ABSTRACT

Title of Document:	WORKPLACE HAPPINESS: ORGANIZATIONAL ROLE AND THE RELIABILITY OF SELF-REPORTING
	Hongyi Huang, Master's of Science in Civil Engineering with a focus in Project Management, 2015
Directed By:	Dr. Qingbin Cui, Civil and Environmental Engineering Department

Happier employees are more productive. Organizations across industry, no doubt, try to improve their employees' happiness with the objective to achieve higher profitability and company value. While this issue has drawn increasing attention in high tech and other industries, little is known about the happiness of project management professionals. More research is needed to explore the current situation of workplace happiness of project management professionals and the driving factors behind it.

This thesis explores the workplace happiness of project management professionals based on the exploratory statistical analysis of a survey 225 professionals in the state of Maryland. Two critical issues with respect to workplace happiness are investigated in this study: i) how reliable self-reporting is; and ii) how an organization can make an impact on its employees' happiness. The thesis applies Structural Equation Modeling and multiple regression analysis to the dataset and shows no significant impact of gender, age, work experience, or some other demographic traits on workplace happiness, also named well-being. On the other hand, organizations can improve workplace happiness by creating pleasant work environment, promoting open and well-organized team, and becoming good organization. It is interesting to note that the application of project management best practices will increase individual workplace happiness, especially for less-mature organizations. Furthermore, education on the meaning of work, e.g. what the employee's doing matters, makes a significant impact on workplace happiness by improving personal resources. With respect to the reliability of self-reporting, the study finds that the comprehensive appraisal tool designed by Happiness Works and New Economics Foundation can give a more reliable happiness evaluation. Two key factors, i.e. career perspectives and free to be self, can help alleviate the overconfidence of workplace happiness.

WORKPLACE HAPPINESS:
ORGANIZATIONAL ROLE AND THE RELIABILITY OF SELF-REPORTING

By

Hongyi Huang

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Advisory Committee:
 Professor Qingbin Cui, Chair
 Professor Gregory Baecher
 Professor Michael Fu
 Professor Jocelyn S. Davis

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I owe a deep sense of gratitude to my committee members: **Professor Jocelyn S. Davis** introduced me to the original research topic. With her tremendous efforts, Nelson Hart Company generously offered the data source collected in Project Management Institute Silver Spring Chapter for me to analyze as part of her Happy Project Manager initiative.

I thank profusely to **Professor Gregory B. Baecher** for inspiration in and out of his class. He had always been supportive throughout my study and research period.

I'm so thankful to **Professor Michael Fu**. His enthusiasm and dynamism enabled me to complete my thesis and defense. I'm also grateful for his encouragement.

Please also allow me to show my gratefulness to **Professor John H. Cable**, who has always been so kind to me, taught me knowledge and granted an awesome environment to my study and research.

The Happy PM initiative is using a survey designed by Happiness Works and the New Economics Foundation and customized by Professor Davis.

Last but not least, I would like to show my deepest love to my parents and friends. It is my luck to have a professor mom, **Professor Yanni Yu**. Even though her specialty lies in Pathology, her research spirit encouraged me. My best friend, **Ms. Clara Cheung** also gave me rich and precious suggestions for my thesis.

Table of Contents

List of Figures

List of Tables

Chapter 1: Research Background

Happier workers do help their company boost performance. Oswald et al (2009), Freeman (1977), Boehm & Lyubomirsky (2008), and Amabile &Kramer (2011) found that workplace happiness can help employees to achieve career success, improve their job satisfaction, and encourage them work harder; at the same time, the turnover rate of happy employees can be lower. Companies achieve higher profitability and decrease the healthcare costs. Workplace happiness can even positively impact other aspects of company operations, not only its productivity. Edmans (2012) revealed that the US's 100 best employee-satisfied companies generate a 2.3% to 3.8% higher stock return compared with the market average level.

However, what we saw from the current performance of large amount of employees was that they experienced high emotional feelings during the weekends, while their happiness turned down during the weekdays (Dodds et al, 2011). Terkel (1974) described these phenomena as "a Monday-to-Friday sort of dying".

Both academicians and industry leaders were seeking for better statistical practices to explore the workplace happiness and the driving factors behind it. Happiness Works (2014) and New Economics Foundation (2014) built up a model and designed a questionnaire (Shown in Appendix A) to explain the functioning relationships of the four critical constructs of happiness, which were personal resources, organizational system, functioning at work, and experience of work (Jeffrey et al, 2014).
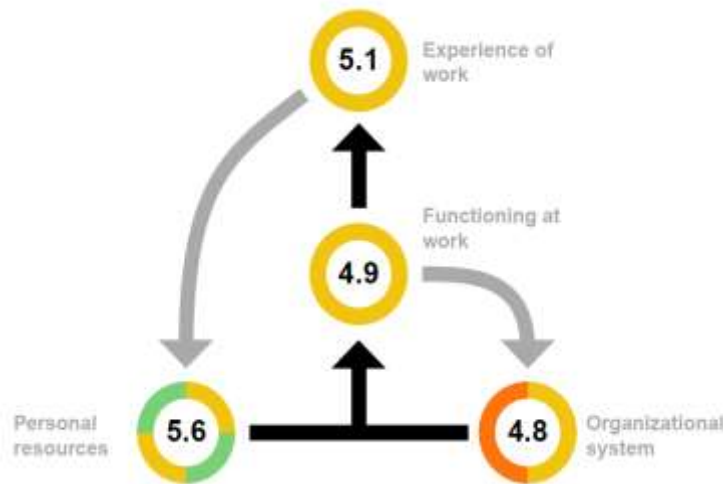
Figure 1 The dynamic model of well-being at work

Based on this questionnaire, a survey was conducted in Project Management Institute (PMI) Silver Spring Chapter, Montgomery County, Maryland and raw data was collected by Nelson Hart. With this data source, we conducted the exploratory statistical analysis to explore key factors impacting workplace happiness of project managers: The first research was to evaluate the validity and reliability of workplace happiness. The Happiness at work survey as customized includes 40 standard questions, one of which is summative. For purposes of evaluating the internal validity of the survey and test data set, we compared the responses to summative questions and to the results of the full survey response. This value was the self-reported value of the workplace happiness. There can exist differences between the summative result and the full survey response, if any, the driving factors behind this difference will deserve our attentions.

The second part of research was the systematical analysis of the data to explore the mechanisms of the happiness, within two of the four domains of the Happiness Work model: Organizational System and Personal Resources. The other two domains,

2

Functioning at Work and Experience of Work were not included in this analysis. This appraisal system used to be applied to survey the overall happiness status of employees from various industries. When we narrowed down our research boundary to project management (PM) professionals, a new model and its results can reflect the unique features regarding to our testers' group.

Chapter 2: The Difference between the "Real" Workplace Happiness and the Self-Reported One

1. Introduction

We sought to compare the results to the single, summative survey question and to the overall results of the survey. The internal validity of this sample data set was the initial part of our exploratory statistical analysis.

Myers and Diener (1995) define "happiness" in general as the experience of high-frequent positive affect, low-frequent negative affect, and an overall life satisfaction. Academically, the three aspects of happiness have been named as hedonic (Kahneman et al, 1999), eudaimonic (Waterman, 1993), and evaluative (Deaton, 2012). The hedonic aspect is more about people's subjective feelings and emotions. For example, people's evaluation of life satisfaction can reflect the hedonic part well. The high frequency of experiencing positive feelings and low frequency of suffering negative feelings is considered as a happier status. While, scholars such as Schimmack (2008) inserted that the illusion of happiness and even falsely perceived temporary happiness cannot be considered as indicators of "true" happiness. The eudaimonic school of views defined happiness as a truly well lived life, with a sense of competence and purpose. This state of life can help you meet basic psychological needs and interact with the

environment around you well. The evaluative aspect of happiness refers to people's own way of evaluating particular aspect of their lives.

Workplace happiness is also quoted as work-happiness or happiness at work. Fisher (2010) asserted the definition of workplace happiness as a construct that reflects pleasant judgments (positive attitudes), pleasant experiences (positive feelings, moods, emotions, flow states) or positive affective experience in the workplace. In Pryce-Jones' (2011) book, Happiness at work: Maximizing your psychological capital for success, workplace happiness was described as "a mindset which allows you to maximize performance and achieve your potential. You do this by being mindful of the highs and lows when working alone or with others."

Happiness is not only decided by personal characteristics, but also the social environment (McNulty, 2012). Workplace happiness has narrowed the social environment to the workplaces, which assesses mostly the happiness level influenced by their work and reflected in the workplace. On average, adults spend as much as a quarter to perhaps a third of their waking life in work. Research indicates that a fifth to a quarter of the variation in adult life satisfaction can be accounted for by satisfaction with work. (Campbell, Converse & Rodfers, 1976) These numbers again justify the work's affection to worker's happiness and emphasize the importance of workplace happiness to a person.

2. Methods

2.1 Sample and designs

In October, 2014, Professor Davis developed and deployed a pilot survey of the project in profession using the Happiness @ Work survey, including selected customized

4

questions and filters. Nelson Hart Company launched a research within the Project Management Institute (PMI) to start the investigation of the workplace happiness situation of project managers in a systematic and well-designed way. The survey was deployed through the PMI Silver Spring Chapter, Montgomery County, Maryland. Of 405 possible respondents, 225 completed the survey, resulting in a sample of sufficient size for statistical analysis, with response rate of 55.56%.

The respondents' participation was voluntary and anonymous. The only incentive offered to respondents was the receipt upon survey completion of their individual results (online). A briefing to the PMI Silver Spring Chapter, was presented an aggregated results by Professor Davis.

The demographic traits of the respondents demonstrated their diverse background：

- 50.2% of the sample were males, and 49.8% are females.

- Over 72% of these project managers are over 45.

- Further, 90.3% of them are full time employed by their company; 2.6% of them work at part-time. 49.8% of the PMs have joined in PMI over five years; and 97.3% of them have more than ten years' working experience.

- Finally, the ranges of the PMs' organizational type, occupation sector and current project type vary broadly. For example, 5.3% work for banking, financial and insurance, 0.9% construction, 17.6% consultancy, 4% defense, 2.2% education, 7% health, 36.1% IT product services, 0.9% pharmaceuticals,

4.8% telecommunications, 0.9% transport and logistics, 0.4% retail, and 19.8% others.

- Approximately 35.7% of the employees' companies are in private sector and closely held, 28.6% in private sector and public held, 29.5% in public sector, and 6.2% in charity or non-profits.

- 19.4% of the respondents also report their current project as pure project, 22.5% as functional, and 58.1% as matrix.

This sample dataset was representative in basic demographic traits, which cover gender, age, role, tenure, organization type, and sector. No key group was missed out, regarding to these important traits. Specifically, questions related to PM professionals were also listed in the survey, such as the maturity level of their project. In this survey, five levels of maturity models has been adopted which are AD HOC LEVEL with no formal PM process, data collection or analysis, PLANNED STAGE with informal PM process, data collection and analysis, MANAGED STAGE with partially formalized PM planning and control systems with informal documentation, and organization-wide focusing on project planning and management, INTEGRATED STAGE with formal, integrated PM processes, data collection and analysis, and able to deliver multiple projects effectively, and SUSTAINED STAGE with PM process, data collection and analysis formally documented, rigorously analyzed, and continuously improved (Davis, 2014).

The survey questions and its corresponding key words are shown in Appendix A: Survey Questions and Corresponding Key Words. The survey sheet consists of two

parts: ten demographic questions (such as gender, age and etc.) and forty happiness assessment questions (such as "Is it safe to speak up and challenge the way things are done within your organization?"). The forty assessment questions covered comprehensive aspects of workplace happiness.

2.2 Survey report

A report will be generated after each tester finishing his/her survey. The report has four layers. The first layer is the overall workplace happiness score; the second layer consists of four scales, including experience of work, functioning at work, organizational system and personal resources; the third layer consists of subscales regarding to the second layer. Each scale has four subscales. For example, positive feelings, worthwhile work, negative feelings and engaging work are the subscales to experience of work. The subscale length varies between one item (work-life balance), two items (worthwhile work, autonomy, sense of progress, social value, vitality, happiness and confidence), three items (positive feelings, negative feelings, self-expression, job design, and work environment), and four items (work relationships, and management system); the forth layer has the items regarding to the third layer. For example, enjoy work and organizational pride are items to positive feelings. There are forty items in total. The scores of the first (second/ third) layer are the arithmetic average of the corresponding factors (sub-factors/ items.)

3. Measures

We adopt multiple linear regression model as our exploratory research tool. In statistics, Freedman (2009) said that linear regression modeling is used to construct linear function(s) to assess the relationship between a scalar dependent variable y and

7

one or more indicators. To test the model parameters, we adopt progressive analysis in our research by gradually introducing more indicators into the regression model to reflect how better the later introduced indicators can help to explain the existing regression model. The regression models of difference between self-reporting and the "real" value can tell how much indicators can trigger deviations of the self-reported value to the "real" one. The coefficients of the indicators can reflect how they can impact the difference.

When significant subjective factors, demographic traits and their covariance are introduced to conduct test in the model, the function is shown below:

Subjective factors (x) + Subjective factors * traits (x*z) + traits (z) ~ Difference

$$\text{Difference} \propto \sum x_i + \sum x_i z_k + \sum z_k$$

x_i: Subjective factors

z_k: Traits

Here the difference is defined as the self-reported value minus the "real" value.

4. Results

Results of the regression analysis PM professionals are revealed in Appendix C. The score of difference is the self-reported score of workplace happiness minus the real one, which means that when difference is a positive value, participants over-estimate their real happiness level; and when difference is a negative value, participants under-evaluate their real happiness level. Before building up the regression model, we conducted some descriptive analysis first.

5.1 Survey data

- Overall Workplace Happiness

The overall workplace happiness was 4.74 (SD =1.36). 12% of the respondents reported that they had a stressful job. 27% of the respondents asserted that they had enough autonomy in the workplace. 53% of the respondents said that their job was a worthwhile one. 61% of the respondents felt they acquired enough motivation in the work. 50% of the respondents felt their organization is a good one to work for. 27% of the respondents agreed that their organization was well-managed. 38% of the respondents had a satisfying job. 49% of the respondents had an absorbing work. 44% of the respondents' work was not boring. 16% of the respondents reported their work was not frustrating. 32% of the respondents achieved balance between their work and life. 36% of the respondents can learn new skills in their work. 35% of the respondents can make influential decision. 40% of the respondents had job security. 24% of the respondents had high career prospects. 32% of the respondents had good friends at work. 44% of the respondents can be free to be themselves. 47% of the respondents can use strength in their work. 32% of the respondents felt their job was achievable. 40% of the respondents got fair pay.

- Gender and Workplace Happiness
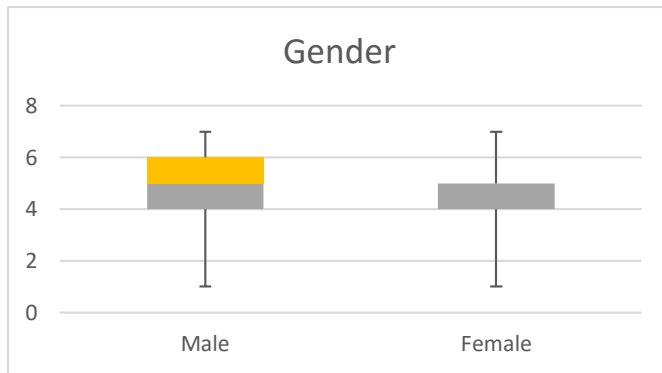
Figure 2 Gender and Workplace Happiness

Male (mean= 4.87, SD= 1.38) reported slight higher workplace happiness compared with female (mean= 4.61, SD= 1.32). Statistically, there is no significant difference in the workplace happiness between male and female respondents.

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Male	4.8684	50.7	1.38585	4.6113	5.1256
Female	4.6126	49.3	1.32233	4.3639	4.8613
Significance	0.158				

Table 1 Gender and Workplace Happiness

- Age and Workplace Happiness
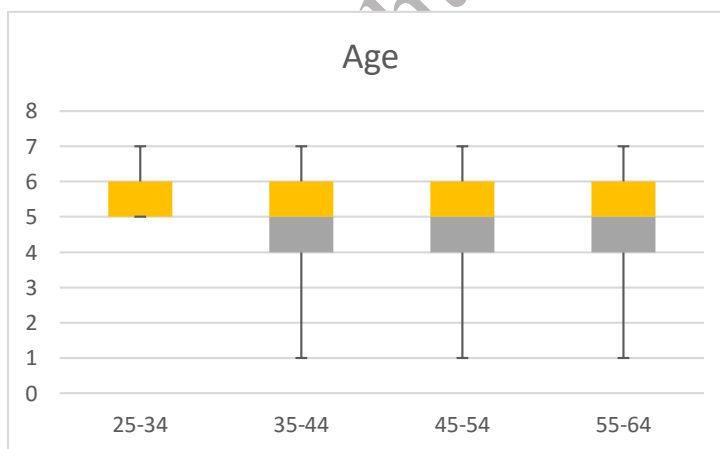
Figure 3 Age and Workplace Happiness

Employee in the age range of 45-54 (mean= 4.67, SD= 1.29) reported the lowest workplace happiness compared with other age groups. This difference was not statistically significant.

10

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
25-34	5.5000	3.6	.75593	4.8680	6.1320
35-44	4.7400	22.2	1.57545	4.2923	5.1877
45-54	4.6742	39.6	1.28607	4.4032	4.9451
55-64	4.7436	34.7	1.33325	4.4430	5.0442
Significance	.440				

Table 2 Ages and Workplace Happiness

- Time at Organization and Workplace Happiness
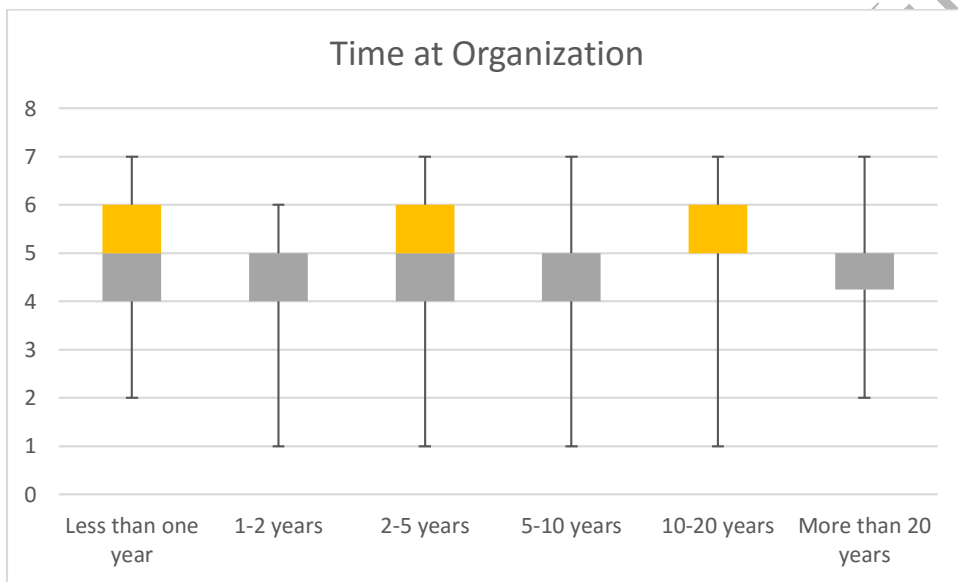
Figure 4 Time at Organization and Workplace Happiness

Respondents who had join in Project Management Institute for 10-20 years reported their workplace happiness as the highest (mean= 5.02, SD= 1.21). Meanwhile, respondents with only 1 to 2 years' experience reported the lowest happiness level (mean= 4.29, SD= 1.52) compared with other peer groups. No statistical differences between any of the two groups regarding to their time at organization.

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
					Upper
				Lower Bound	Bound

Less than one year	4.8966	12.9	1.26335	4.4160	5.3771
1-2 years	4.2857	9.3	1.52128	3.5932	4.9782
2-5 years	4.7419	27.6	1.42502	4.3800	5.1038
5-10 years	4.5455	19.6	1.45402	4.1034	4.9875
10-20 years	5.0213	20.9	1.20667	4.6670	5.3756
More than 20 years	4.7727	9.8	1.19251	4.2440	5.3015
Significance	.342				

Table 3 Time at Organization and Workplace Happiness

- Employment Status and Workplace Happiness

Figure 5 Employment Status and Workplace Happiness

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Full time	4.7745	90.7	1.34206	4.5892	4.9598
Part time	4.8000	2.2	.83666	3.7611	5.8389
Other	4.3125	7.1	1.66208	3.4268	5.1982
Significance	.424				

Table 4 Employment Status and Workplace Happiness

12

Respondents with employment status of part-time (mean= 4.80, SD= 0.84) reported slightly higher workplace happiness compared with full-time ones (mean= 4.77, SD= 1.34). These two groups of respondents had a much higher workplace happiness than respondents with other employment status (mean= 4.31, SD= 1.66). The differences of the results were not statistically different.

- Position and Workplace Happiness
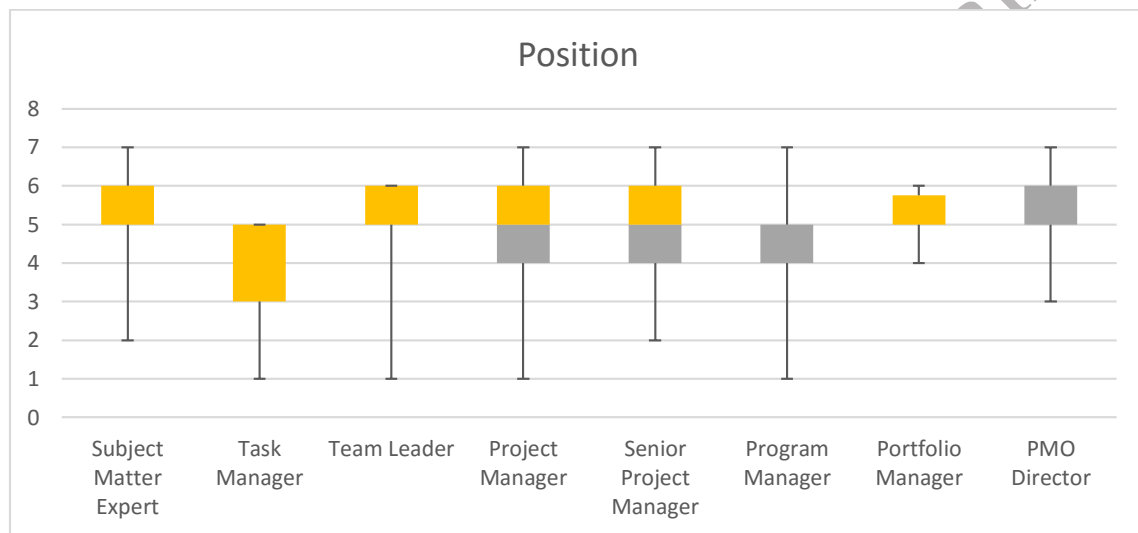
Figure 6 Positions and Workplace Happiness

Respondents with the position of task manager showed a significantly low self-reported happiness (mean= 3.33, SD= 1.58). Respondents in the position of the project level reported themselves happier than the task level. Respondents in the director level scored themselves high in their happiness, such as the portfolio manager (mean= 5.17, SD= 0.75) and the PMO directors (mean= 5.40, SD= 1.17).

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Subject Matter Expert	4.8788	14.7	1.45253	4.3637	5.3938
Task Manager	3.3333	4.0	1.58114	2.1180	4.5487
Team Leader	4.9231	5.8	1.38212	4.0879	5.7583

Project Manager	4.7368	33.8	1.37955	4.4216	5.0521
Senior Project Manager	4.8824	15.1	1.14851	4.4816	5.2831
Program Manager	4.5682	19.6	1.31887	4.1672	4.9692
Portfolio Manager	5.1667	2.7	.75277	4.3767	5.9567
PMO Director	5.4000	4.4	1.17379	4.5603	6.2397
Significance	.044				

Table 5 Position and Workplace Happiness

- Sector and Workplace Happiness
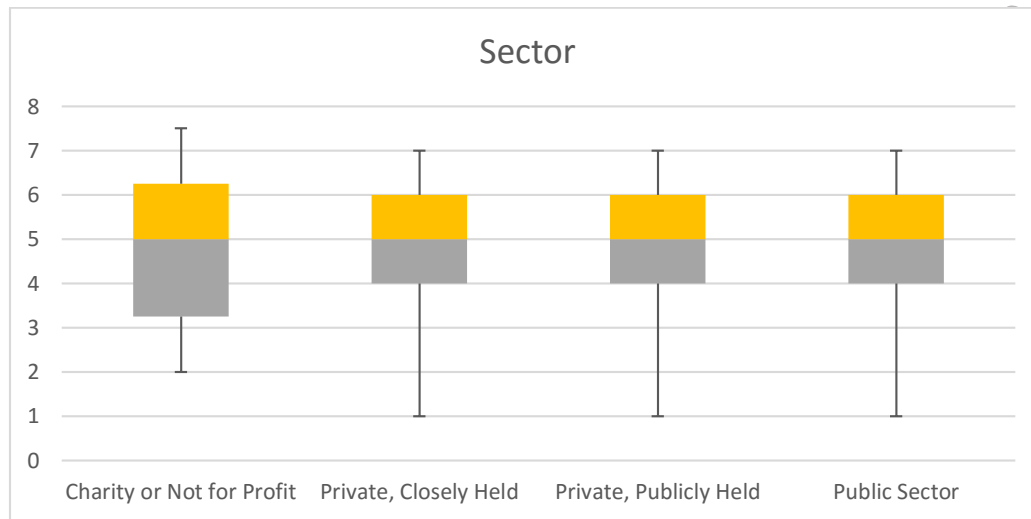
Figure 7 Sector and Workplace Happiness

Respondents worked in the public sector (mean= 4.88, SD= 1.35) were the happiest, rather than the ones in private, closely held (mean= 4.77, SD= 1.32), private, publicly held (mean= 4.60, SD= 1.40) or non-for-profit sectors (mean= 4.57, SD= 1.45). However, the results were not statistically significant.

	Mean	Std. Deviation	Percent	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
charity or not for profit	4.5714	1.45255	6.2	3.7328	5.4101
private, closed held	4.7750	1.32144	35.6	4.4809	5.0691
private, publicly held	4.6000	1.40089	28.9	4.2529	4.9471
public sector	4.8788	1.35323	29.3	4.5461	5.2115
Significance	.651				

Table 6 Sector and Workplace Happiness

14

- Working Experience and Workplace Happiness

Working Experience

Respondents who worked for 6-10 years (mean= 4.50, SD= 1.00) reported the lowest

happiness level, which matched with the seven-year itch saying. There was an increase

in happiness in the groups of 11-15 years (mean= 4.92, SD= 1.68) and 20-25 years

(mean= 4.95, SD= 1.34). The results were not significant.

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
6-10 y	4.5000	1.8	1.00000	2.9088	6.0912
11-15 y	4.9200	11.1	1.68127	4.2260	5.6140
15-20 y	4.5882	15.1	1.23381	4.1577	5.0187
20-25 y	4.9500	17.8	1.33877	4.5218	5.3782
More than 25 y	4.6694	53.8	1.33159	4.4297	4.9091
Significance	.414				

Table 7 Working Experience and Workplace Happiness

- Industry and Workplace Happiness

15
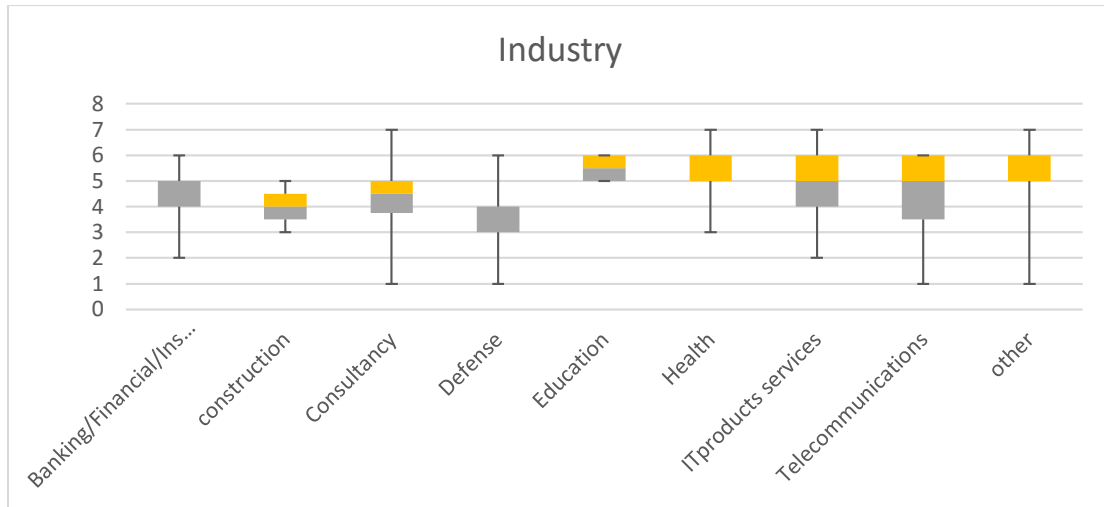
Figure 9 Industry and Workplace Happiness

The employees working for the defense sector (mean= 3.67, SD= 1.50) were the least happy group, while the ones working for the education sector (mean= 5.50, SD= 0.58) were the happiest. The second happiest employees (mean= 5.19, SD= 1.17) were from the health industry. The statistical comparison was significant.

	Mean	Std. Deviation	Percent	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Banking/Financial/Insurance	4.5833	1.16450	5.3	3.8434	5.3232
Construction	4.0000	1.41421	.9	3.4188	5.4142
Consultancy	4.2750	1.61702	17.8	3.7579	4.7921
Defense	3.6667	1.50000	4.0	2.5137	4.8197
Education	5.5000	.57735	1.8	4.5813	6.4187
Health	5.1875	1.16726	7.1	4.5655	5.8095
IT Products Services	4.8395	1.17746	36.0	4.5791	5.0999
Telecommunications	4.4545	1.63485	4.9	3.3562	5.5529
Other	5.1333	1.28982	20.0	4.7458	5.5208
Significance	.012				

Table 8 Industry and Workplace Happiness

- Current Project(s) Organized and Workplace Happiness

16
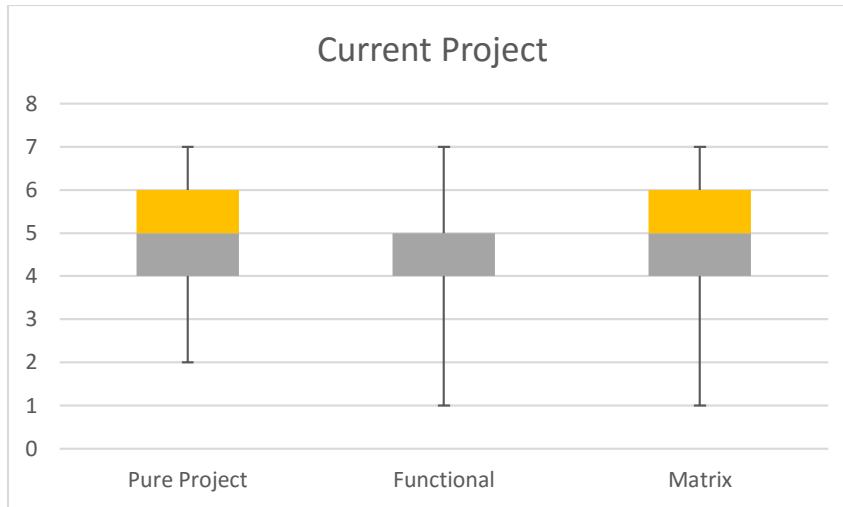
Figure 10 Current Project(s) Organized and Workplace Happiness

Employees working in the pure project were the happiest (mean= 4.98, SD= 1.21). The ones working in the functional project (mean= 4.73, SD= 1.38) and the ones working in the matrix project (mean= 4.67, SD= 1.40) reported a slightly lower happiness level. These results were not statistically significant.

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Pure Project	4.9773	19.6	1.21020	4.6093	5.3452
Functional	4.7347	21.8	1.38106	4.3380	5.1314
Matrix	4.6667	58.7	1.39611	4.4263	4.9071
Significance	.423				

Table 9 Current Project(s) Organized and Workplace Happiness

- PM Process Maturity Model Level and Workplace Happiness
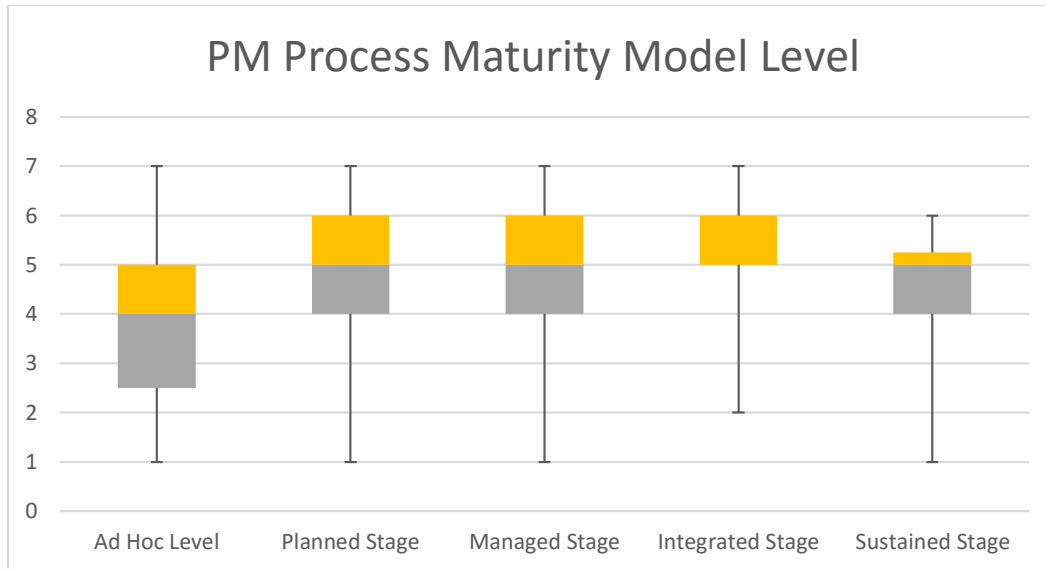
Figure 11 PM Process Maturity Model Level and Workplace Happiness

Employees in organizations using the ad hoc project management process (mean= 3.96, SD= 1.82) reported lower happiness at work than those with more mature project management processes. The results were statistically significant.

	Mean	Percent	Std. Deviation	95% Confidence Interval for Mean	
				Lower Bound	Upper Bound
Ad Hoc Level	3.96	10.2	1.82	3.17	4.74
Planned Stage	4.98	18.7	1.24	4.59	5.36
Managed Stage	4.80	45.8	1.29	4.54	5.05
Integrated Stage	4.95	16.4	1.08	4.59	5.31
Sustained Stage	4.50	8.9	1.57	3.76	5.24
Significance	.030				

Table 10 PM Process Maturity Model Level and Workplace Happiness

5.2 Descriptive statistics

Before assessing the possible existing difference in PM professional's workplace happiness self-reports, the statistical significance of the difference need to be tested. If the gap between the "true state of affairs" and the self-report is not significant, this difference can be tolerated.

18

SUMMARY						
Groups	Count	Sum	Average	Variance		
Self-reported workplace happiness	225	1067	4.74	1.84		
The real happiness	225	1161.3	5.16	2.18		
ANOVA						
Source of Variation	SS	df	MS	F	P value	F value
Between Groups	19.76	1	19.76	9.83	0.002	3.86
Within Groups	900.88	448	2.01			
Total	920.64	449				

Table 11 ANOVA analysis of self-reported value and real one

The real happiness (n=225) averages 5.161 (SD=1.476) and self-reported workplace happiness (n=225) averages 4.7422 (SD=1.358). Both variables are on 7-point scales. Linearity reflects variation due to a linear relationship between the variables. A small significance value (<.05) indicates that a linear relationship exists. Deviation from linearity reflects variation due to nonlinear relationships between the variables. Small significance value indicate that nonlinear relationship exist, for example, quadratic fill. Here, we the F factor of linear relationship is much larger than the one of nonlinear relationship. So, we interpret the relationship between "self-reported workplace happiness" and "the real happiness" as linear relationship, while the difference is still significant.

5.1 Correlations

In the correlation test, we tested the correlations between cognitive bias and indicators including demographic factors, subjective factors, and their covariance. Here, cognitive bias is the difference between self-reported happiness value and the "real" happiness one; demographic factors are the questions in the filter; subjective factors are the questions in the survey questionnaire; and the covariance are the products of demographic traits and subjective factors. We can tell that the demographic factors and

19

the covariance have no significant connections with the cognitive bias and demographic traits.

Table 12 tells us the inter-correlated relationships among the top three influential indicators and cognitive bias of workplace happiness. The top three highest correlated indicators are "free to be self", "influence decision", and "career prospects". The mean of cognitive bias of workplace happiness was -0.419, with standard deviation of 0.894. The threshold ranged from -1.3 to 0.48, which covered the original point. Testers reported their indicator of free to be self (mean=5.03, SD= 1.56), influence decision (mean= 4.77, SD= 1.47), and career prospects (mean= 4.16, SD= 1.65). All of the three the indicators are significantly negatively correlated to the cognitive bias. The results gave us support to introduce these three indicators into the regression model to test their predictive capability to workplace happiness.

Indicator	Mean	Std. Deviation	Correlations			
			1	2	3	4
(1) Cognitive bias of Workplace Happiness	-.4191	.89435				
(2) Free To Be Self	5.0311	1.55951	-.414**			
(3) Influence Decisions	4.7689	1.46991	-.399**	.415**		
(4) Career Prospects	4.1600	1.64783	-.397**	.295**	.629**	

** indicates significance index p<0.01

Table 12 Descriptive statistics and interrelationship among indicators

5.2 Regression

We introduced the indicators into the regression model to get the result regarding to the difference. The findings of this study revealed that the regression model was significant (F value= 20.42). "Career prospects" (b=-0.13) and "free to be self" (b=-0.20) were the two major predictors of the difference for PM professionals. These two indicators

20

explained 21.5% of the variance of difference. The constant score (b=1.09) was significantly positive, which represented that testers estimated their workplace happiness 1.09 more than their real level in a 7-point scale. When testers scored themselves higher in "career prospects" or "free to be self", their difference would be lower. When both the prediction values of "career prospects" and "free to be self" increased, the difference score can be even negative. "Influence decision" was also tested in the regression model to test its interpretive capability of this model, while this variable did not play as a significant indicator to difference.

Indicators	Coefficient	T value
(Constant)	1.094**	5.440
Career Prospects	-.126**	-3.769
Free To Be Self	-.196**	-5.534
Number of cases	225	
R Square	0.215	
F Ratio	30.423**	

**p<0.01; the original regression result shows in Appendix

Table 13 Regression model of the Cognitive bias

The overall results matched with our hypotheses well and meanwhile, some unexpected interesting findings also show up. The regression model satisfied with the significant coefficients and non-collinearity rules. The variance inflation factor (VIF) of the career prospects (VIF= 1.08) and that of free to be self (VIF=1.08) were lower than 3 (Kutner, Nachtsheim, and Neter, 2004).

5. Discussion and managerial implement

In the workplace happiness assessments derived from the questionnaires collected in Project Management Institute Silver Spring, MD chapter in October 2014 (response rate 56%), the self-reported happiness score averages 4.74 (r= 1.84), while the real

happiness score averages 5.16 (r=2.17). These project managers negatively interpreted their workplace happiness. This result suggests us to explore whether organization or individuals themselves can improve the accuracy in improving their self-reports' accuracy and also figure out the causes of the cognitive biases exist in happiness cognition.

6.1 Demographic traits

First, we conducted descriptive analysis on demographic traits to test their potential influence on cognitive bias. From these results, we can tell that no significant difference of their cognitive existed between male and female PM professionals. Testers in the age group of 35-44 showed slight lower cognitive bias compared with their peers in other age groups. This slight difference was statistically insignificant. Results regarding to the role showed that the only group which expressed limited positive bias on their workplace happiness evaluation was portfolio managers. The other groups of role had negative bias. Among them, the most negative bias happened to PMO directors, the mean of which was -0.69. Professionals with working experience of 6-10 years has smallest gap when predicting their workplace happiness. Employees working in projects with higher level of maturity did not show a significant improvement in their cognitive bias value.

6.2 Subjective factors

Then, the progressive analysis of linear regression told us that only one model was significant and can be adopted to explain the cause-result relationship between indicators and cognitive bias. Career prospects and free to be self were the indicators. These two indicators can pull down the overall over-optimistic status of employees,

which educated the organizations to search for measures to improve employees' prospects of their career and guarantee their employees enough space to be themselves.

- Career prospects

To improve career prospects, we should understand why some employees have low expectation from their own career. Employees set their prospects low, sometimes because they don't have strong interests to the work at hand. Organization can offer alternatives of job to employees to choose from. Within alternatives, employees will feel easier to find a job can be really compelling to them. The second possible reason of low career prospects can be lack of sources. With no enough industry information and having no idea of the long-term goals of their organization, employees might be restricted within their at-hand work and have no motivation to explore the unknown area which is beyond their own work. Unfortunately, the opportunities of their future career lie in the unknown area. To solve this problem, organization can subscribe career-specific consulting service or magazine to help their employees get updated with the new industry trends and advancements.

- Free to be self

For organizations, to improve the level of "free to be self" is to help employees develop their ability (self-actualization), and to educate employees to accept themselves (self-acceptance). Employees need support from their supervisors, co-workers, and subordinate in the process of developing their ability. Getting feedback from others and freely expressing their own opinions is the first step of constructing a free environment. These feedback and opinions should be constructive, rather than superficial judging words. The latter can destroy one's confidence and even decrease the motivation to

develop the ability. Organizations can set up feedback system to offer channels of employees' timely and effective communication. This is one of the key components of the new concept of "agile management" invented in IT industry, whose purpose is to provide high quality inter-communication system within the production supply chain, and make sure the flexibility of the system.

From manager's perspective, this results also indicated possible explanation to some odd survey results when managers wished to investigate the workplace happiness situation within their organization. By asking only employees themselves their psychological status, managers can only take the results as a reference. The single-source survey results can be affected by some cognitive bias sources. For example, if a tester perceived that low happiness is an indicator of the failure at work, and other people might know who filled in this piece of survey according to the demographic question answers and be judgmental, this tester got high pressure from external environment and deliberately scored him- or herself high somehow. Based on our research results, the effective way of improving survey quality can be: When knowing the group of testers have a general low career prospects or they are lack of flexibility and the feeling of free in their working environment, organizations had better adopt multi-source measurements to get a more accurate workplace happiness evaluation. However, cognitive bias will still exist, even we choose multi-source measurements. The bias sources can be from even more random cases. Taking the environment as an example, some people would feel naturally less happy when it rains. If the survey were conducted in a rainy day, it is possible that the overall happiness level drops. In a word,

we can only work on decrease the gap between actual situation and the results of survey report, rather than wishing this cognitive bias can disappear.

6. Conclusion

For self-reported workplace happiness results, difference can mislead the managerial strategies and threat the validity and reliability of the research. Researchers are trying to improve the accuracy of further workplace happiness research and help PM professionals (employees) to precisely perceive their own happiness level. Finding out the causes of difference is the precondition of controlling the self-report bias and preventing possible problems. This organizational behavior research adopted linear regression tool to model the relationship between indicators and difference. The effective indicators were career prospects and free to be self, which affected testers' cognitive bias in our research. Testers originally over-estimated their happiness level, while these two indicators can ameliorate the over-confidence situation by pulling down the difference score. The conclusion of this study tend to offer a new possibility to the general solution to happiness difference problems. However, the explanatory power of this model is not strong enough. We just tentatively identified some of the causes of difference within the limited information we have. More research need to be done to address other causes of this difference and draw the whole picture of the cause-effect relationship.

7. Study limitations

The present study first time provides the meta-analysis of the relevant factors and workplace happiness analysis of project managers. In professional environment, our research scope has been limited into a specific and work-related part. The assessment

approach has been adjusted to match with the topic. The hypotheses are suggested based on the previous well-acknowledged psychological and sociological research.

Replicated research with larger testing groups with PM professionals from more diverse occupational groups will be required to reinsure the conclusions we get here and test the undiscovered causalities of the inaccuracies happening in the self-reported results.

Chapter 3: Workplace Happiness of Project Managers: How Organization Can Make an Impact

1. Introduction

People have treated happiness as one of their ultimate goals for their whole life, which can be traced from 2000 years ago in Aristotle's teachings. For a long time, we have taken it for granted that people should shoulder the responsibility of their own happiness. As Connolly and Viswesvaran (2000) asserted, positive and negative personality traits have been found to predict workplace happiness. The stability of workplace happiness is dependent on genes and self-evaluation (Ilies and Judge, 2003).

Another school of thought, like Newman's (2013) thesis cited in the Wall Street Journal, provides an alternative perspective that organizations should start to take the responsibility of their employee's workplace happiness. The meta-analysis conducted by Parker et al (2003) focused on the organizational climate, which can predict 61% of job satisfaction in their model. Sirota et al (2006) found that a terribly managed organization can directly demotivate its employees.

A heated broad-based discussion as above has been happening for over two decades to actively increase employees' workplace happiness. Topics such as the rankings of the

26

happiest jobs are popular in business reviews (Forbes, 2015; Harvard Business Review, January- February, 2012); and research is scattered among fields like management science (Rego & Cunha, 2008; Ilies et al, 2006), applied psychology (Boswell, 2005), and social science (Diener, 2009; Headey, 2008). Yet when we narrowing down our research boundary to PM professionals, limited prior research has been found. In other words, workplace happiness of PM professionals has been overlooked (Huemann et al, 2007).

PM professionals need to be happy. First, PM professionals interact with people often. Happy people are less cautious and protective in social situations (Argyle and Crossland, 1987), while unhappy counterparts report getting less attention, including feedback from co-workers and supervisory support (Staw, Sutton, & Pelled, 1994). Second, PM professionals are supposed to have high control over the project process and are meant to handle the stress well. Myers & Diener (1995) asserted that unhappy people are more prone to stress symptoms. Third, PM professionals should be decisive and proactive in order to approach chances and deal with risks. Unhappy people are less optimized about upcoming events and feel lower control over the problems happening around them (Dember & Brooks, 1989; Seligman, 2011).

Projects are strongly goal-focused. Limited resources, time and budget allowances can be used to complete a project (Huemann et al., 2008). It is a challenging task to manage a project. Project managers do not only need to improve their own working efficiency, but also to ensure the productivity of the whole team and coordinate the different parts of a project. Can we take the general empirical method into improving project managers' performance by increasing their happiness? The existing research tells us

27

that little workplace happiness research has been conducted into PM professionals. Without convincing research results, it is understandable that organization leaders are skeptical of the role of organizations in improving employees' workplace happiness and hesitate to invest in it.

2. Perspectives on Workplace Happiness

2.1 Organizational Effects

The surroundings and physical conditions are discussed with topics like workplace safety and ergonomic workstation designs. The components of the tangible workplace environment can be as small as having safe drinking water or as huge as the construction of the work building.

Organization is responsible for offering employees a safe and comfortable working environment. Maslow (1943) mentioned in his human motivation pyramid model that without satisfying people's physiological and safety needs, it will be harder to motivate people to chase after higher goals, including achieving happiness. Safety hazards arise from time to time, especially when organizations overlook safety training or are under high production pressure (Brown et al, 2000). Even more recently, with the invention of highly intelligent machines meant to replace human labor in high physical risk jobs, we can still find that on average 11 American employees die on their job per day (National Safety Council, 2015).

To optimize the safety of physical working environments, employee-centered studies like those about Human factors (Ergonomics) are being considered by researchers. The International Ergonomics Association (2000) contended that taking into account the interaction between humans and other elements in their workplace is the crucial

antecedent to employees' happiness, health and safety, concentration, and the overall performance. By adjusting the physical details following the human factor instruments, such as Six Sigma and lean management, people's work efficiency can be improved, and their work injuries and psychological hurts can decrease. Providing empirical support for the hypothesis, Silverstein (2012) tested the physiological and psychological strain of the coffee plant worker before and after their adopting the improved coffee bag. Their strain was significantly alleviated both subjectively and objectively. The general conclusion we can get from all these studies is that staying in a safe, clean, and comprehensive tangible working environment is the precondition of employees' workplace happiness. Although the researchers mentioned here understand that the impact from other channels can also affect workplace happiness, they set their conclusions by assuming that employees can be immediately affected by the physical environment where they stay.

Employees stay both in the smaller climate of their team and the larger climate of their organization (Parker et al, 2003). Researchers hold the perspective that there is a compelling argument that cultural and social conditions influence happiness. Proponents of this thinking highlight that the intangible condition of an organization influences inter-personal collaboration, and personal development. The psychological climate is the precedent of psychological indexes, such as workplace happiness.

A team, as the basic collaboration unit in an organization, is more than a group of people working together. Within the team, employees get influenced by their co-workers and direct managers. A team represents a group of people effectively and cohesively collaborating to achieve certain objectives under a systematic

29

administration (Katzenbach, 1996). This thinking connects a well-managed team with multiple criteria including good leadership, group members with team spirit, a clear job perception, target setting, and performance appraisals. Eisenhardt (1997) commented in the Harvard Review that a good leader has been described as one who can encourage team members to achieve a higher level of participation, collaboration, and cooperation. A well-managed team can offer administrative and organizational support to its team members. Prior quantitative research results support that a better team climate has a positive relation with a higher level of psychological well-being, such as the survey of the Team Climate Inventory and the General Health Questionnaire (Rose et al. 2006).

In Jim Writehurst's book the Open Organization: Igniting Passion and Performance, the four principles that are listed as transparency (to share information early and often), authenticity (to be real and down-to-earth always), access (to make the information available and easy-to-use to people in need) and openness (to be open and avoid hurdles and hoops). He also gives a clear definition of open organization, that is, "an organization that engages participative communities both inside and out—responds to opportunities more quickly, has access to resources and talent outside the organization, and inspires, motivates, and empowers people at all levels to act with accountability." With the improvement of openness in organization, job satisfaction can be improved and anxiety and depression will decrease.

A good organization in which to work means that the organization itself is good and also it has a good reputation. The perception of an organization's image can indirectly influence internal stakeholders, especially those employees, by the way of how

outsiders evaluate the organization (Hatch and Schultz, 1997). When employees trust their organization is a good one, it gets easier for them to build up organizational commitment and become more self-motivated in their work environment. About the high reputation, there are two possible explanations found in prior research (Carmeli and Freund, 2002; Riordan et al, 1997): one is that a good reputation can influence other aspects of well-being, such as job satisfaction, and then indirectly influence the final status of well-being; the other explanation is that a good reputation can make the employees' business with the external stakeholders easier, thereby having a 'direct' impact on the employees' personal experience and then the well-being level can be improved. All in all, in both explanations, 'good organization in which to work' is the root reason to positively influent well-being.

2.2 Personal Indicators

People can be happier with their own efforts. Maintaining good health is the first step. Personal health is influenced by various aspects like genetics, environment, and individual behaviors. These three aspects will not act independently and as an ordinary adult spends more than 1/3 of his or her week days in a working environment, their health is definitely affected by the working environment's conditions. Heavy workload, inappropriate drinking amount, unscheduled overtime, or long-time traveling can bring negative influences to one's health. When people continuously feel strained, they are three times more likely to get a heart problem and five times more likely to get certain cancers (Shain and Kramer, 2004). Bad office air quality, poor lighting, and uncomfortable thermal environments can also affect employees' health and well-being. Bad health can decrease one's working efficiency and increase the financial and time

costs of the company. Here we focus on workplace happiness, which mainly emphasizes psychological performance. Physical well-being is introduced to the model as an indicator, not within the scope of outcomes.

Ryan and Frederick (1997) mention that vitality reflects well-being. Vitality is explained as "having energy and spirit" in hedonic statements and as "growing in many positive ways" in eudaimonic ones (Spreitzer et al 2005). In other research, vitality has been interpreted as feelings of energy (Stewart et al, 1992), vigor/activity (McNair, Lorr, and Doppleman, 1971), and full of pep (Thayer, 1987). Vitality can indicate personal health-related concerns, and the free of psychological negative feelings (tension, depression, anger, confusion and fatigue). In brief, the sense of vitality is a unique factor, which can represent the subjective perception of the nexus of the convergence of physical and psychological parts.

Happiness has been widely discussed on the personal level (Fisher, 2010). From the "top down" view, personality and past experience largely decide people's overall happiness. For example, faced with the same situation, some individuals react naturally happier than others (Diener, et al., 1999). The most famous "top down" theory based on this thesis is the set point theory, which asserts that each individual maintains a relatively stable level of happiness and it is prone to get back to this level after external positive or negative disturbances (Brickman et al, 1978). This 'set point' theory has been reexamined in the Dynamic Equilibrium Model of Heady and Wearing (1992). Bringing this theory to our discussion, that is to say that a naturally happier employee can achieve happiness more easily in the working environment.

When using the "bottom up" view to explain the impact of personal happiness on workplace happiness, proponents of this thinking contend that the unclear line between work and personal life contributes to this phenomenon. The famous "bottom up" theory is developed by Diener, Sandvik and Pavot (1991) that the overall happiness assessment is from the percent of time individual's experienced net positive feelings. Favorable experiences in their personal life, such as getting married or having new-born babies, can stimulate a good mood to work and improve the employee's tolerance to difficulties at work; on the other hand, unfavorable experiences in their personal life, such as getting divorced, can disturb an employee and make them feel frustrated and fragile, eventually decreasing their working efficiency. So, even if we highlight the importance of a professional attitude in our work, work life and personal life are hard to tear apart and personal happiness can impact workplace happiness.

We hypothesized that attributes of the organization and attributes of the person both can influence workplace happiness. However, since individual employees are our unit of analysis, we predicted that people have a higher capability of control over their workplace happiness.

Hypothesis 1: Employees can be happier with their own efforts; meanwhile, organizational factors can impact workplace happiness directly.

2.3 Moderators

Demographic traits, like role and/or the maturity level of the project can play the role of moderator in the model. The project management maturity instrument is developed by following PMI's PMBOK® Guide's 10 Knowledge Areas (Project Management Institute, 2013). The purpose of inventing this set of evaluation criteria is to provide a

33

logical path for progressive development and a strategic plan for advancing project management improvement within the organization. Some research reflected that this tool gave the PMs realistic milestones for short and long-term priorities and also help overcome organization cultural barriers (Crawford, 2006). Increasing the maturity level of a project is an excellent adaptation and implementation of PM tools and processes.

Hypothesis 2: Demographic trait(s), such as role and PM maturity level, play the role of the moderator on the relation between organizational factor and workplace happiness.

2.4 <u>Other Indicators</u>

Societal benefits is also called as the increase of the societal welfare. Societal benefits mentioned here is the benefits created by the course of actions made by company and have impacts to its employees, such as increasing the living standards of employees and supporting those who need help. Societal benefits includes all the private benefits and the external benefits of production and consumption.

The approaches company takes to improve social benefits can be decreasing the pollution brought by its production process or donating money to charities and civic organizations. To increase the benefits company brings to the society can improve the company's corporate image (how the public looks the company's goodwill toward society, customers, employees and other stakeholders) and marketing image (the way people evaluate the quality of the company's overall marking offer and mix). In this way, the perceived external prestige (PEP) is also improved.   Perceived external prestige is a concept to view the approach how employees perceive their company/

organization on the base of their exposure to information of their company/organization.

Companies put consumerism at the center, because benefiting their clients can spur sales and keeping loyal client sources. After years of empirical study, companies also surprisingly noticed that incenting client benefits can also motivate and satisfy the employees who interacted with clients well and perceive work as a moral duty. The quantitative based research help to confirm this view. For example, Berg et al (2010) found that salesmen who would spend time on amusing clients to build rapport with them can be more optimized about their work. Bunderson and Thompson's (2009) quantitative survey of the zookeepers made the point that when perceiving their work as creating values to the clients, rather than just cleaning cages and feeding animals, zookeepers have higher motivation to focus on small tasks.

Considering that these two indicators both provide meaningfulness to employees' work content, we named this latent variable as "meaning at work" and predicted the third hypothesis as below:

Hypothesis 3: Other factor has positive or negative influence on PM's workplace happiness, sequentially through the personal factor.

2.5 Summary of Model Relationships

Depending on the three hypotheses and their derivation processes, we drew the conceptual model as Fig. 1. The attributes of three aspects (organizational system, personal resources, and other factor) can contribute to workplace happiness. From Hypothesis 1, organizational system and personal resources influence workplace happiness independently. To improve the reliability of this model, we also tested the

indirect effect of organizational system through personal resources. The same here, when testing the effect of other factors which occurs indirectly through personal resources, illustrated in Hypothesis 3, we also verified the possibility that other factors might impact workplace happiness directly. Meanwhile, as mentioned in Hypothesis 2, the uniqueness of the research scope of PM professionals enabled us to test the possible moderating effects of role and/or project management maturity level in the conceptual model.

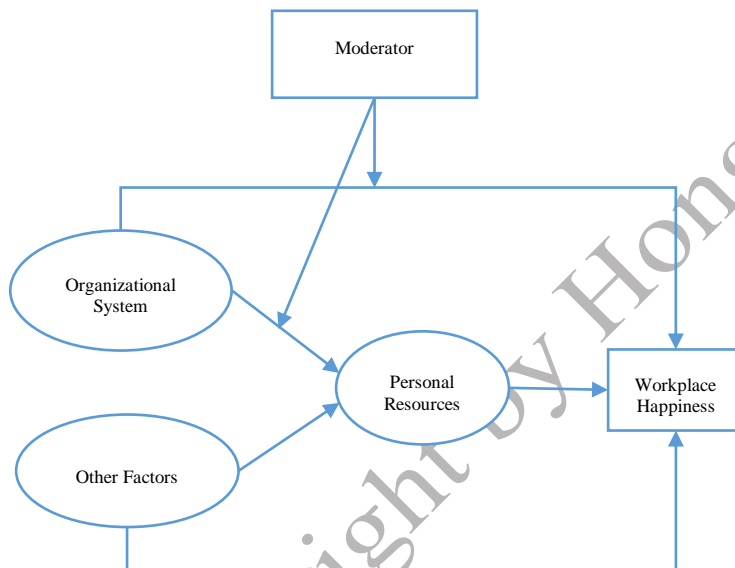*Figure 12   Conceptual model of workplace happiness*

3. Methods

We addressed the research issues described above using data from the PMI Maryland survey of 225 PM professionals. The predominant analysis method is a structural equation model (SEM), which allows us to test the cause and consequence relationships between multiple latent constructs with their own indicators. (Chin, 1998)

3.1 Sample and design

In October, 2014, Nelson Hart Company launched a research within the Project Management Institute (PMI) to start the investigation of the workplace happiness situation of project managers in a systematic and well-designed way. PMI, as the largest professional project management organization has the most comprehensive human resource of project managers for this research. The survey was conducted on the PM professionals from the PMI Silver Spring Chapter, Montgomery County, Maryland. Of 405 electronic surveys initially distributed to the PM professionals in October, 2014, 225 were filled out and returned. Of the returned surveys, 225 were sufficiently complete to be considered in the statistical analysis, producing an effective responsive rate of 55.56%.

The respondents' participation was voluntary and anonymous. No incentives were offered to their participations. Of these respondents, 50.2% of the sample were males, and 49.8% are females. Over 72% of these project managers are over 45. Further, 90.3% of them are full time employed by their company; 2.6% of them work at part-time. 49.8% of the PMs have joined in PMI over five years; and 97.3% of them have more than ten years' working experience. Finally, the ranges of the PMs' organizational type, occupation sector and current project type vary broadly. For example, 5.3% work for banking, financial and insurance, 0.9% construction, 17.6% consultancy, 4% defense, 2.2% education, 7% health, 36.1% IT product services, 0.9% pharmaceuticals, 4.8% telecommunications, 0.9% transport and logistics, 0.4% retail, and 19.8% others. Approximately 35.7% of the employees' companies are in private sector and closed held, 28.6% in private sector and public held, 29.5% in public sector, and 6.2% in charity or non-profits. 19.4% of the respondents also report their current project as pure

project, 22.5% as functional, and 58.1% as matrix. This database was diverse in basic demographic traits, which cover gender, age, organization type, and sector. No key group was missed out, regarding to these important traits. Specifically, questions related to PM professionals were also listed in the survey, such as the maturity level of their project.

The survey questions and its corresponding key words (shown in Appendix A: Survey Questions and Corresponding Key Words) was designed by Happiness Works and New Economics Foundation. The survey sheet consists of two parts: ten demographic questions (such as gender, age and etc.) and forty happiness assessment questions (such as "Is it safe to speak up and challenge the way things are done within your organization?"). The forty assessment questions covered comprehensive aspects of workplace happiness.

3.2 Survey report

A report will be generated after each tester finishing his/her survey. The report has four layers. The first layer is the overall workplace happiness score; the second layer consists of four scales, including experience of work, functioning at work, organizational system and personal resources; the third layer consists of subscales regarding to the second layer. Each scale has four subscales. For example, positive feelings, worthwhile work, negative feelings and engaging work are the subscales to experience of work. The subscale length varies between one item (work-life balance), two items (worthwhile work, autonomy, sense of progress, social value, vitality, happiness and confidence), three items (positive feelings, negative feelings, self-expression, job design, and work environment), and four items (work relationships, and

38

management system); the forth layer has the items regarding to the third layer. For example, enjoy work and organizational pride are items to positive feelings. There are forty items in total. The scores of the first (second/ third) layer are the arithmetic average of the corresponding factors (sub-factors/ items.)

4. Measures

Five indicators were included in the survey to measure organizational system, based on the previous literature reviews. Responses varied from 1 (totally disagree) to 7 (totally agree). The Chronbach's Alpha equaled to 0.849, which meant each indicator was aggregated well within the scales to collectively build the construct of organizational system. We tested the explanatory capability of the indicators by using principal components factor analysis with varimax rotation. Five indicators explained 62.76% of the variance. Since the factor loadings of the indicators are greater than 0.5 (Brown et al, 2000), we chose to treat them all as effective ones.

Subdomain	Indicator	Factor Loading of PCA	Factor Loading of CPA
Organizational System	Team Well Managed	.657	.90
	Organization Well Managed	.810	.54
	Pleasant Environment	.654	.61
	Open Organization	.744	.65
	Good Organization To Work	.838	.91
	Constructive Feedback	.690	<0.5
	Trusted By Manager	.557	<0.5
	Fair Pay	.288	NA
	Job Security	.205	NA
	Achievable Job	.072	NA
Meaning of Work	Customer Benefits	.872	.84
	Social Benefits	.862	.89
Personal Resources	Personal Health	.717	.69
	Sense of Vitality	.852	.91
	Personal Happiness	.638	.66
	Personal Resilience	.670	.53
	Self-Confidence	.659	<0.5
	Work-Life Balance	.228	NA
	Supportive Relationship	.228	NA

*P value<0.01
Table 14 Factor Matrix

39

Personal resources were assessed by four indicators:. These indicators were scored on seven- point scales, from 1 (totally disagree) to 7 (totally agree). The Chronbach's Alpha equaled to 0.781. This also represented a well aggregation of the indicator's scales. Principal component factor analysis revealed that these four factors can have explanatory capability of 60.88% to the variance of the latent variable; and the factor loadings fit well.

The construct of other factor was named as meaning of work. Meaning of work has two indicators to measure, which used the same scoring scales as above. The Chronbach's Alpha equaled to 0.853, which also met up with the aggregation criteria. These two indicators explained 87.66% of the variance in PCA test and the factor loadings were over 0.5. The indicators of the three constructs and their corresponding data are shown in Appendix B.

5. Results

5.1 Descriptive Statistics

Table 1 offers descriptive statistics of mean, standard deviation, and inter-correlations of constructs in the model. Workplace happiness is significantly correlated with all the three constructs, which reflects the possible cause-effect relationships exist among any of these three constructs and workplace happiness. Two constructs, organizational system and meaning of work, are respectively significantly correlated with personal resources, which verify the necessity of testing the possible indirect effect from these two constructs to workplace happiness, sequentially through personal resources.

Variable name	Mean	Std. Deviation	Correlations			
			1	2	3	4
(1)Workplace Happiness	4.7422	1.35793				

40

(2)Organizational System	4.8951	1.21509	.614**			
(3)Personal Resources	5.2267	.85517	.345**	.349**		
(4)Meaning of Work	5.2756	1.31597	.481**	.407**	.219**	

** indicates significance index p<0.01
Table 15 Descriptive statistics and interrelationship among constructs

5.2 <u>Validity Test of the Measurement Model</u>

Before conducting the structural regression model test to analyze the relationships among the constructs, we need to test whether the collected data of each construct fits our understanding of the nature of the construct and the preliminary hypothesized model by using confirmatory factor analysis (Jöreskog, 1969). The construct validity test results show in Fig.13. The factor loadings of the indicators associated with each of the three latent constructs are listed in this figure. These results matched with the expectations we had when we built up the model and the design of the survey, even some indicators of original survey was dropped out because their weak capability in explaining the latent factors variance. The standardized factor loadings are statistically significant, and their average is 0.74.

Both the principal factor analysis and the confirmatory factor analysis were conducted within the sub-groups of indicators of organizational system and personal resources. The indicators in groups of functioning at work and experience of work were not tested.
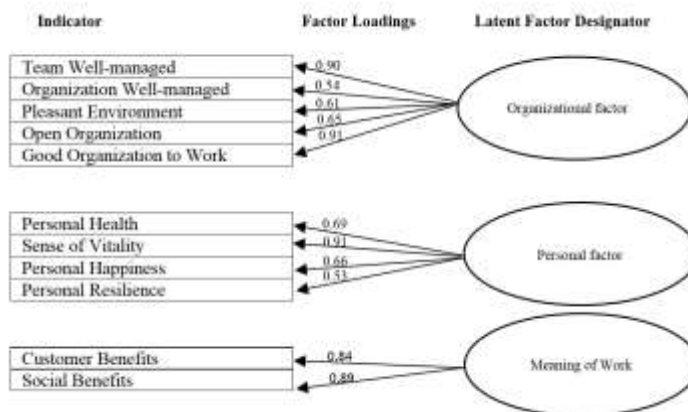

Figure 13 Baseline Measurement Model.

41

Beyond validating the latent factor designator by confirmatory factor analysis, different factor tests for discriminant validity were also conducted, by assuming single factor model or two- factor model can have a better model fit, rather than a three latent factors one. Any of these later suggested model presumed that any two, or even all three of the latent factor in the original model were measuring the same construct, and they were not supposed to be separated manually. The model fit test results shown in the Table 2 later designed constructs presented worse model fitting results compared with the baseline model, with much higher Chi-square value, and RMSEA and much lower CFI, IFI, and PCFI reassured that the validity of the design of the latent factors in our model. Here, CFI and IFI indicate the model fit extent, and reaching 0.9 or greater would indicate good model fit (Hu & Bentler 1999). PCFI equals 0.6 or greater meets up with model retention expectation (Williams and Podsakoff, 1989). RMSEA values less than 0.1 is acceptable fit (Kline et al, 2011).

Model	Chi-square	df	CFI	IFI	PCFI	RMSEA	Chi-square difference	df	CFI difference
Baseline measurement	78.978	41	0.964	0.965	0.719	0.064			
Two- factor model									
Equate organizational system and meaning in workplace	231.949	43	0.823	0.825	0.644	0.14	152.971	2	0.141
Equate personal resources with organizational system	299.469	43	0.76	0.763	0.594	0.163	220.491	2	0.204
Equate personal resources with meaning in workplace	281.054	43	0.777	0.78	0.608	0.157	202.076	2	0.187
Single factor model									
	446.77	44	0.623	0.627	0.499	0.202	367.792	3	0.341

Table 16 Fit indices of possible measurement models

5.3 <u>Structural Equation Model (SEM) Results</u>

Based on the three hypotheses depicted in Fig. 12, we built up three structural equation models to respectively examine the indirect/direct effects of organizational system and meaning of work on workplace happiness. In effective model with good model fit and significant paths, we prove or disprove the hypotheses using the statistical regression results. In the first structural model, we tested whether the organizational system and meaning of work influence workplace happiness indirectly through their effects on personal resources firstly. Then the second model introduced direct impact paths from organizational system to workplace happiness and/or from meaning of work to workplace happiness, to testify whether there existed direct impact without the moderation of personal resources. Lastly, only direct links were kept for organizational system and meaning of work; and we assumed these two latent factors had no impact on personal resources in the third model. All these three models were tested in SPSS AMOS program. The significance of model paths was been examined (shown in Fig. 14-16), and four fit indices, including CFI, IFI, PCFI, and RMSEA were used in assessing the model fit.
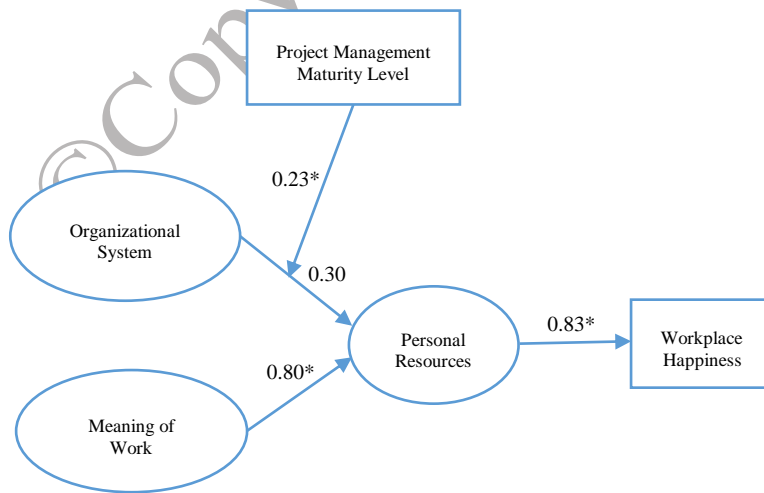

Figure 14 Indirect effect model

The first model is to test the indirect effect, following with our organization/meaning of work-person sequence hypothesis. The fit indices and structure parameters significance were estimated, revealed in Fig 14. Because the coefficient for the path from organizational system to personal resources was insignificant, which did not allow us to adopt this model for further explanation. We chose to remove the link from organizational system to personal resources and moved on to test the next model.

Figure 15 Dual effect model.

The second model depicted in Fig. 15, examined the property of adding direct path(s) from organizational system (meaning of work) to workplace happiness to the previous model. When only considering the organizational system influenced on workplace happiness outcomes directly, rather than sequentially through personal resources, the model got a well explanatory result. The model fit indices met with the statistical

44

requirements. All the coefficients of the path are significant. Noticeably, the path from the project management maturity level to organizational system had a significant coefficient of 0.21, which confirmed with the Hypothesis 3 that improving the project management maturity level can modify employees' workplace happiness by influencing organizational system.

While, when adding the other direct path from meaning of work to workplace happiness, the model solution became inadmissible, with a non-positive defined covariance matrix. Even AMOS can produce estimates of variances and covariance in this case, this model was still perceived as inadmissible. So we only kept the first direct path (depicted as a solid line in Fig. 14) and deleted the second one (depicted as a broken line in Fig. 15).
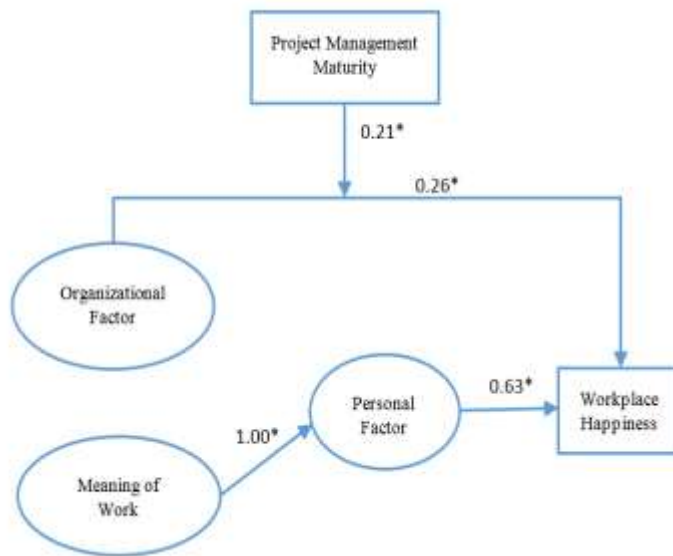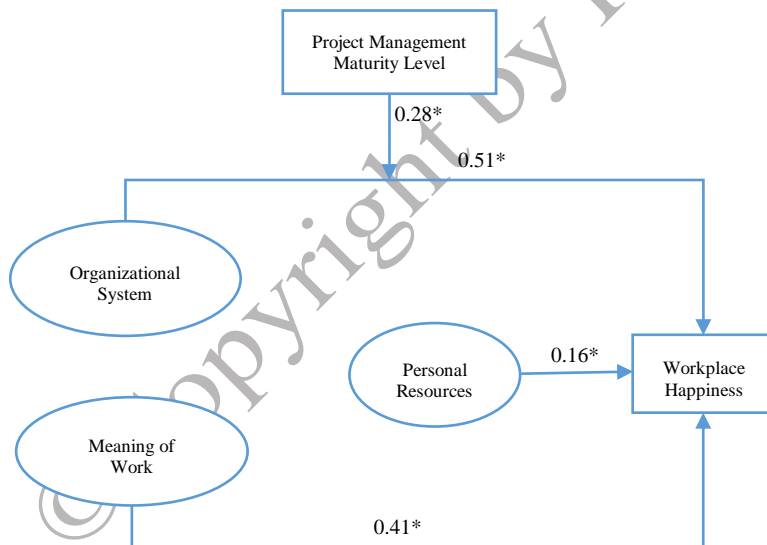

Figure 16 Direct effect model

*Results: Standardized path coefficients are displayed adjacent to influence arrows. Chi-square=188.328; Comparative Fit Index= 0.901; Incremental Fit Index= 0.902; Parsimonious Fit Index= 0.728; Root Mean Square Error Approximation = 0.094; Degree of Freedom= 63; * Indicated p<0.05*

The third structural model (see Fig. 16) tested the last possibility of the functioning paths between the latent factors and workplace happiness, that all three latent factors

operated independently and directly impacted workplace happiness. With a higher Chi-square value (188.328, p<0.05) compared with the value of Model 2(108.375, p<0.05) and lower CFI, IFI, and PCFI, we can confirm that the complete direct model was less explanatory and the best explanatory structural model of our research was Model 2, the dual effect model.

According to the results of the dual effect model, we can find support to the previous three hypotheses. First, the path coefficient of personal resources (0.63, p<0.05) overweighs the one of organizational system (0.26, p<0.05). Both organizations and employees can positively and directly modify their workplace happiness. Hypothesis 1 was validated.

Second, the presence of a moderator, project management maturity level upgrades the organizational system (0.21) and simultaneously, the organizational system can improve employees' workplace happiness (0.26). Thus, by adopting maturity improvement instruments and processes, employees' happiness perceived in their work environment can be positively influenced. On the other hand, the perception of meaning of work can sequentially improve workplace happiness (0.63) through personal resources. The omnibus model fit indices and significant path coefficients support the previous hypotheses.

In Fig. 16, project management maturity level has the moderation effect over the link between organizational system and workplace happiness, which reflected as a significant positive effect over the slope (0.21, p<0.05). The slope of the line relating organizational system to workplace happiness changes at different levels of PM maturity level. According to the suggestion of Cohen (2013), we depicted the

moderation effect of PM maturity level (Fig. 17). The five levels of PM maturity were recoded as ad hoc level ("PM0" in the figure), which represented the status of the project with no formal PM process, data collection or analysis, and advanced level (PM1 in the figure), which represented the status of the project on the planned stage, managed stage, integrated stage, or sustained stage. In this figure, organizational system are shown to have a different degree of influence on employee's workplace happiness, under two different conditions of project management maturity. Hypothesis 2 has been verified.
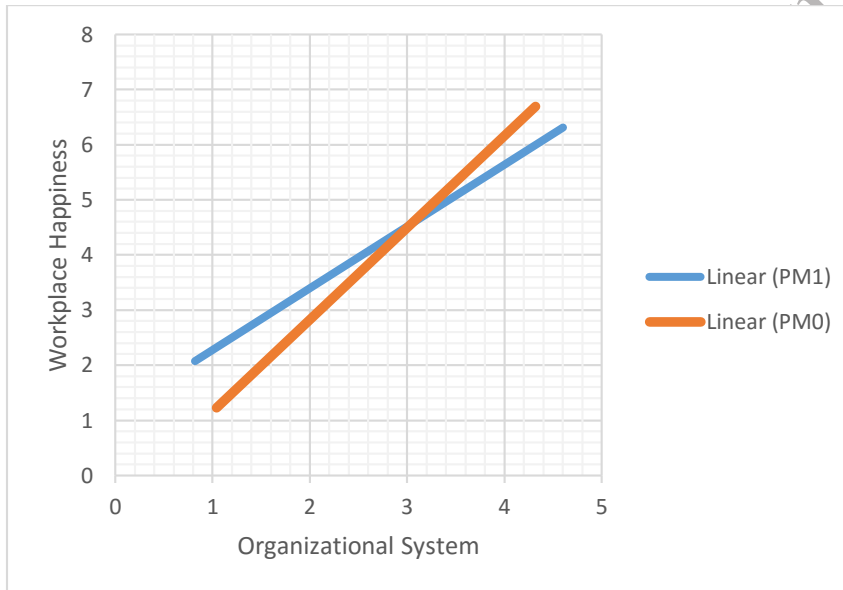
Figure 17 The moderation effect of project management maturity level on the relationship between organizational system and workplace happiness.

Third, the path coefficient from meaning of work to personal resources is positive (1.00, $p<0.05$) and the positive link between personal resources and workplace happiness exists significantly as mentioned above. The direct path from meaning of work to workplace happiness is insignificant. These results confirms that Hypothesis 3 is valid: Meaning of work has positive influence on PM's workplace happiness, sequentially through the personal factor.

6. Discussion

Researchers make assumptions about who should shoulder the responsibility of workplace happiness why they should, and how these influential factors of workplace happiness function. In a time of world economic uncertainty and companies struggling to survive the downturn (Corkindale, 2009), where managers question the necessity and feasibility of investing in improving their employees' happiness, our results give in-time evidence that workplace happiness lies within the scope of an organization's control. The solution to the managers' problem goes beyond the common organizational system. The model which has been statistically verified also indicates other factors and the mechanism of the functioning system, which can be adopted as an entry point for managerial improvement. For example, we cannot find a significant workplace happiness difference between lower role level PM professionals and their counterparts at a higher role level. However, adopting PM maturity tools and following the body of PM knowledge can significantly make a difference in the issue of employees' happiness.

6.1 Personal resources

Our model's results give employees a hint that individuals play a key role in their own workplace happiness issues. Personal resources are the main and direct cause of workplace happiness; also, it has a mediation effect to the paths from organizational system and meaning at work to workplace happiness. The indicators to personal resources included personal health, sense of vitality, personal happiness, and personal resilience. The managerial insight taken from this result is that employees can actively

affect their workplace happiness, even before organization taking actions. Well-known practices including exercising regularly, keeping an optimistic attitude, and acquiring bounce-back capability can help individuals to enhance their happiness. On the other side, when individuals are reluctant to be self-motivated to improve their happiness or passively experience misery in their personal life, it will be hard for their surroundings to ensure them to be truly happy in the long-term.

6.2 Organizational system

Workplace happiness is not just a byproduct of business success; rather, it leads to prosperity of business (Boehm & Lyubomirsky, 2008; Judge & Hurst, 2008). Human resources decide the future development of the company. Organizations should take strategies to prioritize the conditions of employee's happiness. Employees are not machines without emotions. Once they get satisfied with their incomes and their basic living conditions, they are inspired by spiritual incentives, not only monetary incentive. Firms spend money on happiness consulting services, team-building exercises, and reward systems in order to take control of the employees' workplace happiness as the company's best interest. Happiness related company policies need to be valued equally and seriously as other human resource management policies. For example, Google set up positions with the name of Chief Happiness Officer (Kovensky, 2011).

6.3 Meaning of Work

An interesting insight discovered in our research is that meaning of work significantly impacts PM professionals' workplace happiness in our model. This result again verifies the thesis that employees has a high expectation in sense making and tendency to spirituality at an individual level (Karakas, 2010; Hasnain et al., 2011). Recognizing

49

that their work is worthwhile, meaningful, and significant can create motivational forces and spiritual fulfillment.

Adding to the existing knowledge is the fact that creating social benefits and customer benefits can meet up with the consumer preference and improve the market image of the company. For example, Edelman (2010) asserted that 62% of global consumers will prefer brands which work with more benefit causes. Our model-testing results give organizations another reason to enhance their efforts in social and customer benefits creating: these external benefits can also improve employees' workplace happiness.

In practice, shouldering corporate social responsibility (CSR) is often considered as a cost, which is admirable but also not easy to sustain (Zimmermann et al, 2014). Taking our results as a reference, organizations can strategically adjust their perceptions of CSR, from a cost to a wise investment. The measures of this investment can be setting happiness enhancement goals in company policies and assigning specialties to reach this goal. Some pioneering positions have been set, such as the Chief Happiness Officer (CHO) in Google and WooHoo, and General Manager for Support Service in Belgium's social security ministry.

6.4 PM Maturity Level

Project management maturity model is the best practices developed by following PMI's PMBOK® Guide's 10 Knowledge Areas. By assessing and improving the maturity level of a project, this set of instruments assisted PM professionals better accepting the external incentives and improving their positive perception of their job. It provides a logical path for progressive development and a strategic plan for advancing project management improvement within organizations. Some research reflected that this tool

gave PMs realistic milestones for short and long-term priorities and also helps overcome an organization's cultural barriers (Crawford, 2007). The less mature organizations and start-ups, which have less well-established management system, should invest their limited energy and financial sources in improving PM maturity level of their projects. This approach can benefit both the operational process of the projects and employees' psychological status.

7. Conclusion

In sum, organization can have a direct impact on affecting its employees' happiness climates. By underscoring workplace happiness in organization policies and company culture to cultivate an employee-centered human resource strategy, organization can benefit their employees and get financial benefits and good reputations back. The results of our model present that enhancing employees' workplace happiness cannot be neatly categorized in an employee's domain.

Previously, most managers considered creating social and customer benefits as just an approach to attract more external attention and ensure that a company is competitive in the market. Our results show that it is also a business strategy that yields internal advantages to ensure a higher moral perception by employees and, in the end, improve their happiness. To pursue the happiness of project managers is a valuable and possible task for project management practitioners, their companies, and organizations like PMI. Especially, less mature companies or start-ups should invest their limited resources in adopting PM maturity tools, in order to figure out a correct and healthy way for their long-term growth and employees' happiness.

8. Study Limitations

The general limits of the study can be the restriction of the limited number of participants and also other possible influential predictors which we have not introduced to our models. Also, the metrical differences of the personal interpretation can be another limitation.

For survey based studies, limitations also happen due to its reliance on the self-reported assessments of workplace happiness. This survey may only collect responses which are in a way that are socially desirable rather than reveal the testers' actual response to each question, just like Ryff (1995) comments on his well-being assessment tool. Ryff suggests that if we want to obtain a more complete understanding of a tester's psychological well-being, relevant data from others who are around or important to the respondent should also be collected.

Chapter 4: Summary

Our research showed a clearer picture of workplace happiness by surveying PM professionals and disclosing whether and how organizational causes can directly impact workplace happiness. Organization can have a direct impact on affecting its employees' happiness. Except for increasing universally applicable organizational indicators, project-oriented organizations can improve PM professionals' workplace happiness by contributing to the implementation of PM Body of Knowledge, such as the project management maturity model. With these convincing research results, organization leaders can be persuaded and accept the role of organizations in improving employees' workplace happiness. This research also put extra value to the investment

of social and customer benefits, by digging out the indirect impact from the meaning of work to workplace happiness. By extending the perceptions of employees' work and connecting the daily work to the welfare of the other people or even the community, organization can win their employees support by making them satisfied and happy.

The second part of the research tested the widely-discussed cognitive bias happening to survey-based research, which can resolve the problems of the validity and reliability of these study results. Meanwhile, by presenting the existence of positive cognitive bias and giving the impact factors of the cognitive bias, the study also introduced a way of improving happiness perception and decreasing the risk of misunderstandings in future happiness research. This organizational behavior research adopted linear regression tool to model the relationship between cognitive bias and impact factors, which were career prospects and free to be self. With a high prospects of their career and the capability to freely management themselves, testers presented a more accurate understanding of their own happiness. On the other side, these results suggested that when we were faced with employees performing not well on these two aspects, we needed to adopt multi-source measures to assess their happiness. In a word, the validity and reliability of this study can be ensured. The cognitive bias was within the controllable range and its causes can be adopted to assist future research and managerial implementation.

Appendices

Appendix A: Survey Questions and Corresponding Key Words

This survey questionnaire and filters is designed by New Economics Foundation and Happiness Work, and some questions within the survey are customized by Ms. Jocelyn S. Davis.

Subjective Questions	Question	7-Point Scale							Key words
		1	2	3	4	5	6	7	
1. How satisfied are you with…	Your overall job?	Extremely dissatisfied						Extremely satisfied	Satisfying Job
	The balance between the time you spend on your work and the time you spend on other aspects of your life?	Extremely dissatisfied						Extremely satisfied	Work-Life Balance
2. How much of the time you spend at work…	Are you absorbed in what you are doing?	None of the time						All of the time	Absorbing Work
	Do you enjoy what you are doing?	None of the time						All of the time	Enjoy Work
	Do you feel frustrated?	None of the time						All of the time	Frustrating Work (Absence Of)
	Do you feel bored?	None of the time						All of the time	Boring Work (Absence Of)
3. Thinking about the job you do, in general would you say…	That you feel happy when you are at work?	Not at all happy						Extremely happy	Happiness At Work
	You have control over the important elements of your job?	No control						Extremely worthwhile	Feel In Control
	That the job you do is worthwhile?	Not at all motivated						Extremely motivated	Worthwhile Job
	You feel motivated to do the best you can in your job?	Not at all stressful						Extremely stressful	Motivation
	That your job is stressful?	Not at all good						Extremely good	Stressful Job (Absence Of)

Subjective Questions	Question	7-Point Scale								Key words
		1	2	3	4	5	6	7		
4. Thinking about your working life, in general would you say…	That your organization is a good organization to work for?	Not at all well							Extremely well	Good Organization To Work For
	That your organization is well managed?	Not at all well							Extremely well	Organization Well Managed
	You get along well with your manager?	Not at all pleasant							Extremely pleasant	Relationship With Manager
	That the surroundings and physical conditions that your work in are pleasant?	Not at all beneficial							Extremely beneficial	Pleasant Environment
	That the job you do has a beneficial impact on the lives of your customers?	Not at all beneficial							Extremely beneficial	Customer/Client Benefits
	That the job you do is beneficial to society in general?	Not at all beneficial							Extremely beneficial	Societal Benefits
5. How much do the following statements apply to you:	I have very good friends at work	Does not apply at all							Applies completely	Good Friends At Work
	I feel as if I can be myself at work	Does not apply at all							Applies completely	Free To Be Self
	At work, I am regularly able to do what I do best.	Does not apply at all							Applies completely	Use Strengths
	I have enough time, within my normal working hours, to get my job done.	Does not apply at all							Applies completely	Achievable Job
	Considering all my efforts and achievements at work, I feel I get paid appropriately.	Does not apply at all							Applies completely	Fair Pay
	I receive regular and constructive feedback on my performance	Does not apply at all							Applies completely	Constructive Feedback
6. To what extent…	Have you been able to learn new skills at work?	Not at all							A great deal	Learning New Skills

Subjective Questions	Question	7-Point Scale								Key words
		1	2	3	4	5	6	7		
	Do you get the chance to be creative in your job?	Not at all						A great deal		Creativity
	Does your job offer good prospects for progressing your career?	Not at all						A great deal		Career Prospects
	Can you influence decisions that are important for your work?	Not at all						A great deal		Influence Decisions
	Do you feel proud to work for your organization?	Not at all						A great deal		Organizational Pride
	Do you feel trusted by your manager?	Not at all						A great deal		Trusted By Manager
	Is it safe to speak up and challenge the way things are done within your organization?	Not at all						A great deal		Open Organization
	Do you worry you might lose your job in the next six months?	Not at all						A great deal		Job Security
7. The next questions are about your team or the group of people you work most closely with.	To what extent do you like the people within your team?	Not at all						A great deal		Team Relationships
	In general would you say that your team is well managed?	Not at all						A great deal		Team Well Managed
	In general would you say that teams within your organization work well together?	Not at all						A great deal		Co-Operation Between Teams
8. Now some questions about you and your life overall.	Taking all things together, how happy would you say you are?	Not at all happy						Extremely happy		Personal Happiness
	In general would you say your overall health is good?	Not at all happy						Extremely good		Personal Health
	To what extent do you feel full of energy in life?	Not at all						A great deal		Sense Of Vitality
	In general would you say you find it easy or difficult to deal with important problems that come up in your life?	Extremely difficult						Extremely easy		Personal Resilience

Subjective Questions	Question	7-Point Scale							Key words
		1	2	3	4	5	6	7	
	How much does the following statement apply to you: in general I am very positive about myself	Does not apply at all						Applies completely	Self Confidence
	To what extent do you receive help and support from other people when you need it?	Not at all happy						A great deal	Supportive Relationships

Demographic Traits	Choices								
Your gender?	Male	Female	Other						
Your age?	16-24	25-34	35-44	45-54	55-64	65 or over			
How long have you worked at your organization? †	Less than 1 year	1-2 years	2-5 years	5-10 years	10-20 years	More than 20 years			
How long have you been at PMI organization? †	0-5 y	6-10 y	11-15 y	15-20 y	21-25 y	More than 25 years			
Which sector do you currently work in? †	Private, closed held	Private, public held	Public sector	Government, federal	Government state or local	Charity or not for profit			
Which industry are you working in? †	Banking / financial/insurance	construction	consultancy	defense	education	health	IT product services	manufacturing	pharmaceuticals
	telecommunications	Transport/ logistics	retail	utilities	other				
What is your project management role? †	Entry level	Subject matter expert	task manager	team leader	project manager	senior project manager	program manager	portfolio manager	PMO director
Currently, I work... †	Full time	Part time	Other						
How is your current project(s) organized? †	Pure project	Functional	matrix						
What is the PM Process Maturity Model level of your organization? †	Ad hoc level	Planned level	managed level	Integrated level	sustained level				

† indicates the questions customized by Ms. Jocelyn S. Davis.

Sources: Jocelyn S. Davis, Nelson Hart LLC, at
https://happyprojectmanager.happinessatworksurvey.com/s/a003f349ea0f68a80c3c917ccdab1c53/1, Retrieved on December 10th, 2015; New Economics Foundation and Happiness Works, at https://app.happinessatworksurvey.com/ and https://www.happinessatworksurvey.com/try?, Retrieved on November 11th, 2015.

Appendix B: The Indicators of the Three Constructs and Their Corresponding Data

Construct	Scale Items		Item mean (S.D.)	Cronbach 's Alpha
Organizational System				0.849
	Team well managed	In general would you say that your team is well managed?	4.91 (1.54)	
	Organization well managed	That your organization is well managed?	4.43 (1.62)	
	Pleasant environment	That the surroundings and physical conditions that your work in are pleasant?	5.32 (1.37)	
	Open organization	Is it safe to speak up and challenge the way things are done within your organization?	4.67 (1.60)	
	Good organization to work	That your organization is a good organization to work for?	5.15 (1.56)	
Personal Resources				0.781
	Personal health	In general would you say your overall health is good?	5.61 (1.06)	
	Sense of vitality	To what extent do you feel full of energy in life?	5.15 (1.11)	
	Personal happiness	Taking all things together, how happy would you say you are?	5.21 (1.10)	
	Personal resilience	In general would you say you find it easy or difficult to deal with important problems that come up in your life?	4.94 (1.13)	
Meaning of work				0.853
	Customer benefits	That the job you do has a beneficial impact on the lives of your customers?	5.51 (1.28)	
	Social benefits	That the job you do is beneficial to society in general?	5.04 (1.53)	

Appendix C: The Coefficients of Regression Model

Coefficient								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.094	.201		5.440	.000		
	Career Prospects	-.126	.034	-.233	-3.769	.000	.925	1.081
	Free To Be Self	-.196	.035	-.342	-5.534	.000	.925	1.081
a. Dependent Variable: Differences								

R square= 0.215, F= 30.423

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