Assessment of the Goodness of Measure of Union Commitment: A Factorial Validation in Sri Lankan Context[1]

K.A.S. Dhammika *

Fais Bin Ahmed - Thi Lip Sam †

Abstract

Union commitment has received substantial attention of researchers over the past years. However, it seems that some issues related to the measurement of union commitment are still remained debatable. The dimensions or the factor structure and their relative significance are such critical issues. The present study examined the goodness of measure of union commitment in the Sri Lankan context. It was found that a three factor model of union commitment is held valid with significant level of reliability. These factors or dimensions were union loyalty, union responsibility and union beliefs. Further, ten, out of eleven items of the tested instrument were found to be relevant for measuring union commitment in the context of Sri Lanka.

Key Words: Factorial Validity - Measurement - Reliability - Union Commitment

Introduction

Union commitment has been subjective to extensive research not only in industrial and labour research but also in behavioural studies. The researchers' interest on union commitment lies in the fact that it has many implications to the behaviour of employees in organizations. This may, in turn, impact on some of the employee outcomes in firms. Some of the employees' outcomes which have been cited as having association with union commitment are job satisfaction (Hammer & Avgar, 2005), organizational commitment (Sadler, 2009) performance (Senguptha, 2008) and organizational citizenship behaviour (Edsnape & Redman, 2006). Therefore, understanding the nature and the level of union commitment of employees in unionized work environment is highly warranted. Measurement of union commitment no doubt stands central in such an understanding process of union commitment.

However, studies on unions and union commitment, in particular, are scant in the Sri Lankan context. Though some attempts have been made to examine the issues related to employee unionization in Sri Lanka (Gamage & Hewagama, 2012; Jinadasa & Opatha, 1999) union commitment has not been explored adequately. As an initial attempt, this study was intended to test the goodness of measure of union commitment in Sri Lanka. It was expected to test the four factorial structures of the union commitment and its validity. By doing so, it is intended to propose a tested instrument for measuring union commitment for future research in the Sri Lankan context. Further, this will provide an insight for both administrators of the public sector and union leaders in managing the commitment level of their employees and members.

Union Commitment

Union commitment (UC) is defined as the extent to which an individual has a desire to remain membership in, exert effort for and identify with the objectives of a union (Gordon, Philpot, Burt, Thompson, & Spiller, 1980). Though there is universal consensus on the definition of the union commitment, the underlying factor structure remains a dispute (Bamberger & Suchard, 1999). Despite the fact that the four factor structure of union commitment of Gordon et al., (1980) has received much acceptance, it needs further validation especially for different contexts. The four factor model of UC includes

dimensions of union loyalty; a sense of pride and an awareness of the benefits of the union, responsibility to the union; willingness to fulfill the day to day obligations to the unions, willingness of work for the union and general union beliefs. This lack of congruence on the nature and dimensionality of UC has resulted in various conceptualization and measurement models. However, Mowday, Richard, and Lyman, (1979) characterized union commitment with three factors, namely, a strong belief in union values; desire to keep the membership and willingness to exert a great effort towards the union. On the contrary, Snape, Redman, and Chan, (2000) conceptualized UC having two dimensions, namely, affective commitment and instrumental commitment. Affective commitment refers to a sense of shared values, identity and pride in union whereas instrumental commitment implies the perceived benefits flawing from the union.

It is evident that researchers tend to conceptualize union commitment differently though some conception has received much acceptance. Therefore, the factor structure of union commitment should be tested when the measurement is to be used in different contexts.

Measuring Union Commitment

Measurement instruments used by the researchers vary according to their conceptualization of UC. Given that there is a general consensus over the four factor model of Gordon et al. (1980), researchers widely use the 30 items union commitment measure. But later, shorter versions of the original measure were developed. The 13 items scale of Kelloway, Catano, and Southwell (1992), 12 items scale of Mowday, Poter, and Steers (1982) 3 items measure of Martin and Peterson (1987) four items measurement of Jones and Roy (1995) are some of the examples. Compounding the confusion on measurement of UC, some studies have used only a selected number of dimensions of UC for measurement purposes. For instance, union instrumentality (Goeddeke & Kammeyer-Mueller, 2010) union membership (Renaud, 2002), union loyalty (Iverson & Kuruvilla, 1995) and union participation (Parks, Gallangher, & Fullagar 1995) can be cited. Further, making a significant stride, Snape and Redman, (2012) used four items measure of affective commitment of Meyer and Allen, (1997) to measure union commitment.

Studies on union commitment of employees in Sri Lanka are scant. Jinadasa and Opatha (1999) and Gamage and Hewagama, (2012) examined the union participation of the public sector employees. They found that union commitment was a strong determinant of union participation of the public sector employees. However, measuring of union commitment seems to be partial in term that they have not conceptualized it as a multi-dimensional variable.

Two issues seem to be involved in the case of measuring UC. The first is to decide the number of constructs to be included in the measurement instrument and the second issue is to decide their relative importance in the measurement. Given the fact that vast array of measuring instruments are available, it is advantageous if the measurement to be used is tested for its goodness. This is specially recommended if the context is significantly different from the context for which the original measure was developed (Chan, Tong-Qing, Redman, & Snape, 2006). Likewise, this study attempted to test the goodness of measure of 11 item union commitment measurement adapted from Conlon and Gallagher (1987).

Measurement

The measurement of union commitment (Conlon & Gallagher, 1987), contains 11 items which have been scaled on five point Likert's scale with 1= strongly disagree and 5= strongly agree. This instrument was developed based on the organizational commitment measure of Poter, Steers, Mowday, and Boulian, (1974) with a single factor structure recording a high internal reliability (α =.85). However, the items represent some of the dimensions of union commitment of Gordon et al. (1980). For example, the item "I feel very little loyalty to this union" measures the union loyalty factor, and "there is no too much to be gained by belonging with this union indefinitely" represents the union instrumentality dimension. Therefore, the present study examined the factor structure of the instrument to check whether it holds a single factor structure or a four factor structure in the Sri Lankan context. The item number 2, 8 and 11 were negatively worded as in the original measure, and words of some items were changed so that it stands more appropriate for the context.

Sample

A sample of 136 employees of clerical and related services of the public sector from 33 organizations was drawn for the data collection. Respondents were selected for the sample with stratified random sampling technique so that representative sample from each organization can be warranted.

The profile of the sample is such that 64.7 percent were male and 35.3 percent were female. Further, 61 percent of respondents are between 21-40 year age category while 33.8 percent are more than 40 years old. Sample respondents come from diverse educational backgrounds; 46.7 percent representing G.C.E.(A/L), 26.2 percent are graduate and 10.4 percent are with other qualifications. Majority of respondents (58.1 percent) has work experience of 5-10 years and 16.9 percent has more than 10 years experience.

Testing Reliability

Testing of reliability was done with the assessment of Cronbach's Alpha coeffcient (λ). Cronbach's Alpha specifies that if the sum of the individual items variance is closer to the variance of the entire scale, alpha values come closer to zero, stating that they are not measuring the same construct. Cronbach Alpha is a widely used coefficient for assessing the reliability of a measurement instrument. It measures the degree to which the test score indicates the status of an individual item on the factor defined by the test, as well as the degree to which the test score demonstrate individual differences in these traits (Cronbach & Meehl, 1955).

Validity Testing

Confirmatory Factor Analysis (CFA) was used for testing the construct validity of the measure of union commitment with Structural Equation Modelling (SEM). CFA assesses the factor structure of underlying variables based on the prior knowledge on that variable or construct (Byrne, Stewart, & Lee, 2004). Using of CFA is based on the rationale of Byrne, (2010) who asserted that CFA is most appropriate for testing the factorial validity of measure which has been substantially developed and validated. In the testing of validity of factor structure with CFA, it is tried to determine the extent to which each item measures the particular factor it is designed for.

The analytical procedure of the study involves testing of four models. This procedure termed as competing model testing (Antonakis, Avolio, & Sivasubramaniam, 2003), involves with testing of a target model or base line model with the other possible models in order to find the most parsimonious model for the sample data.

Based on competing model testing, the first model taking it as the baseline model tests the second order factor structure of the measurement instrument, assuming that it represents a multidimensional measurement structure with four factor structure. The second and third models test the measurement with three and two factor structure of second order. The final model tested the measurement as unidimentional with single factor of first order. The chi-square statistics with relevant degree of freedom and the model fit indices were compared to assess the best fit model.

Results

The reliability coefficient (Cronbach's Alpha) on total items of the measure scored a value of .732 which can be considered as a satisfactory level of reliability (Sekaran & Bougie, 2009). The individual item reliability score ranges from 0.713 to 0.732 which is again at the acceptable level.

The construct validity of the measurement was tested with CFA using SEM procedure with AMOS 16. Table 1 show the chi-square values with the degree of freedom for each model tested with model fit indices.

The results of CFA with competing model fitting indicate that the baseline model, which assumes four factor structure for union commitment score, is $x2=700.1$ with 43 df. However, the model fit does not indicate an adequate fit of the model (RMSEA=.093,CFI=.713 and AIC=746). The second model with three factor structure received a $x2$ value of 521.9 at 42 df with better model fit indices (RMSEA=.056,CFI=.981 and AIC=680) compared to the baseline model. The third model which is a two factor model had a $x2$ value of 661.7 at 45 df with moderate model fit indices (RMSEA=.071,CFI=.855 and AIC=703). The fourth model which tests the unidimensional single factor structure scored a $x2=636.1$ at 44 df again with moderately fitting indices (RMSEA=.086, CFI=.881 and AIC=680).

Accordingly, it is the three factor model which fits the data better than the alternative models. However, it is needed to explore the factor loading weights of the items of the measurement for identifying the three factors.

Table 1: Model Fit Statistics of Competing Model Fit Tests

Models	$\chi 2$	df	$\chi 2$/df	$\Delta \chi 2$	RMSEA	CFI	AIC
Model 1: Four Factor Model	700.1	43	16.27	-	.093	.713	746
Model 2: Three Factor Model	521.9	42	12.42	168.2	.056	.711	680
Model 3: Two Factor Model	661.7	45	14.70	38.4	.088	.855	703
Model 4: One Factor Model	636.1	44	14.4	64	.086	.881	680

Source: Compiled by the author based on data of survey 2012

Table 2 indicates the factor loading values. The identified three dimensions regressed with the union commitment construct significantly (β=.39, .61 and .53, CR>1.96, P<.050). Further each item of the measurement instrument loaded significantly with the three factors (β= .24 to .73, CR> 1.96, p<.05) except item number 7 (β=-.12CR<1.96, P>.05) which has to be deleted from the item list.

Table 2: Regression Weights
Group Number 1 - Default Model

Regression Path			Estimate	S.E.	C.R.	P
Union Loyalty	<—	Union com	.392	.033	11.951	***
Union Responsibility	<—	Union com	.612	.047	12.951	***
Union Belief	<—	Union com	.525	.041	12.753	***
Item 4	<—	Union Loyalty	.435	.056	7.767	***
Item 3	<—	Union Loyalty	.733	.048	15.270	***
Item 2	<—	Union Loyalty	.489	.071	6.881	***
Item 1	<—	Union Loyalty	.310	.092	3.369	***
Item 8	<—	Union Responsibility	.423	.098	4.316	***
Item 7	<—	Union Responsibility	-.012	.063	-.195	.845
Item 6	<—	Union Responsibility	.247	.059	4.187	***
Item 5	<—	Union Responsibility	.241	.059	4.076	***
Item 11	<—	Union Belief	.342	.098	3.498	***
Item 10	<—	Union Belief	.649	.138	4.702	***
Item 9	<—	Union Belief	.364	.099	3.691	***

*Note:* *** Significant at P=0.05

Source: Compiled by the author based on data of survey 2012

The schematic model with standard parameter estimated is depicted in Figure I.

Discussion

The objective of the present study was to test the goodness of measure (Validity and Reliability) of the union commitment measure adopted from Conlon and Gallagher(1987) in the Sri Lankan context. The reliability was assessed with reliability test, and the validity of the measure was tested by Confirmatory Factor Analysis (CFA) with SEM procedure which involves testing of multiple models (Byrne, Stewart, & Lee, 2004).

Figure 1: Three Factor Model of Union Commitment
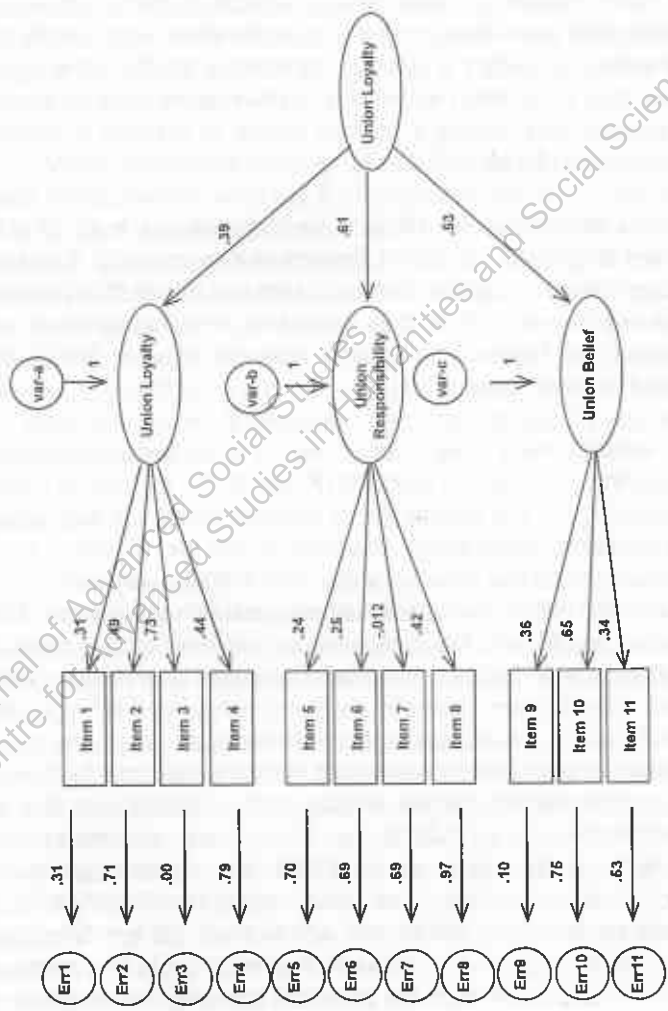
Source: Compiled by the author using data from survey 2012

The reliability analysis indicated a substantial level of reliability both on total instrument and each item of the instrument. Therefore, the instrument can be assumed to measure the underlined construct with a reasonably high level of consistency across the respondent and time.

The competing model testing indicates that the third model represents the best fitted one for sample data with smallest chi-square value ($x2=521.9$, df=42) compared to the other models. However, due to inherent weakness of chi-square such as sensitivity to the sample size, taking it as sole model fit statistic is erroneous (Byrne, Stewart, & Lee, 2004).

An alternative for Chi-square comparison is to check the chi-square difference ($\Delta x2$) of the alternative models. The highest significant chi-square difference indicates the better fitting model for the data set (Byrne, 2010). It is again the three factor model which has scored the highest chi-square different ($\Delta x2=168.2$, p<.05) compared to other models.

Researchers have to consider the other model fit indices for assessing the goodness of model fit (Kline, 2011). It gives an extended understanding on the model fitting position using parallel with Chi-square statistics. Accordingly, the third model has received the best fitting indices than the other models. The RMSEA value of 0.56, CFI =.981 and AIC =680, indicate a better model fitting situation. Though the second and fourth (two factor model and one factor model) have moderate model fit indices, the third model has been better fitted.

The CFA result confirmed a three factor structure for union commitment measurement instead of hypothesized four factor model, namely, union loyalty, union responsibility, willingness and union belief of Gordon, et al. (1980). The three factor structure identified were union loyalty, union responsibility and general union belief. The factors of union willingness were loaded significantly with union responsibility factor except item 7 which says "I am extremely glad that this union was chosen over others which could be representing me". This is expected with the fact that the respondents may have found this item irrelevant, given that they have only one major union representing their employee category. However, loading of the remaining items with the respective factors indicates the degree of discriminant validity of the measurement. All items except item 7

loaded with respective factor taking a value ranging from 0.733 to 0.241 with a significant CR ratio.(CR>.1.96).

It seems that union commitment of public sector employees consisted of union loyalty, union responsibility and general union beliefs. Therefore, these three dimensions should be taken together for accurate conceptualization of union commitment of Sri Lankan employees. On the other hand, this may be an insight for both managers and union leaders for managing the union commitment of their employees or members.

Willingness dimension of union commitment measured by the original measurement was not found valid in the Sri Lankan context. This is evident with the loading of items intended to measure union willingness with union responsibility factor. Loading of willingness items with union responsibility can be explained with the fact that union members may have perceived that it is their responsibility to serve for the union rather than arbitrarily (Jinadasa & Opatha, 1999). Therefore, the willingness dimension of union commitment may have been absorbed by more prevalent union responsibility dimension in Sri Lankan context.

Conclusion

The objective of this study was to test the reliability and validity of the union commitment instrument adapted in the Sri Lankan context. It was found that the measurement is reliable for measuring union commitment. However, the study did not reveal evidence for confirming the four factor structure of union commitment. Instead, it found that a three factor structure is more valid for Sri Lanka with factors of union loyalty, union responsibility and general union belief. One the questionnaire item of the original instrument was found irrelevant and deleted from the subsequent development. Therefore, we may reasonably conclude that 10 items measurement instrument is usable for measuring union commitment variable in future research in the Sri Lankan context. Items of the union willingness dimension of the original measure were found to be loaded with union responsibility dimension. This could be expected with the perception of most of employees that it is their responsibility to involve with union activities. However, further studies are recommended with samples from different employee categories so that the measurement can be validated in other contexts.

References

Antonakis, J., Avolio, B. J., & Sivasubramaniam, N. (2003). Context and leadership: An examination of the nine-factor full range leadership theory using the multi factor leadership questionnaire. *The Leadership Quarterly, 14,* 261-295.

Bamberger, P. A., Kluger, A. N., & Suchard, R. (1999). The antecedents and consequences of union commitment: A meta analysis. *Academy of Management Journal, 42* (3), 304-318.

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications and programming.* (2nd Ed.) New York: Taylor & Francis.

Byrne, B. M., Stewart, S. M., & Lee, P. W. (2004). Validating the beck depression inventory for Hong Kong community adolescents. *International Journal of Testing , 4* (3), 199-216.

Chan, A. W., Tong-Qing, F., Redman, T., & Snape, E. (2006). Union commitment and participation in the Chinese context. *Industrial Relation, 45* (3), 485-489.

Conlon, E. J., & Gallagher, D. G. (1987). Commitment to employer and union: Effect of membership status. *The Academy of Management Journal, 30* (1), 151-162.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological test. *Psychological Bulletin, 52,* 281-302.

Gamage, P. N., & Hewagama, V. G. (2012). Determinant of union participation of public sector organizations in Sri Lanka. *Sri Lankan Journal of Human Resource Management, 3* (1), 19-32.

Goeddeke, F. X., & Kammeyer-Mueller, J. D. (2010). Perceived support in a dual organizational environment: Union participation in a university setting. *Journal of Organizational Behavior, 31,* 65-83.

Gordon, M. E., Philpot, J. W., Burt, R. E., Thompson, E. A., & Spiller, W. E. (1980). Commitment to the union: Development of a measure and an examination of its correlates. *Journal of Applied Psychology, 65,* 479-499.

Hammer, T. H., & Avgar, A. (2005). The impact of unions on job satisfaction, organizational commitment and turnover. *Journal of Labour Research, 16* (2), 241-266.

Iverson, R. D., & Kuruvilla, S. (1995). Antecedent of union loyalty: The influence of individual dispositions and organizational context. *Journal of Organizational Behavior, 16,* 557- 582.

Jinadasa, P. V., & Opatha, H. P. (1999). An empirical study of membership participation in trade union activities: Evidence from selected service organizations in Sri Lanka. *Sabaragamuwa University Journal, 2* (1), 17-34.

Jones, J. G., & Roy, J. W. (1995). The effect of union membership on multiple work commitments among female public sector employees. *Journal of Psychology, 129* (2), 181-192.

Kelloway, E. K., Catano, V. M., & Southwell, R. R. (1992). The construct validity of union commitment: Development and dimensionality of a shoter scale. *Journal of Occupational and Organizational Psychology, 65,* 197-211.

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford.

Martin, J. E., & Peterson, M. M. (1987). Two-tier wage structures: Implications for equity theory. *Academy of Management, 30,* 297-315.

Meyer, J., & Allen, N. J. (1997). *Commitment in workplace: Theory, research and application.* Osaka: Sage.

Mowday, R. T., Poter, L. W., & Steers, R. M. (1982). *Employee-organizational linkage: The psychology of commitment, absenteeism and turnover.* New York: Academic Press.

Mowday, R. T., Richard, S. M., & Lyman, P. W. (1979). The measurement of organizational commitment. *Journal of Vocational Behaviour, 14* (October), 179-196.

Parks, J. M., Gallangher, D. G., & Fullagar, C. J. (1995). Operationalizing the outcomes of union commitment. The dimensionality of participation. *Journal of Organizational behaviour , 16,* 533-555.

Poter, W. L., Richard, S. M., Mowday, T., & Paul, B. V. (1974). Organizational commitment, job satisfaction and turnover among psychiatric technicians. *Journal of applied Psychology , 56* (5), 603-609.

Renaud, S. (2002). Rethinking the union membership job satisfaction relationship: Some empirical evidence in Canada. International *Journal of Manpower, 23* (2), 137-150.

Sadler, J. (2009). *The role of participatory union leadership and union commitment an organizational change process in health care setting.* Retrieved January 14, 2011, from http://www.lera.uiuc.edu/IndustryCouncils/health%20care/Sadler%202009.pdf

Sekaran, U., & Bougie, R. (2009). *Research methods for business: A skill building approach* (5th ed.). UK: John Wiley.

Senguptha, S. (2008). The impact of employee share ownership schemes on performance in unionized and non unionized workplaces. *Industrial Relation Journal, 39* (3), 170-190.

Snape, E., Redman, T., & Chan, W. A. (2000). Commitment to the union: A survey of research and the implication for industrial relation and trade unions. *International Journal of Management Review, 2*(3), 205 - 230.

Snape, E., & Redman, T. (2006). *The consequences of dual and unilateral commitment: Evidence from health service.* Retrieved March 11, 2011, from https://www.dur.ac.uk/resources/dbs/faculty/working-papers/WP-102-Feb06.pdf

Snape, E., & Redman, T. (2012). Industrial relation climate and union
         commitment: An evaluation of workplace level-effect. *Industrial
         Relation, 51* (1), 11-29.

Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational
         commitment as predictor of organizational citizenship and
         in-role behaviour. *Journal of Management , 17* (3), 601-617.