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[Field Research]

A Study on the Improvement Plan of Business District Information System

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Abstract

Purpose – This study aims to suggest a developmental direction to small enterprisers who start their business. The developmental direction makes the small enterprisers more stable with providing the Business District Information System service, which offers the location and business area's information aimed at pre-enterprisers after analyzing its overcrowded index's current state and problems.

Research design, data, and methodology – This research proposes the developmental direction for helping the pre-small enterprisers to have more stability through examining the Business District Information System's—operated by Small Enterprise and Market Service—overcrowded index's current state and problems.

Results – This system has drawbacks about giving the start-up overcrowded index as follows: ① non-accurate consultative group for sharing the DB ② providing analysis information, not evaluation information ③ not to anticipate the changes of business types & the flow of business district and perceive the symptom data with providing predictive information.

Conclusions – This system should be more publicized through the mass media for making it approachable with collecting the user's opinion and investigating customer satisfaction & the level of awareness.

Keywords: Business District Information System, Start-up Overcrowded Index, Predictive Information, Pre-Small Enterpriser.

JEL Classifications: R58, R59, Z18.

1. Introduction

1.1. Background and Objectives

The social costs increase due to the vicious cycle caused by starting & shutting down business indiscriminately. It damages start-up markets in Korea even the rate of demand for opening new business becomes increasingly high.

The number of enterprisers in Korea is reducing consistently (5.97million in 2008 → 5.65million in 2014, economic activity census, National Statistical Office, hereinafter NSO) still the proportion of enterprisers is 1.8 times higher(27.4%) than OECD average by the year of 2012. Meanwhile, the number of small enterprisers annually increases(2.71million in 2008 3million in 2013, national business census, NSO); it affects on its density. Especially, the start-ups for living such as food, retail, whole-sale, and lodging industry get more overheated competition.

In this research, the enterprises with fewer than 4 employees is defined as small enterprisers by NSO investigation because there is no proper research following the law called 'Special Act for Restructuring Small Businesses and Promoting Traditional Markets'—regulated number of full time employees as 5(except for mining, manufactures, building and transportation industry; under 10 people per one enterprise admitted as small enterprise)—by related organization such as National Tax Service, NSO on the investigation how many small enterprisers exist.

<Table 1> The changes for Number of Enterprisers and Small Enterprisers by year

Division \ Year	2008	2009	2010	2011	2012	2013	2014
Number of Enterprisers	5,970	5,711	5,592	5,594	5,718	5,651	5,652
Number of Enterprises	3,264	3,293	3,355	3,470	3,602	3,676	-
Number of Small Enterprisers (Employees 1~4)	2,712	2,723	2,804	2,879	2,963	3,005	

Source: NSO(2008-2014).

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<Table 2> Density by Business Types for every 1,000 people

Types \ Year	2008	2009	2010	2011
Manufactures	5.2	5.5	5.8	6.0
Wholesales-Retail	15.6	16.0	16.6	16.8
Lodging/Food	11.5	11.8	11.8	12.0
Repair/Service	5.3	5.4	5.5	5.5

Source: NSO(2008-2011).

Basically, the business environment for small enterprisers can be described as having small sized capital scale, unskilled, and low barriers to bring excessive competition. It gets worse because of the youth unemployment and retirement of boomers; they want to start their own business instead of getting a job. Particularly, people in middle-aged are taking a big possession in start-up and shut down. 6 hundred thousand(62.8%) people in middle-aged open their business, while 5.83 hundred thousand (70%) close it. A growing trend start-ups is expected to be influenced continuously by the middle-aged people's retirement for the next years.

<Table 3> The Current State of Start-up & Closure Business by Age in 2012

Age \ Number of	Start-ups		Closures	
	Start-ups	Ratio	Closures	Ratio
Under 20s	95,748	10.0%	59,904	7.2%
30s	259,350	27.1%	189,412	22.7%
40s	301,905	31.6%	260,026	31.2%
over 50s	298,961	31.2%	323,329	38.8%
Total	955,964	100.0%	832,671	100.0%

Source: Statistics Annual Report for National Tax by NTS (2013).

Besides, the stagnant economy—such as Europe economic crisis—all over the world, domestic recession and major(large) companies' commercial supremacy make small enterprisers' conditions aggravated. This is why selecting the best business area is the most important factor that makes small enterprisers attain success because their business' scale is small. However, the urban environment becomes more disadvantageous to the small enterprisers due to reducing the number of suitable area in the commercial facility and increasing expense of launching the stores. There is a rising issue which is called "3 Low Phenomenon" presenting low income, low skilled, and low hope for living according to the research report for small enterprisers from SEMAS, 2015. What was worse, 36% of small enterprisers earn lower than the minimum cost of living(2.08 million won / family of five) and 14.3% of them make lower than 1 million won for the average revenue per month(SEMAS A, 2015). Also,

there are research results from NSO in 2013 which accounts for the enterprisers' rate of poverty(24.1%) based on individual characteristic. It shows that enterprisers' rate is five times over than a regular employees(4.4%).

The Ministry of Strategy and Finance anticipated that the economic will be recovered with improving the domestic economy's state influenced by declining the oil price, maintaining extensive macro-supported policy, promoting the investment and consumption. (2016 Economic View Report, 2015). To vitalize the domestic market after MERS (Middle East Respiratory Syndrome), government carried out various support policies such as Grand Sale and Black Friday, but it is still pessimistic.

Some may argue that the cause of this crisis is directly attributable to the unfavorable distribution structure for small enterprisers, large companies' commercial supremacy & aggressive marketing strategy based on big data. However, some may realize that small enterprisers are to blame for this crisis because of their non-strategic management; it is not coped with the market changes.

The biggest and most changeable market change is consumer trend. Recently, there are rapid changes in consumption patterns; consumers want to use 'smart-on-line' system, buy 'small amount products' and go 'near'. According to the research on wholesales-retail industries by NSO, online shopping industries grew up 5.3 times in 2014 comparing with 2006 meaning that its revenue in 2014 comprises 6.1%(19 trillion won) of the total consumption market(except the car industry) which is 309 trillion won(NSO, 2014). Increase in number of small families such as one person households and aging phenomenon encourage people to purchase small amount products or go nearby markets from their house; it boosts convenient stores' revenue. Plus, consumers become more complicated comparing with the past that they are now willing to buy something trendy and convergence with culture, not just purchase something simply. Maybe, young people's tendency—not to go the local business and traditional markets which are insufficient for attraction, trendy food and service—is inevitable result.

Of course, the main reason for reducing small enterprisers' revenue is to blame for large companies' commercial supremacy. This is why government legislates the law for protecting small enterprisers and make following policies. Nevertheless, large distributions expand their business through formulating the mutated type of SSM. In fact, small enterprisers are in adverse condition when they come to the distribution structure because they should purchase the raw materials, supplies and sale goods, etc. 12.5% over than large companies and franchises which explain small enterprisers' shortage of cost competitiveness. (Small Enterprise Development Agency, 2013).

<Table 4> Small Enterprisers' Economic Sentiment

Section \ Year	2014		2015											
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sentiment	52.5	53.4	51.1	60.0	60.4	66.7	66.3	43.5	64.2	63.0	69.0	71.4	63.2	-
Prospect	100.5	96.4	84.2	77.5	118.4	93.3	83.9	75.5	66.0	79.9	94.1	98.3	90.4	84.2

Source: SEMAS(2015).

In spite of many handicaps, small enterprisers should have their own strategic plans for overcoming their defects. Most of small enterprisers start their business just for living because they do not have alternatives. During the preparation process such as market research, selecting the zone, financing etc., small enterprisers are curious about the number of competitors around the zone, sales estimates, the past business type, current state of the business district. Nevertheless they are wondering whether they initiate and invest their business without detailed reviews. Even though small enterprisers have difficulties for selecting the location (42.6%) and business type (16.5%), 53.1% of them do not use the business district analysis data. In addition, only 12.3% of them take part in start-up educational classes and 9.5% of them tried to get the consulting (SEMAS A, 2015). These unprepared small enterprisers make their business shut down in a 1 year by themselves; their survival rate is only 60.1% (NSO, 2015). Without planning any strategies, people who do not have any professional skills choose the easier one which has lower barriers to entry causing the problem of increasing the rate of business closure. To solve the problem, government has provided the small enterprisers & pre-small enterprisers with the Business District Information System at no cost since 2006 to prevent them from excess competition and make them ready for initiating their business. With this system, people can get the knowledge and information about the state of the business districts easily; they can experience planning the strategies and get differentiated service indirectly. This efficient system is developed for small enterprisers to more convenient by collecting and offering the big data which is not approachable individually.

This study aims to suggest a way of making small enterprisers start their business more stable with reviewing the Business District Information System's overcrowded start-up index—which also providing the information about business district—operating state and problems. Plus, the authors have a purpose to strengthen the applicable and customized supporting system for small enterprisers on the basis of the results from this research with normative study methodology (Youn & Kim, 2007).

2. Necessity of Supporting Small Enterprisers and History

2.1. Necessity of Vitalizing Small Enterprisers

Socially, small enterprisers play very important roles and have value of their existence because government can reduce burden thanks to them when it comes to the welfare system and the virtuous circulation of local economy. Reducing the revenue and customers in the poor state of domestic economy can be the reasons why the average number of employees per one enterprise gradually decreases every year; the average is now 0.89 people per one enterprise (SEMAS, 2015). The most critical problem is that small enterprisers' collapse caused by these phenomenons makes domestic economy and the local

business more constricted because one of the best roles of the small enterprisers is their good and stable circulation and making profits can bring a positive effect on job creation around the local business district.

Some people are doubtful about the effectiveness of governmental support system for the small enterprisers. However, one will discover that the main drawback to it is the big loss of social cost if there are no more supports from government. According to the study on how the closure of small enterprisers' business affect the trend of economic performance and the social cost, the rate of shutting down increases by 12.8%(real figure 14.6% → assumption 27.4%) without the government support. These will cause the rate of social cost to be increased from 30.3 trillion won to 5.6 trillion won at maximum to minimum. At the time series method point of view, total social cost is estimated to be increased 38.6 trillion won at maximum and 7.2 trillion won at minimum caused by the closures of small enterprises until 2020; the individual's amount will be increased approximately from 64,494 won to 11,946 won by the standard of 2015. Consequently, the government support has a positive influence on preventing loss of bearing extra welfare budget(annually 5.3 trillion won) by helping small enterprises not to close their business.(SEMAS B, 2015).

2.2. History of Small Enterprisers

The support system for the small enterprisers and the traditional markets takes marginal portion in the government policy. After the IMF, the government tried to pay attention to solve the unemployment problem; yet inserting a clause "traditional market" in the Distribution Industry Development Act in 1997 was all what government did. Since then, 'The Act on Supporting Small Business' and 'The Act on Adjusting Structure of Small and Medium Business' and 'Special Act for Restructuring Small Businesses and Promoting Traditional Markets' had been enacted by government in 2000 and 2002 respectively. This has been the legal basis of the very first establishment for the Small Business Development Center which is led by government. And then, an interagency among the Small and Medium Business Administration, Ministry of Trade, Industry, and Energy and Ministry of Health and Welfare, etc. planned 'comprehensive plan for the small business owners' for protecting them; it was the true meaning of protecting the local business. The supporting system for the small enterprises and the traditional markets has have completion and systematic structure with legislating 'Special Act for Small Manufacturers in Cities' in May 2014 and revising the 'the Act on Protecting and Supporting Small Enterprises' in December 2015; also establishment of the specialized organization for them called SEMAS in 2014 and new establishment for 'Promotion Fund for Small Enterprise & Market' in 2015 make the system more organized by incumbent government. In 2015, 365 policies were enforced with giving 2.3 trillion won support by government in total. The central government financially supported 2.1 trillion won(89.5%) on 80 policies, meanwhile the local government supported 0.2 trillion won(10.5%) on 285 policies. Analyzing by

the sectors, infrastructure takes the biggest part(24.4%, 89 policies with 553.2 billion won supported) followed by Marketing 23.6%, Finance 21.4%, Manpower and Education 16.2% and Technology 14.5%. The support policies for the small enterprisers in Growth stage, have the highest percentage (82.2%, 300 policies with 1.9 trillion won supported) followed by Initiative stage 11.5%, Decline stage 6.3% by analyzing the small enterprisers' life cycle. The cross analysis between life cycle and functional indicates that the marketing support policy for the small enterprisers in Growth stage provided at the most(23%). The percentage of policies for improving the infrastructure(19.2%) and supporting financial(15.5%) in Growth stage followed after. It represents that the present support system focuses on providing the infrastructure support such as giving common equipment, common distribution and publicizing, etc.

Of course all the small enterprisers in the stages of life cycle need help but the one who would like to start his/her business in the initiative stage should be considered as more important, careful and deliberate attention because selecting a proper location, planning a differentiated strategies, having OJT (on-the-job-training) experience and testing the customer response before their start are the most rudimentary step for making them have more viability. These prepared small enterprisers will be grown up as successful business owners who do not need any support for restoration the business meaning that their success has a beneficial power for making a good circulation of the small enterprises' developmental structure.

Therefore, the most needed support system for the pre-small enterprisers is to provide the appropriate business analysis information based on the big data from the both —public and private— which is unapproachable to individual.

3. The State of Overcrowded Start-up Index in the System & Suggestion

3.1. Introduction to Overcrowded Start-up Index

In the government policies, the Business District Information System offers the big data as mentioned above. It has offered the data at no cost since 2006 for the small enterprisers & pre-small enterprisers to prevent from excess competition and make them prepared for initiating their business with stabilities. The main information provided by this system can be divided as two aspects; one is the current state such as statistics, progresses. The other one is evaluation information such as excessiveness, competitiveness. The analysis of business area service offers a certain area or certain business type's current state in 49 forms of information as follows: 14 of business types, 7 of revenues, 17 of population, 11 of location, etc.

The store's history gives the information about the changes of open & closure and past career of business management. Among those information, small enterprisers should pay attention to the overcrowded start-up index which provides anticipated data based on a consumption level, floating population and

density in the area for informing the competition level with aggregating the index such as prospect of sale by utilizing a 'Warning Light; Safe(Green)-Caution(Yellow)-Risk(Orange)-High Risk(Red)'. It offers information like <Table 5> indicated; 10 types of DB such as shopping area, population, traffic, GIS, market value of rent, administrative, etc and 8,900 data in 27 types collecting from 37 related organizations. Then, the system provides the anticipated appraisal information of the certain area's competitiveness and future rate of sales potential comparing to the present one using well-merged combination of those data. In 2016, it activates the service on offering the data about 10 types of businesses(Chicken Restaurants, Coffee Shop, Snack Bar, Fast Food Shop, Bakery, Convenient Store, Cosmetic Store Retail, Beauty Salon, Gym, Karaoke Room) in 7 cities — Seoul, Kwangju, Daegu, Busan, Wolsan, Incheon, Daejeon.

The users will see the <Figure 1> when they select the location and the business type in their destination for start-up. The left one indicates a degree of risk using the warning light; Safe(Green)-Caution(Yellow)-Risk(Orange)-High Risk(Red). Then, the right one shows the overcrowded start-up index which is accumulated data in last two years. 'Total Number of Potential Demands' is based on the scales, types and consumption patterns of living, working, floating population which influences on the right to guarantee the business district. The total number of minimum sales for maintaining the business in the guarantee area based on average sales of enterprises which maintain their business for 3 years has been calculated as 'Total Number of Ideal Revenue'. And, 'Total Number of Enterprises' represents the total number of selected business type in the guarantee area.

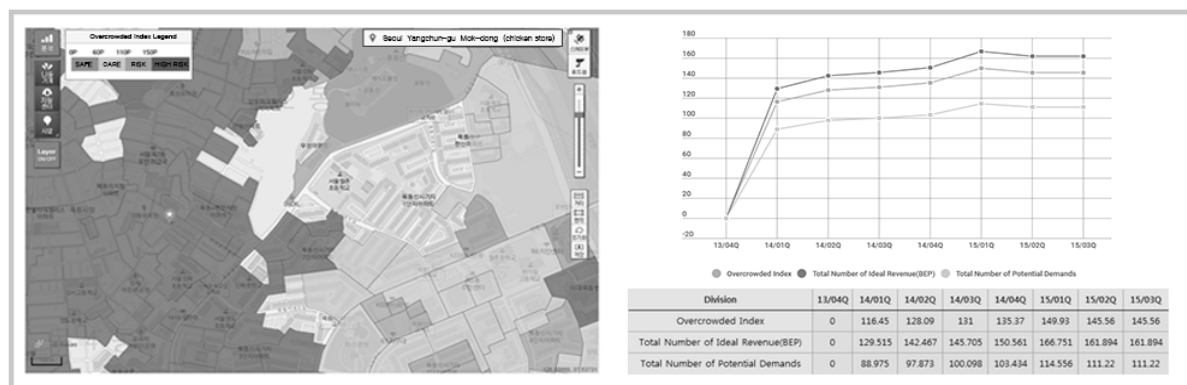
However, there are limitations to use a 2014 index for the system; having problem with not including the demands such as floating population & resident population and being based on total sales not a gain by investment which can be considered as logical leap. Also, the statistics divided in administrative area or main districts would be valuable to the policy maker or scholars but not to the pre-small enterprisers; they should be aware of the specific business type and area for deciding whether start their business or not.

To solve these problems, SEMAS has improved the overcrowded start-up index in 3 aspects— base, demand and supply— in 2015. First, the system imposed a method for estimating the influx of customers as the base aspect. This method is to analyze the over-dense in the selected area by the system users based on the pattern of using credit cards with a distance of customer inflow, average consumption zone and a rival store's location which is automatically clustered by industrial classification. It is significant improvement that data's range has been become changeable reflected by the users' specific demand; they want to choose the particular area by themselves even though it is virtual preparation. In addition, this function is very useful for planning the strategies of customer service marketing, taking advantages position first, etc.

<Table 5> The Basis DB of Business District Information

Section	Data Name		Categories	Sources Provided by (Organizations)	Provided as	Number of holdings
Shopping Area DB (1 kind)	Combined into 1 kind	Card Affiliate DB	Private	NICE Information Service	Raw	36,000,000
		SK Planet POI	Private	SK planet	Raw	300,000
		Open& Closure Data of Shopping Malls	Public	SEMAS	Raw	1,500,000
		License Data	Government	16 Local Governments	Raw	1,000,000
Population DB (6 kinds)		Traffic Research	Public	SEMAS	Researched Statistic	3,000
		SKT Floating Population	Private	SK Telecom	Researched Statistic	-
		Walking Traffic Research	Private	Open Mate	Estimated Statistic	180,000
		Census of Resident Registration	Government	Ministry of Security and Public Administration	Researched Statistic	10,710
		Estimated Census by Lot Numbers	Private	Open Mate	Raw	4,000,000
		Number of Workforce	Private	NICE Information Service	Statistic	360,000
Transportation DB (2 kinds)		Numbers of Vehicle Registration	Government	16 Local Governments	Researched Statistic	232
		Numbers of getting on & off (Subway)	Public	6 Urban Railway Corporations	Researched Statistic	734
Property DB		Public House(APT) DB	Government	Ministry of Land, Infrastructure, and Transport	Raw	470,000
Rental rate (1 kind)	Combined into 1 kind	Researched Rent Market Price	Public	SEMAS	Researched Statistic	1,189
		Analyzed Rent Market Price	Public	SEMAS	Raw	263,414
		Analyzed Rent Market Price	Public	Korea Appraisal Board	Researched Statistic	3,000
Enterprises DB (4 kinds)		NICE Enterprises DB	Private	NICE Information Service	Raw	200,000
		Enterprises NSO DB	Government	National Statistical Office	Researched Statistic	3,570
		Main Facilities for Gathering	Public	Agencies of Various Levels	Raw	200,000
		Store History DB	Space	16 Local Governments	Raw	1,000,000
Sales DB (2 kinds)		Statistics by Revenue	Private	BC card	Estimated Statistic	360,000
		Statistics by Business Districts	Private	BC card	Estimated Statistic	360,000
School DB		School DB	Government	The Education Ministry	Raw	20,000
GISDB (4 kinds)		National Main Business Districts	Public	SEMAS	Raw	1,189
		Daum Normal Range	Private	Daum	Image	-
		Daum Background Image	Private	Daum	Image	-
		Daum Road View	Private	Daum	Image	-
Base DB (5 Kinds)		Lot Numbers DB	Government	Ministry of Land, Transport and Maritime Affairs	Raw	37,500,000
		Administrative District DB	Government	Ministry of Security and Public Administration	Raw	3,570
		Postal DB	Public	KOREA POST	Raw	84,000
		New Postal DB	Public	KOREA POST	Raw	-
		New Adress DB	Government	Ministry of Land, Transport and Maritime Affairs	Raw	7,890,000

Source: Own



<Figure 1> The Warning Lights of Overcrowded Start-up Index & Explanation

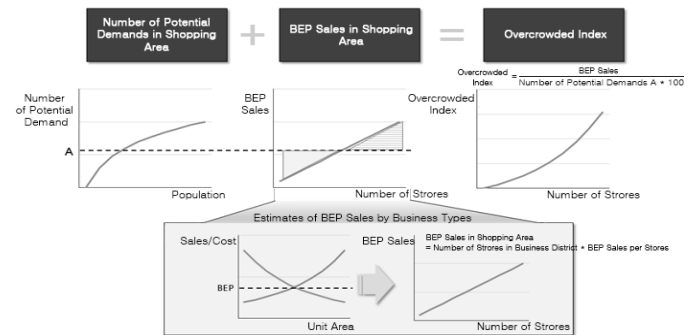
Second, this system clarifies the main cause of demand by analyzing the consumption disbursement in types of business and area with utilizing the data from examining the potential demand by living population, number of workforce, floating population and estimating a monthly average the consumption amount classified by business type, gender and age. Last, the users can get the data based on the monthly average revenue of the stores which basically maintain their business over 3 years and the mutual effect between the rivals—sharing the right to guarantee the business district—for applying the investment costs after estimating and adding the ideal revenue(or Break Even Point).

Now, the overcrowded start-up index is improved by those factors and then calculated by the ideal revenue(or Break Even Point) for sustainable management compared with the population structure in the business area and potential demand by different types of business. For this, the index is divided into 4 types of modeling as follows: guaranteeing the profits in the specific business area, the rating of business district, the ideal revenue(or Break Even Point), measuring the potential demand for calculating the ratio of Break Even Point. The right to guaranteeing business area for the store owner can be clustered based on the data of credit card revenue from the small zones around the store—living town and companies—which people spend money or use the credit card. The ideal revenue is needed for sustainable management in “that business area”. To investigate it, the system with the data will be come up after calculating the rating of business area in metropolitan cities → BEP revenue by rating of business zones → BEP revenue by rating of small business district. The system is systemized to use the rating of business zone calculated by the total sales amount per unit area for narrowing the gap from the cost aspect when BEP is calculated. Also, the business area is classifies and measured by comparing the fixed cost such as rent fee per unit area for verifying its validity. Plus, the overcrowded start-up index encompasses indirectly influencing stores which is not included in the samples of being investigated for calculating the index because these are not located in the business zone. Measuring the potential demand is to estimate the number of living population, workforce and floating population in the business area but the researchers should be aware of the characteristic of floating population; is not directly related to consumption. This is why the amount of spending money by floating population is calculated as two aspects; the amount of consuming per person is a dependent variable and the attributes of the area, the gathering facilities and density of same business are the independent variable.

The <Figure 2> shows the process of calculation of this model. It determines the overcrowded start-up index by the required ratio of BEP(Break Even Point) sales for being sustainable comparing the potential demands in business types by population structure and location characteristic in the guarantee area. To clarify the main cause of demands, the system analyzes consumer's expenditure by business type and the nature of the business area. The per capita potential demand by living population and working people has been

calculated into the monthly average amount of consumption by business type, gender and age. The per capita potential demand by floating population has been estimated by the monthly average amount of consumption by business type, gender, age, date and time.

The main cause of supply comes up with the monthly average sales of enterprise which maintains the business over 3 years for reflecting the cost per store. Also, it reflects the mutual influence from store by store located in the guarantee area; the total number of BEP sales is based on this data.



<Figure 2> Definition of Overcrowded Start-up Index & Concept Map

3.2. The State of Overcrowded Start-up Index by the Business District Information System

According to the Business District Information System by third-quarter of 2015, the 50.7% region is in the high-risk and the rate will go up to 68.3% if risk stage is included. Service industry takes a large part(54.2%) of being overcrowded followed by food industry(54.0%) and retail industry(36.8%). The average ratio of 7 metropolitan cities in high-risk is 50.7%; the highest one is Seoul (68.4%) and the lowest one is Daegu(37.1%). Analyzing by the business types, Bakeries in Seoul has 81.9% overcrowded rate which indicates it is the highest one followed by Fast Food Shop in Seoul(78.2%), Chicken Restaurants in Seoul(75.7%), Coffee Shop in Seoul(75.2%), Bakeries in Incheon(72.2%). As those show, the food industry is at high when it comes to the density.

The rate of overcrowded by business types indicates that the service industry's degree of high-risk is 54.2% which is higher than other business types relatively. The highest one is operating Karaoke Room(68.0%) among the all types of business. In the food industry, 54% of 7 metropolitan cities are highly risky region for the start-ups; especially the bakeries have rate of 67.5% in high-risk stage and the fast food shops take 57.1% of being risky meaning that these are riskier than others.

Regarding the Retail industry, 36.8% of entire region is in high-risk stage. Convenient Stores in Wolsan and Daegu are generally okay comparing other regions due to its rate of risky only takes 15.8%. It implies that the convenient stores make a profit rather than there are few. By regional examining the rate of overcrowded, one can discover that Seoul has the highest

percentage of each business types; Seoul's overcrowded rates are as follow: Food industry(89.5%), Service industry(81.7%), Retail industry(71.3%). Incheon is on the second highest which is 74.4%; especially 78.9% in the Food industry is overcrowded.

Busan is the lowest city of overcrowded comparing to the others; its average is 56.5%. To classify into the business types, it has 60.0% of Service industry, 59.1% of Food industry and 44.4% of Retail industry.

<Table 6> The current state of overcrowded start-ups by business types & regional in third-quarter in 2015

Seoul							Kwangju						
Type of Business		Safe	Caution	Risk	High-Risk		Type of Business		Safe	Caution	Risk	High-Risk	
	Food	Snack Bar	1.8%	12.1%	18.6%	67.5%		Food	Snack Bar	6.9%	25.0%	22.8%	45.4%
		Bakery	0.8%	6.0%	11.3%	81.9%			Bakery	4.1%	12.0%	13.8%	70.1%
		Chicken Restaurants	1.1%	9.2%	14.0%	75.7%			Chicken Restaurants	5.0%	24.6%	23.1%	47.3%
		Coffee Shop	3.6%	9.4%	11.9%	75.2%			Coffee Shop	9.6%	21.3%	18.1%	51.1%
		Fast Food Shop	0.8%	7.7%	13.4%	78.2%			Fast Food Shop	7.1%	16.3%	12.3%	64.3%
	Retail	Subtotal	1.6%	8.9%	13.8%	75.7%		Retail	Subtotal	6.5%	19.8%	18.0%	55.6%
		Convenient Store	5.2%	27.0%	24.8%	43.1%			Convenient Store	16.6%	40.8%	19.4%	23.3%
		Cosmetic Store	8.8%	16.6%	12.8%	61.9%			Cosmetic Store	13.2%	20.1%	13.8%	52.9%
	Service	Subtotal	7.0%	21.8%	18.8%	52.5%		Service	Subtotal	14.9%	30.5%	16.6%	38.1%
		Karaoke Room	4.1%	10.4%	9.9%	75.7%			Karaoke Room	4.7%	12.9%	12.5%	69.9%
		Beauty Salon	4.6%	15.1%	17.6%	62.7%			Beauty Salon	5.0%	25.5%	24.7%	44.8%
		Gym	5.5%	15.5%	16.5%	62.5%			Gym	8.2%	24.8%	19.7%	47.4%
		Subtotal	4.7%	13.7%	14.7%	67.0%			Subtotal	6.0%	21.1%	19.0%	54.0%
Subtotal		3.6%	12.9%	15.1%	68.4%	Subtotal		8.0%	22.3%	18.0%	51.7%		
Busan							Daejeon						
	Food	Snack Bar	15.5%	38.4%	20.8%	25.2%		Food	Snack Bar	6.8%	23.6%	22.6%	47.0%
		Bakery	3.2%	17.4%	20.4%	59.0%			Bakery	2.8%	11.8%	15.6%	69.8%
		Chicken Restaurants	7.7%	31.2%	24.6%	36.4%			Chicken Restaurants	2.0%	15.5%	14.8%	67.7%
		Coffee Shop	31.5%	30.3%	13.3%	24.9%			Coffee Shop	4.1%	20.0%	18.0%	57.9%
		Fast Food Shop	8.0%	21.0%	18.5%	52.5%			Fast Food Shop	3.6%	18.8%	21.9%	55.7%
	Retail	Subtotal	13.2%	27.7%	19.5%	39.6%		Retail	Subtotal	3.9%	17.9%	18.6%	59.6%
		Convenient Store	29.5%	32.1%	16.8%	21.6%			Convenient Store	12.0%	36.7%	21.4%	30.0%
		Cosmetic Store Retail	21.0%	28.7%	15.5%	34.8%			Cosmetic Store	12.4%	21.4%	14.6%	51.6%
	Service	Subtotal	25.3%	30.4%	16.2%	28.2%		Service	Subtotal	12.2%	29.1%	18.0%	40.8%
		Karaoke Room	7.8%	16.9%	14.4%	60.9%			Karaoke Room	3.2%	13.5%	12.8%	70.6%
		Beauty Salon	14.3%	30.2%	20.2%	35.3%			Beauty Salon	6.8%	28.7%	22.9%	41.5%
		Gym	19.8%	30.8%	17.1%	32.3%			Gym	4.4%	20.4%	18.1%	57.2%
		Subtotal	14.0%	26.0%	17.2%	42.8%			Subtotal	4.8%	20.9%	17.9%	56.4%
Subtotal		15.8%	27.7%	18.2%	38.3%	Subtotal		5.8%	21.0%	18.3%	54.9%		
Daegu							Wolsan						
	Food	Snack Bar	10.6%	33.2%	25.6%	30.6%		Food	Snack Bar	10.3%	24.6%	21.1%	44.0%
		Bakery	6.8%	18.2%	18.0%	57.0%			Bakery	2.0%	14.3%	21.2%	62.5%
		Chicken Restaurants	7.6%	37.1%	28.6%	26.6%			Chicken Restaurants	7.9%	23.6%	24.1%	44.4%
		Coffee Shop	27.3%	35.3%	15.1%	22.4%			Coffee Shop	13.8%	20.0%	12.5%	53.7%
		Fast Food Shop	13.2%	24.9%	17.7%	44.2%			Fast Food Shop	12.1%	25.6%	21.1%	41.2%
	Retail	Subtotal	13.1%	29.7%	21.0%	36.2%		Retail	Subtotal	9.2%	21.6%	20.0%	49.2%
		Convenient Store	24.0%	44.4%	15.9%	15.8%			Convenient Store	34.0%	34.4%	15.8%	15.8%
		Cosmetic Store	17.3%	25.8%	17.2%	39.7%			Cosmetic Store	22.3%	21.9%	12.8%	43.0%
	Service	Subtotal	20.7%	35.1%	16.6%	27.8%		Service	Subtotal	28.2%	28.2%	14.3%	29.4%
		Karaoke Room	4.0%	14.7%	16.5%	64.8%			Karaoke Room	5.9%	17.6%	14.1%	62.4%
		Beauty Salon	6.6%	26.2%	27.0%	40.2%			Beauty Salon	11.2%	24.6%	19.7%	44.5%
		Gym	17.4%	33.7%	19.8%	29.2%			Gym	11.4%	24.1%	18.5%	46.0%
		Subtotal	9.3%	24.9%	21.1%	44.7%			Subtotal	9.5%	22.1%	17.4%	51.0%
Subtotal		13.5%	29.4%	20.1%	37.1%	Subtotal		13.1%	23.1%	18.1%	45.8%		
Incheon							Total						
	Food	Snack Bar	7.6%	21.5%	21.3%	49.7%							
		Bakery	3.2%	12.2%	12.4%	72.2%							
		Chicken Restaurants	4.0%	15.0%	21.7%	59.4%							
		Coffee Shop	6.9%	15.6%	12.1%	65.3%							
		Fast Food Shop	4.8%	15.1%	16.4%	63.8%							
	Retail	Subtotal	5.3%	15.9%	16.8%	62.1%							
		Convenient Store	14.5%	35.4%	21.7%	28.4%							
		Cosmetic Store	16.5%	18.5%	11.3%	53.7%							
	Service	Subtotal	15.5%	27.0%	16.5%	41.1%							
		Karaoke Room	6.0%	13.0%	9.5%	71.5%							
		Beauty Salon	5.9%	22.2%	22.9%	49.0%							
		Gym	6.6%	11.7%	11.1%	70.7%							
		Subtotal	6.2%	15.6%	14.5%	63.7%							
Subtotal		7.6%	18.0%	16.0%	58.4%								

Source: Own

3.3. Suggestion for Improvement

The Business District Information System which provides the relevant business analysis based on the big data from the both—public and private—which is unapproachable to individual has important task to perform as follows. First of all, it should maintain the accuracy and be improved. It can be very serious problem if the system offers the analysis data about the coffee shop to the pre-small enterpriser without considering the large scale of coffee shop is located nearby where she or he wants to open her or his store. Considering the 1.9 million enterprises change the business types(31.2%, researched by National Tax Service, 2013), the Business District Information system is pretty accurate and in fine condition to provide the information because 91.0% from the system was correct in 2015 comparing to having average number of 90.4% in the industries such as beauty, food, etc licensed by Ministry of Government Administration and Home Affairs during the past 3 years.

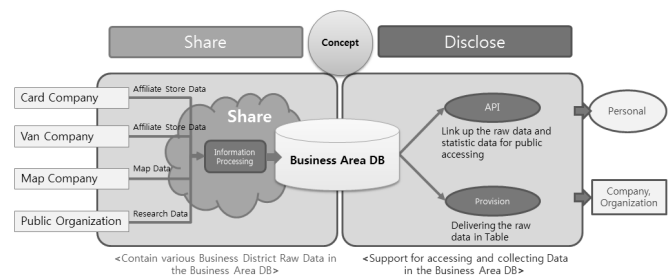
Still, putting effort on improving the accuracy of the system is very important considering the aftereffect on the small enterprisers if there is just 1 store omission. This can explain why the consultative group for sharing the DB operated by SEMAS from 2015 should be more active. There is a limitation for enhancing the accuracy of small enterprise' DB because it is so variable caused by the small enterprisers' state such as shutting down or changing the business type nevertheless their DB plays very important role for improving the policies and collecting the information & statistic data which is accordance with the demands; not easy to collect by any organizations or companies. This is why SEMAS started to integrate and filter the data cooperating with the 'consultative group' composed of 11 related organizations—Korea Appraisal Board, BC card, NAVER, NICE Information Service, SKT, etc.— and mutually interchange. Not only the related organizations but also the public can use this big data free from December, 2015; it brings positive effect on reducing the burden of bearing the costs of collecting and managing the data. Adjusting the business district data which was not organized to the high quality one is value enough by itself, still the best achievement is to reduce the social costs as the data has been released to the public for free.

For the next future plan, the author has expectation of operating expanded DB sharing center and combining the data which indicating symptoms of business closure such as decreasing amount of gas, water use and card traffics; it will be very beneficial for helping the small enterprisers not to be collapsed and planning the relevant policies.

The <Figure 3> is 'The Business Area DB Sharing Center & Concept Map'. The small enterprise and the shopping area's DB is considered as very important data for developing the information service, statistic and policy related them, but still, there is a limitation for enhancing the accuracy of small enterprise' DB because it is so variable caused by the small enterprisers' state such as shutting down or changing the business type. Even though those data is highly demanded in the market, any organizations or companies cannot accord with its expectation for collecting the accurate data. It causes over

expenses for collecting, managing and publically using at the national level; annually over 20 billion won is spent individually on building a data management system for doing the research on entire business by NSO or running the Web portal, navigation system by companies like Naver. Thus, Business District Information System started to collect, integrate and filter the data centered shopping area's DB from 2015 sharing with from information provider to the public. The cooperation group is composed of 11 related organizations—Korea Appraisal Board, BC card, NAVER, NICE Information Service, SKT, etc.

Through the DB sharing center, one can expect to have systematic structure of enhancing the contents for small enterprises such as Business District System based on shopping area DB and providing additional information by opening economically high qualified information(DB) which has been well prepared and reworking the data collected from both of government and privates. In addition, the organizations and the companies will be able to have cost saving effect thanks to this DB sharing system, and develop more systematic business for integrating the data.



<Figure 3> The Business Area DB Sharing Center & Concept Map

Secondly, the way of providing the information should be changed. It should be easier and funnier so that people can use the data easily and make decisions refer to it. In other words, the system should be systemized as the clearest one when the small enterprisers want to collect the data; it should provide appraisal data not analysis data. In this respect, the 'Virtual Experience for Start-ups' which is middle and long term plans from 2016 to 2018 by SEMAS will help the pre-small enterprisers a lot. This is the simulation for experiencing a virtual store from initiating to closing or changing the business type accordance with the life-cycle of small enterprisers based on the real information; it leads the pre-small enterpriser to be ready for starting their business with intensive preparation. Also, the system suggests the policies by the small enterprisers' life cycle so that they can be aware of understanding the policies' objectives.

According to the plan, the simulation starts to check the basic and administrative information such as floating population, sales of credit card use, licensing and tax called preparation stage. Then, the users should pass all the steps of getting a loan, renting, firefighting, sanitary, interior, managing employees, obtaining raw materials and contract for finally running their business. Plus, this simulation is influenced by rivals' appearance

<Table 7> Expectation Effectiveness by Life-Cycle of Small Enterprisers

Stage	Virtual Start-up	Stores Registration	Firms, Consultants	Government, Public Organization
Start-up Preparation	Checklist for Start-up Provide Info for security & sanitary Learn the process of licencing, law, tax	Rent fee, Premium, Monthly Sales, POS interlocking, etc.	Brand Info Tips for being affiliates Tips & Notes for start-up	Policy Fund Loan Info Start-up Education Start-up Consulting
Managing & Running Business	Experience for operating episode by business types & regional Implement mission by stages Connection of public relations for stores & product commerce		Provide mission by business types Moot Start-up Competition Knowhow for Start-up	Publicizing the government Policy Propagation for SEMAS Business Propagation for Risk-management
Closure	Passing on the know-how of shutting down the business Providing data for purchasing buildings & expanding affiliates, if succeed		Introduction to its stores Consulting for the business location & start-ups Recommending the other stores	Support for Small Enterprise Restoration * Hope Return, Package for restoration Policy Fund Loan Info
Based on ICT	Providing statistical model based on real floating population, anticipating sales data from mobile company Extending through providing 3D Building, Interior VR			

Source: Own

and revenue representing that this is the reason why the simulating system in the Business District Information System is differentiated from Tycoon which distributed by privates and also the existed one. Thanks to it, the way of providing the information has been changed to be more realistic. In addition, people can try to operate the virtual store with ICT convergence using VR, 3D, O2O, etc. The interesting thing is that the user can set up a virtual situation such as consultant helps the user to plan management strategies and purchasing the products between the virtual stores. Permitting consultants or salesman's promotion for their own goods can be a driving force of making a good business case which is combined with advantages from both of public and private.

Lastly, the information should be diversified. Analyzing the trends based on big data has the reason to plan the most optimum strategy with consumption pattern analysis. It is time for Business District Information System to provide 'start-up's predictive information by time series method'. The predictive information is composed of the data and symptoms around the business area for small enterprisers and it gives the information like weather chart form. It helps small enterprisers not only to make their own decision for starting business but also to plan management strategies. Besides, it can be used for developing and improving the support system effectively. Forecasting the changes in frequency, stock price, BSI, analyzing of effect by business area & types and finding any linkage between main index and particular business type (eg., forecasting the changes in sales affected by the business type relied on raw materials such as Bakeries) can minimize the bad influence.

Above this, there are some kinds of information as follows: 'predictive information for business district changes' which forecasts the current state and the future using floating population, revenue, workforce, living population, market price of rent, vital index, overcrowded index and economic index and 'analysis for wait-list' which provides the prediction for

overcrowded zone using opening & closure analysis, business district analysis data. Of course, a control tower and management system will be needed for forecasting the local business's state and checking the rate of decline with monitoring the current state in real time.

4. Conclusion

This paper studied to suggest a developmental direction for small enterprisers' business stability with providing the Business District Information System service which offers the location & business area's information aimed at pre-enterprisers after analyzing its overcrowded index's current state and problems. The Business District Information System offers the start-up overcrowded index which is the anticipated data based on a consumption level, floating population and density in the area utilizing a 'Warning Light; Safe(Green) - Caution(Yellow) - Risk (Orange) - High Risk(Red)' when the new business initiated. In 2016, it provides the data about 10 types of businesses in 7 cities to the pre-small enterprisers.

SEMAS found the drawbacks of the index in 2014 such as excluding the demands such as floating population & resident population and being based on total sales not a gain by investment. Thus it has improved the overcrowded start-up index in 3 aspects— base, demand and supply— in 2015.

First, this system includes the right to guarantee the business district. Second, it has been improved as getting the information with estimating the monthly average consumption cost through analyzing business type, gender and age. Last, the data has been upgraded to use the monthly average revenue of the stores which basically maintain their business over 3 years and the mutual effect between the rivals—sharing the right to guarantee the business district—.

In spite of these efforts, the Overcrowded Start-up Index has

some problems to consider as follows: firstly, 'the consultative group' for sharing the DB should be more active for making the data more accurate preparing for bad influence by omitting data. Secondly, the system should be easier to use providing appraisal data for the public so that people can make decisions for starting the business refer to it. For this, 'the simulation service' for experiencing a virtual store prepared by SEMAS should be actualized. The last one is to provide start-up's predictive information by time series method like whether chart which forecasts the current state and the symptoms

As mentioned before, this study aims to suggest a way of making small enterprisers start their business more stable with reviewing the Business District Information System's overcrowded start-up index—which also providing the information about business district—operating state and problems. Even though government suggest and try to implement good policies or system for the start-ups, it would be useless if small enterprisers are not aware of. Therefore, there should be further researches for striving to have more public relations through mass media so that the policies and the system can become more approachable with collecting the user's opinion and investigating customer satisfaction & the level of awareness.

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