

ผลกระทบของโครงการองค์กรแห่งความสุข:กรณีศึกษา 2 ธุรกิจในประเทศไทย

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EFFECT OF HAPPY WORKPLACE PROGRAM:
A CASE STUDY OF 2 FIRMS IN THAILAND

Mr. Shigeru Yamato

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Arts Program in Labour Economics and Human Resource Management

Faculty of Economics
Chulalongkorn University

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ชิเกรุ ยามาโต : ผลกระทบของโครงการองค์กรแห่งความสุข: กรณีศึกษา 2 ธุรกิจในประเทศไทย. (EFFECT OF HAPPY WORKPLACE PROGRAM: A CASE STUDY OF 2 FIRMS IN THAILAND) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ.ดร.กิตติ ลิ่มสกุล, 139 หน้า.

องค์กรสุขภาวะ (Happy Workplace Program) เป็นกรอบแนวคิดในการเสริมสร้างความสุขในสถานที่ทำงาน ในการศึกษาให้ความสำคัญกับกิจกรรมแห่งความสุขด้านสุขภาพดี (Happy Body) และด้านผ่อนคลาย(Happy Relax) เป็นสำคัญ ทั้งนี้เนื่องจากสถานะภาพทางสุขภาวะของทรัพยากรมนุษย์ อาทิเช่นความเจ็บป่วยและอุบัติเหตุที่เกิดขึ้นจากการทำงานมีผลกระทบต่อความพึงพอใจในการทำงาน (Job satisfaction) และการขาดงาน (Absenteeism) ในองค์กร ปัจจุบันองค์กรต่างๆจึงพยายามแสวงหาแนวทางที่นำไปสู่การลดผลกระทบจากสภาวะดังกล่าว อย่างไรก็ตามการนำเครื่องมือที่เรียกว่ากล่องความสุขดังกล่าวมาใช้ในองค์กรยังไม่มีผลการพิสูจน์ผลสัมฤทธิ์ในเชิงประจักษ์อย่างแพร่หลายเท่าที่ควร การศึกษานี้ทำการพิสูจน์สมมุติฐานว่าการนำกล่องความสุขมาใช้ปฏิบัติในองค์กรส่งผลดีหรือไม่อย่างไรต่อความพึงพอใจในการทำงานและการขาดงานของพนักงาน

เพื่อพิสูจน์สมมุติฐานดังกล่าว เชิงประจักษ์การศึกษานี้คัดเลือกพนักงานจำนวน 356 คน จากบริษัทตัวอย่าง 2 แห่ง เพื่อเป็นหน่วยวิเคราะห์ในการศึกษา ได้แก่บริษัท โลออนคอร์ปอเรชั่น (ประเทศไทย) จำกัด และ บริษัท เอนโอเค พรีซิชั่นคอมโพเนน (ประเทศไทย) ตามลำดับ การศึกษาเชื่อว่าบริษัททั้งสองเป็นตัวแทนขององค์กรที่พยายามสร้างบริษัทให้เป็นองค์กรสุขภาวะตามแนวคิดข้างต้น แม้บริษัทโลออนคอร์ปอเรชั่น มี วัฒนธรรมองค์กรที่ค่อนข้างอนุรักษ์เนื่องจากก่อตั้งมายาวนานตั้งแต่ พ.ศ. 2512 และเป็นผู้ผลิตสินค้าอุปโภคและบริโภคในประเทศ ในขณะที่บริษัทเอนโอเคเป็นตัวแทนขององค์กรสมัยใหม่ มีประวัติการก่อตั้งน้อยกว่า 10 ปีและเป็นผู้ผลิตอุปกรณ์อิเล็กทรอนิกส์สู่ตลาดโลก

ผลการวิเคราะห์เชิงสถิติพบว่า กิจกรรมผ่อนคลาย (Happy Relax) มีผลกระทบเชิงบวกต่อความพึงพอใจในการปฏิบัติงานในทั้ง 2 บริษัท ในขณะที่กิจกรรมเพื่อส่งเสริมความมีสุขภาพดี (Happy Body) มีผลต่อบริษัท เอนโอเคฯ เป็นสำคัญมากกว่า สำหรับตัวแปรด้านอายุของพนักงาน อัตราเงินเดือนและอายุงาน มีผลกระทบอย่างมีนัยสำคัญอย่างจำกัด แต่สามารถสรุปได้ว่าการที่บริษัทไม่ว่าจะมีวัฒนธรรมการบริหารที่แตกต่างกัน มีอายุการจัดตั้งที่ต่างกัน มีที่มาจากแหล่งทุนในประเทศ-ต่างประเทศ การผลิตสินค้าที่แตกต่างกัน ฯลฯ หากนำโครงการสร้างสุขภาวะในองค์กรมาปฏิบัติแม้เพียงบางกิจกรรมก็อาจสามารถเพิ่มความพึงพอใจในการทำงานและลดแรงกดดันจากการที่มีอัตราการขาดงานของพนักงานลงได้ การศึกษามีการนำเสนอผลเปรียบเทียบกับการศึกษาอื่นๆและพบว่าโดยทั่วไปมีผลสรุปที่ไม่แตกต่างกัน

ข้อเสนอแนะจากผลการวิจัยคือให้มีการส่งเสริมการใช้กลยุทธ์การสร้างองค์กรสุขภาวะกับบริษัทต่างๆในประเทศไทยโดยเฉพาะบริษัทต่างชาติในประเทศไทยเพื่อเพิ่มคุณภาพของชีวิตพนักงานและเพิ่มสมรรถนะของหน่วยธุรกิจจากการลดการขาดงาน อย่างไรก็ตามก็ยังคงต้องมีการศึกษาเพิ่มเติมด้วยการเพิ่มจำนวนหน่วยธุรกิจที่เป็นตัวอย่างให้มีความหลากหลาย มีคัมมรรมของตัวแปรกำหนดองค์กรสุขภาวะเพิ่มและมีความเป็นมาตรฐานสากลต่อไป

สาขาวิชา เศรษฐศาสตร์แรงงานและ..... ลายมือชื่อนิติ.....

.....การจัดการทรัพยากรมนุษย์..... ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....

ปีการศึกษา 2554.....

##5285597029: MAJOR LABOUR ECONOMICS AND
HUMAN RESOURCE MANAGEMENT

KEYWORDS: WORKSITE HEALTH PROMOTION/ABSENTEEISM/
JOB SATISFACTION/HAPPY WORKPLACE PROGRAM

SHIGERU YAMATO: EFFECT OF HAPPY WORKPLACE
PROGRAM: A CASE STUDY OF 2 FIRMS IN THAILAND.
ADVISOR: ASSOC. PROF. KITTI LIMSKUL, Ph.D., 139 pp.

The Happy Workplace Program (HWP) is a unique worksite health promotion program in Thailand, promoting mental and physical well-being of employees. As work-related illness and accidents are increasingly viewed as a global social issue, the HWP is considered to be such a program to resolve it. Since the importance of measuring the effect of these programs has been growing worldwide, this study contributes to the analysis of the effect of the HWP on employee absenteeism and job satisfaction, focusing on only two out of eight concepts contained within the HWP, *Happy Body* (physical exercise) and *Happy Relax* (relaxing activities).

In this study, questionnaire survey was conducted to collect primary data from a total sample of 356 employees from Lion Corporation (Thailand) Limited and NOK Precision Component (Thailand) Ltd respectively. Established in 1969, LION represents *traditional* firms with a long history, while NOK represents *modern* firms with a history of less than 10 years. A case study of two such contrasting firms could yield referential empirical results for a wide range of manufacturers in Thailand. Not only simple data analysis but also econometric approach is employed, including the multiple regression, logit and simultaneous equation models.

Empirical results show that *Happy Relax* proved to have a positive effect on job satisfaction across all models at NOK and LION, whereas *Happy Body* only proved itself at NOK. Age, salary, years of service and marital status have effect on job satisfaction and absenteeism with some limitations. Absenteeism is affected by job satisfaction at both firms. Some generalization can be drawn from the results in this study although further study with different firms and sample is necessary.

It is recommended that firms with different characteristics introduce the HPW to increase job satisfaction and decrease absenteeism for their employees. Standardization of cause and effect will be also topic of further study.

Department: Economics..... Student's Signature.....

Field of Study: Labour Economics and.....
Human Resource Management..... Advisor's Signature.....

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CHAPTER I

INTRODUCTION

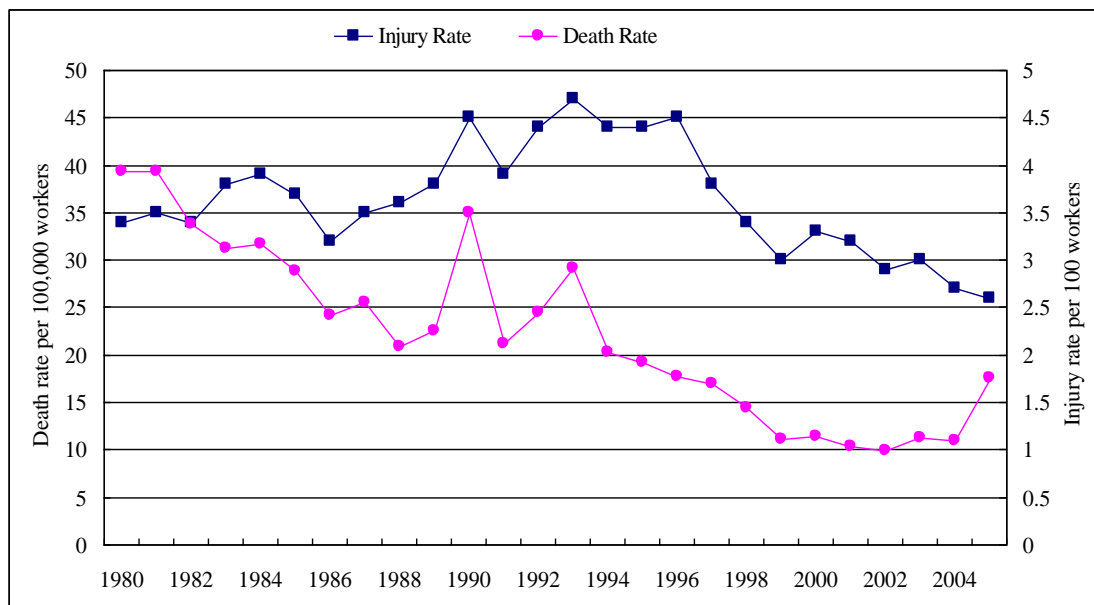
1.1 Significance of the Problem

The mental and physical well-being of employees is of vital concern not only for the employees themselves, but also for their employers; It is essential to the competitiveness and sustainable growth of an organization. The International Labor Organization (ILO) and the World Health Organization (WHO) collected the data of an estimated 2 million fatalities occur worldwide each year as a result of occupational accidents and work-related illnesses or injuries. Another 268 million non-fatal workplace accidents result in an average of 3 lost workdays per casualty. Additionally, 8% of the global burden of physiological disease from depression is currently attributed to occupational risk (World Health Organization, 2010). In the case of Japan, the estimated economic loss resulting from Japanese suicides due to depression reaches about 2.7 trillion yen annually (32 billion U.S. dollars) (Japanese Ministry of Health, Labor and Welfare, 2009). Experts recognize that this depression is largely related to hazardous occupational conditions and environment. Therefore, the health of employees is not just an individual issue. It is an increasingly global social issue, which needs to be addressed urgently and solved with collective wisdom from around the world.

In the case of Thailand, compared with the rates in the 1990's, the rates of occupational death and injury in the workplace have been on a downward trend. However, the statistic from the

Ministry of Labour in Thailand still shows that 214,235 employees had occupational injuries in the workplace and 1,444 employees died due to dangerous occupational incidents in 2005. Since the statistic just shows the number of employee covered by workers' compensation, it is reasonably possible that the actual number could be higher than sated in the statistic.

Figure1.1 Rates of occupational deaths and injuries
in the workplace in Thailand 1980-2006



Source: Ministry of Labour in Thailand

Under the circumstance stated above, many employers have adopted worksite programs promoting employee physical and mental health in an attempt to develop high functioning employees over the past 25 years (Parks & Steelman 2008). Such programs are commonly called a Worksite Health Promotion Program (WHPP),

Occupational Health and Safety (OHS) Interventions or an Employee (or Corporate) Wellness Program and so on.

In Thailand, there is a unique worksite health promotion program called the “Happy Workplace Program”. It is a comprehensive program that supports employee physical and mental health and safety. The program was developed by the Thai Health Promotion Foundation, hereinafter referred to as “Thai Health”, an autonomous state agency governed by the Ministry of Public Health in Thailand.

1.2 Objective

The objective of the research is to analyze the effects of the Happy Workplace Program in Thailand on employee absenteeism and job satisfaction. Absenteeism in this research is focused on only the one due to physical or mental illness, excluding other types of it such as a marriage leave, bereavement leave and so on. Literature related to such programs focus on a reduction in absenteeism as a major effect of the program because it is considered to be reasonable to quantitatively analyze the effect. The reason behind the adoption of these programs is that employers expect the improvement of employee health and a reduction in illness-related absenteeism. It has been estimated that absenteeism costs organizations more than 26 million dollars each year (Altchiler and Motta, 1994) and accounts for 10.4 million workdays lost each year (Ho, 1997). Therefore, in terms of practical benefit from the research, absenteeism is analyzed as one of the dependent variables in this paper.

Furthermore, the job satisfaction is analysed as one of the effects of the Happy Workplace Program, considering that this paper hypothesizes that one organizational factor impacting the job satisfaction is the presence of the Happy Workplace Program. One perspective is that employers who provide such worksite programs are viewed as having more concern for their employees and as a result enhance employees' attitudes toward the organization. This concept is recognized as a theory of perceived organizational support (POS) developed by Eisenberger and his colleagues (Eisenberger, 1986).

1.3 Scope of the study

In this research, only two major programs among a total 8 programs of the Happy Workplace Program are focused, accounting for *Happy Body* and *Happy Relax Program*. It is generally thought of that employees are more likely to be involved to them because it is reasonably and physically possible to participate in the programs if restrictions such as time or place are excluded. Absenteeism and job satisfaction are treated as the dependent variables in this study.

1.3.1 Definitions

Happy Body Program includes various programs featuring physical exercise to build healthy bodies and minds. While some more obscure activities may be present at some sites, such as sepatakrav (kick volleyball), the most common examples are yoga, aerobics, working out at the gym, table-tennis, and so on. All the facilities for these activities are provided by employers.

Happy Relax Program is a program which enhances relaxation and recreation for employees. This concept offers singing songs (karaoke), playing musical instruments, taking a nap, relaxing in garden, field trips, regular company social gathering and so on. As same as *Happy Body Program*, all the necessary facilities such as karaoke box at worksite place for music are generally provided by employers.

Absenteeism. The scale used to measure absenteeism in the questionnaire is based on the World Health Organization Health and Work Performance Questionnaire (HPQ) drafted (Kessier et al, 2003). The questionnaire asks how many days sample employees missed an entire work day(s) or a part of work day due to problems with their physical or mental health in the past four weeks.

Job Satisfaction. The conceptual approach to measuring job satisfaction in this research follows the Warr-Cook-Wall scale (Warr et al, 1979) widely viewed as the most common scale to measure overall job satisfaction. The scale consists of 10 questions and each item is rated on a seven-point Likert scale, accounting for extreme satisfaction (7.0) through extreme dissatisfaction (1.0).

1.4 Organization of the Study

This thesis is composed of a total 5 chapters. The first chapter is considered to be an introduction of this thesis, including the significance, objective and scope of the study as well as the definitions of technical terms in this research. The second chapter

is found to be literatures review, consisting of a healthy workplace model and effect of a worksite health promotion program. The third chapter is theory and methodology. It discusses theory and concept of the Happy Workplace Program in Thailand as well as the details of a program structure. Hypotheses 1-5 in this research are explicitly stated. Models are extensively discussed, including the logit, multiple regression, and simultaneous equation method. In the last part of this chapter, firms studied are discussed, including rationales behind selecting LION and NOK as firms

The fourth chapter is empirical results that the data collected is analyzed, consisting of a hypothesis test for the population proportion, for crosstabs and chi-square analyses of three variable areas, and econometrics. The last one is a conclusion including tables of summarized results. Policy recommendation and limitation of this research are also found in this chapter.

CHAPTER II

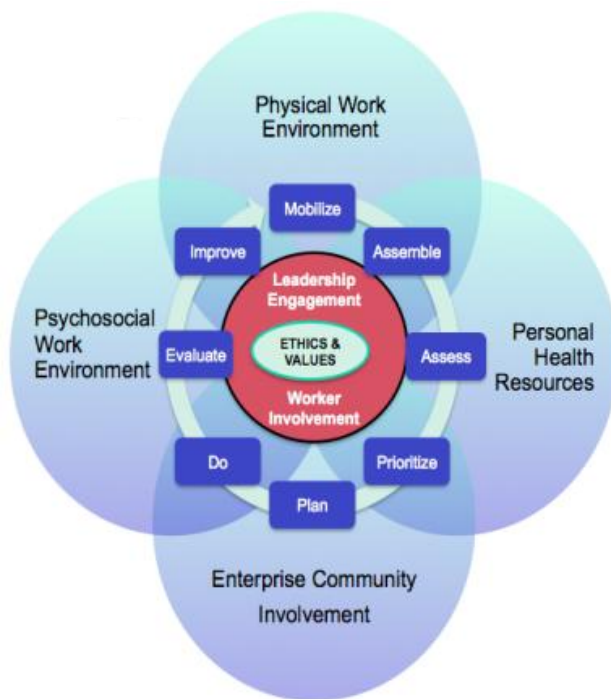
LITERATURE REVIEW

2.1 Healthy Workplace/Organization Model

The origins of worldwide efforts to pursue a healthy workplace and organization is considered to be the establishment of a joint committee on occupational health in 1950 by the WHO and ILO. In recent years, the ILO and the WHO have been working more closely together to achieve their stated objectives, such as the improvement of employee health, safety, and well-being. The WHO developed a healthy workplace model leading to a healthy organization. It brings together the principles and common factors that appear to be universally supported in the literature and in the perceptions of experts and practitioners in the fields of safety and organizational health. However, it is noted that there is no “one-size-fits-all” and each organization must adapt this model to their own workplace conditions, culture and procedures unique to that country (Neira 2010).

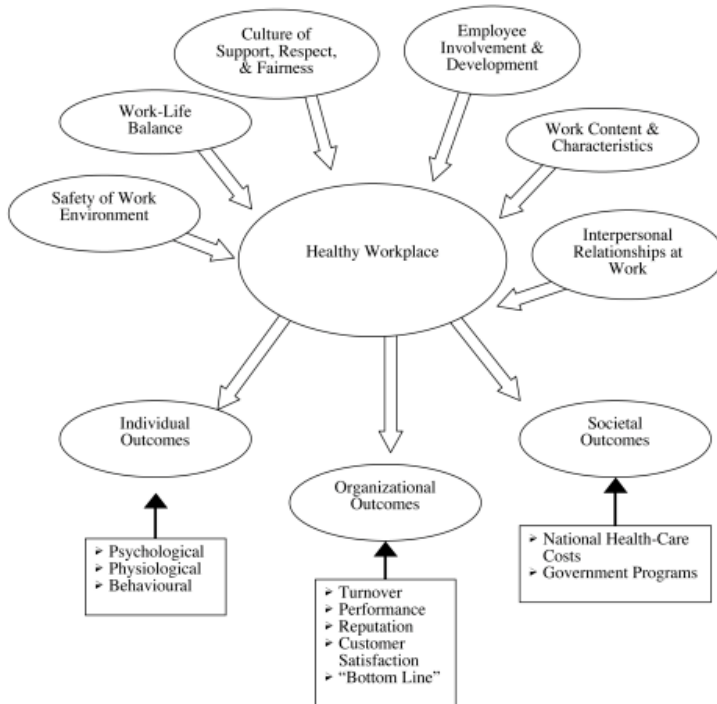
In addition to the effort of such international organizations, each country’s government and institutions also develop a theory and practical framework related to a healthy workplace and organization. The following framework developed by Kelloway and Day (2005: 223-235) is widely thought of as a comprehensive tool for building a healthy workplace as well as to develop a worksite health promotion program, hereinafter referred to as a “WHPP”.

Figure 2.1 WHO Health Workplace Model



Source: The WHO 2010

Figure 2.2 Antecedents and outcomes of a healthy workplace



Source: Kelloway and Day 2005

2.2 The effects of a WHPP

The effect of a WHPP is studied across multiple academic fields ranging from economics, management, psychology, public health and so on. Different variables are analyzed according to the purpose of the research, such as absenteeism, job satisfaction, return on investment (ROI), physical capability, mental condition and so on.

When it comes to analyzing the economic impact of a WHPP, the target figures of medical costs and absenteeism due to illness of the employees are usually discussed. Sockoll reported that studies dealing with the evidence of cost effectiveness of a WHPP arrive at the conclusion that the positive effects on absenteeism and medical costs are sufficiently proven by using return on investment (ROI) as a specific index to quantitatively measure the effect (Sockoll 2009). One study in particular shows an ROI of 1:2.3 to 1:5.9 for the medical costs as well as 1:2.5 to 1:10.1 for the absences (Kreis and Bodeker 2003). Indeed, the European Network for Workplace Health Promotion (ENWHP) reported that a number of studies have shown that every Euro spent on workplace health promotion program leads to an ROI of between 2.5 and 4.8 Euro due to a reduction in absenteeism costs (ENWHP 2009).

In terms of major effects of a WHPP, Aldana found that 18 studies show that absenteeism dropped after the implementation of a WHPP and 28 studies show the same of medical care costs. Of those, 6 studies reported cost benefit ratios averaged savings of \$5.07 for every dollar invested and 10 studies reported \$3.93 (Aldana 2001). Similar results of the implementation of a WHPP

are found to be in the study carried out by Parks & Steelman, stating that it is adopted by employers in an attempt to develop high functioning employees (Parks & Steelman 2008).

As a case study in the U.S., the long-term impact of Johnson & Johnson's health and wellness program was researched. The empirical study focused on the impact on health care utilization and expenditures and concluded a large reduction in medical care expenditures (approximately \$224.66 per employee per year) over the 4-year program period. Johnson & Johnson, a pioneer in the field, first offered its LIVE FOR LIFE® worksite health promotion program in 1979, with the expressed aim of making "Johnson & Johnson employees the healthiest in the world" (Ronald J. Ozminkowski et al., 2002).

2.3 Job satisfaction and absenteeism as effects of a WHPP

In regards to job satisfaction and absenteeism, the literature is limited, but observed in relatively large numbers in management and psychology because they could generally be viewed as remarkable factors to evaluate the effect in terms of organizational performance, especially for employers.

As an overall observation regarding the effect of a WHPP, a meta-analysis review was conducted, consisting of fifteen pieces of research regarding job satisfaction and/or absenteeism (Kizzy, 2008). A summary of the review includes the fact that participation in a WHPP was associated with increased job satisfaction and decreased absenteeism, whereas some literature showed opposite conclusions which state that job satisfaction and absenteeism are

not affected by participation in a WHPP (Kizzy 2008). The following tables show a list of studies evaluating job satisfaction and absenteeism respectively. The effect size is a measure of the overall effect of the intervention and is calculated from various statistical data: means, *t* test, correlations, and *F* values. It provides an estimate of the size of the treatment effect (participation in a wellness program) as compared to the control group (nonparticipation in a wellness program). To reduce the effect of sampling error, the effect size was weighted by sample size, which resulted in the adjusted effect size. This procedure gives more weight to effect sizes derived from larger samples and thus least susceptible to sampling error (Kizzy 2008).

Table 2.1 Studies evaluating job satisfaction as an effect of a WHPP

Author	N	Industry	Job Satisfaction Measure	Effect Size
Daley and Parfitt (1996)	209	Food	1 item (Warr, Cook and Wall, 1979)	.58
Guerra (1989)	102	Education	Brayfield-Rothe Index Minnesota Satisfaction	.09
Bonner (1991)	45	Insurance	Questionnaire (5 point Likert scale)	.41
Nurminen et al. (2002)	260	Laundry	1 item measure	.16
Peterson and Dunnagan (1998)	1,272	Education	Job in general scale (Balzer, et al., 1990)	.11
Groningsaeter et al. (1992)	52	Insurance	Facet-specific satisfaction (Quinn and Staines)	.81
Halfon et al. (1990)	540	Pharmaceutical	Scale unknown	.24
Total	2,480			.42

Source: Kizzy 2008

Table 2.2 Studies evaluating absenteeism as an effect of a WHPP

Author	N	Industry	Absenteeism Measure	Effect Size
Lechner et al.(1997)	530	Police, Chemical, Banking	Involuntary	.29
Baun et al.(1986)	517	Automotive Federal Highway	Both	-.20
Horowitz (1987)	41	Administration	Involuntary	.24
Bell and Blanke (1989)	216	Transportation	Not available	.09
Daley and Parfitt (1996)	209	Food	Not available	-.80
Kerr and Vos (1993)	76	Banking	Voluntary	-.50
Tucker et al.(1990)	3,751	Unknown	Involuntary	-.30
Guerra(1989)	102	Education	Both	-.51
Reed et al.(1986)	1,237	Medical	Not available	-.66
Wood et al.(1987)	1,026	Food	Involuntary	-.33
Total	7,705			-.30

Source: Kizzy 2008

2.3.1 Job satisfaction and a WHPP

Considering the relation between job satisfaction and a WHPP, the results of the study vary depending on the case. As one piece of literature shows positive results, the effect of a British corporate health and fitness club was assessed, consisting of 293 sample employees (147 males and 145 females) in a leading British food retail company (Daley 1997). They are categorized into three groups: 96 members of the club, 113 non-members, and 84 on a waiting list to join.

In terms of job satisfaction, the Warr-Cook-Wall scale¹ was employed to measure overall job satisfaction. It consists of 10 questions and each item is rated on a seven-point Likert scale, ranging from extreme satisfaction (7.0) through extreme dissatisfaction (1.0). The study concluded that higher job satisfaction, with a median (M) of 5.2 and standard deviation (SD) of 1.09 were shown in members of the corporate health and fitness club whereas lower ones (a median (M) of 4.5 and standard deviation of 1.3) were found in non-members.

On the other hand, an empirical study done at Montana State University in the U.S. indicates that a WHPP does not significantly impact job satisfaction (Peterson, 1998). A total sample of 1,283 full-time employees was taken and they were studied through the questionnaire, consisting of 727 employees who participated in the WHPP and 545 who did not. According to the results, the highest job satisfaction was reported among those who are married, have a terminal degree such as a Ph.D, are salaried (non-classified), have at least one dependent and exercise regularly. The study indicated that job design and the psychosocial aspects of the work environment may be more influential in improving job satisfaction.

¹ The Warr-Cook-Wall scales (Warr et al, 1979) is widely viewed as the most common scale to measure overall job satisfaction, consisting of 10 questions and each item is rated on a seven-point Likert scale.

Table 2.3 Job Satisfaction Variability, by demographic grouping and exercise behaviour

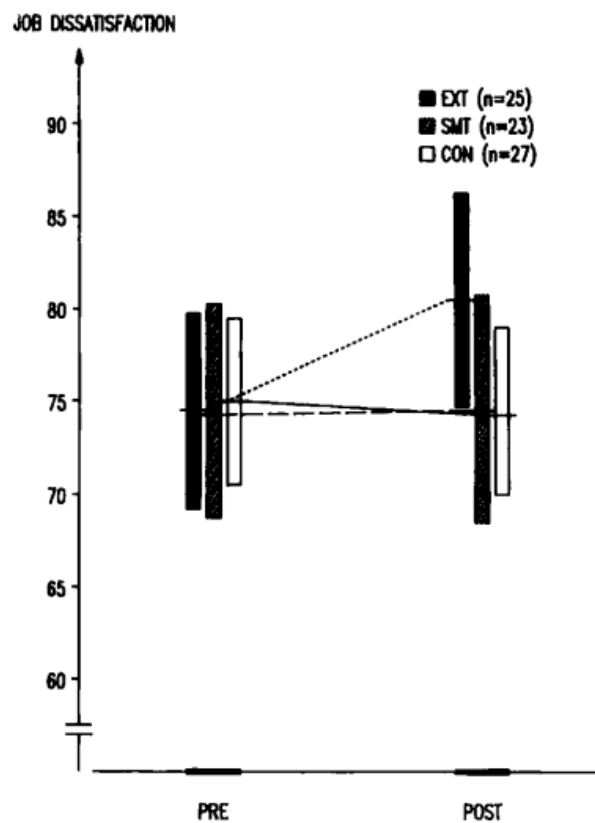
Variable	df	F	Post Hoc Comparisons ¹	
			Group1 (JIG Score ²)	Group2 (JIG Score ²)
Marital Status	2	4.15*	Not married (43.9)	Married (45.6)
Education	6	3.70**	High School/GED (43.2)	Terminal degree (46.3)
Job classification	2	11.28**	Not Classified (46.3)	Classified (44.1)
Dependents	2	11.73**	At least one (45.9)	No dependents (44.5)
Regular exercise (past 6 months)	2	3.86*	Yes (45.8)	No (44.4)
3 months regular exercise in past 3 years	2	3.49*	Yes (45.6)	No (44.2)
¹ All other measurements of health (participation in wellness program, high blood pressure, smoking, current exercise behavior, stress-reduction activities, exercise classes, nutrition classes, health screenings) did not produce significant variability in job satisfaction. ² JIG stands for Job-in-General Scales *p<.05 **p<.001				

Source: Peterson 1998

In the same manner, no positive relation between job satisfaction and the WHPP was found to be in another empirical study done at an insurance company in Oslo, Norway (Gronningsaeter et al 1992). In this research, the effects of two types of stress-reduction worksite intervention for physically inactive employees were studied. A total sample of 76 was selected at random to participate in (a) aerobic physical exercise, (b) stress management training or (c) a control group (no treatment). The “Facet-Specific Job Satisfaction” questionnaire, originally developed by Quinn and Staines, was employed to evaluate job

satisfaction. This resulted in an outstanding finding; aerobic exercise resulted in significant decreased job satisfaction while the stress management training and control group had no significant changes. According to the discussion in the research, participation in the aerobic exercise group was recognized as one of the causes of the increase in dissatisfaction with work conditions. The following figure shows mean values for subjectively reported job dissatisfaction among women and men. The vertical columns indicate 95% confidence intervals from pre- to post-test for the aerobic exercise group (EXT), the stress management group (SMT), and the control group (CON).

Figure 2.3 Job dissatisfaction pre- and post-worksite program



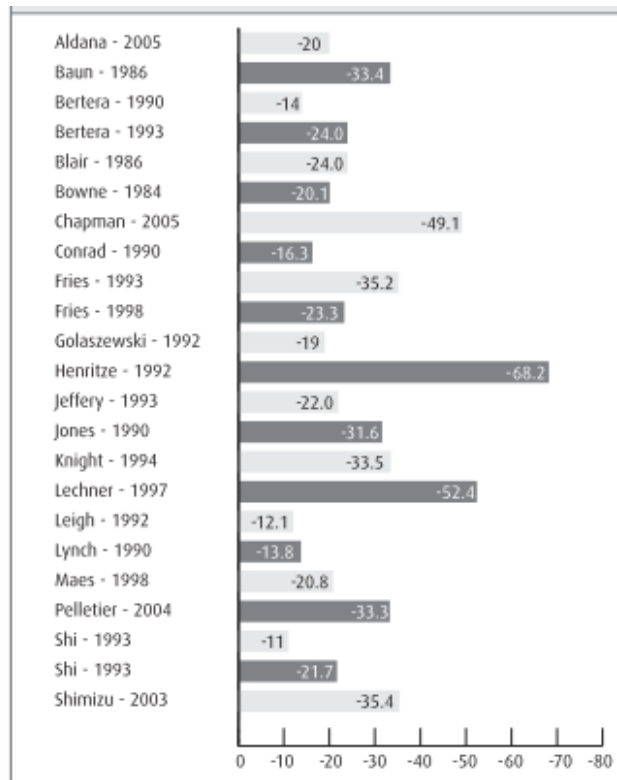
Source: Gronningsaeter et al 1992

Similarly, American Oden and Scandinavian Nurminen carried out randomized controlled trials, resulting in a worksite exercise intervention that did not cause increased job satisfaction. Job satisfaction was analyzed in 45 “blue-collar workers” (Oden 1989) and 260 women engaged in physically demanding laundry work (Nurminen 2002) respectively.

2.3.2 Absenteeism and a WHPP

To begin with, overall analysis including percent change in sick leave absenteeism, American Chapman reviewed studies that deal with the economic benefit of comprehensive workplace health promotion programs in a meta-evaluation of 42 studies. The meta-evaluation points out the lack of uniform methodology and quality in the evaluation of workplace health promotion programs. According to Chapman, however, there is evidence of a reduction in costs caused by absenteeism. The following figure shows the summed up results of the meta-evaluation.

Figure 2.4 Percent Change in Sick Leave Absenteeism



Source: Chapman 2005

A case study focusing on “white-collar” professional bank employees at the ING Bank in Amsterdam was carried out by Dutch researchers which indicated a significant decrease in absenteeism amongst both regular and irregular participants in the employee fitness program. In the study, data were collected from 152 employees, classified into four groups on the bases of participation or non-participation in the fitness program. The results indicated that participation in the program could lead to significant decrease in absenteeism. The following table shows that the average absenteeism was decreased for 3.7 and 2.3 days in regular and

irregular participants respectively in experimental groups whereas it was increased in the control groups (Kerr and Vos 1993).

Table 2.4 Average absenteeism (days/year) before and during the employee fitness program

Groups	1988		1989		Difference		%
	M	SD	M	SD	M	SD	
<i>Experimental groups</i>							
Regular Participants	9.1	14.8	5.3	7.5	-3.7	9.8	-41.1
Irregular participants	8.1	11.8	5.8	6.5	-2.3	11.8	-28.4
<i>Control groups</i>							
Regular exercisers	6.0	7.2	6.7	7.1	0.7	5.2	11.4
Non-exercisers	7.1	8.7	10.5	14.0	3.4	11.7	48.1

Source: Kerr and Vos 1993

Another study focusing on the effect of a corporate fitness program on absenteeism was a case study done in the U.S., composed of a sample of 517 employees in the automotive part industry (Baun et al., 1986). In this study, absenteeism and health care cost were analyzed as dependent variables among exercisers and non-exercisers during the start-up of a corporate health and fitness program called The Tenneco Health and Fitness Program, initiated in 1982. A wide range of activities is included in the program such as independent health and fitness activities and instructor-led aerobic, calisthenic, and health promotion classes for Tenneco Employees in Houston. The study concluded that exercise was associated with decreased absence due to illness among female participants who exercise 47 to 69 hours (wherein a p-value is less than .05 (5%)) and there was a trend for illness

absence to be inversely related to advancing age among exercisers, whereas the absence increased among non-exercisers. However, no significant relation between male exercisers and non-exercisers was identified in this case.

Table 2.5 Number of Hours of absence due to illness by Age, Sex, and Exercise Status

Age	Male							Female						
	Non-Exercisers			Exercisers			P*	Non-Exercisers			Exercisers			P
	N	M	SD	N	M	SD		N	M	SD	N	M	SD	
<35	65	28	33	51	29	33	.77	60	65	91	77	52	56	.36
35-54	78	25	49	48	20	28	.37	43	57	75	32	39	36	.19
55<	39	43	71	10	26	32	.26	11	146	241	3	4	7	.07
Total	182	30	50	109	25	34	.28	114	69	114	112	47	51	.05

¹N, M, and SD stands for number of sample, mean and standard deviation.

*P Value for difference of mean hours of sickness between exercisers and non-exercisers obtained by student's *t* test

Source: Baun et al., 1986

Furthermore, a study which analyzed the effect of a health promotion program on reduced absenteeism due to illness is found to be a practical experiment in the Netherland (Lechner et al., 1997). A longitudinal pretest-posttest design is employed, consisting of 884 samples on three different industries which are police force, chemical industry, and banking. Such samples were classified into three groups: high participation, low participation, and no participation in the program. It is concluded that the high participation group had a significant decline in sick days,

accounting for a decreased 4.77 days after starting the exercise program, whereas the low and no participation groups indicated only a decline of 0.22 and 0.10 days. The analysis of covariance (ANCOVA) was conducted to analyze the effect of participation group on changes in sick days between year before and after the program, resulting in a significant relation between change in sick days and participation level especially at the chemical industry ($F(1,395) = 5.17, P < 0.05$).

Table 2.6 Results of ANCOVA to analyze the effect of participation group on changes in sick days

Factor	High Participation (<i>n</i> =27)	Low and No Participation (<i>n</i> =368)	<i>F</i>	Significance of <i>F</i>
Covariates				
Sick Days before Program	12.48	17.60	209.57	0.000
Age			4.18	0.042
Gender			0.28	0.60
Main Effect				
Participation Group			5.17	0.024

Source: Lechner et al., 1997

Additionally, as it was discussed in a part of job satisfaction, a study concerning the effect of a British corporate health and fitness club focused on absenteeism as well. Due to company's policy, a number of sample for absenteeism was decreased to 162 from total 293 compared with a number of sample for job satisfaction. Lower absenteeism rate (a median (*M*) of 3.5,

standard deviation (SD) of 3.3) was identified in members of the corporate health and fitness club whereas higher absenteeism rate (a median (M) of 8.75 and standard deviation (SD) of 8.8) was found in non-members (Daley 1997).

2.4 Thai study related to a WHPP

Although it is limited to find English literatures related to a WHPP in Thailand, a research and discussion of health promotion in Thailand is found in several literatures. One of them is considered to be a research paper carried out by Thai Boonchong at the National Institute of Development Administration (NIDA) in Thailand. His paper is composed of descriptive analysis, including introduction of concept and example related a happy workplace worldwide. It is considered to be origin of a happy workplace program in Thailand that the Federation Thai Industries (FTI) realized employees' quality of work and life is critical to develop Thai economy and society (Boonchong 2007). Other research is conducted by Australian Rob, discussing a policy and practice related to health promotion in Thailand. The Thai Health Promotion Foundation (ThaiHealth) and their related health promotion activities are regarded as an example of the way forward for health promotion in Asia, leading to the development and sustainability of country's health promotion effort (Rob 2000).

Furthermore, in terms of a WHPP in Thailand, health promotion program for the safe use of pesticides in Thai farmers are studied by Thai Kleebkaew and her colleagues. For several reasons, pesticides are widely used in agricultural land which is

considered to be Thai farmer's workplace. In the study, 33 voluntary Thai farmers in Bang Phae district, Ratchaburi province are recruited as sample of study. The knowledge, attitudes, and practices (KAP) is used as a measurement of a training program of the safe use of pesticides for 6 months. Research findings show that the mean score of KAP in the posttest were significantly higher than the pretest as stated in table 2.8. The results of this study provide health professionals with information to develop more effective prevention and intervention programs. In order to prevent illness from pesticides, this study also emphasizes that education and information for individual, families, and communities should be focused on by health officers in Thailand.

Table 2.7 Comparison of the mean scores of KAP on safe use of pesticides between pretest and posttest by paired t-test

	X	SD	t	p-value
Knowledge on safe use of pesticides				
Pretest	13.33	2.63	9.99	0.00
Posttest	18.73	1.04		
Attitudes to safe use of pesticides				
Pretest	32.24	4.7	7.18	0.00
Posttest	38.85	1.64		
Practices on safe use of pesticides				
Pretest	23.42	5.56	9.83	0.00
Posttest	35.48	4.27		

* $n=33$

Source: Kleebkaew et al., 2005

The effectiveness of health promotion behavior program (HPBP) in Thai hypertensive patients is studied at Thammasat University in Thailand. Although it is not directly related to a workplace health promotion activity, some part of the HPBP is applicable to a workplace as well. A quasi-experimental study design is employed for experimental and control groups consisting of 22 participants respectively. They are 35-59 years old and grade 1 hypertensive without complication of cardiovascular, respiratory, or skeletal diseases. The experimental group participated in the HPBP, but the control group did not. The HPBP consists of health education strategies, respiratory and exercise practical skill, caregiver supporting, telephone counseling and home visiting for an 8-week period. The interview, questionnaires, respiratory, and exercise time records were collected and analyzed as stated in table 2.8.

Table 2.8 Comparison of the average values of each variable before and after the experiment between the control group and experimental group

Variable	Control Group X (SD)	Experimental Group X (SD)	p-value (2-tailed)
1. Perception of Health			
Before the experiment	4.78 (1.9)	6.13 (2.4)	0.043 *
After the experiment	4.95 (1.9)	7.95 (1.7)	0.000 ***
2. Perception of Stress			
Before the experiment	50.32 (11.9)	52.59 (11.6)	0.525
After the experiment	51.27 (11.3)	54.36 (7.9)	0.299
3. Stress Management Behavior			
Before the experiment	24.50 (4.8)	26.68 (5.1)	0.152
After the experiment	25.14 (4.1)	29.32 (4.4)	0.002 ***
4. Waist circumference (inches)			
Before the experiment	34.64 (3.8)	36.38 (4.1)	0.152
After the experiment	35.39 (3.3)	35.21 (4.3)	0.873
5. Hip circumference (inches)			
Before the experiment	38.58 (3.2)	40.81 (3.5)	0.032 *
After the experiment	39.15 (2.7)	40.34 (3.2)	0.186

* $n=22$ per group

Source: Pantip and Netip 2010

CHAPTER III

THEORY AND METHODOLOGY

3.1 Introduction

The theory and concept of the Happy Workplace Program in Thailand is overviewed in this chapter as well as the details of the program structure, which consists of a total 8 programs. After the parts, null hypotheses 1-5 in this research are explicitly stated in the following part. Furthermore, a model in this research is extensively discussed, including the logit model, multiple regression analysis, and simultaneous equation method (SME). In the last part, firms studied are discussed, including the rationale behind selecting LION and NOK as firms in this case study.

3.2 The Happy Workplace Program

3.2.1 Theory and Concept

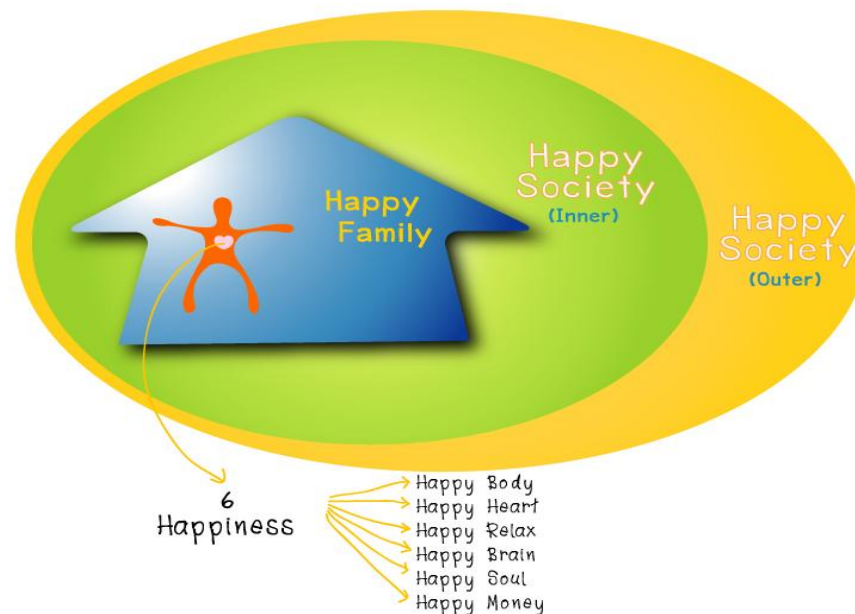
Theory of the Happy Workplace Program was developed by the Thai Health Promotion Foundation (ThaiHealth)² as a unique and comprehensive worksite program for employee physical and mental health, subsequently leading to better families and society. The theory emphasizes that the worksite is the best place to *create* and *monitor* a work and life balance as well as a balance between intelligent quotient (IQ) and emotional quotient (EQ), leading to the increase of employee's satisfaction and engagement. In the theory, such employees who have the balance are considered to be

² ThaiHealth was established based on the Health Promotion Foundation Act of 2001, aiming the reduction of sickness and death, and general improvements in the quality of life for Thai people.

an essential factor to be composed of Happy people (self), Happy home (family) and Happy teamwork (community) which are widely viewed as the key indicators of a healthy organization.

The conceptual framework behind the Happy Workplace Program is the transition from a “house” (workplace) to a “home” (happy workplace). The expectation is that it will lead to drawing out the full potential of the employees and sustainable growth as a result (Figure 3.1). Compared with similar programs in the U.S., which mainly just focus on the reduction of employee medical care, the program in Thailand emphasizes *employee happiness* and *unconditional cooperation* which reflect an essential peace of Thai culture.

Figure 3.1 Framework of Happy Workplace Program



Source: Thai Health

The framework provides a general guideline focusing on 3 main aspects of human relations: individuals, family, and society. The program can be thought of as a tool that allows the organization to achieve a better workplace and functioning employees. When all three aspects have been fulfilled through the program, synergy emerges and improves the worksite, ultimately leading to sustainable growth.

3.2.2 Program Structure

The Happy Workplace Program philosophy consists of three major areas, individuals, family and society. The individuals further break down into six concepts, *Happy Body*, *Happy Heart*, *Happy Soul*, *Happy Relax*, *Happy Brain*, and *Happy Money*. The family and society areas are addressed with *Happy Family* and *Happy Society*, respectively. The eight concepts are collectively referred to as “the Happy8 Workplace”. The aims of each concept and specific explanations and examples of activities are described as follows.

Area1: People

1. Happy Body - Building healthy bodies and minds
2. Happy Relax - Taking some time to relax in life
3. Happy Heart - Exercising kindness and sympathy
4. Happy Soul - Fostering good morals and faith
5. Happy Brain - Promoting lifelong learning
6. Happy Money - Managing personal finances well

Area2: Family

7. Happy Family - Creating a happy and understanding environment for families

Area3: Society

8. Happy Society - Developing a productive society and caring for others in the community

Happy Body includes various programs featuring physical exercise to build healthy bodies and minds. While some more obscure activities may be present at some sites, such as sepaktakraw (kick volleyball), the most common examples are yoga, aerobics, working out at the gym, table-tennis, and so on. All the facilities for these activities are provided by employers.

Happy Relax is a program which enhances relaxation and recreation for employees. This concept offers singing songs (karaoke), playing musical instruments, taking a nap, relaxing in garden, field trips, regular company social gathering and so on.

Happy Heart shows employees they are cared about by including events such as pregnancy support sessions, birthday parties, and events to reinforce authenticity in traditional Thai practices like *Loy Krathong* or *Songkran Festival*, which are typically neglected by individuals in recent years. Through these events and activities, the importance of exercising kindness and sympathy is emphasized.

Happy Soul is in line with the Buddhist beliefs of Thailand. Employers bring lectures from revered monks high in the hierarchy, Zen meditation sessions, and alms rituals (donation of foods to monks) into the workplace. Such events target fostering respectful morals and faith in employees.

Happy Brain allows employees to take advantage of ongoing development, both self-developmental and company-sponsored training opportunities. They can study independently by using facilities like the library, the computer are and on-line seminar space. The latter consists of specific training seminars delivered by an external lecturer, such as a business knowledge seminar or an English course. *Happy Brain* aims to promote lifelong learning.

Happy Money's objectives include financial support from employers, such as vouchers for meals and health insurance, as well as educational programs to help employees to manage their personal finances.

Happy Family enables employees to reinforce relationships with their family members. This is done by organizing Mother's Day events, granting scholarships for employees' children, and annual appreciation events which family members are invited to. It is meant to create happiness and an understanding environment within the family unit.

Happy Society provides a chance for employees to make connections with those whom they have no direct connection to. They achieve this through blood donation, charitable events for elementary schools, volunteer activities and so on. It develops respect for greater society and caring for others in the community.

3.3 Hypothesis

As stated in the literature review, certain positive effect of the worksite health promotion program on job satisfaction and absenteeism was found in many countries, accounting for the increase of job satisfaction and decrease of absenteeism. Similarly, the Happy Workplace Program is also considered to have such a functional role in Thailand. In the context, according to combination of variables, the hypotheses in this research are stated in the following.

- Hypothesis 1 (Job Satisfaction and the *Happy Body*)

Job satisfaction in employees who participate in the *Happy Body Program* is more likely to be higher than that in those who do not participate in it.

- Hypothesis 2 (Job Satisfaction and the *Happy Relax*)

Job Satisfaction in employees who participate in the *Happy Relax Program* is more likely to be higher than that in those who do not participate in it.

Hypothesis 1 stated above is tested to find whether the *Happy Body* such as yoga and aerobics positively affects job satisfaction at both NOK and LION. Hypothesis 2 is also tested to find whether the *Happy Relax Programs* such as singing songs (karaoke), taking a nap, regular company social gathering positively affects job satisfaction or not at both firms. According to the literature review, contrasting empirical results were found, consisting of having no effect and significant effect on job satisfaction.

- Hypothesis 3 (Absenteeism and the *Happy Body*)

Absenteeism of employees who participate in the *Happy Body Program* is more likely to be lower than that of those who do not participate in it.

- Hypothesis 4 (Absenteeism and the *Happy Relax*)

Absenteeism of employees who participate in the *Happy Relax Program* is more likely to be lower than that of those who do not participate in it.

Hypothesis 3 stated above is tested to find whether the *Happy Body Program* such as yoga and aerobics inversely affects absenteeism or not at both NOK and LION. Hypothesis 4 is tested to find whether the *Happy Relax Programs* such as singing songs (karaoke) and taking a nap inversely affect absenteeism or not at both firms. According to the literature review, a positive effect of

the worksite health promotion program was found in almost literatures, accounting for the decrease of absenteeism.

- **Hypothesis 5 (Job Satisfaction and Absenteeism)**

Absenteeism of employees with high job satisfaction is more likely to be lower than that of those with low job satisfaction.

Hypothesis 5 stated above is tested to find whether job satisfaction affects absenteeism of employee or not at both NOK and LION. This hypothesis test is based on the idea that employee with high job satisfaction is more likely to have low or no absenteeism because employees' satisfaction about their worksite and work itself is high. As a practical empirical result for especially employers, this hypothesis test is thought of as critically important as well as the hypotheses 1-4.

3.4 Model

In this section, models in this research are extensively discussed, including the logit model, multiple regression model, and simultaneous equation method (SME).

3.4.1 The Logit models

Because of the problems that we have established with the liner probability model, different models will be used. One of the possible approaches that has been developed in the econometrics literatures is to model a latent variable

$$Y_i^* = \beta_1 + \beta_2 X_{i2} + \mu_i, \quad (3.1)$$

where Y_i^* is an unobservable variable. Applying this equation to this research, Y_i^* represents the degree of job satisfaction that employee i has through their work. What we observe is a dummy variable Y_i defined by:

$$\begin{cases} 1, & \text{if } Y_i^* > 0, \\ 0, & \text{otherwise.} \end{cases}$$

Denoted by P_i the probability that event $Y_i^* > 0$ occurs:

$$\begin{aligned} P_i &= \text{Prob}(Y_i = 1) \\ &= \text{Prob}(Y_i^* > 0) \\ &= \text{Prob}(\beta_1 + \beta_2 X_{i2} + \mu_i > 0) \\ &= \text{Prob}(\mu_i > -(\beta_1 + \beta_2 X_{i2})). \end{aligned}$$

In terms of this research, P_i is considered to be the probability of being more than 5.0 of job satisfaction which is widely viewed as high job satisfaction. It is binary method using 0 or 1, showing 0 if more than 5.0 of job satisfaction and 1 if less than 4.9 of that. The simplest equation using logarithm and variable are expressed as follows.

$$\ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_2 X_{i2} + \mu_i, \quad (3.2)$$

Applying this equation above to this research, the equation with 9 independent variables is expressed in the following.

$$\ln\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 X_{\text{gen}} + \beta_2 X_{\text{mar}} + \beta_3 X_{\text{age}} + \beta_4 X_{\text{edu}} + \beta_5 X_{\text{de}} + \beta_6 X_{\text{sal}} + \beta_7 X_{\text{sey}} + \beta_8 X_{\text{hb_full}} + \beta_9 X_{\text{hr_full}} + \mu_i \quad (3.3)$$

where

gen = a dummy variable indicating whether or not the subject's gender

mar = a dummy variable indicating whether or not the subject get married

age = a vector of covariance indicating the subject's age

edu = a vector of covariance indicating subject's educational attainment

dep = a dummy variable indicating whether or not the subject has dependent(s)

sal = a vector of covariance indicating subject's salary level

sey = a vector of covariance indicating the subject's years of service

hb_full = a vector of covariance indicating subject's frequency of participation in the *Happy Body Program*.

hr_full = a vector of covariance indicating subject's frequency of participation in the *Happy Relax Program*.

As a measure of goodness of fit in the logit model, a likelihood ratio test (LR-test)³ is used to test the null hypothesis that the parameters are zero. A pseudo R-squared is also analyzed to evaluate the goodness-of-fit of logit model. They are often shown as an output in software for statistics and econometrics such as EViews. Moreover, in terms of an exponential distribution, a

³ As a measure of model's goodness of fit, LR-test is used. The null hypothesis that the parameters are zero is tested with a likelihood ratio test. The LR-test statistic is the well-known statistic: $LR = -2(\ln(L_R) - \ln(L_U))$.

probability density function (PDF) and cumulative distribution function (CDF) are calculated as they are regarded as a function to indicate a probability for a random variable to take on a given value and to be found at a given value or below it. The equation is expressed as follows.

$$\text{Probability Density Function (PDF): } f(x; \lambda) = \lambda e^{-\lambda x}$$

$$\text{Cumulative Distribution Function (CDF): } F(x; \lambda) = 1 - e^{-\lambda x}$$

3.4.2 Multiple Regression Model

In addition to the logit model, a multiple regression model is also employed to study how much the *Happy Body* and *Relax Program* affect the dependent variables, which are job satisfaction and absenteeism respectively. The model is normally thought to be a single-equation regression model. In such model, one variable (the dependent variable Y) is expressed as a linear function of one or more other variables (the independent variables, the X 's). An implicit assumption based on such models is that the cause-and-effect relationship, if any, between Y and the X 's is unidirectional: The independent variables are the cause and dependent variable is the effect. The simplest notation of a multiple regression equation is expressed as follows.

$$Y_i = \beta_1 + \beta_2 X_{t2} + \dots + \beta_K X_{tK} + \mu_i \quad (3.4)$$

Applying this equation to this research, the equation with 9 independent variables is expressed in the following. Equation (3.5)

and (3.6) represent job satisfaction model and absenteeism model in this research respectively.

$$Y_{1i} = \beta_0 + \beta_1 X_{\text{gen}} + \beta_2 X_{\text{mar}} + \beta_3 X_{\text{age}} + \beta_4 X_{\text{edu}} + \beta_5 X_{\text{dep}} + \beta_6 X_{\text{sal}} + \beta_7 X_{\text{sey}} + \beta_8 X_{\text{hb_full}} + \beta_9 X_{\text{hr_full}} + \beta_{10} X_{\text{abs}} + \mu_{1i} \quad (3.5)$$

where

Y_{1i} = Job satisfaction

abs = a vector of covariance indicating subject's absent days

other independent variables⁴

According to theory related to worksite health promotion program, each coefficient, which is beta, is hypothesized in the following.

$$\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 > 0; \beta_5 > 0$$

$$\beta_6 > 0; \beta_7 > 0; \beta_8 > 0; \beta_9 > 0; \beta_{10} < 0$$

$$Y_{2i} = \beta_0 + \beta_1 X_{\text{gen}} + \beta_2 X_{\text{mar}} + \beta_3 X_{\text{age}} + \beta_4 X_{\text{edu}} + \beta_5 X_{\text{dep}} + \beta_6 X_{\text{sal}} + \beta_7 X_{\text{sey}} + \beta_8 X_{\text{hb_full}} + \beta_9 X_{\text{hr_full}} + \beta_{11} X_{\text{jos}} + \mu_{2i} \quad (3.6)$$

where

Y_{2i} = Absenteeism

jos = a vector of covariance indicating subject's job satisfaction

other independent variables⁵

⁴ Definition of other independent variables in equation 3.5 and 3.6 such as gender, marital status, number of dependents and etc, is considered to be same as the one in equation 3.3 in the logit model.

⁵ Same as a footnote above (footnote 4).

According to theory related to worksite health promotion program, each coefficient, which is beta, is hypothesized in the following.

$$\beta_1 < 0; \beta_2 < 0; \beta_3 < 0; \beta_4 < 0; \beta_5 < 0$$

$$\beta_6 < 0; \beta_7 < 0; \beta_8 < 0; \beta_9 < 0; \beta_{10} < 0$$

3.4.3 Simultaneous Equation Model

As stated above, a multiple regression model is considered to represent a cause-and-effect relationship, accounting for an independent variable X 's as the cause and a dependent variable Y as the effect.

However, in many situations, such a one-way or unidirectional cause-and-effect relationship is considered to be not practical. There are situations where there is a two-way flow of influence among economic variables; that is, one economic variable affects another economic variable(s) and is, in turn, affected by it (them). This occurs if Y is determined by the X 's and some of X 's are, in turn, determined by Y . In short, there is a two-way, or simultaneous, relationship between Y and the X 's, which makes the distinction between dependent and independent variables of dubious value. It is better to lump together a set of variables that can be determined simultaneously by the remaining set of variables.

In such models, there is more than one equation, one for each of the mutually or jointly dependent or endogenous variables. Then, unlike the single-equation models, in the simultaneous-

equation models, one may not estimate the parameters of a single equation without taking into account information provided by other equation in the system.

Moreover, a possible question might be if the parameters of each equation are estimated by applying the ordinary least square method, disregarding other equations in the system. One of the crucial assumptions of the method is that the independent X variables are either non-stochastic or, if stochastic (random), are distributed independently of the stochastic disturbance term. If neither of these conditions is met, then, as shown later, the least-square estimators are not only biased but also inconsistent; that is, as the sample size increases indefinitely, the estimators do not converge to their true population values. Therefore, simultaneous-equations with Y_{1i} and Y_{2i} are expressed as follows.

$$Y_{1i} = \beta_{10} + \beta_{12}Y_{2i} + \gamma_{11}X_{1i} + \mu_{1i} \quad (3.7)$$

$$Y_{2i} = \beta_{20} + \beta_{21}Y_{1i} + \gamma_{21}X_{1i} + \mu_{2i} \quad (3.8)$$

where Y_{1i} and Y_{2i} are mutually dependent, or endogenous, variables and X_1 is an exogenous variable and where μ_{1i} and μ_{2i} are the stochastic disturbance terms, the variable Y_1 and Y_2 are both stochastic. Therefore, unless it can be shown that the stochastic independent variable Y_2 in (3.7) is distributed independently of μ_{1i} and the stochastic independent variable Y_1 in (3.8) is distributed independently of μ_{2i} , application of the classical OLS to these equations individually will lead to inconsistent estimates.

Applying these equations above to this research, the equation with 9 independent variables is expressed in the following as well. Equation (3.9) and (3.10) represent job satisfaction and absenteeism model in this research respectively.

$$Y_{1i} = \beta_0 + \beta_1 X_{\text{gen}} + \beta_2 X_{\text{mar}} + \beta_3 X_{\text{age}} + \beta_4 X_{\text{edu}} + \beta_5 X_{\text{dep}} + \beta_6 X_{\text{sal}} + \beta_7 X_{\text{sey}} + \beta_8 X_{\text{hb_full}} + \beta_9 X_{\text{hr_full}} + \mu_{1i} \quad (3.9)$$

$$Y_{2i} = \beta_{10} + \beta_{11} Y_{1i} + \mu_{2i} \quad (3.10)$$

where

Y_{1i} = Job satisfaction

Y_{2i} = Absenteeism

Other independent variables⁶

According to theory related to worksite health promotion program, each coefficient, which is beta, is hypothesized in the following.

$$\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 > 0; \beta_5 > 0;$$

$$\beta_6 > 0; \beta_7 > 0; \beta_8 > 0; \beta_9 > 0; \beta_{11} < 0$$

3.5 Firms studied

3.5.1 Rationale behind selecting LION and NOK

Since Thai society has become more health conscious in recent years, the number of health-oriented firms has increased as

⁶ Definition of other independent variables in equation 3.9 such as gender, marital status, number of dependents and etc, is considered to be same as the one in equation 3.3 in the logit model.

well. Those firms actively and continuously support employee physical and mental health through their worksite activities such as the Happy Workplace Program because a worksite is considered to be one of the best places to effectively provide such opportunities to employees.

This research focuses on two firms that have already implemented the Happy Workplace Program in Thailand, NOK Precision Component (Thailand) Ltd, hereinafter referred to as “NOK” and Lion Corporation (Thailand) Limited, hereinafter referred to as “LION”. They are widely viewed as representative of health-oriented firms, as their activities to promote employee health through worksite programs are continuously promoted as appealing to the public. The implementation of the Happy Workplace Program is considered to be witness that LION and NOK are such firms.

The rationale behind selecting LION and NOK as firms in this research is that they represent typical contrasting manufacturers in Thailand, consisting of traditional and modern styles. Summarized characteristics of both firms in table 3.1 show different and common points they possess. Italicized items in the table indicate contrasting characteristics of LION and NOK, which are considered to be features typical of manufacturers across Thailand.

Considering the characteristics, the establishment dates of these two firms clearly indicate their empirical difference, consisting of LION’s long history of more than 40 years and NOK’s one of approximately 10 years. Since LION was established

in March 1969, it is considered to be representative of traditional firms with a long history in Thailand. Moreover, LION is found to possess the following characteristics: a traditional corporate culture, a human-oriented management style, and a seniority-based personnel system.

Conversely, since NOK was established in March 2001, it has just around 10 years' history in Thailand and their employees are relatively young, resulting in the following characteristics contrasting with those of LION: a modern corporate culture, a system-oriented management style, and a performance-based personnel system.

However, despite these contrasting points, in regards to the Happy Workplace Program, several common points can be found in table 3.1 as well, including the implementation dates of 2003 for LION and 2006 for NOK; both LION and NOK have reached a point of experience and effectiveness (at least 5 years), which most other firms that have since adopted the Happy Workplace Program do not possess. The number of implemented concepts (all 8) and involvement of management in the Happy Workplace Program are also considered to be remarkable common points, accounting for management's kind understanding and support for allowing this research to be conducted and the collection of data.

Regarding to the rationale behind the selection of LION and NOK as samples for this research, not only are both firms pioneers in the implementation of the Happy Workplace Program, but they also maintain a close relationship with ThaiHealth, setting them

apart from other firms. The development and promotion of the program continue to happen.

For that reason, it is reasonably possible to state that a case study of two such contrasting firms, LION and NOK, could yield referential empirical results for a wide range of manufactures in Thailand.

Table 3.1 Comparative chart between LION and NOK

	LION	NOK
Establishment Date	<i>March 1969</i>	<i>March 2001</i>
Industry (Product)	Manufacturing (Toiletry Product)	Manufacturing (Precision Component)
Corporate Culture	<i>Traditional</i>	<i>Modern</i>
Management Style	<i>Human-oriented</i>	<i>System-oriented</i>
Personnel System	<i>Seniority-based</i>	<i>Performance-based</i>
Implementation Date of HWP	July 2003	July 2006
Implemented Concepts	All 8 concepts	All 8 concepts
Management Involvement in HWP	High	High

Source: Author's interview with LION, NOK and ThaiHealth

3.5.2 LION

LION was established in March 1967 as a joint venture between Sahapattanapiboon Co., Ltd. in Thailand and The Lion Fat and Oil Co. Ltd. in Japan. LION was formally named as The LION Fat and Oil (Thailand) Co., Ltd., as opposed to its current official company name, LION Corporation (Thailand) Limited. Worksite

location at LION is located on Bangkok (Rama 3 road, Yannawa) as a head office and Siracha (Saha Industrial Estate) as a factory. LION originally started manufacturing powder shampoo and Top powder detergent in replacement of importation from Japan but currently manufacture wider product line up such as Kodomo (baby powder), Systema (oral care), and Shokubutsu Monogatari (body soap).

LION implemented the Happy Workplace Program in 2003 by strong leadership from top executive, especially management and staff in the human resources department. Number of permanent employee is 1,025 employees as of 1st February 2011, consisting of 478 male and 547 female employees. Of 1,025 employees, 418 employees (40.8%) are recorded as those who aged 28-37 years old whereas only 14 employees (1.4%) are categorized as 18-22 years old. Focusing on middle-aged and older employees, 155 (15.1%) and 117 (11.4%) employees are shown to be those aged 38-42 and 43-47 each. 99(9.7%), 79(7.7%), 17(1.7%) and 5(0.5%) employees account for those aged 48-52, 53-57, 58-62 and over 63 years old respectively.

In regards to years of service, as the age distribution of middle-aged and older employees is shown, employees with longer years such as more than 20 years are found to be 137 employees representing 13.4%. Furthermore, the distribution of education level at LION shows bachelor or higher education for 299 (29.2%), technical diploma for 203 (19.8%), elementary for 177 (17.3%), lower secondary 108(10.5%), upper secondary vocational for 76(7.4%) and upper secondary general for 52(5.1%) respectively.

Average salary for permanent employees at LION is 24,900 Baht per month.

3.5.3 NOK

Official name of NOK is NOK Precision Component (Thailand) Ltd. NOK was established as a subsidiary of NOK Corporation in Japan and started operation at Bangpa-in industrial estate, Ayutthaya in March 2001, producing precision components such as hard disk drive component and electronic parts. The history of company is still 10 years but NOK is widely viewed as a leading company in precision component industry in Thailand. The Happy Workplace Program was implemented at NOK in 2006 by strong leadership from top management and with the cooperation from Thai Health.

In regard to the number of employee, it is increasing as their operation volume increases, achieving 1,920 employees as of 1st February 2011. There are several features regarding employees' distribution at NOK such as gender, age, and years of service.

To begin with the gender, the data provided by the human resources department at NOK indicates 1,703 (88.7%) for female and 217 (11.3%) for male. Furthermore, 1,629 (88.2%) of employees are covered by employees less than 32 years old as well as 1,292 (70%) have worked for less than three years, accounting for employees at NOK consisting of relatively young employees. Regarding the distribution of education level, 858 (45%) employees are classified with the upper secondary general whereas 332 (17%), 288 (15%), 233 (12%), and 181 (9%) are categorized

into lower secondary, technical diploma, upper secondary vocational, and bachelor or higher respectively. Average salary at NOK is 10,375 baht per month.

3.5.4 Sample Data from LION and NOK

Primary data for this research was collected through a questionnaire in the Thai language⁷ and administered to sample employees at both LION and NOK. Based on the random sampling method by using software for random number, the questionnaires were distributed to sample employees by the manager of the human resources department at both firms. Although it is referred as a limitation of this research in the chapter 5, due to the time and financial cost restriction, the distribution and collection of a questionnaire by the manager of the human resources management at both firms were considered to be inevitable.

In order to ensure the quality of the questionnaire, a trial questionnaire was conducted toward 10 employees and the result was analyzed before completing the final version of the questionnaire. The finished product consists of the following 5 parts such as (1) socioeconomic, (2) absenteeism, (3) job satisfaction, (4) feeling at worksite, and (5) happy workplace program. Printed questionnaires were brought to both firms and distributed to their employees by the manager at the human resource departments based on the random number of employees' ID created by a software

Total 356 employees are selected as samples for this research, consisting of 200 employees from NOK and 156 ones from LION.

⁷ A questionnaire translated in English is included in Appendix A.

The data sheets, which includes all data for this research, are attached as Appendix B (Data Sheet of NOK 1-200) and C (Data Sheet of LION 201-356) respectively. Moreover, the following table 3.2 shows the summary of basic variables of sample (n), consisting of gender, marital status, age, education, the number of dependent(s), salary level, and years of service. Figure 3.2 and 3.3 shows a relation between job satisfaction and frequency of participation in *Happy Relax* (relaxing activities) and *Happy Body* (physical exercise). The hypothesis tests for the population proportion, which examine the significance of the difference of distribution between population (N) and sample (n), is carried out and stated in the chapter 4, leading to the confirmation of statistical reasonableness of the sample in this research.

Table 3.2 Summary of basic variables of sample

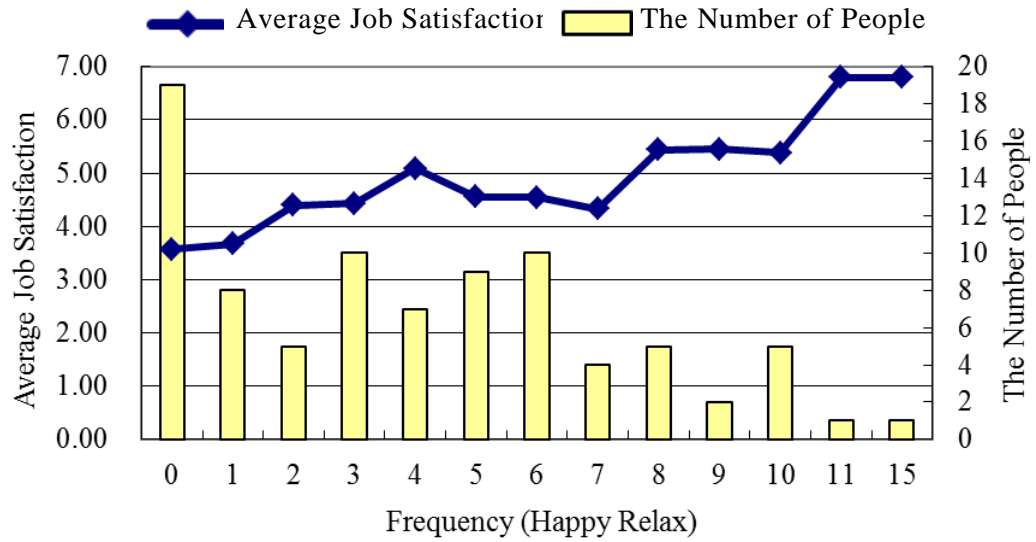
Variables	NOK		LION	
	n	%	N	%
Gender				
Male	25	12.5	61	39.1
Female	175	87.5	95	60.9
Total	200	100	156	100
Marital Status				
Single	137	68.5	79	50.6
Married	63	31.5	77	49.4
Total	200	100	156	100
Age				
<=29	142	71	31	19.9
30-39	58	29	62	39.7
40-49	0	0	43	27.6
50-59	0	0	18	11.5
>=60	0	0	2	1.3
Total	200	100	156	100
Education				
6y	4	2	9	5.8
9y	14	7	5	3.2
12y	109	54.5	10	6.4
16y	73	36.5	132	84.6
Total	200	100	156	100

Table 3.2 Summary of basic variables of sample (Cont.)

Variables	NOK		LION	
	n	%	n	%
Dependent(s)				
0	8	4	23	14.7
1	25	12.5	19	12.2
2	61	30.5	45	28.8
3	69	34.5	32	20.5
4	26	13	27	17.3
5	9	4.5	6	3.8
6	2	1	4	2.6
Total	200	100	156	100
Salary(1,000THB)				
>8.0	47	23.5	1	0.6
8.0-8.9	26	13.0	3	1.9
9.0-9.9	25	12.5	5	3.2
10.0-10.9	42	21.0	3	1.9
11.0-11.9	25	12.5	4	2.6
12.0-12.9	9	4.5	3	1.9
13.0-13.9	7	3.5	3	1.9
14.0-14.9	6	3.0	8	5.1
15.0-15.9	1	0.5	5	3.2
16.0-16.9	1	0.5	6	3.8
17.0-17.9	1	0.5	7	4.5
18.0<	10	5.0	108	69.2
Total	200	100	156	100
Years of Service				
>1	60	30.0	10	6.4
1-2	49	24.5	5	3.2
2-3	30	15.0	5	3.2
3-4	10	5.0	6	3.8
4-5	9	4.5	6	3.8
5-6	10	5.0	5	3.2
6-7	12	6.0	9	5.8
7-8	8	4.0	4	2.6
8-9	9	4.5	4	2.6
9<	3	1.5	102	65.4
Total	200	100	156	100

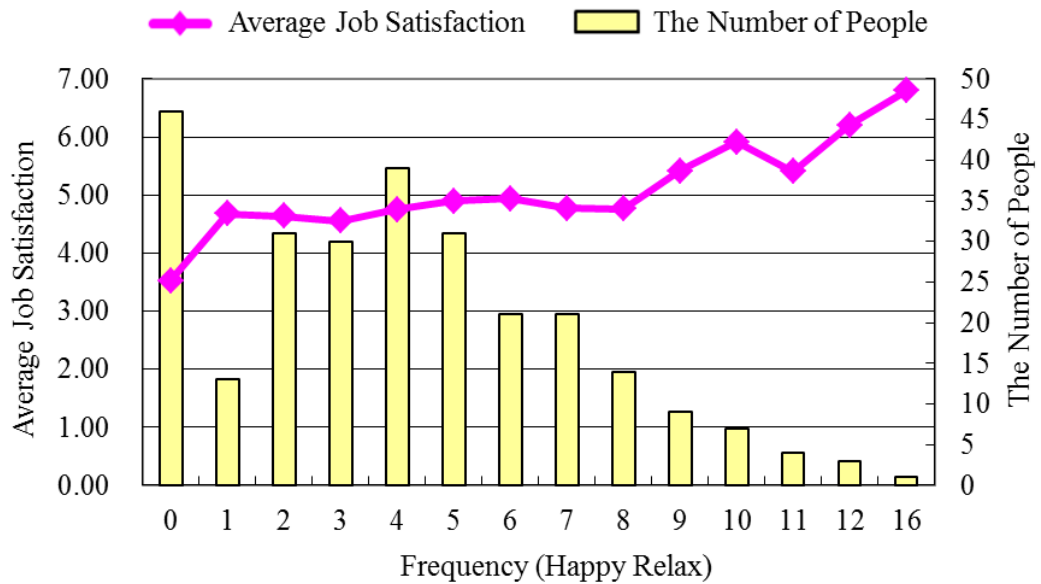
Source: Author's calculation

Figure 3.2: Male's Job Satisfaction and Frequency (Happy Relax)



Source: Author's calculation

Figure 3.3: Female's Job Satisfaction and Frequency (Happy Relax)



Source: Author's calculation

CHAPTER IV

THE EMPIRICAL RESULTS

4.1 Introduction

The data collected through a questionnaire to NOK and LION employees is analyzed to test each hypothesis in this research. The hypotheses testing are composed of the three subchapters: the population proportion, the crosstab and chi-square analyses of three areas, econometric analyses including a comparison of the models and analysis of open-response question.

A hypothesis test for the population proportion examines the null hypothesis that there is no significant difference between N (population) and n (sample) in both NOK and LION. The crosstab and chi-square analyses of three areas are considered to be analyses of relation between the Happy Workplace Program (*Happy Body* and *Happy Relax*) and dependent variables (job satisfaction and absenteeism). Moreover, as an overall picture of analyses, econometric analyses are carried out, consisting of the logit model, multiple regression model, and simultaneous equation method.

4.2 Hypothesis Test for the Population Proportion

In regards to a hypothesis test for the population proportion, the significance of the difference of distribution between N (population) and n (sample) was tested⁸, resulting in the fact that the null hypothesis is rejected and the alternative hypothesis is accepted in several variables. The summary of the test results is stated in Table 4.1 and 4.2.

⁸ The equation is described as $Z_0 = |p - \pi_0| / \sqrt{\pi_0(1 - \pi_0)/n}$, where p : sample proportion, π_0 : population proportion, and n : number of participation in sample. A five (5) percent significance level and a two-tailed test are employed, resulting in $Z = \pm 1.960$ from the standard normal distribution table.

Table 4.1 Hypothesis Tests for NOK's population proportion

Item		N		N		z-value
Gender	Male	217	11.3%	25	12.5%	0.473
	Female	1703	88.7%	175	87.5%	-0.473
	Total	1920		200		
Age	18-22	247	12.9%	17	8.5%	-1.628
	23-27	685	35.7%	75	37.5%	0.475
	28-32	760	39.6%	97	48.5%	2.277 *
	33-37	181	9.4%	9	4.5%	-2.106 *
	38-42	23	1.2%	2	1.0%	-0.227
	43-47	12	0.6%	0	0.0%	-0.991
	48-52	12	0.6%	0	0.0%	-0.991
	53-57	-	-	-	-	
	58-62	-	-	-	-	
	63-	-	-	-	-	
	Total	1920		200		
Years of Service	-1y	548	29.7%	60	30.0%	0.081
	1-2y	476	25.8%	49	24.5%	-0.371
	2-3y	268	14.5%	30	15.0%	0.168
	3-4y	77	4.2%	10	5.0%	0.516
	4-5y	86	4.7%	9	4.5%	-0.096
	5-6y	100	5.4%	10	5.0%	-0.232
	6-7y	89	4.8%	12	6.0%	0.686
	7-8y	79	4.3%	8	4.0%	-0.174
	8-9y	88	4.8%	9	4.5%	-0.158
	9y-	34	1.8%	3	1.5%	-0.318
	Total	1845		200		
Education	6y	9	0.5%	4	2.0%	2.800 *
	9y	332	17.3%	14	7.0%	-3.399 *
	12y	1091	56.8%	109	54.5%	-0.586
	16y	469	24.4%	73	36.5%	3.510 *
	Others	19	1.0%	0	0.0%	-1.249
	Total	1920		200		

*Significant difference is found with .05 (5%) significant level.

Source: Author's calculation

Table4.2 Hypothesis Tests for LION's population proportion

Item		N		N		Z value
Gender	Male	478	46.6%	61	39.1%	-1.886
	Female	547	53.4%	95	60.9%	1.886
	Total	1025		156		
Age	18-22	14	1.4%	3	1.9%	0.600
	23-27	121	11.8%	19	12.2%	0.145
	28-32	194	18.9%	29	18.6%	-0.107
	33-37	224	21.9%	32	20.5%	-0.405
	38-42	155	15.1%	27	17.3%	0.762
	43-47	117	11.4%	16	10.3%	-0.455
	48-52	99	9.7%	18	11.5%	0.795
	53-57	79	7.7%	9	5.8%	-0.908
	58-62	17	1.7%	3	1.9%	0.259
	63-	5	0.5%	0	0.0%	-0.874
Total	1025		156			
Years of Service	-1y	231	22.5%	10	6.4%	-4.821 *
	1-2y	136	13.3%	5	3.2%	-3.705 *
	2-3y	58	5.7%	5	3.2%	-1.326
	3-4y	63	6.1%	7	4.5%	-0.863
	4-5y	36	3.5%	6	3.8%	0.227
	5-6y	28	2.7%	4	2.6%	-0.128
	6-7y	29	2.8%	9	5.8%	2.215 *
	7-8y	14	1.4%	5	3.2%	1.979 *
	8-9y	18	1.8%	4	2.6%	0.768
	9y-	412	40.2%	101	64.7%	6.254 *
Total	1025		156			
Education	6y	177	17.3%	9	5.8%	-3.800 *
	9y	108	10.5%	5	3.2%	-2.982 *
	12y	128	12.5%	10	6.4%	-2.296 *
	16y	502	49.0%	132	84.6%	8.905 *
	Others	110	10.7%	0	0.0%	-4.331 *
	Total	1025		156		

*Significant difference is found with .05 (5%) significant level.

Source: Author's calculation

In regards to table 4.1, a significant difference was found in the areas of age and education level, indicating that the null hypothesis for them is rejected. Focusing on the age distribution, employees 28-32 years old were over-sampled and 33-37 years old were under-sampled. One possible reason for the difference is because the recruitment for employees 28-32 years old had been made just before the questionnaire was distributed at NOK and some employees aged 33-37 years old had resigned.

In terms of the education level, employees who had 6 years and 16 years of education were over-sampled while those with 9 years were under-sampled. A cause for the difference could be the limitation of the random distribution. Although software for random selection was used, some employees were not in the office for reasons such as a business trip, personal leave, etc, resulting in the distribution to other employees discretely selected by the human resources department at NOK.

Regarding table 4.2, a significant difference was found in the areas of years of service and education level, resulting in that the null hypothesis is rejected and the alternative hypothesis is accepted. Considering years of service, the sample representing employees who have less than 1 year of service and 1 to 2 years were under-sampled whereas the sample representing employees who have 6 to 7 years, 7 to 8 years, and over 9 years were over-sampled. One possible reason for the difference is because employees with less than 2 years of service had a limited amount of time to answer the questionnaire due to restrictions, especially in a factory. Compared with employees in the office, employees in

the production line at a factory have more limitations on things they can do other than their routine duties during working hours. Conversely, employees who have certain years of service tend to be available to do such things, including answering the questionnaire.

In terms of the education level, employees who have 6, 9, and 12 years and other, less common amounts were under-sampled while those with 16 years were over-sampled. One cause for the difference could be attributed to the limitation of the random distribution. Although software for random selection was used, some employees were not in the office for reasons such as a business trip, personal leave, etc, resulting in the distribution to other employees discretely selected by the human resources department at LION.

4.3 Relation between Job Satisfaction, Absenteeism, and the Happy Workplace Program

In order to test hypotheses among each variable, crosstabs for NOK and LION were conducted separately over three areas, focusing on the results of a chi-square test, which shows a significance of less than .05 (5%). The residual value found from the selected crosstab results is also analyzed to understand what the value represents statistically.

4.3.1 Analysis of NOK's data

The crosstab to be analyzed is composed of the three areas of *salary, absenteeism, and frequency of participation in the happy*

relax program (hereinafter referred to as *happy relax frequency*) and are analyzed as interesting sets of variables for the crosstabs. *Salary* is composed of “Low”, “Middle”, “High” and “Very High”. *Absenteeism* is defined as the number of days an employee was absent from work and is categorized into “No”, “Low”, “Middle”, and “High”. *Happy relax frequency* is classified into “No”, “Low”, “Middle” and “High” which represents how often employees participate in the happy relax program. The chi-square test with the crosstabs yields the following results.

Since the significance of the chi-square test in very high represents .832 (83.2%), which largely exceeds .05 (5%), the test results are not considered to be significant. Conversely, the test indicates the significance of .029 (2.9%), .012(1.2%), and .006(0.6%) in low, middle, and high respectively, leading to further analysis of the residual value to find what the value represents.

The employees who have a low salary and never participated in the happy relax program produces a residual value of 4.7 in high absenteeism, while those who have low, middle and high participation in the program come to 1.4, 2.2, and 2.1 respectively in no absenteeism.

Among the employees with middle salary, the positive residual value is found to be 7.3 in no participation and high absenteeism. While there were no employees without any participation in the program, those with low participation have a positive residual value of 1.3 in high absenteeism.

According to the analysis above, it could be concluded that regardless of the salary level, the absenteeism is likely to be affected by the frequency of the happy relax program.

Table 4.3 Results of the Chi-Square Test 1 at NOK

Variable: Salary, Absenteeism, and Happy Relax Frequency			
	Chi-Square	Significance	Degree of Freedom
Low	5.512	.029 (2.9%)	9
Middle	24.134	.012 (1.2%)	9
High	5.512	.006 (0.6%)	9
Very High	2.134	.832 (83.2%)	9

Source: Author's calculation

Furthermore, a combination of marital status, frequency of happy body program and job satisfaction shows a remarkable result. The chi-square test produces the following results.

Since the significance in married employees comes to .344 (34.4%), it is not considered to be a significant difference among them while the significance in single employees calculates to .012 (1.2%), which is considered to be significant. Single employees with no participation in the happy body program show a positive residual value of 3.7 and 6.1 in low and middle job satisfaction, indicating that they are more likely to have lower job satisfaction than those who participate in the program.

Regarding the residual value in high job satisfaction, the positive values of 5.9, 3.0, and 1.0 are shown in low, middle, and high participation respectively. The result could be thought of as

statistically sufficient to state that the participation level in the happy body program affects job satisfaction.

As a conclusion, single employees at NOK who have no participation in the happy body program are more likely to have lower job satisfaction than those who participate in it. Significant difference among married employees is not found in this crosstab.

Table 4.4 Results of the Chi-Square Test 2 at NOK

Variable: Marital Status, Job Satisfaction, and Happy Body Frequency			
	Chi-Square	Significance	Degree of Freedom
Single	16.432	.012 (1.2%)	6
Married	6.755	.344 (34.4%)	6

Source: Author's calculation

The last chi-square test of the variable areas of marital status, absenteeism, and *happy relax frequency* also yields interesting results in the crosstab.

Single employees with no or low participation in the happy relax program show a positive residual value of 6.9 and 1.4 in high and middle absenteeism respectively, while the employees with high participation come to 2.3 and 1.5 in no and low absenteeism.

Moreover, although the married employees with high, middle, and low participation show a positive residual value of 3.7, 0.8, and 0.3 in no absenteeism, married employees with no participation in the program show 5.6 in high absenteeism.

As a conclusion, participation in the happy relax program affects the absenteeism of both single and married employees at

NOK. Most notably, no participation clearly results in high absenteeism for both and therefore, the happy relax program is a factor in affecting absenteeism at NOK.

Table 4.5 Results of the Chi-Square Test 3 at NOK

Variable: Marital Status, Absenteeism, and Happy Relax Frequency			
	Chi-Square	Significance	Degree of Freedom
Single	23.522	.005 (0.5%)	9
Married	17.591	.040 (4.0%)	9

Source: Author's calculation

4.3.2 Analysis of LION's data

The three variable areas the analysis is composed of are *gender*, *absenteeism*, and *frequency of participation in the happy relax program* (hereinafter referred to as *happy relax frequency*). They are analyzed as interesting sets of the variables for the crosstab and chi-square analysis. *Gender* is composed of "Male" or "Female". *Absenteeism* is defined as the number of days an employee was absent from work and is categorized into "No", "Low", "Middle", and "High". *Happy relax frequency* is classified into "No", "Low", "Middle" and "High" which represents how often employees participate in the happy relax program.

Since the significance of the chi-square test for males represents .788 (78.8%), which largely exceeds .05 (5%), the test results are not considered to be statistically significant. Conversely, the test indicates a significance of .004 (0.4%) for

females, leading to further analysis of the residual value to find what the value represents.

Considering the residual value, female employees who have never participated in the happy relax program have a residual value of 6.1 in the category of high absenteeism, while those who have a high frequency of participation in the program come to 1.0 and 1.3 in the categories of no and low absenteeism respectively. Since female employees who have low and middle participation have positive residual value in no, low, and middle absenteeism, further detailed analysis might be necessary to find the cause. However, in terms of the results from those who have no and high participation, it is reasonable to conclude that female employees at LION who have high *happy relax frequency* are more likely to have less or no absenteeism, whereas there is not a significant effect on male employees. The chi-square test with the crosstabs yields the following results.

Table 4.6 Results of the Chi-Square Test 1 at LION

Variables: Gender, Absenteeism, and Happy Relax Frequency			
	Chi-Square	Significance	Degree of Freedom
Male	5.512	.788 (78.8%)	9
Female	24.134	.004 (0.4%)	9

Source: Author's calculation

The next variable combination consists of *gender*, *absenteeism*, and *frequency of participation in the happy body program*, (hereinafter referred to as *happy body frequency*).

Interesting results are also found through the crosstab analysis. The chi-square test produces the following results stated in Table 4.7.

Since the significance for females comes to .212 (21.2%), it is not considered to be a significant difference among the female employees, while the significance for males is calculated at .009 (9%), which is considered to be statistically significant. Male employees without *happy body frequency* have a positive residual value of 6.8 in high absenteeism, indicating that they are more likely to have higher absenteeism than those who participate in the happy body program.

In regards to the residual value of no absenteeism, the positive values of 1.6, 3.7, and .6 are found in low, middle, and high participation respectively. It would be statistically reasonable to claim that *happy body frequency* would affect absenteeism.

As a conclusion, male employees at LION who have no *happy body frequency* are more likely to have a higher absenteeism rate than those who have it. Significant difference among female employees is not found in the crosstab.

Table 4.7 Results of the Chi-Square Test 2 at LION

Variable: Gender, Absenteeism, and Happy Body Frequency			
	Chi-Square	Significance	Degree of Freedom
Male	22.028	.009 (0.9%)	9
Female	12.030	.212 (21.2%)	9

Source: Author's calculation

Considering the combination of *marital status*, *job satisfaction*, and *happy body frequency*, interesting results are also found through the crosstab analysis. Similar to the previous analysis, the chi-square test yields the following results.

Single employees without *happy body frequency* have a positive residual value of 1.8 and 3.0 in low and high job satisfaction respectively, while the employees with *happy body frequency* have a value of 4.8 in middle job satisfaction. In the case of married employees, those who have no participation in the happy body program scored 3.2 in low job satisfaction although those who participated in it scored 1.2 and 2.0 in middle and high job satisfaction.

As a conclusion, the results for single employees at LION show that certain employees have high job satisfaction even though they do not participate in the happy body program, contradictory to the hypothesis stated in this paper. However, for married employees, the participation in the program positively affects job satisfaction.

Table 4.8 Results of the Chi-Square Test 3 at LION

Variable: Marital Status, Job Satisfaction, and Happy Body Frequency			
	Chi-Square	Significance	Degree of Freedom
Single	6.068	.048 (4.8%)	2
Married	7.473	.024 (2.4%)	2

Source: Authors' calculation

4.3.3 Summary of crosstab and qui-square test

The following tables 4.9 and 4.10 are a summary of crosstab and qui-square test shown before, focusing on the results of a chi-square test, which shows a significance of less than .05 (5%).

Table 4.9 Summary of Crosstabs and Chi-Square Test at LION

1	Variable Combination: Gender, Absenteeism, and Happy Relax Frequency			
		Chi-Square	Significance	Degree of Freedom
	Male	5.512	.788 (78.8%)	9
	Female	24.134	.004 (0.4%)	9
Summary: Female employees at LION, who participate in the <i>Happy Relax Program</i> , are more likely to have lower absenteeism than those who do not participate in it.				
2	Variable Combination: Gender, Absenteeism, and Happy Body Frequency			
		Chi-Square	Significance	Degree of Freedom
	Male	22.028	.009 (0.9%)	9
	Female	12.030	.212 (21.2%)	9
Summary: Male employees at LION, who participated in the <i>Happy Body Program</i> , are more likely to have lower absenteeism than those who do not participated in it.				
3	Variable Combination: Marital Status, Job Satisfaction, and Happy Body Frequency			
		Chi-Square	Significance	Degree of Freedom
	Single	6.068	.048 (4.8%)	2
	Married	7.473	.024 (2.4%)	2
Summary: Both single and married employees at LION, who participate in the <i>Happy Body Program</i> , are more likely to have higher job satisfaction than those who do not participate in it.				

Source: Author's calculation

Table 4.10 Summary of Crosstabs and Chi-Square Test at NOK

1	Variable Combination: Marital Status, Job Satisfaction, and Happy Body Frequency			
		Chi-Square	Significance	Degree of Freedom
	Single	16.432	.012 (1.2%)	6
	Married	6.755	.344 (34.4%)	6
Summary: Single employees at NOK, who participate in the <i>Happy Body Program</i> , are more likely to have higher job satisfaction than those who do not participate in it.				
2	Variable Combination: Marital Status, Absenteeism, and Happy Relax Frequency			
		Chi-Square	Significance	Degree of Freedom
	Single	23.522	.005 (0.5%)	9
	Married	17.591	.040 (4.0%)	9
Summary: Both single and married employees at NOK, who participated in the <i>Happy Relax Program</i> , are more likely to have lower absenteeism than those who do not participated in it.				
3	Variable Combination: Salary, Absenteeism, and Happy Relax Frequency			
		Chi-Square	Significance	Degree of Freedom
	Low	5.512	.029 (2.9%)	9
	Middle	24.134	.012 (1.2%)	9
	High	5.512	.006 (0.6%)	9
	Very High	2.134	.832 (83.2%)	9
Summary: Employees at NOK, who have low, middle, and high salary and participate in the <i>Happy Relax Program</i> , are more likely to have lower absenteeism than those who do not participate in it.				

Source: Author's calculation

4.4 Analysis using Econometric Models

As stated in chapter 3, equation, variable and hypothesis for each econometric model are found to be in the following.

The Logit Model

$$\ln\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 X_{gen} + \beta_2 X_{mar} + \beta_3 X_{age} + \beta_4 X_{edu} + \beta_5 X_{de} + \beta_6 X_{sal} + \beta_7 X_{sey} + \beta_8 X_{hb_full} + \beta_9 X_{hr_full} + \mu_i \quad (4.1)$$

Multiple Regression Model

$$Y_{1i} = \beta_0 + \beta_1 X_{gen} + \beta_2 X_{mar} + \beta_3 X_{age} + \beta_4 X_{edu} + \beta_5 X_{dep} + \beta_6 X_{sal} + \beta_7 X_{sey} + \beta_8 X_{hb_full} + \beta_9 X_{hr_full} + \beta_{10} X_{abs} + \mu_{1i} \quad (4.2)$$

$$Y_{2i} = \beta_0 + \beta_1 X_{gen} + \beta_2 X_{mar} + \beta_3 X_{age} + \beta_4 X_{edu} + \beta_5 X_{dep} + \beta_6 X_{sal} + \beta_7 X_{sey} + \beta_8 X_{hb_full} + \beta_9 X_{hr_full} + \beta_{11} X_{jos} + \mu_{2i} \quad (4.3)$$

Simultaneous Equation Method

$$Y_{1i} = \beta_0 + \beta_1 X_{gen} + \beta_2 X_{mar} + \beta_3 X_{age} + \beta_4 X_{edu} + \beta_5 X_{dep} + \beta_6 X_{sal} + \beta_7 X_{sey} + \beta_8 X_{hb_full} + \beta_9 X_{hr_full} + \mu_{1i} \quad (4.4)$$

$$Y_{2i} = \beta_{10} + \beta_{11} Y_{1i} + \mu_{2i} \quad (4.5)$$

where

gen = a dummy variable indicating whether or not the subject's gender

mar = a dummy variable indicating whether or not the subject get married

age = a vector of covariance indicating the subject's age

edu = a vector of covariance indicating subject's educational attainment

dep = a dummy variable indicating whether or not the subject has dependent(s)
 sal = a vector of covariance indicating subject's salary level
 sey = a vector of covariance indicating the subject's years of service
 hb_full = a vector of covariance indicating subject's frequency of participation
 in the *Happy Body Program*.
 hr_full = a vector of covariance indicating subject's frequency of participation
 in the *Happy Relax Program*.
 Y_{1i} = Job satisfaction
 abs = a vector of covariance indicating subject's absent days
 Y_{2i} = Absenteeism
 jos = a vector of covariance indicating subject's job satisfaction

4.4.1 Results of the Logit Models

Logit models are employed to analyze the probability of being more than 5.0 of job satisfaction which is widely viewed as high job satisfaction. It is a binary method using 0 or 1, showing 0 if job satisfaction is 5.0 or greater and 1 if it is less than 5.0.

As stated in table 4.11, models 1-6 each contain a coefficient, z-value, log likelihood, LR statistic, and number of observations. The first two models, 1 and 2, include 356 observations, consisting of the total number of sample employees at both NOK and LION. The second two models, 3 and 4, consist of sample employees from NOK only, and there are 200 observations. Models 5 and 6 only consist of LION employees with 156 observations.

One of the most interesting findings of the logit models is that *happy relax frequency* (stated as *HR_FULL* in the table) is

considered to be statistically significant in each model 1-6, accounting for a p-value less than .01 (1%) in models 1, 2, and 6, as well as a p-value less than .05 (5%) in models 3-5. In terms of the hypothesis test, this finding is found to be statistically sufficient to claim that null hypothesis 2⁹ (Job Satisfaction and the *Happy Relax Program*) is rejected and the alternative hypothesis is accepted in each model 1-6 in table 4.11.

Conversely, *happy body frequency* (stated as *HB_FULLL* in the table) is only found to be statistically significant in models 1-4. As stated above, models 1 and 2 make up the total sample of both NOK and LION employees while models 3 and 4 only show sample employees at NOK. In regards to the hypothesis test, it could be concluded that the null hypothesis 1⁹ (Job Satisfaction and *Happy Body Program*) is rejected and the alternative hypothesis is accepted in models 1-4 while the null hypothesis is accepted in models 5 and 6, which consist of only LION employees.

Considering other independent variables, age is considered to be statistically significant in model 2, representing the total number of sample employees, and the number of dependents is also significant in model 6. Other socioeconomic variables (gender, marital status, education level, salary, and years of service) do not have significant results in these models. The constant is recorded as significant in models 5 and 6, which only include sample employees at LION, resulting in a p-value of less than .01 (1%).

In the end, we can see from the logit models that *HR_FULLL* is statistically significant in each model 1-6, indicating that the

⁹ Null hypotheses 1-5 are stated in chapter 3.3 (page 30-32).

null hypothesis is rejected and the alternative hypothesis is accepted in models 1-6. However, *HB_FULLL* is only found to be statistically significant in models 1-4, which contain both the combined sample and the sample at NOK only. Since *HR_FULLL* proved to be effective across all 6 models, whereas *HB_FULLL* only proved itself in 1-4, the *Happy Relax Program* is likely to have a broader range of positive impact than the *Happy Body Program* has.

Age and number of dependents are considered to be statistically significant in models 2 and 6 respectively, although other variables such as salary and gender are not considered to be so in any model.

Moreover, in terms of an exponential distribution, a probability density function (PDF) and cumulative distribution function (CDF) are calculated as they are regarded as an index to indicate a probability for a random variable to take on a given value and to be found at a given value or below it. As pointed out above, the logit model is a binary method using 0 or 1, showing 0 if job satisfaction is 5.0 or greater and 1 if it is less than 5.0. Average job satisfaction of a sample of 356 employees in this research is 5.057 and 0.1977 of λ (lambda) is calculated as well.

Based on the information above, a probability density function is approximately 0.074 (7.4%), indicating a probability for job satisfaction to take on 5.0. Conversely, accumulative distribution function is around 0.628 (62.8%), describing the probability that job satisfaction is found at 5.0 or less. From the opposite point of view, 0.362 (36.2%) is thought of as the

probability that job satisfaction is found at over 5.0. According to results of the logit model, age is considered to be statistically significant in model 2, which includes the total sample of both NOK and LION employees, resulting in a p-value of less than .05 (5%). One possible reason is that the employee would be able to be involved to a job with more responsibility as he/she gets older. Since it would be difficult for young employees to have such job, age is considered to be a factor to increase job satisfaction more than 5.0. Another perspective is that the employee would obtain more freedom to choose their own method of working as he/she gets older. This could be explained by Thai culture and society where people respect the elderly. Furthermore, the number of dependents is also significant in model 6, which consists of only LION employees. One of the reasons is that LION employees with more dependents are more likely to feel a sense of responsibility for their family. For such employees, a job would develop their responsibility, which increases job satisfaction.

The following list of abbreviations is used in each table from this point forward.

- List of abbreviations in each table

- GEN: a dummy variable indicating whether or not the subject's gender
- MAR: a dummy variable indicating whether or not the subject get married
- AGE: a vector of covariance indicating the subject's age
- EDU: a vector of covariance indicating subject's educational attainment
- DEP: a dummy variable indicating whether or not the

subject has dependent(s)

SAL: a vector of covariance indicating subject's salary level

SEY: a vector of covariance indicating the subject's years of service

HB_FULLL: a vector of covariance indicating subject's frequency of participation in the *Happy Body Program*.

HR_FULLL: a vector of covariance indicating subject's frequency of participation in the *Happy Relax Program*.

JOS: a vector of covariance indicating subject's job satisfaction

ABS: a vector of covariance indicating subject's absent days

According to theory related to worksite health promotion program, each coefficient, which is beta, is hypothesized in the following.

$$\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_4 > 0; \beta_5 > 0; \beta_6 > 0; \beta_7 > 0; \beta_8 > 0; \beta_9 > 0$$

Table 4.11 Results of Binary Logit Models 1-6

Variable	Dependent Variable: Job Satisfaction Method: Binary Logit											
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Coeff	z Stat	Coeff	z Stat	Coeff	z Stat	Coeff	z Stat	Coeff	z Stat	Coeff	z Stat
C	-1.7178	-1.85	-1.5397	-1.85	-0.0188	-0.01	-0.1177	-0.20	-3.8189	-3.09 **	-3.6907	-3.05 **
GEN	0.1220	0.42			0.0550	0.11						
MAR	0.0086	0.03			-0.1166	-0.34						
AGE	0.0396	1.89	0.0365	1.97 *	0.0150	0.31			0.0362	1.50	0.0355	1.48
EDU	-0.0376	-0.80	-0.0443	-1.01	-0.0346	-0.51						
DEP	0.0928	1.06	0.0962	1.11	-0.0596	-0.44			0.2355	1.93	0.2449	2.02 *
SAL	-0.0093	-0.21			-0.0758	-1.17	-0.0799	-1.35	0.0911	1.13	0.0884	1.11
SEY	-0.0751	-1.51	-0.0787	-1.74	-0.0837	-1.20	-0.0892	-1.33	-0.1030	-1.27	-0.1087	-1.34
HB_FULL	0.1325	2.44 *	0.1261	2.40 *	0.2064	2.49 *	0.2005	2.58 **	0.0631	0.85		
HR_FULL	0.1328	3.19 **	0.1352	3.27 **	0.1360	2.19 *	0.1292	2.15 *	0.1478	2.49 *	0.1647	2.94 **
Log Likelihood	-225.59		-225.71		-125.34		-125.60		-96.00		-96.36	
LR Statistic	32.86		32.61		20.07		19.54		21.16		20.42	
McFadden R-squared	0.0679		0.0674		0.0741		0.0722		0.0993		0.0958	
No. Observation	356		356		200		200		156		156	

***p<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

4.4.2 Results of Multiple Regression Model

Job satisfaction is analyzed through the multiple regression method, consisting of five models to study the significance of each coefficient as well as the models' goodness. Since the sample of this study is composed of NOK and LION, the analyses cover three cases in total; one analysis is present for each firm and a third one covers both combined.

In the beginning wherein the total sample is 357, as stated in table 4.12, model 5 includes absenteeism (hereinafter referred to as *ABS*) as an independent variable showing the largest adjusted R square of 0.3267 (32.67%) although it is not considered to be statistically strong. In all models, *happy relax frequency* as an independent variable has a significant effect on job satisfaction, which is a dependent variable, showing a p-value of less than 0.01 (1%) or 0.001 (0.1%) in each model 1-5. This finding indicates that the null hypothesis 2⁹ (Job Satisfaction and the *Happy Relax Program*) stated in chapter 3 is rejected and the alternative hypothesis is accepted, accounting for the fact that there is a significant difference between job satisfaction in employees who participate in the *Happy Relax Program* and that in those who do not participate in it.

Conversely, *happy body frequency* has significant results in models 1-3 without *ABS* and in 5 with *ABS* while it does not have any significant results in model 4 with *ABS*. In terms of the hypothesis test, in models 1-3 and 5, null hypothesis 1⁹ (Job Satisfaction and the *Happy Body Program*) is rejected and the alternative hypothesis is accepted. Since *HB_FULLL* does not have

significant results in model 4, the null hypothesis is accepted, resulting in there being no significant difference between job satisfaction in employees who participate in the *Happy Body Program* and that in those who do not participate in it.

Other than the variables related to *HB_FULL* and *HR_FULL* stated above, years of service and age are considered to have statistically significant results in each model 1-5 and 1-3 respectively. Regarding years of service, since its coefficient is negative, less years of service could lead to more job satisfaction although the value of the coefficient would be very low. In terms of age, elder employees tend to have higher job satisfaction in models 1-3, which exclude *ABS* as an independent variable.

Table 4.12 Regression Results of combined NOK and LION Job Satisfaction Model

Variable	Company: NOK and LION Dependent Variable: Job Satisfaction Method: Ordinary Least Squares									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
C	2.992	6.50 ***	2.989	6.51 ***	3.309	11.11 ***	4.085	9.57 ***	4.336	15.15 ***
GEN	0.257	1.81	0.266	1.89	0.260	1.88	0.190	1.51	0.179	1.45
MAR	0.032	0.26					0.049	0.44		
AGE	0.031	3.02 **	0.028	3.05 **	0.028	3.01 **	0.015	1.56	0.016	1.93
EDU	0.023	0.98	0.016	0.74			0.011	0.54		
DEP	0.039	0.89	0.042	0.98			0.028	0.73		
SAL	-0.017	-0.79					0.006	0.33		
SEY	-0.064	-2.58 *	-0.071	-3.18 **	-0.066	-3.06 **	-0.047	-2.15 *	-0.040	-2.05 *
HB_FULL	0.093	3.60 ***	0.091	3.56 ***	0.093	3.66 ***	0.044	1.89	0.046	1.98 *
HR_FULL	0.098	4.78 ***	0.098	4.83 ***	0.101	4.98 ***	0.049	2.59 *	0.050	2.69 **
ABS							-0.366	-9.47 ***	-0.366	-9.59 ***
Adj R ²	0.1472		0.1504		0.1519		0.3212		0.3267	
DW Stat	1.9321		1.9303		1.9506		1.9033		1.9274	
No. of Obs	356		356		356		356		356	

***P<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

The regression results of the NOK job satisfaction analysis represent the highest adjusted R square of .3547 (35.47%) in model 5. The most interesting finding is that *HR_FULL* as an independent variable does not have a significant effect on job satisfaction, indicating that null hypothesis 2⁹ (Job Satisfaction and the *Happy Relax Program*) is accepted in models 4 and 5 while it is rejected and the alternative hypothesis is accepted in models 1-3 without *ABS*.

Conversely, different from the logit in table 4.11 and the combined model in table 4.12, *HB_FULL* has a significant effect on job satisfaction in model 1-5 each, representing that the null hypothesis 1⁹ (Job Satisfaction and *Happy Body Program*) is rejected and the alternative hypothesis is accepted in all models.

In terms of the fitness of regression models, model 1-3 without the *ABS* yields the low value of the adjusted R square from .1110 (11.1%) to .1239 (12.39%), accounting for a low fitness of the model although both *HB_FULL* and *HR_FULL* have a significant probability showing a p-value of less than .01 (1%). In this context, it is reasonably possible to say that the multiple regression model without the *ABS* does not represent a good fitness of the model to analyze the job satisfaction at NOK and the model with the *ABS* shows higher fitness of model although *HR_FULL* is considered to be not significant independent variable and the value of the adjusted R square itself is even not so high.

Regarding the *ABS* as an independent variable, it is considered to be significant on job satisfaction in model 4 and 5, showing a p-value of less than .001 (0.1%). Since the coefficient

of it is negative, it is recognized that less *ABS* could lead to higher job satisfaction, which is viewed as a common recognition about the correlation of them.

Table 4.13 Regression Results of Job Satisfaction Model for NOK

Variable	Company: NOK Dependent Variable: Job Satisfaction Method: Ordinary Least Squares									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
C	3.6050	4.31 ***	3.6087	4.39 ***	4.2031	9.33 ***	5.1904	6.96 ***	5.1652	13.38 ***
GEN	0.1996	0.78	0.1760	0.70			-0.0028	-0.01		
MAR	-0.0910	-0.54					-0.0440	-0.30		
AGE	0.0186	0.76	0.0152	0.64			-0.0020	-0.09		
EDU	0.0367	1.08	0.0390	1.17	0.0371	1.12	0.0335	1.14	0.0356	1.25
DEP	-0.0218	-0.32					-0.0150	-0.26		
SAL	-0.0380	-1.18	-0.0373	-1.17	-0.0366	-1.23	-0.0436	-1.57	-0.0470	-1.85
SEY	-0.0525	-1.55	-0.0554	-1.66	-0.0524	-1.61	-0.0377	-1.29	-0.0335	-1.25
HB_FULL	0.1123	3.02 **	0.1127	3.05 **	0.1047	2.95 **	0.0658	2.03 *	0.0754	2.58 *
HR_FULL	0.0932	3.06 **	0.0916	3.06 **	0.0917	3.11 **	0.0239	0.87		
ABS							-0.4398	-8.20 ***	-0.4533	-9.08 ***
Adj R ²	0.1110		0.1185		0.1239		0.3410		0.3547	
DW Stat	2.0668		2.0672		2.0600		2.0466		2.0454	
No. of Obs	200		200		200		200		200	

***P<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

Considering the regression result of job satisfaction model at LION, overall observation considered to be similar to previous ones. The highest adjusted R square of .3428 (34.28%) is shown in model 5 with the *ABS* as an independent variable. However, unlike the models of NOK, other independent variables also have significant effects on job satisfaction such as a salary and years of the service, representing a p-value of less than .05 (5%).

One unique finding is found in the situation where the *HB_FULLL* has no significant on any models, representing that the *happy body program* does not have a significant effect on job satisfaction for LION employees. This finding leads to the conclusion that the null hypothesis 1⁹ (Job Satisfaction and *Happy Body Program*) is accepted in model 1-5 each, accounting for that there is no significant difference between job satisfaction of the employees who participate in the *Happy Body Program* and that of those who do not.

Contrastively, the *HR_FULLL* is considered to be significant in model 1-5 each, showing a p-value of less than .001 (0.1%) in model 1-3, .01 (1%) in model 5 and .05 (5%) in model 4. In terms of the hypothesis test, the null hypothesis 2⁹ (Job Satisfaction and *Happy Relax Program*) stated in the chapter 3 is rejected in model 1-5 each and the alternative hypothesis is accepted. Compared with the finding of NOK, that of LION clearly indicates a different significance of the *HB_FULLL* from NOK, concluding that the null hypothesis regarding the *HB_FULLL* is accepted in all models.

Regarding the *ABS* as an independent variable, as same as the finding from NOK, it is considered to be significant on job satisfaction in model 4 and 5, showing a p-value of less than .001 (0.1%). Since the coefficient of it is negative, it is recognized that less *ABS* could lead to higher job satisfaction, which is viewed as a common recognition about the correlation of them.

Table 4.14 Regression Results of Job Satisfaction Model for LION

Variable	Company: LION Dependent Variable: Job Satisfaction Method: Ordinary Least Squares									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
C	2.2379	3.06 **	2.4371	4.40 ***	3.0396	8.15 ***	3.2120	4.70 ***	3.1426	6.19 ***
GEN	0.2183	1.17					0.1763	1.04		
MAR	0.1617	0.85					0.1493	0.87		
AGE	0.0292	2.32 *	0.0274	2.33 *	0.0215	2.34 *	0.0113	0.96	0.0115	1.05
EDU	0.0114	0.33					-0.0093	-0.30		
DEP	0.0813	1.36	0.0893	1.53	0.0732	1.26	0.0762	1.41	0.084745	1.61
SAL	0.0441	1.11	0.0517	1.38			0.0851	2.33 *	0.0855	2.49 *
SEY	-0.0867	-2.13 *	-0.0740	-1.88			-0.0815	-2.21 *	-0.0703	-1.99 *
HB_FULL	0.0701	1.94	0.0637	1.80	0.0681	1.91	0.0194	0.57		
HR_FULL	0.1038	3.68 ***	0.1098	4.00 ***	0.1039	3.78 ***	0.0664	2.52 *	0.0751	3.05 **
ABS							-0.3232	-5.75 ***	-0.3281	-6.13 ***
Adj R ²	0.1877		0.1943		0.1833		0.3340		0.3428	
DW Stat	1.6928		1.7034		1.7095		1.6796		1.6810	
No. of Obs	156		156		156		156		156	

***P<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

The *ABS* is analyzed through the multiple regression model as well as the job satisfaction. As stated in the chapter 3, the null hypothesis regarding the *ABS* is that there is no significant difference between absenteeism of the employees with high job satisfaction and that of those with low job satisfaction. Since this research hypothesizes that job satisfaction could have statistically significant effect on the *ABS*, the first three models 1-3 in each regression includes job satisfaction as an independent variables.

The regression result of the absenteeism model including both NOK and LION employees is analyzed, showing the highest adjusted square of .3549 (35.49%) in model 3. Job satisfaction shows a significant effect, which has a p-value of less than .001

(0.1%) and t-stat of more than -5.75. This finding could lead to a conclusion that null hypothesis 5⁹ (Job Satisfaction and Absenteeism) is rejected and the alternative hypothesis is accepted, indicating that less job satisfaction results in higher absenteeism.

Furthermore, the *HR_FULLL* shows a p-value of less than .001 (0.1%) in model 1-5 each although a t-stat in model 3 is considered to be low as -0.8. *HB_FULLL* represents a p-value of less than .01 (1%) in model 1-3 and .001 (0.1%) in model 4 and 5 respectively although a low t-stat is shown in model 3 as same as the one of *HR_FULLL*. Regarding other independent variables, salary is considered to be statistically significant on the *ABS*, accounting for a p-value of less than .05 (5%) in model 1, 2, 4 and 5 as well as less than 0.01 (1%) in model 3. Age is also recognized as a significant independent variable, showing a p-value of less than .001 (0.1%) in model 4 and 5 and less than .05 (5%) in model 1-3 each.

Table 4.15 Regression Results of combined NOK and LION Absenteeism Model

Variable	Company: NOK and LION Dependent Variable: Absenteeism Method: Ordinary Least Square									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
C	4.6680	8.65 ***	4.6013	9.54 ***	4.3369	12.66 ***	2.9834	5.23 ***	2.9164	5.29 ***
GEN	-0.0364	-0.23					-0.1810	-1.03	-0.1881	-1.08
MAR	0.0635	0.47	0.0627	0.46			0.0454	0.30		
AGE	-0.0277	-2.39 *	-0.0274	-2.38 *	-0.0232	-2.31 *	-0.0453	-3.53 ***	-0.0449	-3.56 ***
EDU	-0.0192	-0.74	-0.0181	-0.70			-0.0322	-1.10 *	-0.0317	-1.09
DEP	-0.0069	-0.14					-0.0288	-0.53		
SAL	0.0547	2.29 *	0.0554	2.34 *	0.0513	2.60 **	0.0643	2.41 *	0.0646	2.43 *
SEY	0.0086	0.31	0.0079	0.29			0.0446	1.46	0.0444	1.47
HB_FULL	-0.0794	-2.74 **	-0.0779	-2.78 **	-0.0799	-0.08 **	-0.1315	-4.13 ***	-0.1324	-4.17 ***
HR_FULL	-0.0777	-3.34 ***	-0.0787	-3.42 ***	-0.0763	-0.08 ***	-0.1327	-5.25 ***	-0.1343	-5.36 ***
JOS	-0.5631	-9.47 ***	-0.5649	-9.59 ***	-0.5684	-0.57 ***				
Adj R ²	0.3474		0.3510		0.3549		0.1800		0.1839	
DW Stat	2.0763		2.0698		2.0567		2.1052		2.1027	
No. of Obs	356		356		356		356		356	

***p<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

In regards to a case of NOK employees only, the regression result of absenteeism model shows the highest adjusted R square of .3818 (38.18%) in model 3 with job satisfaction as an independent variable. Furthermore, in model 1-3, job satisfaction is considered to be statistically significant, showing a p-value of less than .001 (0.1%) and t-value of less than -8.20. This finding results in that the null hypothesis H_0 (Job Satisfaction and Absenteeism) is rejected and the alternative hypothesis is accepted.

Moreover, the *HR_FULL* is found to be significant in model 1-5 each, accounting for a p-value of less than .01 (1%) or .001 (0.1%) and t-value of less than -3.26. Conversely, the *HB_FULL* is

shown to be not significant variable in model 1-3 while a p-value of less than .05 (5%) is indicated in model 4 and 5 each. Other socioeconomic independent variables such as gender, marital status, age, etc, are considered to be not significant in all models.

Table 4.16 Regression Results of Absenteeism Model for NOK

Variable	Company: NOK Dependent Variable: Absenteeism Method: Ordinary Least Squares									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
C	5.7573	6.55 ***	5.7524	6.71 ***	5.8763	7.54 ***	3.6050	3.70 ***	3.2913	4.03 ***
GEN	-0.3411	-1.33	-0.3407	-1.34	-0.3410	-1.36	-0.4603	-1.54	-0.4234	-1.50
MAR	0.0525	0.31	0.0536	0.32			0.1069	0.54		
AGE	-0.0357	-1.46	-0.0354	-1.48	-0.0337	-1.45	-0.0468	-1.65	-0.0405	-1.58
EDU	0.0146	0.43	0.0146	0.44			-0.0074	-0.19		
DEP	0.0024	0.04					0.0154	0.20		
SAL	-0.0355	-1.09	-0.0351	-1.10	-0.0322	-1.06	-0.0128	-0.34		
SEY	0.0023	0.07					0.0336	0.85		
HB_FULL	-0.0386	-1.01	-0.0385	-1.02	-0.0375	-1.00	-0.1057	-2.44 *	-0.1077	-2.54 *
HR_FULL	-0.1018	-3.26 **	-0.1010	-3.46 ***	-0.1001	-3.45 ***	-0.1575	-4.44 ***	-0.1471	-4.44 ***
JOS	-0.5970	-8.20 ***	-0.5977	-8.31 ***	-0.5966	-8.37 ***				
Adj R ²	0.3697		0.3763		0.3818		0.1498		0.1659	
DW Stat	2.2874		2.2857		2.2900		2.3076		2.2893	
No. of Obs	200		200		200		200		200	

***p<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

Furthermore, the regression result of absenteeism model for LION employees only shows different findings from previous ones. The highest adjusted R square of .3628 (36.28%) is shown in model 3. Similarly, job satisfaction of LION employees is considered to be statistically significant, showing a p-value of .001 (0.1%) and less than a t-value of -5.75 respectively. This finding indicates that the null hypothesis 5⁹ (Job Satisfaction and Absenteeism) is

rejected and the alternative hypothesis is accepted, indicating that less job satisfaction results in higher absenteeism.

Different from the result at NOK, the *HB_FULLL* has a significant effect on model 1-5 each, representing a p-value of less than .01 (1%) while the *HR_FULLL* does in only model 4 and 5 with a p-value of less than .01 (1%).

Other unique findings are found to be in salary and age, accounting for a p-value of salary showing less than .01 (1%) in model 1, 3, and 5 and less than .05 (5%) in model 2 and 4. Although it is considered to be deviated result from common recognition about a correlation between salary and absenteeism, it shows that employees with higher salary tend to have higher absenteeism.

Moreover, a p-value of age shows less than .001 (0.1%) in model 5, .01 (1%) in model 3 and 4, and .05 (5%) in model 5, indicating that younger employees tend to have higher absenteeism while a value of coefficient is very low. This finding could be explained by that elder employees have more responsibility and higher salary, leading to high motivation and less absenteeism.

Table 4.17 Regression Results of Absenteeism Model for LION

Variable	Company: LION Dependent Variable: Absenteeism Method: Ordinary Least Squares									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
C	4.2996	4.72 ***	4.3067	4.80 ***	4.4117	5.01 ***	3.0137	3.09 **	2.8799	3.11 **
GEN	-0.0045	-0.02					-0.1299	-0.52		
MAR	0.0544	0.24					-0.0385	-0.15		
AGE	-0.0386	-2.50	-0.0381	-2.55 *	-0.0418	-3.12 **	-0.0554	-3.30 **	-0.0530	-3.62 ***
EDU	-0.0576	-1.40	-0.0591	-1.48	-0.0574	-1.45	-0.0641	-1.41	-0.0611	-1.40
DEP	0.0308	0.42	0.0341	0.48			-0.0159	-0.20		
SAL	0.1524	3.17 **	0.1521	3.22 *	0.1401	3.24 **	0.1270	2.40 *	0.1265	2.66 **
SEY	-0.0338	-0.68	-0.0322	-0.67			0.0161	0.30		
HB_FULL	-0.1166	-2.64 **	-0.1164	-2.70 **	-0.1141	-2.66 **	-0.1569	-3.26 **	-0.1542	-3.30 **
HR_FULL	-0.0560	-1.57	-0.0564	-1.62	-0.0582	-1.70	-0.1156	-3.08 **	-0.1198	-3.35 **
JOS	-0.5746	-5.75 ***	-0.5735	-5.81 ***	-0.5598	-5.80 ***				
Adj R ²	0.3481		0.3567		0.3628		0.2049		0.2243	
DW Stat	1.9347		1.9345		1.9369		1.9479		1.9301	
No. of Obs	156		156		156		156		156	

***p<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

4.4.3 Results of Simultaneous Equation Method (SEM)

Considering the regression result of simultaneous equation model for both NOK and LION, the highest R square of .1689 (16.89%) in equation 1 is shown in model 1 although the R square of .3025 (30.25%) in equation 2 is not changed in model 1-3.

Furthermore, in terms of independent variables, age, years of service, the *HB_FULL*, and the *HR_FULL* indicate a significant effect on job satisfaction in equation 1. Especially, the *HR_FULL* has a p-value of less than .001 (0.1%) in model 1-3 each while the *HB_FULL* shows .001 (0.1%) in only model 2. In terms of the hypothesis test, the null hypothesis 1⁹ (Job Satisfaction (Y_1) and *Happy Body Program*) and 2⁹ (Job Satisfaction (Y_1) and *Happy*

Relax Program) are rejected and the alternative hypothesis is accepted, indicating that employees who participate the *Happy Body* and *Relax Programs* are more likely to have higher job satisfaction. Age is found to be significant in model 1-3 as well, representing a p-value of less than .01 (1%) as well as years of service is considered to be significant in model 1-3.

In equation 2, it is clearly shown that job satisfaction as an independent variable has a significant effect on absenteeism, accounting for a p-value of less than .001 (0.1%) and t-stat of -12.39 in model 1-3. The finding leads to a conclusion that the null hypothesis 5⁹ (Job Satisfaction and Absenteeism) is rejected and the alternative hypothesis is accepted, indicating that less job satisfaction results in higher absenteeism and vice versa.

Table 4.18 Results of Simultaneous Equation Method for NOK and LION

Equation	Variable	Company: NOK and LION Dependent Variable: Job Satisfaction (Y ₁) and Absenteeism (Y ₂) Method: Simultaneous Equation Model (SEM)					
		Model 1		Model 2		Model 3	
		Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
1	C1	2.9917	6.50 ***	3.3094	11.11 ***	3.5946	13.96 ***
	GEN	0.2567	1.81	0.2599	1.88		
	MAR	0.0320	0.26				
	AGE	0.0313	3.02 **	0.0279	3.01 **	0.0252	2.74 **
	EDU	0.0231	0.98				
	DEP	0.0388	0.89				
	SAL	-0.0171	-0.79				
	SEY	-0.0638	-2.58 *	-0.0664	-3.06 **	-0.0676	-3.11 **
	HB_FULL	0.0925	3.60 **	0.0933	3.66 ***	0.0815	3.29 **
	HR_FULL	0.0976	4.78 ***	0.1005	4.98 ***	0.1060	5.29 ***
2	C2	4.4037	16.35 ***	4.4037	16.35 ***	4.4037	16.35 ***
	JOS	-0.6952	-12.39 ***	-0.6952	-12.39 ***	-0.6952	-12.39 ***
R ² (Equation1)		0.1689		0.1639		0.1554	
R ² (Equation2)		0.3025		0.3025		0.3025	
No. of Obs		356		356		356	

***p<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

In regard to a result of sample employees of NOK, unlike the previous model, years of service is not considered to be statistically significant because it does not show a p-value of less than .05 (5%).

Observing the *HB_FULLL* as an independent variable in equation 1, a significant effect with a p-value of less than .01 (1%) is shown in all models, leading to a significant effect on job satisfaction. Furthermore, the *HR_FULLL* shows a significant p-value of less than .001 (0.1%) and .01 (1%) as well. In terms of other independent variables, no significant difference is shown in model 1-3 although the constant shows a p-value of .001 (0.1%). These findings are considered to be sufficient to state that the null hypothesis 1⁹ (Job Satisfaction (Y_1) and *Happy Body Program*) and 2⁹ (Job Satisfaction (Y_1) and *Happy Relax Program*) are rejected and the alternative hypotheses are accepted, indicating that employees who participate the *Happy Body* and *Relax Programs* are more likely to have higher job satisfaction.

Considering equation 2, as same as the previous model, the job satisfaction as an independent variable has statistically significant effect on absenteeism, representing a p-value of less than .001 (0.1%) and t-stat of -12.39. Therefore, the null hypothesis 5⁹ (Job Satisfaction and Absenteeism) is rejected and the alternative hypothesis is accepted, indicating that less job satisfaction results in higher absenteeism.

Table 4.19 Results of Simultaneous Equation Method for NOK

Equation	Variable	Company: NOK Dependent Variable: Job Satisfaction (Y_1) and Absenteeism (Y_2) Method: Simultaneous Equation Model (SEM)					
		Model 1		Model 2		Model 3	
		Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
1	C1	3.6050	4.31 ***	4.2031	9.47 ***	4.5836	15.54 ***
	GEN	0.1996	0.78				
	MAR	-0.0910	-0.54				
	AGE	0.0186	0.76				
	EDU	0.0367	1.08	0.0371	1.13		
	DEP	-0.0218	-0.32				
	SAL	-0.0380	-1.18	-0.0366	-1.24	-0.0275	-0.96
	SEY	-0.0525	-1.55	-0.0524	-1.63	-0.0486	-1.50
	HB_FULL	0.1123	3.02 **	0.1047	2.99 **	0.1090	3.08 **
	HR_FULL	0.0932	3.06 **	0.0917	3.15 **	0.0923	3.13 ***
2	C2	4.3492	13.06 ***	4.3492	13.12 ***	4.3492	13.06 ***
	JOS	-0.6868	-9.93 ***	-0.6868	-9.98 ***	-0.6868	-9.93 ***
R ² (Equation1)		0.1512		0.1459		0.1404	
R ² (Equation2)		0.3323		0.3323		0.3323	
No. of Obs		200		200		200	

***P<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

Lastly, considering a result of sample employees from LION, the highest R square of .2349 (23.49%) in equation 1 is found in model 1. A unique finding in equation 1 is considered to be that the *HB_FULL* has no significant effect on job satisfaction in model 1-3 each while it does in the case of NOK. This finding leads to a conclusion that the *happy body program* does not work well in improving job satisfaction at LION. However, the *HR_FULL* shows statistically significant effect in all models, accounting for a p-value of less than .001 (0.1%). In terms of the hypothesis test, the null hypothesis 1⁹ (Job Satisfaction (Y_1) and *Happy Body Program*) is accepted, indicating that there is no significant difference

between job satisfaction of the employees who participate in the *Happy Body Program* and that of those who do not participate in it.

Conversely, the null hypothesis 2⁹ (Job Satisfaction (Y_1) and *Happy Relax Program*) is rejected and the alternative hypotheses are accepted, indicating that employees who participate the *Happy Relax Programs* are more likely to have higher job satisfaction.

Furthermore, age is considered to be a significant independent variable in all models, showing a p-value of less than .01 (1%) in model 3 and .05 (5%) in model 1 and 2. Also, years of service is considered to be statistically significant in model 1, showing a p-value of less than .05 (5%).

Considering equation 2, the R square of .2737 (23.37%) is shown in all models. As same as previous two models, job satisfaction as an independent variable has statistically significant effect on absenteeism which shows the largest value of coefficient, accounting for -0.7050 of coefficient and -7.62 of t-stat respectively. In this context, therefore, the null hypothesis 5⁹ (Job Satisfaction and Absenteeism) is rejected and the alternative hypothesis is accepted, indicating that higher job satisfaction results in less absenteeism.

Table 4.20 Results of Simultaneous Equation Method for LION

Equation	Variable	Company: LION Dependent Variable: Job Satisfaction (Y ₁) and Absenteeism (Y ₂) Method: Simultaneous Equation Model (SEM)					
		Model 1		Model 2		Model 3	
		Coeff	t Stat	Coeff	t Stat	Coeff	t Stat
1	C1	2.2379	3.06 **	2.4371	4.40 ***	3.0040	8.06 ***
	GEN	0.2183	1.17				
	MAR	0.1617	0.85				
	AGE	0.0292	2.32 *	0.0274	2.33 *	0.0315	2.76 **
	EDU	0.0114	0.33				
	DEP	0.0813	1.36	0.0893	1.53	0.0871	1.49
	SAL	0.0441	1.11	0.0517	1.38		
	SEY	-0.0867	-2.13 *	-0.0740	-1.88	-0.0532	-1.46
	HB_FULL	0.0701	1.94	0.0637	1.80	0.0636	1.79
	HR_FULL	0.1038	3.68 ***	0.1098	4.00 ***	0.1071	3.90 ***
2	C2	4.4684	10.09 ***	4.4684	10.09 ***	4.4684	10.09 ***
	JOS	-0.7050	-7.62 ***	-0.7050	-7.62 ***	-0.7050	-7.62 ***
R ² (Equation1)		0.2349		0.2255		0.2156	
R ² (Equation2)		0.2737		0.2737		0.2737	
No. of Obs		156		156		156	

***p<.001; **p<.01; *p<.05

Note: Abbreviations of variable is explained in page 67.

Source: Author's calculation

4.4.4 Summary of each model and method

Summarized results of the logit model, multiple regression model and simultaneous equation method are stated in table 4.19, stating whether each null hypothesis is rejected or not.

H1, H2, and H5 stated in table 4.19 stand for Hypothesis 1⁹ (Job Satisfaction and the *Happy Body Program*), Hypothesis 2⁹ (Job Satisfaction and the *Happy Relax Program*) and Hypothesis 5⁹ (Job Satisfaction and Absenteeism) respectively.

Table 4.21: Summarized results of Each Model

The Logit		
Combined n:356	H1	H_0 is rejected and H_1 is accepted in models 1 and 2
	H2	H_0 is rejected and H_1 is accepted in models 1 and 2
	Other	Age is considered to be significant in model 2
NOK n:200	H1	H_0 is rejected and H_1 is accepted in models 3 and 4
	H2	H_0 is rejected and H_1 is accepted in models 3 and 4
LION n:156	H1	H_0 is accepted in models 5 and 6
	H2	H_0 is rejected and H_1 is accepted in models 5 and 6
	Other	Dependent is considered to be significant in model 6
Multiple Regression		
Combined n:356	H1	H_0 is rejected and H_1 is accepted in model 1-3 and 5 H_0 is accepted in model 4
	H2	H_0 is rejected and H_1 is accepted in model 1-5 each
	H5	H_0 is rejected and H_1 is accepted in model 1-3 each
NOK n:200	H1	H_0 is rejected and H_1 is accepted in model 1-5 each
	H2	H_0 is rejected and H_1 is accepted in model 1-3 H_0 is accepted in models 4 and 5
	H5	H_0 is rejected and H_1 is accepted in model 1-3 each
LION n:156	H1	H_0 is accepted in model 1-5 each
	H2	H_0 is rejected and H_1 is accepted in model 1-5 each
	H5	H_0 is rejected and H_1 is accepted in model 1-3 each
Simultaneous Equation Method		
Combined n:356	H1	H_0 is rejected and H_1 is accepted in model 1-3 and 5 H_0 is accepted in model 4
	H2	H_0 is rejected and H_1 is accepted in model 1-5 each
	H5	H_0 is rejected and H_1 is accepted in model 1-3 each
NOK n:200	H1	H_0 is rejected and H_1 is accepted in model 1-5 each
	H2	H_0 is rejected and H_1 is accepted in model 1-3 H_0 is accepted in models 4 and 5
	H5	H_0 is rejected and H_1 is accepted in model 1-3 each
LION n:156	H1	H_0 is accepted in model 1-5 each
	H2	H_0 is rejected and H_1 is accepted in model 1-5 each
	H5	H_0 is rejected and H_1 is accepted in model 1-3 each

Source: Author's calculation

4.5 Analysis of Open-Response Question

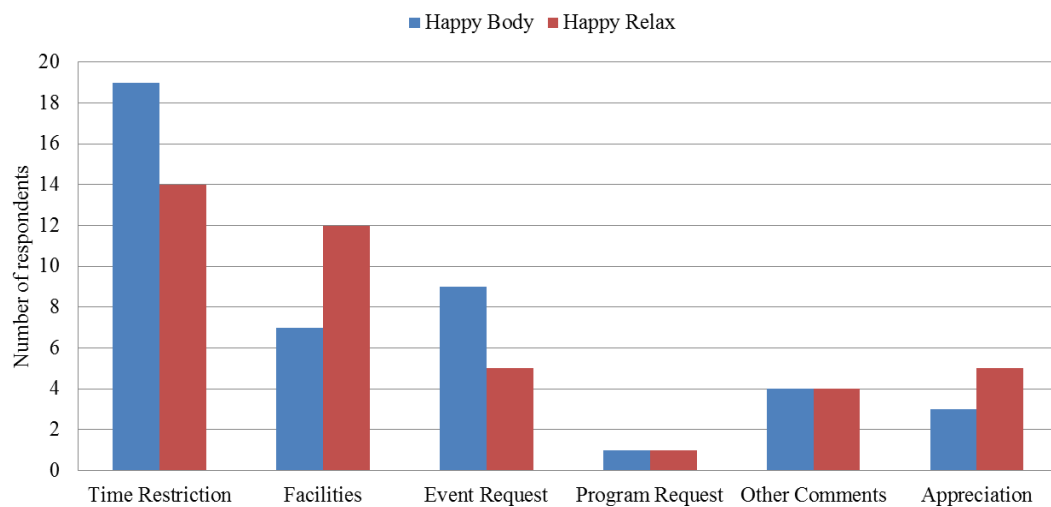
An open-response question is asked as a part of a questionnaire in this research, collecting information related to *Happy Body* and *Happy Relax* at both NOK and LION. Compared with a response rate for a multiple-choice question, the rate for an open-response question in this research is low as same as other types of research in general. However, employees' answers¹⁰ to the question are considered to be useful to analyse what employees think of regarding *Happy Body* and *Happy Relax*. All answers are classified by category, consisting of time restriction, facilities, event request, program request, other comments, and appreciation. Almost answers are regarded as employees' request and/or suggestion related to *Happy Body* and *Happy Relax*.

Considering the case of NOK, the largest number of respondents wrote their comments regarding a time restriction such as not enough break time, a program in the night and weekend and so on. Moreover, comments regarding facilities are also found in both *Happy Body* and *Happy Relax*. Almost all comments are composed of employee's request such as increase of sport equipment, update of karaoke song and so on. Major comments related to event request include a monthly sport day, annual company-sponsored trip and so on. Conversely, in regards to employees at LION, comments related to a time restriction are considered to be very few. Employees' comments related to facilities are similar to those at NOK such as repair of a sport equipment, library, computer room and so on. Regarding program

¹⁰ Answers to an open-response question are included in Appendix D.

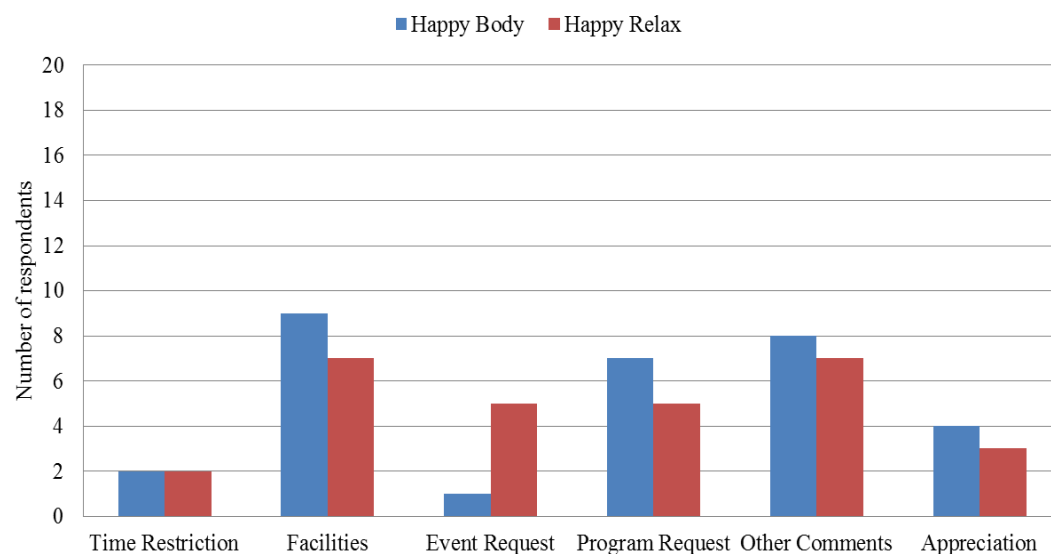
requests at LION, almost employees requests a variety of program to meet all generation's needs from young to old employees. It is unique aspect as employees at LION are composed of twenties to sixties though those at NOK are only twenties and thirties.

Figure 4.1 Summary of answers to an open-response question at NOK



Source: Author's calculation

Figure 4.2 Summary of answers to an open-response question at LION



Source: Author's calculation

4.6 Comments from Interview with Management

As a by-product of this research, an interview with management at NOK and LION was conducted as well. Interviewees in this research are Mr. Surapong Supajanya, Director of the Human Resources Department at NOK and Ms. Kiewchai, Director of the Human Resource Management Section at LION respectively. They state that the Happy Workplace Program is regarded a factor to promote mental and physical well-being of employees, leading to a reduction of healthcare and other related costs. Quantitative analysis of such costs is not included in research objectives of this study. However, comments obtained through an interview with management could be useful in the real world of business. Moreover, as managements are always concerned about how to use company's limited resources effectively, their comments tend to focus on cost reductions and considered to be positive about the Happy Workplace Program.

Table 4.22: Summarized comments from an interview with management at both NOK and LION

No.	Improved Item	Comments
1	Healthcare Cost	As mental and physical well-being of employees is promoted by the Happy Workplace Program, healthcare cost at company expense is reduced.
2	Absenteeism	As the Happy Workplace Program leads to low absenteeism, the cost of absenteeism is decreased.
3	Turnover	As employers who provide a worksite program such as the Happy Workplace Program are viewed as having more concern for their employees and as a result reduce employee turnover.

Source: Author's Interview with management at NOK and LION

4.7 Discussion

The most important finding obtained through the foregoing empirical results in this study is that both *Happy Body* (physical exercise) and *Happy Relax* (relaxing activities) are statistically significant and proved to be effective programs to increase job satisfaction and decrease absenteeism, although with minor exceptions. Two sample firms are selected in this study. They are Lion Corporation (Thailand) Limited, hereinafter referred to as “LION” and NOK Precision Component (Thailand) Ltd, hereinafter referred as “NOK” to represent both *traditional* and *modern* manufacturers in Thailand. A sample survey with 356 samples was conducted for hypothesis testing, leading to statistically significant relationship between the programs and employee job satisfaction and absenteeism. The hypothetical signs of coefficients are in accordance with theory.

Compared with similar worksite health promotion programs in Western countries, which mainly just focus on the reduction of employee medical care, the Happy Workplace Program in Thailand emphasizes *employee happiness* and *unconditional cooperation* which would reflect an essential peace of Thai culture. Such unique aspects of the program could be the likely factor to yield positive results in this research.

As stated in chapter 2 (literature review), there is one piece of literature focusing on the effect of a British corporate health

and fitness club in a leading British food retail company (Daley 1997). The study with 293 sample employees shows positive results between worksite program and job satisfaction. It is consistent with the findings of this research.

Moreover, the Warr-Cook-Wall scale¹¹ to measure overall job satisfaction is employed for both studies. The study concluded that higher job satisfaction was shown among members of the corporate health and fitness club whereas lower job satisfaction was observed among non-members. Here, the findings in this study may be generalized by comparing them with the result from the British company. As members of the fitness club could be comparable to sample employees at NOK and LION, who participated in *Happy Body*, the findings in this study would be empirical knowledge to support positive relation between job satisfaction and a worksite health promotion program (WHPP).

Conversely, empirical studies done at an insurance company in Oslo, Norway (Gronningsaeter et al 1992) and Montana State University in the U.S. (Peterson 1998) indicate that a WHPP does not significantly affect job satisfaction. Both studies provided different results from other studies as well as this research in Thailand. The study in Norway concluded that aerobic exercise resulted in significant decreased job satisfaction while the stress management training and control group had no significant changes.

¹¹ The Warr-Cook-Wall scales (Warr et al, 1979) is widely viewed as the most common scale to measure overall job satisfaction, consisting of 10 questions and each item is rated on a seven-point Likert scale.

According to the finding above, participation in the aerobic exercise group was recognized as one of the causes of the increase in dissatisfaction with work conditions. The study in the U.S. concluded that job design and the psychological aspects of the work environment may be more influential in improving job satisfaction. Since such variables are out of scope in this research, it might be not meaningful to make a comparison between this study and the study in the U.S. However, it is obvious that there is plenty of room for further study on the determinants of job satisfaction.

In regard to empirical results focusing on absenteeism, almost same results are found in both this and other studies, indicating that participation in a WHPP could lead to decrease in absenteeism. A case study which focuses on bank employees at the ING Bank in Amsterdam (Kerr and Vos 1993) has found interesting conclusion. Compared with 356 sample employees in this research, 152 sample employees at the ING Bank is relatively small. However, the sample employees are classified into four groups on the bases of participation or non-participation in the fitness program. Such classification is considered to be comparable to a research methodology for this research in Thailand. The study at ING Bank indicated that participation in the program could lead to significant decrease in absenteeism.

Although cultural aspect underlying the Happy Workplace Program in Thailand is unique and different from the one in Western countries, activities similar to *Happy Body* can be found in other WHPP in other research. They include aerobic, yoga,

working out at the gym, health promotion class, and so on whereas different aspects are also found in a program participation policy. *Happy Relax* such as singing songs (karaoke), playing musical instruments, and taking a nap is considered to be a unique program in Thailand and therefore, programs similar to *Happy Relax* are not found in other studies. As company-driven relaxing activities at a worksite are not widely implemented yet, empirical results in this research could serve as a useful reference for further research.

CHAPTER V

CONCLUSION AND POLICY RECOMMENDATION

5.1 Conclusion

The objective of this research is to analyze the effects of the Happy Workplace Program in Thailand on employee absenteeism and job satisfaction. The Happy Workplace Program was developed by the Thai Health Promotion Foundation. It is a unique worksite health promotion program in Thailand, promoting the mental and physical well-being of employees. As work-related illness and accidents are increasingly viewed as a social issue globally, the Happy Workplace Program is considered to be such a program to resolve it. Since the importance of measuring the effects of these programs is growing worldwide, this research contributes to the analyses of the effect of the Happy Workplace Program on employee absenteeism and job satisfaction, focusing on only two out of eight concepts contained within the Happy Workplace Program, *Happy Body* (physical exercise) and *Happy Relax* (relaxing activities).

Two firms are selected as representative for this study. Lion Corporation (Thailand) Limited, hereinafter referred to as “LION” is selected to represent *traditional* firm in Thailand as it was established in 1969. LION is widely considered to be a large manufacturer with a wide range of toiletry product line up mostly for a domestic market. NOK Precision Component (Thailand) Ltd, hereinafter referred to as “NOK” is selected to represent *modern* firm in Thailand. NOK was established in 2001 as a manufacturer

of precision component such as electronic parts for an international market.

In order to prove the effect of the Happy Workplace Program on both firms, primary data was collected through a questionnaire in the Thai language to a total of 356 sample employees. This comprises 156 employees from LION and 200 ones from NOK respectively. In this study, not only simple data analysis but also econometric approach is employed, including the multiple regression and simultaneous equation models as well as “logit” function to test hypotheses of this research accordingly.

The most important finding obtained through this study is that both *Happy Body* and *Happy Relax* are statistically significantly effective programs in regards to increased job satisfaction and decreased absenteeism.

In this study, the null hypothesis 1¹² (Job Satisfaction is not affected by *Happy Body*) is rejected and the alternative hypothesis is accepted in all models, consisting of the total sample of both NOK and LION, and only NOK employees. The results indicate that *Happy Body* is regarded as an effective worksite program to increase job satisfaction at NOK, representative of a *modern* manufacturer in Thailand. In regard to *Happy Relax*, the null hypothesis 2¹⁰ (Job Satisfaction is not affected by *Happy Relax*) is rejected in almost all models¹³ in all 3 samples: the combined sample, the sample from NOK only and at LION only. The hypothesis testing leads to the conclusion that *Happy Relax* is

¹² Null hypotheses 1-5 in this chapter are stated in chapter 3.3 (page 25-27).

¹³ Only in models 4 and 5 at NOK in multiple regression analysis did *Happy Relax* not have a significant effect on job satisfaction.

considered to be an effective worksite program to increase job satisfaction at both *modern* and *traditional* firms.

Furthermore, in terms of the relationship between job satisfaction and absenteeism, the null hypothesis 5¹⁰ (Job Satisfaction is negatively related to Absenteeism) is rejected in all models in all 3 samples defined earlier. This is to say the higher job satisfaction leads to less absenteeism at both firms. It is, therefore, implied that introduction of *Happy Body* and *Happy Relax* would contribute to the increase of employee job satisfaction. As a result, it is concluded that comprehensive worksite health promotion programs such as *Happy Body* and *Happy Relax* are considered to be effective organizational tools in decreasing employee absenteeism.

Considering other findings obtained through this study, age and years of service are thought of as significant variables in the combined sample and at LION only. The finding regarding age indicates that elder employees are more likely to have higher job satisfaction at LION. This could be explained by LION's seniority-based personnel system where salary increases as the employee gets older. Conversely, the finding related to years of service shows a negative coefficient, leading to the conclusion that employees with fewer (longer) years of service are more likely to have higher (lower) job satisfaction. One possible reason is that employees with many years of service at LION may have job position, description, or responsibility inconsistent with their expectations as they work for a long time, leading to low job satisfaction. However, further study is required to clarify this.

A simple statistical analysis also finds that female employees at LION who participate in *Happy Relax* have lower absenteeism than those who do not, whereas there is not a significant effect on male employees. Furthermore, male employees at LION who participate in *Happy Body* have lower absenteeism than those who do not, while a significant difference among female employees at LION is not found. The results for single employees at LION show that certain employees have high job satisfaction even though they do not participate in *Happy Body*, contradictory to the hypothesis stated in this paper. However, for married employees, *Happy Body* positively affects job satisfaction.

The findings obtained through a simple statistical analysis at NOK are different from ones at LION. Employees at NOK who have low, mid-range, and high salaries and participate in *Happy Relax* have lower absenteeism than those who do not, reaching the conclusion that regardless of the salary level, absenteeism is likely to be affected by *Happy Relax*. Moreover, single employees who have participated in *Happy Body* have higher job satisfaction than those who do not, whereas significant difference among married employees is not found.

In another combination of the three variables, *Happy Relax* affects absenteeism for both single and married employees. Most notable is that no participation clearly results in high absenteeism for both and therefore, *Happy Relax* could be considered as a factor in reducing the absenteeism rate at NOK.

5.2 Policy Recommendations

As previously explained, empirical findings of selected firms, LION and NOK are statistically significant and therefore, they may be generalized as policy recommendations on job satisfaction and absenteeism for similar business organization.

Policy recommendations based on the results in this study are divided into three subchapters: a macro-perspective approach, a micro-perspective approach, and a strategic promotion to foreign firms in Thailand.

The macro-perspective approach implies that as *Happy Relax* (relaxing activities) has proved to be effective across all models at NOK and LION, whereas *Happy Body* (physical exercise) has only proved to be effective at NOK. Thus, *Happy Relax* is likely to have a broader range of positive impact than *Happy Body* has. Therefore, it is reasonable to recommend that priority be given to developing and promoting *Happy Relax* at a firm with limited resources as much as possible. Especially, it is considered to be strongly effective in *modern* firm in Thailand such as NOK.

Considering the micro-perspective approach, individual variables such as gender, marital status, etc are considered to be factors affecting job satisfaction and absenteeism. As the results of the crosstabs and chi-square test have shown, single employees at NOK and both single and married at LION who participate in *Happy Body* are more likely to have higher job satisfaction than those who do not. Therefore, although further research might be necessary, it could be recommended that firms which have a large

number of single employees promote *Happy Body* rather than other type of programs.

A strategic promotion to foreign-capitalized firms in Thailand would be recommended. Based on the results of this research, it is found that frequent communication with top management could create more understanding of the significant effects of the Happy Workplace Program. Such opportunity for top management to understand the Happy Workplace Program leads to a supportive environment and driver to implement the program at each firm. Especially, in the case of Thailand, there are a large number of foreign-capitalized firms operating in Thailand and therefore, many foreigners such as Japanese or Westerners could be at the executive level. For those firms, more strategic promotion has to be carried out, including a seminar and workshop in Japanese or English and advertisement in those languages. Since those promotions should be in a professional manner to increase the credibility of not only Thai Health Promotion Foundation but also the Happy Workplace Program, a native speaker should be closely involved with the promotion. As it has been effective for NOK and LION, for example, it is better to ask a native Japanese speaker to prepare the content of the advertising and make the presentation in the Japanese language at the seminar to top Japanese management, leading to better understanding of the program.

After top management makes a decision to officially implement the Happy Workplace Program, what has to be made next is a practical support system to implement it at the actual

worksite. Responsibility for the program implementation at the worksite generally lies on employees in the human resources department. Since it is not an easy task to create sustainable corporate culture at all levels of the firm to maintain the worksite program, a large amount of effort has to be made to delegate implementation activities to facilitate a long term basis. Indeed, professionals from Thai Health Promotion Foundation regularly visit the workplace and advise them on how to implement and handle the program, including explanatory meetings to all employees to facilitate understanding the rationale and advantages of the Happy Workplace Program. Through such continuous support activities, the program manager, such as an employee in the human resources department at each firm, could obtain practical experience and skills to maintain and improve the program, resulting in the maximization of the Happy Workplace Program, rather than the superficial implementation of it.

5.3 Limitation of the Study

Although this thesis has attempted to yield practical results to reveal the effects of the Happy Workplace Program, several limitations are found in it. The first limitation is the number of participants in the sample, consisting of only two firms with 356 sample employees. The number may be not sufficient to make generalization of the findings in this research. In order to find more commonly persuasive results related to the effects of the Happy Workplace Program, a greater number of firms and sample employees are essential. However, due to the limitation of time

and resources, only NOK and LION were treated as target firms in this research.

The second consideration is the availability of other data such as medical expenses, investment amount and so on. Firm performance would be also key variable for further study. In terms of the practical figures, such as possible financial benefits from the program like ROI (return on investment) were considered because it is more attractive to the management at any firm. However, as it was limited to only collecting a sufficient amount of data to write academically appropriate contents for this study; job satisfaction and absenteeism were focused on as dependent variables.

5.4 Recommendation for further study

In order to promote a worksite health promotion program across the world such as the Happy Workplace Program in Thailand, global standardization of measurement methods for such programs would be an essential index for not only an academic environment but also in terms of business. Job satisfaction and absenteeism used in this study are viewed as two of the common variables in the field of study of a worksite health promotion program. However, it is obvious that they are not regarded as a global standard. Furthermore, as stated in chapter 2 (literature review), a wide variety of variables and methods are found in each study, depending on the purpose of the study. Although a time-consuming endeavour is necessary to realize global standardization, study and research based on industrial-academic-governmental collaboration

has to be driven worldwide, leading to a mutual consensus regarding the global standard.

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Appendices

Appendix A
Questionnaire in English

Questionnaire for Effect of Happy Workplace Program

[Purpose]

The purpose of this questionnaire is to gather information about effect of Happy Workplace Program in your organization. This information will be used for only academic research conducted in the Master of Arts Program in Labor Economics and Human Resource Management, Faculty of Economics, Chulalongkorn University. In order to avoid any bias, please do not talk to others about your answers and open-heartedly answer the questions.

Part 1: Socioeconomic Variables

1. Gender

- Male Female

2. Age _____ Years old

3. Marital Status

- Single Married

4. Number of Dependent

- 1 2 3 4 Other ()

5. Education

- Grade 6 or Lower (Elementary School)
 Grade 9 (Junior High School)

Grade 12 (High School) Certificate in vocational education

Technical Diploma Bachelor Degree or Higher

Other ()

6. Job Category

Production Production Engineering Business Support

Quality Assurance HR & Administration IT

Other ()

7. Title

Operator Level Staff Level Supervisor Level

Assistant Manager Level Manager Level

Other ()

8. Income Level (Monthly)

Less than 8,000THB 8,000 - 8,999THB

9,000 - 9,999THB 10,000 - 10,999THB

11,000 - 11,999THB 12,000 - 12,999THB

13,000 - 13,999THB 14,000 - 14,999THB

15,000 - 15,999THB 16,000 - 16,999THB

17,000 - 17,999THB Over 18,000THB

9. Service Years

Less than 1y 1y to less than 2y

2y to less than 3y 3y to less than 4y

4y to less than 5y 5y to less than 6y

6y to less than 7y 7y to less than 8y

8y to less than 9y Over 9y

Part 2: Emotion Scale

10. How often do you feel this way at work?

Negative Emotion

		Often	Sometime	Rarely	Never
A	I feel down-hearted and blue.	1	2	3	4
B	I get tired for no reason.	1	2	3	4
C	I find myself restless and can't keep still.	1	2	3	4
D	I am more irritable than usual.	1	2	3	4

Positive Emotion

		Often	Sometime	Rarely	Never
E	I find it easy to do the things I used to do.	1	2	3	4
F	My mind is as clear as it used to be.	1	2	3	4
G	I feel hopeful about the future.	1	2	3	4
H	I find it easy to make decision.	1	2	3	4
I	I still enjoy the things I used to.	1	2	3	4
J	I feel that I am useful and needed.	1	2	3	4

11. Based on the above expression in 10, do you think you are ready to work harder?

Yes

No

Part 3: Job Satisfaction Scale

12. Please indicate how satisfied or dissatisfied you are with each of the various aspects of your job? Please ring a response on the scale.

		1-extreme dissatisfaction				7-extreme satisfaction		
A	Physical working conditions	1	2	3	4	5	6	7
B	Freedom to choose your own method of working	1	2	3	4	5	6	7
C	Your colleagues and fellow workers	1	2	3	4	5	6	7
D	Recognition you get for good work	1	2	3	4	5	6	7
E	Amount of responsibility you are given	1	2	3	4	5	6	7
F	Your remuneration	1	2	3	4	5	6	7
G	Opportunity to use your abilities	1	2	3	4	5	6	7
H	Your hours of work	1	2	3	4	5	6	7
I	Amount of variety in your job	1	2	3	4	5	6	7
J	Taking everything into consideration, how do you feel about your job?	1	2	3	4	5	6	7

Part 4: Absenteeism Scale

13. In the past 4 weeks, how many days did you miss an entire day of work because of problems with your physical or mental health?

Ex) If you took a day off due to stomachache on Monday & Tuesday and headache on next Friday, your answer is “3Days”.

1Day 2Days 3Days 4Days 5Days Other (__Days)

14. In the past 4 weeks, how many days did you miss an entire day of work because of any other reason?

Ex) If you took a day off due to family's wedding on Friday and childcare on next Tuesday, your answer is "2Days".

1Day 2Days 3Days 4Days 5Days Other (__Days)

15. In the past 4 weeks, how many days did you miss part of a work day because of problems with your physical or mental health?

Ex) If you took a morning off due to stomachache on Monday and an afternoon off due to headache on Friday, your answer is "2Days".

1Day 2Days 3Days 4Days 5Days Other (__Days)

16. In the past 4 weeks, how many days did you miss part of a work day because of any other reason?

Ex) If you took a morning off due to childcare on Monday and an afternoon off due to care for parent on Friday, your answer is "2Days".

1Day 2Days 3Days 4Days 5Days Other (__Days)

Part 5: Happy Workplace Variables

17. Do you know Happy Workplace Program in your organization?

Yes No

18. Have you ever participated in any activities of Happy Workplace Program in your organization?

Yes → If Yes, please go to the question 20

No → If No, please go to the question 19

19. Why you have never participated in any activities of Happy Workplace Program in your organization?

- I'm not interested in it.
- Although I'd like to participate in it, I have no time to do so.
- Other (_____)

20. Which activity(s) of Happy Workplace Program have you ever participated in?

- Happy Body (Sport Activity: Yoga, Badminton, Fitness, etc)
- Happy Relax (Recreation Activity: Karaoke, Nap, Picnic, etc)
- Happy Soul (Mental Activity: Lecture from Monk, Donation, etc)
- Happy Heart (Hearty Activity: Support for pregnant employee, etc)
- Happy Brain (Learning Activity: Knowledge Center, etc)
- Happy Money (Financial Activity: Market Fair, etc)
- Happy Family (Family Activity: Mother's day, etc)
- Happy Society (Social Activity: Donate and Charity, etc)

22. In the last three months, how many times did you participate in the following activity(s) of Happy Relax? (Please tick all that apply)

Happy Relax (Recreation Activity)									
Karaoke					Nap				
No	Low	Med	High	Other	No	Low	Med	High	Other
0	1-3	4-6	7-9	()	0	1-3	4-6	7-9	()
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Playing Musical Instruments					Relaxing at Center Point, Walkway, Garden etc				
No	Low	Med	High	Other	No	Low	Med	High	Other
0	1-3	4-6	7-9	()	0	1-3	4-6	7-9	()
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet at Knowledge Center					Knowledge Theater at Knowledge Center				
No	Low	Med	High	Other	No	Low	Med	High	Other
0	1-3	4-6	7-9	()	0	1-3	4-6	7-9	()
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picnic					Karaoke Contest				
No	Low	Med	High	Other	No	Low	Med	High	Other
0	1	2	3	()	0	1	2	3	()
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New Year Party					Other ()				
No	Low	Med	High	Other	No	Low	Med	High	Other
0	1	2	3	()	0	1-3	4-6	7-9	()
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other ()					Other ()				
No	Low	Med	High	Other	No	Low	Med	High	Other
0	1-3	4-6	7-9	()	0	1	2	3	()
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. Do you have any comment about the activity of Happy Body (Sport Activity)? Please feel free to write down your comment in the space below.

23. Do you have any comment about the activity of Happy Relax (Recreation Activity)? Please feel free to write down your comment in the space below.

24. Do you feel that you are happy to work in your organization?

Yes No

Thank you very much for your precious time and kind cooperation.

Appendix B
Data Sheet of NOK (No. 1-200)

No	C O M	G E N	A G E	MA R	DE P	E D U	S A L	S E Y	HB_ Full	H B	HR_ Full	H R	A B S	A B S 2	J O S	J O S 2
1	0	0	30	0	2	12	16	0	0	0	3	1	3	1	3.2	1
2	0	1	28	0	1	16	15	3	3	1	4	1	1	0	5.4	0
3	0	1	29	1	2	16	10	6	0	0	4	1	3	1	4.2	1
4	0	1	22	0	2	16	8	2	4	1	10	1	0	0	6.8	0
5	0	0	31	0	3	12	14	3	8	1	7	1	0	0	4.6	1
6	0	1	27	0	4	16	12	8	7	1	10	1	0	0	6.9	0
7	0	1	25	1	5	6	7	4	0	0	5	1	4.5	1	2.1	1
8	0	1	27	0	3	16	10	5	2	1	5	1	0	0	5.9	0
9	0	1	31	0	6	6	8	2	0	0	5	1	0	0	3.9	1
10	0	1	28	1	5	16	12	5	1	1	6	1	2	1	4.7	1
11	0	1	31	0	3	16	10	4	6	1	7	1	0.5	0	6.7	0
12	0	1	29	0	2	12	7	2	0	0	0	0	2	1	4.1	1
13	0	1	21	0	2	16	7	2	0	0	5	1	1	0	3.9	1
14	0	1	31	0	2	16	10	0	2	1	9	1	0	0	5.9	0
15	0	1	23	0	2	16	7	1	1	1	2	1	0	0	4.7	1
16	0	1	21	0	1	12	9	1	0	0	0	0	2	1	3	1
17	0	1	27	0	1	16	13	5	0	0	0	0	0	0	5.5	0
18	0	1	24	1	3	16	12	1	0	0	0	0	1.5	1	3.1	1
19	0	1	25	0	5	12	8	5	4	1	7	1	0	0	4.3	1
20	0	1	28	1	4	16	11	9	6	1	6	1	0.5	0	4.2	1
21	0	1	29	0	4	12	12	0	0	0	0	0	3.5	1	4.6	1
22	0	1	27	0	2	12	10	1	0	0	0	0	3	1	3	1
23	0	1	33	0	4	12	7	0	4	1	4	1	1	0	4.1	1
24	0	1	30	0	3	16	8	0	0	0	4	1	4	1	3.8	1
25	0	1	28	0	2	12	7	0	0	0	2	1	1	0	4	1
26	0	1	24	0	3	9	11	2	5	1	5	1	0	0	6.3	0
27	0	1	27	1	2	9	9	1	0	0	0	0	0	0	5.2	0
28	0	1	34	0	2	12	7	0	5	1	4	1	1	0	4.5	1
29	0	1	31	1	1	12	10	0	0	0	1	1	0	0	4.4	1
30	0	1	24	0	5	16	10	2	0	0	0	0	2	1	3.9	1
31	0	1	28	0	3	12	10	0	2	1	0	0	0	0	4.9	1
32	0	1	29	0	2	12	10	0	0	0	0	0	2	1	4	1
33	0	1	26	0	2	12	10	0	0	0	4	1	1	0	5.3	0
34	0	1	33	1	2	16	10	0	0	0	1	1	0.5	0	4.5	1
35	0	1	29	0	2	16	9	1	0	0	0	0	1	0	2.2	1
36	0	1	24	0	1	12	7	2	2	1	4	1	0	0	5.7	0
37	0	1	27	0	4	16	11	1	0	0	5	1	0	0	3.3	1
38	0	1	31	1	1	9	9	2	0	0	2	1	3.5	1	2.1	1
39	0	1	26	0	3	12	7	1	0	0	2	1	2.5	1	3.4	1
40	0	1	24	1	3	12	10	0	0	0	0	0	1	0	4.2	1
41	0	1	30	1	3	12	11	0	2	1	6	1	0.5	0	5.5	0
42	0	1	23	0	1	12	11	2	13	1	12	1	0	0	6.1	0
43	0	1	31	0	4	12	10	2	0	0	3	1	1.5	1	4.1	1
44	0	1	28	0	5	9	10	2	1	1	7	1	2	1	5.1	0
45	0	1	24	0	1	12	9	2	0	0	1	1	2.5	1	3.1	1
46	0	1	39	0	4	12	10	0	0	0	0	0	0	0	6	0
47	0	1	21	0	1	12	7	1	0	0	0	0	3	1	3.8	1
48	0	1	29	0	5	16	18	1	2	1	6	1	0.5	0	5.1	0
49	0	1	27	0	5	12	7	0	0	0	2	1	4	1	2.9	1
50	0	1	26	0	3	9	8	2	0	0	3	1	0	0	4.3	1
51	0	1	29	0	2	16	14	0	0	0	1	1	4	1	3.7	1
52	0	1	29	0	3	16	18	0	0	0	4	1	0	0	3.9	1
53	0	1	29	1	2	12	10	2	0	0	1	1	0	0	5.1	0
54	0	1	27	0	2	12	13	0	0	0	0	0	4	1	3	1
55	0	1	25	0	2	16	8	7	0	0	5	1	0	0	5.4	0
56	0	1	24	0	2	12	11	0	0	0	3	1	3.5	1	3	1
57	0	1	25	0	3	12	10	0	0	0	3	1	0	0	4	1

No	C O M	G E N	A G E	MA R	DE P	E D U	S A L	S E Y	HB_ Full	H B	HR_ Full	H R	A B S	A B S 2	J O S	J O S 2
58	0	1	27	0	3	12	9	0	3	1	4	1	0	0	5	0
59	0	1	25	0	3	12	7	0	0	0	2	1	0	0	5.1	0
60	0	1	31	1	2	12	11	1	0	0	4	1	0	0	4.3	1
61	0	1	30	0	4	12	10	1	0	0	4	1	0	0	7	0
62	0	1	33	1	3	16	7	0	0	0	5	1	0	0	4.5	1
63	0	1	28	0	1	12	10	1	0	0	3	1	0	0	6.2	0
64	0	1	21	0	4	12	10	1	1	1	2	1	1	0	5.5	0
65	0	1	24	1	1	16	10	1	0	0	2	1	0	0	6.6	0
66	0	1	26	0	3	12	7	2	0	0	2	1	0	0	5.5	0
67	0	1	30	1	1	12	11	2	0	0	0	0	7	1	2.3	1
68	0	1	28	0	3	12	7	2	0	0	1	1	0	0	5.2	0
69	0	1	30	0	4	9	10	2	0	0	0	0	1	0	6.2	0
70	0	1	32	1	4	9	11	0	0	0	0	0	1	0	5.4	0
71	0	1	30	0	3	12	8	0	0	0	0	0	1	0	6	0
72	0	1	25	0	2	16	11	1	0	0	7	1	2	1	4	1
73	0	1	20	0	3	12	7	1	0	0	3	1	2.5	1	3	1
74	0	1	30	0	0	16	8	2	0	0	1	1	2	1	4.4	1
75	0	1	24	1	3	12	7	0	0	0	3	1	0	0	4.8	1
76	0	1	21	0	0	16	11	0	0	0	0	0	5	1	4.1	1
77	0	1	30	0	2	12	11	0	0	0	0	0	2	1	4.5	1
78	0	1	30	0	2	9	7	2	0	0	0	0	0.5	0	4	1
79	0	1	32	1	0	12	11	0	0	0	1	1	0	0	5.3	0
80	0	1	29	0	2	12	11	0	0	0	4	1	1.5	1	4.1	1
81	0	1	24	1	4	12	7	1	12	1	11	1	0	0	6	0
82	0	1	27	1	3	12	8	0	1	1	3	1	2	1	4.3	1
83	0	1	25	0	2	12	9	1	0	0	7	1	0	0	4.3	1
84	0	1	27	1	4	12	7	1	0	0	9	1	0	0	5	0
85	0	1	27	1	3	12	8	1	0	0	0	0	2.5	1	4.1	1
86	0	1	31	1	2	16	7	2	1	1	6	1	0	0	6.5	0
87	0	1	30	1	1	16	7	7	0	0	4	1	1.5	1	4.1	1
88	0	1	28	1	3	12	8	1	0	0	0	0	3	1	3.3	1
89	0	1	27	0	2	12	7	1	0	0	11	1	1.5	1	3.6	1
90	0	0	29	1	3	16	9	5	6	1	2	1	0	0	5.8	0
91	0	0	24	0	0	16	8	1	3	1	2	1	2	1	5.4	0
92	0	1	28	0	3	16	8	8	0	0	5	1	1.5	1	6.1	0
93	0	1	25	0	2	16	10	0	5	1	5	1	0	0	6.1	0
94	0	1	27	1	3	12	11	0	6	1	6	1	0	0	5.6	0
95	0	0	30	0	2	16	18	2	11	1	3	1	0	0	6.2	0
96	0	0	30	0	2	16	18	6	3	1	5	1	0	0	4.6	1
97	0	1	27	0	4	16	13	6	3	1	9	1	0.5	0	5.7	0
98	0	0	37	1	3	16	18	7	3	1	1	1	3	1	4.7	1
99	0	1	29	1	3	16	14	8	1	1	8	1	0	0	3.7	1
100	0	1	22	0	3	12	9	0	0	0	0	0	2	1	4.5	1
101	0	1	28	0	4	16	11	3	0	0	0	0	3	1	2	1
102	0	1	27	1	3	12	11	7	0	0	0	0	3.5	1	3	1
103	0	1	28	1	5	12	7	8	2	1	8	1	0	0	4.8	1
104	0	1	22	1	4	12	11	3	0	0	9	1	1.5	1	3.8	1
105	0	1	27	0	3	16	7	0	0	0	5	1	1	0	4.5	1
106	0	1	24	0	3	16	10	1	2	1	2	1	0.5	0	6.5	0
107	0	1	30	1	4	12	14	8	2	1	8	1	0	0	4.2	1
108	0	1	30	0	6	16	17	6	2	1	5	1	0	0	4.3	1
109	0	1	25	0	3	16	10	0	0	0	3	1	0	0	4.9	1
110	0	1	28	0	3	12	8	1	4	1	3	1	2.5	1	3.6	1
111	0	1	23	0	2	12	9	4	2	1	4	1	0	0	4.2	1
112	0	1	21	0	0	12	8	1	3	1	4	1	4	1	3.3	1
113	0	1	28	1	1	12	11	0	0	0	1	1	0	0	5.8	0
114	0	1	27	0	1	12	11	5	0	0	2	1	0	0	6.6	0

No	C O M	G E N	A G E	MA R	DE P	E D U	S A L	S E Y	HB_ Full	H B	HR_ Full	H R	A B S	A B S 2	J O S	J O S 2
115	0	1	25	0	3	12	10	3	0	0	0	0	4.5	1	3.5	1
116	0	1	22	0	0	16	7	0	0	0	1	1	1.5	1	4.3	1
117	0	1	30	1	1	12	11	1	0	0	0	0	4.5	1	3.5	1
118	0	1	29	0	2	16	10	0	0	0	2	1	0	0	4.9	1
119	0	1	30	0	3	12	10	0	0	0	2	1	2	1	3.3	1
120	0	1	23	1	0	16	10	0	0	0	4	1	0	0	5.6	0
121	0	1	32	1	3	16	13	8	2	1	4	1	1	0	4.8	1
122	0	1	24	0	1	12	9	1	0	0	7	1	1.5	1	4.3	1
123	0	1	29	1	2	12	7	8	3	1	9	1	0	0	5.1	0
124	0	1	30	1	3	16	7	0	0	0	0	0	3	1	3.8	1
125	0	1	34	0	2	9	8	0	0	0	3	1	0	0	6.3	0
126	0	1	30	1	2	12	10	5	3	1	3	1	0	0	5.1	0
127	0	1	29	0	3	12	11	0	0	0	2	1	0	0	5.9	0
128	0	1	28	0	3	16	12	9	3	1	8	1	1.5	1	3.6	1
129	0	0	25	0	2	12	10	0	1	1	11	1	0	0	6.8	0
130	0	1	29	0	2	12	7	0	0	0	0	0	3.5	1	3.5	1
131	0	1	32	1	2	16	13	6	0	0	4	1	0	0	6.8	0
132	0	0	34	0	3	16	18	0	0	0	1	1	1	0	4.7	1
133	0	0	30	0	3	12	8	6	1	1	5	1	2	1	2.8	1
134	0	1	26	0	2	16	7	1	7	1	10	1	0	0	6.8	0
135	0	1	22	0	3	16	10	2	7	1	1	1	0	0	6.5	0
136	0	0	26	0	2	16	12	4	0	0	4	1	0	0	5.3	0
137	0	0	32	0	3	12	7	6	5	1	6	1	1	0	4.8	1
138	0	0	23	0	2	16	7	0	4	1	6	1	1	0	5.3	0
139	0	1	31	0	3	16	18	0	2	1	4	1	0	0	4.3	1
140	0	0	36	1	3	16	18	5	5	1	1	1	0.5	0	3.5	1
141	0	0	29	0	1	16	18	5	8	1	2	1	0.5	0	3.8	1
142	0	1	30	1	3	12	10	1	0	0	2	1	0	0	5	0
143	0	1	19	0	2	12	9	0	2	1	2	1	1.5	1	4.9	1
144	0	1	25	1	4	12	7	2	0	0	4	1	0	0	3.9	1
145	0	1	31	1	3	12	8	1	0	0	4	1	1.5	1	3.5	1
146	0	1	25	0	3	9	7	4	0	0	7	1	0	0	5.8	0
147	0	1	23	0	2	12	7	2	7	1	2	1	0.5	0	6	0
148	0	1	28	0	2	16	10	2	0	0	5	1	0	0	6.2	0
149	0	1	24	0	5	12	8	1	0	0	0	0	2.5	1	5	0
150	0	1	29	0	2	16	9	2	1	1	4	1	0	0	4.5	1
151	0	1	31	0	2	12	10	4	0	0	1	1	1.5	1	5.4	0
152	0	1	28	0	3	6	12	7	0	0	6	1	0	0	4	1
153	0	1	22	0	2	12	11	0	0	0	3	1	3	1	3.9	1
154	0	1	29	0	2	12	12	8	0	0	3	1	1.5	1	6	0
155	0	1	26	0	2	12	10	7	0	0	5	1	1	0	4.8	1
156	0	1	33	0	3	12	7	3	0	0	2	1	1.5	1	3.6	1
157	0	1	32	0	3	12	9	3	1	1	0	0	0	0	5.4	0
158	0	0	28	0	3	16	11	0	1	1	6	1	0	0	5.8	0
159	0	1	32	0	3	16	13	6	0	0	8	1	0	0	3.9	1
160	0	0	28	1	3	12	7	0	1	1	0	0	2	1	5.8	0
161	0	0	38	0	1	16	18	9	0	0	6	1	1.5	1	3.5	1
162	0	0	28	0	2	12	13	4	0	0	1	1	1	0	2.1	1
163	0	0	26	0	2	16	7	0	2	1	3	1	4	1	4.2	1
164	0	0	26	0	1	12	7	5	0	0	0	0	2.5	1	5.2	0
165	0	0	30	1	1	12	7	1	4	1	3	1	1.5	1	3.9	1
166	0	1	28	1	2	16	7	1	2	1	4	1	0	0	4.6	1
167	0	1	20	0	3	6	10	0	1	1	4	1	0	0	4.7	1
168	0	1	30	0	2	12	10	2	1	1	5	1	1.5	1	5.8	0
169	0	1	24	0	2	12	8	1	6	1	4	1	0	0	5.1	0
170	0	1	26	0	3	12	9	3	0	0	3	1	1.5	1	3.6	1
171	0	1	26	0	4	12	7	6	3	1	5	1	0	0	5.6	0

No	C O M	G E N	A G E	MA R	DE P	E D U	S A L	S E Y	HB_ Full	H B	HR_ Full	H R	A B S	A B S 2	J O S	J O S 2
172	0	1	30	0	3	12	7	6	1	1	7	1	0	0	5.9	0
173	0	1	26	1	3	9	9	2	0	0	6	1	2	1	3.9	1
174	0	1	28	0	4	16	12	6	0	0	2	1	2	1	3.9	1
175	0	1	25	0	1	9	7	1	0	0	3	1	1.5	1	3.1	1
176	0	1	29	0	3	16	7	4	0	0	6	1	2.5	1	5.2	0
177	0	1	28	1	1	12	9	3	3	1	3	1	0	0	3.5	1
178	0	1	32	0	1	12	9	1	0	0	0	0	1	0	3.5	1
179	0	0	25	0	4	12	8	0	0	0	0	0	3	1	6.2	0
180	0	1	21	0	2	9	9	1	0	0	3	1	2.5	1	3.8	1
181	0	1	20	0	3	12	7	0	0	0	4	1	0	0	6.2	0
182	0	1	24	1	3	16	10	4	0	0	3	1	0	0	4.8	1
183	0	1	32	1	4	12	11	8	0	0	0	0	3	1	4.7	1
184	0	1	28	0	2	12	9	1	2	1	6	1	0	0	6	0
185	0	1	25	1	4	12	9	1	1	1	5	1	1	0	6.3	0
186	0	1	24	0	3	16	8	1	4	1	3	1	0	0	4.5	1
187	0	1	25	0	4	12	10	1	0	0	7	1	1	0	5.2	0
188	0	1	23	0	2	12	8	0	1	1	4	1	0	0	5.8	0
189	0	1	25	1	3	12	8	1	0	0	0	0	2.5	1	3	1
190	0	1	25	0	0	12	8	1	0	0	3	1	0	0	4.8	1
191	0	1	28	1	3	12	10	1	0	0	4	1	0	0	6	0
192	0	1	31	1	1	12	8	2	0	0	3	1	0	0	6	0
193	0	1	28	1	2	12	9	1	2	1	7	1	0	0	6.2	0
194	0	1	25	1	2	12	9	1	0	0	9	1	1	0	6.7	0
195	0	0	29	0	4	16	14	6	9	1	10	1	0.5	0	5	0
196	0	1	28	1	3	12	7	1	0	0	2	1	2	1	4	1
197	0	1	29	1	2	16	9	3	0	0	2	1	4.5	1	2.9	1
198	0	1	25	1	4	9	9	0	0	0	7	1	1	0	5.5	0
199	0	1	29	1	3	16	10	7	1	1	10	1	1.5	1	4.2	1
200	0	0	30	0	3	16	14	7	3	1	8	1	0	0	3.9	1

Appendix C
Data Sheet of LION (No. 201-356)

No	C O M	G E N	A G E	MA R	DE P	E D U	S A L	S E Y	HB_ Full	H B	HR_ Full	H R	A B S	A B S 2	J O S	J O S 2
201	1	1	57	0	4	16	18	9	1	1	7	1	1	0	4.1	1
202	1	1	36	1	0	16	15	6	0	0	6	1	0	0	4.5	1
203	1	1	49	1	1	16	18	0	1	1	2	1	1.5	1	3.8	1
204	1	1	60	0	0	16	18	9	3	1	4	1	0	0	4.3	1
205	1	1	39	1	4	16	18	9	0	0	2	1	0	0	4.7	1
206	1	1	25	0	4	16	11	1	3	1	4	1	0	0	3.7	1
207	1	1	42	1	6	16	18	9	2	1	5	1	1.5	1	4.8	1
208	1	1	43	0	2	16	18	9	4	1	6	1	1	0	5.1	0
209	1	1	39	1	3	16	18	9	0	0	4	1	1	0	6	0
210	1	1	33	0	3	16	18	1	0	0	6	1	1.5	1	5.6	0
211	1	1	31	0	0	16	10	3	0	0	2	1	1	0	3	1
212	1	1	46	0	1	16	18	9	0	0	5	1	0	0	3.3	1
213	1	1	24	0	2	16	9	1	0	0	4	1	2	1	4.7	1
214	1	0	34	0	0	16	18	0	1	1	3	1	0	0	3.4	1
215	1	1	41	0	4	16	18	9	0	0	3	1	1	0	3.4	1
216	1	1	48	0	2	16	18	9	0	0	7	1	1	0	4.6	1
217	1	1	43	0	2	16	18	9	0	0	0	0	3.5	1	3.3	1
218	1	1	48	1	4	16	18	9	4	1	7	1	1	0	3.8	1
219	1	1	42	1	2	16	18	9	0	0	5	1	0	0	4.2	1
220	1	1	50	0	3	12	18	9	0	0	6	1	0	0	5.1	0
221	1	1	46	1	2	16	18	9	0	0	4	1	0	0	5.5	0
222	1	1	37	0	3	16	18	9	0	0	4	1	0.5	0	6.3	0
223	1	0	30	0	0	16	14	4	6	1	0	0	0	0	3.6	1
224	1	1	40	1	4	16	18	9	3	1	6	1	2	1	1.9	1
225	1	1	38	0	3	16	18	9	3	1	0	0	0	0	4.1	1
226	1	1	49	1	5	16	18	9	1	1	8	1	0	0	5.9	0
227	1	1	53	1	5	16	18	9	3	1	5	1	0	0	6.4	0
228	1	1	26	1	0	16	12	3	1	1	2	1	0	0	4.8	1
229	1	0	30	1	0	16	18	5	5	1	0	0	1.5	1	4.3	1
230	1	0	42	0	0	16	18	9	1	1	0	0	1.5	1	4	1
231	1	1	50	1	3	12	18	9	2	1	2	1	0	0	6.1	0
232	1	0	34	0	0	16	16	0	5	1	4	1	0	0	6.3	0
233	1	0	44	0	1	16	18	9	6	1	0	0	0	0	4.9	1
234	1	0	55	1	3	16	18	9	0	0	0	0	3	1	4	1
235	1	0	28	0	2	16	14	3	3	1	0	0	0	0	5.1	0
236	1	1	30	0	1	16	18	6	3	1	5	1	1	0	5	0
237	1	1	32	0	4	16	18	6	2	1	12	1	0	0	6.2	0
238	1	1	35	0	2	16	16	9	0	0	0	0	5	1	3	1
239	1	0	35	0	2	12	16	6	0	0	1	1	2	1	3.3	1
240	1	1	41	1	2	16	18	9	2	1	3	1	1	0	5.8	0
241	1	1	35	1	2	16	18	9	2	1	3	1	0	0	5.8	0
242	1	0	40	1	2	16	14	9	2	1	0	0	0	0	4.4	1
243	1	0	49	1	2	16	17	9	3	1	6	1	0	0	5.3	0
244	1	0	53	1	2	16	18	9	3	1	9	1	2	1	4.2	1
245	1	1	47	0	0	16	18	9	0	0	2	1	0	0	6.1	0
246	1	0	29	0	5	16	10	9	3	1	10	1	1.5	1	2.9	1
247	1	0	48	0	4	16	18	9	4	1	4	1	0	0	5.4	0
248	1	1	31	0	2	16	18	8	7	1	9	1	0	0	5.8	0
249	1	1	34	1	2	6	18	9	0	0	4	1	1	0	3.9	1
250	1	0	42	1	4	16	18	9	8	1	9	1	0	0	6.7	0
251	1	0	48	1	4	16	18	9	3	1	15	1	1	0	6.8	0
252	1	1	34	0	3	16	18	9	12	1	16	1	0	0	6.6	0
253	1	1	22	0	0	16	14	0	0	0	6	1	1	0	4	1
254	1	0	24	0	3	16	15	0	4	1	8	1	1.5	1	6	0
255	1	0	25	0	2	16	15	0	3	1	7	1	2.5	1	4.1	1
256	1	0	26	1	1	16	8	1	0	0	4	1	2	1	5.4	0
257	1	1	23	0	4	16	14	0	0	0	3	1	0	0	6.1	0

No	C O M	G E N	A G E	MA R	DE P	E D U	S A L	S E Y	HB_ Full	H B	HR_ Full	H R	A B S	A B S 2	J O S	J O S 2
258	1	0	30	0	0	16	14	9	0	0	2	1	1	0	3	1
259	1	1	30	0	2	16	18	9	0	0	5	1	0	0	5.1	0
260	1	1	34	1	4	16	18	9	6	1	7	1	0	0	4.6	1
261	1	1	32	0	1	16	18	9	3	1	8	1	2.5	1	2.6	1
262	1	1	42	0	3	16	18	9	1	1	2	1	0	0	6.2	0
263	1	1	42	1	3	16	18	9	0	0	4	1	0	0	6.2	0
264	1	1	33	0	3	16	18	9	5	1	4	1	1	0	5.2	0
265	1	1	31	1	1	16	18	9	4	1	3	1	0	0	4.5	1
266	1	1	35	1	3	16	18	9	7	1	5	1	1	0	4	1
267	1	1	33	0	3	16	15	8	3	1	3	1	2.5	1	3.5	1
268	1	1	44	1	3	16	18	9	2	1	7	1	0	0	3.3	1
269	1	0	40	0	0	16	18	9	1	1	4	1	0.5	0	3	1
270	1	0	55	1	4	16	18	9	0	0	1	1	1.5	1	6.1	0
271	1	1	30	0	0	16	14	5	2	1	4	1	2.5	1	3.1	1
272	1	1	36	0	4	16	18	9	0	0	2	1	0	0	6.5	0
273	1	1	52	0	1	16	18	9	0	0	2	1	0	0	6.3	0
274	1	1	40	0	5	16	18	9	0	0	1	1	0	0	6.1	0
275	1	1	27	0	5	16	12	3	7	1	8	1	0	0	5.5	0
276	1	1	44	1	2	12	18	9	10	1	11	1	0	0	6.4	0
277	1	0	52	1	2	16	18	9	9	1	8	1	0	0	6	0
278	1	1	31	1	4	16	17	9	0	0	0	0	3.5	1	3	1
279	1	1	35	0	0	16	18	9	0	0	10	1	0.5	0	6.2	0
280	1	1	37	1	3	16	18	9	4	1	8	1	0	0	5	0
281	1	0	42	1	3	16	18	9	0	0	3	1	0	0	6.1	0
282	1	0	42	1	6	16	18	9	1	1	5	1	0	0	4.3	1
283	1	0	49	1	4	9	18	9	0	0	0	0	1.5	1	5	0
284	1	0	22	1	4	16	11	4	2	1	0	0	1	0	3.9	1
285	1	0	60	0	2	16	18	9	1	1	0	0	0	0	3.7	1
286	1	0	30	1	2	16	17	6	0	0	0	0	2.5	1	5.2	0
287	1	0	52	1	2	12	18	9	2	1	10	1	0	0	6.1	0
288	1	1	50	1	2	16	18	9	0	0	5	1	1	0	5.4	0
289	1	0	27	0	3	16	9	3	0	0	5	1	0	0	5.5	0
290	1	1	45	0	0	9	18	9	0	0	3	1	1	0	4.8	1
291	1	0	37	1	3	16	16	9	0	0	6	1	3	1	5.1	0
292	1	0	39	1	4	6	7	2	11	1	5	1	0	0	5.6	0
293	1	0	57	1	2	9	18	9	3	1	10	1	0	0	6.1	0
294	1	0	28	0	3	16	13	6	9	1	6	1	1	0	4.8	1
295	1	0	48	1	4	12	18	9	3	1	1	1	1.5	1	3.8	1
296	1	0	46	1	3	16	18	9	0	0	0	0	3.5	1	2	1
297	1	0	27	1	1	16	17	6	1	1	6	1	2.5	1	3.7	1
298	1	1	33	0	3	16	18	9	0	0	5	1	1	0	5.1	0
299	1	0	30	0	0	16	18	6	0	0	0	0	5	1	2	1
300	1	0	50	1	2	12	18	9	0	0	8	1	0	0	5.5	0
301	1	0	25	0	3	16	17	3	3	1	5	1	1.5	1	3.6	1
302	1	0	25	0	2	16	15	2	8	1	5	1	0	0	4.1	1
303	1	1	34	1	2	16	18	9	6	1	6	1	0	0	4.5	1
304	1	1	26	0	2	16	13	0	1	1	7	1	0	0	4.3	1
305	1	0	43	1	1	16	18	9	0	0	0	0	4	1	3	1
306	1	0	38	1	3	16	18	9	0	0	10	1	0	0	6.8	0
307	1	0	29	0	1	16	17	8	0	0	3	1	2	1	2.7	1
308	1	0	39	1	6	16	18	9	0	0	7	1	3	1	4.1	1
309	1	0	29	0	2	16	11	5	1	1	5	1	2.5	1	4.2	1
310	1	0	26	0	0	16	8	0	0	0	6	1	3	1	3	1
311	1	0	25	0	4	16	10	4	5	1	7	1	0	0	3.8	1
312	1	1	33	1	4	12	16	9	0	0	11	1	0.5	0	5.6	0
313	1	1	53	1	4	6	18	9	0	0	6	1	1.5	1	5.6	0
314	1	0	32	1	2	16	12	5	0	0	3	1	1	0	5	0

No	C O M	G E N	A G E	MA R	DE P	E D U	S A L	S E Y	HB_ Full	H B	HR_ Full	H R	A B S	A B S 2	J O S	J O S 2
315	1	1	55	1	2	6	18	9	2	1	5	1	0	0	5.6	0
316	1	1	32	0	1	9	9	9	3	1	9	1	1	0	4	1
317	1	0	35	1	2	16	18	9	3	1	4	1	0	0	5.6	0
318	1	1	43	1	2	16	18	9	0	0	5	1	3	1	3.3	1
319	1	1	39	1	2	16	18	9	0	0	7	1	4.5	1	3.2	1
320	1	0	56	1	4	16	18	9	1	1	4	1	0	0	4.6	1
321	1	0	39	1	2	16	18	9	0	0	2	1	1.5	1	4	1
322	1	1	35	1	4	12	9	9	1	1	6	1	0	0	3.8	1
323	1	1	33	1	3	12	16	9	0	0	0	0	4.5	1	3	1
324	1	1	59	0	0	6	18	9	0	0	5	1	5	1	3.7	1
325	1	1	34	1	2	6	9	9	0	0	3	1	1.5	1	5	0
326	1	1	18	0	0	9	8	0	4	1	10	1	0	0	4.7	1
327	1	1	45	1	4	16	18	9	0	0	10	1	1.5	1	4.6	1
328	1	0	41	1	1	16	18	9	0	0	6	1	0	0	4.1	1
329	1	0	36	0	0	16	18	9	0	0	0	0	3.5	1	3	1
330	1	1	33	1	1	16	18	8	0	0	0	0	4.5	1	4.1	1
331	1	1	32	0	2	16	18	7	0	0	0	0	5	1	3.9	1
332	1	1	43	0	3	16	18	9	0	0	5	1	1.5	1	3.9	1
333	1	0	38	1	3	16	18	4	7	1	8	1	0	0	5.8	0
334	1	1	28	0	2	16	18	7	7	1	9	1	1	0	6.7	0
335	1	1	29	0	1	16	18	2	0	0	0	0	6	1	5.9	0
336	1	1	29	0	3	16	18	6	4	1	4	1	0	0	4.7	1
337	1	1	35	1	3	16	18	9	1	1	6	1	0	0	4.8	1
338	1	1	27	0	1	16	18	4	0	0	0	0	6	1	4.1	1
339	1	0	24	0	0	16	14	1	1	1	1	1	0	0	3.8	1
340	1	1	30	0	2	16	18	7	0	0	2	1	7.5	1	2.5	1
341	1	1	39	0	3	16	18	9	1	1	5	1	2.5	1	3.6	1
342	1	0	49	1	4	16	18	9	5	1	5	1	0	0	5.7	0
343	1	0	34	0	0	16	11	2	0	0	3	1	0	0	4.5	1
344	1	1	51	1	3	6	18	9	0	0	8	1	0	0	5.2	0
345	1	1	40	1	1	6	18	9	0	0	7	1	0	0	4.6	1
346	1	1	35	0	2	16	18	9	1	1	8	1	3	1	4.5	1
347	1	1	31	1	1	16	18	9	4	1	8	1	0.5	0	5.2	0
348	1	0	26	0	4	16	17	2	0	0	3	1	3	1	5.1	0
349	1	1	31	1	1	16	18	7	0	0	0	0	4.5	1	3	1
350	1	0	28	1	6	6	18	5	0	0	0	0	5	1	2.1	1
351	1	1	43	1	2	16	18	9	2	1	7	1	1.5	1	4.3	1
352	1	1	45	0	5	16	18	9	4	1	6	1	0	0	5.1	0
353	1	1	34	0	3	16	18	9	0	0	12	1	0	0	4.6	1
354	1	1	41	1	2	16	18	9	2	1	8	1	1.5	1	6.3	0
355	1	1	34	0	2	16	18	9	1	1	8	1	0	0	5.9	0
356	1	1	24	0	2	16	13	4	4	1	7	1	0.5	0	5.3	0

Appendix D

Employee's answers to an Open-Response Question
(NOK and LION)

NOK

Happy Body	
Time Restriction	
1	Employees in production department don't have time to participate in it.
2	No time to participate in the program.
3	Since brake is very short and sport center is in high level, once I get there brake is over.
4	Brake is 30 minutes which only enough for having meal so no more time for other activities. (From building No.3)
5	Since brake is very limited, I just have a few chance to participate in Happy Body programs
6	Should have aerobics in the evening after work.
7	Employees have very limited break time. They should have more time so they can enjoy their activities.
8	Brake is very short, just going there brake is over.
9	Not enough time
10	Should open sport facility during weekend because on weekday employees have to travelling back home, so there is not enough time.
11	Should extend brake time to 1 hour because activity and having meal are currently the same time so employees have to decide to join or to have meal.
12	Work in night shift.
13	Good but I don't have time if the company expects employees to join in activities, they should extend brake.
14	Not enough time.
15	Good but no time
16	No time.
17	Every week, the company should arrange 1 hour of exercise because in normal, just 30 minutes of brake is not enough for exercise
18	Good but no time
19	Everything is good. I just don't have time.
Facilities	
1	Should have more sport equipment.
2	Employees don't clean football pitch after using.
3	They are hold far from work place so they should be arranged between buildings.
4	Should have Happy Body programs in each building.
5	Should have fitness center, yoga and sport equipment in building No.3.
6	Please arrange sport activities in building No.3 or at ground floor, not enough time to go upper floor.
7	Fitness room should be accessible for employees in production department.
Event Request	
1	should have health promotion day so employees can be healthy e.g. sport competition
2	hold event that employees can participate in e.g. sport competitions

Happy Body	
3	The company should hold sport day so employees can be healthy and relaxed.
4	Sport day
5	Should hold sport day to promote harmony within organization.
6	If the company wants employees to exercise, they must hold a sport event because in normal time employees have to work.
7	The company should arrange Happy Body time once a month.
8	Should hold Happy Body activities before holiday e.g. New Year.
9	Should have sport festival because in normal situation.
Program Request	
1	The company should hold craft or sewing class
Other Comments	
1	The company has several Happy Body programs, some of them I haven't an opportunity to try.
2	Should arrange 10-15 minutes exercise before work or after brake so employees can feel fresh.
3	The company should have healthy food in menu.
4	Don't know detail of each program.
Appreciation	
1	Everything is good.
2	It is good that the company gives priority to exercise. I hope the company can maintain they good work like this forever.
3	Everything is good.

Happy Relax	
Time Restriction	
1	Good although not enough time.
2	Should arrange relaxed time 10 minutes in every 2 hours.
3	Should provide more time for employees to participate in each activity so they can be relaxed and happy.
4	Should add more time for activities
5	Work in Night Shift
6	Extend brake to 1 hour.
7	Want to be opened during weekend.
8	Work in night shift.
9	Good but no time
10	Not enough time.
11	Should have longer brake.
12	Just having meal, brake is over.
13	Brake time is just enough for eating. No time for something else.
14	Relaxed time is very limited.
Facilities	
1	Songs in karaoke room are dated. The machine frequently breakdown and always crowded.

Happy Relax	
2	Should update songs in karaoke room
3	Should add more computers that can access to the internet in Knowledge Center.
4	Should increase PC with internet access in knowledge center or allow employees to use them after work because they are unavailable in day time.
5	Don't have my favorite book and should have instruction for equipment. e.g. how to search.
6	The company shouldn't block G-mail and Facebook, at least unlock in brake time and count it as one kind of relaxation.
7	Should improve to maximum capacity.
8	Should provide napping room for night shift.
9	Should arrange space where employees can be relaxed.
10	Thai massage, movie theater during brake, nap rooms in every building.
11	Should have karaoke in building No.3 so employees can be relaxed.
12	Activities should be around canteen or on ground floor.
Event Request	
1	Should have sport day or company-sponsored trip.
2	Should have picnic activity every year.
3	Should bring employees to picnic because usually they work 6 days a week thus they don't have much time.
4	Want the company to bring employees to temple or to sea or Khao Yai.
5	Should promote events for special occasions e.g. New Year and give presents to every employee.
Program Request	
1	The company should bring employees to temple to make merit or bring them to zoo or natural park in order to encourage preservation mentality.
Other Comments	
1	Should arrange 10-15min exercise before work so employees can feel fresh.
2	Should have relaxed activity during work all over the company at the same time.
3	Should play music softly during brake so employees can be relaxed
4	Don't know detail of each program.
Appreciation	
1	Already good
2	Good
3	Satisfied with everything
4	Already good.
5	Everything is fine.

LION

Happy Body	
Time Restriction	

Happy Body	
1	Employees on some shifts cannot participate
2	Should have indoor gymnasium for many kinds of sport and open to 9.00 pm.
Facilities	
1	Should have indoor gymnasium for many kinds of sport and open to 9.00 pm.
2	Should improve sport facilities to appropriate standard.
3	Should conduct an examination in each equipment e.g. chairs, desks and computers for safety of employees.
4	Should have sport complex.
5	Should have sport fields with attendance seats for every kinds of sport.
6	No place to exercise.
7	Should improve and repair equipment in a fitness center.
8	Should improve fitness center.
9	Should support sport activities seriously by providing equipments, arranging places and holding activities continuously.
Event Request	
1	Should have activities every week.
Program Request	
1	Should have more variety of activities to fit all age.
2	Should have a kind of sport for the elderly.
3	Activities should be expanded for all kind and level of employees.
4	Should support many kinds of sport and continuously.
5	Should have more varieties of sport and should have more facilities.
6	Should arrange Thai and Western dance class.
7	Should hold an activity to teach about health
Other comments	
1	Should have a committee to motivate employees to attend these activities at least 3 times a week.
2	Should ask employees about their opinions and their will to join in each activity.
3	Already suggested but no respond.
4	Should sell healthy food.
5	It should be better advertised.
6	After annual health examination, doctors should give advice for employees with health problem.
7	Should force employees to exercise for benefit of their health.
8	Should follow the result of annual health check through a year.
Appreciation	
1	Already good
2	Excellent
3	Excellent
4	Good

Happy Relax	
Time Restriction	
1	Should have enough time and place.
2	Should find a time before asking this question.
Facilities	
1	Should turn conference room no.5 into a movie room in lunchtime.
2	Book corner should be peaceful and cozy.
3	Should have enough chairs for employees so they can sit and relax.
4	Should have karaoke rooms or boxes in canteen.
5	Library and karaoke room should be improved.
6	Everything is already good, but if there is indoor gymnasium, employees will be more relax.
7	Should have public library.
Event Request	
1	Should arrange making merit trip with family.
2	Should hold a petanque competition between departments to improve relations and this kind of sport is appropriate because it can be played by both sexes and all age.
3	Should have sport day in Sunday so every can participate.
4	New year party should be held long before the actual New year day so employees who live in other area can attend.
5	Should have relaxing activities in every month.
Program Request	
1	Should have more variety of activity.
2	The kind of relax activities can be more than those in example, it depends on each person
3	Should have music therapy program periodically around 4-5 songs a day.
4	Should have more variety of activities to fit all age.
5	Activities should more cover on operator level.
Other comments	
1	Should have a committee to motivate employees to attend these activities at least 3 times a week.
2	Should ask employees about their opinions and their will to join in each activity.
3	Employees should be allowed to change their workplaces but need to submit their works on time.
4	Should conduct a survey about how employees can be relax so activities can fit their needs.
5	It should be better advertised.
6	Employees should participate more. Besides, the company should have more readiness.
7	Should have employees club so they can exercise or getting together after work.
Appreciation	
1	Already good
2	Excellent
3	Excellent

Appendix E

Company Information and Total Employees' Distribution at NOK

Company Name:	NOK Precision Component (Thailand) Ltd
Establishment Date:	March 27th, 2001
Implementation Data of the HPW:	July 2006
Number of Employee:	1,845 Persons (as of 1st February 2011)
Location:	Bangpa-in Industrial Estate, Ayutthaya
Land Area:	46,400 m ² (29Rai)
Capital Registered:	360 Million Baht
Share Holder:	100% by NOK Corporation
Main Products:	Hard disk drive component and Electronic parts
Company Website:	http://www.nokpoc.com

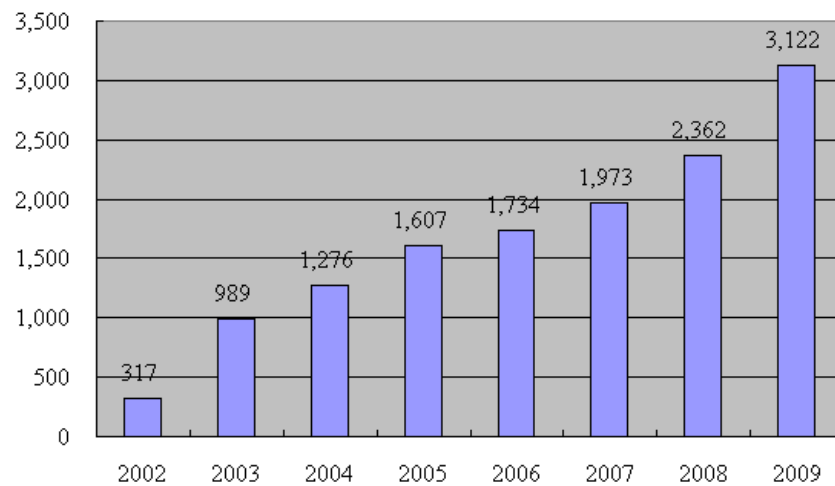
Variables (as of 1st February 2011)

		NOK	
		N	%
Gender	Male	217	11.3%
	Female	1703	88.7%
	Total	1920	
Age	18-22	247	12.9%
	23-27	685	35.7%
	28-32	760	39.6%
	33-37	181	9.4%
	38-42	23	1.2%
	43-47	12	0.6%
	48-52	12	0.6%
	53-57	0	0.0%
	58-62	0	0.0%
	63-	0	0.0%
	Total	1920	
Years of Service	Less than 1y	548	29.7%
	1y to less than 2y	476	25.8%
	2y to less than 3y	268	14.5%
	3y to less than 4y	77	4.2%
	4y to less than 5y	86	4.7%
	5y to less than 6y	100	5.4%
	6y to less than 7y	89	4.8%
	7y to less than 8y	79	4.3%
	8y to less than 9y	88	4.8%
	Over 9y	34	1.8%
	Total	1845*	
Education	Elementary (6y)	9	0%
	Lower secondary (9y)	332	17%
	Upper secondary general (12y)	858	45%
	Upper secondary vocational (12y)	233	12%
	Technical diploma (16y)	288	15%

	Bachelor or higher (16y)	181	9%
	Others	19	1%
	Total	1920	
Pregnancy	Normal	1644	97%
	Maternity Leave	16	1%
	Pregnancy	43	3%
	Total	1703	
Salary	Average	10,375	

Source: Human Resource Department at NOK

Amount of Sales (Million Baht) at NOK



Source: Human Resource Department at NOK

Appendix F

Company Information and Total Employees' Distribution at LION

Company Name:	Lion Corporation (Thailand) Limited.
Establishment Date:	March 5th, 1969
Implementation Data of HPW:	July 2003
Number of Employee:	1,025 Persons (as of 1st February 2011)
Location:	Bangkok and Sriracha
Capital Registered:	300 Million Baht (1999)
Share Holder:	Shahapattanapiboon Co., Ltd. and Lion Fat and Oil Co. Ltd.
Main Products:	Powder Shampoo and Detergent
Company Website:	http://www.lion.co.th/index.html

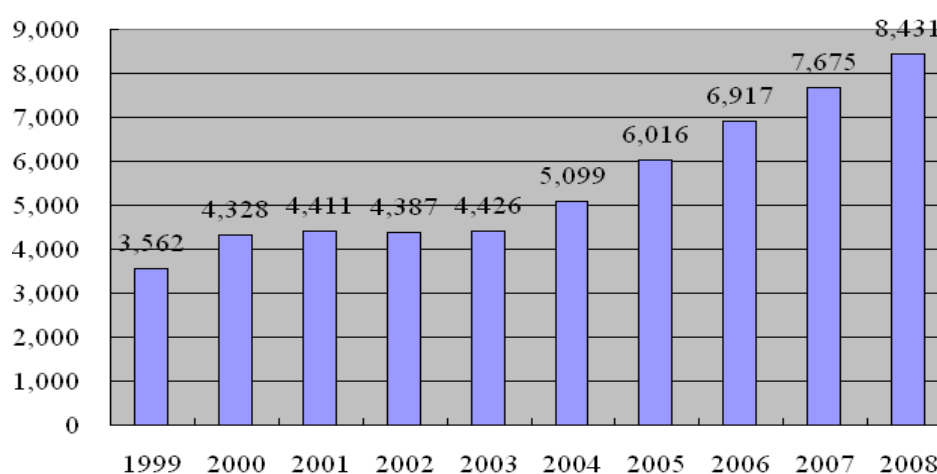
Variables (as of 1st February 2011)

LION

		N	%
Gender	Male	478	46.6%
	Female	547	53.4%
	Total	1,025	
Age	18-22	14	1.4%
	23-27	121	11.8%
	28-32	194	18.9%
	33-37	224	21.9%
	38-42	155	15.1%
	43-47	117	11.4%
	48-52	99	9.7%
	53-57	79	7.7%
	58-62	17	1.7%
	63-	5	0.5%
	Total	1,025	
Years of Service	Less than 1y	231	22.5%
	1y to less than 2y	136	13.2%
	2y to less than 3y	58	5.7%
	3y to less than 4y	63	6.1%
	4y to less than 5y	36	3.5%
	5y to less than 6y	28	2.7%
	6y to less than 7y	29	2.8%
	7y to less than 8y	14	1.3%
	8y to less than 9y	18	1.8%
	9y to less than 10y	3	0.3%
	10y to less than 11y	37	3.6%
	11y to less than 12y	28	2.7%
	12y to less than 13y	13	1.3%
	13y to less than 14y	38	3.8%
	14y to less than 15y	64	6.3%
	15y to less than 16y	35	3.4%
	16y to less than 17y	17	1.6%
	17y to less than 18y	14	1.3%
18y to less than 19y	13	1.2%	

	19y to less than 20y	14	1.3%
	20y to less than 21y	12	1.2%
	21y to less than 22y	10	1.0%
	22y to less than 23y	10	1.0%
	23y to less than 24y	5	0.5%
	24y to less than 25y	5	0.4%
	25y to less than 26y	3	0.3%
	26y to less than 27y	3	0.3%
	27y to less than 28y	5	0.4%
	28y to less than 29y	3	0.3%
	29y to less than 30y	7	0.7%
	Over 30y	74	7.2%
	Total	1,025 ¹⁴	
Education	Elementary (6y)	177	17.3%
	Lower secondary (9y)	108	10.5%
	Upper secondary general (12y)	52	5.1%
	Upper secondary vocational (12y)	76	7.4%
	Technical diploma (16y)	203	19.8%
	Bachelor or higher (16y)	299	29.2%
	Others	110	10.7%
	Total	1,025	
Pregnancy	Normal	1,009	98.4%
	Maternity Leave	9	0.9%
	Pregnancy	7	0.7%
	Total	1,025	
Salary	Average	24,900	

Amount of Sales (Million Baht) at LION



Source: Human Resource Department at LION

¹⁴ The number is calculated based on the proportion of numbers representing total employees including permanent and part-time which is provided by HR department at LION.

BIOGRAPHY

Mr. Shigeru Yamato

Gender: Male,

Nationality: Japan,

Civil Status: Married,

Date of Birth: 30-July-1978,

Family: Aki (Wife),

Language: Japanese (Native), English (Fluent), and Thai (Intermediate)

Education

2001-2002 One year all-inclusive scholarship's program,

Truman State University, Missouri, USA

1998-2003 B.A. in Economics, Hosei University, Tokyo, Japan

2009-2011 M.A. in Labour Economics and Human Resource Management,

Chulalongkorn University, Bangkok, Thailand

Employment

2003-2007 Global Business Department, Strategic Alliance,

NTT DOCOMO INC., Tokyo, Japan

2007-2011 Seconded to Mobile Innovation Co., Ltd., Bangkok, Thailand

(Joint venture between NTT DOCOMO and LOXLEY)

2012-Present Corporate Marketing Strategy Department, Global Planning,

NTT DOCOMO INC., Tokyo, Japan