

Regulations

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The Effect of the Sports Agent's Perception Due to the Sports Agent REGULATION on the Expected Role and the Expected Job Satisfaction

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Abstract

Purpose: A sports agent is continuously developing based on the growth potential thanks to the expansion of the professional sports market, introduction of the free agent system, and the development of mass media across the sports service industry among the modern sports industries. Athletes increasingly need a negotiations expert equipped with professional knowledge and insights related to the sports, contracts, and the economic issues. Therefore, this study is meaningful in that it examines the effect of the sports agent's perception caused by the sports agent regulations of college students concerning the sports agents capable of providing significant assistance for the college students' job placement and startup on the expected role and expected job satisfaction, while presenting a future direction for the sports agent's role and the sports agent fostering institutions' educational programs.

Method: In this study, by having college students as the group as of 2021, the sampling method targeted 380 people by the convenience sampling, and the survey was conducted by using the self-administration method. and 369 questionnaires were used as valid samples, excluding the data in which some of the survey contents were omitted. The data processing for this study was conducted by the frequency analysis, Cronbach's α coefficient calculation, factor analysis, and the correlation analysis by using SPSS 25.0 Program, which is a statistical package program. The multiple regression was used.

Results: First, as a result of performing the factor analysis and the reliability analysis, the sports agent's perception consisted of the 3 factors of the recognition factor($\alpha=.752$), necessity factor($\alpha=.860$), and the expectation factor($\alpha=.831$). The factors for the expected role were consisted of the 3 factors of the management factor($\alpha=.862$), organizational management factor($\alpha=.746$), and the financial management factor($\alpha=.697$). The expected job satisfaction was consisted of the 1 factor of the expected job satisfaction($\alpha=.845$). Second, as a result of performing the correlation analysis, it was discovered that there exists a relationship between all of the factors. Third, in terms of the effect of the sports agent's perception on the expected role and the expected job satisfaction, awareness, necessity, and expectation of the sports agent's perception influence the goal management, organizational management, and the financial management of the expected role, while the awareness and the necessity of the sports agent's perception and the expectation influence the expected job satisfaction of the expected job satisfaction. The target management of the expected role, organizational management, and the financial management turned out to have an effect on the expected job satisfaction of the expected job satisfaction.

Conclusion: The sports agent's perception turned out to have a significant effect on the expected role and the expected job satisfaction. Therefore, the development and implementation of the educational programs related to the launch of a curriculum for fostering the sports agents at colleges and universities, and the theoretical knowledge and field practice for the sports agents to have need to be explored. Along with the improvement of the ability and skills, the students who wish to become sports agents also need to make continuous efforts to improve their foreign language skills and understand laws and regulations to develop their qualifications, and in particular, it is also important for them to have and grow a mindset and attitude for building interpersonal relationship and trust.

1. Introduction

1.1. The needs and purpose of the study

In today's sports, the development of life due to economic development has influenced not only the increase in terms of the leisure time due to the implementation of the five day work week along with the reduction of working hours, but also the expansion of the base by making sports a habit, has caused an impact on social values as a popular culture. Furthermore, their economic, political, and diplomatic values are increasing, while playing an important role in connecting the international economy and society in the realm of globalization as well as domestically[1][2]. Recently, national interest in the sports industry has rapidly grown and the size of the domestic sports industry has rapidly expanded along with the growth of the domestic and foreign sports markets[3]. As such, following the growth of the sports industry itself and the revitalization of the sports marketing, star players have emerged and stood out in each sport, and the image of companies and products is naturally further enhanced. While the companies have increased their reliance on marketing using athletes such as by playing large roles in the birth of star players, the status of the sports agent industry is growing to the extent of changing the perception of agents who manage and represent players as a subcategory of sports marketing[4][5].

On top of urging the institutionalization of an advanced industrial structure and the preparations of supportive measures for the further development of professional sports, discussions of the introduction of a sports agent system appropriate for the domestic sports market have also been actively taken place[6]. In the case of the existing agents, in general, they were at the level of mainly playing the contract related roles such as carrying out negotiations between clubs and players and annual salary contracts. The sports agent vied for in the future is a professional manpower cultivated through systematic education and management, and beyond which, there are various areas of services provision including contract negotiation to protect the athletes' interests, improvement of performance through the player management, and the expansion of the sports marketing business based on the players[7].

Amidst which, the sports agent is continuously developing based on the growth potential due to the expansion of the professional sports market, introduction of the free agent system, and the development of mass media across the sports service industry among the modern sports industries. That is, as the salaries of free agent players surged, various and complex clauses were inserted into the contracts, and the negotiators with professional knowledge and insights related to the sports, contracts, and the economic issues became more needed for the players. Furthermore, the weight and importance of the role of the sports agent in making domestic and overseas entries or transfer of excellent domestic players is increasingly growing[8].

Therefore, this study is meaningful in that it examines the effect of the sport agent's perception caused by the sports agent regulations of college students concerning the sports agents capable of providing significant assistance for the college students' job placement and startup on the expected role and expected job satisfaction, while presenting a future direction for the sports agent's role and the sports agent fostering institutions' educational programs.

2. Research Methods

2.1. Subjects and sampling technique

In this study, by having college students as the group as of 2021, the sampling method targeted 380 people by the convenience sampling, and the survey was conducted by using the self-

administration method. and 369 questionnaires were used as valid samples, excluding the data in which some of the survey contents were omitted.

2.2. Measurement method

The sports agent's perception factor was structured by modifying and supplementing the questionnaire used in the study of Jongpill Choi(2011), Injae Kim & Jaehyun Lee(2004), and Namyang Hur & Sowon Yoon(2011) according to the purposes of this study[9][10][11], while the Cronbach's α coefficient representing the reliability of the questionnaire turned out to be .848 for the recognition factor, .809 for the necessity factor, and .885 for the expectation factor in Namyang Hur & Sowon Yoon's(2011) study, most of which demonstrated the reliability appropriately.

As for the expected role factor, the questionnaire used in the study of Jeonga Kim(2012) and Jeongae You & Yeonkyung Jin(2013) was restructured according to the purposes of this study, while the Cronbach's α coefficient representing the reliability of the questionnaire turned out to be .889 for the goal management factor, .900 for the organizational management factor, and .884 for the financial management factor in Jeongae You & Yeonkyung Jin's(2013) study, most of which demonstrated the reliability appropriately[12][13].

The expected job satisfaction factor was structured by modifying and supplementing the questionnaire used in the study of Suryeon Han and Jeongdo Choi(2007), Seongsu Kim and Jitae Kim(2009), Chanhoo Ahn, Jinwook Han and Eunju Jung(2018) in line with the purposes of this study, while the Cronbach's α coefficient representing the reliability of the questionnaire turned out to be .925 for the expected job satisfaction factor, which demonstrated the reliability appropriately[14][15][16].

2.3. Analysis of data

The data processing of this study was conducted by using the SPSS 25.0 Program, a statistical package program, after recovering the distributed questionnaire, excluding the data determined to be incomplete or unreliable from the research subjects, and by individually inputting the data which may be analyzed into the computer, then according to the purposes of data analysis and data analysis, conducted the statistical validation as follows.

First, the frequency analysis was performed to identify the general characteristics.

Second, to validate the reliability of the questionnaire, the Cronbach's α coefficient was calculated.

Third, the factor analysis was performed to classify the sports agent's perception factor, role performance factors, and the educational service requirement factor.

Fourth, the correlation analysis was performed to examine the relationship between the variables.

Fifth, the multiple regression was used to examine the effect of sports agent's perception factor on the role performance factor and the educational service demand factor, while the statistical significance level was validated at the level of .05.

3. Results

3.1. Validity and reliability of the questionnaire, correlation

In this study, the content validity of the questionnaire was secured via the consultations with experts of the related areas of research with a view to adopt the questionnaires appropriate for the purposes of this study. The exploratory factor analysis was performed to validate the construct validity. The principal components analysis was used, and the varimax method, which is an orthogonal rotation among the orthogonal rotation methods, was used for the factor rotation with a view to clearly interpret the meaning of the factors obtained initially. As for the factor extraction, only the factors with an

eigenvalue of 1.0 or higher were selected, and the factor loading indicating the extent of correlation between each variable and factor was limited to the questionnaires with an eigenvalue of 0.5 or higher.

As a result of performing the factor analysis on the sports agent's perception factor, the eigenvalue of the recognition factor turned out to be 2.574, the necessity factor 2.213, and the expected factor turned out to be 1.982, and the ratio of the 3 factors explaining the whole variable turned out to be 54.389%. As a result of performing the factor analysis of the factors for the expected role, the eigenvalue of the target management factor turned out to be 2.364, organizational management factor 2.091, and the financial management factor turned out to be 1.864, while the ratio of the 3 factors explaining the total variable turned out to be 48.658%. As a result of performing the factor analysis for the expected job satisfaction factor, the eigenvalue of the expected job satisfaction factor turned out to be 2.355, while the ratio of one factor explaining the entire variable turned out to be 43.276%.

In this study, the reliability was validated based on the results of the exploratory factor analysis, and the reliability was analyzed by using the Cronbach's α coefficient.

As a result of performing the reliability analysis for the sports agent's perception factor, the recognition factor turned out to be $\alpha = .752$, necessity factor $\alpha = .860$, and the expectation factor turned out to be $\alpha = .831$. As a result of performing the reliability analysis of the factors for the expected role, the target management factor turned out to be $\alpha = .862$, organizational management factor $\alpha = .746$, and the financial management factor turned out to be $\alpha = .697$. As a result of performing the reliability analysis for the expected job satisfaction factor, the expected job satisfaction factor turned out to be $\alpha = .845$.

Furthermore, in this study, the correlation analysis was performed to understand the relationship between each variable, and as a result, it turned out that there is a positive(+) or negative(-) relationship between all of the factors, and it was discovered that the regression analysis is possible to examine the impact made between the variables based on such results.

3.2. Effect of the sports agent's perception on the expected role

Table 1. Effect of the sports agent's perception on goal management.

Dependent variable Independent variable	Goal management			
	<i>b</i>	<i>Std.E</i>	β	<i>t</i>
Perception	.360	.082	.375	2.437***
Necessity	.249	.081	.210	1.117***
Expectation	.185	.072	.199	1.179**
R^2	.354			
F	19.217***			

Note: *** $p < .001$ ** $p < .01$.

<Table 1> illustrates that the recognition factor($\beta=.375$), necessity factor($\beta=.210$), and the expectation factor($\beta=.199$) of the sports agent's perception have a significant effect on the goal management factors, and the coefficient of determination turned out to be $R^2=.354$, which has an explanatory power of 35.4%.

Table 2. Effect of the sports agent's perception on organizational management.

Dependent variable Independent variable	Organizational management			
	<i>b</i>	<i>Std.E</i>	β	<i>t</i>

Perception	.434	.118	.504	5.473***
Necessity	.129	.114	.125	3.245***
Expectation	.257	.109	.252	2.539***
R^2	.328			
F	16.725***			

Note: *** $p < .001$.

<Table 2> illustrates that the recognition factor($\beta=.504$), necessity factor($\beta=.125$), and the expectation factor($\beta=.252$) of the sports agent's perception have a significant effect on the organizational management factors. and the coefficient of determination turned out to be $R^2=.328$, which has an explanatory power of 32.8%.

Table 3. Effect of the sports agent's perception on financial management.

Dependent variable Independent variable	Financial management			
	b	$Std.E$	β	t
Perception	.412	.148	.374	3.264***
Necessity	.219	.136	.297	1.674***
Expectation	.202	.128	.128	1.127***
R^2	.285			
F	13.422***			

Note: *** $p < .001$.

<Table 3> illustrates that the recognition factor($\beta=.374$), necessity factor($\beta=.297$), and the expectation factor($\beta=.128$) of the sports agent's perception have a significantly effect on the organizational management factors, and the coefficient of determination turned out to be $R^2=.285$, which has an explanatory power of 28.5%.

3.3. Effect of the sports agent's perception on the expected job satisfaction

Table 4. Effect of the sports agent's perception on the expected job satisfaction.

Dependent variable Independent variable	Expected job satisfaction			
	b	$Std.E$	β	t
Perception	.193	.083	.219	2.488***
Necessity	.208	.076	.237	2.530***
Expectation	.241	.088	.236	2.693***
R^2	.294			
F	14.734***			

Note: ***p<.001.

<Table 4> illustrates that the recognition factor($\beta=.219$), necessity factor($\beta=.237$), and the expectation factor($\beta=.236$) of the sports agent's perception has a significant effect on the expected job satisfaction factor, and the coefficient of determination turned out to be $R^2=.294$, which has an explanatory power of 29.4%.

3.4. Effect of the expected role on the expected job satisfaction

Table 5. Effect of the expected role on the expected job satisfaction.

Dependent variable Independent variable	Expected job satisfaction			
	<i>b</i>	<i>Std.E</i>	β	<i>t</i>
Goal management	.354	.082	.369	4.186***
Organizational management	.321	.087	.294	2.691***
Financial management	.316	.085	.331	3.627***
R^2	.312			
<i>F</i>	14.347**			

Note: ***p<.001, **p<.01.

<Table 5> illustrates that the expected role's goal management factor($\beta=.369$), organizational management factor($\beta=.294$), and the financial management factor($\beta=.331$) have a significant effect on the expected job satisfaction factor. and the coefficient of determination turned out to be $R^2=.312$, which has an explanatory power of 31.2%.

4. Discussion

The following efforts are required for many college students to place their job and start a business in the area of sports agent along with the improvement of their perception of the sports agents, their expected roles and expected job satisfaction, and the development of the sports industry.

First, required is the formation of a relationship of mutual cooperation by and between the players, clubs, and the sports agents. The clubs, players, and the sporting groups develop the power to adjust the factors required for the development of organic relationships, while the sports agent maintains trust with the players and provides various information to the club, and while the club considers the players' position, a mutually balanced relationship which may recognize and actively support the activities of the players' agents must be formed[17].

Second, required is the reorganization of related laws and regulations. The history of Korea's sports agent may be conceived from Chanhoo Park's entry into the Major League Ball of the United States. Since the domestic sports market is very small relative to those of the advanced countries such as the United States and Europe, the Korean sports agent system does not have a great effect[18][19]. Furthermore, the domestic sports agent management system is still incomplete. Therefore, in the case of Korea, an institutional system and management system to appropriate control legal issues in the areas of qualification review of sports agents, contract consignment, and compensation for wages and damages must be developed. The method of such a management system is the introduction of an official qualification system, whose foundation is the implementation of a qualification related testing system. The efforts to strengthen public confidence are required as there have been the cases where the activities of indiscriminate or unqualified sports agents have caused issues domestic and abroad, while

the market confusion needs to be minimized by regulating the prohibition of the activities of unqualified agents. In this process, the regulations of the association(confederation) should also be established and revised, and the players' contracting system must also be improved across the board.

Third, required is the training of the professional manpower. To foster excellent talents for the sports agent market, it is necessary to foster the sports agents with an international level of expertise[20]. To foster the professional manpower, it is necessary to encourage physical education and related majors to acquire qualifications, and classify them into the revitalization of the sports private qualification system, strengthening of the policies for the fields of priority, legal regulation, deduction of research projects, and the expansion of strategies, while a clear validation system by the government and related organizations is required[21].

Fourth, required is an effort to improve the qualities of a sports agent. A sports agent ought to be well aware of the laws and regulations of domestic and foreign sports organizations and leagues, and the mindset and professional knowledge appropriate in line with the trends and times are required, while a spirit to serve is also needed. Working as an intern or volunteer is also a good way at various sports organizations and clubs[22]. In addition, it is also necessary for the companies and players to strive for satisfaction with the service by improving the servicing quality of the sports agents[23].

Sports pursue public values, whose foundation is not only ethical and moral, but also public values include sports, arts, education, and culture[24][25][26]. Since the evaluation across such areas is performed within the scope of ethics or norms, the ethical part may also be said to be important, and since the area of sports agent begins with the relationship between the player and the agent, such ethical part is also crucial[27][28].

5. Conclusion

This study is playing such a big role in the field of sports industry, and by examining the effect of the college students' perception of sports agent on the expected role and the expected job satisfaction of sports agent, which can greatly help the college students to place their job and start a business, it is quite meaningful in that it presents a future direction of the educational program of the sports agent fostering institutions and the role of the sports agent.

Towards this end, as of 2021, 380 college students served as the subjects of the study, and 380 students were targeted by the convenience sampling, and the survey was conducted by using the self-administration method, while 369 people's questionnaires were used as valid samples, excluding the data in which some of the survey contents were omitted. As for the data processing in this study, the frequency analysis was performed to examine the general characteristics by using the SPSS 25.0 Program, a statistical package program, while the Cronbach's α coefficient was calculated to validate the reliability of the questionnaire. The factor analysis was performed to classify the factors, and the correlation analysis was performed to understand the relationship between the variables. The multiple regression was used to examine the effects of the sports agent's perception factor on the expected role factor and the expected job satisfaction factor.

Through this method, first, as a result of performing the factor analysis and the reliability analysis, the sports agent's perception was consisted of the 3 factors of the recognition factor($\alpha=.752$), necessity factor($\alpha=.860$), and the expectation factor($\alpha=.831$), while the expected role's factors were consisted of the 3 factors of the target management factor($\alpha=.862$), organizational management factor($\alpha=.746$), and the financial management factor($\alpha=.697$). The expected job satisfaction was consisted of the 1 factor of the expected job satisfaction($\alpha=.845$). Second, as a result of performing the correlation analysis, it turned out that there exists a relationship between all of the factors. Third, in the effect of sports agent's perception on the expected role and the expected job satisfaction, perception, necessity, and expectation of the sports agent's perception have an effect on the goal management, organizational management, and the financial management of the expected role, awareness and the necessity of the sports agent's perception, while the expectation has the effect on the expected job satisfaction of the expected job satisfaction. Target management of expected role,

organizational management, and the financial management turned out to have an effect on the expected job satisfaction of the expected job satisfaction.

Overall, the sports agent's perception turned out to have a significant effect on the expected role and the expected job satisfaction. Therefore, the development and implementation of the educational programs related to the launch of a curriculum for fostering the sports agents at colleges and universities, and the theoretical knowledge and field practice for the sports agents to have need to be explored. Along with the improvement of the ability and skills, the students who wish to become sports agents also need to make continuous efforts to improve their foreign language skills and understand laws and regulations to develop their qualifications, and in particular, it is also important for them to have and grow a mindset and attitude for building interpersonal relationship and trust.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Lead Author	HC	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
Corresponding Author*	CL	-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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The Impact of Collective Art Therapy on the LEARNED Lethargy

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Abstract

Purpose: Since lethargic people express a belief that they are unable to control themselves over some issues and matters, their passivity further elevates, their expectations and motivation for the future fall, and their capacity for performance diminishes. Therefore, it may be viewed that collective art therapy could change negative perceptions and behaviors by conducting group interaction and successful experiences in the process of art therapy. This paper seeks to specifically verify the impact on the learned lethargy formed via repeated failures by utilizing the collective art therapy, which is found to be very useful among the various techniques of treatment which might help address internal issues.

Method: Uncover the factors of the learned lethargy through references, organizes the concepts, characteristics, and the basic aspects of the factors, and articulate and specify the negative impact on the learned lethargy in detail.

Results: The collective art therapy assists one to address issues via deep insights to one's inner self, encourages one to enhance one's self-esteem by having a positive self-image, and through interactions by and among the members of group, the process of self-discovery largely contributes to improving one's self-esteem. It was discovered that, by conducting the collective art therapy, group interactions and successful experiences of the art therapy not only change the negative cognitions and behaviors, but also help achieve a proactive attitude, which is a departure from a depressive behavior studies and a passive attitude.

Conclusion: It was discovered that being tamed for the learned lethargy causes a negative impact across various areas and negative emotions including depression and anxiety. Therefore, through this study, the collective art therapy programs will need to proactively endeavor to ensure that the collective art therapy program delivers a sense of achievement for human growth, convert negative motivations into positive motivations, and that the program is used even more diversely for addressing practical issues.

[Keywords] Art Therapy, Learned Lethargy, Group Counseling, Self-Esteem, Success Experiences

1. Introduction

Art therapy is a type of mental health activity which engages self-exploration through a creative process of using art media and the resulting work. Through which, the counselee may elevate self-exploration, self-control, social skills and self-esteem. Among the advantages of art therapy is that it expresses the inner realm such as thoughts, emotions, and perceptions through art more vividly than the words alone [1]. We think of art with an image before a language, yet art is a non-linguistic, artistic form of language which may express such an image most directly. Through which, an individual can seize opportunities for change and growth, and among the various techniques of treatment which could not only enhance the value of life but also address the individual's inner issues, it is intended to utilize the collective art therapy,

which is very useful, to verify the impact of the collective art therapy on the learned lethargy formed through repeated failures in greater details[2].

A psychological state which emerges when it is impossible to control oneself over some matter, lethargy may largely be classified into the organic lethargy and the learned lethargy. Organic lethargy means an innate lethargy, whereas learned lethargy means a state of lethargy which is formed through the repeated experiences of the situations beyond control in the past. That is, learned lethargy is a psychological state where one's own reaction forms the expectation that the results cannot be controlled through repeatedly experiencing impossible situations, and the relevant expectation causes a loss of motivation, thereby resulting in a loss of performance[3]. According to Seligman(1975), a most important factor in the generation of the learned lethargy is that when faced with various stresses prevailing in day to day life, human could not handle the external stimuli or are prone to causing problematic behaviors from the continued exposure to stressful conditions, which makes it easy for one to fall for a state of maladaptation, which is said to be a factor of diseases and mental disorders harmful to health[4]. Therefore, the collective art therapy will provide a most important pillar for the various efforts to help bring about changes to the negative perceptions and behaviors through the group interactions and successful experiences in the process of art therapy[5].

2. Theoretical Background

2.1. Art therapy

Among the artistic activities which can help one visualize one's emotions and actively express oneself is art. Art therapy is a type of mental health activity which helps humans grow and rehabilitate through the practical art activities and self-explore through the works. The fundamental belief of the art therapy is that the images which emerge in our mind facilitate the understanding of ourselves and insights. Through which, the individuals could have opportunities for change and growth, and may also enhance the value of their lives. In such a process, an art therapist helps counselees to relate the images they conceive to their real lives and gain insights therefrom. For those who do not express themselves with ease, art, which is a non-linguistic expression, could be a more comfortable and safe means of expression than to verbally describe themselves[6].

While conducting art work, people often unconsciously express the issues they conceal, suppress, or avoid. Such a self-expression is an opportunity for them to achieve a sense of identity, and may also be a factor in enhancing their self-esteem and a sense of responsibility for their lives[7]. Those with a low self-esteem may have difficulties in making autonomous choices, and may also demonstrate a lack of the sense of responsibility. In this vein, art therapy provides them with an opportunity to choose their own colors or materials and the experiences where they may feel actively responsible for the choices they make. Furthermore, art therapy does not set standards on the aesthetic value of works, yet respects the special meaning each work carries, and hence, from this point of view, people feel for the value of work which expresses their inner realm, and could enhance their self-esteem and self-confidence[8].

2.2. Collective art therapy

Among the art therapies, the collective art therapy helps one to address issues through deep insights into one's inner realm, and helps one to improve self-esteem by having a positive self-image. Through the interactions by and between the group members, the process of self-discovery is crucial for improving one's self-esteem, and by offering a sense of accomplishment in solving realistic problems and converting any negative motivations into the positive motivations, the collective art therapy program has such a broad range for utilization[9]. Art therapists ought to form an atmosphere where the counselees can work as freely as possible, and also help them

to gain successful experiences[6]. In particular, the collective art therapy is an approach which allows multiple people to simultaneously participate and engage in creative activities together by employing various methods whereby they can communicate with each other and with greater ease, explore the minds their own, of others, and for each other reflected in the works[10]. In the collective art therapy, communication by and between the group members, stimulation for activities, and imitation, etc., take place, which act as a factor of promoting the counselees to participate even more actively for therapy. Furthermore, within the group, individuals can achieve growth and development by sharing their own problems or conflicts and by exploring solution. s. According to the previous studies, the collective art therapy causes a positive impact on the enhancement of self-identity for those with low self-esteem, and is effective for enhancing self-esteem as well[3].

2.3. Learned lethargy

It is a prediction that one's reactions will not control the outcome which will take place in the future. This means that the mental state in which intrinsic motivation and resources are lost due to such negative stimuli as the external pressures and control emerges repeatedly. Such learned lethargy emerges as a lack of self-confidence, depression-negative cognition, passivity, lack of control, lack of persistence, lack of desire to show off, and a lack of responsibility[11]. According to Seligman(1975), the learned lethargy shows that even in a situation where there is a correlation between reactions and the outcome, the individual's motivation to react is further reduced, and when if there is a reaction, the ability to learn that a reaction is effective is further reduced, and the motivational, cognitive, and emotional damages are caused, which further trigger emotional disorders such as depression and anxiety[12].

Since learned lethargy was first observed, many studies have been conducted. Examining the leading theories which explain the psychological mechanisms causing the learned lethargy, the first is the theory which pays attention to the fact that one's response to overcome a negative situation does not affect subsequent results, or the theory of unrelatedness between response and outcome[13]. That is, when humans or animals cannot control various events such as physical restraints and noises taking place in their environments at their will, they would eventually give up on their will and effort to control such environments. Second is the argument that the cause of the learned lethargy is a stable, comprehensive, and internal failure attribution while believing that the cause of failure is one's own inadequacy, and such that it cannot be changed by efforts alone[14]. This leads to the realization that painful and unhappy events will come no matter how hard one works, and consequently, one will see increasingly demeaning oneself, which will further cause various negative emotions, thereby yielding weaker self-esteem, anxiety and depression. Third is a theory which explains the lethargy of infants and children, which provides for the conditional self-worth, which evaluates one's worth depending on the reactions of others, and the implicit intelligence theory, which means the belief in changes in intelligence, and this is a theory which is primarily used for explaining the lethargy of infants and children rather than the adults[15].

While various scholars have presented diverging views as to why the learned lethargy arises, there are limitations to providing a comprehensive explanation. However, since the learned lethargy does not manifest itself as a single symptom, multiple features are manifested simultaneously, and hence, it causes behavioral disruptions under situations beyond control, which gives rises to a major impediment to growth and development[16].

First, excessive failure related experiences provide for the cause of the learned lethargy. Ah-young Kim(2010) claims that failure is attributable to the lack of ability, and if it is repeated as such, nobody will not have the ability to achieve the relevant tasks, and hence, he or she will solidify the belief that he or she will not succeed no matter how hard he or she works, whereby the declining self-efficacy results in the learned lethargy. The excessive failure related experiences or the situations which are difficult to handle cause the students to feel anxious and dreadful as to how to perform the tasks and whether they will be able to perform them well, further to causing them to be unable to respond to

the situations of problems in an effective manner[17]. Depending on how one perceives the failure related experiences would have a greater impact on the learned lethargy than the failure related experience themselves. That is, depending on the state of mind, even the same issue may be felt easy or difficult.

Second, the lack of self control may provide for the cause of the learned lethargy. Lacking control, lethargy might result. Those who think that they will not be able to control the experiences beyond control they are experiencing now will cause lethargy and depression, and those believe that they cannot control themselves under situations of problems, and those who think that the outcome of their work are attributable to their surroundings often fall for lethargy. The people equipped with a tendency for internal control, who believe that the outcome of some event is the result of one's ability or effort, do not easily fall for lethargy. However, those with a tendency for external control, who believes that the outcome of some event is caused by fate or those around them easily fall for lethargy[18].

Third, emotional maladaptation stands among the causes of the learned lethargy. It is very easy to lose self-confidence and fall for lethargy if one is excessively nervous or emotionally unstable. Where such happens often, one would lose confidence, dislike the relevant work and fall for lethargy, and ultimately would become sensitive towards changes taking place in the surrounding environment[18].

Fourth, the lack of persistence is another cause. A lethargic student is not motivated across all matters, and could not persist in solving even a single task. That is, even in pursuing the daily life, he or she would know what must be done, yet does not in fact practice it. Furthermore, there are many times when learning goals are set very well yet are not pursued or achieved. Whenever that happens, declining self-confidence, etc., would become evident[19].

Fifth, external factors surrounding oneself might be a cause of the learned lethargy. When one gains the experience of a situation beyond control due to such external factors as family problems, competitive learning environment, academic distress, relationships with friends, and parental pressure for one to overachieve, he or she would not know that his or her responses were successful even when his or her responses were successful indeed. As such, various characteristics of the learned lethargy exist concurrently.

It was presented that the characteristics which are manifested when the learned lethargy arises as described in the above include the strengthened passivity, declining task performance, depressed and negative cognition, declining problem solving skills, and the lack of patience in giving up easily. It was seen that emotional problems were among the most common problems experienced by the students of learned lethargy. For instance, the number of the students experiencing psychological difficulties is very large, and an appropriate intervention is required for such students. According to a previous study, only 27.3% of the adolescents' parents answered that their kids are mentally healthy[20].

Furthermore, low self-esteem, low expectations for success, declining individual decision-making skills, feelings of inferiority, anxiety, depression, sense of guilt, and lack of persistence were presented among the symptoms of lethargy. From the above it may be seen that the learned lethargy is an important factor which might cause behavioral, cognitive, and emotional disorders. First, in terms of behavior, it is low motivation. Given the repeated failure related experiences, one would think that any action he or she takes will have no effect on the outcome, and hence, the motivation for the reaction itself is low. However, he or she would miss the timing since he or she cannot determine where to begin. Second, in terms of the cognitive aspect, learning that there is no relationship between response and outcome, and the perception that effort and outcome are irrelevant is formed, and hence, even in a situation where actual success may be achieved, no willpower is manifested since there is no conviction whatsoever. Third, in terms of the emotional aspect, one would become insensitive and non-emotional to his or her own and others' feelings and would fall for the condition of depression. Consequently, it may cause the emotional confusion and maladjustments to the school life[21].

2.4. Collective art therapy and learned lethargy

One's having the learned lethargy will lead to the negative predictions about one's own work, causing the side effect of not making efforts to change the situation, which will naturally lead to another failure, thereby falling into a vicious cycle. In fact, the learned lethargy brings about a significantly negative effect on the overall behaviors of an individual since it is a phenomenon[22]. In which one repeatedly experiences failures and makes no attempt to conduct any problem-solving behavior thereafter even while efforts were made to overcome a negative situation. Therefore, various efforts have been made to specifically study the characteristics of the learned lethargy. Examining their details, the learned lethargy reduces the passion or pleasure-seeking behaviors in day to day life, desensitizes everyday emotions we feel, and reduces the individual's voluntary will, thereby influencing the motivation and increasing the passivity. Furthermore, those suffering from the learned lethargy considered themselves mentally unstable, and also reported a high rate of headaches and sleep disorder, etc[23].

Following their examination, other studies have demonstrated that those with the learned lethargy experience difficulties in their interpersonal relationships and lethargically give up on their work, are dependent, passive, and lack a sense of responsibility, and avoid thinking without showing their will to do things on their own, and consequently, demonstrate lethargy not only in their academic situations but also in their day to day situations. The psychological environment of family at home has a higher relationship with the children's learned lethargy than the socioeconomic position, and the expectations or pressures of parents, which are difficult for adolescents to meet, also grow and contribute to the learned lethargy[24]. Since lethargic people develop a belief that controlling themselves is not possible, their passivity grows, their expectations and motivation for the future fall, and their performance declines. The collective art therapy introduced the concept of art for the group psychotherapy, which utilizes the creative activities in which the group members can interact and the therapeutic power of the group[25].

Art therapy is a responsive method intended for overcoming the learned lethargy. It not only offers a preventive effect, but also helps one develop the ability and skills to control one's own treatment. Furthermore, art therapy assists one with self-expressions through undertaking art activities. Self-expression is an ability to effectively express oneself, which is considered to include the emotional ability to respect one's feelings and the consideration for others, cognitive ability such as the recognition of one's own and others' rights and values, and the understanding of desirable behaviors, and the behavioral abilities and skills expressed through language and behavior. Self-expression is an act of respecting others' thoughts, emotions and rights along with self-respect, and is also an act of honestly expressing desires, thoughts, and feelings in order to protect one's dignity. Those less skilled in self-expression would likely have a lower self-esteem, and would worry more about gaining recognition from others, and would turn out to have a greater depressive tendency than those who express themselves very well[26].

Among the reasons for one's poor skills of self-expression are dysfunctional behavioral habits, hypersensitivity or underreaction to stimulus, excessive fear of irrational thoughts and negative evaluations, and low self-esteem. Hence, it is possible to explore the causes of lethargy by appropriately expressing oneself with an image through the medium of art, and by experiencing various attempts in the course of creating works by using media of art in a group, self-awareness and autonomy in the process of acceptance may be enhanced. Since lethargic people are prone to developing the belief that it is impossible to control themselves, and hence, their passivity increases, while their expectations and motivation for the future decline, and their performance will further decline thereby. Hence, the collective art therapy may be carried out based on the basic principles of cognitive behavior to help transform their irrational beliefs into the rational belief systems, and negative cognitions and behaviors may be transformed through group interactions and successful experiences in the process of art therapy[18].

Furthermore, creating something through a medium of art and seeing the finished works would promote anything beyond satisfaction and a sense of accomplishment. Through such experiences, one may become aware of one's own value, and while incrementally freeing oneself from the lethargy,

would enhance self-esteem, discover one's own potential, and have expectations for the future[19].

In order to elevate the effectiveness of the collective art therapy program, the form of content delivery is and will be a very crucial process. In particular, when it has to do with those with a high level of lethargy, it would be far more effective when it is delivered in a manner appropriate for the developmental process and characteristics. The program ought to be so structured as to be active and motivating based on the experiences to help build and maintain intimacy and a sense of belonging in group relationships, and to discover universality by exchanging feedbacks with each other. This requires any work which allows for one to experience oneself and move one's body, and the program ought to proceed as a process of learning from each other through the interactions rather than the unilateral delivery[27]. As for the activity content of the program to help reduce the learned lethargy, cooperative work has been selected. Techniques were used to enhance the team's solidarity including such team goals as collaboration, joint circle, and group body circle, as well as a sense of camaraderie. Collaborative work encourages one to facilitate the social interaction of friendship by engaging peers in mutual activities, break away from self-centric thinking, and cause interactions with others, ask questions about the others' thoughts, and organize and rearrange their own thoughts, thereby furthering the interactions in a social context for friendship[28].

People with a high level of lethargy would be less likely to voluntarily participate in the program, and hence, fun inductive activities which motivate them ought to be included. Hence, it is intended that the collective art therapy be applied to enhance the individual and group problem solving skills, while promoting the individual growth[29].

Art therapy carries its unique therapeutic factors which are very different from the linguistic counseling and psychotherapy, and such therapeutic factors operate as the opportunities for the positive changes toward improving the psychological, physical, and the mental health for the clients through therapeutic activities by using the media of art. As such, in the realm of art therapy, therapeutic factors are operating in the context of interaction in the process, and the media of art which facilitate such therapeutic factors play an important role in leading the changes of the clients as a medium of expression. In a study conducted with the professionals of art therapy, it was claimed that crayons, colored pencils, and decorating media were often cited for the intimacy factors and proved to be effective. It was also claimed that such familiar media help to reduce resistance and stimulate intimacy through the decorating media, whereby interest would be stimulated and the clients who are dreadful about direct self-expression may access them with greater comfort.

3. Conclusion

As examined in the above, a medium called art has become one that which allows one to express one's feelings, explore relationships, and achieve self-fulfillment. Through art activities, one would express not only his or her conscious thoughts and feelings, but also the unconscious desires and conflicts.

Furthermore, one would manifest thoughts, feelings, and conflicts which one was not aware of, along with what one is currently aware of.

In the course of exploring the surroundings, art activities pivot toward making attempts to do something, and through such process, one might gain a better sense of accomplishment and control. Even in terms of communication, art activities serve to provide a most natural medium for self-expression.

First, through art, students learn how to solve their own problems and skills. In particular, in a comfortable and safe ambience where they are confident that they will not be judged or criticized, they will continue to develop their creative thinking.

Through such process, they are assisted with effectively resolving conflicts in situations which they encounter in real life.

Second, through art, intense emotions may be released and resolved. This is an important factor in maintaining the physical as well as the mental health. Through which, the underlying thoughts and emotions which were previously difficult to express are exposed, relaxed, and a sense of security will

be present .

Third, as an important therapeutic factor of art, there is an aspect where it is the flexible and diverse use of one's imagination towards diverse utilization. They would learn and know better about themselves through their imagination, and further expand the realm of influence. Learned lethargy in such situations where it is difficult to adapt to and control in real life may bring about increased effort, determination, and performance without causing lethargy when and as they experience outcomes under control. Hence, it was verified that the collective art therapy has a significantly positive effect on the learned lethargy.

The group members would meet naturally through a relationship of giving and receiving help through mutual exchanges in a creative process. They would feel proud in that their words and actions bring a positive impact on the other group members, and in that they can help others while complementing the others' work. Furthermore, creating something as a medium of art and viewing the completed works promotes much more than a sense of satisfaction and accomplishment.

Through such experiences, they would become aware of their own worth, and may gradually break away from the lethargy and improve their self-esteem so that they could discover their potential and anticipate their future. By providing opportunities to freely exchange ideas on the works of art in a group, they would become aware of their own issues and expand their way of thinking across various perspectives through the process of breaking out of one's shell and examining them from new perspectives. In the process of the collective art therapy, the group members uncover their negative thoughts and behaviors and their interpersonal relationship patterns, etc., and objectively verify their reality through the group members' feedbacks and self-observation, etc. Through such intra-group interactions, they would acquire social adaptation skills, and by having the opportunities to practice and evaluate naturally with their group members in the safe space of their group, their ability to adapt to new situations will be improved, and better interpersonal relationships may be learned. Successful experiences in group may also be applied to day to day life, and changes may occur, such as interactions with others and learning from other people's experiences. That is, by correcting one's distorted thoughts and interpersonal relationship patterns, it was possible to achieve a potential therapeutic effect towards a better, positive attitude of life. Therefore, they ought to spare no effort for actively developing and applying systematic programs for the specific methods of overcoming the learned lethargy utilizing the collective art therapy moving forward[30].

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5. Appendix

5.1. Authors contribution

	Initial name	Contribution
Author	CK	<ul style="list-style-type: none">-Set of concepts <input checked="" type="checkbox"/>-Design <input checked="" type="checkbox"/>-Getting results <input checked="" type="checkbox"/>-Analysis <input checked="" type="checkbox"/>-Make a significant contribution to collection <input checked="" type="checkbox"/>-Final approval of the paper <input checked="" type="checkbox"/>-Corresponding <input checked="" type="checkbox"/>-Play a decisive role in modification <input checked="" type="checkbox"/>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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A Study on Antibacterial REGULATIONS and Functional of Bamboo Fiber Pillow Cover

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Abstract

Purpose: The purpose of this study is to identify the antibacterial properties of hemp fiber pillowcases, and after analyzing the superiority of the hemp fiber pillowcases before and after use and through IPA, marketing plan for hemp fiber pillowcases applying the research results would like to propose.

Method: In order to achieve this objective, a corresponding sample T-test and IP matrix were prepared to investigate the difference between the antibacterial test and the functionality of bamboo fibers.

Results: The research results and implications through empirical analysis are presented as follows. First, the antibacterial properties of bamboo fibers against *Staphylococcus aureus*, *Escherichia coli*, and *pneumococcus* are 99.9%, and it has been found that bamboo fiber is a material with excellent utility as a pillow cover, so it can be said that commercialization is possible. Second, as a result of the corresponding sample T-test, it was found that there were significant differences in convenience, hygiene, and fragrance in order to examine the difference in the functionality of bamboo fibers before and after use. This means that the hemp fiber pillow cover is highly hygienic with excellent single-use convenience and antibacterial properties, and the fragrance is an item that needs improvement. Therefore, for commercialization, it is necessary to further develop convenience and hygiene and to conduct research and development to control fragrance. Third, among the functional items of the bamboo fiber pillow cover by IPA, ventilation, material, cleanliness, convenience, feel, hygiene, and dryness showed high satisfaction, and fragrance was found to be an item that needs improvement. Therefore, bamboo fiber is used as a pillow cover, and it can be said that it is a very suitable material in terms of antibacterial properties and functionality.

Conclusion: Therefore, bamboo fiber is used as a pillow cover, and it can be said that it is a very suitable material in terms of antibacterial properties and functionality.

[Keywords] Bamboo Fiber Pillow, Cover, Antibacterial, Functional, IPA(Importance Performance Analysis)

1. Introduction

Humans' bio rhythm is active in the morning, and rests at night, and repeat in the form of resting activities in a 24 hour cycle. During the rest, sleep is a most important activity, and while maintaining the physiological rhythm at the same time, it restores the body through recovery from the fatigue, thereby regenerating new energies. Furthermore, the hours of sleep, which accounts for a third of the day, plays a role in relieving the fatigue, yet is also the time when the skeleton of the human body, which has been distorted in daily life, finds its proper place. For health, it is important to get adequate sleep by using the right pillow as well as the proper amount of sleep for health[1][2].

Among the beddings, pillows support the body and head in a stable and natural condition in a laid position to ensure that the body can get a comfortable sleep[3]. It also facilitates various body move-

ments which occur during the sleep, blocks sounds and vibrations transmitted from the floor, and relieves the pressure on the head in contact with the floor. Hence, pillow is an essential tool for our sleeping activities, and in order to have a comfortable sleep, various hygienic conditions for the pillow must be satisfied[4].

In such a background, the purpose of this study is as follows. First, measure the antibacterial to determine the hygiene and cleanliness, etc., of the bamboo fiber pillow cover. Second, examine the excellence of the function of the bamboo fiber pillow cover through the analysis before and after its use and the IPA. Third, it is intended to propose a marketing plan for the bamboo fiber pillow cover by applying the research results.

2. Theoretical Background

2.1. Consideration of the previous studies

In-seok Yoo(2012) claimed that if a pillow is used incorrectly from the perspective of orthopedic surgery, it could cause various diseases including neck muscle pains, ligament damages, and neck diseases, and under severe cases, it might lead to a neck disc[1]. He proposed that long pillows be used such as those which are 10cm longer than the shoulder, which are neither too high or low, and as for the comfortable sleep inducing conditions, he claimed that thermal characteristics, shape, height, and texture ought to be considered, and the feeling of sleep varies depending on the height of the pillow, and claimed that it is recommended that a shallow pillow be used since it worsens the posture, and that the depth of sleep may be affected depending on the material of the pillow[4].

Furthermore, Nak-goo Kim and 4 others(2001) tested the antibacterial activity of the bamboo extracts with 3 types of the Gram positive bacteria and 4 groups of negative bacteria among the main food poisoning bacteria, and presented that research results that the extracts of porphyria of the entire atheroma demonstrated antibacterial activities against each strain, while Sook-gyeong Lee(2003) presented the results such that the antibacterial activity of each sample against dandruff bacteria turned out to be in the order of terbina fine > 100% bamboo oil > 50% bamboo oil, and 100% bamboo oil and 50% bamboo oil demonstrated similar antibacterial effects, and hence, 50% bamboo oil demonstrated effective results in terms of the cost reduction[5]. In addition, Yeon-tae Kim(2005) derived the result that the antibacterial activity of bamboo oil was very high against the 4 types of oral bacteria and 1 type of the general bacteria in a study conducted on the antioxidant and antibacterial activity of bamboo oil[6].

In a study conducted by Ki-ok Jeong and 2 others(2020) on the antibacterial effects of the bamboo extracts on the oral microorganisms, it is known that the bamboo grass extract contains large quantities of various amino acids(aspartic acid, proin), vitamins(vitamins B1, B2, B6, B12, vitamin C, K1), and minerals(calcium, potassium, magnesium, etc.), and the bamboo grass extract is rich in antioxidants and contains a large amount of polyphenols. Furthermore, it is claimed that it has an excellent effect of removing the acrylamide component. In addition, in a study conducted by Sook-gyeong Lee and 9 others(2010) on the antibacterial effects of the bamboo oil against the dandruff bacteria, BO, a natural substance, demonstrated an excellent antibacterial activity even when it is compared to IC and KC, in view of which, they claimed that it would be possible to present the possibility of a new formulation through the continuous research of the antibacterial activity according to the quantity of B.O added and the method of addition[7][8].

2.2. IPA

The importance performance analysis(IPA) is considered to be determined by the consumers' expectations for a satisfactory product and the utilization of product attributes, and Martilla & James(1977) proposed a management diagnosis technique based on the consumer opinion survey during the 1970s, and the IPA was performed to analyze the performance of the automobile business[9]. The IPA is a method of identifying the factors which the customers consider important before

purchasing products and the customers' satisfaction after purchasing the products in connection with such factors as the coordinates on a matrix, and the customers' satisfaction for products is viewed to be determined by the customers' expectations and the performance for a particular attribute (Gi-cheol Ki, 2005). Through the analysis of the two dimensional matrix of the importance and satisfaction, it is possible to identify the marketing performance where many resources are unnecessarily allocated [10].

Furthermore, it may be said that it is a tool which can evaluate the customer satisfaction with the marketing strategy. In addition, the advantage of the IPA is that it is possible to establish a desired marketing strategy at a company with a low cost and a relatively easy analysis. In the IP matrix, a two dimensional investigation is carried out, and satisfaction, which is an attribute used for the X-axis, and importance, which is used for the Y-axis, are investigated. Through which, 4 quadrants are formed, and the meaning of each is as follows.

The first quadrant (maintaining a good level of execution) is an attribute with both high importance and satisfaction, which means that a service or a product has competitiveness, and the second quadrant (concentration of effort oriented) is an attribute which the consumers consider to be very important. Notwithstanding which, it means that the satisfaction with the service or the product is low. Furthermore, the third quadrant (low priority) is an attribute with low importance and satisfaction. The need to allocate additional resources for such areas is relatively low. In the fourth quadrant (avoiding excessive efforts), satisfaction turns out to be high yet importance is low. That is, it is a case where the efforts deployed for such attributes may bring better effects if they are deployed for other areas [11][12][13].

3. Research Design

3.1. Antibacterial measurement

For the measurement of the antibacterial properties of bamboo fiber pillow cover, the antibacterial test method for textile materials was used, where after performing the UV sterilization of 0.4 g of the sample, 0.4 ml of bamboo oil was added to the sample and used for the test.

3.2. Functional measurement

The functional measurement tool For this study was the questionnaire form of entry type. Among the questionnaire items, the functional items before and after use of the bamboo fiber pillow cover were supplemented and revised based on the items measured presented in the previous studies of Nak-goo Kim et al. (2001), Ji-eon Kim (2004), Min-jeong Seong and Soo-gwang Seong (2006), Sook-Gyeong Lee et al. (2010), In-shik Yoo (2012), Young-seon Jo et al. (2018), Choon-ok Park (2019), and Ki-ok Jeong et al. (2020) [1][4][7][14][15][16][17]. The eventually derived items of functional measurement were consisted of 8 items of breathability, material, cleanliness, convenience, feel, hygiene, dryness, and fragrance, and 3 items of demographics (gender, age, and hours of sleep), for a total of 11 items. In addition, as for the items of functional measurement, a 5-point (Not at all-Average-Very much) scale was used, and as for the demographic items, a nominal scale was used.

3.3. Data collection and analytical method

For the antibacterial measurement, by using a bamboo fiber pillow cover,,, For the functional measurement, the research subjects were general people, and 30 people who used the bamboo fiber pillow cover themselves were the sample group, whereby the data were collected.

The analytical method for the collected data is as follows. First, for the measurement of antibacterial,.... Second, the frequency analysis was performed to identify the demographic characteristics of the sample, and third, the reliability analysis was performed for the reliability of the measurement items, and fourth, the matching sample T-test and IP matrix were prepared to examine the differences in the functional. As for the analytical tool, the SPSS 23.0 statistical package program was utilized.

4. Empirical Analysis

4.1. Test results of the antibacterial and bacterial detection

The antibacterial test results of bamboo fibers are as illustrated in <Table 1>.

Table 1. Antibacterial test results.

Item of test		Results of test	
		Control	Sample
Concentration of ATCC 6538(staphylococcus aureus) inoculum	Bacteriostatic reduction rate for bacterial count(CFU/ml) after 18 hours 3.3×10^5 CFU/ml	4.5×10^6	< 10 99.9
Concentration of ATCC 8739(coliform bacillus) inoculum solution	Bacteriostatic reduction rate for bacterial count(CFU/ml) after 18 hours 3.0×10^5 CFU/ml	7.0×10^5	< 10 99.9
Concentration of ATCC 4352(pneumococcus) inoculum	Bacteriostatic reduction rate for bacterial count(CFU/ml) after 18 hours 3.0×10^5 CFU/ml	6.2×10^5	9.3×10^2 99.9

Note: Sample information: material-fiber, cyress oil / Contrast: standard cotton fabric / Sample Treatment: after performing the UV sterilization of 0.4 g of the sample, 0.4 mL of cyress oil sent by the company was added to the sample and was used for the test.

Bacteriostatic reduction rate(%)=[(Bacteria after control culture)-(Bacteria after sample culture)] / (Bacteria after control culture) X 100(%) In addition, the bacteria detection test results are as illustrated in <Table 2>.

Table 2. Results of the bacteria detection test.

Item of test		Results of test	
		Day 1	Day 5
General aerobic bacteria	Number of detected bacteria (CFU/ml)	6.4×10^2	2.4×10^3

Note: Material of sample: bamboo material fiber/Bacterial collection: placed 16g of sample together with 144g of sterile physiological saline in a sample bag, and shook them for 3 minutes by using a stoma marker. 1 mL of the shaken bacterial solution was used as a bacterial sample solution. / Test method: inoculated 1 mL of the bacterial sample into 3MTM Petrifilm TM(AC, USA) and incubated it at 35 °C. After 48 hours of incubation, red colonies were counted. The average of the results repeated 3 times was calculated and marked.

The growth rate of the bacteria is as fast as once every 20 minutes, and divides 72 times every 24 hours. Each weighs only 10^{-12} g, yet after a day, it divides 2^{72} times, resulting in 400 barrels(Nak-eon Choi, 2018). Furthermore, according to the Korea Centers for Disease Control and Prevention, if one does not wash hands, 64 bacteria will emerge after 1 hour, but the number of bacteria increases 64 times to 4,096 after 2 hours, and increases by approximately 4,062 times to 260,000 after 3 hours. As such, the increase in the bacteria takes place exponentially over a short period of time. Hence, the number of bacteria on the first day using the bamboo fiber pillow cover was 640 CFU/ml, and the number of bacteria on the 5th day was 2,400 CFU/ml, which increased only approximately 4 times, respectively, and hence, it may be said that the ability to inhibit the bacterial growth of bamboo fiber pillow cover is excellent.

4.2. Demographic characteristics

The demographic characteristics of the 30 subjects of this study are as illustrated in <Table 3>.

Table 3. Demographic characteristics of the research subjects(N=30).

Classification	Item	Frequency (people)	Ratio (%)	Classification	Item	Frequency (people)	Ratio (%)
Gender	Men	15	50	Age	20s	6	20

	Women	15	50		30s	9	30
Hours of sleep	6 hours and less	6	20		40s	6	20
	7 hours	15	50		50s	3	10
	8 hours or longer	9	50		60s and older	6	20

As for gender, men and women each accounted for 50%, respectively. It turned out that the hours of sleep were 7 hours were 50%, 8 hours were 30%, and 6 hours or less were 20%. As for age, those in their 30s had the highest for 30%, while those in their 20s, 40s, and 60s were 20%, and those in their 50s were 10%, demonstrating the smallest distribution.

4.3. Reliability analysis

Reliability is intended to evaluate the extent of consistency when a variable is measured in various ways or measured many times, and there are the remeasurement method and the internal consistency method. In this study, the analysis was performed by using the Cronbach's alpha coefficient, which evaluates the most widely used internal consistency among the items.

In general, the reliability coefficient ought to be .90 or more for the area of applied research, and .80 or more for the area of basic research, yet in the area of exploratory research or at the level of analysis of operational units, it is considered good if it is .60 or more (Hoon-young Lee, 2017).

The reliability analysis results of the functional measurement variables are as illustrated in <Table 4>.

As a result of analyzing 8 reliability factors before and after using the bamboo fiber pillow cover, the overall reliability before use turned out to be .793 and the overall reliability after use turned out to be .820, which were favorable. When the items were removed, the Cronbach's alpha coefficient before use turned out to be .779 to .791, and the Cronbach's alpha coefficient after use turned out to be .800 to 0.820, suggesting that there was no variable which lowered the reliability. Hence, the measurement variables of the functional are reliable.

Table 4. Reliability validation of the functional measurement items.

Item	Before use(cronbach's alpha: .793)			After use(cronbach's alpha: .820)		
	Mean	Standard deviation	A coefficient upon removal	Mean	Standard deviation	A coefficient upon removal
Breathability	3.10	.407	.780	3.70	.305	.811
Material	2.20	1.186	.791	3.60	.498	.820
Cleanliness	2.00	1.114	.786	3.00	.643	.817
Convenience	2.20	1.186	.782	3.60	.675	.800
Feel	3.00	.643	.791	3.50	.509	.805
Hygiene	2.40	.498	.779	3.70	.466	.819
Dryness	2.80	.407	.788	3.70	.466	.816
Fragrance	2.60	.498	.790	2.10	.305	.820

Note: Scale. 1= not at all to 3= average to 5= very much.

4.4. T-test of matching sample for the quality of sleep

The matching sample T-test was performed to analyze and examine the quality of sleep before and

after the use of the bamboo fiber pillow cover. The results are as illustrated in <Table 5>.

Before using the bamboo fiber pillow cover, among the qualities of sleep, 'drowsy during the day, tossing and turning a lot, very tired when waking up in the morning' turned out to be low, and after using it, 'wake up twice or more during sleep, not getting a lot of sleep, tossing and turning a lot, very tired when waking up in the morning, and drowsy during the day' turned out to indicate a poor quality of sleep. Furthermore, among the contents regarding the quality of sleep before and after using the product, 'difficult to fall asleep after waking up, tossing and turning a lot during sleep, very tired when waking up in the morning, and drowsy during the day' demonstrated statistically significant results. Consequently, it may be said that the quality of sleep improved after using the bamboo pillow cover.

Table 5. Analysis of the differences in the sleep quality before and after using bamboo fiber pillow cover.

Item	Before use(B)			After use(A)			B-A	Significance probability
	Mean	Standard deviation	Ranking	Mean	Standard deviation	Ranking		
It takes long to fall asleep.	2.70	.794	6	2.60	.814	6	.100	.083
I wake up twice or more while sleeping.	2.90	1.062	4	3.00	1.114	1	-.100	.083
I can't sleep much.	2.90	1.155	4	2.80	1.186	2	.100	.083
I fall asleep, then wake up, then can't get back to sleep.	2.60	1.133	8	2.40	1.037	8	.200	.035*
I toss and turn in bed.	3.10	.845	2	2.80	.761	2	.300	.048*
I feel very tired when I get up in the morning.	3.10	1.062	2	2.80	.761	2	.300	.001**
I worry about not being able to sleep.	2.70	.794	6	2.60	.814	6	.100	.083
I can't sleep well because of dreams I have.	2.10	.305	10	2.00	.305	10	.100	.083
I'm drowsy during the day.	3.20	.761	1	2.80	.761	2	.400	.012*
I often sleep during the day.	2.40	1.133	9	2.40	1.037	8	0.000	1.000

Note: Scale. 1=not at all to 3=average to 5=very much / *= $p<.05$, **= $p<.05$, ***= $p<.05$.

4.5. Functional IPA

The matching sample T-test was performed to analyze and examine whether there was a functional difference between the bamboo fiber pillow cover before and after its use. The relevant results are as illustrated in <Table 6>.

Table 6. Analysis of the functional differences before and after using bamboo fiber pillow cover.

Item	Before use(B)			After use(A)			B-A	Significance probability
	Mean	Standard deviation	Ranking	Mean	Standard deviation	Ranking		
Breathability	3.10	.407	1	3.70	.305	1	-.60	.000***
Material	2.20	1.186	6	3.60	.498	4	-1.40	.461
Cleanliness	2.00	1.114	8	3.00	.643	7	-1.00	.122
Convenience	2.20	1.186	6	3.60	.675	4	-1.40	.000***
Feel	3.00	.643	2	3.50	.509	6	-.50	.089
Hygiene	2.40	.498	5	3.70	.466	1	-1.30	.000***
Dryness	2.80	.407	3	3.70	.466	1	-.90	.247
Fragrance	2.60	.498	4	2.10	.305	8	.50	.025*

Note: Scale. 1=not at all to 3=average to 5=very much / *= $p<.05$, **= $p<.05$, ***= $p<.05$.

Before using the bamboo fiber pillow cover, breathability(average = 3.10) ranked first, feel ranked second(average = 3.10), and dryness ranked third(average = 2.80), respectively. It is evident that as for the pillow covers other than bamboo fiber, breathability is the most important optional functional. Furthermore, as for the lower rankings, cleanliness(average = 2.00) ranked the eighth, and material and convenience(average = 2.20) were tied at sixth, demonstrating that cleanliness was the largest dissatisfaction.

As for the functional after using the bamboo fiber pillow cover, breathability, hygiene, and dryness(average = 3.70) were tied at the first place, and material and convenience(average= 3.60) were tied for the fourth place. It may be said that the largest satisfaction are breathability, hygiene, and dryness after using the bamboo fiber pillow cover. Furthermore, as for the lower rankings, fragrance(average = 2.10) turned out to be the eight place, and hence, it may be said that the fragrance is not satisfactory.

Furthermore, among the functional, convenience, hygiene, and differences between before and after the use of fragrance demonstrated the statistically significant results.

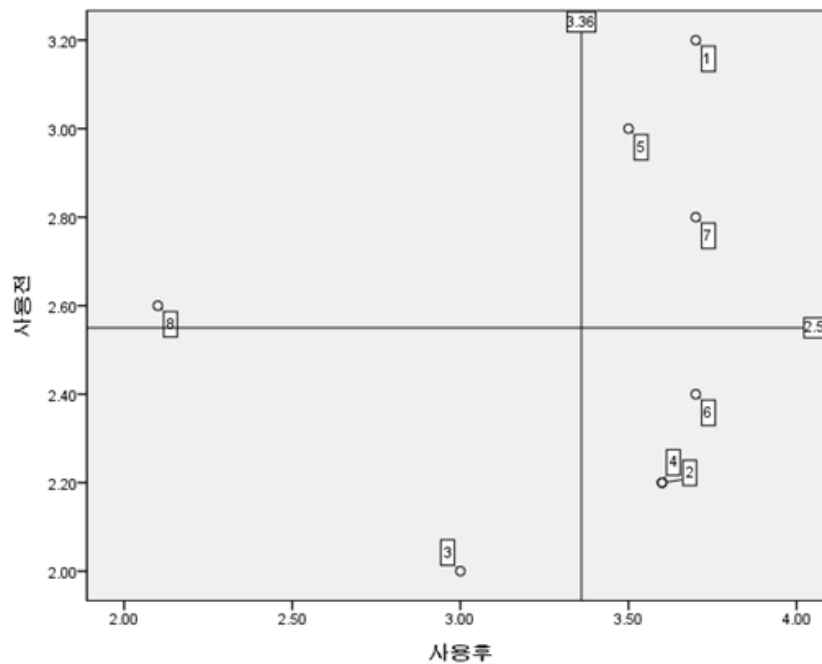
In addition, the IP matrix was performed, which divided into four quadrants by the mean(2.55) before use and mean after use(3.36) for the 8 parameters of the bamboo fiber pillow cover's functional. The relevant results are as illustrated in <Figure 1>.

The items associated with the first quadrant(continued maintenance of good performance) is consisted of a total of the 3 items of breathability, feel, and dryness. That is, it may be said that among the functionals of the bamboo fiber pillow cover, the satisfaction with breathability, feel of the pillow cover material, and the dryness were high for the satisfaction.

The items associated with the second quadrant(area of focused improvement) turned out to be fragrance. It is necessary to regulate the unique scent of bamboo which stems from the bamboo fiber pillow cover.

The items associated with the third quadrant(low priority) turned out to be clean. It is recognized that bamboo fiber has excellent antibacterial properties, and hence, the satisfaction is high, and hence, it may be said that cleanliness is guaranteed by using bamboo fiber as the pillow cover.

Figure 1. IP matrix before and after the use of the bamboo fiber pillow cover.



Note. 1=breathability, 2=material, 3=cleanliness, 4=convenience, 5=feel, 6=hygiene, 7=dryness, 8=fragrance / length: before use, horizontal: after use.

There are a total of 3 items associated with the fourth quadrant (avoiding excessive efforts), which are material, convenience, and hygiene. Through which, it is evident that among the functionals of the bamboo fiber pillow cover, the satisfaction with material, convenience, and hygiene is very high.

5. Conclusion

The purpose of this study is to examine and understand the antibacterial of the bamboo fiber pillow cover, and after analyzing the excellence of the function of the bamboo fiber pillow cover through the analysis before and after its use and through IPA, propose a marketing plan for the bamboo fiber pillow cover by applying the research results. To achieve such, the matching sample T-test and the IP matrix preparation were carried out to examine the differences between the antibacterial test and functional of bamboo fiber.

The research results and the implications gained through the empirical analysis may be presented as follows. First, the antibacterial of the bamboo fiber for staphylococcus aureus, coliform bacillus, and pneumococcus turned out to be 99.9%, the number of bacteria on the first day by using the pillow cover of the bamboo fiber turned out to be 640CFU/ml, and the number of bacteria on the fifth day turned out to be 2,400CFU/ml, increasing by approximately 4 times only, whereby the inhibition of bacterial growth of the bamboo fiber pillow cover was excellent. As it has been discovered and articulated that bamboo fiber is a material with excellent utility as a pillow cover, it may be said that it could be commercialized.

Second, among the contents regarding the quality of sleep before and after using the bamboo fiber pillow cover, 'difficult to fall asleep again after waking up, tossing and turning a lot during sleep, very tired when I wake up in the morning, and drowsy during the day' demonstrated the statistically significant results. Based on such results, it may be said that the quality of sleep improved after the bamboo pillow cover was used. Third, as a result of conducting the matching sample T-test to examine and understand the differences between the functional of bamboo fiber before and after its use, it turned out that there were significant differences in terms of convenience, hygiene, and fragrance. This means

that the bamboo fiber pillow cover is easy to use for one off use, and has excellent antibacterial hygiene, while the fragrance is an item which requires improvement. Hence, for the commercialization, it is necessary to further develop convenience and hygiene, and conduct research and development to regulate fragrance. Fourth, among the functional items of bamboo fiber pillow cover by the IPA, breathability, material, cleanliness, convenience, feel, hygiene, and dryness turned out to have a high satisfaction, and fragrance turned out to be an item which requires improvement. Hence, it may be said that bamboo fiber is a very appropriate material to be used as a pillow cover in terms of antibacterial and functional.

In this study, the antibacterial of bamboo fiber was measured through the test, yet as for the item for functional, it was not adequate to generalize given a small number of experimental groups. For the future research, however, it is necessary to expand the experimental groups for the functional research and conduct test researches.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Author	YK	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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Measures to Revitalize Resident Participation in the Self-Governing Police SYSTEM

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Abstract

Purpose: In order to successfully establish a self-governing police system, police work, which has been greatly expanded compared to the past, must be effectively performed. Therefore, policy measures that can expand not only formal community governance in which local residents participate but also various informal governance should be sought from now on.

Method: This study examines the need and current state of a participation system for the secure establishment and expansion of an autonomous police system, and examines policy measures to increase resident participation in Korea in the future.

Results: Regarding the study results, as a policy alternative for the successful establishment of an autonomous police system, first, in order to expand the institutional mechanism for an autonomous police system led by local residents, it is considered necessary to expand their participation in the provincial autonomous police committees, and to introduce a resident recommendation system for the heads of local police departments. Second, in order to strengthen a security network based on public-private cooperation centered on local residents, the systematic operation of an autonomous crime prevention squad and the operation of a Police Development Council should be improved through the enactment of related laws. Third, it was observed that a network consultative body should be established, an advisory group for local residents should be formed, and the operation should be expanded.

Conclusion: This study, ultimately, pretends to present resident-led administration as the most important value of the autonomous police system. In addition, citizens and local residents are the most important actors not only in the autonomous police system, but in all administrative functions of the state and local governments. In order to create a genuine 'policing cooperation ecosystem' that can discover the demand for public security suitable to the local characteristics through an autonomous police system and guarantee the democracy and resident-oriented nature of police activities, local governments and the police must cooperate and connect with resident-centered governance.

[Keywords] Local Police System, Local Autonomy, Local Decentralization, Residents Participation, Police Activities

1. Introduction

The self-governing police system can be said to be an autonomous police system in which residents actively participate by performing police activities appropriate to local conditions based on the will and demands of local residents.

As a result, advanced countries that have already implemented the autonomous police system are encouraging the voluntary participation of local members to eliminate disorder in the local community

by establishing an active civil-economic cooperation system and expanding the official resident participation system[1].

In particular, according to Article 4 of the current *National Police and Autonomous Police Organization and Operation Act in Korea*, the duties of autonomous police include preventive activities for the safety of local residents, support for crime prevention activities with resident participation, and various disasters. In addition to comprehensive safety activities, protecting people who need social protection, such as children, adolescents, the elderly, women, and the disabled, as well as prevention of crimes such as domestic violence, school violence, and sexual violence are comprehensively stipulated.

Therefore, in order to successfully establish the autonomous police system, which has been implemented nationwide from July 1, 2021, it is necessary to effectively carry out police work that has been greatly expanded in comparison to the past.

Therefore, policy measures that can expand not only formal community governance in which local residents participate but also various informal governance should be sought from now on.

Accordingly, in this study, the necessity and current state of the resident participation system for the secure establishment and expansion of an autonomous police system, as well as policy measures to expand resident participation in the future in Korea will be examined.

2. Necessity of Resident Participation

The self-governing police system is a system in which local police carry out public security tasks independently based on the will of local residents under the authority and responsibility of local governments in accordance with the idea of decentralization. It is a police system for local residents, and it can be said that it is based on so-called 'police administration by residents', 'police administration for residents', and 'police administration of residents'.

Therefore, the self-governing police system, above all else, aims to establish itself as a resident-centered public security system into the national police by expanding the participation of residents by systematically improving the existing unavoidable harm caused by the unified police organizational structure.

Therefore, in the self-governing police system, it is necessary to present specific alternatives for policy design to induce participation in public security administration by self-governing organizations such as residents' associations, and to establish a platform for self-governing police-resident participation.

Of course, although resident participation and further securing democracy in local autonomy can be indirectly secured by elected local councils and government heads when direct resident participation is difficult, it can be said that a direct participation method in making decisions is preferable.

In Korea, the referendum system in 1994, the system for requesting the opening and closing of ordinance enactment in 1999, the resident audit request system, the resident litigation system in 2005, and the recall system in 2006 were introduced by the *Local Autonomy Act*, and , the direct resident participation system was further expanded through the enactment of the *Resident Recall Act* in 2006 [2].

As such, the essential task for the successful establishment of the autonomous police system is the creation of a common security service through the active participation of local residents.

Therefore, on the occasion of the full implementation of the self-governing police system, the Minister of the Interior and Safety has placed on the establishment of a community police in order to create a 'security cooperation ecosystem' through the participation of residents, the residents led by the local community governance and the local police[3].

However, the fact that the direct participation of local residents is limited because, in the current unified autonomous police system, its affairs are handled by the central government's national police due to the nature of the system has been criticized.

Therefore, the self-governing police system, introduced to realize true decentralization and local autonomy, enables the active participation of local residents to discover, decide, and implement police

activities and policing policies in the relevant community, and laws and institutional devices should be strengthened so that local residents can actively manage and supervise the police personnel, budget, and other detailed operations[4][5].

3. Cases of Resident Participation in Korea

3.1. Self-defense force

The autonomous crime prevention unit is an organization with 77,811 members in a total of 4,229 organizations as of 2020. It is a volunteer organization organized by local residents to prevent crime in the region. They mainly patrol and prevent crimes with local police officers at the local district unit or police box. Conduct activities such as crime prevention activities such as reporting, youth protection, and students returning home safely[6].

However, at present, autonomous crime prevention units are operated according to the rules of each city and provincial police agency without any legal basis, showing various operational limitations. In particular, only a small amount of budget support is provided in accordance with different ordinances for each local government, and management for effective operation such as police guidance and supervision or education and training is not properly implemented.

On the other hand, in the case of a volunteer fire brigade, which has a similar function to an autonomous crime prevention brigade, the legal basis for the organization's status is provided by the Framework Act on Firefighting and the Act on the Establishment and Operation of Volunteer Fire Brigade, and various support is provided through this. The autonomous crime prevention unit should also be operated more systematically by supplementing the relevant legal basis.

The operating status of autonomous crime prevention units by regional governments across the country is shown in <Table 1>.

Table 1. Status of autonomous crime prevention units by regional governments nationwide.

Classification	2016		2017		2018		2019		2020	
National police agency	Organization	No. of people	Organization	No. of people	Organization	No. of people	Organization	No. of people	Organization	No. of people
Seoul	449	11,115	447	10,553	437	10,553	435	7,734	426	7,685
Busan	195	3,860	179	3,311	184	3,366	170	2,813	172	2,762
Daegu	163	4030	163	4220	166	4,264	164	3,339	164	3,299
Incheon	159	3706	136	3,445	143	3,464	139	2224	140	2,177
Gwangju	88	1,899	89	2,039	90	2,123	83	1270	81	1,232
Daejeon	144	2,865	144	2,734	143	2,774	139	1,824	139	1,824
Ulsan	66	2162	66	2186	66	2,290	69	1,893	69	1,921
Sejong	Before opening						28	345	28	345
Southern Gyeonggi	541	14067	542	13,600	552	13,654	546	8,621	545	8,451
Northern Gyeonggi	208	4,731	201	5141	200	4,832	198	3352	199	3,284

Gangwon	259	8,552	257	8,131	255	7,950	257	6,255	256	6,454
Chungbuk	237	5,825	221	5,917	221	5,827	218	4,589	216	4,106
Chungnam	373	8,527	382	8,544	381	8,186	340	5,319	332	5,243
Jeonbuk	286	7,526	285	7,258	283	7,304	285	6,025	285	5,972
Jeonnam	339	7,663	345	7,816	344	7,726	351	6,640	351	6,537
Gyeongbuk	430	10,099	431	10,119	435	10,091	433	8,250	434	8,388
Gyeongnam	375	8,795	374	8,575	371	8,854	371	7,614	371	7,604
Jeju	24	780	25	799	22	821	21	531	21	527
Total	4,336	106,202	4,287	104,388	4,293	104,079	4,247	78,638	4,229	77,811

Note: Source: internal data from the national police agency(2021).

3.2. Life safety council

When the local police system was implemented in 2004, a Living Safety Council was organized in each district unit to establish a cooperative system for local residents regarding police activities.

According to Article 1 of the *Living Safety Council Operation Rules*, its roles and functions are first, finding and suggesting matters related to the living safety of local residents; second, cooperation with cooperative organizations such as autonomous crime prevention organizations within the district police; third, carrying out local safety campaigns such as safety activities with local residents, and fourth, suggestions for other local police activities.

The council consists of no more than 30 members, including one chairman, who is elected by the council. The members of the council are appointed by the head of the local police station from among people from all walks of life in the local community, such as experts in the field of life safety, representatives of civic groups, and representatives of residents.

Members of the Living Safety Council can be reappointed only once in two years of their term of office. The council meetings are divided into regular meetings and ad hoc meetings, and regular meetings are held every quarter[7].

3.3. Police development council

According to Articles 1 and 2 of the *Police Development Council Operation Rules*, the Police Development Council is an organization under the authority of the provincial and police commissioners and chiefs in charge of discussing fair and reasonable security policies based on the trust and cooperation of local residents and the police.

The main roles and functions of the Police Development Council pursuant to Article 3 of the above operating rules are to discuss fair and reasonable public security policies, propose policies for the protection of the socially disadvantaged such as women, children, the elderly and the disabled, and respond to various complaints and suggestions such as irrationality and unkindness of police officers.

In addition, according to Article 4 of the *Operational Rules*, the council is composed of at least 10 and no more than 30 members; while the organization of the council is divided into the chairman, secretary, and three divisions(administrative, social protection, and integrity).

The meetings are divided into regular meetings and ad hoc meetings, and regular meetings are held once every two months or once every quarter, and the chief of police officers, the heads of departments by function, the heads of the departments concerned with the agenda, and the person in charge

of each department attend.

3.4. Regional security council

Since 2008, the regional security council has signed an agreement for the establishment of the council and, in accordance with the ordinances of each local government, established the legal order through organic cooperation of the local community such as related organizations and local residents, and strengthened the social safety net at the city, county, and district level^{[8][9][10]}.

Looking at the general contents stipulated in the ordinances of each local government, the functions of the council include establishment of legal order, major policies related to safety in the local community and matters related to jointly promoted projects, as well as support for the protection of the elderly, children, youth and women and matters concerning public relations for crime prevention, and others deemed necessary by the head of a local government for the prevention of crime.

Generally, the council is composed of no more than 20 members, and the chairperson is in charge of the head of a city, county, or district, and the vice chairperson is in charge of the police chief. In addition, the term of office of commissioned members is two years, but most local government ordinances stipulate that they can be reappointed only once.

4. Plan to Expand Resident Participation for the Successful Establishment of the Autonomous Police System

4.1. Expansion of institutional devices for local residents-led autonomous police system

4.1.1. Increase participation of local residents in provincial autonomous police committees

On August 4, 2020, Rep. Kim Young-bae, proposed an Amendment to the Police Act by specifying that the law was proposed to provide a variety of security services suitable for the needs of residents by securing the linkage between local administration and public security administration.

In addition, in Article 4(2) of the *Act on the Organization and Operation of National Police and Autonomous Police*, the duties of autonomous police include support and guidance for crime prevention activities with resident participation and support and guidance for local traffic activities with resident participation. Thus, local residents are encouraged to participate as major parties in maintenance activities.

Therefore, the self-governing police system is not an 'autonomous police system in which local residents participate', but rather should be reborn as an 'autonomous police system led by local residents'.

However, in the current National Police and Autonomous Police Organization and Operation Act. Article 20, the qualifications for appointment of city/provincial police committee members include persons who have held the office of a judge, public prosecutor, lawyer, or police for at least five years; persons who are qualified as a lawyer and has at least 5 years of experience in legal affairs at a national institution, etc., or persons who has held a position of assistant professor or higher in the field of law, public administration or police science at a university or an accredited research institute or an equivalent position for more than 5 years. In addition, it is difficult in reality for general local residents to participate as members are limited to those who have professional qualifications, such as those who have a lot of experience in the field of local self-government administration or police administration, and who have knowledge and virtue among the local residents in the jurisdiction.

However, under the four-way system of the British police, the residents directly elect the local policing chairperson and then the regional policing chairperson is responsible for maintaining public order in the area, which offers many implications for Korea.

Of course, in the case of Korea, under the current legal system, residents cannot directly elect representatives of local security like in the UK. Therefore, realistically, the following measures are needed to properly reflect the will of local residents through the current city/province police committee system.

First, the possibility to reflect their diverse values while lowering the barriers to entry by easing the

qualification requirements for city and provincial autonomous police committee members.

Second, as a suboptimal measure, to expand the participation of local residents and strengthen the representativeness of the committee, the total composition of the city/province autonomous police committee was increased to around 12 to 13 members. A method of appointing 3 or less members of the basic and regional councils as members according to the distribution of political parties in the local councils may also be considered[11].

4.1.2. Expanding the introduction of the resident recommendation system for local police chiefs

In order for the autonomous police system to be established as a resident-led system, ultimately, a so-called direct system in which local residents can directly elect a person in charge of local security should be discussed. This is because, in principle, it is important for autonomous police to establish a common security system with residents, such as grassroots democracy, while forming close relationships with local residents.

In fact, recently, the Sejong Special Self-Governing City Police Committee started a review work to introduce a resident recommendation system for regional police officers, such as district leaders and police station heads, for the first time in the country. The resident recommendation system for local police chiefs is a policy similar to the resident recommendation system for the heads of villages, towns and neighborhoods, and strengthens the control of local residents over front-line security sites so that local residents become the rulers of policing activities. It can provide a basis for activities to take place [12].

Therefore, not only Sejong Special Self-Governing City, but also other local governments need to positively review the introduction of the resident recommendation system for local police chiefs.

4.2. Strengthening the public-private partnership centered on local residents

4.2.1. Systematic operation of autonomous crime prevention units through the enactment of related laws

In the case of a volunteer fire brigade that performs a function similar to that of an autonomous crime prevention unit, the legal basis for the status of the organization is provided by the relevant laws and receives various supports through this.

The following are measures that should be specified in the law.

First, in principle, one autonomous crime prevention unit should be formed at the village/town/neighborhood unit or each district unit or police box under the jurisdiction of the police box. The scope of duties of the autonomous crime prevention squad should be clearly defined, including activities requested by the mayor/district governor, the head of a city/division/district, and the head of an village/town/neighborhood for the safety of the local community.

Second, for those who has been sentenced to prison or a higher sentence for a sex offense against children or minors and for whom five years have not passed since the date the execution was terminated or exempted, as well as those who work in businesses harmful to young people, such as entertainment businesses, etc., should be strictly limited so that they cannot become autonomous security personnel.

Third, the state and local governments should also prepare a legal basis to support the expenses necessary for the activities of the autonomous crime prevention unit and promote the effective operation of the activities.

Fourth, in the event of a disease, injury, or death of a voluntary security guard during their activities, a legal basis should also be established for the voluntary security guard or his/her bereaved family to receive compensation from the state or local government.

Fifth, the chief of the police station, etc. shall conduct education and training necessary for autonomous crime prevention activities for autonomous crime prevention members, and the Commissioner of the National Police Agency, the chief of a provincial police agency or the chief of a police station,

and the mayor/province governor, the head of a city/division/district, and the head of an village/town/neighborhood should be able to reward autonomous security personnel and autonomous security forces.

4.2.2. Substantialization of the operation of the police development council

In Japan, a police station council is established and operated for each police station in accordance with Article 53-2 of the *Police Act*, and members of the council commissioned by the Public Safety Committee serve as a bridge between the police station and the local community as a kind of advisory body to the chief of police. In addition, they mainly participate in various and practical activities such as cooperation and discussion on police activities, inspection of police task force training, inspection of police boxes and post offices, inspection of police headquarters facilities, and various campaigns.

In the case of Korea, as discussed above, the Police Development Council currently operated by each city, county, and province unit is established. Concerns about the link between the police and the local community, and the situation where they are not free from criticism of the closed operation, the problems that have already been presented for a long time have continued[13].

Therefore, to keep pace with the implementation of the autonomous police system, in order for the Police Development Council to be reborn as a true resident-participatory civil network in which local residents and the police cooperate, first, anyone can participate in the Police Development Council through an open call for local residents; second, minutes of all meetings should be made public so that local residents can evaluate their activities.

Third, each police station prepares an institutional device that can actively reflect the evaluation and advice of the Police Development Committee not only in the police department but also in the police activities of each district unit or police station.

Fourth, appropriate remuneration should be paid to the members by securing the relevant budget, and the practice of collecting operating expenses or membership fees from the members should be improved to avoid criticism from sister organizations.

4.3. Discovering tangible public security policies centered on residents

4.3.1. Discovering security policies through the establishment of a local resident network consultative body

In the case of the UK, not only the police but also local residents and various local organizations participated in the 'Regional Crisis Management Forum' or 'Local Crisis Management Forum' to organize not only crime but also various diseases and disasters that could threaten the quality of life of local residents. In addition, we are discovering response policies for issues related to various crisis management situations, etc[14].

In Japan, through the Police Station Council, issues closely related to the lives of local residents are jointly discussed with local residents, and their opinions are reflected in actual police activities.

Therefore, even in the autonomous police system of Korea, institutional devices should be prepared to discover local and resident-centered security policies that local residents can experience. Currently, in most of the villages, towns and neighborhoods in Korea not only autonomous crime prevention units, but also various resident autonomous organizations such as the Youth Harmful Environment Monitoring Group, the Residents' Association, the Social Security Council, the Right Living Council, and the Saemaul Council are in operation. There are also many autonomous education-related organizations such as student clubs and parent clubs.

However, in order for the autonomous police system to take root in the local community successfully, it is necessary to reorganize the formal and informal resident networks scattered throughout the local community into an official network, and through this, discover a tangible public security policy for local residents and expand the institutionalized joint participation program[15].

For this purpose, specific measures include the establishment of the 'Citizen-Centered Network Consultative Body' promoted by the Daegu Metropolitan City Autonomous Police Committee as the first policy for two-way communication with various members such as citizens, civic groups, volunteer

groups, children and youth.

4.3.2. Formation and operation of an advisory group for local residents

During the pilot implementation period of the autonomous police system, some local governments, such as Gyeongsangbuk-do, Chungcheongnam-do, and Chungcheongbuk-do, conducted a survey or on-site advisory group in order to raise the interest of local residents in the autonomous police system and to actively listen to residents' opinions to establish the system's operation direction.

However, this is a one-time system, and it would be desirable to organize and operate a so-called 'local residents advisory group' in which a large number of local residents participate in order to discover a sustainable resident-participatory public security policy.

Therefore, the participation of the most representative residents in the local community is expanded through the local community open call system for organizing and operating the advisory group, where various residents can directly experience police activities and, through this, it will be necessary to establish an institutional mechanism to actively raise their opinions.

5. Conclusions

It can be said that the self-governing police system is the most important value of the modern nation and an essential element for realizing the principle of local autonomy, which is specified in the Constitution[16].

Therefore, in this study, the necessity and current status of a resident participation system for the stable establishment of the autonomous police system and expansion of the system was examined, and policy measures to expand resident participation in Korea were examined in the future.

Regarding the study results, as a policy alternative for the successful establishment of an autonomous police system, first, in order to expand the institutional mechanism for an autonomous police system led by local residents, it is considered necessary to expand their participation in the provincial autonomous police committees, and to introduce a resident recommendation system for the heads of local police departments.

Second, in order to strengthen the public-private cooperation security network centered on local residents, the systematic operation of the autonomous crime prevention unit through the enactment of related laws and the operation of the Police Development Council should be substantiated.

Third, in order to discover resident-centered, tangible public security policies, it is necessary to establish a local resident network consultative body, organize an advisory group for local residents, and expand the operation.

This study, ultimately, pretends to present resident-led administration as the most important value of the autonomous police system. In addition, citizens and local residents are the most important actors not only in the autonomous police system, but in all administrative functions of the state and local governments.

In order to create a genuine 'policing cooperation ecosystem' that can discover the demand for public security suitable to the local characteristics through an autonomous police system and guarantee the democracy and resident-oriented nature of police activities, local governments and the police must cooperate and connect with resident-centered governance[17][18].

Therefore, the most important task in determining the success or failure of the autonomous police system is to develop and expand various local residents' intrusion systems for the stable establishment and expansion of the autonomous police system in the future.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Author	JN	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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A Study on the Analysis of OVERSEAS MARKET ENTRY Strategy by Growth Stage for ICT Companies of the Post-COVID-19 Era

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Abstract

Purpose: Given the expansion of online and contactless centric corporate activities due to COVID-19, in order to derive a systematic strategy for the Korean ICT companies' contactless manner of overseas market entry, it is intended to present the differences among strategies according to the growth stage of the ICT companies.

Method: A questionnaire survey was conducted by targeting major ICT companies of Korea. Based on which, attempt has been made to verify the status of overseas market entry and the level of technological development of the major Korean ICT companies, while verifying the strategies required for the overseas market entry by each growth stage.

Results: The manner of overseas market entry turned out to vary depending on each company's growth stage. Accordingly, in the survey of the difficulties during the overseas market entry, varying difficulties were experienced depending on the growth stage of the company. The ICT companies of the entry stage noted the issue of finding customers as a difficulty, and the ICT companies of the growth and maturity stages noted the "lack of trade specialists." It was also analyzed that the awareness of government support was low, demonstrating the limitations of comprehensive government support policies. Lastly, it was analyzed that differences arose in the current status of responding to COVID-19 and the difficulties depending on the growth stage of the company. It was verified that the awareness of the government's support policy for the ICT companies was low, which was not properly utilized, thereby further confirming that a policy alternative is needed.

Conclusion: Consequently, it is necessary to change the overseas market entry support policy for the ICT companies focused on the overseas base centers, which have previously been operated primarily by the suppliers, to the consumer centric, whereby the ICT companies could expand by considering the overseas market entry together from the early stage of growth.

[Keywords] ICT Company, Expansion Strategy, COVID-19, Overseas Market, Effectuation Theory

1. Introduction

In this study, the focus has been placed on the fact that the global spread of COVID-19, which began in early 2020, is causing changes in the global value chain(GVC) of companies, and in a situation where it is evaluated that the contactless economy has rapidly emerged, all industries are exploring countermeasures based on the ICT and forming an ecosystem of a new ICT industry[1][2]. For example, in the area of telecommunication and infrastructure, since the use of the Internet has rapidly increased due to the increase in telecommuting and online education, the construction of the 5G infrastructures and digital transformation have actively been promoted and expanded into new business areas including online education platforms and Fintech app developments. As for the manufacturing and distribution and logistics industries, the digital transformation of sales methods such as online marketing has been pursued, while the financial

industry is also pursuing digital transformation such as the artificial intelligence data analysis and the customer customized digital financial services as the frequency of use of the digital banking has grown. As for the distribution and logistics industry, an 'omni-channel' strategy which links online sales and offline stores is being used, while the existing offline businesses are attempting to bring and cause changes, such as by starting new online sales and increasing the proportion of online marketing for the existing online businesses[3][4][5].

As such, based on the analysis which yields that the online and contactless corporate activities will expand in line with the contactless consumption trends due to COVID-19, and since the global competition for the future high-tech industry will further intensify, the convergence with the ICT is being required, and in particular, it has been analyzed that the need for a systematic strategy for the contactless overseas market entry has emerged[6]. Given such circumstances, this study intends to explore the overseas market entry support strategies of the Korean ICT companies after COVID-19, focusing on the current status of the companies in line with their growth stages, and also discuss the differences in strategies according to the growth stages of the ICT companies.

2. Analysis of the Status of Korean and Foreign ICT¹ Industries and Policies

It is developing into a borderless industry, thanks to the evolving ICT technology. Now, it has become one of the important strategies for the business operators of the area of ICT to develop a business model with the overseas market in mind from the initial stage of business. A different strategy may be required for such a company's overseas market entry depending on the company's growth stage, and towards this end, by analyzing the current status of the Korean ICT industry and policy support trends, it is intended to utilize them for deriving the strategies for the overseas market entry by the Korean companies.

2.1. Study on the corporate growth stage and internationalization

A company's internationalization strategy, such as the overseas market entry, is achieved based on a combination of internal and external environmental factors, such as by expanding business areas via management resources or attempting to enter overseas markets to avoid the overly intensified Korean competition, where different factors may operate depending on the stage, and hence, there exist differences for the determinants of overseas market entry[7][8][9]. In the previous studies concerning which, the characteristics and influencing factors according to the stage of growth and internationalization of a company were presented as illustrated in <Table1>. While the internationalization factors for the overseas market entry would vary depending on the growth stage of a company, in the case of the ICT products and services, they often expand their markets with the goal of entering foreign countries where they have a technological competitive edge based on the characteristic that the overseas localization cost is low. Accordingly, even in the case of the ICT companies, as illustrated in <Table 1> below, it is evident and verifiable that the major factors which determine internationalization in conjunction with the growth stage of the company vary by stage.

¹ "ICT" is an abbreviation of "Information & Communication Technology" and a compound word for "Information Technology(IT)" and "Communication Technology(CT)," which means collecting, producing, processing, preserving, forwarding, and utilizing information by using the hardwares of the information equipments, and the software technologies required for their operation and information management[11].

Table 1. Determinants of internationalization according to the stage of corporate growth[10].

Step	Characteristic	Determinants of internationalization
Stage 1 Korean marketing	Korean market sales	Product, current sales activity, overseas market information
Stage 2 before export	Steps to consider overseas expansion	Stimulus from the outside, stimulus from within (corporate advantage, CEO's active attitude)
Stage 3 pilot market entry	Limited export start, Pursuit of short-term profits through indirect exports	CEO's attitude towards international marketing, psychological distance
Stage 4 active market entry	New market development, export increase, direct export	Growth expectations based on empirical knowledge based on export results, degree of funding, CEO's attitude
Stage 5 international enterprise	Allocating corporate resources to Korean and overseas	Distribution channel, price, financial capacity, distribution efforts to overcome obstacles, etc. seize export opportunities, expansion and maintenance of exports

Note: Sunggho Kim et al.(2009).

While the previous studies have derived insights from case studies focusing on the overseas expansion performance of companies, this study intends to derive the necessary factors by focusing on the process of overseas expansion of companies. The ICT companies have the tendency to pursue overseas market entry from the start of their business for market expansion, which varies depending on their realization capabilities to achieve internationalization by utilizing internal and external resources. In particular, in the case of the ICT companies, they have the characteristic of analyzing the decision-making process in the dynamic environment of the rapidly changing technology based industries[12][13][14][15]. Unlike the existing management analysis theories which heavily stress on rationality and causality, this realization theory focuses on maintaining the subjective control, evaluates business opportunities by focusing on the existing possibilities, reduces the uncertainties of the external environment, and overcomes the lack of internal resources via cooperation and creative ideas through various networks[16][17][18]. Lastly, the relevant differences may be explained by viewing that finding new market opportunities through cooperation is even more important than competing with stakeholders in the market. Accordingly, it is claimed that it is important to create and utilize a network capable of extensive cooperation, and the utilization of such network could compensate for the lack of resources and information[16][19]. Therefore, this study intends to examine what factors should be presented as support strategies for the realization of internationalization in the current ICT environment, where it is difficult to predict the market due to COVID-19.

2.2. Analysis of trends for the Korean ICT companies

According to the National IT Industry Promotion Agency,, the Korean ICT industry may be classified into smart city, digital health, contactless solutions, corporate general solutions, and industry specific solutions. Based on the analysis of corporate trends for each area of ICT, it is intended to examine the factors required for the overseas market entry.

The Korean smart city market is expected to reach approximately KRW 151 trillion in 2021, which is estimated to capture approximately 84% of the entire global market. The Korean smart city area is

consisted of a total of 3 sub areas of energy, infrastructure, education, others, and information and communication, and the infrastructure, education and others are mostly consisted of small and medium sized enterprises(SMEs). The number of SMEs for the area of infrastructure, education, and others is 8,969, accounting for 88.4% of the total, while that for the energy area is 1,042, accounting for 10.2% of the total. The exports of the SMEs for the area of infrastructure, education, and others were KRW 196.3 billion, accounting for 99.8% of the total exports of the SMEs for the smart city area. The Korean private and public companies also have the characteristic of actively attempting to implement smart cities in cooperation with major cities[20].

Table 2. Status of the ecosystem for the smart city area[20].

Classification		Number of companies (share)		No. of employees		Sales		Exports	
				Total	Average	Total	Average	Total	Average
Entire smart city field	Total	10,187	(100.0)	150,594	-	1,002,067	-	6,937	-
	Joongang ilbo	10,149	(99.6)	51,955	20	86,059	24	1,966	26
	Large to medium to large companies	38	(0.4)	98,639	3,288	916,007	33,926	4,971	710
Energy	Subtotal	1,044	(10.2)	85	-	233	-	0	-
	Joongang ilbo	1,042	(10.2)	85	7	233	2	0	-
	Large to medium to large companies	2	(0.0)	0	0	0	-	0	-
Infrastructure, education, and others	Subtotal	8,993	(88.3)	103,567	-	710,366	-	6,909	-
	Joongang ilbo	8,969	(88.0)	51,225	20	84,554	25	1,963	27
	Large to medium to large companies	24	(0.2)	52,342	2,379	625,812	29,801	4,946	824
Information and communication	Subtotal	159	(1.5)	26,942	-	291,468	-	29	-
	Joongang ilbo	138	(1.4)	645	18	1,273	31	4	1
	Large to medium to large companies	12	(0.1)	46,297	5,787	290,195	48,366	25	25

Note: Unit: count, people, KRW 100 million / ministry of SMEs and startups. Korea technology and information promotion agency for SMEs. nice tongsang (2018).

In the aspect of technology, the digital health in Korea has already developed a wide range of technologies of variety, and has also reached a level where it may commercialized. However, it is not commercialized due to various regulations including the Korean medical law which permits only the telemedicine between medical staffs, and which prohibits telemedicine between the doctors and patients. While the Korean digital health companies are incrementally entering the CES, it has been pointed out that the problem is the fact that their technologies are often not used in the Korean medical environment. Given the Korean legal and systemic restrictions, many companies are entering into overseas markets, and their technological prowess has already been recognized overseas.

Table 3. Digital health technologies within major hospitals².

Name	Technology utilized	Details of technology implemented	Hospitals of application
Dr. Answer	AI and big data	<ul style="list-style-type: none"> Services providing support for forecast of disease, diagnosis, and treatment customized for individual characteristics by linking and analyzing various medical data(diagnosis information, medical images, genomic information, and life patterns, etc.) Softwares undergoing development for 8 diseases* currently, and a total of 35.7 billion invested by 2020 	A form of consortium consisted of 25 hospitals and 19 ICT companies, led by Asan medical center
SMART-bot platform	mHealth(app) and big data	<ul style="list-style-type: none"> Creates a new industrial ecosystem based on early precision diagnosis technologies, integrated customized information, people centric communication technologies, and comprehensive treatment and care by establishing a platform for precision medicine for brain diseases and cancer A total of KRW 22.5 billion provided in support for national research for 9 years 	Asan medical center ministry of health and welfare research centric hospital "people centric convergence technology" project selected
Voice recognition electronic mandatory medical record	AI and big data	<ul style="list-style-type: none"> Compatible and linkable with all electronic mandatory medical records including various forms as well as surgical records, procedure records, and reading records of all patients including outpatients and hospitalization Real time voice recording and shortening of recording work time, thereby contributing to focus on communication with patients 	St. Mary's hospital
Brightics TM AI	AI and big data	<ul style="list-style-type: none"> By applying deep learning as a fundus image analysis solution to predict multiple ophthalmic diseases, and provide preliminary results based on artificial intelligence, thereby contributing to reducing the burden of reading tasks for the health examination center and preventing and implementing early detection of ophthalmic diseases 	Samsung medical center

Note: 8 diseases: cardio-cerebrovascular disease, heart disease, breast cancer, rectal cancer, prostate cancer, dementia, epilepsy, and rare intractable diseases of children.

While the global expansion and prolongation of COVID-19 has brought about declines in sales across most industries, the contactless solution and software market for the online commerce, education, and remote work, etc., is expected to grow significantly. The UC&C solutions market, such as video conferencing, remote access, and collaboration tools developed by global IT companies, is also expected to grow to USD 48.3 billion by 2023 at a CAGR of 7.1% as of 2019. In particular, the Cloud based UC&C market was worth USD 20 billion as of 2019, and is expected to grow to USD 38.6 billion by 2023, respectively. The Korean contactless software and solution

² [http://www.amc.seoul.kr/\(2018\)](http://www.amc.seoul.kr/(2018)), Asan Medical Center news magazine. Creation of a future smart clinic model in the era of the 4th industrial revolution(2018), [https://www.cmcseoul.or.kr/\(2019\)](https://www.cmcseoul.or.kr/(2019)), Cho YH. Samsung SDI Medical AI Introduction, Korean Medical Information Society Spring Conference Symposium. Yugwangsa(2019).

market is still in its initial stage, and hence, it is difficult to accurately estimate its size. However, as remote work is rapidly spreading along with the expansion of COVID-19, a rapid and continuing growth is expected moving forward.

Table 4. Comparison of telecommuting solutions³.

Name of company	Name of solution	Function
NHN	Toast 'Duray' Toast 'Groupware'	- Cloud based messenger, mail, calendar, and drive, etc., related collaboration services, video call, PC screen sharing, electronic payment and bulletin board
Duozone Bizon	WEHAGO	Support for corporate business systems via Cloud based platforms
Rsupport	Remote meeting Remote call Remote view	Cloud based web video conferencing service Remote support for PCs and smartphones PC control via external communication network
Minds Lab	Mind meeting minutes	Automatic arrangement service for meeting minutes
Toss Lab	JANDI	Messengers for work such as video calls and screen sharing, and linkage with external services such as Google
Fasoo.com	Wrapsody	Provision of free exchange of documents, access control, and audit track functions for the collaborative process of mobile, tablet, Cloud and PC, etc.

Note: JoongAng Ilbo, k biz news, byline network edited.

The corporate software accounts for 23% of the global SaaS market as an essential infrastructure required for the corporate productivity improvement, and it is a situation where it is necessary to target the Korean market and expand into the global market by securing the Cloud competitiveness for the corporate software. Corporate software is a key element which forms the foundation of the corporate information systems, and the market is expected to expand further following the increase in the introduction of the Cloud based system and expansion applications. Since such multinational software companies as Oracle and SAP are capturing the Korean market by comprehensively providing core corporate software and various application softwares, it is necessary to respond with the Koreanly manufactured software. As contactless service(telecommuting and remote education, etc.) solutions have become common after COVID-19, it is evaluated to be a most influential area in the post-COVID-19 era.

As identified in the trend analysis above, the industry of the five largest areas of ICT is an area which provides the foundation for other industries, and hence, a continued growth is expected in the future despite the COVID-19 situation. Accordingly, it is determined that it is important to expand the market via overseas market entry and support Korean companies in line with their growth stage to ensure that they can lead the technology in relevant areas[21][22][23]. Therefore, this study seeks to analyze the status of overseas market entry according to the growth stage of the Korean ICT companies, and also analyze as to whether differences exist in the difficulties faced by the Korean ICT companies of the stages of entry, growth, and maturity and the current situation of responding to COVID-19. Based on which, it is intended to analyze the strategies required for the Korean ICT companies to enter into overseas markets in such a rapidly evolving global environment.

Research question 1 : What are the differences among the types of overseas market entry and difficulties depending on a company's stages of entry, growth, and maturity?

³ [https://news.joins.com/\(2020\)](https://news.joins.com/(2020)), [http://news.kbiz.or.kr/\(2020\)](http://news.kbiz.or.kr/(2020)).

Research question 2 : What is the strategy for overseas market entry utilizing the government supported overseas regional base centers?

Research question 3 : What is the difference in the status of response to COVID-19 according to the company's entry into the growth stage, entry, growth, and maturity stages?

3. Research Method

In this study, the growth stage, status of overseas market entry, and the status of response to COVID-19 of the Korean ICT companies were derived as the relevant factors to seek and explore the overseas market entry strategies for the major Korean ICT companies of the era of COVID-19[24]. Each survey questionnaire was structured by modifying the questions of the survey on the actual conditions of companies by the National IT Industry Promotion Agency in line with this study. The response results for each question were analyzed by using the descriptive statistical analysis. Each factor was cross-analyzed according to the growth stage of the company.

In this study, 127 companies on the list of major ICT areas provided by the National IT Industry Promotion Agency were selected as the research subjects. A survey was conducted from October to November 2020 by targeting 127 companies for the ICT area. Out of the total of 127 companies, 71 companies responded faithfully, demonstrating a response rate of 55.9%, and the industry distribution and area of the responding companies are as follows.

Table 5. Industry distribution of responding companies.

Industry distribution of responding companies (N=71, overlapped)		Industries of responding companies (N=71, overlapped)			
Information and communication broadcasting service	7 counts (10%)	IT services	37 counts (51%)	Electronic parts	3 counts (4%)
Information and communication broadcasting equipment	3 counts(4%)	Package software	24counts (33%)	Game software	1 count(2%)
Software and digital contents	62 counts (86%)	Information service	6counts(8%)	Communication service	1 count(2%)

4. Analytical Results

4.1. Analysis of the corporate growth stage

The 71 companies which responded to the survey questionnaire on the current growth stage of the company were analyzed as follows[25][26]. The largest number of the companies operating in the ICT area where they are currently conducting business determined that it is a growth stage where “follow-up products and services are released, sales have increased, and the market is undergoing diversification”(46.4%, 33 companies), while 35% of them responded that it is the maturity stage, 18% of them responded that it is the entry stage, and no company determined that the ICT area of their affiliation is declining, respectively.

Table 6. Definition by the growth stage of ICT companies.

Classification	Description
Entry stage	Stage where a company is started, and products and services are developed. Stage where sales are generated by releasing the first product or service in the market.
Growth stage	Stage where subsequent new products and services are derived, sales increase, and the market is diversified.

Maturity stage	Stage where a company has a leading market position within the industry, such as being stabilized or listed on the stock market.
Declining stage	Stage where corporate activities are likely to stagnate or decline without significant improvement in sales performance.

4.2. Status of the overseas market entry

In this study, in order to analyze the status of overseas market entry according to a company's growth stage, the cross analysis was performed across the questions of the company's growth stage, type of overseas market entry, and difficulties. As a result of analyzing a total of 39 companies which are experienced in the overseas market entry, the status of overseas market entry varied depending on the growth stage of the company, as illustrated in <Table 9>.

First, comparing the types of overseas market entry according to the growth stage, it turned out that the companies of the maturity stage of the corporate growth stage have the highest ratio of export types using the "independent product entry" method. Meanwhile, in the case of the local business linkage method, the companies of the entry stage had a higher ratio for the export type. Given such results, it may be explained that when a company grows and enters into a maturity stage where it has a leading position, the ratio of export in the form of independent product entry would increase, and in the entry stage, it may be explained that the overseas market entry begins in an indirect manner[26].

When entering into the overseas markets, there was a difference in terms of the difficulties between the companies of the maturity stage and the entry stage, and the ratio of the companies of the maturity stage had a higher ratio of noting the "lack of professional trade manpower" as a difficulty. Meanwhile, it turned out that the companies of the entry stage had a high ratio of noting the "problem of finding customers" as a difficulty[10]. The companies of the growth stage turned out to experience various difficulties relatively, in the sequence of the "lack of professional trade manpower(38.9%)," "lack of funds required for the overseas market entry," "lack of corporate awareness," "problem of finding customers," and "requirement for the local market standards and certifications."

In particular, as a result of analyzing the difficulties for the overseas market entry due to COVID-19, there was a difference between the companies of the entry stage and those of the growth and maturity stages. The companies of the entry stage noted "finding new local buyers" as the largest problem, while the companies of the growth and maturity stages noted "local promotion and marketing" as the difficulty. That is, given the characteristics of the ICT companies, it is evident that it would be difficult for the companies which have grown by targeting the Korean and foreign markets since their beginning to expand their local customers due to COVID-19, which has made it difficult to grow. Meanwhile, in the case of the companies entering the growth and maturity stages, it has been analyzed that they consider being unable to actively engage in promotion and marketing because they have secured a certain amount of customers in the overseas markets as their problem.

Table 7. Types of overseas market entry and difficulties by the company's growth stage.

Classification	Item	Entry stage	Growth stage	Maturity stage	Total
Manner of export	Independent product entry	2(40%)	9(50%)	10(62.5%)	21(53.8%)
	Local corporate linkage	2(40%)	6(33.3%)	3(18.8%)	11(28.2%)
	Online app market, etc.	1(20%)	3(16.7%)	1(6.3%)	5(12.8%)
	Software linkage for similar areas	0	0	2(12.5%)	2(5.1%)

	Total	5	18	16	39
Difficulties with export	Lack of technical skills	0	1(5.6%)	0	1(2.6%)
	Lack of trade specialized manpower	1(5.6%)	7(38.9%)	9(56.3%)	17(43.6%)
	Issue of finding clients	3(60%)	2(11.1%)	5(31.3%)	10(25.6%)
	Lack of funds required for overseas market entry	0	3(16.7%)	1(6.3%)	4(10.3%)
	Local market standards and certification requirements	0	2(11.1%)	1(6.3%)	3(7.7%)
	Lack of corporate awareness	1(20%)	3(16.7%)	0	4(10.3%)
	Total	5	18	16	39
Difficulties with export due to Covid-19	Finding new buyers locally	2(40%)	2(11.1%)	2(12.5%)	6(15.4%)
	Local promotion and marketing	1(20%)	6(33.3%)	5(31.3%)	12(30.8%)
	Identify local market information	0	3(31.3%)	5(31.3%)	8(20.5%)
	Operation and management of existing overseas organizations	1(20%)	2(11.1%)	2(12.5%)	5(12.8%)
	Maintain and cooperate with existing customers	0	4(22.2%)	1(6.3%)	5(12.8%)
	Incorporate new local entity and branch office	1(20%)	1(5.6%)	1(6.3%)	3(7.7%)
	Total	5	18	16	39

A survey has been performed as to what extent the ICT companies are using the regional base center project, which is at the core of the government's overseas market entry support project for the ICT companies[27][28][29][30][31][32]. Based on the analytical results, an attempt has been made to explore what strategies are needed to support the overseas market entry for the Korean ICT companies moving forward. It turned out that, first, 27 companies responded that they did not know about the overseas base centers, and 38% of the responding companies were not aware of the base centers, while 62% of the companies were aware to some extent. A total of 11 companies actually have used the overseas base centers, and they were using them in the sequence of Singapore, Vietnam, and the United States, respectively. In this connection, an analysis was performed as to which services were used, and it turned out that primarily, they are using promotion related fields such as participation in exhibitions and seminars and marketing related services such as marketing partner linkages. 72% of the companies using the base center demonstrated satisfaction in using the services.

Meanwhile, as the relevant government support projects which the companies that have entered the overseas markets think are most needed, the parts related to “local financial procurement support” and “financial support such as industrial development fund and loans” were the highest, while “provision of the overseas market entry information” and the “technology development support,” etc., were also selected as high priorities.

Table 8. Ranking of government policies and support projects required for successful overseas market entry/export(overlapping responses).

NO	Support projects and policies	No. of responses (count)	Percentage	Priority
1	Financial support(local financial procurement support, and industrial development funds and loans, etc.)	23	28	1

2	Support for technology development(next generation core environmental technology development, and technology innovation development for SMEs, etc.)	10	12	3
3	Support for contract winning(feasibility study, international joint research, and bidding support, etc.)	6	7	6
4	Support for sales and marketing(exhibitions, environmental technology road shows, and joint trademark support, etc.)	8	9.5	4
5	Support for fostering manpower(professional manpower fostering support project, and overseas invitation training, etc.)	5	6	7
6	Provision of overseas market entry information(website, guide, and business and investment attraction related presentations, etc.)	13	16	2
7	Diplomatic support(investment agreements, and inter-governmental negotiations, etc.)	8	9.5	4
8	Consulting services(export consultation, KOTRA, Korea SMEs and startups agency, etc.)	4	5	8
9	Support for addressing local difficulties(overseas cooperation center, overseas embassies, trade offices, etc.)	2	2.5	10
10	Provision of a pool of overseas investment / export experts (provision of information for individual consulting, etc.)	3	3.5	9

4.3. Status of the response to COVID-19

As a result of the study, the status of response of the ICT companies to COVID-19 varied according to the growth stage of the company, and the analytical results are as illustrated in <Table 11>. In response to the question of “to what extent they are affected by COVID-19,” 23 companies(32.4%) responded “almost not affected.” However, such responses differed according to the growth stage of the company, and in the case of the companies of the maturity stage, the highest percentage of responses claimed that there is little influence(44%). However, the startups of the entry stage had the highest percentage of responses claiming that they had significant influence(38.5%), and the companies of the growth stage also had the highest percentage of responses claiming that they had little influence. Such results imply that the COVID-19 pandemic is now having a much larger influence on the ICT startups which are growing in the market.

In response to the question of “which areas are experiencing difficulties due to COVID-19,” it turned out that the companies of all stages responded with the highest percentage for “deterioration of cash liquidity and the deterioration of financial condition.” However, “financial influence” has appeared at a much higher rate for the companies of the entry stage, which may lead to explaining that the problem of “cash liquidity” has a larger influence on the startups. Furthermore, the difficulty of making business trips domestic and overseas for the companies of all stages was noted as a difficulty given COVID-19 following the deterioration of financial conditions.

Table 9. Influence of Covid-19 following the company's growth stage.

Classification	Item	Entry stage	Growth stage	Maturity stage	Total
Influence of Covid-19	Significant influence	5(38.5%)	4(12.1%)	3(12%)	12(16.9%)
	Some influence	3(23.1%)	12(36.4%)	8(32%)	23(32.4%)
	Average influence	2(15.4%)	8(24.2%)	3(12%)	13(18.3%)
	Almost no influence	3(23.1%)	9(27.3%)	11(44%)	23(32.4%)
	Total	13	33	25	71
Areas influenced by Covid-19	Supply chain, shipping, and logistics	1(7.7%)	5(15.2%)	2(8%)	8(11.3%)
	Business trip	3(23.1%)	11(33.3%)	6(24%)	20(28.2%)
	Personnel management	1(7.7%)	2(6.1%)	3(12%)	6(8.5%)

	Deterioration of cash liquidity	7(53.8%)	11(33.3%)	10(40%)	28(39.4%)
	All of the above	1(7.7%)	4(12.1%)	4(16%)	9(12.7%)
	Total	13	33	25	71

As a result of analyzing the detailed difficulties in the areas experiencing difficulties due to COVID-19, a significant ratio of the companies related to supply, delivery, and logistics have responded that they were not affected, yet the ratio of response claiming that the business decision making process due to the difficulties related to supply, delivery, and logistics was higher. Such results reflect the corporate characteristics of the software are called the ICT, and while most of the companies are not affected by supply, delivery, and logistics, the uncertainties of the business decision making process due to the problems with domestic and overseas logistics supply chains may be analyzed as a difficulty.

Furthermore, in connection with the business trips, the ratio of businesses which responded that they are not impacted by COVID-19 was the highest. In particular, it turned out that the companies of the maturity stage were less affected, and all companies noted the situation where they could not make business trips to the relevant country as a problem. Furthermore, it turned out that all companies responded that they were experiencing financial problems due to COVID-19, and an analysis of the response results for the details in this respect has demonstrated that the ratio of respondents claiming that their operating costs have increased due to COVID-19 was high. Second, the companies of the entry stage responded that the “demand for products and services” had declined, while the companies of the growth and maturity stages responded that the “increased technology cost” was a problem. Such results may explain that as telecommuting, quarantine, and video conferencing have become common due to COVID-19, the resulting increase in the costs is causing financial burdens, which may further explain that such are becoming greater burdens for the companies of the entry stage.

Meanwhile, a high ratio of respondents claimed that they were not affected by the COVID-19 pandemic in terms of the personnel management. The companies of the entry and growth stages responded the “technical restrictions due to telecommuting” as a problematic aspect of their personnel management. However, the companies of the mature stage had a high ratio of responding that they were affected by the “declining number of employees” due to COVID-19. Based on such survey result, it is evident that the companies of the growth and entry stages are experiencing more problems in providing a telecommuting environment than those of the maturity stage.

Table 10. Areas influenced by Covid-19 according to company's growth stage.

Classification	Item	Entry stage	Growth stage	Maturity stage	Total
Supply/shipping/logistics influenced in detail by Covid-19	Confusion of local supply chain	0	0	3(12%)	3(4.2%)
	Confusion of global supply chain	1(7.7%)	5(15.2%)	0	6(8.5%)
	Increased manufacturing and shipping costs	1(7.7%)	2(6.1%)	1(4%)	4(5.6%)
	Uncertainties of the business decision making process	2(15.4%)	7(21.2%)	2(8%)	11(15.5%)
	No influence	9(69.2%)	19(57.6%)	19(76%)	47(66.2%)
	Total	13	33	25	71
Business trips influenced in detail by Covid-19	Global travel advisory	5(38.5%)	5(15.2%)	5(20%)	15(21.1%)
	Business trips from Korea declined	0	4(12.1%)	1(4%)	5(7%)

	Business trip to relevant country is not allowed	2(15.4%)	9(27.3%)	4(16.1%)	15(21.1%)
	No influence	6(46.2%)	15(45.5%)	15(60%)	36(50.7%)
	Total	13	33	25	71
Financial conditions influenced in detail by Covid-19	Increased operating cost	7(53.8%)	10(30.3%)	8(32%)	25(35.2%)
	Decreased demand for products and services	3(23.1%)	8(24.2%)	4(16%)	15(21.1%)
	Increased product price	0	2(6.1%)	3(12%)	5(7%)
	Non-performance of contractual obligations	1(7.7%)	2(6.1%)	2(8%)	5(7%)
	Supplier's non-performance of contractual obligations	0	1(3%)	2(8%)	3(4.2%)
	Increased technological costs	1(7.7%)	10(30.3%)	6 (24%)	17(23.9%)
	Pressure on loan repayment	1(7.7%)	0	0	1(1.4%)
	Total	13	33	25	71
Personnel management influenced in detail by Covid-19	Lack of manpower	0	1(3%)	0	1(1.4%)
	Decline in number of employees	1(7.7%)	2(6.1%)	4(16%)	7(9.9%)
	Decline in labor productivity	2(15.4%)	3(9.1%)	3(12%)	8(11.3%)
	Technical restrictions following telecommuting	4(30.8%)	10(30.3%)	2(8%)	16(22.5%)
	Cost increased according to the number of labor policies	0	0	1(4%)	1(1.4%)
	No influence	6(46.2%)	17(51.5%)	15(60%)	38(53.5%)
	Total	13	33	25	71

Lastly, the ICT companies turned out to have the highest number of companies responding that they needed policies related to the “subsidies and grants” for the necessary government support programs related to COVID-19. Furthermore, the largest number of companies responded that they need support for the financial area, such as salary support and loan support, even for the short term.

5. Conclusion

In this study, an attempt has been made to derive a support strategy for the overseas market entry during the COVID-19 period by analyzing the growth stage of the ICT companies, and as to how the status of overseas market entry and response to COVID-19 vary accordingly. Out of the 71 companies which have responded to the survey, 13 were of the entry stage, 33 were of the growth stage, and 25 were of the maturity stage, and none were of the declining stage, respectively. Accordingly, it was analyzed that the status of overseas market entry and the response to COVID-19 varied depending on the company's growth stage.

As a result of this study, it turned out that the ICT companies have each different types of overseas market entry and difficulties during the COVID-19 period depending on the growth stage. Notwithstanding which, the government's support for overseas market entry has been provided in a comprehensive manner, and accordingly, companies were not aware of the support policies and are not using

them properly. Hence, in this study, it is intended to offer recommendations for the following strategies to help support the efficient overseas market entry in the face of the contactless era triggered by COVID-19.

First, the policy to support the overseas market entry for the ICT companies focused on overseas base centers, which has been operated primarily by suppliers, needs to be changed to become company centric. As examined earlier, the types of overseas market entry vary according to the company's growth stage, and hence, the factors causing problems also vary. Hence, the support for overseas market entry for the ICT companies also needs to be further classified into the startups of the entry stage and the companies of the maturity stage according to the company's growth stage, and be curated with the necessary policies. It is evident that it is very urgent to create a platform which could integrate and match the base centers online via contactless integration, spanning from finding buyers to securing local support. Through this platform, it is necessary to establish a new overseas expansion strategy in line with COVID-19.

Second, as COVID-19 prolongs over time, the corporate activities for the ICT area are also stagnant, while the opportunities to expand and grow overseas, too, are declining in their number. As a result of the study, it turned out that the level of influence varies between the companies that have entered their maturity stage before COVID-19 and the startups which are yet undergoing the entry stage. In the case of start-ups, they were experiencing difficulties in growth since they did not have sufficient resources to operate their business on a contactless basis and enter into the overseas markets. Hence, it is necessary to establish a customized support strategy for growth based on having the contactless business resources to ensure that the ICT companies could expand by considering the overseas market entry from the early stage of their growth.

This study is meaningful in that it has surveyed the status of overseas market entry for the ICT companies during the COVID-19 period, prepared for the post-COVID-19 era, and has analyzed the factors required for the Korean ICT companies to grow. The results of this study may contribute to the further classification of the roles of contactless platforms planned by the government moving forward, and it is also determined that it may be used as a practical alternative for the public-private sector collaboration and the ministerial discussions pursued in this process. Notwithstanding which, the number of companies subject to this study is not adequate to derive a statistical significance, and hence, there is a limitation in terms of representation. It is hoped that the analytical results derived from this study will offer any practical and strategic assistance for the Korean ICT companies and the organizations dedicated to the overseas market entry as they desire to enter the overseas markets in response to the global business environment which is undergoing difficulties of making any predictions due to COVID-19.

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7. Appendix

7.1. Authors contribution

	Initial name	Contribution
Lead Author	SP	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
Corresponding Author*	KK	-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
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A Study on the REGULATION of Relationship Between Chakras and Aroma from the Perspective of Wave Energy

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Abstract

Purpose: This study examines the wave energy relationship between the chakra system and aromatherapy and explains that aromatherapy has an organic relationship as a holistic therapy of the chakra system. It is also intended to identify the possibility of use as wave medicine through the energy mechanisms of chakra and aroma.

Method: For the purposes of this study, we examined the principles of the chakra system and aromatherapy and integrated literature theorem and examination to explore how the two systems interact organically with wave energy.

Results: In terms of wave energy, our bodies are energy structures based on chakra and aura as energy systems in addition to physiological and chemical aspects. This energy structure is influencing and influenced by thoughts and emotions and affects the chemical structure and cells of our bodies. Human beings are alive because their vitality flows through the body, which is controlled by an energy center called chakra. Each chakra has a constant motion and resonates with aroma essential oil at a particular frequency. Most healing mechanisms involve the exchange of energy. Chakra acts as an information receiver that draws wave energy directly from the surroundings when the surrounding waves become suitable for each individual's frequency. Aroma is associated with healing applications to the human body depending on the part of extraction off a plant. Plants receive the information energy of the earth and spread it to the world, and humans receive the energy and give the energy of the sky to the earth.

Conclusion: These wave energy aspects of chakra systems and aromatherapy can be expected to harmonize with physical, psychological, spiritual balance and are of sufficient value in wave medicine.

[Keywords] Aromatherapy, Chakra, Aroma, Wave Energy, Wave Medicine

1. Introduction

From a natural medicine perspective, consciousness and body are fused together and cannot be separated. The body is an organic unity and a kind of "gathering." In particular, Western medicine, which treated diseases only for the "body," introduced a wave medicine concept, looking at the cause of the disease in terms of the triple structure of "body, mind, and energy," and began to encourage doctors diagnose and treat it holistically [1].

Andrews, H.B(1981) said, "The human body is an innate integration that cannot be distinguished between the soul and the body or between the mind and the body. As the root of the healing, emotional, mental, physical, and spiritual balance aims to solve the cause, not the symptoms [2]." The healing method from the holistic point of view can supplement the problems of Western medicine, and interest is growing as a way to alleviate or resolve physical and mental

symptoms. In particular, in Korea, problems such as stress, anxiety, and alienation from the excessive competition and performance-oriented mentality in the process of high economic growth in a short period of time cause various psychological maladaptation and physical diseases. Recognizing that physical diseases in this process stemmed from psychological problems, more interest in healing the mind than ever before, and more interest in a variety of energy-oriented therapies that were considered unscientific in the past.

Cultural forms under the theme of "healing" are expanding into various community activities for mind control and healing. Various diagnostic devices using waves and energy healing methods play a role as a venue for introduction and experience through fairs and events[3]. This new perspective on health exists in the body in a microscopic form that is invisible. It is significant to study the chakra system, which provides spiritual energy to the human body, and aromatherapy, which promotes balance and harmony of mind and body using the essential oil, an oil-based plant concentrate.

Chakra is a wheel of life and an energy reservoir. Prana is understood to be the center of cohesive life and is directly related to the endocrine system. It is a rotating energy center and the receiver and transmitter of energy. It exists as a major group of seven energies along the spine, the centerline of the human body, closely correlated with the sympathetic and parasympathetic nervous systems within the autonomic nervous system and connected to the whole body. If the seven chakras maintain balance and harmony, physical, psychological, emotional, and spiritual elements are all in optimal condition and keep one healthy. However, if this balance breaks down and a part of the chakra system suffers from disabilities with as mental and physical, emotional, and spiritual problems, then causes health issues too. These chakras are not visible to the naked eye but are accepted as tools for meditation and mental training[3].

For thousands of years since ancient times, aromatic plants have been perceived to be directly and indirectly involved in human health issues through experience in life. Aromatherapy is a representative holistic therapy that pursues the therapeutic effects of the body, mind, sensitivity, and mind using 100% natural essential oil extracted from aromatic medicinal plants with healing effects. It is freely applicable regardless of time and place and shows the interrelationship between physical and emotional health. This is the theory that emotional health means the health of the body, and aromatherapy is explained as a therapy that can overcome the separation of the body and soul[4].

The chakra system and the wave energy structure of the aroma are the physical and chemical structures that influence human consciousness and emotion while also affecting cells. Each chakra has a specific frequency, and the aroma is also a plant's wave energy body, resonating with a specific frequency and can act on the human body. This energy resonance and exchange entail healing mechanism.

Thus, this study seeks to identify the organic relationship and wave-medical possibilities of the two systems through the understanding of aromatherapy, a holistic natural healing therapy, and chakra, an energy system of the mind and body.

2. Purpose of Research

The purpose of this study is to explore the wave energy relationship between the chakra system and aromatherapy and to explain that aromatherapy has an organic relationship as a holistic therapy of the chakra system. Chakra interacts with the sensory coordination organs and resonates with the plant energy the scent has. Modern people desperately need effective therapy to restore the balance of mind and body broken by stress. Thus, the wave-energy approach of aromatherapy for chakra awakening meets this need and is also considered highly worth researching in terms of utility. Therefore, we would like to identify the possibility of wave medicine through the energy mechanisms of chakra and aroma.

3. Method of Research

For the purposes of this study, Chapter II explains the importance of the two systems as complementary relationships through the understanding of the chakra system and aromatherapy, and as a holistic therapy in harmony with body, mind, and soul balance.

In Chapter III, chakra and aroma are identified in terms of wave energy as organic relationships and wave medical healing potential. Integrating these concepts, we looked at how to use them in practical healing.

4. Aromatherapy and Chakra System

4.1. Chakra system

Chakra is a Sanskrit word derived from "vcar(movement)" and was used as a name for the ritualistic figure used in Hindu religious practice or meditation, a symbol of divinity, and a sacred precinct where the ritual is performed[5]. It also represents the "wheel of creation(bhava cakra)" and "circulation of being(saṃsāra; "phenomenal universe")"[6]."

Chakra is the center of the constant rotation of microscopic vitality[7]. This is a collection of energies along the spine, either wheel-shaped or circle-shaped[8]. It is not a physical organ, but it rotates at an incredibly high speed, where the internal and external energy intersect. Billions of fine prāṇa resonates and changes at relative frequencies. At this time, when the energy changed to resonate returns to normal rotational energy, the body, mind, and universe become harmonious[9]. The center of these round-shaped gases allows the human body to accept microenergy and life energy, which is absorbed and distributed in various organs and tissues by pushing or pulling it in the direction of rotation of chakra[9].

Energy in the body, which is always active in consciousness and unconsciousness, creates a variety of mental states. For the chemical changes produced by endocrine glands and hormones mixed with the human bloodstream, ancient philosophers refer to this phenomenon as five fundamental elements(tattvas). That is, it is also related to sky, wind, fire, water, land(Harish Johari, 1987). The holistic concept of integration will help heal, allowing physical, emotional, mental, and spiritual energy to become aware of physiological, emotional, and psychological connections[10].

Chakra is located along the spine and is related to the level of consciousness that moves from a lower level to a higher level. The lowest level of chakra is associated with a rough and coarse material consciousness, and the higher the level, the more mental and spiritual consciousness is expressed and revealed[11]. There is potential creativity inherent in part in everyday life, vibrating at various frequencies ranging from rough to subtle.

The chakra system that is popular today has the ideological background of tantra idea and hatha yoga. Tantra is said to have discovered that there are several centers of mental energy in the microspheres or in the astral body[12].

4.1.1. Features and characteristics of chakra

We need a metaphysical and intuitive understanding of chakra. We experience various senses in meditation, sound and color, sense, thought, memory, and certain internal conditions. When a performer immerses oneself in this inner experience, harmony with the universe begins[13].

The initial symbolic image was likened to a lotus flower, and the energy intensity of each chakra was different, indicating a gradual increase in the number of petals depending on the vibration resistance[14].








The seven-chakra system currently used is based on Śaṭcakranirūpaṇa, the sixth chapter of Śrī tattvacintāmaṇī, which consists of 25 chapters, written by Pūrṇānanda Svāmī in 1577. It was published in 1919 as Serpernt Power under the pseudonym Arthur Avalon by John Woodroff, including Kālīcaraṇa's annotation[6].

Traditionally, each chakra is represented by a variety of elements, such as petal numbers and colors, kshetram, vizamantra, human body components(dhatu), micro-elements, sensory/perceptual organs, behavioral organs, and coarse elements[3].

Chakra is closely related to nerves, hormones, and emotions. Chakra's location is the same as the body's neuroendocrine-immune system and connects energy and the body. The human body's energy system is a holographic field that conveys information related to the body's growth, development, and regeneration. These fields regulate the process of transforming human cells into tissues and organs. Each chakra is closely related to the body organ and emotional state and becomes stronger or weaker depending on the thoughts and feelings. That is, certain emotions target certain parts of the body[10].

When recognizing chakra as the center of energy linking emotions to the body, it is clear that it will help heal, allowing you to realize psychological, emotional, and physiological relationships.

Table 1. Chakras.

Chakra	Yantra	5 elements, sense, Sense organ, motor organ	Mantra	Organiza-tion	Physiology	Endocrine
Mūladhāra cakra		Prthivi, smell, nose, excretion	Om̐		Excretion, sexual activity	Perineum
Svādhiṣṭhāna cakra		Āp, taste, tongue genital	Kshaṁ	Mind	Urination, defecation, reproductive system	Testis, ovary
5 dythmanipūra cakra		Agni, visul, eye, foot	Haṁ	Prana	Digestion, thermo regulation	Adrenal gland
Ānāhata cakra		Vāyu, tactile sense, skin, hands	Yaṁ	Plasma	Heart, lung, diaphragm	Thymus
Viśuddhi cakra		ākāśa, aual, ear, word	Raṁ	Blood	Thyroid, articulation organ	Thyroid gland
Ājñā cakra		Mind, inner perception	Vaṁ	Fat	Pineal	Pineal gland
Sahasrāra cakra		Consciousness	Laṁ	Muscle	Coordinating all glands and organs in the body	Pituitary

4.1.2. Chakra awakening

Chakra awakening is a holistic way of opening chakra, an energy system, to look at one's true self, to expand the inner potential, to purify and activate it[3].

Chakra is a system that constantly exchanges energy with the outside world, which works in harmony to create an ideal type of chakra system that has no blockage, imbalances, leaks, and congestion of the biological energy.

Niranjanananda says that subtle awareness and high intelligence are the results of high-potential prana vibrations, and high-speed, high-magnification prana vibrations bring a higher chakra awakening. As such, high-frequency prana vibrations, such as kundalini and chakra awakening, induce high levels of recognition to correct negative thinking, emotions, and behaviors resulting from recognition errors and increase the likelihood of converting them into positive thinking and response[15].

Chakra awakening is often confused or recognized as having the same meaning as kundalini awakening. This is more precisely an extension of the same biological energy awakening system. This is a simultaneous interaction that implies and promotes each other.

Satyanada said, "Kundalini energy is an energy, but it also implies individual psychic centers. Or, through chakra, they express themselves differently in a harsh, instinctive way at first, and then in an increasingly subtle way." In the tradition of yoga, it is common to awaken chakra by awakening kundalini[15].

Selby said, "Kundalini exists as a potential energy form at the bottom of the vertebral base, awakening and activating the energy center, the seven chakras, and is waiting to transform each chakras as insight and power and rise to the upper chakras[16]." Frawley also said, "Kundalini energy reveals our potential, which exists as seven chakras, potential energy centers in subtle bodies. It is activated by kundalini[16]."

Ayurveda believes that the temperament and personality of consciousness are determined by which level of chakra the conscious energy remains. They said that if you focus on chakra and become aware of it, you will have the ability to objectively observe certain tendencies that dominate you. In other words, this energy is involved in the state of our bodies, minds, and souls, and it shows a wide variety of characteristics in life, such as patterns of personality and human relationships, and material and spiritual characteristics, depending on their balance[17].

In the chakra system, the full balance between each chakra enables the body to maintain its best mental and emotional state and health within the body. It also allows greater balance in life and that balance to enter life for real healing[3].

4.2. Aromatherapy

Aromatherapy generally refers to natural healing for disease, trauma, disease prevention, mental and physical health, relaxation, and stress relief using the scent of essential oils or plant-derived scents[18]. Essential oils compressed and distilled from plant parts, such as flowers, leaves, seeds, rootstalk, trunk, and bark, are used in general therapy for physical, mental, psychological and spiritual well-being, also called aroma -remedy or fragrance therapy, etc[3].

Ancient humans naturally learned the power of certain plants through experience and have used aromatic plants for rituals and healing wounds and diseases. In ancient civilizations, believing that scent is the soul of nature and inhaling it had a sacred meaning of attracting the spiritual energy of the universe to the human body. It was also believed that burning fragrant plants and performing ancestral rites would create a way for prayer to reach God through the smoke. Humans and plants have coexisted since the dawn of human history. In particular, beautiful and fragrant plants were believed to be a medium for human beings and gods, health and disease, death and eternal life, and were treated sacredly. As such, aromatherapy continues its course from ancient times to modern times[19].

Robert Tisserand defined aromatherapy as "a practical therapy that induces relaxation, boosts energy, reduces stress, and balances the mind, body, and soul by communicating the concept of healing with aroma materials."

Gabriel Mojay defined aromatherapy as "a controlled use of essential oils to maintain and promote physical, mental, and spiritual well-being." Valerie Cooksley also defined it as "using essential oils in a skilled and controlled way for physical and emotional health and well-being[18]."

Aromatherapy stabilizes the mind and body by stimulating the olfactory receptors through the nose and directly transmitting them to the cerebrum, relieving stress and tension, strengthening the immune system and cell regeneration, and reducing pain and inflammation[20]. Through these effects, aromatherapy is the most effective treatment that improves the body's natural healing power, relaxes the mind, and balances the mind and body through emotional stability[21].

4.2.1. Characteristics of aroma essential oil

Essential oil as a substance underlying aromatherapy is the oil extracted from various plant parts such as stems, leaves, fruits, barks, roots, seeds, and resins of flowers and trees in various ways. Essential oil is a mixture of several aromatic ingredients, each of which has a pharmacological effect[22].

Essential oil stimulates the human body and has stimulation and facilitation that activates the body's function, relieves stress, relaxes the mind and body, and it also has an aphrodisiac effect. It also has a variety of functions, such as promoting metabolism to regulate body balance and increasing the number of white blood cells to boost immune function[3]. Aroma essential oils are also fat-soluble, so they dissolve mostly in fat, except for a few types of them, making it easier for it to pass through blood-brain barriers, which can directly affect the central nervous system. Therefore, aroma particles can have psychological and physiological effects by sending chemical information through the olfactory system, skin, and lungs, and circulatory systems to the limbic system of the brain. It can also be absorbed quickly into the sebum produced by the skin, and when it activates body cell function and enters the fat, it acts as healing by circulating through the walls of the lymph nodes and capillaries[18].

4.2.2. Principle of aromatherapy

4.2.2.1. Absorption through smell

Buckle explains that aroma-scented molecules dissolve in mucous membranes in the epithelial cells of the olfactory cells and arrive at the olfactory receptor present in the cilia[2].

Electrical signals are generated when a molecule of aroma is combined with a molecule of the olfactory receptor. Electrical signals arrive in the olfactory bulb along the axons called nerve cells. The posterior part of the brain connects signals from receptor molecules to the cerebral olfactory cortex. At this time, the chemical components of the scent calm and relax, and the cilia transmits the detected information to the olfactory nervous system, which passes through the base of the olfactory epithelial cells and passes through the cerebral limbic system. This is transmitted through sensory neural pathways to the hippocampus, tonsils, and hypothalamus of the lymphatic system[18].

4.2.2.2. Absorption through the lungs

This pathway system is transmitted to the brain through the nose's olfactory nervous system through the bronchial tubes, which affect the entire body through capillaries, sedate the mind and body, and affect the endocrine system[23]. The absorption mechanism through the olfactory or lung inhibits the secretion of adrenaline, which gives a quick effect in a short period of time[24]. Absorbed into the lungs, circulates along the bloodstream into the body's organs and diffuses most of them through the lungs. In the circulation of the whole body, wastes and toxins are detoxed and released from the liver and kidneys, processed as sweat, urine, and feces, and excreted[2].

4.2.2.3. Absorption through the skin

Fine molecules of scent are absorbed into the skin through the pores and sweat glands by massage or foot bath, absorbed into the dermal layer of the skin, passed through capillaries and into the circulatory system, releasing toxins by lymphatic circulation. Aroma oil is made up of fat-soluble molecules, so it is absorbed through the skin but does not accumulate in the body and is mostly released through sweat or urine[3].

4.3. Chakra and aroma's wave medical approach

Wave medicine deals with the frequencies and all forms of causes of wave energy that generate a multidimensional human energy system. The relationship between health and disease is viewed from various levels of energy dysfunction. This relates to the entire energy environ-

ment, including emotional and energy environments created through our consciousness, attitudes toward others, and events in life, and the biochemical molecules that form the body are a real form of wave energy, and matter and energy can exist and interact with each other. Waves are the basis of all the natural phenomena, the vibration of atoms generates heat and sound, and light is another aspect of vibration energy color. Einstein's " $E=mc^2$ " describes the interrelationship between energy and matter. We can see that energy and matter are just different forms of the same substance[19].

It is consciousness that plays an essential role in health and disease as a new human wave model, not just in the electrical and chemical signaling processes of the brain, but as a kind of energy. In terms of wave medicine, consciousness is not limited to the brain and central nervous system, but also exists as an essential aspect of the human heart. In terms of human functionality, emotion is not just a result of neurochemical action within the limbic system or the brain's emotional center. The response of living beings is recorded in the biochemical form in the memory stores in the brain, and also in seven important bioenergy centers that nourish cells and organs in the body. From an energy perspective on the health of the human body, the body has energy, which is the power of the mind and heart. When disease appears, a person can be treated with energy frequency and various forms of therapy, not just surgical procedures and drugs. This energy perspective is what is described and emphasized by the wave medical model of human function[25].

"In terms of wave medicine, the body has certain biochemical functions. In this respect, the wave that has perception is life energy and healing energy. The wave is accompanied by the principles of health, nature, and spirituality." As the key to using vibration for healing and spiritual growth, it is important to harmonize with the energy balance of the chakra system. So we look at the relationship between the chakra system and aromatherapy in terms of wave energy[26].

4.3.1. Energy resonance(coordination)

Resonance has the same intrinsic frequency and is a phenomenon that absorbs vibration from one another. In other words, two tuning forks with the same inherent frequency cause resonance even if they differ in distance from each other. When energy is delivered most efficiently, the natural frequency causes completely identical resonance, and the resulting harmony and vibration mechanisms can be exchanged[6].

In wave medicine, each small cell in the body contains all the information related to the body. The human body consists of organs and tissues such as muscles, blood, bones, heart, tissue, and liver. The tissues and organs are cells and deeper into which molecules and atoms are gathered, creating their own vibrations depending on the number and form of electrons. The shape can change depending on what kind of wave the vibration causes. The human body, composed of numerous vibrations of life electrons, is a mass of energy that throbs with life, and the human body also has its own wave energy, depending on the tissues and organs[23].

All living things and pathogens on Earth have their own molecular vibration patterns. Our bodies are also composed of small particles, atoms, molecules, cells, tissues, organs, and parts. Each of these parts and stages has its own waves that combine levels below that, so human consciousness and emotion create their own waves in the brain. Like this, every substance in the world, every substance that moves the human body, consciousness, and emotion, has its own vibrations and waves.

The human body has the ability to heal itself to maintain homeostasis, but it can also cause self-toxication due to its own toxins. The best cure for it is for cells to help each other self-regenerate through biometric information. For that, if the normal frequency is met, the cells that hold the best self-treatment method, free radical, brain waves, or kidney waves, will perform self-treatment. The body's intrinsic bioenergy values show an amazing healing phenomenon when transcribing resonant frequencies[6].

4.3.2. Observer effect

All matter and phenomena are invisible mind actions. In other words, the mind is the cause, matter and phenomenon are the results. The key to scientists studying quantum physics is that "mind" and "consciousness" are essential, and the rest are all illusions. The universe is a sea of enormous energy full of life electrons, and when one realizes that one is connected to the great energy of the universe, and one can build the strength of one's soul and make one's dreams come true[3].

As conscious energy expressing human biological energy, wave energy is not a scalar wave(which has only energy scale with speed, weight, and temperature), but a vector-wave(which has scale and direction with force, speed, and acceleration). Conscious energy that awakens our cells begins to differentiate and express the biological energy of the individual in order to evolve when it coincides with the universe-like attributes of creation and harmony(coexistence), evolution, and diversity. In bioenergy healing, conscious energy is vector energy with direction, so when directed in the right direction, the result of energy action is shown[27]. The capacity of the observer, the channel through which the consciousness operates, may not have been sufficiently refined or sympathetic to higher frequencies. In that case, consciousness interprets all information according to the observer's own perception, and purification and deformation can occur through introspection and meditation.

From the chakra awakening perspective, the chakra awakening method stated that the eye should be focused on the chakra stimulation point of the spinal cord. It is easier to focus on the chakra kshetram, which is located on the front surface of the body. At this time, the nerves pass through the chakra itself, and then the sensation of going up to the brain occurs. In the yoga tradition, the concentration of the mind can affect the body, physiology, and psychological state, saying, "chakra lives with looking as food[10]."

5. Energy Relationship Between Chakra and Aroma

5.1. Positive and negative energy of chakra and aroma

5.1.1. The yin and yang energy aspects of chakra

Another invisible body has many circuits of energy. It is called nāḍi, and its etymology is "nda" in Sanskrit, which means "movement" or "vibration." On both the left and right sides of the invisible microscopic body are the circuits of the moon, the ida, and the circuits of the sun, the pingala. When these two things stop moving, the kundalini rises through the central airway suṣumnā circuit. Two main airways, the ida circuit, the white moon, and the pingala circuit, the red sun, are created by the combination of the apāna cations and prāṇa anions, with two forces flowing from the muladhara at the base of the spine as soul energy. In the end, the two forces circle both sides of the fire-like-colored suṣumnā or circuit in opposite directions, and one of the suṣumnā circuits meets the ida and pingala circuits in the middle of the forehead through the center of the spine in a tunnel shape[12].

Kundalini is the static and dynamic energy expressed in the world of all phenomena, which becomes the energy consumed by the survival base, and the static energy is dormant in the consciousness that is normally in operation[7]. The energy released by śakti(female or negative principle) awakening the dormant kundalini to a higher soul center sequentially changes and sublimates and merges with śiva, a pure ritual in brahmarandhre, the seat of the sahasrara chakra[12].

Tantra and yoga aim to unite śakti and śiva into a great integration to escape the suffering of the polarized world[13]. Tantra has a very characteristic human-understanding structure of the bipolar śiva-śakti or male-female form, and the human body is the residence of śiva, the male principle, and śakti, the female principle. The purpose of practicing tantra is to unite the two principles within the body. According to śiva-saṃhitā: 2.1-36; 5.132-139, Yogi's body is either a sacred space or an inner temple in which female and male energies are interpenetrated. Yogi

The direction of the chakra's rotation changes from chakra to chakra, forming male and female in different ways, and inducing energy charging in all areas of life. The yin and yang clearly symbolize the rhythmic movement of all life, and the existing balance of the universe around us is the result of the interaction of the pairs of polarities (elements and relative elements). They use scents and different awakening methods for circulating movements consistent with these chakras[28].

Essential oils stored in the plant's oil springs are composed of dozens of chemical components. These chemical components show the pharmacological effect on the body[29].

Kurt Schunaubelt classified the main components of aroma essential oils according to their chemical composition and pharmacological effects. In the case of oils located below the longitudinal axis(+) where aroma essential oil molecules are electron-friendly, when used in the human body, the cells have strong anti-inflammatory effects, cell activation effects, and warm properties. This is a chemical group of terpenes, alcohols, and phenols that are anti-bacterial.

Figure 1. Yin-yang energy on the chemical structure of aroma essential oil.



Aroma essential oil is a substance that is grown by the combination of negative energy of soil and positive energy of the sun and has the full vitality of plants[35]. Gabriel Mojay linked the positive and negative energy of aroma essential oils to human emotions and physical symptoms. Positive energy warms the body and has tonic effects, while negative energy lowers heat and helps relax. When positive energy is low, lacking morale, using energy-boosting oils such as rosemary and ginger is effective. German chamomile and melissa are effective when one experiences nervousness, hyperactivity, and insomnia due to an excessive amount of positive energy. When there is a lack of negative energy, use rose and geranium, the representative oils that boost the negative energy. From a psychological perspective, positive energy is involved in conscious thinking and analysis and affects logic and exploration faculty. Rosemary and Laurel oil, which help concentrate and awaken, can enhance positive faculties. Negative energy is associated with emotion, expression of emotion, sensibility, and emotional life. Oil from jasmine and neroli can relax reason and boost sensory awakening to improve the ability of negative energy.

The energy properties of these aroma oils that appear physically can also be applied to psychological and emotional aspects[30].

The chakra system is associated with the flow of "nāḍī," a finely condensed "prana" in the body. Among them, breathing-related ida and pingala form a relationship with yin and yang energy of aroma. Located to the left of the central passage of the spine, suṣumṇā nāḍī, ida nāḍī is derived from the word "light, pale" and is a negative energy channel symbolizing the cold moon. To the right of it is piṅgalā nāḍī, derived from "red." It is a passage through which life energy flows, symbolizing the positive energy of the hot sun. Ida and pingala carry prāṇa and apāna and carry all the subtle energies of the body[31].

According to Johari, "Through the sensory neural network of the nose, the nostrils are connected to nadi with microscopic nerves. Physiologically hot breathing on the right increases the secretion of acidic substances and cold nasal breathing on the left increases the secretion of alkaline substances." If the left nostril is opened more and breathing occurs more smoothly, it means that ida nadi is activated, while the right nostril is open more open means that pingala nadi is activated. "[36]The right and left nostrils are connected to the opposite cerebral hemisphere and the posterior lobe of the brain, respectively, and by the respiratory process, the reflex of the nerve root is related to the autonomic nervous system(sympathetic and parasympathetic nerves)" [7].

Breathing usually means the concentration of prana along the passageways of ida and pingala, and its performance dominates the sympathetic and parasympathetic nervous systems at the physical level, respectively. Therefore, Prana activates sympathetic nerves through breathing control that moves along the pingala, increasing heart rate and metabolism. Another prana can gradually reduce mental and physical relaxation and metabolism by activating parasympathetic nerves through ida[6].

In other words, positive aroma oil can increase body temperature, activate cells, and stimulating energy, and affect pingala because it is related to the sympathetic nervous system. In addition, negative aroma oil is associated with the parasympathetic nervous system due to its relaxation and calming effects, which can help activate ida nadi, which can affect the olfactory mechanism of absorbing aroma through breathing and can control the autonomic nervous system. This healing mechanism shows that aromatherapy is complementary to chakra awakening in terms of mental and physical balance and harmony. In meditation, breathing training, and healing sites, aromatherapy is gradually expanding the area of aromatherapy as it uses scents more smoothly and quickly for the calming and balancing effects for the mind and body[3].

Table 2. Yin-yang energy essential oil.

Yang - piṅgalā essential oil	Yin - iḍā essential oil
Ginger, lavender spike fennel, lavender majoram, cedarwood hyssop, rosemary juniper berry, melissa benzoin, thyme orange, myrrh basil, black pepper grapefruit, lemon	Geranium, rose ylang ylang, clary sage cypress, eucalyptus chamomile, neroli lavender, lemongrass bergamot, vetiver sandalwood, yarrow everlasting, palmarosa

5.2. Chakra and aroma wave energy

5.2.1. Chakra in terms of wave energy

As an energy center, chakra has the function of supplying energy to physical organs. "If you look at how a fine energy center chakra can provide energy at a rough physical level, you can find it in chakra's function of lowering polar currents to energize the physical system[32]." Through nadi, chakra absorbs life energy from the subtle energy body of humans and the surrounding environment, space, and all the developing worlds. And it converts this energy of life into the frequencies needed in various parts of the physical body or subtle body.

"The chakra system is closely related to the bioenergy layer." Gerber, who interprets the chakra system from a wave-medical perspective, describes it as the etheric body, astral body, mental body, soul body, or causal body(Gerber, 2001). Each level of the body has its own frequency, and the role of transporting consciousness according to the level of vibration to each body is to provide high levels of energy, sensation, and perception as the frequency rises, and the bodies at various levels continue to vibrate within their respective frequency ranges[28].

5.2.1.1. Etheric body

It is an inner physical body that actually exists in the same space as a material body but is invisible to the eye. However, it has a higher wave rate and energy frequency than the physical body[33]. It brings the solar energy through manipura chakra and the earth's life energy through muladhara chakra. It stores two energies, continuously energizing the physical body through chakra and nadi, and balancing life. "Etheric body" and "physical body" both respond strongly to thoughts that come from the "body of mind" of stimulation, indicating that positive thinking is closely related to health. "It is plants that radiate energy similar to the energy emitted by the etheric body. Using plant energy, new energy can be brought to the human body's aura and have healing effects[28]."

5.2.1.2. Astral body

This is the layer responsible for our relationship with all the worlds we belong to, sometimes referred to as the "emotional body," and represents feelings, emotions, and personality traits. Every change in sentiment is radiated from the body of this layer through the chakra in aura form. It sends out vibrations through the aura of this sentiment and unconsciously conveys information to the outside world. In terms of healing, basic energy must be controlled first in order to convert the body or internal organs from unhealthy to healthy. That is, it should start with either the human energy field or bioenergy fields[34].

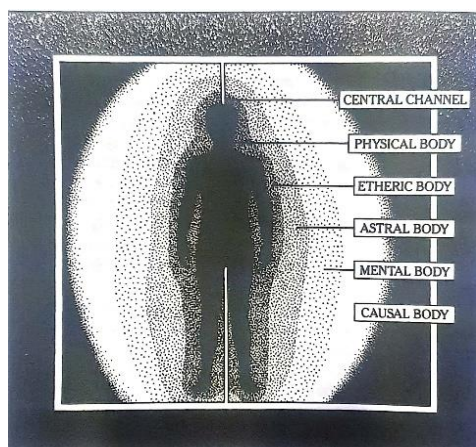
5.2.1.3. Mental body

It is related to thought, creativity, invention, and intuitive perception. This has a higher frequency than the "etheric body" and "astral body" dimensions, while the density of the structure is very low. The pattern of strong thought and mental energy creates a mental concept, which is observed by people who are able to perceive higher aspects of the human energy domain. Confusion at this stage can indicate a functional impairment of the energy pattern and make it difficult to progress thought at the stage of the body's nervous system. Combined with the upper chakra sahasrara and the third eye chakra, the mental body can reach a higher frequency[28][33].

5.2.1.4. Causal body

It has a higher frequency than any other energy body. It is sometimes referred to as the "karaṇa-śārīra body." Many diversified expressions have a record of energy for the real identity of the stored soul, which has been encrypted(potentialized) through physical life, and are part of one's divine being immortal. Only through the body of the soul can we understand the source and purpose of existence, the purpose of life[28][33].

Figure 2. The human energy field.



"The front energy center of the chakras is interrelated with the emotional function of the human body, and the back is related to our willful function and the rational function of the 7th chakra sahasrara, so emotional, rational, and willful functions must be well balanced to stay healthy. In order to balance reason, will, and emotion in life, you must balance the chakras and sympathize with them." Understanding the higher multi-dimensional domain of the energy body will enable the use of self-healing and individual healing processes with the human energy field[34].

5.2.2. Aroma in terms of wave energy

All matters in the phenomenal world are not fixed but dynamic. Based on this "circulation," the principle of the ecosystem is that living things control themselves to form conditions favorable to them through interaction with the environment. Plants quietly produce food and release clean oxygen from the energy of sunlight. "Plants photosynthesize, which is the primary metabolism that makes glucose and oxygen needed for growth by utilizing water absorbed from the roots, sunlight, and carbon dioxide in the air." The substances that make up the human body are those obtained through the roots and pores of the plant, except for water and salt, and the majority of the energy that sustains life comes from sunlight that passes through the leaves of a plant. Plants used as personal enjoyment items, raw materials for medicines, and plant resources produce secondary metabolites such as alkaloids, flavonoids, terpene, terpenoid, etc[35][36][37].

John Tyndale discovered that molecules of aroma essential oil emit infrared rays that induce insects to come. Oil such as patchouli, sandalwood, cloves, lavender, rose, lemon, thyme, rosemary, and anise can absorb infrared rays. Infrared exposure improves circulation, expands blood vessels, and carries blood to the skin's surface[38].

"In the extraction process, aroma essential oils vary in composition and produce new chemicals through hydrolysis." Humans have always been at the center of the healing power of plants and the spiritual treatment and medical care of human society[4].

According to Doctrine of the Signatures, the healing properties of plants are influenced by their physical shape and habitat. Considering the plant's form, many essential oils' individuality and signals represent subtle healing properties by aromas, anatomy, habitats, and parts of the plant used. The unique fragrance of each essential oil represents its properties and healing potential[22].

Normal Shealy said it has vibrating energy as a kinetically living ingredient, vibrating with certain frequencies, acting on the human body, and balancing it. Chi(energy) and prana also have special electric frequencies, and aroma, the energy of plants, also has these frequencies, which restore and maintain the balance of the human body with harmonious direct current frequencies[22].

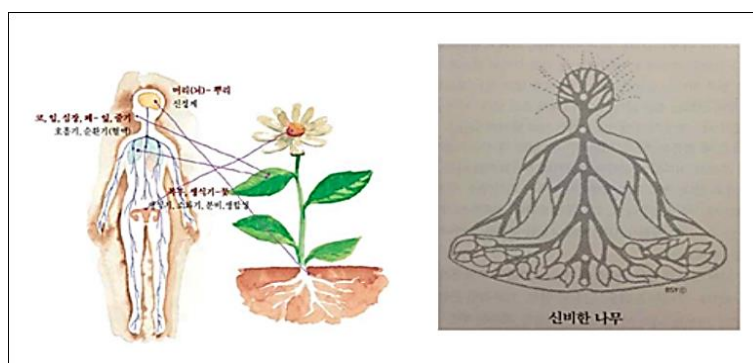
Dr. Royal Raymaon Rife(1888-1971) said, "Cells have their own vibrational echoes. Substances with higher frequencies offset substances with lower frequencies. Pure aroma essential oils have the highest frequency of natural ingredients, and impurity-mixed aroma oils can be as low as 0 MHz." Basil was measured at 52 MHz, lavender at 118 MHz, sandalwood at 96 MHz, peppermint at 78 MHz, and rose oil at 52 MHz to 320 MHz. These measurements vary depending on the purity of the oil's growth process and collection process. In comparison, dry herbs have frequencies ranging from 12 to 22 MHz and fresh herbs have frequencies ranging from 20 to 27 MHz[23].

Dr. Bruce Tainio stated that the average frequency of the body was 62 to 68 MHz. In a negative mental state, the human body's frequency drops to 10, and with a positive mental attitude, the frequency can be raised from 10 to 15. Essential oils have human-friendly frequencies, have higher frequencies than any natural substance, and create an environment in which harmful bacteria cannot survive[22].

Essential oils also affect emotions, especially those with higher vibrations. Essential oils with low frequencies have a greater impact on structural and physical changes in viruses, bacteria, and fungi, including viruses, bacteria, diseases, as well as cells, hormones, and bones[23].

"Chakra theory relates to healing applications to the human body depending on the area of extraction of aroma essential oils. Plants receive the information energy of the earth and spread it to the world, and humans can be seen as giving the energy of the sky to the ground. For neurostabilization, arousal effects, and nervous system diseases, use aromas extracted from the roots of plants. The aroma for the respiratory tract and circulatory system is extracted from the leaves and stems. For diseases related to human genitals, digestive organs, secretions, etc., use aromas derived from plant flowers[26]."

Figure 3. Human being and plants.



According to Frawley, the plant's aroma is a sensory property belonging to the ground (pṛthivi) element in terms of Ayurveda, which itself constitutes a subtle geo-factor. Aroma dominates the ground (pṛthivi) element and contains all five elements, which can stimulate all the subtle senses. Aroma oil contains a large amount of prana, which facilitates purification, neural system, sensory, and energy circulation in the mind, and can enhance the right movement of vitality at all levels[28].

5.2.3. Chakra and aroma in terms of energy exchange

Most therapeutic mechanisms involve the exchange of energy. In aromatherapy, the energy transferred through aroma massage acts on the selection and causes energy exchange. Energy is not created or destroyed, but only exchanged. Essential oil with vibrating energy is transported to the carrier oil and exchanged for energy in the body and mentally needed areas. The energy frequency of aroma essential oils is to restore and maintain balance in the body[22].

Quantum theory suggests that the most important of all energy absorption reactions in photosynthesis are resonant energy transition and redox reactions. When molecules absorb quantum energy, electrons transition from low to high energy levels[6].

"Chakra converts high subtle energy into the cellular structure of the physical body, drawing one form and frequency energy to a lower level of energy, becoming hormones at the physical level, physiological, and ultimately into cell change[23]." It appears to be a rough level of body or a finer level of consciousness. "Chakra draws wave energy directly from the surroundings when the surrounding waves are suitable for each individual's frequency. Chakra is a wave energy antenna that connects us to the environment, nature, and universe, and is an energy conversion system." That is, it acts as a receiver of information beyond energy vibrations and material worlds[32].

"When chakra interacts with the body and mind function normally, it releases its unique energy, and the remaining emotional disturbances in internal and external relationships affect the corresponding chakra center, making the energy flow less smooth." Aroma essential oils are different from medicines. Even with the same oil, there is a self-regulation ability that works differently depending on the individual. "When the imbalance and incongruity of the chakra system, an energy system, the negative energy such as depression and stress can be converted into positive energy using aromas containing concentrated energy from plants." Aroma oil with complex structures interacts with humans and functions fundamentally flexible and harmoniously[4].

5.3. Wave energy utilization of chakra and aroma

Frawley said, "We use aroma oils and fragrances to comfort our minds and promote meditation, and aromas increase serenity and help us shake off negative thoughts and emotions."

Aroma can be used in a variety of ways[28]. No fine function can reach information stored in the unconscious as directly as the sense of smell. The subtle substances obtained from flowers and plants touch the body of energy in which chakra sits and heal harmoniously. Energy changes hormonally and physiologically, and it is in effect cell changes across the body. And each important chakra is associated with a special form of mental perception[32]. Aroma essential oil is higher vibrating energy of healing plants, resonating with the vibrating energy of the human body, and may be used as an energy resonance principle to activate the aura-level chakra. Various treatments that use wave energy such as homeopathy, Bach flower therapy, acupuncture, etc. in aromatherapy can be used in harmony[26].

5.3.1. Chakra meditation and aromatherapy

Aroma essential oils have been useful for meditation and prayer. It helps purify and breathe deeply and slowly in the place where you want to meditate, increases your respiratory

awareness to help concentrate your breathing, and opens the center of the higher chakra by balancing. It also increases awareness, raises the mind to a higher level, honing and covering energy. It also harmonizes the return of personal power within the group by covering up the wave energy[23].

Table 3. Essential oil to help chakra meditation.

Essential oil	Meditation effect
Frankincense	It leads to deepening, slowing, and calm meditation.
Juniper	It is a mental cleaning agent that purifies the space before modification.
Rose	Open Anahata Chakra to help you to love and receive. It is useful for meditation in which creativity is stimulated and which is related to visualization.
Rosewood	It has the ability activating the Sahasrara chakra. It helps to feel the calm without the languidness.
Sandalwood	It helps balance and calm, and is traditionally used in incense.
vetiver	It has a balanced action and helps all the major chakras to align their energy. It is useful in the harmonization of the group energy.

5.3.2. Psychological counseling with chakra and aroma

Jennifer Jefferies talked about using chakra, the human energy center, for the corresponding effects of each aroma essential oil on the mind. Visual artist Karen Osborn created an aromatherapy insight card in conjunction with the painting. It's making us aware of an intuitive state of mind of which we are not aware.

Jefferies said aromatherapy, which uses the most pleasant sense of smell, is one of the most common natural healing treatments. He also said that if we trust and develop our instincts as healers, we can find the key to the answer to life that is open to us.

Forty-two Aromatherapy Insight cards are linked to each chakra energy. Each card that expresses oil has a keyword including a message. Aroma's metaphysical effect is wave-medical attraction and its subconscious state when choosing a card. It indicates that the use of aroma essential oils on the card is appropriate, indicating that the true value of aroma essential oils acts effectively on the emotional energy behind the physical effects[26].

Table 4. Aromatherapy insight cards[38].

Chakra	Aroma oil	Key-word	Chakra	Aroma oil	Key-word
1	Ginger	Stamina/procrastinating	4	Bergamot	Cheerfulness
	Myrrh	Inspiration		Geranium	Re-balancing
	Thyme	Will power and strength		Grapefruit	Optimism
	Vetiver	Centered		Jasmine	Living in the now with passion
2	Cinnamon	Coldness and introversion		Lavender	Nurturing
	Clary sage	Clarity		Mandarin	Happiness

3	Fennel sweet	Assertive/completion		Rose	Love
	Nutmeg	Increases emotional energy		Ylang ylang	Peace
	Orange-sweet	Seriousness		Basil	Self expression
	Patchouli	Unity		Cypress	Transition
	Sandalwood	Contemplation		Chamomile-german	Letting go
	Blak pepper	Direction	5	Peppermint	Purpose
	Cedarwood	Courage		Petitgrain	Conscious mind
	Clove	Remove attachments		Rosemary	Creativity
	Lemon	Rationality		Rosewood	Receptivity
	Lemongrass	Expansion		Spearmint	Invigoration
	Lime	Eases stress	6	Eucalyptus	Integration
	Marjoram	Anxiety		Juniper	Preparation
	Palmarosa	Adaptability		May chang	Stimulating
				Pin	Self worth
				Tea tree	Understanding
			7	Frankincense	Protection
				Neroli	Choice

"Pure aroma oil spreads human waves more finely and balances the fine bodies of all layers. The oil that heals awakening chakra and strengthening aura can be called prana." It's the energy that plants have. This is what resonates with human energy. Aroma essential oil can be used as a resonant principle of energy in activating chakra[3].

6. Conclusion

Modern people, who need efficient therapy to solve stress-induced mental and physical imbalances, are demanding "healing of hurt hearts" rather than "healing for disease(the body)."

Today's healthcare crisis is due to excessive reliance on chemical, mechanical, and artificial treatments. Now, a return to a natural system that is positive for life and soul, along with life-style and curing methods for self-healing, has become a natural phenomenon. All living things are created by the principles of life in the universe and they develop, decline, and perish, and the principles of life in the universe are the principles of balance and harmony. When these principles are applied to humans, they appear in harmony between the mind and the body.

This study sought to explain that chakra and aroma, which interact with the sensory coordination organs and resonate with the plant energy that the fragrance has, are organic as whole therapy. Also, based on the chakra system and the wave energy mechanism of aromatherapy, we tried to identify the possibility of its use as wave medicine.

Based on these research purposes, the results are as follows:

Chakra is a center of ever-rotating microscopic vitality and is an energy center in the body that is always active both in consciousness and unconsciousness. Our body's energy circulates through these chakras, creating a variety of mental states[5].

Aromatherapy means natural healing using the scent of essential oils or the scent extracted from plants[24]. Through the nose, the fragrant particles of perfume stimulate the olfactory receptor and are directly transferred to the cerebrum to relieve stress and tension. It also helps calm and relax, strengthen the immune system and regenerate cells, reduce pain and relieve inflammation, and helps blood and lymphatic circulation to stabilize the mind and body[11]. With these effects, aromatherapy improves the body's natural healing power and relaxes the

mind. This is the most effective treatment for maintaining overall health that balances the mind and body through emotional stability[35].

Chakra awakening is based on the belief that it will be a holistic healing when we take actions that understand and integrate the whole thing. The premise of holistic therapy is that there is the energy of vitality in us. The chakra system is the conduit for the "electrical flow" of life energy in the universe flowing through our body, and aromatherapy also has wavelengths of plant energy inherent in aroma essential oils. When chakra awakening and aromatherapy are applied to our body, the condition of a healthy body also affects emotional health.

In terms of wave energy, our body is an energy structure based on chakra and aura as energy systems in addition to physiological and chemical aspects. This energy structure is influenced by thoughts and emotions and affects the chemical structure and cells of our body. Human beings are alive because their vitality flows through the body, which is controlled by an energy center called chakra. Each chakra has a constant motion and resonates with aroma essential oil at a particular frequency. In other words, pure aromatic essential oils are the energy wavelengths that plants have, resonating with our body's energy system chakra and act on our body. The concept of wave medicine helps us understand olfactory how aroma essential oils work at a subtle level and physiological benefit.

Through nadi, chakra absorbs life energy from the delicate energy body of humans, the surrounding environment, the universe, and all the phenomenal worlds. And it converts this energy into the frequencies needed by the physical or subtle body parts. In the chakra system, each level of the body has its own frequency and acts to transport consciousness according to the level of vibration to each body. Higher frequencies provide a high level of energy, sensation, and perception. The bodies of different energy levels are spread to each other, vibrating continuously within their respective frequency ranges[29].

Aroma is associated with healing applications to the human body depending on the plant's extraction parts. Plants receive the information energy of the earth and spread it to the world, and humans give the energy of the sky to the ground. For the treatment of neurostabilization, arousal effects, and nervous system diseases, aromas extracted from the roots of plants are used. The aromas for respiratory and circulatory systems use ones extracted from leaves and stems. For human genital, digestive, and secretion-related diseases, use aromas derived from plant flowers.

Most healing mechanisms involve the exchange of energy. Chakra acts as an information receiver that draws wave energy directly from the surroundings when the surrounding waves are fitted to each individual's frequency. It is also a multi-layered system that focuses on individuals, draws in beneficial energy frequencies, and moves out when there is harm or inadequate energy frequencies to exchange energy with the surrounding environment[29].

These wave energy aspects of chakra systems and aromatherapy can be expected to harmonize with physical, psychological, spiritual balance, and are of sufficient value in wave medicine.

The chakra system and the wave energy structure of the aroma affect the body's chemical structure and cells while influencing and receiving human consciousness and emotions. Each chakra, an energy system, has a certain frequency, and the aroma resonates and acts on the body.

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8. Appendix

8.1. Authors contribution

	Initial name	Contribution
Lead Author	DH	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
Corresponding Author*	GL	-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	EJ WK	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

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NORTH KOREAN Defectors: Perceptions According to the Size of Manpower of the Constituents of the Security Police Organization and Their Service Location

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Abstract

Purpose: Given the reality where the North Korean defectors are struggling in the South Korean society matters much to the security police activities of South Korea, which manage them. Among the general characteristics of the security police, it is intended to examine and understand the differences in the perception of the North Korean defectors of the security police according to the number of employees within the police organization and their service location following the urbanization due to the South Korean economic growth.

Method: As for the data processing of this study, the frequency analysis was performed to identify the general characteristics of the police officers serving at the security department among the police organizations of South Korea in 2020 by using the SPSS 23.0 program, while the Cronbach's α coefficient was calculated by selecting 91 questions for 100 people, and the One Way ANOVA and t-Test were performed to examine and learn about the differences in the perceptions of the security police towards the North Korean defectors according to the number of employees of the police organization and their service location.

Results: As a result of this study, it turned out that the perception of the North Korean defectors varied according to the number of employees of the security police organization managing the North Korean defectors. Furthermore, it turned out that there is a difference in the perception of the North Korean defectors according to the service location of the security police organization in large cities and small to medium sized cities of the security police.

Conclusion: Since the North Korean defectors, who are accustomed to communism, are struggling with their adapting to the South Korean capitalist economy, it would be necessary to prepare a system which will facilitate and enable sustainable economic activities, and also build various crisis management systems in South Korea in preparations for the collapse of the North Korean regime.

[Keywords] North Korean Defectors, Security Police, Perceptions, Number of Employees, Service Locations

1. Introduction

North Korea is continuing with the "succession of power for three generations" which is rare to find internationally[1][2]. Kim Il-Sung ruled North Korea with the fear of terror for 46 years, followed by his son, Kim Jong-Il for 16 years, and his grandson, Kim Jong-Un for the third generation[3].

The succession of power of the Kims for three generations is unique in the history of communism and the modern history, which is not aligned with the doctrines and principles of communism pursuing a classless society and the social equality for all people [4][5][6][7][8].

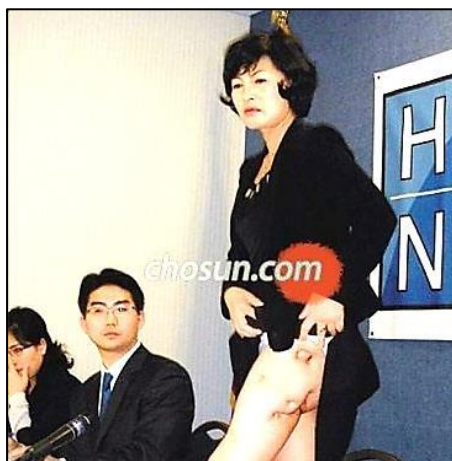
However, the recent development of the Internet is delivering a culture of freedom for the society of the North Koreans, and such a psychological shock has accelerated defection of the North Koreans[9][10]. As a matter of fact, it has yielded an increased number of those watching

the South Korean dramas and movies within North Korea even while facing execution, along with the expansion of the South Korean dialect. As such, the desire for freedom has grown within North Korea, while the number of defection cases towards South Korea via China and Southeast Asia is on the steady rise.

In particular, North Korea's possession of nuclear weapons without the consent of the international community is a situation where it is difficult to maintain the North Korean regime under the economic sanctions of the United Nations. While the dependence on China, North Korea's ally, has increased, the education with China, the only free trade country, is also difficult due to the recent COVID-19, and the North Korean regime creates concentration camps in each neighborhood and imprisons those who are dissatisfied with the regime and those who threaten the dictatorship.

Amidst such circumstances, examining the cases of the North Korean defectors, the North Korean defectors are flowing into South Korea given such various complex factors as economic difficulties within the dictatorial ruling power of the North Korean society, dissatisfaction with the system and reality, and the right of pursuit of freedom for a better life[11][12][13][14][15][16], and as of December 2020, a total of 33,752 North Korean defectors have settled in South Korea[17].

Figure 1. Kim young-soon testifying on the torture wounds after being imprisoned in yodok concentration camp for 10 years.



Note: www.chosun.com.

How such North Korean defectors are struggling in the South Korean society matters much to the security police activities of South Korea, which manage them in reality[18][19][20][21].

Therefore, in this study, an attempt has been made to examine and explore the differences in the perception following the service location along with the size of manpower for the constituent of the security police organization of South Korea concerning the North Korean defectors targeting the security police officers among the South Korean police officers provide support and management of the North Korean defectors.

2. Research Method

2.1. Research subjects and sampling method

In this study, among police officers in the security department as of 2020 who had experience in work related North Korean defectors, 100 trainees in the Police Human Resources Development Institute were surveyed via self-administration method. Among the collected survey questionnaires, 91 were selected as valid samples, excluding those whose answers were incomplete or missing.

Table 1. The general characteristic of the research subjects.

	Description	N(%)	Total
Gender	Male	61(67.0%)	91
	Female	30(33.0%)	
Age	20s	7(7.7%)	91
	30s	28(30.8%)	
	40s	30(33.0%)	
	50s or older	26(28.6%)	
Education	High school	14(15.4%)	91
	Junior college	30(33.0%)	
	College	43(47.3%)	
	Graduate school	4(4.4%)	
Rank	Policemen/women	1(1.1%)	91
	Senior policemen/women	19(20.9%)	
	Assistant inspector	18(19.8%)	
	Inspector	29(31.9%)	
	Senior inspector	14(15.4%)	
	Superintendent	10(11.0%)	
Employment path	General recruitment	75(82.4%)	91
	Special recruitment	5(5.5%)	
	Police academy	2(2.2%)	
	Police cadet	9(9.9%)	
	Other	0(0.0%)	
The total length of service as a police officer	5 years and less	13(14.3%)	91
	6-10 years	32(35.2%)	
	11-15 years	13(14.3%)	
	16-20 years	13(14.3%)	
	Longer than 20 years	20(22.0%)	
The length of service at the security department	2 years and less	16(17.6%)	91
	3-5 years	56(61.5%)	
	6-10 years	17(18.7%)	
	Longer than 10 years	2(2.2%)	
The number of police officers in the organization	10 or less	18(19.8%)	91
	11-15	42(46.2%)	
	16-20	24(26.4%)	
	More than 21	7(7.7%)	
Service location	Tier 1 areas(big cities)	80(87.9%)	91
	Tier 2 areas(small/medium-sized cities)	11(12.1%)	
	Tier 3 areas(rural areas)	0(0.0%)	

2.2. Measuring instrument

The appropriate method for each verification method was chosen to increase the content validity and verify the construct validity of the questionnaire. Content validity was validated through consultation with relevant experts to adopt survey questions suitable for the purpose of the study, and the reliability of the survey questions was shown to be Cronbach's α coefficient .878.

Table 2. The questions.

	Questions
Q-1	North Korean refugees are satisfied with their lives in South Korea.
Q-2	North Korean refugees are agonizing because of their families left behind in North Korea.
Q-3	North Korean refugees are feeling threatened.
Q-4	North Korean refugees feel antagonistic towards South Koreans.
Q-5	North Korean refugees believe that there are forces in South Korean society which follow the North Korean regime.
Q-6	Police officers in charge of personal protection play such an important role in the settlement process for North Korean refugees in South Korea.
Q-7	North Korean refugees believe that they could pose a threat to themselves following political changes in South Korea.
Q-8	For North Korean refugees, the police officers in charge of personal protection need a variety of help in addition to their duties.
Q-9	Counseling is provided for the North Korean refugees across various issues as the police officers in charge of personal protection
Q-10	North Korean refugees are satisfied with South Korea's police officer system for personal protection.
Q-11	North Korean refugees desire facilitation of legal assistance related issues for the police officers in charge of personal protection
Q-12	North Korean refugees desire facilitation of the employment and job placement related issues for the police officers in charge of personal protection.
Q-13	North Korean refugees facilitation of the personal protection related issues of the police officers in charge of personal protection.
Q-14	North Korean refugees are satisfied with the duty of the police officers in charge of personal protection.
Q-15	North Korean refugees believe that the South Korean police organization is an organization dedicated to serving the people.
Q-16	North Korean refugees consider the South Korean police organization to be an honest law enforcement organization.
Q-17	North Korean refugees believe that the South Korean police organization is a coercive organization which rules over the people.
Q-18	North Korean refugees believe that the South Korean organization is one which protects the socially disadvantaged.
Q-19	North Korean refugees visit the South Korean police stations with ease as needed.
Q-20	North Korean refugees visit South Korean police stations to find North Korean refugees or relatives.
Q-21	North Korean refugees visit South Korean police stations because they have been defrauded or assaulted by someone.

Q-22	North Korean refugees visit South Korean police stations to seek legal assistance.
Q-23	North Korean refugees visit South Korean police stations to seek help with how they are treated unfairly such as unpaid wages
Q-24	Understanding of South Korean society is the most necessary education for North Korean refugees to adapt to the South Korean society.
Q-25	Understanding legal aspects is the most necessary education for North Korean refugees to adapt to the South Korean society.
Q-26	Understanding cultural life is the most necessary education for North Korean refugees to adapt to the South Korean society.
Q-27	Understanding vocational training is the most necessary education for North Korean refugees to adapt to the South Korean society.
Q-28	North Korean refugees are looking for jobs themselves in the South Korean society
Q-29	North Korean refugees are looking for jobs in the South Korean society through religious organizations.
Q-30	North Korean refugees are looking for jobs in the South Korean society through manpower agencies.
Q-31	North Korean refugees look for jobs in the South Korean society through the police officers in charge of personal protection.
Q-32	North Korean refugees are looking for jobs in the South Korean society through other governmental agencies (vocational counselors and the North-South Hana Foundation).
Q-33	The largest challenge for the North Korean refugees in settling in the South Korean society is finding a job.
Q-34	The largest challenge for the North Korean refugees in settling in the South Korean society is their personal safety.
Q-35	The largest challenge for the North Korean refugees in settling in the South Korean society is their economic life.
Q-36	The largest challenge for the North Korean refugees in settling in the South Korean society is their adaptation to daily lives
Q-37	The largest challenge for the North Korean refugees in settling in the South Korean society is their communication with neighbors.
Q-38	The average monthly income per household of the North Korean refugees is moderate.

2.3. Data processing and analysis method

The data processing of this study was performed by using the SPSS 23.0, a statistical package program, to perform statistical verification for the purpose of data analysis as follows:

First, frequency analysis was conducted to identify general characteristics using the SPSS/PC+23.0 program.

Second, Cronbach's α coefficient was calculated for the reliability verification of the questionnaire.

Third, One Way ANOVA was conducted to investigate the difference in perception of North Korean defectors according to the number of police officers.

Fourth, the t-Test was conducted to find out the difference in the perception of North Korean defectors by the security police according to the working area.

3. Research Results

3.1. Differences in police officers' perceptions of North Korean defectors according to the number of employees

<Table 3> illustrates the differences in the perceptions of the North Korean defectors by the police officers according to the number of employees of their organizations in which they belong. As a result of the analysis, and at the 1% level, it turned out that the number of 10 or less people for Q-5 was higher than 15 or more and 20 or less people. 15 or more and 20 or less people for Q-11 turned out to be higher than 11 or more and 15 or less people. 15 or more and 20 or less people, and 21 or more people for Q-14 turned out to be higher than 10 people or less. 21 or more people for Q-27 turned out to be higher than 11 or more and 15 or less people. At the 5% level, 15 or more and 20 or less people, and 21 or more people for Q-19 turned out to be higher than 11 or more and 15 or less people. 15 or more and 20 or less people for Q-31 turned out to be higher than 11 or more and 15 or less people.

Table 3. Differences in perception according to the number of affiliated employees.

		N	M	SD	F	Sig	Post hot
Q-1	10 or less	18	2.6111	.60768	1.008	.393	
	11 or more and 15 or less	42	2.5238	.63392			
	15 or more and 20 or less	24	2.7500	.53161			
	21 or more	7	2.8571	.89974			
Q-2	10 or less	18	2.6111	.69780	1.643	.185	
	11 or more and 15 or less	42	2.6429	.53289			
	15 or more and 20 or less	24	2.3750	.57578			
	21 or more	7	2.2857	.48795			
Q-3	10 or less	18	2.4444	.61570	.276	.843	
	11 or more and 15 or less	42	2.3333	.47712			
	15 or more and 20 or less	24	2.4167	.65386			
	21 or more	7	2.2857	.48795			
Q-4	10 or less	18	2.3889	.50163	.965	.413	
	11 or more and 15 or less	42	2.4048	.49680			
	15 or more and 20 or less	24	2.2500	.44233			
	21 or more	7	2.5714	.53452			
Q-5	10 or less	18	3.0000	.76696	3.037	.033	A>C
	11 or more and 15 or less	42	2.6905	.74860			
	15 or more and 20 or less	24	2.3750	.57578			
	21 or more	7	2.4286	.53452			
Q-6	10 or less	18	3.1667	.78591	2.300	.083	
	11 or more and 15 or less	42	3.3571	.75938			
	15 or more and 20 or less	24	3.4583	.65801			
	21 or more	7	4.0000	.57735			
Q-7	10 or less	18	3.2222	.64676	1.399	.249	
	11 or more and 15 or less	42	2.9048	.75900			

	15 or more and 20 or less	24	2.7500	.79400			
	21 or more	7	3.0000	.81650			
Q-8	10 or less	18	3.5000	.70711	2.036	.115	
	11 or more and 15 or less	42	3.2857	.86351			
	15 or more and 20 or less	24	3.2083	.83297			
	21 or more	7	4.0000	.57735			
Q-9	10 or less	18	3.1667	.78591	1.965	.125	
	11 or more and 15 or less	42	3.2619	.88509			
	15 or more and 20 or less	24	3.2500	.73721			
	21 or more	7	4.0000	.57735			
Q-10	10 or less	18	3.1667	.85749	1.961	.126	
	11 or more and 15 or less	42	3.1667	.69551			
	15 or more and 20 or less	24	3.3333	.70196			
	21 or more	7	3.8571	.69007			
Q-11	10 or less	7	3.4286	.53452	3.221	.027	C>B
	11 or more and 15 or less	18	2.7778	.42779			
	15 or more and 20 or less	42	3.5000	.70711			
	21 or more	24	3.4167	.50361			
Q-12	10 or less	7	2.7143	.75593	2.516	.063	
	11 or more and 15 or less	18	3.6111	.50163			
	15 or more and 20 or less	42	3.2857	.74197			
	21 or more	24	3.2917	.62409			
Q-13	10 or less	7	3.2857	.95119	2.380	.075	
	11 or more and 15 or less	18	3.3333	.68599			
	15 or more and 20 or less	42	2.9048	.53235			
	21 or more	24	2.9167	.40825			
Q-14	10 or less	7	3.2857	.48795	3.701	.015	C,D>A
	11 or more and 15 or less	18	2.8333	.51450			
	15 or more and 20 or less	42	3.1429	.64662			
	21 or more	24	3.3750	.57578			
Q-15	10 or less	18	3.5000	.70711	2.391	.074	
	11 or more and 15 or less	42	3.2619	.73450			
	15 or more and 20 or less	24	3.5417	.77903			
	21 or more	7	4.0000	.57735			
Q-16	10 or less	18	3.3889	.60768	1.274	.288	

	11 or more and 15 or less	42	3.2857	.74197			
	15 or more and 20 or less	24	3.4583	.83297			
	21 or more	7	3.8571	.69007			
Q-17	10 or less	18	2.3889	.50163	2.048	.113	
	11 or more and 15 or less	42	2.2381	.53235			
	15 or more and 20 or less	24	2.5833	.77553			
	21 or more	7	2.1429	.37796			
Q-18	10 or less	18	3.3333	.76696	1.658	.182	
	11 or more and 15 or less	42	3.1905	.74041			
	15 or more and 20 or less	24	3.3750	.76967			
	21 or more	7	3.8571	.69007			
Q-19	10 or less	18	2.9444	.80237	5.037	.003	C,D>B
	11 or more and 15 or less	42	2.6190	.76357			
	15 or more and 20 or less	24	3.2083	.65801			
	21 or more	7	3.5714	.97590			
Q-20	10 or less	18	2.6111	.69780	.863	.464	
	11 or more and 15 or less	42	2.5238	.63392			
	15 or more and 20 or less	24	2.7083	.55003			
	21 or more	7	2.8571	.37796			
Q-21	10 or less	18	3.3889	.60768	.727	.539	
	11 or more and 15 or less	42	3.1667	.76243			
	15 or more and 20 or less	24	3.0833	.58359			
	21 or more	7	3.1429	.69007			
Q-22	10 or less	18	3.0000	.34300	2.634	.055	
	11 or more and 15 or less	42	2.9762	.51741			
	15 or more and 20 or less	24	3.2500	.60792			
	21 or more	7	3.4286	.53452			
Q-23	10 or less	18	2.8333	.78591	.543	.654	
	11 or more and 15 or less	42	2.8333	.65951			
	15 or more and 20 or less	24	3.0417	.69025			
	21 or more	7	2.8571	.37796			
Q-24	10 or less	18	3.1667	.70711	1.749	.163	
	11 or more and 15 or less	42	3.3333	.72134			
	15 or more and 20 or less	24	3.3750	.64690			

	21 or more	7	3.8571	.37796			
Q-25	10 or less	18	3.1111	.83235	2.223	.091	
	11 or more and 15 or less	42	3.0714	.60052			
	15 or more and 20 or less	24	3.4167	.65386			
Q-26	21 or more	7	3.5714	.53452	1.341	.266	
	10 or less	18	3.7222	.57451			
	11 or more and 15 or less	42	3.4286	.63025			
	15 or more and 20 or less	24	3.5000	.51075			
	21 or more	7	3.7143	.48795			
Q-27	10 or less	18	3.5000	.61835	3.597	.017	D>B
	11 or more and 15 or less	42	3.1429	.64662			
	15 or more and 20 or less	24	3.3750	.57578			
	21 or more	7	3.8571	.37796			
Q-28	10 or less	18	3.0556	.87260	.621	.603	
	11 or more and 15 or less	42	2.9286	.71202			
	15 or more and 20 or less	24	3.0833	.65386			
	21 or more	7	3.2857	.48795			
	10 or less	18	2.8333	.51450			
Q-29	11 or more and 15 or less	42	2.8571	.52132	.753	.524	
	15 or more and 20 or less	24	3.0000	.41703			
	21 or more	7	2.7143	.75593			
	10 or less	18	3.0000	.00000			
Q-30	11 or more and 15 or less	42	2.9048	.53235	.285	.836	
	15 or more and 20 or less	24	2.9167	.40825			
	21 or more	7	3.0000	.00000			
	10 or less	18	3.1111	.58298			
Q-31	11 or more and 15 or less	42	2.8333	.58086	4.386	.006	C>B
	15 or more and 20 or less	24	3.3750	.57578			
	21 or more	7	3.2857	.95119			
	10 or less	18	3.3333	.68599			
Q-32	11 or more and 15 or less	42	3.2381	.65554	.638	.593	
	15 or more and 20 or less	24	3.0833	.50361			
	21 or more	7	3.2857	.48795			
	10 or less	18	3.3333	.76696			
Q-33	11 or more and 15 or less	42	3.2857	.74197	.743	.529	

	15 or more and 20 or less	24	3.2917	.62409			
	21 or more	7	3.7143	.75593			
Q-34	10 or less	18	2.4444	.61570	2.369	.076	
	11 or more and 15 or less	42	2.3571	.61768			
	15 or more and 20 or less	24	2.1250	.33783			
	21 or more	7	2.7143	.75593			
Q-35	10 or less	18	3.6111	.50163	.312	.816	
	11 or more and 15 or less	42	3.4524	.67000			
	15 or more and 20 or less	24	3.5417	.58823			
	21 or more	7	3.5714	.78680			
Q-36	10 or less	18	3.7222	.46089	.937	.427	
	11 or more and 15 or less	42	3.5000	.70711			
	15 or more and 20 or less	24	3.4167	.50361			
	21 or more	7	3.5714	.53452			
Q-37	10 or less	18	3.7778	.42779	1.379	.255	
	11 or more and 15 or less	42	3.5238	.67130			
	15 or more and 20 or less	24	3.4167	.58359			
	21 or more	7	3.4286	.53452			
Q-38	10 or less	18	2.7778	.42779	.708	.550	
	11 or more and 15 or less	42	2.8095	.45468			
	15 or more and 20 or less	24	2.9167	.40825			
	21 or more	7	3.0000	.57735			

Note: A: 10 or less, B: 11 or more and 15 or less, C: 15 or more and 20 or less, D: 21 or more.

3.2. Differences in police officers' perceptions of North Koreans by service locations

<Table 4> illustrates the differences in the perceptions of the North Korean defectors according to the service location in which they belong. As a result of the analysis, it turned out that, as for Q-5, Q-26, and Q-35, Class 2 location (small to medium sized cities) were higher than Class 1 location (large cities) at the 1% level. As for Q-7, Q-21, Q-27, Q-32, Q-33, Q-36, and Q-37, and at the 5% level, it turned out that Class 2 location (small to medium sized cities) was higher than Class 1 location (large cities), whereas for Q-14, it turned out that Class 1 location (large cities) was higher than Class 2 location (small to medium sized cities).

Table 4. Differences in perception according to the service locations of the police.

		N	M	SD	T-value	Sig
Q-1	Tier 1 areas (big cities)	80	2.6375	.64128	.455	.650
	Tier 2 areas (small/medium-sized cities)	11	2.5455	.52223		

Q-2	Tier 1 areas(big cities)	80	2.5375	.54988	-.042	.966
	Tier 2 areas (small/medium-sized cities)	11	2.5455	.82020		
Q-3	Tier 1 areas(big cities)	80	2.3875	.53943	.646	.520
	Tier 2 areas (small/medium-sized cities)	11	2.2727	.64667		
Q-4	Tier 1 areas(big cities)	80	2.3875	.49025	.732	.466
	Tier 2 areas (small/medium-sized cities)	11	2.2727	.46710		
Q-5	Tier 1 areas(big cities)	80	2.5625	.67212	-3.220	.002
	Tier 2 areas (small/medium-sized cities)	11	3.2727	.78625		
Q-6	Tier 1 areas(big cities)	80	3.4000	.75641	.151	.880
	Tier 2 areas (small/medium-sized cities)	11	3.3636	.67420		
Q-7	Tier 1 areas(big cities)	80	2.8750	.75263	-2.042	.044
	Tier 2 areas (small/medium-sized cities)	11	3.3636	.67420		
Q-8	Tier 1 areas(big cities)	80	3.3000	.84793	-1.989	.050
	Tier 2 areas (small/medium-sized cities)	11	3.8182	.40452		
Q-9	Tier 1 areas(big cities)	80	3.2750	.84156	-.676	.501
	Tier 2 areas (small/medium-sized cities)	11	3.4545	.68755		
Q-10	Tier 1 areas(big cities)	80	3.2875	.71501	.821	.414
	Tier 2 areas (small/medium-sized cities)	11	3.0909	.94388		
Q-11	Tier 1 areas(big cities)	80	3.2750	.65555	.845	.400
	Tier 2 areas (small/medium-sized cities)	11	3.0909	.83121		
Q-12	Tier 1 areas(big cities)	80	3.3125	.72205	-.615	.540
	Tier 2 areas (small/medium-sized cities)	11	3.4545	.68755		
Q-13	Tier 1 areas(big cities)	80	3.2875	.71501	.065	.948
	Tier 2 areas (small/medium-sized cities)	11	3.2727	.64667		
Q-14	Tier 1 areas(big cities)	80	3.2500	.77132	2.103	.038

Q-15	Tier 2 areas (small/medium-sized cities)	11	2.7273	.78625	-.498	.619
	Tier 1 areas(big cities)	80	3.4250	.75933		
	Tier 2 areas (small/medium-sized cities)	11	3.5455	.68755		
Q-16	Tier 1 areas(big cities)	80	3.4000	.77296	.151	.880
	Tier 2 areas (small/medium-sized cities)	11	3.3636	.50452		
Q-17	Tier 1 areas(big cities)	80	2.3500	.59746	-.070	.944
	Tier 2 areas (small/medium-sized cities)	11	2.3636	.67420		
Q-18	Tier 1 areas(big cities)	80	3.2875	.78262	-1.058	.293
	Tier 2 areas (small/medium-sized cities)	11	3.5455	.52223		
Q-19	Tier 1 areas(big cities)	80	2.9625	.80259	1.612	.111
	Tier 2 areas (small/medium-sized cities)	11	2.5455	.82020		
Q-20	Tier 1 areas(big cities)	80	2.6500	.61829	1.468	.146
	Tier 2 areas (small/medium-sized cities)	11	2.3636	.50452		
Q-21	Tier 1 areas(big cities)	80	3.1250	.68205	-2.393	.019
	Tier 2 areas (small/medium-sized cities)	11	3.6364	.50452		
Q-22	Tier 1 areas(big cities)	80	3.1000	.54191	.584	.560
	Tier 2 areas (small/medium-sized cities)	11	3.0000	.44721		
Q-23	Tier 1 areas(big cities)	80	2.9125	.67868	.853	.396
	Tier 2 areas (small/medium-sized cities)	11	2.7273	.64667		
Q-24	Tier 1 areas(big cities)	80	3.3500	.67693	-.061	.951
	Tier 2 areas (small/medium-sized cities)	11	3.3636	.80904		
Q-25	Tier 1 areas(big cities)	80	3.2375	.64128	1.095	.276
	Tier 2 areas (small/medium-sized cities)	11	3.0000	.89443		
Q-26	Tier 1 areas(big cities)	80	3.4625	.59414	-2.986	.004
	Tier 2 areas (small/medium-sized cities)	11	4.0000	.00000		

Q-27	Tier 1 areas(big cities)	80	3.2750	.63595	-2.271	.026
	Tier 2 areas (small/medium-sized cities)	11	3.7273	.46710		
Q-28	Tier 1 areas(big cities)	80	3.0250	.67458	.108	.914
	Tier 2 areas (small/medium-sized cities)	11	3.0000	1.00000		
Q-29	Tier 1 areas(big cities)	80	2.9000	.49299	1.048	.298
	Tier 2 areas (small/medium-sized cities)	11	2.7273	.64667		
Q-30	Tier 1 areas(big cities)	80	2.9250	.44366	-.558	.578
	Tier 2 areas (small/medium-sized cities)	11	3.0000	.00000		
Q-31	Tier 1 areas(big cities)	80	3.0750	.67082	.359	.720
	Tier 2 areas (small/medium-sized cities)	11	3.0000	.44721		
Q-32	Tier 1 areas(big cities)	80	3.1625	.60470	-2.480	.015
	Tier 2 areas (small/medium-sized cities)	11	3.6364	.50452		
Q-33	Tier 1 areas(big cities)	80	3.2625	.72468	-2.482	.015
	Tier 2 areas (small/medium-sized cities)	11	3.8182	.40452		
Q-34	Tier 1 areas(big cities)	80	2.3125	.56465	-1.250	.215
	Tier 2 areas (small/medium-sized cities)	11	2.5455	.68755		
Q-35	Tier 1 areas(big cities)	80	3.4500	.63445	-2.861	.005
	Tier 2 areas (small/medium-sized cities)	11	4.0000	.00000		
Q-36	Tier 1 areas(big cities)	80	3.4750	.61572	-2.292	.024
	Tier 2 areas (small/medium-sized cities)	11	3.9091	.30151		
Q-37	Tier 1 areas(big cities)	80	3.4875	.61611	-2.225	.029
	Tier 2 areas (small/medium-sized cities)	11	3.9091	.30151		
Q-38	Tier 1 areas(big cities)	80	2.8625	.44277	.944	.348
	Tier 2 areas (small/medium-sized cities)	11	2.7273	.46710		

Note: A: tier 1 areas(big cities), B: tier 2 areas(small/medium-sized cities).

4. Discussion and Conclusion

In this study, it was empirically validated as to whether the perceptions of the North Korean defectors had any differences according to the number of employees in the security police department and service location targeting the police officers of the security police organization.

As a result of the analysis, first, it turned out that the perception towards the North Korean defectors was highly formed within the security police organization of middle size mostly as for the questions such as Q-5, Q-11, Q-14, Q-19, Q-27, and Q-31, which demonstrated a statistically significant difference in the perception of the North Korean defectors of the leaders according to the number of employees of the organization. Hence, it is determined that it is most desirable to organize the security police organization into one consisted of 15 or more people in line with the overall size of the organization rather than an excessively small organization moving forward.

Furthermore, in terms of the difference in the perception of the North Korean defectors according to the service location, it turned out that, in most of the questions except for Q-14, Class 2 location (small to medium sized cities) are higher than Class 1 location (large cities). Hence, the perception of the North Korean defectors within the organizations located in large cities among the security police organizations is low because it pertains to the communist economy experienced in North Korea, and it is also determined to be related to the difficulties of adapting to the capitalist economy of South Korea.

Therefore, it is necessary to prepare a system for facilitating and enabling the sustainable economic activities when the North Koreans accustomed to communism are absorbed into South Korea in preparations for the collapse of the North Korean regime, and also build various crisis management systems in South Korea in preparations for the collapse of the North Korean regime.

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6. Appendix

6.1. Authors contribution

	Initial name	Contribution
Author	HK	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>