

Systemic Analysis of Competition between SSM and Small-to-Medium Retailers (SMR) in Korea

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Abstract

As the number of SSM (Super Supermarket) has been growing, there are being deeper conflicts between large companies and Small-to-Medium Retailers (simply 'SMR' herein). To resolve the conflict, the government enacted the system of limiting business of large enterprises. It brought about the growth of sales of small retailers in the short run. However, unintended effects were caused by the system. This research, by adopting system thinking, aims to analyze underlying structure of conflicting relationships between SSM and small retailers and find political alternatives through a simulation model which is developed based on the factors involved in the retailing system.

Keywords: Competition and Competition, Policy Leverage, SMR (Small-to-Medium Retailer), SSM (Super Supermarket), System Archetypes, System Simulation, Systems Thinking

1. Introduction

As the distribution channel has been diversified due to the development of retail industry, Distribution Industry Development Act came into effect. This has changed the institutional system for the large enterprise's entry into the retail business - from permit to registration, and thus it has been possible for large retailers to freely enter into the retail industry. In turn the retail market has been rapidly saturated with increase in the number of hypermarkets and fierce competition between domestic and international distributors has started¹. Consequently, large retailers, in order to gain their competitive edges, have actively expanded their business in the form of SSM (Super Supermarket) and entered into the local market.

While SSM with large-scale capital had entered into the traditional commercial market in the form of a direct investment or franchise, this has directly had a negative economic impact on SMR which are mostly run their business in the traditional local markets². The consensus began to be formed nation-wide that the sales of small retail businesses have to be protected by some means.

In this background, Korean government has imposed regulations such as the Mediation System and the amendment of Distribution Industry Development Act onto their sales and store openings to protect SMR's businesses¹.

Regulations like opening hour limit and the designated holidays imposed on the SSM contribute to the stalls of their sales and the increase in sales of the traditional markets and general supermarkets instead. However, it is revealed that such measure is not notable and effective³. Furthermore, Convenience Stores, Home Shopping, the Internet Commerce, and other channel businesses are benefiting from the regulations on the SSM business. Also unintended consequences from the effect of the government's regulatory policy have occurred. For example, the disguised SSM like a chained convenience store, a drug store, and goods supply points started appearing in the market, all of which are the forms created with an attempt to evade the government regulations as entry barriers⁴.

Even though there are numerous studies focusing on the institutional and policy feasibility for the win-win of SSM and SMR, they fail to discuss underlying mechanism of the relationship between SSM and SMR.

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With system thinking approach, this paper, therefore, aims to investigate the reciprocity by identifying factors involved in the relationship between SSM and SMR and trace both the effect and the unintended consequences from the government policy for the retailing systems. Finally, a policy option for the competition (cooperation and competition) is proposed by simulating the retailing systems which reflects the nature of rivalry in particular between SSM and SMR.

2. Theoretical Foundations

2.1 Conflict on SSM Regulations

So-called 'SSM' (Super Supermarket) refers to a corporate supermarket run by large corporate, larger than general Supermarkets (less than 600m²) and smaller than discount stores (more than 3,000m²). As the store area of SSM has a variety of sizes from 330m² to 3000m², it is not difficult to open the store even in residential areas, unlike supermarket and large stores. Due to the ambiguity of legal regulations as such, SSM is swiftly penetrating into the existing small retail market, resulting in the serious damage to SMR^{3,5}. For this reason, Korean government has implemented policies for the protection of small businesses, such as introducing the business mediation system and designating the traditional commercial conservation areas. Meanwhile the government also imposed strong restrictions against large retailers to protect SMR businesses. A representative case is the amendment of Distribution Industry Development Act which specifies two day mandatory-off per week, opening hour limit, pre-notice for opening a store, etc¹. However, there has been a growing concern that all these efforts by the government simply one-sidedly lead to constricting the SSM businesses instead of developing the win-win environment.

There are pros and cons on the regulations against SSM's entering into the retail market (see Table 1). The cons claim that installing the market entry barriers is against 'The General Agreement on Trade in Services (GATS)', Free-market Principles (article 1, section 119), Freedom of Occupation (section 15), and the Right of Consumer Choice (section 10) of the Constitution. On the other hand, the pros hold that there is no problem with WTO agreement, pointing out that advanced countries also practice regulatory policies against large-scale retailers⁶, which include National Economic Regulation and Control (Article 2, Section 119) and Small Business Protection (Section 123) for example³.

Table 1. Controversial issues on SSM regulations

Issues	Pros on SSM regulation	Cons on SSM regulation
Policy Issues	No problems with WTO agreement under the fact that advanced countries also practice regulatory policies against large-scale retailers.	Installing the entry barriers in the market is against 'the General Agreement on Trade in Services (GATS).
Economic Issues	By exercising monopoly power SSM disrupts local business and ultimately constricts the development of retail industry.	The retailers' competitiveness will be weakened, which eventually leads to the decline of national competitiveness declines.
Judicial Issues	The measures taken by the government have their grounds in National Economic Regulation and Control (Article 2, Section 119), Small Business Protection (Section 123) for example.	The measures taken by the government violate the legal institutions like Free-market Principles (article 1, section 119), Freedom of Occupation (section 15), and the Right of Consumer Choice (section 10).

2.2 System Dynamics

System Dynamics (SD) was originated from Industrial Dynamics authored by professor, Jay W. Forrester of the Massachusetts Institute of Technology (MIT) in 1961. As Industrial Dynamics was applied across all areas of the social sciences as well as industry, it became known as the more general term, System Dynamics. System Dynamics puts a greater interest in the trend of dynamic change (stable/unstable tendencies, vertical periodic wave, growth/decline pattern and maintain equilibrium, etc.) of variables over time^{8,9}. In other words, this focuses on how the dynamic changes take place in a system of interest and how it is going to be changed over time. The methodology of system dynamics uses Causal Loop Diagram (CLD) for conceptual modeling order to investigate and understand the dynamics between diverse variables and Stock Flow Diagram (SFD) for computer-based simulation model to analyze the dynamic behavior and understand the phenomenon more clearly.

Causal Loop Diagram (CLD) has been used as a tool for representing the feedback relations within the system of interest and extracting dynamic hypothesis between elements. To represent the causal link between the relevant factors, an arrow is shown with a link polarity (+, -, or S, O) labeled. This is to indicate how the

dependent variable changes when the independent variable changes; if a causal relation between two variables moves right, '+' or 'S (same direction)' is labeled on the arrow of the link to show it is a positive link and if it moves opposite, '-' or 'O (opposite direction)' is put on its arrow to indicate it is a negative link. A positive link means that if the cause increases (decreases), the effect increases (decreases) above (below) what it would otherwise have been. A negative link means that if the cause increases (decreases), the effect decreases (increases) below (above) what it would otherwise have been.

The reciprocal relationship between causal factors forms a closed feedback loop creating a loop polarity either positive or negative. A positive feedback loop is called a 'reinforcing loop' and denoted by a '+' or 'R'; while a negative loop is called a 'balancing loop' and denoted by '-' or 'B'. The easier way to determine the loop polarity is to simply count the number of negative links in the loop. If the number of negative links is even, the loop is positive; if the number of negative links is odd, the loop is negative. This rule works because positive loops reinforce change while negative loops are self-correcting; they opposing disturbance⁷.

3. Causal Structure between SSM and SMR

Once the cause is identified, the problem is almost solved; and the causes can be identified from the hidden side of structure rather than phenomena itself. As such, the strategic implications for the mutual growth of SSM and SMR would be drawn by finding a policy leverage which resides in the hidden side of structure, rather than simply concentrating on problematic symptoms revealed above the surface⁸. In this context, 'Systems Thinking' is perhaps a useful tool to achieve this. It is because the basic worldview of systems thinking lies in the belief that what lays behavior over time is not the past behavior but the structure causing the behavior.

3.1 A Reference Model for the Relations between SSM and SMRs

Among the archetypes for systems thinking, 'Success to the Successful' is very well suited for describing the relation between SSM and SMRs. The 'Success to the Successful' archetype forms the structure with two reinforcing loops engaged by a common variable as shown in Figure 1.

Its typical Behavior Over Time (BOT) as in Figure 2 reveals a pair of diverging curves, one heading up and the other heading down. As advantage for A over B goes up the energy in the system moves into the left-hand loop (R1) reinforcing its virtuous cycle, leading to decreasing resources for B and the right-hand loop (R2) turning into its vicious cycle⁹.

While SSM with large-scale capital runs its business in a virtuous cycle by enjoying the economies of scale and provides the service to the consumer with maintaining inexpensive and high quality of goods, SMR keeps falling deeper into a vicious cycle with the loss of competitiveness due to their high cost structure and low efficiency. In fact, such as aging facilities, lack of linkages between parking lots and market, vulnerability of payment method, lack of funding in terms of procurement and purchasing, they have a vicious cycle because they do not enjoy the economies of scale so that a high prime cost leads a high selling price. Looking at the structure as in Figure 3, the SSM forms Loop R1 showing that as SSM's revenue goes up, SSM's investment ability is on the rise and as SSM's investment ability increases, SSM's market share also increases and as SSM's market share goes up, SSM's revenue goes higher. Meanwhile, small retailers form Loop R2. As SSM market share increases, SMR's revenue decreases, and as their revenue goes down, resources for the investment also reduces. This structure shows unfair system of growth as resources are allocated against one's will; One side gallops toward the growth and the other side goes down to the decline.



Figure 1. Success to the successful archetype.

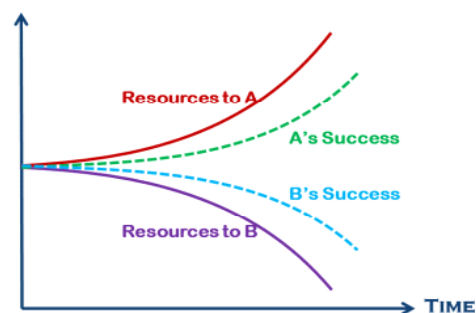


Figure 2. BOT of 'success to the successful archetype'.



Figure 3. Competitive relations between SSM and small-medium retailers.

In the structure of ‘Success to the Successful’, the complaint of the weak grows against the strong and the applied system. Eventually, when it is hard to be patient any more, it cannot avoid extreme behavior to overturn this unfair competition structure itself. In the behavior of positive (+) feedback loop, there always exists the critical point. Exceeding this critical level means reaching the limit of patience⁸.

3.2 A Reference Model for the Current Regulations (Business Mediation System)

Although Business Mediation System imposed on the SSM contributes to protecting the SMR’s revenue, it also brought unintended results, such as emergence of disguised SSMs, entry of foreign SSM and increase in online sales of hypermarkets. This phenomenon can be explained with another system archetype, ‘Fixes That Fail’.

‘Fixes That Fail’ exhibits a two-part dynamic as shown in Figure 4. The first dynamic can be depicted as a balancing loop (B) containing the problem symptom followed by quick fix. This loop explains how the problem can be solved quickly. The second part of the dynamic usually begins out of sight, and often unfolds relatively slowly. As depicted in loop (R) this part is the reinforcing process that comes as the unintended consequence of the fix (Symptom → Fix → Unintended

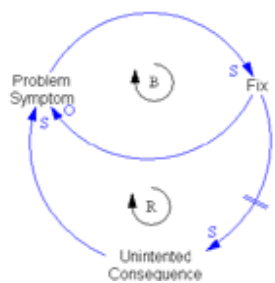


Figure 4. Fixes that fail archetype.

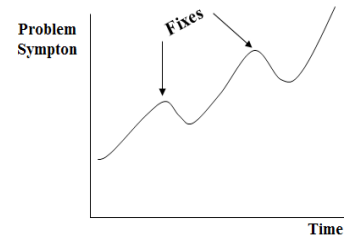


Figure 5. Fixes that fail BOT.

Consequence → Symptom). Time delay, marked with the double line on the link from fix to unintended consequence, is another important component because it has such a destructive impact. As it increases gradually over time without notice, the short-term fix is reapplied before anyone wonders why the problem symptom keeps recurring. By then, the whole systemic structure is entrenched and hard to stop or turn around. The short-term fix is also necessary⁹ but the painful irony of the ‘Fixes That Fail’ dynamic is that the rapid fix taken to solve a problem leads to a worsening of the problem over long term. Such a reinforcing process can rapidly spiral into a vicious cycle, sometime called “The Death Spiral”⁸.

Loops B1 and R2 in Figure 6 represent the view of government policy-makers on the Business Mediation System (BMS) imposed on SSM. This dynamic, comparable to ‘Fixes That Fail’ archetype, depicts how BMS as a win-win strategy reduce the problem symptom and resolve the problem. As small retailers’ revenue decreases, SSM’s market share (B1) makes higher; As SSM’s market share is on the rise, the SMR’s revenue also goes up, and it brings to increase in the investment ability, leading to increase in SSM’s market share (R2).

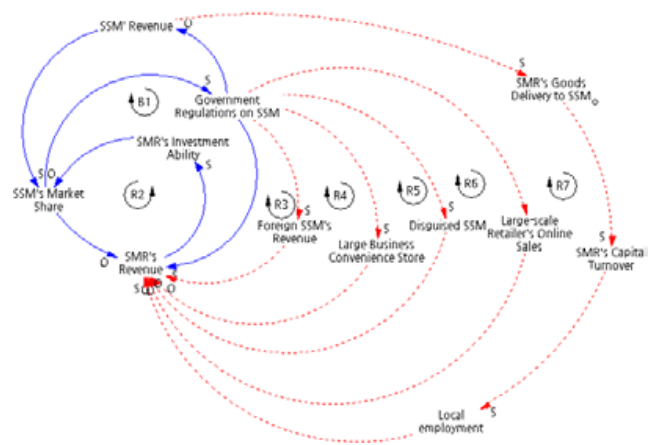


Figure 6. Feedback structure of Business Mediation System against SSM.

However, it should be noted that as the government regulations are stepped up, the energy or drive in the system shifts from the quick-fix loop to the unintended consequences loop. The delayed and accumulated consequence of applying the quick fix takes over. Restricting the new entry of large stores and demanding the mandatory holidays, etc. clearly contribute in the short run to the protection of the small retailers by limiting the business of the large stores and SSM that run directly or under franchise^{5,10,11}. However, such regulatory measures lead to the increase in the number of SSM supported with foreign capitals entering into the market as they are not the objects of the regulations, which results in the loss of competitiveness of domestic SSM (R3). Furthermore, large stores evade the restriction of the law by opening commodity supply stores as a form of franchise with indirect management, which are classified as the private business under Distribution Industry Development Act. Therefore, there is no obligation for them to keep the duty holidays and opening hours limit. For this reason, variant SSM disguised with commodity supply stores as a form of franchise has rapidly increased in number (R5). The convenient store (CVS) chains are also entering into the retail market as they are not affected by the Business Mediation System (R4). In addition, mandatory holidays SSM has to observe leads to increase online sales by SSM (R6). And there is another unintended loop that propels employment decrease in the area where small retailers deliver goods to SSM, resulting from the deterioration of capital turnover (R7).

Therefore, the best way to manage 'Fixes that Fail' is to explore the long-term fix and avoid getting into the temptation of a short-term fix, by investigating the structure behind the problem symptom. And taking it into account that a quick fix will be followed by potential unintended consequences, we have to be prepared to manage both short-term and long-term outcomes from the actions taken. To turn around an existing 'Fix That Fail' dynamic, it should be acknowledged that the quick fix is not solving the problem; it merely alleviating a symptom. If it is not possible to fully avoid the longer-term difficulties, then it is crucial to anticipate and prepare form them in advance.

3.3 In Search of Policy Leverage

By properly managing the mix of both short-term and long-term solutions we will be able to turn around an existing 'Fix That Fail' dynamic. 'Shifting the Burden' archetype can be well suited for this purpose. As shown in Figure 7, 'Shifting the Burden' can be explained with three

feedback loops. The first dynamic is a balancing loop (B1) with quick fix applied to ease problem symptom. This loop explains how the problem can be solved quickly. The second dynamic is another balancing loop (B2) with a time delay involved before the problem symptoms are fundamentally resolved. In fact, we feel no need to adopt the more difficult, time-consuming fundamental solution even though it is more likely to solve the problem at the root-cause level and keep the problem symptom from recurring. The third dynamic is a reinforcing loop (R) which deters the base for fundamental solutions due to the unintended consequences from the quick fix (Symptom → Quick Fix → Side Effect → Fundamental Symptom → Symptom). With each application of symptomatic solution, the impact of the side-effect becomes greater through a reinforcing process, and the ability to implement a fundamental solution spirals downward faster. As shown in Figure 8, the BOT of 'Shifting the Burden' Archetype shows an 'X' pattern. The line indicating the application of quick fix rises in a wavering shape that reflects the intermittent impact of that activity. In the other hand, the line indicating the application of the fundamental solution usually drops sometime in a smooth line if there is no attention given to it and sometimes in a wavering line if it is applied intermittently and less and less frequently.

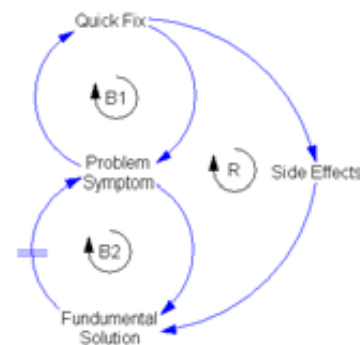


Figure 7. Shifting the Burden Archetype.

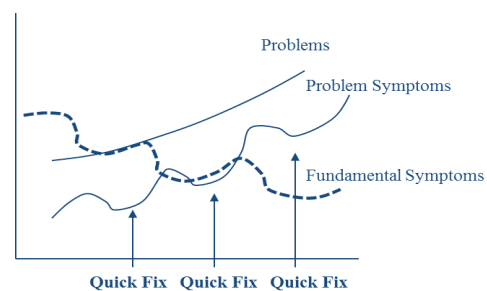


Figure 8. Shifting the Burden BOT.

Figure 9 shows an extended version of the causal loop diagram in Figure 6 by taking the fundamental solutions into account. It is necessary to create business environment where SMR can be competitive against SSM, instead of simply regulating the SSM¹². Therefore, a new variable, the viability of small retailers is included in the model as a fundamental solution. Besides, the characteristics of small retailers and the policies supported by the Bureau of Small and Medium Business Administration are considered as new variables. Generally, SMR works for their living, and they are vulnerable to debt in poor economic condition¹³. Also, a more cost-effective retail network for SMR has to be developed to alleviate the burden of high-cost structure inherent to the small retailers because they do not enjoy the economies of scale in terms of procurement and purchasing¹⁴. In addition, it is necessary to support training and consulting in order for them to have a sense of business mind and to be competitiveness¹⁵.

However, these policies as fundamental solutions take a long time before they start to kick in. For this reason policy makers are mostly prone to rely on the symptomatic solutions by intervening in the problem immediately¹⁶. A quick is more likely to accompany side effects (R3 to R7) and undermine the ability to enforce fundamental solutions. The best way to manage this type of ‘Shifting the Burden’ situation is to avoid the ‘knee-jerk’ reaction to pressures. It is important, though, not to frame the fundamental solution as the ‘right’ solution, because ‘rightness’ often depends on one’s perspective. When trying to distinguish between symptomatic and fundamental solutions, we need to examine the problem from multiple viewpoints so as to get a better understanding of the structure and a potential solution. Another point to keep in mind is that it is difficult to detect side effects of “Shifting the Burden” in reality. The more frequently or insistently the quick fix is applied, the more energy that goes into the reinforcing process that undermines investments in a more fundamental solution⁹.

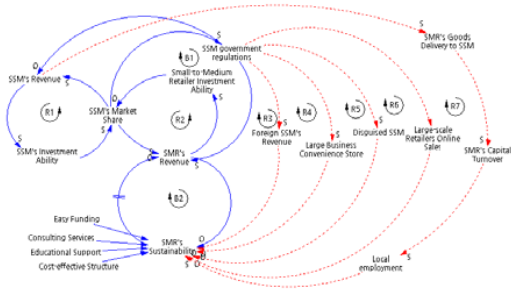


Figure 9. Feedback structure of the fundamental policy.

4. Simulation and Implications

4.1 Base Simulation

Based on the causal models as previously discussed, a simulation model with SFD (Stock-Flow Diagram) was designed and computer simulation runs were conducted according to the scenarios. The main objective to carry out computer simulations is to analyze and compare the sensitivity of the system behaviors according to the change of the policy variables, which is not able to find out with causal loop diagrams alone. In this study, a system simulation software, ‘VENSIM’ was used, and DT (delta time) was set to 0.065 for analysis. To formulate the of simulation equations, Normalized Unit Modeling By elementary Relationship (NUMBER) was applied, which is often used to convert a CLD (Causal Loop Diagram) into SFD. And the relationship between stock (variable level) and flow rate (variable rate) was set as the basic relationship. The units of measure for these variables are set to equalize with the value of 0 up to 1 or with DT¹⁷. Therefore, an SFD model, as presented in Figure 10, was developed by using the index data which is relative and intuitive, rather than using a detailed realistic data. This is because there was no empirical data available. There are no problems with using relative and intuitive index data to study the relative results from the system’s behavior; and compare and evaluate the effects of the main policies¹⁸.

The simulation results in Figure 11 present the case where the business mediation system is implemented as a quick fix. While the quick fix is in reinforcing spiral, the fundamental solution to support the competitiveness

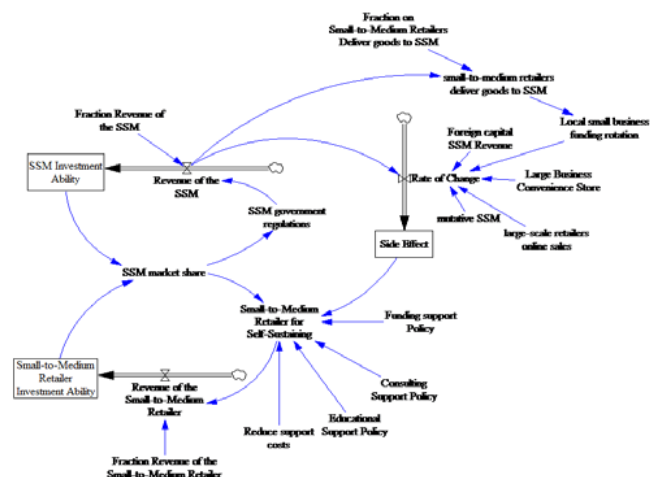


Figure 10. Competitive relations and policy model between SSM and Small-to-Medium retailers designed with SFD.

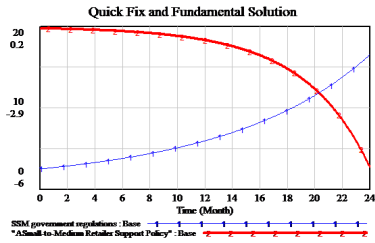


Figure 11. Quick fix and fundamental solution.

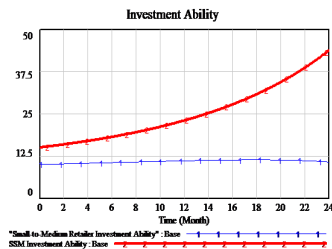


Figure 12. Investment ability.

of SMRs keeps rapidly going downward, due to the side-effects of the quick fix. As for the SMR's viability, a simulation run as in Figure 12 reveals no improvement. Rather, the SMR's viability in terms of their investment ability decreases gradually over time, whereas the viability of SSM rapidly goes up.

4.2 Discovering the Better Alternatives

- Imposing government regulation on SSM: The government regulations have been stepped up as an attempt to propel the SMR's competitiveness. However, the simulation result reveals that such regulatory measures fail to take effect as shown in Figure 13. This is mainly because side-effects of regulations are more strongly working than the originally intended effects from the quick fix. All possible side-effects (refer to the side effects' reinforcing processes from R3 to R7 in Figure 9) are reflected in the simulation model as variables. As seen in Figure 13, as the government regulation is strengthened, SSM's revenue and their investment ability decrease for a while, but the SMR's viability are hardly improved. This result is almost identical to from the previous analysis that decrease in SSM's sales does not lead to increase in SMR's sales in traditional market³.
- Promoting the SMR's viability: As shown in Figure 14, policies to create a positive business environment reveal more effective to both SSM and SMR by enabling SMR to improve their business viability, increase

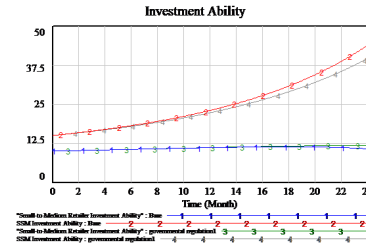


Figure 13. Imposing government regulations on SSM.

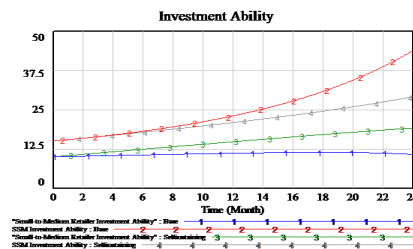


Figure 14. Promoting the viability of small retailers.

their investment ability, and eventually promote their competitiveness. The only problem with this option lies in the fact that it takes a long time to kick in. Therefore, the best possible option to create a win-win environment and avoid the 'winner gets the most' situation is to apply the mix of short-term and long-term solutions. While imposing the regulatory measures on SSM, it is also necessary to implement diverse policies for small retailers such as easy funding, business education and training so as for them to minimize the chance of store shutdown and closure¹⁴.

4.3 Implications

This study aims to find the way for the mutual benefits to both SSM and SMR by conducting in-depth analysis of the dynamic nature their relations. The main contributions from the study are summarized as follows: First, introducing systems thinking, the underlying structure of the relations between SSM and SMR was systemically identified analyzed, which is perhaps useful in shaping policies for the creation of 'win-win' business environment. Second, in its extension, the conceptual model and simulation model for the situation under study were developed. Third, it is found from the simulation that promoting the viability of SMR's businesses is more effective than simply regulating the SSM's business.

The implications surrounding the objective of study are drawn as follows: firstly, to develop a win-win policy it should not be overlooked that the root cause of the

conflict between large retailers like SSM and SMR lies in consumers' preference and their needs that are getting pickier and more diverse. There would be no excuse for imposing regulations on the SSM to protect SMR simply because consumers prefer SSM. Clearly this means limiting the right for the consumer's choice. Therefore, market intervention by government - either supportive or regulative should be justified in its economic or socio-political legitimacy¹⁹. It should be noted that such legitimacy comes from the local community members or the general public. If the regulations on SSM are viewed as a means to simply regulate the SSM's business, then consumers might not support for them.

Secondly, the government's supportive measures should be dealt with selectively. It is not appropriate to protect unconditionally the SMR without their will for innovation. The economic weak have to be supported and protected by some means, but only the weak that are eligible for it. Therefore, the supports from the government should go to selectively those who try to change spontaneously¹⁴.

Thirdly, it is more desirable to provide incentives to those who make joint efforts and cooperation on both sides instead of simply regulating or supporting the only one side. It will be more effective to establish a policy and make efforts for the multilateral benefits not only to SSM and SMR but even to the community.

5. Conclusion

The relations between SSM and SMR are systemically investigated by introducing some of the system archetypes such as 'Success to the Successful', 'Fixes That Fail', and 'Shifting the Burden', which are well suited to the problem to tackle for the study. By applying the archetypes to developing CLDs which delineate the underlying structure of retailing business, it has been clarified the reason the government policy at present is not working with side-effects produced. The archetypes presented in this paper can help you uncover many different potential solutions to problems, as well as deepen your understanding of the system in which the problems unfold. Furthermore, simulations models which are developed on the basis of CLDs reveal the fact that it is not possible to improve the competitiveness of small retailers only with the government regulations on SSM. We could draw conclusion from the simulation runs that the best possible option to create a win-win

environment and avoid the 'winner gets the most' situation is to apply the long-term solutions together with short-term solution. Ultimately, the government policy will turn out to be effective when the root cause of SMR's vulnerability is remedied in harmony with business mediation system.

Despite the theoretical and practical contribution, this study has some drawbacks. A method of NUMBER (Normalized Unit Modeling By elementary Relationship) was adopted to formulate the mathematical equations for simulation. NUMBER is practically useful in comparing and evaluating the effects of the main policies by analyzing relative behaviors between variables with index data. For more sophisticated design of the model to depict a variety of real settings for the policy making, the empirical data are required. And a set of scenarios have to be developed to test the sensitivity of the system under investigation and find policy leverages.

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