Abstract

Background/Objectives: After the 1990s, traditional markets in Korea have been in a continuous decline due to opening of the retail market and introduction of new types of businesses. Market modernization projects have been consistently promoted but have not yet to make a successful model. This is partly due to the lack of post case analysis research on market modernization projects. The study was conducted to derive problems and implications about nationwide representative market modernization project promotion cases through post comparative analysis. Methods/Statistical analysis: The study selected 4 traditional markets throughout the nation where there was promotion of market modernization projects to conduct field research and interviews about store modules, line of flow, facility configuration, and types of businesses. Empirical comparative analysis was conducted on construction hardware status through measurement and observation and data was collected on business environment and requirement characteristics by business type through interviews with merchant associations of the corresponding markets. Consistent standard was applied as much it was possible to comparatively analyze the 4 market modernization cases and on the unique characteristics of individual markets, the cause was determined in conjunction to the history of the business promotion process and regional characteristics. Ex post temporary stores unrelated to modernization projects were excluded from research subjects. When there were differences in currently used store modules and merchant area requirements by each business type, causes such as interior facilities were analyzed. Findings: As a result of analysis, although there were deviations according to the status of previous business types in each market, generally the size of the area used was in the order of restaurants> fisheries> livestock> side dishes. Overall, it was found that main line of flow had a wide line of flow of around 3 m considering logistics line of flow but in case of sub line of flow, there was fairly narrow line of flow due to the influence of such things as store area expansion demands and it was causing inconvenience for customer movement and inflow and outflow of products. Many of the problems of market modernization projects were confirmed in the facilities and equipment sector and especially problems about ventilation and plumbing were found commonly in most cases. Although traditional markets have inherently different identities from other retail categories, there are often cases of applying building plans imitating general hypermarkets and in the study, Gunsan Public Market corresponds to this case. In the future, continuously analyzing problems of market modernization projects such as construction, MD, and facilities equipment, and making databases and manuals of the solutions will be a necessity in successful market modernization project model establishment. Improvements/Applications: The study has significance in the fact that it established a starting point of comparative analysis research about status of facilities modernization projects after completion which was insufficient in previous researches about traditional markets. After the study, basic data to suggest guidelines in store modules by business type in traditional markets could be acquired and the study identified the facilities equipment standards that must be considered in future market modernization projects.
Key Words: Case Analysis, Market Modernization Project, Market Activation, Store Module, Traditional Market

1. Introduction

Following the development in the retail industry, retail channels have become diversified. According to related laws, the finish in about various types of businesses have been done according to size and characteristics and among them, traditional markets, from the legal definition by Special act for the development of traditional markets and shopping centers (2009.12.30 Law 9887) has been defined as 'a place created naturally by social and economic demand where transactions of product and services are generally done in a traditional manner based on mutual trust' and the premise is that it is a place that needs promotion of modernization by improving current status. Through this, modernization projects of traditional markets have been promoted continuously nationwide in part by super policies of the government and old downtown redevelopment policy of regional governments. However, until now, standardized relevant model has not been established and it has remained a passive development form for minimum image improvement such as increase in convenience facilities such as simple arcades and parking lot installations and sign renovations, and in case of reconstruction of the entire area, due to construction plans imitating hypermarkets unable to reflect the unique characteristics of traditional markets such as lack of logistics line of flow or ventilation and the trial and error of losing the competitiveness of traditional markets is being repeated. To overcome this, there needs to be development of success factors by conducting comparative analysis based on uniform standards on completed traditional markets based on previous market modernization project results and there is need to find causes of failure cases to establish solutions so that it does not repeat in future projects. However, studies until now have been focused on introducing domestic and international success cases relating to traditional markets, suggestion of traditional market design guideline, or verification of the effects of modernization projects on market merchants or customers. For this, the study selected traditional markets that have continued operation for a number of years after promotion of market modernization projects to conduct case analysis and suggest empirical data based on common standards and provided basic data for success in the expanding traditional market modernization projects and activation support projects such as culture and tourism markets and alley markets.

Traditional market related studies are being conducted in various fields. Most studies were conducted in the purpose of seeking activation plans based on the awareness of the reality of stagnating traditional markets and especially there is a trend of increase in traditional market modernization projects or activation projects related studies. To explore the design trends through spatial configuration and production methods focusing on traditional markets that deliver diverse lifestyle and culture, In suggested the problem of improving as well as nonphysical activity elements such as cultural activities support. In7 suggested the problem of how to strategically approach gate type public symbolic sculptures that give a familiar but also strong and unique feeling in traditional markets in the perspective of public design and focusing on approach cases, explored methods for traditional market image improvement and marketing activation. In8 conducted empirical analysis through...
systematic data collection in the perspective of merchants in 'Bong-pyong traditional market activation project' to analyze the effect of activation projects in agricultural area traditional markets. Investigating entrance space status in 19 traditional markets located in the old urban areas of Seoul to reveal that, in perception, rather than symbolic structures, the priority was on general recognition of traditional markets that are familiar and easy to see and in image evaluation of entrance spaces found that it was highly evaluated in appropriateness, familiarity, clarity, and legibility but evaluated lowly in formativeness, symbolism, and especially tradition, showing that there was much room for improvement. Converged the concept of shopping malls on traditional markets to analyze the influence of selection factors of shopping places on attractiveness (image, evaluation, situational) of traditional markets to empirically analyze the influence of attractiveness (image, evaluation, situational) on re-visit intention. Explored versatility of space to increase competitiveness of traditional markets and explored the problems and to suggest application plans and necessary justification of universal design, application content of universal design was suggested through field investigation and evaluation of Seoul Namdaemun market and claimed that there was limitations in the standard arcade and parking lot installation for activation of traditional markets and that there was need for establishing the most convenient environment for customers and changing the perception about traditional markets.

2. Proposed Work

The study conducted comparative case analysis on 4 markets that were reconstructed through the market modernization project promoted nationwide. The markets selected as analysis subjects were markets with reputation that could represent the area which was completed through the market modernization project in various regions of Korea after 2000. Analysis method consisted of exploring the comprehensive overview of the market and analyzing the specification and area of each stores composing the market through empirical data by business. The study also reviewed store layout and line of flow to check if there were problems in customer use and logistics function. Capture statistics of each markets for determined through field investigations on the most important functions in operation and management of traditional markets such as ventilation, plumbing, loading docks, storage, and facilities equipment status and through relative comparative analysis on the overall case analysis subject market, derived problems and implications in market modernization projects.

2.1 Hayang Ggumbau Market

As shown in Table 1, Hayang Ggumbau Market is the first public market with modern facilities in Korea and it is composed separated by A complex (Ggumdong) and B complex (Baudong). It is a culture and tourism type market that promotes tourism contents of Kyungsan through various cultural events which made use of the characteristics of traditional markets. It was created spontaneously in 1931 and it is eight markets with a tradition of over 80 years and due to aging of buildings, market modernization project was promoted in 2011.

As shown in Table 2, in case of Ggumdong, differential distribution of area is done according to

| Location | Gyeongsangbuk-do Gyeongsan Hayang-eup Daehak-ro 1543 (Geumrakri 35-5) |
|----------|-------------------------------------------------------------------------|
| Area     | Land area 6,992m² / Construction area 3,997m² / Gross floor area 9,107m² |
| Store composition | A Complex (Ggum-dong) 1F Fisheries, Vegetables, Meat, Fruit and vegetables, Dried fish, Side dishes, Snacks such as Gimbap, etc. 2F Men and women’s clothing, Shoes, Hanbok, Kitchen utensils, Keys, Bedding, Interior accessories, etc. |
|          | B Complex (Bau-dong) 1F Specialized restaurants, Seed, Rice, Tofu, Sesame oil, Health shops, Glass, Hardware, and other products 2~4F Parking lot |
| Number of stores | 109 |
| Parking capacity | 109 |
| Hours of operation | Summer season 08:00~22:00/Winter season 08:00~21:00 |
| Completion | May 2013 |
business type for module and line of flow and has a difference in designated area between 6.6m² ~ 13.2m². Livestock, fisheries, and dried fish businesses prefer box type stores where it is possible to install fridge/freezer storage, acquire workspace, and install showcases within interior and placement according to business type is applied for increase of customer convenience and efficient management operation plans. In Baudong, specified 13 m² module is used for the interior and dining area of 120 seats is jointly used. Exterior uses the largest 26m²~43m² area due to processing/cooking equipment and personal storage and the store in flow direction is divided through spatial separation of interior and exterior stores.

**Table 2. Hayang Ggumbau market store module**

| Division | Business type | Size     | Area    | Number |
|----------|---------------|----------|---------|--------|
| Ggumdong | Fisheries     | 3.9m x 5.7m | 22.2 m² | 7      |
| Ggumdong | Livestock     | 3.7m x 5.7m | 21 m²  | 4      |
| Ggumdong | Side dishes/foods | 3.8m x 4.2m | 16 m²  | 13     |
| Ggumdong | F&B           | 2.7m x 4.0m | 10.8m² | 10     |
| Ggumdong | Bedding, Hanbok | 4.6m x 5.0m | 23 m²  | 5      |
| Ggumdong | Clothing      | 4.0m x 4.2m | 16.8 m²| 15     |
| Ggumdong | Household goods | 3.6m x 5.0m | 18 m²  | 5      |
| Ggumdong | Kitchen, pottery | 4.5m x 4.9m | 22 m²  | 5      |
| Baudong  | Restaurants   | 3.7m x 3.4m | 12.6 m²| 6      |
| Baudong  | Foods         | 4.7m x 5.9m | 27.7 m²| 4      |
| Baudong  | Health        | 4.7m x 5.9m | 27.7 m²| 2      |
| Baudong  | Other         | 6.1m x 7.2m | 43.9 m³| 5      |

In facilities equipment, there are differences in location and capacity of plumbing (electricity, gas, drainage) according to business type by store and it has a logistics line of flow of 30 to 40 m that lead to inflow/processing/movement/sales. The status is enumerated as follows Figure 1.

**Figure 1. Hayang Ggumbau market facilities status.**

### 2.2 Sangnam Market

As shown in Table 3, Sangnam market which is a modern traditional market with the store area size of 23,140 m² located in the heart of Changwon, Sangnam, has introduced a night market that specializes in foods with proximal large distribution facilities and differentiated strategy. Sangnam market which has 60 years of tradition was developed as a modern facility in the 2000s but due to large retail facilities nearby such as department stores, hypermarkets, and SSM, there was outflow of demand from users in the age range of 20~40s. After, as it was detonated as a cultural tourism market in 2014, linking with existing stores, it introduced specialized food market within the night market utilizing public footpaths to promote commercial area activation.

**Table 3. Sangnam market status**

| Location                        | Gyeongsangnam-do Changwon Seongsan-gu Madimi-ro 28 (Sangnamdong 16) |
|---------------------------------|---------------------------------------------------------------------|
| Area                            | Land area 19,392 m²/ Store area 24,033 m²                          |
| Store configuration             | 1F Foods market, Fisheries, Meat, Fruits and vegetables, Vegetables, Stores, Side dishes, Sesame oil, Rice cakes, Fermented foods |
|                                 | 2F Foods market, Snacks, Desserts, Korean foods Men and women’s clothing, Shoes, Hanbok, Keys, Bedding, Other |
|                                 | 3F Specialized restaurants, Bars, Karaoke, Cultural center         |
| Number of stores                | 589(+20 kiosk stores)                                              |
| Number of merchants             | 295                                                                 |
| Parking capacity                | 509 (30 min 1,000 KRW/ 1day parking 15,000 KRW)                    |
| Hours of operation              | 06:00~20:00(Closed first and third week Sundays) Night market 15:00~24:00(Open all year round) |
| Completion                      | September 2000                                                     |
As shown in Table 4, on the first floor of Sangnam market, for store module and line of flow, it acquired increase in stores through decrease of corridor width and unit store size for maximization of lot sales, but this caused a line of flow under 2m width which made transportation of hand cars and carts difficult, causing inconvenience in logistics movement. It has store areas of wall surface stores 21.8 m²–20 m² and island stores 10.6 m²–14 m² and some island stores rent nearby stores for storage and workspaces. Second floor is where the most of the stores in Sangnam market is located and it is composed of 4 types of store modules such as kiosk, Public footpath, exterior, and island stores. Excluding the foods market and bank, most stores have areas between 16.5 m²–23.1 m². Centering on 20 kiosk stores lining the public footpath (East-West) there is a 3.8 m bidirectional walking line of flow and it has logistic line of flow system utilizing the south and north gates where the external parking lots are located. The third floor is a floor where many specialized Korean foods restaurants are located and excluding Wall surface/Island stores (26.4m²–39.7m²), most are composed of stores with the areas between 13.2m²–16.5m² but for cooking space and dining space, 2~5 stores are combined to have an average size of 26.4m²~66.1m².

Due to sale in lots structure business method, location and size of plumbing facilities (electricity, gas) were uniformly applied by floors. In front of stores in the first and second floor that use water, a commonly utilized trench was installed but due to aging of facilities and lack of management, there are frequent blockages. In units of 12 stores, there are par distribution boards and gas meters in the public spaces. On the first floor where stores causing order such as fisheries, livestock, and side dishes stores are located, there is a floor height of 4 to 5 m and straightened line of flow as well as various entrances and it has relatively smooth ventilation. On the ceiling, an automatic retractable ceiling window was installed and optimal internal temperature and humidity is controlled through periodic ventilation. The status is enumerated as follows Figure 2.

| Store Module | Specification | Area     |
|--------------|---------------|----------|
| 1F Wall surface A | 4.1m x 7.2m | 29 m²   |
| Wall surface B   | 3.6m x 6m   | 21.8 m² |
| Island A         | 4.2m x 3.4m | 14.3 m² |
| Island B         | 3.1m x 3.4m | 10.5 m² |
| 2F Kiosk         | 2.8m x 6m   | 16.8 m² |
| Public footpath  | 3.9m x 5.8m | 22.5 m² |
| Island C         | 3.9m x 4.9m | 19 m² |
| Exterior         | 4m x 4.7m   | 18.8 m² |
| 3F Parking front | 3.8m x 4m   | 14.9 m² |
| Island D         | 6.9m x 5.7m | 39.6 m² |
| Island E         | 3.9m x 3.5m | 13.5 m² |
| Wall surface C   | 3.6m x 7.8m | 28.2 m² |

Table 4. Sangnam market store module

2.3 Gunsan Public Market
As shown in Table 5, Gunsan market which is located in Gunsan, Jeollabuk-do is a case of reconstructing a 90 year tradition market into a modern mart type market. In 2012, it was developed as the first mart type traditional market in Korea with horizontal width of 170m within a rectangular lot, but due to competitiveness decrease from such things as product quality and service compared to nearby hypermarkets, there is insufficient activation.
Table 5. Gunsan public market status

| Location                        | Jeonbuk Gunsan Shingeum-gil 18 |
|---------------------------------|---------------------------------|
| Area                            | Land area: 10,942 m²/ Gross floor area 20,763 m² |
| Size                            | 1F–4F (3–4F Parking) |
| Completion                      | March 2012 |
| Parking Capacity                | 488 |
| Number of stores                | 282 |
| Art of operation                | 5:30–21:00 |

As shown in Table 6, for store modules on the first floor, store area is distributed from standard designated area 14.4 m² to 20.2 m² and livestock, fisheries business types prefer areas over 16.5 m² for freezer, workspace, and installation of showcases. On the second floor, clothing stores have the most number of stores and types of businesses with defined purpose such as Hanbok and Bedding are located mostly on the sides. The main line of flow on first and second floor have ample line of flow system of around 3 m to 5 m considering customers using carts and there is a problem of odor coming up from the first floor due to the moving walk and void space in the middle. The most of the inflow of customers are from the North gate facing the street and South gate that lead to ground-floor parking lot and Yeokjeon general market.

Reflecting business type placement plan, for facilities equipment, plumbing facilities and trenches were installed in fisheries, livestock, and F&B stores. Product inflow and movement convenience was increased by placing cargo elevator and loading dock on the west side with relatively low floating population but this caused the decrease in efficiency due to the far distance from fisheries/livestock stores with frequent inflow and outflow with the loading dock. Also, trenches were not installed in the public spaces and pollutants occur during inflow of fisheries and livestock products. There was lacking ventilation plans at the time of development and there are frequent complaints from merchants and customers due to odors at the medicine market. This implies the necessity of establishment of plans adequately considering their conditioning facility such as ventilation in closed mart type traditional markets. The status is enumerated as follows Figure 3.

Figure 3. Gunsan public market facilities status.

2.4 Naju Moksageoul Market

As shown in Table 7, Naju Moksageoul Market located in Naju, Jeollanam-do is a market that modernized Geumkye public market and Seongbuk five-day market, which is Korea’s first five-day market. The modernization project was completed in 2012 with 40 permanent stores in a single floor form. It developed character products, introduced construction environment motivated by traditional Korean housing, and installed an outdoor event square.

Table 6. Gunsan public market store module

| 1F     | Division              | Livestock  | Side dishes/foods | Household goods | Herbal / health stores |
|--------|-----------------------|------------|-------------------|-----------------|-----------------------|
|        | Specification         | 4.1 × 3.5m | 4.1 × 3.5m        | 3.9m × 4.4m     | 2.8m × 7.2m           |
|        | Area                  | 14.4 m²    | 14.4 m²           | 17.2 m²         | 20.2 m²               |
| 2F     | Division              | Bedding    | Household goods   | Clothing        | Fashion accessories   |
|        | Specification         | 4.3m × 4.2m| 3.5m × 5.0m       | 4.1m × 3.5m     | 3.6m × 2.8m           |
|        | Area                  | 18.1 m²    | 17.5 m²           | 14.4 m²         | 10.8 m²               |
Table 7. Naju Moksagoeul market status

| Location       | Jeonnam Naju Cheongdong-gil 14 |
|----------------|---------------------------------|
| Area           | Land area: 27,338 m² / Construction area 4,923 m² |
| Size           | Above ground 1F~2F               |
| Completion     | January 2012                     |
| Parking capacity | 268                             |
| Number of stores | Permanent stores: 40 / 5-day Market: 112 / Food and beverages: 9 |
| Hours of operation | 6:00~21:00                      |

As shown in Table 8, for stores modules, on the first floor, F&B markets have size of 16.5 m² and other business types have uniform 24.8 m² store configuration. A unique mood of a traditional market was implemented through installing traditional Korean lanterns by module, traditional tiles, and composition of interiors motivated by traditional Korean housing. While individual store size is larger than other traditional markets, due to the lack of separate storage spaces to load products, it causes inconveniences. In the center area there is a mart selling manufactured goods which has the problem of hindering visibility of stores in the rear. On the exterior of the public market, there are 7 Korean food focused restaurants, 1 café, and 1 Naju local food restaurant. There is an outdoor square and food and beverage space of 60 m²~109 m² in the middle of the five-day market linking shopping and dining.

For line of flow, it is 3 m for main line of flow and 2.5m for subline of flow which are widths possible for carts and hand cars to move logistics. The parking space is connected to the south and the main entrance is open in the south and north direction which makes it easy for customer’s inflow and it has a line of flow system with easy product inflow through the parking lot.

Table 8. Naju Moksagoeul market store module

| Division     | Fisheries | Livestock | Side dish/foods | F&B |
|--------------|-----------|-----------|-----------------|-----|
| Specification| 4.5 × 5.5m | 4.5 × 5.5m | 4.5 × 5.5m | 4.5 × 3.7m |
| Area         | 24.8 m²   | 24.8 m²   | 24.8 m²       | 16.7 m² |
| Number       | 6         | 4         | 10            | 3    |

Due to the lack of MD zoning division in the initial stages of development, appropriate facilities equipment was not planned. Necessary facilities equipment type businesses (gas/trench/plumbing) were additionally installed later. Ventilators were additionally installed due to the fermented foods smell from the Kimchi/side dishes corner in the center area. Due to the full class installation at initial development, there was a problem of heating, cooling, and ventilation and air conditioning was additionally installed by the city of Naju. Due to narrow piping, frequent leaking occurred during the rainy season and additional repairs were done. It could be confirmed that acquisition of appropriate piping width is important in initial development. The status is enumerated as follows Figure 4.

Figure 4. Naju Moksagoeul market facilities status.

2.5 Results
Market modernization projects all over the nation mostly consist of maintaining business types of existing merchants while improving through reconstructing aging facilities, it is difficult to expand store areas through decrease in number of merchants or integration and maintains a tight store area. Store modules show differentiation according to business type and generally the size of the area used was in the order of restaurants> fisheries> livestock> side dishes. Most had main line of flow of over 3 m and had vertical lines of flow such as moving walks and elevators. In case of facilities equipment, location and capacity of equipment where applied differently according to planning by business type status but due to the understanding of products and sales characteristics of traditional markets, there were markets that required additional construction after completion. The status is enumerated as follows Table 9.
| Hayang Ggumbau Market | Changwon Sangnam Market | Gunsan Public Market | Naju Moksagoeul Market |
|-----------------------|-------------------------|----------------------|------------------------|
| **Module**            |                         |                      |                        |
| Area distribution ac-  | No area standard by     | Area distribution by  | Area division by F&B   |
| cording to business   | business type            | dedicated area       | and other businesses   |
| type                   | Livestock:              |                      | for uniform segmentation|
| 3.7×5.7m              | 3.7×5.7m                |                      |                        |
| Fisheries:             | Island:                 | 4.1×3.5m             |                        |
| 3.9×5.7m              | 4.2×3.4m 3.1×3.4m       | 4.1×3.5m             | 4.5×5.5m               |
| Side dishes:           | Kiosk:                  | 2.8×7.2m             | Side dishes:            |
| 3.8×4.2m              | 2.8×6m                  | 4.5×5.5m             |                        |
| F&B: 2.7×4m           |                         |                      | F&B: 4.5×3.7m          |
| Bedding:              |                         |                      |                        |
| 4.6×5.0m              |                         | 4.1×3.5m             |                        |
| Clothing: 4×4.2m      |                         | Household goods: 3.5 |                        |
| **Line of flow**      | Main: 2.7~3.6m          | Main: 3~5.5m         | Main: 3m               |
|                       | Sub: 1.8~2.3m           | Sub: 2.2~3m          | Sub: 2.2~2.5m          |
| - Low indoor garage    | - Public area minimization for maximum number of stores | - Easy vertical movement between floors through central M/W vertical line of flow | - Line of flow system with easy logistics inflow through parking lot |
| access convenience     |                         |                      |                        |
| **Facilities equipment** | • Differentiated location and size of plumbing system by business type |
|                       | • Visual confirmation possible through installation of meters in each store |
|                       | • Smell and order blockage through installation of void block and automatic doors |
|                       | • Minimum space location between unloading, work-space, store |
|                       | • Automatic ceiling window installation |
|                       | • Installation of power distribution board and gas meter within public space |
|                       | • Smooth ventilation through installation of multiple entrances |
|                       | • Installation of trenches commonly used by each store front |
|                       | • Plumbing and trench installation completed in advance within stores |
|                       | • No planning of ventilation at initial element |
|                       | • High maintenance costs due to installation of moving walks and elevators |
|                       | • Separate exterior storage due to lack of storage |
|                       | • Lack of storage space |
|                       | • No plans of facilities equipment due to no MD zoning at initial development |
|                       | • No planning of ventilation and plumbing at initial development |
3. Conclusion

The study has significance in that, in a field related to traditional markets that were studied in various subjects that lacked post comparative case analysis, it derived problems and implications through post comparative case analysis of markets that went through market modernization projects. Also it has differentiation in that by reviewing standard area through comparative analysis by business type in individual store modules, it established a starting point to suggest a store area guideline reflecting the interests of merchants in the future. Market modernization projects promoted all over the nation are largely in the public interest considering regional activation and small merchant support through environmental improvement. However, compared to private commercial facility development that prioritizes profit, it has limitations of various aspects. First, because rather than business type allocation considering sales efficiency and marketing, it maintains the existing number of merchants and usage area, it has limitations in implementing store area and line of flow by business type which is optimized for attracting new customers and increasing sales. Second, due to the lack of establishment of plans based on regional cultural characteristics and unique competitiveness of traditional markets, there is the limitation as simple facilities improvement project imitating modern retail facilities which cause cases that require additional facilities investment after completion of the project. Third, the problems and solutions in market modernization projects by region are not recorded or managed by the central government and similar problems recur frequently in attempts by other regions. While this study analyzed 4 cases of market modernization projects nationwide, there needs to be continuous and comprehensive research in the future to systemize and database the procedures and systems of market modernization projects to contribute to activation of economy of the ordinary people through strengthening of competitiveness in traditional markets and merchants.

4. Acknowledgment

This research was financially supported by Hansung University

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