

# Investigating Importance Weighting of Satisfaction Scores from a Formative Model with Partial Least Squares Analysis

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Accepted: 15 May 2008 / Published online: 10 June 2008  
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**Abstract** This study introduced a formative model to investigate the utility of importance weighting on satisfaction scores with partial least squares analysis. Based on the bottom-up theory of satisfaction evaluations, the measurement structure for weighted/unweighted domain satisfaction scores was modeled as a formative model, whereas the measurement structure for global satisfaction scores was modeled as a reflective model according to top-down theory. The purpose was to see if the predictive effect of importance-weighted domain satisfaction scores is stronger than unweighted domain satisfaction scores in predicting global satisfaction scores. Three datasets in life, self, and job satisfaction were analyzed. In the life satisfaction dataset, 237 undergraduates at Central Taiwan University of Science and Technology voluntarily provided their responses. The mean age of respondents was 20.80 years (SD = 1.05). In the self-satisfaction dataset, 269 undergraduates at National Taiwan University provided their responses. The mean age of respondents was 19.78 years (SD = 1.44). Finally, in the job satisfaction dataset, 557 staff members in seven Taiwan provincial hospitals provided their responses. The mean age of respondents was 35.87 years (range from 21 to 65, SD = 8.60). Three measures of domain satisfaction, domain importance, and global satisfaction were collected in each dataset. Partial least squares analysis was used in model estimation. All the results revealed that unweighted domain satisfaction scores have a stronger predictive effect for global satisfaction measures than importance-weighted domain satisfaction scores, indicating that importance weighting on satisfaction scores did not have an empirical benefit.

**Keywords** Satisfaction · Weighting · Importance · Partial least squares

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## 1 Introduction

The procedure of importance weighting on satisfaction rating scores at the item level has been applied in quality of life (QOL) instruments, such as the Comprehensive Quality Of Life Scale (ComQol, Cummins 1997), the Quality of Life Index (QOL Index, Ferrans and Powers 1985), the Quality of Life Inventory (QOL Inventory, Frisch 1992), and the Quality of Life Profile-Adolescent version (QOLPAV, Raphael et al. 1996). The goal of importance weighting is to obtain individualized QOL scores by incorporating individuals' importance perceptions into their satisfaction judgments. However, Russell and Hubley (2005), Wu (2007, 2008a, b) and Wu and Yao (2006a) recently indicated that this weighting procedure does not have a solid psychological basis.

Based on Locke's (1969, 1976) range-of-affect hypothesis, Wu's studies (2007, 2008a, b) and Wu and Yao (2006b, 2007a) showed that satisfaction evaluations are determined by the interaction effect between have-want discrepancy (the discrepancy between what the individual wants and what he/she perceives himself/herself as getting) and importance (the importance to the individual of what is wanted). Specifically, at a given level of discrepancy, an item with high personal importance can produce a wide affective reaction ranging from great satisfaction to great dissatisfaction, while an item with low personal importance can only produce a restricted affective reaction around the neutral point of the satisfaction–dissatisfaction dimension. Item satisfaction, therefore, already has incorporated within it information regarding the item's importance, which renders weighting item satisfaction with item importance redundant. In addition to quality of life research, the range-of-affect hypothesis was also supported in job satisfaction studies (McFarlin et al. 1995; McFarlin and Rice 1992; Mobley and Locke 1970; Rice et al. 1991a, b). Friedlander (1965) and Trauer and Mackinnon (2001) also indicated that items of extreme satisfaction/dissatisfaction are more important than mild satisfaction/dissatisfaction items, supporting that the responses of satisfaction have a wider range on dissatisfaction–satisfaction scale for the high-importance item. Consistent with the implication derived from the range-of-affect hypothesis, many studies have found that importance-weighted satisfaction scores, compared to unweighted satisfaction scores, did not have an additional contribution in predicting criterion variables, such as overall subjective well-being (e.g., Hsieh 2003; Russell et al. 2006; Wu and Yao 2006b), employee turnover (e.g., Mikes and Hulin 1968; Waters and Roach 1971) and global job satisfaction (e.g., Ewen 1967; Rice et al. 1991a; Staples and Higgins 1998; Waters 1969; Waters and Roach 1971).

Russell and Hubley (2005) also mentioned other drawbacks of importance weighting. First, the weighted scores are not easy to interpret. For example, a weighted score 4 would be produced from a 4-point satisfaction score and 1-point importance score and a 1-point satisfaction score and 4-point importance score. It can be seen that the same weighted score represents two different situations. If we only used weighted scores to evaluate individual's QOL, we cannot thoroughly understand these two kinds of life conditions. Second, satisfaction and importance rating scores are usually non-ratio level data. The multiplicative nature of the weighted scores cannot hold the statistic position of its meaning. This is also an obstacle for interpreting the meaning of weighted scores.

However, Hsieh (2004) did not think these findings and obstacles were sufficient to justify the abandonment of incorporating importance weighting into QOL instruments. He thought that incorporating importance weighting into QOL instruments is appropriate, but the critical issue is how to weight. He proposed a formative model as the theoretical basis to compute the importance-weighted satisfaction score. The perspective of a formative model is different from the perspective of a reflective model. In brief, in a reflective model,

manifest indicators are assumed to be influenced by unobserved latent variables. That is, the latent construct exists independent of the measures used. Conversely, in a formative model, manifest indicators are used to define latent variables. That is, the latent construct is a combination of its indicators.

Taking a perspective from a formative model or a reflective model is not only a matter of measurement or statistics; it is a theoretical issue as well. Regarding satisfaction scores, choosing a formative model or a reflective model would be related to the top-down and bottom-up theories of satisfaction judgment. Specifically, the top-down theory regards satisfaction evaluations in various life domains as resulting from evaluation of life as a whole (Diener 1984; Diener et al. 1999). As a result, a reflective model should be chosen. Conversely, the bottom-up theory regards evaluations in various life domains as contributing to the evaluation of life as a whole (Diener 1984; Diener et al. 1999). Accordingly, a formative model is more desirable. Hence, from the bottom-up perspective, a formative model can be acceptable as the measurement basis for domain-specific measures of satisfaction as suggested by Hsieh (2004). Consequently, it provides a measurement basis to discuss which weighting algorithm is more desirable in the importance weighting procedure, because the latent construct is empirically defined by manifest indicators in a formative model.

However, previous studies on the top-down/bottom-up controversy usually adopted a reflective model to build a model for global (top-down) and domain-specific (bottom-up) measures of satisfaction (e.g., Headey et al. 1991; Wu and Yao 2007b). According to bottom-up theory, the measurement structure of domain-specific measures should be built as a formative model. To date, only Staples and Higgins (1998) have adopted this approach. They built a formative model for domain-specific measures of job satisfaction and a reflective model for global measures of job satisfaction, and they used PLS to estimate the path loading between the two latent factors (one is formative latent factor, the other one is reflective latent factor). They built the same model with importance-weighted and unweighted domain satisfaction scores to investigate the utility of importance weighting and found that importance-weighted scores are not superior to unweighted scores in predicting global job satisfaction. However, because their study is presently the only one to use PLS analysis, more studies are needed to cross-validate their results.

Hence, the main purpose of this study was similar to the aim in Staples and Higgins' (1998) study. That is, we used a formative model to represent the measurement structure of domain satisfaction and used a reflective model to represent the measurement structure of global satisfaction. In addition, we also examined the utility of importance weighting in predicting criterion variables by building the same model with importance-weighted and unweighted domain satisfaction scores. Three datasets in life, self, and job satisfaction were used here to examine the utility of importance weighting in different areas.

## 2 Method

### 2.1 Description of Life Satisfaction Dataset

Two hundred and thirty-seven (58 male and 179 female) undergraduates at the Central Taiwan University of Science and Technology voluntarily participated in the study on life satisfaction. The mean age of participants was 20.80 years ( $SD = 1.05$ ). Two self-report questionnaires were administered to the participants in a classroom setting. Participants' confidentiality and anonymity were assured. After completing the questionnaires, participants returned them to the administrator directly.

The first questionnaire was the Quality of Campus Life Questionnaire (Wu and Yao 2006b), which contains 15 items measuring college students' satisfaction with 15 different life domains on a Likert-type scale ranging from 1 (*very dissatisfied*) to 5 (*very satisfied*). The 15 items were: living environment, campus environment, learning atmosphere, social and political environment, transport, money, eating, health, sleep, leisure activities, energy, non-study performance, learning performance, social relationships, and social support. After completing satisfaction ratings, participants were asked to rate the importance of each item on a Likert-type scale ranging from 1 (*not at all important*) to 5 (*very important*). In Wu and Yao's (2006b) study, the internal consistency reliability (Cronbach's  $\alpha$ ) of the satisfaction ratings and importance ratings were 0.82 and 0.86, respectively. In this study, the internal consistency reliability (Cronbach's  $\alpha$ ) of the satisfaction ratings and importance ratings were 0.91 and 0.91, respectively.

The other questionnaire was the Satisfaction with Life Scale (SWLS; Diener et al. 1985), which is a widely-used measure of subjective well being. The scale contained five items and employed a seven-point Likert scale, with higher values corresponding to a higher degree of satisfaction. The SWLS has shown good reliability and validity (see Pavot and Diener 1993). In the Taiwan-published Chinese-translated version, the Wu and Yao study (2006c) confirmed the single-factor structure of the SWLS-Taiwan version and revealed that the SWLS-Taiwan version was factor invariant across gender. In this study, the Cronbach's  $\alpha$  of the scale was 0.87.

## 2.2 Description of Self-Satisfaction Dataset

Two hundred and sixty-nine undergraduate students (40.9% female ( $n = 110$ ) and 59.1% male ( $n = 159$ )) at National Taiwan University voluntarily participated in the study on self-satisfaction. The mean age of participants was 19.78 years ( $SD = 1.44$ ). Similarly, two self-report questionnaires were administered to the participants.

The first was a questionnaire measuring participants' satisfaction and importance perception in seven aspects, including (1) appearance, (2) social skill, (3) emotion management, (4) work capacity, (5) ability for problem solving, (6) academic achievement, and (7) social status. In the first section, participants were asked to rate their satisfaction on these seven domains (one item for each domain) on a seven-point Likert-type scale ranging from 1 (*very dissatisfied*) to 7 (*very satisfied*). In the second section, participants were also asked to rate the importance of each domain on a seven-point Likert-type scale ranging from 1 (*not at all important*) to 7 (*very important*). The internal consistency reliability (Cronbach's  $\alpha$ ) of the satisfaction ratings and importance ratings for the current sample were 0.80 and 0.69, respectively.

The other questionnaire was the Rosenberg's (1965) 10-item self-esteem scale, which was used to measure participants' generalized, global feelings of self-worth. Participants responded to statements on positive and negative feelings about the self, such as "I am able to do things as well as most other people," on a Likert seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The self-esteem scale has shown good reliability and validity. On reliability, the internal consistency reliability (Cronbach's  $\alpha$ ) ranged from 0.77 to 0.88; the test-retest reliability coefficient ranged from 0.82 (2-week interval) to 0.85 (1-week interval). Regarding validity, the self-esteem scale demonstrated adequate construct validity, convergent validity, and discriminant validity (see Robinson et al. 1991). For the Chinese version of Rosenberg's 10-item self-esteem scale, a study (Wu 2007) conducted among 123 undergraduate students at National Taiwan University showed that self-esteem was negatively related to anxious and avoidant attachment tendencies ( $r = -0.43$ ,  $p < 0.01$ ;  $r = -0.36$ ,  $p < 0.01$ ) and positively related to self-concept clarity

( $r = 0.59$ ,  $p < 0.01$ ). These findings replicated results obtained in previous attachment studies (e.g., Brennan and Morris 1997; Collins and Read 1990; Griffin and Bartholomew 1994; Roberts et al. 1996) and Campbell's (1990) and Campbell et al. (1996) studies on the relationship between self-esteem and self-concept clarity. In addition, internal reliability (Cronbach's  $\alpha$ ) of the Chinese version of self-esteem scale among the 123 students was 0.93 and the value was 0.81 for the current sample. These results showed that the Chinese version of self-esteem scale is suitable for college students in Taiwan.

### 2.3 Description of Job Satisfaction Dataset

The data on job satisfaction were obtained from Tam's (1999) study, in which 654 staff members in seven Taiwan provincial hospitals were invited to rate their importance perceptions and satisfaction evaluations in several job domains, as well as their global job satisfaction. The domain importance perceptions were rated with a five-point Likert scale ranging from 1 (not important at all) to 5 (very important), and domain satisfaction evaluations were rated with a five-point Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied). Because the purpose of the current study is to investigate the utility of importance weighting on satisfaction scores, we therefore can only choose the domains that were included in both importance and satisfaction ratings in Tam's (1999) study. Seven domains qualified. They were (1) job security, (2) learning opportunity, (3) relationships with coworkers, (4) personal growth, (5) performance appraisal and salary/bonus, (6) employee welfare, and (7) promotion. In addition to these domain ratings, there was one item for global job satisfaction, which was rated on a five-point Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied). Given all of these ratings used in the current study, 557 cases with completed data were used in the following analysis. The internal consistency reliability (Cronbach's  $\alpha$ ) of the satisfaction ratings and importance ratings for the current sample were 0.85 and 0.88, respectively. Among these 557 cases, 77.7% were female ( $n = 433$ ) and 22.1% were male ( $n = 123$ ), and one participant did not report his/her sex. The mean age of respondents was 35.87 years (range from 21 to 65,  $SD = 8.60$ ). Most of the participants were non-managers ( $n = 449$ , 80.6%), were married ( $n = 409$ , 73.4%), and had a higher education (college/university and above,  $n = 435$ , 78.1%). This sample also covered various professional workers and staff workers in the hospital, including nurses, doctors, pharmacists, and administration staff members.

### 2.4 Data Analysis

For all datasets, domain satisfaction scores were first multiplied by domain importance ratings to gain the weighted scores. Then, a model which contains a formative model for domain satisfaction scores (either using unweighted or weighted domain scores) and a reflective model for global measures (the SWLS, self-esteem, or the single item for global job satisfaction) was built for each dataset. Partial least squares technique was used here because it is a statistical technique for a model involving a formative part. PLS is a variance-based technique and belongs to the same class of models as canonical correlation, principal components, and regression analysis (Fornell and Bookstein 1981). It focuses on maximizing the variance of the dependent variables explained by the independent ones (Haenlein and Kaplan 2004). This property makes PLS fit the current research purpose in examining the utility of importance-weighted domain satisfaction scores in predicting global satisfaction scores. PLS involves no assumptions about the population or scale of measurement and can be applied when sample size is small (Fornell and Bookstein 1981;

Haenlein and Kaplan 2004). In this study, parameter estimates, composite reliability (Fornell and Larcker 1981) of each latent construct, and significance test with Jackknife statistics were estimated by VisualPLS 1.04b1 (Fu 2006).

### 3 Results

#### 3.1 PLS Analysis of the Life Satisfaction Dataset

Tables 1 and 2 present the PLS estimates in the model for the life satisfaction dataset with unweighted and weighted domain satisfaction scores, respectively. All estimates in the models were significant at  $p < 0.01$ . Composite reliabilities were also satisfactory. According to the results, the unweighted domain satisfaction scores have a stronger relationship ( $r = 0.60$ ) than the weighted domain satisfaction scores ( $r = 0.57$ ) in predicting global life satisfaction (the SWLS). The  $t$ -test statistic on the dependent correlation comparison (Cohen and Cohen 1983) showed that the difference between these two correlations was nearly significant ( $t = 1.81$ ,  $df = 234$ ,  $p = 0.07$ ).

**Table 1** PLS estimates in the model for life satisfaction dataset with unweighted domain satisfaction scores

	Domain satisfaction (Formative model)	Global satisfaction (Reflective model)
Measurement part (loadings)		
Living environment	0.81	–
Campus environment	0.63	–
Learning atmosphere	0.65	–
Social and political environment	0.58	–
Transport	0.45	–
Money	0.62	–
Eating	0.55	–
Health	0.58	–
Sleep	0.56	–
Leisure activities	0.66	–
Energy	0.60	–
Non-study performance	0.57	–
Learning performance	0.68	–
Social relationships	0.60	–
Social support	0.51	–
SWLS1	–	0.84
SWLS2	–	0.90
SWLS3	–	0.89
SWLS4	–	0.85
SWLS5	–	0.63
Composite reliability	0.90	0.91
Structural part		
Global satisfaction	0.60	–

Note. All estimates were significant at  $p < 0.01$

**Table 2** PLS estimates in the model for life satisfaction dataset with weighted domain satisfaction scores

	Domain satisfaction (Formative model)	Global satisfaction (Reflective model)
Measurement part (loadings)		
Living environment	0.81	–
Campus environment	0.66	–
Learning atmosphere	0.66	–
Social and political environment	0.71	–
Transport	0.66	–
Money	0.65	–
Eating	0.55	–
Health	0.65	–
Sleep	0.61	–
Leisure activities	0.57	–
Energy	0.54	–
Non-study performance	0.62	–
Learning performance	0.55	–
Social relationships	0.44	–
Social support	0.81	–
SWLS1	–	0.85
SWLS2	–	0.90
SWLS3	–	0.89
SWLS4	–	0.84
SWLS5	–	0.62
Composite reliability	0.90	0.91
Structural part		
Global satisfaction	0.57	–

*Note.* All estimates were significant at  $p < 0.01$

### 3.2 PLS Analysis of the Self-Satisfaction Dataset

Tables 3 and 4 present the PLS estimates in the model for the self-satisfaction dataset with unweighted and weighted domain satisfaction scores, respectively. All estimates in the models were significant at  $p < 0.01$ . Composite reliabilities were also satisfactory. According to the results, the unweighted domain satisfaction scores have a stronger relationship ( $r = 0.77$ ) than the weighted domain satisfaction scores ( $r = 0.71$ ) in predicting global self-esteem. The  $t$ -test statistic on the dependent correlation comparison (Cohen and Cohen 1983) showed that the difference between these two correlations was significant ( $t = 4.88$ ,  $df = 266$ ,  $p < 0.01$ ).

### 3.3 PLS Analysis of the Job Satisfaction Dataset

Tables 5 and 6 present the PLS estimates in the model for the job satisfaction dataset with unweighted and weighted domain satisfaction scores, respectively. All estimates in the models were significant at  $p < 0.01$ . Composite reliabilities were also satisfactory. According to the results, the unweighted domain satisfaction scores have a stronger relationship ( $r = 0.79$ ) than the weighted domain satisfaction scores ( $r = 0.71$ ) in predicting global job satisfaction. The  $t$ -test statistic on the dependent correlation comparison

**Table 3** PLS estimates in the model for self satisfaction dataset with unweighted domain satisfaction scores

	Domain satisfaction (Formative model)	Global self-esteem (Reflective model)
Measurement part (loadings)		
Appearance	0.70	–
Social skill	0.70	–
Emotion management	0.57	–
Work capacity	0.73	–
Ability for problem solving	0.71	–
Academic achievement	0.60	–
Social status	0.60	–
SES1	–	0.83
SES2	–	0.85
SES3	–	0.78
SES4	–	0.69
SES5	–	0.75
SES6	–	0.82
SES7	–	0.87
SES8	–	0.64
SES9	–	0.63
SES10	–	0.72
Composite reliability	0.84	0.93
Structural part		
Global self-esteem	0.77	–

Note. All estimates were significant at  $p < 0.01$

(Cohen and Cohen 1983) showed that the difference between these two correlations was significant ( $t = 9.93$ ,  $df = 554$ ,  $p < 0.01$ ).

## 4 Discussion

This study introduced a formative model suggested by Hsieh (2004) to investigate the utility of importance weighting on satisfaction scores. Referring to Staples and Higgins' (1998) study, this study compared the utility of weighted and unweighted domain satisfaction scores in predicting global satisfaction measures using partial least squares analysis. Based on the bottom-up theory of satisfaction evaluations, the measurement structure for weighted/unweighted domain satisfaction scores was modeled as a formative model, whereas the measurement structure for global satisfaction scores was modeled as a reflective model according to top-down theory. Three datasets in life, self, and job satisfaction were analyzed. All the results revealed that the latent factor derived from unweighted domain satisfaction scores has a stronger predictive effect for global satisfaction measures than weighted domain satisfaction scores, indicating that importance weighting on satisfaction scores did not have an empirical benefit. These findings are consistent with the result obtained in Staples and Higgins' (1998) study.

Concerning the issue of importance weighting, this study has two major contributions. First, this study brings the perspective of a formative model to examine the utility of



**Table 4** PLS estimates in the model for self satisfaction dataset with weighted domain satisfaction scores

	Domain satisfaction (Formative model)	Global self-esteem (Reflective model)
Measurement part (loadings)		
Appearance	0.54	–
Social skill	0.67	–
Emotion management	0.63	–
Work capacity	0.74	–
Ability for problem solving	0.72	–
Academic achievement	0.56	–
Social status	0.55	–
SES1	–	0.83
SES2	–	0.85
SES3	–	0.77
SES4	–	0.69
SES5	–	0.75
SES6	–	0.82
SES7	–	0.88
SES8	–	0.63
SES9	–	0.63
SES10	–	0.72
Composite reliability	0.82	0.93
Structural part		
Global self-esteem	0.71	–

*Note.* All estimates were significant at  $p < 0.01$

importance weighting. Although this perspective has been taken in Staples and Higgins' (1998) study and also has been mentioned in Hsieh (2004), this perspective and the PLS analysis approach were rarely adopted in studies on importance weighting, especially in the quality of life research. Hence, it can be said that this study demonstratively introduces an alternative perspective into the issue of importance weighting. Second, this study also contributes to cross-validating Staples and Higgins' (1998) study with three datasets of different content. This research design provides us more confidence in finding the result that importance-weighted domain satisfaction scores are not superior to unweighted scores in predicting global satisfaction scores. Although this finding has been obtained in many studies without using a formative model and PLS analysis (e.g., Ewen 1967; Hsieh 2003; Rice et al. 1991a; Waters 1969; Russell et al. 2006; Waters and Roach 1971; Wu and Yao 2006b), it is now cross-validated again with an alternative approach in the context of life, self, and job satisfaction. In conclusion, the study showed again that weighting domain satisfaction scores with importance scores do not have empirical contribution in predicting global satisfaction scores.

In addition to importance weighting, this study also raises another interesting issue: Is a formative or reflective model more suitable for the measurement model of domain satisfaction scores? In this study, we treated the measurement model of domain satisfaction scores as a formative model based on the bottom-up theory on satisfaction evaluation. However, this perspective and treatment is not always true. If we totally rely on the top-down theory on satisfaction evaluation, then we also can treat the measurement model of domain satisfaction scores as a reflective model. In addition, domain satisfaction scores

**Table 5** PLS estimates in the model for job satisfaction dataset with unweighted domain satisfaction scores

	Domain satisfaction (Formative model)	Global job satisfaction (Reflective model)
Measurement part (loadings)		
Job security	0.75	–
Learning opportunity	0.82	–
Relationships with coworkers	0.53	–
Personal growth	0.91	–
Appraisal and salary/bonus	0.74	–
Employee welfare	0.71	–
Promotion	0.75	–
Global job satisfaction	–	1.00
Composite reliability	0.90	1.00
Structural part		
Global self-esteem	0.79	–

*Note.* All estimates were significant at  $p < 0.01$ . Because there was only one item for global job satisfaction, we set its factor loading as 1. In this manner, the measurement model for global job satisfaction can be regarded as a formative model as well

**Table 6** PLS estimates in the model for job satisfaction dataset with weighted domain satisfaction scores

	Domain satisfaction (Formative model)	Global job satisfaction (Reflective model)
Measurement part (loadings)		
Job security	0.77	–
Learning opportunity	0.80	–
Relationships with coworkers	0.41	–
Personal growth	0.83	–
Appraisal and salary/bonus	0.75	–
Employee welfare	0.68	–
Promotion	0.74	–
Global job satisfaction	–	1.00
Composite reliability	0.88	1.00
Structural part		
Global self-esteem	0.71	–

*Note.* All estimates were significant at  $p < 0.01$ . Because there was only one item for global job satisfaction, we set its factor loadings as 1. In this manner, the measurement model for global job satisfaction can also be regarded as a formative model

usually have higher correlations among themselves, implying a common factor behind them (the range of correlations of life, self, and job domain satisfaction scores were 0.23–0.75 [ $M = 0.40$ ], 0.24–0.70 [ $M = 0.36$ ] and 0.25–0.73 [ $M = 0.51$ ], respectively). This empirical evidence would suggest a reflective model rather than a formative model. This is why previous studies usually built a reflective model for the domain satisfaction scores and used factor analysis technique to examine their factorial structure (e.g., Ferrans and Powers 1992; Headey et al. 1991; Meuleners and Lee 2005; Wu and Yao 2007b).

Nevertheless, we do not propose a definite answer to this question. In fact, several existing studies on the top-down/bottom-up controversy indicated that satisfaction

evaluations involve both top-down and bottom-up processes (e.g., Headey et al. 1991; Lance et al. 1995; Wu and Yao 2007b). For example, Headey et al. (1991) test the two-way causation (top-down and bottom-up) between global and domain satisfaction using panel data. Their findings revealed that marriage satisfaction involved both top-down and bottom-up processes. Job, standard of living, and leisure only involved the top-down process, and friendship and health did not have a significant effect in either of the processes. Later, Lance et al. (1995) tested alternative theoretical models that specified bottom-up, top-down, and bidirectional relationships between overall life satisfaction and satisfaction with 11 life facets using several structural equation models. Their results showed that the bidirectional model was the best model, suggesting a non-recursive relationship between global measures and domain-specific measures. Recently, Wu and Yao (2007b) examined the relationship between global and domain measures of quality of life from a psychometric perspective by three different factor structure models. The best model they found is a three-factor model in which one factor (representing quality of life) influences both global and domain measures, another factor (representing global approach) only influences global measures, and yet another factor (representing domain approach) only influences domain measures. This model suggests that global measures and domain measures did assess the same construct on quality of life. However, the measurement approaches they adopted (global or domain approach) also have substantial impact on the meaning of scores. Hence, given the existing findings, both top-down and bottom-up pathways exist. But because we would like to test the utility of importance weighting in predicting global measures from an alternative approach, we rely on the bottom-up perspective here to build a formative model for domain satisfaction scores. It does not mean we totally agree that only the formative model is suitable for domain satisfaction scores. Therefore, conservatively we would like to make a specific conclusion of this study: Based on the bottom-up theory on satisfaction evaluation, this study built a formative model for domain satisfaction scores and used PLS technique to analyze data to examine the utility of importance weighting on satisfaction scores. In this case, it was found that weighting domain satisfaction scores with their importance values did not contribute to predicting global satisfaction scores.

Although the research design and statistical analysis are straightforward in this study, one limitation of the formative model should also be mentioned and addressed in future studies. It is arguable that we only cover a few domains in self and job satisfaction datasets (e.g., seven self-domains, seven job domains). According to the formative-model perspective, it would not be a problem because we can define the latent constructs using observed indicators. But practically, it will still be arguable which domains should be used to define the construct of domain satisfaction. There is no doubt that people will give different answers.

Moreover, it is also possible that the importance-weighted satisfaction scores have a stronger relationship with global satisfaction scores than unweighted satisfaction scores when different domains are used to define the latent construct for domain satisfaction. In this study, except for the domains in campus life satisfaction, domains in self and job satisfaction datasets are used for convenience because they have already existed in the datasets. Therefore, in future studies, the utility of importance weighting can be re-examined in the same way using a set of indicators to define a domain satisfaction construct with a solid reason.

**Acknowledgements** This research was partially supported by a grant from the Central Taiwan University of Science and Technology (CTU97-P-24) to Ying-Mei Tsai.

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