

Study on Measures to Improve Fresh Food Sales at Military Commissaries (PX)

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Abstract

This study aims to confirm the appropriateness of fruit and vegetable sales at military commissaries, with the purpose of enhancing the physical health and morale of military personnel. In order to achieve this objective, we examined the actual conditions of fruit and vegetable sales at military commissaries and analyzed the soldiers' awareness of fruit and vegetable sales through questionnaire surveys. The conclusions of this study are as follows: Firstly, fresh fruits and vegetables were not sold at military commissaries. Secondly, soldiers acknowledged the need for the consumption of fruits and vegetables and strongly expressed the desire for these fresh food products to be sold at military commissaries. Although the ROK Navy privatized military commissaries for the purposes of increasing management efficiency of national defense and strengthening combat power by transferring PX salesclerk soldiers to join combat personnel, this effort produced a negative effect of price increase. The following are proposals for improving this condition: fruit and vegetable products should be introduced to military commissaries through military welfare funds; fresh food markets should be established by closely cooperating with the local community's agricultural producers; processed fruit and vegetable product (dry, frozen, airtight packaged, etc.) sales should be increased; and the privatization of the navy commissaries should be abolished.

Keywords military commissary, PX (postal exchange), fruits, vegetables, fresh foods

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1. Introduction

Anyone who served the South Korean military will have fond memories of the PX (military commissary). The purchase of a Choco Pie at the PX would help one to not only forget the sense of fatigue from training rigorously, but also all other worries and concerns. The PX is not merely a place where one can purchase and enjoy eating a good snack. Indeed, the purchased snack acts as a bridge, transforming the PX into a counseling center where one can engage in heartfelt conversations with a fellow comrade. The PX can also act as a socializing room where one can spend an enjoyable time with friends and lovers. It is a beloved banquet hall that provides soldiers with the only place where they can share various stories, news, and laughter.

In order to successfully carry out the mission of protecting the people's lives and properties, as well as defending territories, the military must possess strong combat power. Although having quality weapons and thorough training is important, high morale is a necessary prerequisite in order for the military to have strong combat power. There is a particular need to boost morale and motivate willpower of these young soldiers mostly in their twenties, who are performing the mandatory yet noble duty of national defense (Ju-youn Yang et al. 2016; Heon-soo Kim 1998). In order to meet this need, the military is operating measures to boost the soldiers' morale through various welfare systems and facilities. The military commissary is probably the only welfare system that is adored by all the soldiers.

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Appetite is a basic human instinct. As such, satisfying one's appetite brings a sense of gratification and comfort, while suppressing it causes stress (Sun-young Kim 2004). Although the military provides a balanced menu three times a day, the meal service makes it impossible for soldiers to choose their own menus, nor satisfy their various needs (Il-hyun Kim 2009). Furthermore, when considering that the most popular issue and topic in the media is 'mukbang' (eating show), it can be perceived that the public's desire for food is becoming more diverse and demanding each day. However, as one of the viewer groups of media, soldiers are unable to answer the question, "What should I eat for today?" by themselves. As such, their sense of relative deprivation increases more and more (Yoon-jae Jang, Mi-ra Kim 2016; Young-jun Choi 2017). In this sense, the role of the military commissary is significant, for it allows soldiers to satisfy their appetite and release their stress (caused by strenuous training, uncomfortable environment, and interpersonal relationships) at least to a certain extent. Nevertheless, even though the military commissary allows soldiers to satisfy their appetite with inexpensive prices, there are limitations. These limitations include a lack of variety in the goods for sale as well as opening hours. Discharged soldiers occasionally joke about rude PX salesclerk soldiers, insufficient amount of supplies, and unreasonable structure of sales. Through this, we can infer that military commissaries are inadequate in meeting the needs of soldiers (Jae-min Jung 2011). Even while the scanty monthly salaries of soldiers are mostly spent at military commissaries, their dependence on military commissaries is nonetheless very high (Digital Times 2014). This shows that while military commissaries play a vital role in enabling soldiers to relieve stress and rejuvenate themselves, it counters the fact that the provided service influences the soldiers' morale.

In the age where health is promoted, interests in healthy lifestyle and maintaining a balanced diet are expanding from older generations to younger generations. In order to satisfy these needs, environment that allows soldiers to choose healthy food products must be created. The problem is, however, that there is a limitation in the choices of foods at the military commissary (Ju-youn Yang et al. 2016). As such, this research aims to draw a solution for improvement, specifically by examining the current conditions of military commissaries and analyzing the soldiers' sense of awareness, with the purpose of boosting the morale and promoting the health of soldiers.

2. Theoretical Background

2.1. Current conditions of military commissaries

Three years after the Army Welfare Act was founded in July 5, 1949, the first PX, modeled after the US military's PX (Post Exchange), was opened on December 1952. This was the inception of South Korea's military PX (Republic of Korea Army Headquarters 1994). From then on, each army's welfare act was renamed as welfare organization. In the midst of the efforts to enhance the welfare of military personnel, the Ministry of National Defense Welfare Agency was founded on January 1, 2010, and is currently operating with the aims of improving welfare task efficiency, reducing budget costs, and transferring PX salesclerk soldiers to combat personnel (Presidential Decree 20974, the Ministry of National Defense Welfare Decree). PX, the commissary within the military base, was renamed as "Choongsung Club" in 2000. Currently, these commissaries are individually named as "00 Supermarket," according to the name of each base camp or geographical location and are generally referred to as military commissary (PX). The welfare facilities managed by the Ministry of National Defense Welfare Agency can be largely categorized into military commissaries (PX), fitness centers (military golfing center), shopping towns, and accommodations. The profits from these welfare facilities are used as "military welfare funds." One of the major objectives of the Ministry of National Defense Welfare Agency is to improve the welfare of military personnel, reserve forces, and families of soldiers. The military commissary (PX) is the facility currently being operated for the purposes of improving combat power, by providing rest areas and inexpensive goods so that active-duty soldiers may relieve stress. By reducing the store rent and payroll costs for salesclerk soldiers, it is possible to bring in goods at a price 90 percent cheaper than superstores, thus selling them at lower prices. Despite low cost goods of military commissaries (PX), fixed demands of hundreds of thousands of soldiers produce an enormous amount of profit annually, thus becoming the main source of income for military welfare funds. From 2011 to 2013, military commissary (PX) sales was 755,600,000,000 Korean won, which covers 84 percent of the total sales (902,800,000,000 Korean won). Business profits of military commissaries was 88,300,000,000 Korean won, reaching approximately 80 percent of the total profit (110,100,000,000 Korean won) of the Ministry of National Defense Welfare Agency (Korea Institute for Defense Analyses 2014). Nevertheless, the military personnel find dissatisfaction with the military commissary because of the lack of variety in

sold goods, compared to the market. Surveys showed that the number one aspect to improve in military commissaries (PX) was “Diversification of sales items,” reaching an overwhelming score of 41.3 percent. Furthermore, there is a regulation that only the items with the most discount rates should be selected for sales. As such, this creates the problem where there is a higher probability of delivering unpopular, unpreferable items to military commissaries (Korea Institute for Defense Analyses 2014).

In recent discussions regarding active-duty soldiers’ commitment to combat and privatization of noncombat areas, there has been an increasing demand for the transfer of PX salesclerk soldiers to combat personnel. As with the stated reasons, along with the purposes of resolving inherent limitations of military commissaries (PX) and enhancing the welfare of military personnel, the navy began to commit the management of their commissaries to private sectors ever since 2006. In particular, a five-year contract was signed with GS Retail (which operates GS25 convenience stores) in 2010 to manage military commissaries. In 2015, the contract was resigned and will be valid until 2020. The conditions of the contact outline that GS Retail should pay a consignment fee of 4,000,000,000 Korean won annually, as well as invest approximately 4,100,000,000 Korean won for improving the facilities of the commissaries. By privatizing the management of commissaries and transferring PX salesclerk soldiers to combat personnel, the navy attempted to strengthen military power and reflect the demand of young soldiers by providing various items and convenience foods. The privatization of commissary management, however, has been found with shortcomings. Compared to the, soldiers have been dissatisfied with the average of 15 percent increase in prices, compared to the preexisting military commissaries (PX). Although the minimum discount rate was 20 percent when it was tendered in comparison with the market price, ROK navy responded to the soldiers’ dissatisfaction and readjusted the minimum discount rate to 30 percent in 2015 (Ministry of National Defense Office of Spokesperson, 2015). As such, the soldiers’ burden of high costs is expected to be reduced in the future. On the other hand, because GS Retail sells their products to military commissaries at a discount rate 10 percent higher than before, it can be easily anticipated that the company will attempt to take measures in order to supplement their profit. Supplies of instant foods (e.g. packed lunchboxes, gimbap, sandwiches, etc.) and fresh food products with a short shelf life will be reduced, since loss ratios are high when unsold. On the other hand, there is a high possibility that GS Retail will try to gain high profits by simplifying their goods, such as products with

higher retention period and margin. Consequently, then, soldiers had to pay the price for improving the Ministry of National Defense’s business management efficiency and privatizing commissaries by transferring salesclerk soldiers to combat personnel. As a result, this case presented by ROK Navy is criticized.

The National Assembly also emphasizes the importance of boosting the morale of military personnel by improving military commissaries. During the National Assembly’s National Defense Committee inspection in 2017, pointed out the problem of soldiers receiving low salary. Furthermore, it was stated that in order to resolve the problem of soldiers’ insufficient salary, basic living expenses should be reduced. In particular, it was indicated that there must be a reduction in the prices of goods sold at military commissaries (National Defense Committee of National Assembly 2017). This was an accurate criticism, since military commissaries were operated with a steady, monopolized profit system, a mass amount of fixed demands, and did not need marketing expenses. Instead of arithmetically calculating the price of goods by comparison with small, privatized retail stores outside base camps, it should be done so by comparing it with the military personnel’s income. As such, it is predicted that the welfare of soldiers will be aggravated if the current operations emphasizing profit continue. Considering the service conditions of active-duty soldiers who have limits to alternate facilities, we can perceive that it is necessary to improve the quality of military commissaries and thereby increase the satisfaction of military personnel (Korea Institute for Defense Analyses, 2014).

2.2. Military Personnel’s Need for the Consumption of Fresh Foods

In order to maintain strong combat power, the army must focus its efforts on the healthcare of the soldiers. As the soldiers are mostly young men in their early twenties, they are in their later adolescence period. Because this particular stage in their life is crucial for their health, it is essential to consume a balanced menu with good nutrition, especially fresh food products such as fruits and vegetables. By doing so, there will be a positive influence upon the soldiers’ quality of life and help them to be accustomed to army life (Yu-kyung Kim, Eui-geum Oh 2015). It was confirmed through advanced research that the more one consumes fresh foods, the level of happiness increases and the level of stress decreases (Sung-jin Moon et al. 2016). Likewise, soldiers have a high interest in their health, engaging in fitness activities to stay in shape. Hence, the issue of the

soldiers' lack of having a nutritious diet must be resolved (Ministry of National Defense Daily 2016). Although military cafeterias provide a balanced diet in terms of nutritional science, the soldiers cannot be forced to take a fixed quantity. Furthermore, since there are individual preferences of menus, there is a limitation for soldiers to have fruit and vegetable intake during meals. Accordingly, in order to satisfy the desire for consuming fresh foods unaddressed by military cafeterias, the military commissaries should create an environment where selecting fruits and vegetables is possible.

Young generations today have the awareness that food is not simply for consumption, but a personal preference and cultural enjoyment. Accordingly, they seek a diversification of products in the choice of foods (Myoung-jeon Ko et al. 2017). In their research, Yeon-jeong Kim et al. (2013) noted that there is a growing number of high school tuck-shops selling fruits and vegetables, and that the majority of students desire tuck-shops that sell healthy food products. This shows that the demand for the consumption of fresh food products is increasing with those in their adolescence, and that there may be a similar demand with soldiers who are around the age group. However, military commissaries have shortcomings in satisfying the diverse needs of young soldiers. Studies (Min-jeong Cho, Young-min Park 2016) show that the consumption of snacks comparatively increase after one enters military service. While there is a growing demand for food consumption, soldiers can only have access to a limited variety of food products in military commissaries, with the exception of having three fixed menus a day, or when they go out during holidays or one-day leaves. As such, there is a great limitation for the selection of foods for soldiers (Ju-youn Yang et al. 2016). Furthermore, due to the popularity of 'mukbang' (eating show) presented on TV shows, there is an increasing consumer desire for newly introduced restaurants and menus. However, because soldiers cannot realize these desires, there is a great possibility that relative deprivation will increase (Yoon-jae Jang, Mi-ra Kim 2016).

Advanced studies conducted on topics related to military commissaries show that there is an insufficient category of products sold at military commissaries. Not only so, the majority of the products are sweet, salty, or spicy processed foods that cause obesity (Hyun-joo Yi 2015). In order to solve this issue, Ju-youn Yang et al. (2016) contested that it is necessary to introduce fresh food products – such as fruits and vegetables – to military commissaries. Yu-kyung Kim et al. (2015) stated that in order to improve the quality of life for soldiers, it is critical that they consume a balanced, nutritious diet and engage in health-promoting

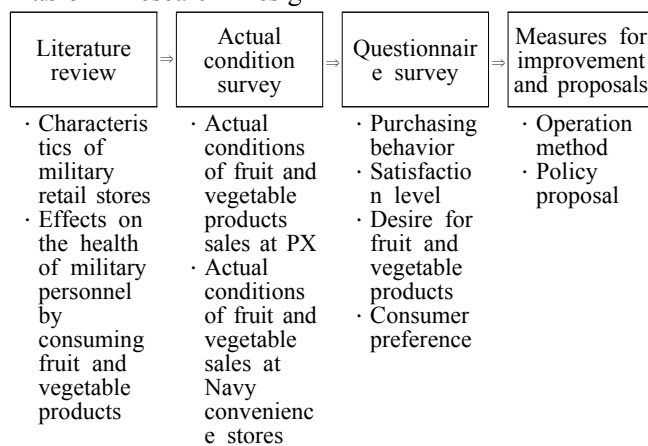
activities. Nonetheless, these studies only dealt with theoretical ideas and confirming actual conditions of military commissaries and failed to reflect the needs of the soldiers. Not only so, the studies on military commissaries were conducted solely on the perspective of the welfare of career soldiers such as commissioned officers and noncommissioned officers (Hyun-tae Kim 2004). In other words, there is an inadequate amount of research conducted in the perspective of active-duty soldiers doing mandatory service. As such, this research aims to deduce an appropriate method of improvement, by analyzing the actual conditions of fruit and vegetable products sales at military commissaries, as well as the soldiers' sense of awareness, for the purposes of enhancing their health and morale.

3. Research Methodology

3.1. Research design

This research is designed as follows. By studying literature reviews, we examined the concept and characteristics of military commissaries, and organized the debates regarding the effects of fresh food products (such as fruits and vegetables) on the health conditions of military personnel. In order to examine the actual conditions of fruits, vegetables, and related processed food products sales at military commissaries, we intercompared military commissaries (PX) operated by the army and air force with convenience stores (GS25) run by the navy. Through questionnaire surveys directed to soldiers, we analyzed their demand for fruit and vegetable products sales and the awareness for it. Finally, we presented an appropriate improvement measure and policy proposal based on the actual conditions and soldiers' awareness deduced from the research.

Table 1 Research Design



3.2. Actual condition survey on fruit and vegetable product sales at military commissaries

For the purposes of this research, analyses have been made on three military commissaries (PX) of the army and three convenience stores (GS25) in the navy, in terms of their present conditions of fruits, vegetables, and related processed food products, from October 16 to 30, 2018. The products have been subdivided into categories of fresh, canned, frozen, dried, and so forth, according to packaged and processed forms. In addition, each of the product categories have been analyzed in terms of pricing, volume, and country of origin.

3.3. Questionnaire survey on the soldiers' awareness on fruit and vegetable products demand and military commissaries

A questionnaire survey was conducted for 162 army soldiers in the Gyeonggi-do Province area from October 23 to 26, 2018, specifically on the demand and awareness of fruit and vegetable products sales at military commissaries. With the exception of 13 who answered insincerely, we analyzed the remaining 149 questionnaire responses and used them for our research material. The questionnaire consisted of a total of 18 questions: 4 questions regarding the purchasing behavior, 7 regarding the satisfaction level for military commissaries, and 7 questions regarding the awareness for the need for fruit and vegetable products. Questions related to purchasing behavior and satisfaction level were modified and supplemented, befitting the purposes of this research and characteristics of military personnel, specifically by referring to advanced studies related to purchasing behaviors in convenience stores (Yeon-jeong Kim et al. 2013; Hee-jin Koo, Seong-yeong Kim 2014). Questions related to fruit and vegetable products were formed by reworking the retail store environment and nutrition assessment tool by Ju-youn Yang et al. (2016), which was modified and supplemented by referring to the retail store environment and nutrition assessment by Glanz et al. (2007). The collected materials were utilized with the PASW Statistics 18 program to conduct a descriptive statistics analysis, using frequency and percentage.

4. Research Results

4.1. Actual Conditions of Fruit and Vegetable Product Sales at Military Commissaries

Table 2 outlines the fruit and vegetable product categories sold at military commissaries. Fresh fruits and vegetables, as well as frozen products were basically nonexistent. Food products consisted of mostly canned (grapes, peaches, and corn) and dry (sweet potatoes, prunes, and coconuts) food items – both categories which have a long shelf life. Other than these, another processed fruit item consisted of a jelly item containing fruit pulp. Overall, it was difficult to detect any noticeable difference between product categories of military commissaries (PX) and navy convenience stores. What the two stores had in common was that there was a lack of variety in food product categories, the highest number being nine.

Table 2 Categories of items held by each store

Category	Military commissary (PX)			Navy Convenience Store (GS25)		
	A	B	C	D	E	F
Fresh fruits	×	×	×	×	×	×
Frozen fruits	×	×	×	×	×	×
Canned fruits	3	3	3	1	2	3
Dried fruits	1	×	2	×	×	×
Other processed fruits	2	2	1	2	1	×
Fresh vegetables	×	×	×	×	×	×
Frozen vegetables	×	×	×	×	×	×
Canned vegetables	×	×	×	×	1	1
Dried vegetables	2	3	3	1	2	2
Other processed vegetables	×	×	×	×	×	×
Total number of items	7	8	9	4	6	6

Table 3 outlines the price differences of products between military commissaries (PX) and navy convenience stores. The comparison was not an easy task to fulfill, since there was only a small number of fruit and vegetable products. After comparing the price-to-volume ratios of semi- fruit or vegetable products, we were able to perceive that average prices at navy convenience stores were higher by 36 percent.

Table 3 Comparison of prices for each store (Korean won)

Category	Military commissary (PX)	Navy convenience store (GS25)
Canned yellow peaches (400g)	1,200	1,640
Dried sweet potatoes (60g)	1,350	2,060
Fruit pulp jelly	1,400(250g)	1,060(160g)
Price difference (%)	100%	136% (↑ 36%)

Lastly, we analyzed the country of origin of the main

ingredients of fruit and vegetable products sold at military commissaries (PX) and navy convenience stores. Of the analyzed items, only two categories (i.e. canned grapes and dried strawberries) were domestic products. The rest of the items were imported from countries such as China, the Philippines, Indonesia, and Thailand.

4.2. Survey results of the military personnel’s awareness of military commissaries and demand for fruit and vegetable products

Table 4 outlines the survey results regarding the military personnel’s food product purchasing behaviors in military commissaries. Those who responded that they visit the military commissary 3 to 4 times a week were highest in number, reaching 48 percent. Ranking second was the response that they visit the commissaries every day, reaching 19 percent. The reasons for the visits were ‘hunger’ (50 percent) and ‘no special reason’ (32 percent). The average expenses made in the commissaries were 3,000 to 5,000 Korean won, which was 35 percent. Next in rank was 5,000 to 10,000 Korean won, which was 25 percent. Forty percent of respondents answered that they visit the commissaries during the afternoon, while 30 percent state that they visit after dinner.

Table 4 Purchasing behavior

Category	Proportion	
Frequency of visit	Every day	19%
	5-6 times a week	15%
	3-4 times a week	48%
	1-2 times a week	17%
	No usage/visit	1%
Purpose of visit	To have a meal	2%
	To satisfy hunger	50%
	To supplement nutrition	10%
	To kill time	32%
	Habit	6%
Average amount of money spent	More than 10,000 Korean won	10%
	5,000-10,000	25%
	3,000-5,000	35%
	2,000-3,000	19%
	Less than 2,000 Korean won	11%
Usual time of visit	Mornings	2%
	After lunch	14%
	Afternoons	40%
	Before dinner	13%
	After dinner	30%

A 5-point Likert scale was used to calculate the average

value of the satisfaction level of military commissaries. The results are presented in Table 5. The average value for question, “The food products sold at the PX is inexpensive,” received a high satisfaction level of 3.83. However, the value of satisfaction level for other categories was relatively low. The question, “I am satisfied with the PX opening hours,” received the lowest value of satisfaction level, 2.68. The question, “The food products sold at the PX is diverse,” received the second lowest value of satisfaction level. The satisfaction levels for fruit and vegetable products provided by military commissaries and military cafeteria meal services were measured. The satisfaction levels for the military cafeteria’s provision of “sufficient fruit and vegetables” and “menu” showed low results, being 3.02 and 2.95, respectively.

Table 5 Satisfaction level for military commissaries

Question	Average value (5 points total)
The food products sold at the PX is diverse.	2.97
The food products sold at the PX is inexpensive.	3.83
The food products sold at the PX satisfy my needs.	3.21
I am satisfied with the PX sales services.	3.39
I am satisfied with the PX opening hours.	2.68
I am consuming a sufficient amount of fruits and vegetables through the military meal service.	3.02
I am satisfied with the fruit and vegetable menu provided by the military meal service.	2.95

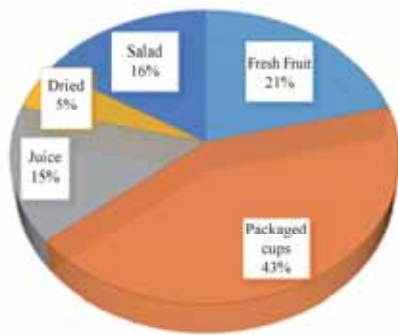
A 5-point Likert scale was used to calculate the average value for the question related to the awareness of the need for fruit and vegetable products. The results are presented in Table 6. The average value for the question, “I am eating a lot of fruits and vegetables,” was at a moderate level of 3.28 points. However, the rest of the questions received high points. The question, “Soldiers must consume fruits and vegetables to have strong combat power,” received 4.03 points, and the question, “The PX should sell fruit and vegetable products,” received 3.95 points. However, the average value received for the question, “I will buy fruits and vegetables from the PX even if they are expensive,” was very low, being 2.85 points.

Lastly, we surveyed consumer preferences for fruit and vegetable products sales at military commissaries. Table 7 presents the results of the consumer preferences from highest to lowest: packaged cups (43 percent), fresh fruits and vegetables (21 percent), salads (16 percent), juices (15 percent), and dried (5 percent).

Table 6 Awareness of the need for military commissaries to sell fruit and vegetable products

Question	Average (5 points total)
Soldiers must consume fruits and vegetables to have strong combat power.	4.03
I want to eat more fruits and vegetables.	3.76
I am eating a lot of fruits and vegetables.	3.28
The PX should sell fruit and vegetable products.	3.95
I will buy fruits and vegetables if they are sold at the PX.	2.83
I will buy fruits and vegetables from the PX even if they are expensive.	2.85

Table 7 Consumer preferences of fruit and vegetable sales at the military commissary



5. Argument and Conclusion

This research aims to deduce an appropriate measure for improving military commissaries, which exist for the purposes of enhancing the health and morale of military personnel. In order to do so, we investigated the actual conditions of fruit and vegetable products sales of three PX’s of the Korean Army and three convenience stores of the ROK Navy, as well as conducted a questionnaire survey for 149 soldiers. The major implications drawn from this research are as follows.

Firstly, the fruit and vegetable products sold at military commissaries consisted of only those items with a long shelf life, such as canned and dried goods. Not only so, there were less than 10 categories of these products, making the range of choices very small. This supports the advanced study (Hyun-joo Yi 2015) which stated that there is an insufficient category of products sold at military commissaries, and that the majority of the products are foods with strong flavors. Furthermore, one must take into consideration that military commissary business profits make up 80 percent of the military welfare funds, and that the criteria for choosing goods to sell is to select ones providing the most discount rate, instead

of reflecting consumer preferences. Considering this fact, it can be predicted that the Ministry of National Defense Welfare Agency focuses its efforts to increase business profit rather than providing a better welfare for military personnel. Although military welfare funds should be used for the welfare of military personnel, the latter is being sacrificed to increase the former. To go on further, studies (Cheadle A et al. 1990) show that the average health level and income were higher in the areas where more expenses were spent on fresh food products, and that the average health level and income were lower in the areas where less expenses were spent on fresh food products. As such, we can see that military commissaries absolutely do not sell fresh fruit and vegetable products, with the exception of several processed foods. This presents an extreme form of retail stores of undeveloped countries. In order to strengthen combat power, help soldiers to adapt to the environment, and improve their quality of life (Yu-kyung Kim, Eui-geum Oh 2015), it is essential to expand the range of fruit and vegetable products so that soldiers may have a balanced and nutritious diet.

Secondly, after comparing the price-to-volume ratios of semi- fruit or vegetable products, we were able to perceive that average prices at navy convenience stores were higher by 36 percent. While it is not the average of all product categories, the results of a survey conducted in 2014 of 268 product categories show that their goods are sold at the average of 16.2 percent higher than military commissaries (PX) (Korea Institute for Defense Analyses). Considering this fact, we are able to perceive that navy convenience store products are generally sold at a higher price than military commissaries (PX). As a way to reform the Ministry of National Defense in terms of increasing business efficiency and transferring PX salesclerk soldiers to combat personnel, navy convenience store business management was privatized. However, payroll costs for civilian employees who took the place of PX salesclerk soldiers increased excessively. Hence, this resulted in an increase in prices. This created an increased dissatisfaction because prices of products increased due to privatization. Although this is an example of one particular case, the Korean army is operating and planning various privatization projects to reform the Ministry of National Defense, with the exception of combat units. However, one must inquire as to whether it is advisable to privatize military commissaries if soldiers will be burdened with increased prices. Furthermore, considering the fact that military personnel have low monthly salaries, the increase of price in welfare facilities such as military commissaries

will lead to an aggravation of military welfare levels. This will ultimately influence the morale of military personnel (National Defense Committee 2017). As such, in order to solve the issue of the military personnel's insufficient salaries, there must be active efforts to lower the prices of products sold at military commissaries. Thirdly, in the satisfaction level survey on military commissaries, we found that there was a low satisfaction level, with the exception of pricing. In particular, the topics regarding opening hours and diversification of product categories showed extremely low satisfaction levels. Through the survey results, we are able to reconfirm the advanced studies (Korea Institute for Defense Analyses 2014) which state that military commissaries fail to satisfy the desires of young generations. Young generations today recognize that being able to seek diverse products is a way to display one's personality and the sense of belonging to a group, as well as to gain new experiences and enjoy entertainment (Myoung-jeong Ko et al. 2017). Although there are differences according to each military unit, the transfer from PX salesclerk soldiers to civilian salesclerks has resulted in shortening opening hours and closing on national holidays. Considering the fact that military commissaries are a monopoly, without other alternative facilities, it can be predicted that shortening opening hours will increase dissatisfaction levels. This is determined as a consequence of increasing payroll costs due to privatization.

Likewise, the satisfaction level for the consumption of fruit and vegetable products through military meal service is low. This is related to the fact that the young generation soldiers' increased desire for food cannot be realized, despite the recent popularity of 'mukbang' (eating shows) and 'cookbang' (cooking shows) from TV shows (Yoon-jae Jang, Mi-ra Kim 2016). It also confirms the statistical research (Korea Institute for Defense Analyses. 2016. KIDA social survey statistical yearbook) results that dissatisfaction levels toward military meal services have increased from 16.8 percent in 2011 to 28.9 percent in 2016, and are, in fact, still increasing. As such, in order to resolve the appetite that is not satisfied through meal services, expectations for military commissaries will continue to increase.

Fourthly, not only does the military personnel recognize the importance of consuming fruit and vegetable products, but they also wish for fruit and vegetable products to be sold at military commissaries. This confirms the study results (Yeon-jeong Kim et al. 2013) which state that there is a growing interest on fresh food products (such as fruits and vegetables) from adolescence, as well as

advanced studies which state that a large number of soldiers have interests in health and nutrition, such as staying fit and developing their muscles (Ministry of National Defense Daily 2016). When considering the fact that a large majority of respondents agreed with the statement, "I will buy fruits and vegetables from the PX even if they are expensive," it can be seen that pricing plays a significant role in determining the satisfaction level for military commissaries.

The summary of our research results is as follows. It is realistically impossible for military personnel to have access to fresh fruit and vegetable products at military commissaries. Military personnel are aware of the need for fruit and vegetable products and strongly desire to have those products to be sold at military commissaries. Furthermore, although there were attempts of strengthening combat power by transferring PX salesclerk soldiers to combat personnel and increasing business efficiency through privatization, it produced a negative effect of increasing prices, thereby placing a heavier burden upon soldiers.

Based on our research results, the following outline possible proposals for enhancing the morale and improving the health conditions of military personnel. Firstly, taking into consideration the fact that the majority of military welfare funds derive from military commissary profits, the Ministry of National Defense Welfare Agency must bear the burden of expenses for bringing in fruit and vegetable products for their main customers, the military personnel. Through this research, we were able to confirm that the products mainly sold by the military commissaries under the management of the Ministry of National Defense Welfare Agency were strongly-flavored processed foods with a long shelf life. Of course, fresh food products, such as fruits and vegetables, have short shelf-lives and are hard to manage or maintain. Furthermore, these products have a high disposal rate when they cannot be sold. As such, it cannot be denied that the seller would be less eager to sell products with a high profit loss rate. Nonetheless, the Ministry of National Defense Welfare Agency should introduce fruit and vegetable products to military commissaries as soon as possible, since the consumption of fresh food products are directly related to the military personnel's health conditions and strengthening their combat power. Not only so, military welfare funds must be used for the welfare of military personnel. It is thus reasonable to state that military welfare funds should be used for distributing fruit and vegetable products and for covering expenses resulted by profit loss. Secondly, by closely cooperating with the local

community's agricultural producers, the Ministry of National Defense Welfare Agency should build a system that can enable fruit and vegetable products sales at inexpensive costs. Recently, educational circles have recognized the gravity of adolescents' consumption of snacks, especially processed foods. By mutual cooperation of the offices of education, local governments, and agricultural circles, there has been an expansion in 'healthy tuck-shops' which sell fresh food products, such as fruit cups, juices, and salads (Yeon-jeong Kim et al. 2013). In the same manner, the Ministry of National Defense Welfare Agency should build provision systems with the agricultural producers of each area, thereby reducing distribution margins and prices. To go on further, various efforts can be made by reducing delivery distances and costs to improve freshness of products, thereby enhancing the military personnel's health conditions and welfare. Thirdly, in order to extend the shelf-lives of fruit and vegetable products, the sales of processed foods must be expanded. Agricultural circles are developing and presenting various products, such as dried, frozen, airtight packaged products, in order to extend shelf life while minimizing nutrient loss. If such products are introduced to military commissaries, profit loss ratio will be reduced significantly compared to the distribution of fresh fruits and vegetables. Lastly, the management of navy convenience stores, currently privatized, should be reverted to PX systems. Privatizing navy convenience stores produced negative results only, in terms of pricing and diversification of sold goods, thus placing a heavier financial burden on military personnel. As such, the contract with convenience stores (GS25) should be terminated when it ends in 2020, and convenience stores should be reverted back to the pre-existing military commissary (PX) system.

There are limitations to this research in terms of its surveys, since the numbers of investigated military commissaries and respondents who participated in the questionnaires were relatively small. Therefore, the research results cannot be said to represent the totality of Korean military. It is regretful that we lost the opportunity to attain research results of better quality, the reasons being that we were unable to reflect the awareness of navy soldiers since the respondents of the questionnaire were limited to soldiers of the army, and that we did not analyze variables by subdividing them by specialty or rank. We were also unable to investigate the correlation between the current overarching consumption behaviors of instant and processed food products and health conditions, which would have supported the legitimacy of the military

personnel's consumption of fruits and vegetables. We propose the necessity of developing future research by analyzing the military personnel's snack consumption behaviors and health conditions in various perspectives. Lastly, we perceive the need for discussions that guarantee a policy-based expansion of fresh food products (such as fruits and vegetables) in military commissaries, in order to improve the health conditions of military personnel and to enhance their morale.

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