to 1st survey (refer to Figure 4.7), 81% of them were eating in the kitchen. Also, 85% of the people visited the kitchen to get a drink. 96% of people used the kitchen for cooking. However, figure 4.6 and 4.7 explained that there were many other activities they did in the kitchen other than cooking and eating. 62% of people gathered with family or friends in the kitchen. 40% watch TV in the kitchen or while dining, 37% of them read books and the newspaper, 34% of people needed to have a big table, such as a dining table for a work surface, 13% of them did laundry in the kitchen, 16% of the family members, such as children, did homework in the kitchen, 8% used a computer in the kitchen, and lastly 36% of them paid bills in the kitchen. For the future perspective on the kitchen, the questionnaires also addressed future activities in the kitchen.

The comparison on current and future activities, the demographical percentage shows that there is not much difference between the activities in current kitchens and future kitchens with regard to eating, cooking, and getting beverages. Currently, 85% of people go to kitchen to get beverages. In the future, 83% predicted that they would go to the kitchen for beverages. This suggests the opportunity to have another refrigerator, other than in kitchen. This would allow for easy access to get the beverages and that would save travel time.

People decided that they wanted to spend more time in the kitchen being involved with non-food related activities. More than half of the participants responded that would enjoy watching television, reading, or paying bills in future
in kitchen. A computer in the kitchen would offer a solution. The willingness of computer usage in future kitchen was 33%, whereas only 8% are currently using their computers in their current kitchen.

According to the focus group research, the three images shown in Figure 4.8 represent what people want to do in their future kitchen. These images explain that people want to share the kitchen with all the family members and want to have harmonious life with their family. They also want to have a romantic and warm environment. The interesting result from the focus groups was that a flower image (refer to Figure 4.9) was the number one choice for age under 17 group. 100% of them chose this flower image to put in their future kitchen. However, the over 18 age group didn't select it much, only 4 people out of 22 people chose that.

In addition, in the interviews with expert interior designers, the Figure 4.8 images were also chosen, except for the coffee image. And from the interview with one housewife, she stated that she likes to have a room for herself, not a kitchen. Also some people responded that they like to have dining room or family room for their families.
Figure 4.8: The most chosen images for what people want to do in their future kitchen by focus group

Figure 4.9: The number one choice for age under 17 group
4.2.5 Traditional housing's preferences

The study of cultural preferences and how people respond to traditional issues was accomplished with the use of surveys, interviews, and focus groups discussions.

![Chart showing where people prefer to live]

**Figure 4.10: Percentage of residential preferences**
60% of them responded that they preferred apartment living as opposed to living in a house. 33% answered that they are preferred living in a house. An interesting point was 'Combination'. 6% opted for a combination that involved living in a house and an apartment.

In addition, Figure 4.11 shows that 47% of them prefer a simple style, which South Korean sees as 'European style'. Traditional style and warm style (American style) were only 8% each. Another interesting point was 36% of 'combination style', which were traditional style combined with simple, functional and modernized style.

> Figure 4.11: Percentage of style preferences

[Image: Pie chart showing style preferences.
- Simple (European style) 48%
- Combination 36%
- Warm (American style) 8%
- Traditional 8%
]
To obtain more opinions about traditional housing, interviews were held with everyday kitchen users. This topic was also covered in the focus group. The following is the summary of the results:

How do you feel and think about traditional housing?

A. I like traditional house but I prefer to live in an apartment instead of traditional house. Because I feel more secure in apartment.
B. I think, I like traditional house but I rather stay in an apartment because of convenience of apartment. Traditional house is beautiful but it's hard to take care of that.
C. I like to live in a traditional house as long as it has modern and functional aspects in it.
D. I'm a 14 years old girl. I never lived in such an traditional house as well as just house either. I only lived in apartment so that I'm not sure how I can compare both of traditional house and apartment.
E. It's nice but not convenient.
F. Used to be that I don't like the traditional things because I thought, being in the traditional way is falling behind. But these days as technology developed I realized and I like to live traditionally. And I think our culture is very important to everyone. So that if designers are concerned about traditional and culture things more it would be great to all of us.

Do you believe in 'feng shui'? If yes, where do you apply it?

A. Not really... I don't care about 'feng shui'
B. I do believe specially when I place furniture such as positioning the bed.
C. I don't believe in 'feng shui' but I cannot just ignore that.
D. For positioning the furniture other than that not really...

Table 4.3: Summary statements made by the participants with regard to traditional housing
Figure 4.12: Result of focus group toward traditional housing preferences in future kitchen.

As depicted in Figure 4.12, out of 30 people, there were not many who preferred to have traditional things. Also, the summary of the interviews (refer to Table 4.3) reveals that people like to see or cannot ignore traditional things although for their own home they have negative opinion. According to interview
and focus group results, it could be summarized with four opinions. 1) People have stereotypical ideas that traditional things are not convenient. 2) If they like to use traditional things then they must be compromised in some way (they are not modern, functional and easy to use). 3) Some beliefs such as 'feng shui' still remain in the society and cannot be disregarded. 4) These days people realized that the traditional aspect is appropriate for their lives.

4.2.6 Mini-Kitchen's preferences

Mini-Kitchen is described as small kitchen components (for example, small refrigerators, small sinks, small stoves) that can also be located in another section of the house. In the 1st survey, it was assumed that the future kitchen design this mini-kitchen system could find the as a possible solution.
Figure 4.13: Percentage of Mini-Kitchen found in the households

Figure 4.14: Percentage of refrigerators in the household

66
24% responded that they have a mini-kitchen in their household. As depicted in Figure 4.14, 52% of people have more than one refrigerator. However, according to the survey (refer to Figure 4.13), 75% of them responded that they do not have a mini-kitchen in their households. Also according to the site survey, people have mini-kitchen, which was used as a second refrigerator. Also, the refrigerator was located most often next to the kitchen, such as on a veranda.

Figure 4.15: Percentage of people of having Mini-Kitchen preferences in future
Another interesting question addressed was, "Could mini-kitchen be a solution for future kitchen design?" According to the first survey, 73% of the people were willing to have a mini-kitchen, if they have space in their home. Almost half of the participants responded that they like to have a mini-kitchen next to the kitchen, such as on a veranda. However, according to the interviews and surveys, they understood mini-kitchen to mean, having a second refrigerator. Also, as depicted in Figure 4.15, 24% of them don't prefer to have a mini-kitchen. From this, the idea of the mini-kitchen, which was small kitchen components, was concluded to be false. However, having a second refrigerator other than in the kitchen, was suggested as a possible use for future households.

Figure: 4.16: Location preference percentages for Mini-Kitchens in the future
4.2.7 Universal Kitchen: Generational effect

South Korean culture respects the aged and traditionally, the first son usually takes care of his parents. Many families still follow this custom. In such cases, three generations often live together in one household. However, urbanization has led to the decline of the extended family system and an increase in the nuclear family system. Consequently, the kitchen design should consider these matters and be designed universally.

![Pie chart showing the percentage of children and elderly family members using the kitchen.](image)

Figure 4.17: Percentage of children and elderly family members using the kitchen
According to the phase one survey, 37% of children and elderly people are using the kitchen, whereas 62% of them responded that they are not using the kitchen. During the interview session, this question was asked to uncover the reason that 62% of them are not using the kitchen. The summary of the responses is the following:

1. Many mothers are not allowing their children and elderly people to use the kitchen due to safety concerns.
2. Because their children are boys
3. Too young to use the kitchen
4. Children don't have the time because of schoolwork.

Regrettably, from the phase one survey and site survey, 100% of the houses did not have any equipment for children and elderly people. Moreover, according to the interview, 100% of the respondents had no conception of universal design.

Recently, many studies on universal design for South Koreans have been conducted. The first international conference regarding universal design was held in 1998 at Seoul, Korea, also many designers have knowledge about universal design, however, in reality, more investigation would be required to create a universally designed kitchen. Moreover, to adopt the universal design theory, more education would be of importance to the everyday people.
4.2.8 Food effect

In South Korea nowadays, fusion restaurants are popular, and on the other hand, many people in the U.S. have become familiar with ‘Zen style’ that originates from Japanese culture and ‘feng shui’, which comes from the Chinese culture. This is a good example of cross-culture at the beginning of the 21st century. One of the most interesting points was that western people began to adopt the Eastern style of food and culture, but the Eastern people began to embrace the Western style. Examples of this include the living environment and appliances, but less regarding food. For example, even though food industry opened up to many different cultural foods, Korean people prefer Korean food. To confirm these assumptions, the focus group research method was applied. The details are as follows:
Figure 4.18: Result of food preference by age group
Figure 4.19: Percentage of food preference by age group

It was assumed that the younger generation would prefer fast food and non-Korean food since that generation was widely open to various cultural influences as they grow up. This pattern can be seen in Figure 4.18 and 4.19. The interesting item was the 'pasta', which is number 6 in Figure 4.19. People age 17 and under should have marked it higher than age 18 and over. However, the graph shows the opposite, which are 43% of age 18 and over responded that
they preferred to eat pasta in future kitchens and 29% of age 17 and under responded likewise. This preference could be caused by the percentage of gender. Male participants consisted of 12% and female participants of 88%.

Coffee was introduced to South Korea in 1895. At that time, the coffee was only for the Royal House. In 1920 a German opened the first coffee shop and, as a result of that, coffee slowly earned fame. After the Korean War, coffee became widely known to the public. Nowadays, the image of coffee is the “tender”, “warm”, “elegant” and “success”. Wine is considered in the same classification. The highest percentages received were from the age group 18 and over. It was 74% for coffee and even teenagers’ responded with 57%.

The interviews and discussions in the focus groups, confirmed that people have known and feel introduced to many different cultures, have gained knowledge that has influenced them with regard to kitchen usage, however, many still prefer their dining out options.

4.2.9 The use of Kitchen appliances

Usually, kitchen appliances are integrated in various ways in a typical kitchen. Appliances are not only placed in the kitchen for functional proposes, it also forces movement, dictate the path people take. Behavior aspects of how and when people use and treat the appliances, how it fits in Korean kitchen, why they bought were questioned in the phase one survey.

As depicted in Figure 4.20, the relationship between current and future revealed interesting points, such as the preference increase for having a
television in kitchen, a 2nd refrigerator, freezer, kimchi refrigerator, an island table
in kitchen, computer, rice refrigerator, radio, dish drier, dishwasher, side dish
refrigerator, and a bookshelf in the future kitchen.

Another interesting item was the "Island table". Until now most of the
kitchen units were attached to a wall. The island table became developed as L-
shaped kitchen with bar or narrow side table attached to the end of the kitchen
units. According to expert interview with interior designers, one of the reasons
the island table couldn't be incorporated in Korean kitchen was due to
regulations. The stove must be attached to the wall. The work surface for cooking
must be next to the stove and island table, therefore is not adequate. The graph
(refer to Figure 4.20) however, shows that 64% of people do want to have an
island table in their future kitchen. Perhaps, this should be considered for future
kitchens.

In addition, according to the interview (refer to Table 4.4) with kitchen
users, some don't want to use a dishwasher because of inconvenience. This fact
allows the following assumptions: 1) people have negative views about the
dishwasher, however, they would like to have one in the future kitchen (refer to
Figure 4.20). The expectations of the design problems being solve and want to
live conveniently. 2) the perceived value of appliances, such dishwasher became
higher. 3) people realized that anything created for one culture much be
designed to suit that culture.
<table>
<thead>
<tr>
<th>Option</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>I have a dishwasher but I never use it for washing dishes. I use it for storage or dry for the dishes. Because, I think dishwasher uses so much water I feel like I'm wasting so much water.</td>
</tr>
<tr>
<td>B.</td>
<td>I do have one. However, I'm not using it that much. Because of I don't think that machine clean my dishes well. Korean dishes are small and deep so that dishwasher does not clean properly. I know there is domestic company designing one dishwasher for the Korean style but I choose foreign manufacture one because of the brand name and I trust that brand name. The reason I bought it was I just wanted to have it and also I thought the dishwasher will work greatly.</td>
</tr>
<tr>
<td>C.</td>
<td>I don't have it. Since I'm busy with my work, I like to buy one of the dishwasher for saving my time and live conveniently.</td>
</tr>
<tr>
<td>D.</td>
<td>I'm not using the dishwasher every time when I need to wash dishes but I use them at least once a week. And I think I like to use it because it could save my time and it's convenient.</td>
</tr>
</tbody>
</table>

Table 4.4: Summary of Interviews with everyday kitchen users regarding the dishwasher.
Figure 4.20: Percentage of current and future use of kitchen appliances
According to phase one survey, envisioning this future kitchen, people prefer to have different kinds of refrigerators, such as a 2nd refrigerator, freezer, kimchi refrigerator, rice refrigerator, and side dish refrigerator. The reason could be as follows.

- They prefer to have fresh food and believe technology will assist, also
- Korean people are open to many differences and are willing to adapt to different cultures and adventures.

Korean culture is very conservative, but is amenable to the adaptation to new, more progressive ideas and products. They would readily accept the new technology and allow it to became a part of their lifestyles.

4.3 Conclusion of Phase Two Research

When analyzing kitchen appliances data from the phase one survey, an interesting point was detected that trends were regionally influenced, along with perceived value. To clearly identify and define what Korean people would want in their future kitchens, the Phase Two Research was conducted.

4.3.1 The stakeholders

The Phase Two Research survey participants were a total of 50 people, both from Korea and America. The table 4.5 following shows more details on these participants.
| Total participants | 50 participants:  
|                   | • 35 Korean (15 from Seoul city, 15 from Ulsan city)  
|                   | • 20 American (10 from New York City NY, and 10 from Columbus OH) |
| Gender            | Female: 100% |
| Age               | Between age 20–50 |
| Marital status    | Seoul: Married: 100%  
|                   | Ulsan: Married: 100%  
|                   | New York City: Married: 44%  
|                   | Divorced: 11%  
|                   | Single: 44%  
|                   | Columbus: Married: 89%  
|                   | Divorced: 11% |
| Car ownership     | Seoul: Owned: 100%  
|                   | Ulsan: Owned: 100%  
|                   | New York City: Owned: 76%  
|                   | Not Owned: 22%  
|                   | Columbus: Owned: 100% |

Table 4.5: The Phase Two Research participants

4.3.2 Ownership and Usage of Kitchen appliances

According to the phase one survey, 100% of the Korean housewives are using the kitchen and most of them, at least once a day. Since the Phase One Research results show that the housework is mostly done by women, this Phase Two Research, women were asked whether their spouses used the kitchen as well. Seoul residents responded that 5 out of 15 spouses use the kitchen, Ulsan...
residents responded 13 out of 15. Looking at the American counterpart, in New York City, 5 out of 10 responded using the kitchen and Columbus residents responded 9 out of 10 that they do, too. Furthermore, they were asked what types of appliances their spouses used. The results are shown below (refer to Figure 4.21).

Figure 4.21: Usage of kitchen appliances by Spouse (refer to husband).
As shown in Figure 4.21, out of 50 residents (15 Seoul people, 15 from Ulsan, 10 from NYC, and 10 from Columbus) the microwave, stove, and refrigerator are most used by spouses. Also this graph explains that:

- The involvement and use of kitchens by spouses in Ulsan and Columbus were higher than in Seoul and NYC.
- The food preparation culture is different in the two countries investigated. For instance, Americans chose mixer, grill, chopper, oven, and toaster, whereas Koreans only chose the rice cooker.

To define what appliances housewives used most, a survey was conducted that asked the participants to list 5 kitchen appliances that they used the most. As demonstrated in Figure 4.22, appliances housewives use the most are the refrigerator, stove, and microwave, the spouses responded with same results however, housewives were using various other appliances, such as an electric pot, mixer, and others. Food culture aspects are also shown in the housewives results.
Figure 4.22: Usage of kitchen appliances by Housewives
In addition, when asked where they mostly eat meals and gather, the choice of among these were 1) Living room 2) Dining room 3) Kitchen. 4) Other. 13 of the 15 Seoul residents said they eat meals at their dining table that is usually located between the kitchen and living room, and 14 people stated that they do talk while they are dining. 8 of 15 Ulsan people eat their meals in their kitchens and 9 people responded that have conversations while dining. 6 people said they watch television. 5 of the 10 NYC residents eat in the living room most after, with 5 people responding that they watch television and talk while dining. 4 of the 10 Columbus people also eat in their living rooms with 7 people responding that they watch television while eating.

4.3.3 Expectations and Perceived Values

While conducting the Phase One Research, the assumption made was that regions would have an affect on expectations and perceived value. To expose people’s expectations the phase two survey contained a question about what kind of automobile they currently have and what kind of automobile they dream about in the future. These days, automobiles flourish in Korea, and depends on kind of automobile becomes an indicator of wealth. According to second survey 100% of Seoul, Ulsan, and Columbus residents own an automobile, 80% of New Yorkers have automobiles.
Figure 4.23: Current and dream automobile ownership by Seoul and Ulsan residents

Figure 4.24: Current and dream automobile ownership by NYC and Columbus residents
Figure 4.23 above visually describes that medium size automobile were the most common size currently owned by Seoul residents, followed by large size automobile. Their dream automobile was large size, followed by imported car. The Ulsan residents responded that a small size automobile was the most common automobile followed by medium size automobile was the most common automobile followed by a medium sized automobile. SUV was the most desired automobile in their futures and also imported car was second most wanted automobile. Most of the time, owning an imported automobile indicated wealth to Koreans. New Yorker's first response, for the current, was a medium size automobile and, for future, was large size or an SUV. The interesting points were “Good enough” and antique automobile for their future. Also Columbus residents responded that a medium size for current and, the future, expectation on automobiles were “Good enough”, medium size, and Hybrid automobile. The responses were “Good enough”, antique automobile, and yet the most interesting point was the hybrid automobile, which do not appear on Korean’s expectation for their future.

Another question that was addressed was about for their future kitchens. What kind of appliances do they want and expect. Table 4.6 shows the results. As mentioned in chapter 2 that anticipated life style of Seoul residents shows a preference for “enjoyment” and “Positivity” for their lives more than other cities. This phase two survey shows that the Seoul residents responded wanting to have high-tech appliances and luxury items with higher incidence than other cities. Such as refrigerator with computer on it, electric cook tops, cleaning robots
and wine refrigerators or other appliances with computer features. Also this study results shows that Ulsan resident's expectations and perceived values on kitchen appliances were similar to Seoul residents. That Korean's expectations and perceived values are higher than American's however, Seoul residents were much higher on the expectation and perceived values than other cities.
Seoul dweller responded that they want these appliances:
- Freezer: to store food and keep it fresh
- Electric Cook Top: for safety
- Dishwasher: for efficiency
- Kimchi Refrigerator: for store food fresh
- Refrigerator with computer on it: while cooking could use internet
- Any appliances with computer features on it: to use internet, communicate with others
- Oven: to cook variously
- Cleaning Robot
- Disposal: for convenience
- Small Dishwasher: for energy efficiency
- Built-in Television and Refrigerator
- Wine Refrigerator
- Microwave above the stove: to save space
- Radio

Ulsan dweller responded that they want these appliances:
- Oven: to cook variously
- Dishwasher: for efficiency
- Side Dish Refrigerator: for fresh food
- Toaster
- Bread Maker
- Kimchi Refrigerator: for store food fresh
- Dish Dryer: for reasons of sanitation
- Phone with visual
- Yogurt Maker
- Washer and dryer
- Coffee Maker
- Water Purifier

New Yorkers responded that they want these appliances:
- Mixer: for baking
- Better Stove
- Toaster: for breakfast
- Washer and Dryer
- Microwave: for time saver
- Espresso: luxury
- Beverage Refrigerator
- Rice Cooker
- Deep Fryer

Columbus dweller responded that they want these appliances:
- Oven: safer than microwave
- Timed Coffee Maker: come on automatically
- Electric Tea kettle
- Side by Side refrigerator with ice and water dispenser on the door
- Dishwasher
- Stove
- Processor
- Microwave above the stove: for space saver
- Self cleaning stove
- Electric water

Table 4.6: The list of what kind of appliances people want in their future kitchen by city (Seoul, Ulsan, NYC, and Columbus)

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Another factor confirmed by this study is: when the 50 dwellers purchase kitchen appliances, the Seoul dweller's biggest concern was the brand name, followed by design and size, their last consideration was the price. Ulsan dweller's stated, however, was that efficiency was first by importance and the price was second. New Yorker's top concern was the price and next was design. Columbus dwellers also said that price was the first concern, followed by design and brand name. In addition, between bigger and smaller, Seoul people preferred bigger appliances, however Ulsan, NYC, and Columbus dwellers chose smaller ones. Between inexpensive and expensive, Seoul dwellers respond that they preferred the expensive items. Ulsan dwellers stated equally 50% inexpensive and 50% expensive. 100% of NYC and Columbus dwellers respond they preferred inexpensive. Lastly, between unique and standard design, all 50 people responded that they preferred to have a uniquely design product.

4.3.4 Trends

People acquire more unique products because they enjoy showing them off to others. During the interview with 4 housewives, their attitudes toward unique products were addressed. They were questioned with regard to dishwashers. 2 housewives from Seoul owned a dishwasher, however they responded that they could live without dishwasher. One housewife stated that she doesn't want to have her dishwasher any longer. She believes that it takes too much space, takes too long to wash the dishes, and that it is a waste of water, time, and energy. Therefore she uses her dishwasher to store her dishes.
She also mentioned that she bought it because, at that time, everyone was buying one for the conveniences. But now she regrets about having bought one. However, if there were a smaller dishwasher that didn’t take a long to clean the dishes she would be likely to purchase one. The other 2 housewives from Ulsan don’t have dishwashers, and they would like to purchase one. One of them stated what she saw on an advertisement on a TV drama about a dishwasher and expressed that having a dishwasher would make a better life on step closer. Both of them mentioned that if they had a dishwasher it would be convenient and it would save time with regard to housekeeping.

4.4 Summary

As shown in this study, 52% of kitchen space was satisfactory with kitchen users in Korea while 70% of dwellers wanted to have new kitchens, even though they live in recently built apartments. To preference for apartment housing is because they are clean, easy to maintain, and secure. However, people are looking for new options in their living environments, especially with reference to the kitchen space.

The following statements summarize the research findings.

1. Housekeeping chores still remain as duties performed by women. According to the phase one survey, out of 200 participants, all of the wives use the kitchen. Other family members often use the kitchen, too. Most of them however are female family members.
2. There is a possibility that some families could experience a lack of communication between parents and the children. Some teenagers would rather play computer games than to communicate with the family.

3. Currently 85% of people go to kitchen to get beverage. It is anticipated that, in the future 83% of them will go to the kitchen to get a beverages.

4. People perform other tasks, such as paying bills, reading books, working on the computer in their kitchens. However, according to the interviews and site surveys, most of them use a dinning table or small side table when they do these other tasks. Also, according to the phase one survey, people wanted to spend more time in the future participating in non-food related activities in the kitchen.

5. People like to see or cannot ignore traditional issues although for their own home they have negative opinion.
   • People have stereotypical ideas that traditional things are not convenient.
   • If they like to use traditional things then they must be compromised in some way (they are not modern, functional and easy to use).
   • Some beliefs such as ‘feng shui’ still remain in the society and cannot be disregarded.
   • These days people realized that the traditional aspect is appropriate for their lives.

6. The mini-kitchen hypothesis was not supported. People prefer to have a 2nd refrigerator rather than a small kitchen.
7. Finding from the phase one survey and site survey, 37% of children and the elderly are using the kitchen, however all of the houses did not have adequate equipment for children and elderly people. According to interview all of the respondents have no idea of what universal design was.

8. In the future kitchen, people preferred to have different kinds of refrigerators. The reason could be as:

- They prefer to have fresh food and believe technology will assist, also
- Korean people are open to many differences and are willing to adapt to different cultures and adventures.

Korean culture is very conservative, however, they would readily accept the new technology and allow it to became a part of their lifestyle.

9. Ulsan resident's expectations and perceived values on kitchen appliances were similar to Seoul residents. That Korean's expectations and perceived values are higher than American's however, Seoul residents were much higher on the expectation and perceived values than other cities.
CHAPTER 5

Development of a guidebook for future kitchen design: The “clever kitchen”

5.1 Objective

During the field research, many issues and suggestions were raised that have contributed toward the “clever kitchen” guidebook for the future Korean kitchen.

This chapter aims to raise awareness among designers that current kitchen design needs improvement. It emphasizes that the future Korean kitchen should be more attuned toward cultural and sociological issues. Also the “clever kitchen” guidebook will provide educational aspects of the universally designed kitchen and point out what is needed by different generations of everyday kitchen users. In addition, when designing the kitchen, it has to be taken into consideration important components of kitchen appliances. The design should consider what people really desire for their kitchens. This “clever kitchen” will
describe options of what people want for their kitchens, based on the research gathered. I will provide potential solutions for an innovative kitchen design.

5.2 Design development

In order to create a “clever kitchen” guidebook for future kitchen design, current and future scenarios for two families (the Lee and the Han families) were developed. Also influencing factors and diagrams were created for future kitchen design based on Lee’s and Han’s family scenarios.

The structure of the “clever book” is largely divided into two parts: 1) a design solution for the kitchen by current and future scenarios 2) universal design information.

The main concepts of influencing factors are “traditional”, “flexible”, and “hi-technology”. These three terms were carefully selected based on the ideal future kitchen from the Phase 1 and 2 researches. The following sections describe more detail.
5.2.1 Current Personas and Scenarios

1. The Lee Family

They live in Ulsan.

Father: Sungjun Lee
- 35 years old
- Business man
- Taking pictures is his hobby
- He is very busy with his work but he always tries to spend time with his children.
- He and his wife were high school sweethearts.
- Introvert

Mother: Mikyung Kim
- 34 years old
- She is a piano teacher
- She spends time with her children all the time except when she is working
- She takes care of all housekeeping and cooking
- Outgoing

Children: Youngwoo Lee
Boy:
- 7 years old
- First grade of elementary school
- He is big brother to his sister
- Mature
- He likes sports

Girl: Dahee Lee
- 5 years old
- She loves to be with her mother
- She likes drawing
- She is a talkative girl.
- Next year she will go to kindergarten and she is very excited about this
- These days she is learning how to spell.
- She likes to follow her big brother

Table 5.1: The Lee family's current personas
6:00 AM

The mother gets up earlier than other family members to prepare breakfast for her husband. The father prefers Korean food for breakfast and the mother worries over what to cook even the night before. She always hopes that her husband would like western food, such as bread. If he liked to eat bread, she would have an easier time preparing breakfast rather than cooking Korean food every morning. She could then sleep in for another half hour. Around 7:00 AM she wakes up her boy to prepare him to go to school. Although the husband doesn't cook breakfast, he helps her set up the table. Everyone sits around a table in the living room to eat and to watch the morning news. She wishes that particular moment is the happiest time for her husband even though she feels tired.

8:00 AM

The husband goes off to work, the older boy goes to school after giving his fussy younger sister Dahee a hug, and she takes her daughter to preschool.

10:00 AM

Mikyoung is a piano instructor at a music institution. She works from 9:30 to 12:30 and then goes to Dahee's preschool to pick her up.
12:00 PM
Mikyung gladly hugs her daughter, who is waiting for her at the preschool next to where she teaches. Once they get back home, she takes Dahee to the bathroom to wash her hands. A little after 1:00, her son Youngwoo comes back from school. She prepares lunch for her kids, and Youngwoo takes care of his little sister so that she does not go near the stove. Little Dahee is curious what her mother is making for lunch, and tries to get near the kitchen. Youngwoo pretends to be angry with her, and shouts, "It's very dangerous to get near the hot stove! Mom told us to play here while she cooks". Of course, he wonders what his mother is preparing for them, too. The three eat lunch in the living room and the children help their mother to clean up the table.

2:00 PM
Her children take a nap and Mikyung enjoys this time very much. She makes coffee for herself, gets a small book table out, and turns on music. She dreams to have a space of her own.

4:00 PM
Mikyung makes some snacks for the children before they wake up from their nap. The children come to kitchen after their mid-afternoon nap. Dahee is still half asleep and fusses to her mother. She soothes her daughter saying that they will have a tasty snack. The children are happy with the snacks their mom made for them and never complain about her not letting them eat junk food. She cares
about her children's well being. While they eat in the kitchen, it becomes their playground. She even removed a dining table they used to have in the kitchen to give her children more room to play. It definitely was more convenient for Mikyoung to have a table in the kitchen but for her children, anything is possible. The refrigerator in the kitchen is covered with pictures and word cards. She bought lots of magnets for her daughter, who loves to stick everything on the wall, and the refrigerator plays a big role as the wall. Youngwoo wants a bigger refrigerator so that he doesn't have to dig through the packed fridge to find his milk.

6:00 PM

Mikyoung asks Youngwoo to take care of Dahee and she prepares for dinner. She hopes to have a larger kitchen so that she can move around more easily. Her children come to the kitchen occasionally to help her but she drives them away because there is not enough space for everyone and most of all, the kitchen is full of dangerous items. Around 7:00, her husband Sungjoon comes back from work. Mikyoung and Sungjoon met when they were in high school. Sungjoon hands her a rose to comfort her. Mikyoung always has a long day as a piano teacher and as a mom. Mikyoung's tiresome day is blown away with his smile and a flower in his hand. The children, who like plants, love her flower. Sungjoon wants to make a little garden for his children, but there is not a good space for it and since they live in an apartment it's just a dream. Sungjoon washes his hands, turns on TV, and comes to the kitchen to help his wife.
8:00 PM

After dinner, Mikyoung does most of the dishes. Sungjoon helps her 3 to 4 times a week but the kitchen sink sits too low and it hurts his back. Once in a while he considers getting a dishwasher, which will help everyone greatly.

10:00 PM

The children are in bed, and Sungjoon goes to bed worn out from the day's work. Mikyoung cleans up the kitchen and goes to the bedroom.
2. The Han Family

Grandmother: Mi-Ja Han
- 78 years old; she is Dongwook's mother
- She was an assistant principal for a long time
- She likes being with people and is never afraid of anything.
- She has an understanding for other cultures, and likes western food.
- She has a hearing problem
- Hard time to walk because of her knee

Father: Dongwook Han
- 52 years old
- He is CEO of his company
- Take lessons to learn about Wine
- Loves shopping for his glasses
- He comes home very late because of heavy work.
- His hobby is Golf
- Usually he goes to play golf during the weekend
- He loves his friends

Mother: Youmi Kang
- 42 years old
- Full time house wife
- She is interested in a well-being life style
- She likes to listen to Jazz and classical music.
- She goes to Yoga almost every day.
- She also plays golf and she likes it.
- She loves shopping also (both internet and home shopping)
- She takes lesson to learn fusion food
- She likes to learn something new.
- Her biggest worry is her son's grades, and considers several ways to bring his grades up.

Boy: Minwoo Han
- 17 years old
- His hobby is computer games and watching animation
- He is a high school student
- He is a quiet boy
- He doesn't have many friends. He is not a social person.
- He doesn't like to study, and he is also physically weak.

They live in Seoul

Table 5.2: The Han family's current personas
5:30 AM

Yoomi get up to prepare breakfast for the family. Mija is already in the kitchen cooking. Yoomi tells her that she will take care of the rest, but Mija insists to stay and help her. Mija was an assistant principal for a long time, was an intellectual for her generation likes being with people and is never afraid of anything. She also has an understanding for other cultures, and likes western food. Yoomi knows these characteristics of Mija well, so she lets her stay in the kitchen. Han's family breakfast is simple; two pieces of toast, rice cakes with plenty of nutrients, a cup of milk, fruits and salad. Yoomi sets up the table nicely and places the morning newspaper on it. While Yoomi makes coffee, Dongwook gets ready to go to work and sits at the table. Dongwook scans the paper and tries to watch the news, but Yoomi does not let him. Their son Minwoo is having breakfast with them, and although everyone is around the table, it is very quiet. Dongwook wants to keep reading the paper and watching TV while he eats but he knows his wife doesn't like it. There's a big age difference between Dongwook and Yoomi, and Yoomi can't do enough for Dongwook to stay away from the newspaper. The breakfast lasts for about 10 to 20 minutes and then everyone goes to work and school. Yoomi cleans up the table and gets ready to do the dishes but Mija insists that she will do it. Mija doesn't want to stay as an old 'ady in the back room. The sinks are too high for Mija, although she feels more comfortable with higher sinks because of her arthritis. She can lean on the sink while she does the dishes. Of course she would prefer to sit down and do it. Mija stacks the washed
dishes in the dishwasher to dry. Mija has a hearing problem and does not realize
how loud she gets when she handles dishes. Yoomi watches her with worries.

8:00 AM

After Mija finishes the dishes and returns to her room, the water is still running.
Mija forgot to shut off the water and she cannot hear the running water sound.
Yoomi comes to the kitchen, shuts off the water and does the dishes once more
because she knows Mija doesn’t do a good enough job. Yoomi doesn’t want to
upset her mother-in-law, so she uses the dishwasher. She hopes to have a
smaller dishwasher to save water and electricity. It has been a while since Yoomi
bought the dishwasher but she uses it once in a while. Having a dishwasher was
such a trend on one point and she purchased it at that period. She trusts in the
brand name and thought it would be nice to have an imported dishwasher and so
she bought an imported brand dishwasher.

10:00 AM

A housemaid comes home to help Yoomi three times a week. When the helper
cleans the house, Yoomi goes to the yoga institute and stops by at a store to get
some organic food. Mija chats with the housemaid as a friend because she
doesn’t have anyone to talk to in the house.
12:00 PM

Yoomi prepares lunch for Mija and herself but she doesn't eat much because she is conscious about gaining weight. Yoomi cleans up the table, goes to the living room to do some internet shopping, listens to jazz, and drinks coffee. Mija also goes back to her room and watches TV while drinking the coffee Yoomi made. Yoomi likes to learn something new. Her biggest worry is her son's grades, and considers several ways to bring his grades up. Yoomi likes to buy unusual things on the internet or home shopping channel on TV. The yogurt machine and the popcorn maker were bought through the internet. Always looking for something new, Yoomi used to be a working mom even 5-6 years ago. It may be the reason why she is better at adapting to new things than other housewives. Also, she is interested in food, especially fusion food, and she enjoys eating out and trying these new foods.

2:00 PM

Yoomi picks out an outfit for their outing to the golf field. She decides to go to the department store. She takes Mija with her.

4:00 PM

After shopping, Mija retires to her room, and Yoomi prepares dinner. Yoomi wishes she had a computer in the kitchen, so that when she finds a good recipe, she can follow the instructions right in the kitchen. Around 5:00, Minwoo comes home from school. Since Yoomi was a working mom when Minwoo was a baby,
Mija practically raised him and they are very close to each other. Yoomi gets dinner ready for her son, who has to go to institutes for his study by 6:00. Mija glances at her grandson with warmth, and worries about his health. Minwoo's health has not been good since he was a child. He is very quiet and enjoys internet games more than sports. Dongwook is too busy to come home early, so the three eat dinner without him around 5:30. The dinner does not even last 20 minutes and Minwoo goes to the institute.

6:00 PM

Yoomi feels stuffed with excess kitchenware surrounding her while she does the dishes. She feels helpless when it comes to her quiet son, and wants to provide warmth and enjoyment.

8:00 PM

Mija drags herself out of her room to get some water. She tries to grab onto the walls because of her weak knees. The wall where she grabs from her room to the kitchen is worn with her touches. Yoomi runs to help her and gets water for her.

10:06 PM

Dongwook comes home from work. He seems to have had a couple of glasses of wine at dinner outside. Yoomi prepares a hot tea for her worn-out husband. Minwoo comes back from the institute. Everyone asks how each of them did that
day and goes to their rooms. Yooni brings late night snacks for her son to his room.

12:00 AM
Dongwook sees Mija when he gets up to get a cup of water. Mija must have come for the same reason. After getting himself some water, Dongwook stops in his son’s room, chats with him for a short moment, and goes back to bed. In the meantime, Yooni cleans the kitchen and goes to bed afterwards.

5.2.2 Influencing Factors of Future Kitchen Design

1. Flexibility

In order to increase the workspace, flexibility should be improved in the future kitchen. For instance, the cabinet units can be designed as a movable cart form (shown in Figure 5.1). Also the counter top can be folded to fit the height of whoever uses the kitchen (shown in Figure 5.2). Moreover, this feature would increase the workspace and reform the kitchen space for any needs.

As the results of this study show, the Seoul dweller prefers to have bigger size appliances than smaller ones while the Ulsan dweller responded in the opposite way. However, according to the interview results, even though the Seoul dwellers have bigger size appliances, they do not always make use of them. For example, they said they would rather have a smaller dishwasher than a larger one for their convenience. Therefore, a dishwasher has a special feature, which
is a drawer type divided into two drawers that they can use separately. The ideal place for it would be right next to the sink, which would meet people’s needs and dreams in the future kitchen.

This study also shows that most of the members in the Korean family cook and that they prefer to eat Korean food in both current and future kitchen spaces. This aspect of their preference should be reflected in kitchen design, such as considering Korean cooking process. When people prepare Korean food they: 1) take out food from the refrigerator (include storage and so on) area, 2) bring the food to the sink area to clean it, 3) and bring it to the cooking area to do cutting and to mix things, 4) bring it to the stove area (include stove, microwave, and so on) to cook, unlike other food, cooking Korean food often times requires several trips to and from the stove to the counter top to cut things more and to let them cool down and 5) finally, bring it to the set up area to prepare to bring food to a dining table. Therefore the stove and preparation areas should be located closely. The kitchen design should incorporate the Korean food cooking processes and mixing it with flexible kitchen features would improve their future cooking experiences.

Figure 5.1: Movable carts unit under the counter top and step for high reach

Figure 5.2: Movable carts unit with folding counter top provide different heights for different users
2. Simplicity

Two design concepts come out of the simplicity theme: 1) an improvement in the storage system that will simplify the kitchen space, and 2) creating a dining room off of the kitchen. The dining room should be located next to the kitchen in order to get family members more involved in the cooking process and in preparing the table together with easier access. A sliding door is one option that creates a separate space without taking up too much space. Also with the sliding door, the kitchen would be blocked from the rest of the house completely for privacy.

In order to simplify the kitchen, the built-in options will be one of the ideal options and combinations of the appliances will be another option. Most of the Korean kitchens today are cluttered with appliances such as refrigerator, Kim chi refrigerator, dishwasher, dish drier, and so on. The built-in option will be one solution and with that the kitchen space becomes simple, clean, organized. It also results in more workspace on the counter top since all the different appliances no longer occupy the counter top.

One result of this study shows that drinking coffee is the number one choice when asked, "what would you prefer to do in your future kitchen?" Therefore, as with other appliances, the espresso machine will be located inside the built-in furniture. As the field research showed, the Seoul dwellers more often responded that they wanted to have high-tech appliances and luxury things than those people from other cities. For this reason, the built-in kitchen furniture will be
a good option for the Korean kitchen because of its simplicity and its capability of containing almost everything they need.

3. Safe and Suitable

For safety and in order to reduce noise, the tabletop, sink, and around the sink area and even the floor will be made out of rubber or silicone. The floor has patterns followed by the path where most people stand up for longer periods such as in front sink area and stove area. Many people put a throw rug for their feet. Hard surface floor and silicone or rubber would distinguish it. With this floor, they don’t need to have a throw rug anymore. Sometimes people drop the dishes while washing them and break them. However with this sink, they don’t need to worry about broken dishes.

In order to create easy access for any generation the universal design concepts would apply to the future kitchen. Also combining modern and traditional way of living can provide better life for the Korean family. For example, various sitting options will provide easier access for any generation. A lower dining table with seating on the floor will give benefit to people who prefer to work seating on the floor. Also an island table would be an ideal option such as island table with two different heights; one for a standing tasks and the other for sitting tasks. Under the island table would be a clear space for wheelchair access and a lot of stage spaces are provide in a movable cart form. Moreover, this island table can be used for having a quick meal together and will provide quality family time together as they prepare meal or set up the table.
Figure 5.3: Images of sink, tabletop, and floor for safety and reduce noise

A: Sink inset of rubber or silicone
B: Tabletop inset of rubber or silicone
C: Floor in front of sink insert of rubber or silicone
4. Hi-technology

Hi-technology is applied in the Korean kitchen recently such as a computer attached to a refrigerator that allows them to share information though the Internet and tells what is inside of the refrigerator. As mentioned in Chapter 4, the perceived value and expectation that people have for kitchen appliances in Korea was higher than in America. Moreover, the Seoul dweller created the trends and generally the Ulsan dweller followed that general tendency. For instance, a sliding panel would separate the cooking and dining areas with the wooden frame carrying an atmosphere of the Korean traditional door. With Hi-tech, this sliding panel can be a screen for TV, or a monitor for computer that allows sharing of information together while they are eating, watching TV while they are cooking, getting recipes instantly when they need it. The sliding panel would be big enough to see clearly from afar, and while having guests at home, this screen becomes a picture frame to make suitable atmosphere. If children need to do homework, this screen becomes a picture frame for the computer resources.

One more hi-tech feature in this kitchen is the "Ubiquitous" system that will bring many benefits to the kitchen. For example, if they forgot to turn off the stove and they remembered it after they were out somewhere, then this "Ubiquitous" system will allow them to control most of kitchen and house appliances even when away from home.
5.2.3 Future Persona and Scenarios

10 Years Later:
The Lee Family

Father: Sungjun Lee
- 45 years old
- Business man
- Taking pictures is his hobby
- He comes home very late because of heavy work.
- He and his wife were high school sweethearts.
- Introvert

Mother: Minkyung Kim
- 44 years old
- She became a fulltime housewife
- These days she is worried about Dahee because they used to spend time together
  a lot but these days they don't.
- She takes care all housekeeping and cooking
- Outgoing

Children:
Boy: Youngwoo Lee
- 17 years old
- Second year in High school
- He is a big brother to his sister
- Matur
- He likes plants and loves watching “discovery channel” on TV
- He is a honors student

Girl: Dahee Lee
- 15 years old
- She used to love to be with her mother, talkative, and likes to follow her big brother
  but these days she likes to be alone: pubescent
- She likes drawing and shopping
- She is 2nd year in Junior High School
- She is shorter than the average 15 year-old girl

Table 5.3: The Lee family's future personas
The following are scenarios of Lee’s future kitchen base on the influencing factors of future kitchen design:

1. Folding Kitchen (shown in Figure 5.1 and 5.2)

   These days Mikyung worries about Dahee. Dahee used to love to be with her mother Mikyung, and she was talkative so that she couldn’t wait to go home and talk about what she did in school. However, these days Dahee became very quiet and she likes to be alone. Mikyung decides to do something so that they can spend time together. That would make Dahee feel she is not alone and becomes open-minded person again. Mikyung buys a cookie set and asks Dahee to help. Dahee is shorter than the average 15 year-old girl. With this folding kitchen Dahee is just a perfect fit and the moving carts can create extra space to work. She can use the counter top folded as part of work surface or pull out the cart part from underneath the counter top. Also the moving cart has small step for reaching higher.

2. Safety: sink and floor (shown in Figure 5.3)

   Mikyung is an outgoing person and often times she appears to be a clumsy person. One day Mikyung is washing dishes but some how she manages to drop the dishes accidentally. She tries to catch it before the dish hits the ground but it is too late, but then she realizes with this rubber or silicone floor that would not be a problem. She has a sigh of relief and there is a smile on her face.
3. Room for me

After Mikyung got married she never had her own space that she always had desired. Now she can enjoy afternoon break with a cup of coffee, music, and sunlight with beautiful indoor garden and the sliding panel works great to have instantly a private room for her.

4. Smart refrigerator

One day, while Mikyung is cooking the dinner her son (Youngwoo) comes to her and asks about some plants. Mikyung is not sure about his question, but she smiles at her boy and tells him “Let’s find out!” Both get excited and they take the cart unit from under the counter top and arrange it in front of the refrigerator to use computer resources.
10 Years Later:
The Han Family

They live in Seoul

Grandmother: Mija Han
- 88 years old, she is Dongwook's mother
- She was an assistant principal for a long time
- She likes being with people and is never afraid of anything
- She has an understanding of other cultures, and likes western food
- She has a hearing problem and her knee problem got worse
- She always wants to go to see her grandson in America

Father: Dongwook Han
- 62 years old
- He is CEO of his company but he tries to retire some time this year
- Loves shopping for his glasses
- His hobby is Golf and enjoys Wine
- Usually he goes to play golf during the weekend
- He loves his friends
- He always brings his reading glasses with him

Mother: Yoomi Kang
- 52 years old
- Full time house wife
- She is interested in a well-being lifestyle and living in a traditional way
- She likes to listen to classical music.
- She also plays golf and she likes it.
- She loves shopping also (both internet and home shopping)
- She sometimes needs to have reading glasses when she reads newspaper and uses a computer
- She likes to learn something new.
- She misses her son; her son is studying abroad

Boy: Minwoo Han
- 27 years old
- His hobby is computer games and taking a picture
- He is a student at New York University, majoring in photography
- He was a very quiet boy but he became social person.
- His health became well
- He goes back home (Seoul Korea) once or twice a year

Table 5.4: The Han family’s future personas

114
The following are scenarios of Han's future kitchen based on the influencing factors of future kitchen design:

1. Clever dishwasher

Mija is 88 years old. Her health is in good condition but her knee and hearing got worse. After breakfast Mija wants to wash her dishes to show that she can still take care herself. She brings dishes from island table to dishwasher. Their dishwasher is a drawer type and divided into two drawers that they would use separately. They simply open the top drawer and places dirty dishes then close. She pushes green button to start washing dishes. Now Yoomi doesn't need to worry about her breaking dishes or whether the dish is clean or not when Mija washes the dishes.

2. Safe and reduced noise: sink, floor, and tabletop

Because of Mija's hearing problem she makes a lot of noise not only while washing dishes but also while dining. While she is eating she likes to lay down her spoon but she does it as if she drops it on the dining table and also with dishes too that makes noise but she doesn't notice it. Yoomi tried to put tablecloth to reduce the noise but it didn't work. However with this rubber or silicone tabletop that problem is solved.
3. The Sliding Panel

During the summer break Minwoo came home from America. After he went to study abroad, he became a social person. He is a student at NYU majoring in photography. Minwoo sent some good pictures that he took via e-mail to his mother. Mikyung then projected the pictures on the panel to think of her son. This panel is located between the cooking area and the dining area. When Minwoo came home he really liked the new kitchen. Since he lived in the states for about 6 years he missed home and he became more interested in Korean culture. Mikyung makes dinner for the family reunion. Since this kitchen is designed for easy access for people, Dongwook and Minwoo help Mikyung easily. While dining they could see Minwoo's photography work through the panel.

4. Built-in

Mikyung likes to invite people to her place since her kitchen has special features and these days she loves to be in the kitchen. One day Mikyung invites her friends to come over to her place. When her friends come she prepares coffee from her new espresso machine and she also brings cookies fresh from oven. After preparing them she simply closes the door and the appliances become invisible. Her friends are impressed about her new kitchen. Mikyung bring her friends to sit around the dining room that is behind the sliding panel. Mikyung turns on music and the sliding panel becomes a screen to show some beautiful images. They all sit on the floor with traditional Korean environment that
makes them more comfortable while talking and enjoying the time. Her friends are even more impressed about the traditional atmosphere and the sliding panel.

5. Ubiquity of Kitchen system

Ubiquitous system works well in Han's family. One day Dongwook wants to eat something with his mother (Mija) before going to the airport to pick up Mikyung and Minwoo (who went to America to see her son). Mija and Dongwook cook something and eat lightly on the island table because after they pick them up they are going to eat out. Dongwook prepares tea for him and Mija. Suddenly he gets a phone call from Mikyung that they arrived earlier than the scheduled time. Dongwook and Mija run out to go to the airport without turning off the stove. While Dongwook is driving he just remembers that he did not turn off the stove. He simply calls the ubiquitous system to turn off the stove. He is happy to have a ubiquitous system in their house.

5.2.4 Diagram of Influencing Factors for Future Kitchen Design

The influencing factors and scenarios would suggest a diagram for the future kitchen design. The following are two examples of suggestions based on two family's scenarios and influencing factors. In fact, these two suggestions are distinguished by the regions, Seoul and Ulsan, by generation (one family has two children and the other with both: a child and an elderly person) and also by kitchen size.
1. The Lee family kitchen: Small size kitchen

Figure 5.4: Current floor plan of The Lee family (small size) and suggested diagram for future kitchen
Three main zones divide The Lee family's future kitchen diagram: 1) Working Zone, 2) Activity Zone, and 3) Principal Zone. These are carefully divided into three zones according to their scenario.

1) Working Zone: The Working zone includes Cooking zone such as sink, dishwasher, and stove, Storage zone such as refrigerator and Kim chi refrigerator, and Set up and dining zone. In addition, the veranda should be closely located to the storage zone with better organization system and light sources. These three aspects are located closely to achieve efficiency of the space and movement.

2) Activity Zone: The Activity zone contains Play such as play space for the children, Enjoy they would enjoy dining together with family, and Nature would be a small garden or some kind of space that children and other family members would explore together. Kitchen would be designed for all family members so that the family would share and communicate together in the future kitchen.

3) Principle Zone: The composition by the Working Zone and the Activity Zone creates Principle Zone. The Principal zone should be easy to access and use since that area is the most frequently used area by every member of family.

4) Sliding panel. The whole kitchen space becomes two different spaces by sliding panel and that would be placed in the middle of the two triangles.
2. The Han family kitchen: Large size kitchen

Figure 5.4: Current floor plan of The Han family (large size) and suggested diagram for future kitchen
Three main zones also divide The Han family’s future kitchen diagram: 1) Working Zone, 2) Activity Zone, and 3) Principle Zone. These are carefully divided into three zones according to their scenario.

1) Working Zone: The Working zone includes Cooking zone such as sink, dishwasher, and stove, Storage zone such as refrigerator and Kim-chi refrigerator, and Set up and dining zone. In addition, for efficient movement and convenience for the users, more of the Set up zone would provide better movement that places the island table in the middle of the working zone triangle. Furthermore, the veranda should be closely located to the storage zone with better organization system and light sources.

2) Activity Zone: The Activity zone contains the Play zone for the family to get together to spend time and to communicate while cooking and also providing various height options that work for Han’s family; in the Enjoy zone they would enjoy dining together with floor setting options or other solutions that please family members, and Nature would be a small garden or some kind of space that family member would explore together and share. The kitchen would be designed for the whole family to enjoy and to share.

3) Principal Zone: The composition by the Working Zone and the Activity Zone creates Principal Zone. The Principal zone should be easy to access and use since that area is the most frequently used area by every member of family.
4) Sliding panel: The whole kitchen space becomes two different spaces by sliding panel and that would be placed in the middle of the two triangles.

5.2.5 Universal design for Kitchen

The “clever kitchen” guidebook of universal kitchen part contains three categories. The three categories for the Korean kitchen are carefully selected on the needs identified from phase one and phase two research. Also the “clever kitchen” contained kitchen checklist for universal design kitchen.¹ The following are the detailed descriptions and examples:

1. Location of appliances:
   • Dishwasher raised 6” to 9” above floor level or drawer unit, so top rack is level with adjacent counter top, puts bottom racks within easy reach requiring less bending.
   • Side-by-side refrigerator allows easy reach of otherwise hard-to-get items, particularly if pull-out shelving is provided.
   • Cook top or range with staggered burners and front or side mounted controls to eliminate dangerous reaching over hot burners.
   • Microwave should locate above the waist line lower than shoulder line.
   • Place the oven at eye-level for good working height for back and to avoid kids reaching into open.

¹ AARP (www.aarp.org)
2. Different height needs:
   • Adjustable height shelves in wall cabinets.
   • Mechanically adjustable counter segments for varied countertop heights:
     some at sitting height (approximately 30"), some at standard height (36"
     some higher (42" to 45"), for stand-up work and taller people
   • Pantry storage with easy access pullout and/or adjustable height shelves for
     easy reaching of otherwise hard-to-get items.

3. Easy accesses:
   • Single-lever water controls at all plumbing fixtures and faucets.
   • Countertop materials and colors that provide good contrast while working,
     and clearly define the countertop edge.
   • Clear knee space under sink (29" high minimum) allows someone to use the
     sink from a seated position. May be open knee space or achieved by means
     of removable base cabinets or fold-back, bi-fold.
   • Generous clear floor space (minimum 30" x 48") at each appliance and work
     station
The kitchen checklist of universal design by AARP (www.aarp.org) is following:

<table>
<thead>
<tr>
<th>General Features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The kitchen is near the door where I unload groceries.</td>
<td></td>
</tr>
<tr>
<td>The kitchen floor has a non-slip surface.</td>
<td></td>
</tr>
<tr>
<td>I have a fire extinguisher in an easy-to-reach place.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Microwave Oven</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The microwave is at least 48 inches from the floor.</td>
<td></td>
</tr>
<tr>
<td>There is a shelf nearby.</td>
<td></td>
</tr>
<tr>
<td>The microwave has touchpad controls.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Kitchen Sink</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>My sink is no more than 6 inches deep.</td>
<td></td>
</tr>
<tr>
<td>It is 34 inches from the floor.</td>
<td></td>
</tr>
<tr>
<td>It has one faucet, not two.</td>
<td></td>
</tr>
<tr>
<td>I can control hot and cold water with one handle.</td>
<td></td>
</tr>
<tr>
<td>I use lever handles - no knobs - to turn on the water.</td>
<td></td>
</tr>
<tr>
<td>The faucet and controls are at the side of the sink.</td>
<td></td>
</tr>
<tr>
<td>There is knee space under the sink.</td>
<td></td>
</tr>
<tr>
<td>I have a spray hose on my sink.</td>
<td></td>
</tr>
<tr>
<td>My sink has an anti-scald device.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dishwasher</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>My dishwasher is eight inches off the floor.</td>
<td></td>
</tr>
<tr>
<td>There is enough space next to the dishwasher to fit a chair.</td>
<td></td>
</tr>
<tr>
<td>The dishwasher has button controls.</td>
<td></td>
</tr>
<tr>
<td>The shelves slide in and out easily.</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.5: The kitchen checklist of universal design (Source: AARP www.aarp.org)
<table>
<thead>
<tr>
<th>Table 5.5 continued</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Countertops</strong></td>
</tr>
<tr>
<td>At least one of my counters is 36 inches from the floor.</td>
</tr>
<tr>
<td>That counter has knee space underneath.</td>
</tr>
<tr>
<td>I've cleared all my counters of clutter.</td>
</tr>
<tr>
<td>The countertops are well lit.</td>
</tr>
<tr>
<td>They have rounded edges.</td>
</tr>
<tr>
<td>These edges are a different color than the rest of the counter.</td>
</tr>
<tr>
<td>My countertops are smooth enough to slide a pot across.</td>
</tr>
<tr>
<td>They have a heat-resistant surface.</td>
</tr>
<tr>
<td>I have countertops on both sides of the sink, refrigerator and stove.</td>
</tr>
<tr>
<td><strong>Refrigerator</strong></td>
</tr>
<tr>
<td>I have a side-by-side refrigerator.</td>
</tr>
<tr>
<td>The shelves of my fridge slide in and out.</td>
</tr>
<tr>
<td>My refrigerator has a water and ice dispenser on the door.</td>
</tr>
<tr>
<td><strong>Cabinets and Drawers</strong></td>
</tr>
<tr>
<td>My upper cabinets are only 45 inches from the floor.</td>
</tr>
<tr>
<td>My lower cabinets are six inches above the floor.</td>
</tr>
<tr>
<td>All my heavy pots and pans are stored below my counters.</td>
</tr>
<tr>
<td>I can hang my pots and pans on the wall.</td>
</tr>
<tr>
<td>I have a shelf below my upper cabinets.</td>
</tr>
<tr>
<td>My shelves are no more than 10 inches deep.</td>
</tr>
<tr>
<td>The shelves on my lower cabinets slide out.</td>
</tr>
<tr>
<td>All my cabinets have u-shaped handles.</td>
</tr>
<tr>
<td>I have a Lazy-Susan on a deep shelf or in a corner cabinet.</td>
</tr>
<tr>
<td><strong>Cooktop and Oven</strong></td>
</tr>
<tr>
<td>I replaced my range with a separate cooktop and oven.</td>
</tr>
<tr>
<td>The cooktop is on a counter that is 32 inches from the floor.</td>
</tr>
<tr>
<td>There is knee space below that counter.</td>
</tr>
<tr>
<td>My oven is mounted in the wall at a height I can reach.</td>
</tr>
<tr>
<td>The oven has a door that swings to the side.</td>
</tr>
<tr>
<td>My cooking controls are at the front of the stove.</td>
</tr>
<tr>
<td>My cooktop burners sit below a smooth glass top.</td>
</tr>
<tr>
<td>My burners are staggered (not in a straight line).</td>
</tr>
<tr>
<td>A light on my cooktop that tells me when burners are hot.</td>
</tr>
<tr>
<td>I have push-button controls.</td>
</tr>
<tr>
<td><strong>Results</strong></td>
</tr>
<tr>
<td>Did you answer “yes” to a question? Great! That part of your kitchen should be easy to use for many years to come. Did you answer “no” to a few questions? These are aspects of your kitchen design that don’t meet universal design standards and may cause accessibility issues at some time.</td>
</tr>
</tbody>
</table>
5.3 Limitations and recommendations

This "clever kitchen" guidebook was carefully developed and designed. However, the "clever kitchen" guidebook has limitations in providing information for the wider range of people who need information. The website option will cover the wider range. Also, through the website, updates are available. Therefore, a combination of website and booklet will be better for these reasons:

1) Most recent version of information are usually available on the website
2) Website could contain more information than booklet. However, frequently people try to print out information through the website for their convenience and keep the information.
CHAPTER 6

CONCLUSION

Kitchen design for the future should focus on dwelling culture, sociological issues, and the environment. Digital culture should be reflected in the kitchen as well. Since 1970, fast economic growth and a construction boom led to imprudent introduction of western culture into Korean society. The results of these influences were 1) uniformity of space 2) unsuitable kitchen appliances and 3) no inclusion of social vision or cultural preferences.

This study focused on Korean kitchens (and a comparison to American kitchens) to develop new paradigms for future Korean kitchen environments that incorporate modern requirements and represent a universal vision for the future in the Korean society.

To achieve the goals, field research was conducted. The research had two main research phases. Both quantitative and qualitative data such as surveys, observation by filming, interviews and focus groups were utilized.
The Phase One Research covered current and future kitchen problems and needs, as well as cultural and generational effects on kitchen design. A total of 200 participants were involved in the Phase One Research.

The Phase Two Research probed further, using surveys, interviews and focus groups. In order to investigate the perceived value and trends of kitchen appliances by region and by cultures, both Koreans and Americans were involved in this phase. The research was conducted in two cities in each country (Seoul and Ulsan in Korea and New York City and Columbus in America). A total of 50 people were involved in the survey part (15 from Seoul and 15 from Ulsan in Korea, and 10 New York City and 10 Columbus in America). 4 homemakers participated in the interviews, and 4 families took part in focus group.

According to this study four themes emerged that will provide new paradigms for future Korean kitchen.

1. Improvement of flexibility in the kitchen.

Future kitchens will be for all ages and both genders, although currently the Korean kitchen is considered mostly women's space. This study has shown that the children will be involved in kitchen activity or they like to get involved if the kitchen condition is safe. Also most of the families get together for mealtime even within such a busy life. Therefore the kitchen has become the heart of the home where everyone shares and spends time together. Future kitchen concepts should emphasize flexibility for all ages, such as applying
Korean average anthropometry so that it could be adjustable for any users. For the family the kitchen system furniture should be movable and rearrangeable for flexibility in the kitchen. That would give one a possibility to multi task in the kitchen. Also, future design should consider the emotional aspects that would give delight to the people.

2. Universal design in the kitchen and educating everyday people about the benefits of universal design.

As shown in the results, in Korea most of kitchens do not have universal design aspects even though many times the kitchen was used by different generations. Moreover, everyday people have no concept of what universal design is and they know no information about universal design. For the future, this universal design aspect should be reflected in the Korean kitchen and the everyday users of kitchens need to be educates about the benefits of universal design.

3. Ubiquitous of Kitchen system

This is the most hi-tech consideration in the home system. Thus, this is currently a concept that is being developed and it needs to be studied and researched more in many ways. If this ubiquitous system in home is generalized, it will open a whole new world to the people. They could even control turning on the water, turning off the water from outside of home. Anything is possible by using ubiquitous system wherever and whenever.
4. Traditional plus Simple

Humans cannot live without their own culture and the kitchen is the most effective space by culture in the household. Furthermore, people will look for new and better options for their future. Therefore, traditional issues should not be disregarded. The result of this study shows that many people have negative feelings about traditional issues (i.e., people have stereotypical ideas that traditional things are not convenient). The design for the future should consider this matter and suitable design form in one culture with simplicity aspect that will raise people utilize better and easier.

In conclusion, this study successfully identified that kitchen design should consider dwelling culture, sociological issues, and as well as regionally based expectations for kitchen appliances. Furthermore, it developed a ‘clever kitchen’ guidebook that will help interior designers guide the ideal kitchen for the future. Also this ‘clever kitchen’ will show that the universally designed kitchen will provide a better life. Designers will realize the importance that universal design can have to everyday kitchen users.

This study opened up a possibility of future kitchen design concept. Further study and research of the ubiquitous home system will play a role as the bridge between giving a new world in kitchen and people’s lives.


APPENDIX A

PHASE ONE RESEARCH QUESTIONNAIRES
Survey Questions of Phase One Research

This survey is about understanding what people want in their kitchens in the future.

Who should fill this out?

Everyone who uses kitchens should fill it out. Kitchens are not just for cooking but also for eating, talking, being with family, etc. If the question doesn't relate to you (for example, you eat in the kitchen but don't cook) then just don't answer that question. But keep going!

<Your Current Kitchen>

1. Do you like your current kitchen? Yes / No
2. What do you like about your current kitchen? ________________
3. What don't you like about your current kitchen? ________________
4. Do you want a new kitchen? Yes / No
5. Do you have space in the kitchen for working on the computer, paying bills, and other tasks? Yes / No
6. Who uses your current kitchen? (Check as many as apply)
   - Yourself
   - Spouse
   - Grandmother
   - Grandfather
   - Mother
   - Child or children
   - Father
   - Brother
   - Sister
   - Other

7. How many people are using your current kitchen?
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5 or more

8. Do young children or elderly family members use the kitchen? Yes / No

135
9. Do any kitchen users have special needs such as?
   a. Wheelchair
   b. Shorter than average
   c. Taller than average
   d. Other ______________

10. Does the kitchen meet the special needs of family members?  
    Yes / No

11. How often do you use the kitchen per day? (Not including going to the kitchen to just get a beverage)
    a. Once
    b. Twice
    c. Three times
    d. Four times or more

12. How many times do you go to the kitchen to get a beverage per day?
    a. Once
    b. Twice
    c. Three times
    d. Four times or more

13. How long do you use kitchen per day?
    a. Less than one hour
    b. 1-2 hours
    c. 3-4 hours
    d. 4-5 hours
    e. 6 and up

14. When you eat meals at home, do you eat meals with the family?
    Yes / No

15. While you eat meals at home, what else do you do while you eat?
    a. Watch TV
    b. Read something (book, magazine, newspaper...)
    c. Talk with someone on the phone
    d. Talk with someone face-to-face (family, friends ...)
    e. Nothing else. I just eat.
    f. Other ______________

16. Do your guests always end up in the kitchen?  
    Yes / No

17. Is your dishwasher easy to load and unload?  
    Yes / No

18. Is fresh water easily accessible when you're cooking?  
    Yes / No
19. Do you need an additional sink or faucet? Yes / No
20. Is your kitchen easy to clean? Yes / No
21. How often do you shop for groceries?
   a. Once a week
   b. Every day
   c. For each meal
   d. Other

22. Do you prepare meals together with someone? Yes / No

<Your Current and Future Kitchens>

23. Now we would like you to think about how you would like your kitchen to be in the future. How many years out is your future?
   a. 1 year from now
   b. 2 or 3 years
   c. 5 years
   d. 10 years or more

24. For which activities do you use your kitchen today and in the future? (Check as many as apply)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Today</th>
<th>Ideal</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>To eat</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>To drink (beverage)</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>To cook</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>To gather with family or friends</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>To watch TV</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>To read (book, magazine, newspaper)</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
</tbody>
</table>

25. What other activities would you like to be able to do in your kitchen? (Check as many as apply)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Today</th>
<th>Ideal</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laundry</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>Homework</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>Watch TV</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>Paying bills</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>Working on the computer</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>Read book, magazine, newspaper</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Yes / No</td>
<td>Yes / No</td>
<td></td>
</tr>
</tbody>
</table>
26. What kind of appliances do you have today and do you want to have for your kitchen in the future? (Check as many as apply)

<table>
<thead>
<tr>
<th>Range</th>
<th>Yes / No</th>
<th>Yes / No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Extra refrigerator or freezer space</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Island table</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Bar sink</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Dishwasher</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Radio</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Trash compactor</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Microwave</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Range hood</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Warming drawer</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Computer</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Wine chiller</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Hot water dispenser</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Built-in icemaker</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Second dishwasher</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

<Your Future Kitchen>

27. Where do you expect to eat meals in the future?
   a. Kitchen
   b. Dining room
   c. Living room
   d. Family Room
   e. Other ____________

28. Do you require a kitchen table in the future? Yes / No

29. Would you like more seating options in the future? Yes / No

30. Who will be using the kitchen in the future? (Check as many as apply)
    __Yourself
    __Spouse
    __Mother
    __Father
    __Brother
    __Sister
    __Grandmother
    __Grandfather
    __Child or children
    __Other ________
31. How many people will use your kitchen in the future?
   a. 1
   b. 2
   c. 3
   d. 4
   e. 5 or more

32. What features do you really need in your new kitchen and which could you live without?
   I really need:

33. What general style do you like?
   a. Contemporary
   b. Traditional
   c. Eclectic
   d. Other

34. What's on the wish lists of others who use your kitchen?

35. About Mini Kitchens. (a ~ f)

   - Means small kitchen components (for example, small refrigerator, small sink, small stove, and etc...) that can be found in another part of the house in addition to the kitchen.

<table>
<thead>
<tr>
<th></th>
<th>Yes/No, Where, Future location</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Do you have a full small kitchen?</td>
<td>/</td>
</tr>
<tr>
<td>b. Do you have a small refrigerator?</td>
<td>/</td>
</tr>
<tr>
<td>c. Do you have a small sink?</td>
<td>/</td>
</tr>
<tr>
<td>d. Do you have a coffee maker?</td>
<td>/</td>
</tr>
<tr>
<td>e. Do you have a freezer?</td>
<td>/</td>
</tr>
<tr>
<td>f. Do you have a microwave?</td>
<td>/</td>
</tr>
</tbody>
</table>
36. If you have your own mini kitchen in your room, do you think it's convenient?  
   Yes / No

37. If you have space in your room, do you want to have a 2nd kitchen (mini kitchen) in your room?  
   Yes / No

38. If you have more than one kitchen in your home, do you think it's convenient?  
   Yes / No

39. If you have space, do you want to have more than one kitchen in your home?  
   Yes / No

<About Me>

40. How old are you?
   a. 10–20  
   b. 21–30  
   c. 31–40  
   d. 41–50  
   e. 51–60  
   f. 61–70  
   g. 71 and more

41. Gender  
   F / M

42. Are you married?  
   Yes / No

43. How many people are in your family?
   a. 1–2  
   b. 3–4  
   c. 5–6  
   d. 7 and more

44. Where do you live?
   a. Apartment  
   b. House  
   c. Other ________

45. How long have you lived in this place?
   a. 1–3 years  
   b. 4–6 years  
   c. 7–9 years  
   d. 10–19 years  
   e. 20 or more years
Interview questionnaire of Phase One Research

1. What is your occupation?
2. Where do you prefer to live between apartment and house? Why?
   • If you prefer to live in apartment
3. If your needs are all meet would you prefer to live in house?
   Or
   • If you prefer to live in house?
3. If your needs are all meet would you prefer to live in apartment?
4. How do you feel and think about traditional housing?
5. Do you believe in ‘feng shui’? If yes, where do you apply it?
6. Do young children or elderly family members use the kitchen?
7. Does the kitchen meet the special needs of family members?
8. Do you know about universal design?
9. What general style do you like for your future kitchen?
10. When do you most eat meals with the family at home?
11. Do you have a dishwasher? What do you think about dishwasher?
APPENDIX B

PHASE TWO RESEARCH QUESTIONNAIRES
Survey Questions of Phase Two Research

This survey is about understanding what people want in their future (particularly appliances) kitchen. The survey will take approximately 10 minutes to do and everyone who cooks in the kitchen should fill it out. If the question does not relate to you, just skip it, but please go to the next question. Your responses will be used to help create future kitchen design concepts.

Thank you!

1. Who uses your current kitchen? (Check as many as apply)
   - Yourself
   - Spouse
   - Mother
   - Father
   - Brother
   - Sister
   - Grandmother
   - Grandfather
   - Child or children
   - Other

2. Does your spouse cook?  Y/N
2-a. If yes, How often?  

3. What kind of appliance(s) does your spouse use the most?
   List the top 3
   1. 
   2. 
   3. 

4. Do your children participate with you while you are cooking?  Y/N
4-a. If no, Why?
4-b. If yes, How often?

5. How often is your kitchen used?
   a. Several times every day
   b. Once a day
   c. A few times a week
   d. Hardly ever

6. When you eat meals at home, do you eat meals with the family?  Yes / Usually / No
7. Where do you eat?
   a. Living room
   b. Dining room
   c. Kitchen
   d. Other

8. When you eat meals at home, what else do you do while you eat?
   a. Watch TV
   b. Read something (book, magazine, newspaper…)
   c. Talk with someone on the phone
   d. Talk with someone face-to-face (family, friends …)
   e. Nothing else. I just eat.
   f. Other

9. Do your guests always end up in the kitchen? Yes / No
   9-a. If yes, Why? _______________
   9-b. If no, why? _______________

10. For which activities do you use your kitchen today and ideally in the future? (Check as many as apply)

   a. To eat
   b. To drink (beverage)
   c. To cook
   d. To gather with family or friends
   e. To watch TV
   f. To read (book, magazine, newspaper)
   g. To do laundry
   h. To do Homework (with children)
   i. To use the computer
   j. To Pay bills
   k. Other

<table>
<thead>
<tr>
<th>Activity</th>
<th>Today</th>
<th>Ideal (future)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To eat</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To drink (beverage)</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To cook</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To gather with family or friends</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To watch TV</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To read (book, magazine, newspaper)</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To do laundry</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To do Homework (with children)</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To use the computer</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>To Pay bills</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Other</td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

11. Which appliances (e.g., refrigerator, stove, microwave, etc.) do you use most?

   List the top 5
   1. __________
   2. __________
   3. __________
   4. __________
   5. __________
12. Do you have any kitchen appliances that you do not really use? List the top 3 appliances you could live without.
   1. ________ why? ________
   2. ________ why? ________
   3. ________ why? ________

13. What kitchen appliances do you want to have in the future? List the top 3
   1. ________
   2. ________
   3. ________

14. When you purchase electric home appliances, what do you consider most?
    Response Ex) a-c-d-b ________________
    e. Other

15. When you purchase food, what is important to you?
    Response Ex) a-c-d-b-e-f ________________
    e. Appearance    f. Brand
    g. Other

16. When you purchase kitchen appliances, what is more important to you? Please answer a through f ex)
    a. Bigger / Smaller
    b. Inexpensive / Expensive
    c. Healthy cooking / Not healthy cooking
    d. Unique / Standard
    e. Luxury / Economy
    f. Efficiency / Brand Name

17. Age   a. 10-19  b. 20-29  c. 30-39  d. 40-49  e. 50-59  f. 60 and over

18. Gender   F/M
19. Occupation ____________________
20. Status Single / Married / Other____
21. Your household income per year?
   __ 30,000__ 50,000__ 75,000__ 100,000__
22. Do you have a car? Y/N
23. What kind of car do you have? ________
24. What kind of car do you want to have in the future? _______________
Interview questionnaire of Phase Two Research

1. Which appliances (e.g., refrigerator, stove, microwave, etc.) do you use most?
2. Do you have any kitchen appliances that you do not really use?
3. What kitchen appliances do you want to have in the future?
APPENDIX C

VISUAL DOCUMENTATION: PHASE ONE AND TWO RESEARCH OF FOCUS
GROUP TOOL KITS AND VISUAL RESULTS
Visual documentation. Phase one research tool kit for focus group and results

Figure C.1: Tool kit for phase one focus group
Figure C.2: Results by age 10 ~ 19 focus groups
<table>
<thead>
<tr>
<th>Age 20 – 29 Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
</tr>
</tbody>
</table>

Figure C.3: Results by age 20 – 29 focus groups
Age 30 ~ 39 Groups

Figure C.4: Results by age 30 ~ 39 focus groups

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Age 40 ~ 49 Group

Figure C.5: Results by age 40 ~ 49 focus group
Figure C.6: Results by age 50 and over focus group
Visual documentation: Future kitchen by Interior designers

Figure C.7: Future kitchen by Interior designers
Visual documentation: Phase Two Research tool kit for focus group and results

Figure C.8: Tool kit for phase two focus group
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