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Validation of Firm-Employee Relationship Strength as a Higher Order Construct

Dr Carmel Herington,
Griffith University

Abstract

This paper reports further assessment of the fit of a model proposed to represent firm-employee relationship strength. Firm-employee relationship strength is defined broadly as the level of the emotional connection between the firm and the employees (Herington, 2003b). Initial support for this model has been reported. In this analysis four competing models were assessed. The analysis provided further support for the originally proposed model, that is an eight-factor, higher order construct. However, the existence of the higher order construct remains inconclusive. Further research is now required to determine the existence of the firm-employee relationship strength as the latent construct, and to assess the model using new data.

Key words: firm-employee relationships, relationship strength.

Introduction

Relationships are now generally accepted as being crucial to marketing success (for example Berry, 1995; Gronroos, 1996;Gummesson, 2002; Sheth & Parvatiyar, 1995). Whilst strong relationships with customers remain the ultimate goal for successful implementation of the marketing concept, it is increasingly posited that internal organisational relationships have an impact on customer (and other external) relationships (Brookes, Brodie & Oliver 1998; Gummesson, 2002). There exists significant anecdotal evidence in the practitioner literature of a strong positive association between internal relationships of the firm and customer relationships (for example Freiberg & Freiberg, 1998; Rosenbluth & McFerrin Peters, 1992, 1998). However, academic empirical evidence testing this association remains limited. In fact, until recently, no measure of internal firm-employee relationships existed within the marketing literature.

Herington (2003a) presented results of testing an initial model of firm-employee relationship strength. Support was able to be provided for a proposed model which presented cooperation, communication, trust, balanced power, respect, attachment, absence of damaging conflict and shared goals and values as indicators of a higher order construct called firm-employee strength. This model is presented as Model 4 in Figure I.

Doll, Xia and Torkzadeh (1994), Bollen (1989), Byrne (1994), Hull, Tedlie and Lehn (1995), Hoyle (1995), MacCallum (1995), Maruyama (1998), Mulaik and James (1995) and Anderson and Gerbing (1988) have all recommended model assessment involving the specification and estimation of a number of plausible alternative models to the proposed theoretical model. These alternative models should be based on previous theoretical or empirical work and their fit to the sample data assessed.

Doll, Xia and Torkzadeh (1994) tested the fit of four alternate models. Model 1 hypothesized one first-order factor accounting for all the common variance amongst the set of variables. The second model proposed that the variables loaded onto a number of different uncorrelated first-order factors. The third model was proposed to be the same as model two, but with the first-order factors correlated. The final model hypothesized that the first-order factors all loaded onto a single second-order factor. Using the same dataset, they then proceeded to assess the fit of the data to each of the models, according to a number of fit indices.

Hence, in order to provide further validation of the initially supported firm-employee relationship strength model and further evidence that the firm-employee relationship strength latent construct does exist, the model should be assessed against a number of competing models to test if another model fits the data better. This paper therefore presents the results of utilising this validation process for Herington's (2003a) developed firm-employee relationship strength model. Firstly, the alternative models will be justified. Then the methodology will be explained. Finally the results of analysis will be discussed, concluding with the identification of the model which best fits the data.

Alternative model development

Based on logic, theory and previous research, four alternative plausible models of firm-employee relationship strength were proposed to test the model of firm-employee relationship strength. These are displayed as models 1-3 in Figure I.

Model 1 hypothesizes a single first-order factor, firm-employee relationship strength (RS), accounting for all the common variance among all items. According to this model, all the items from all of the various scales are highly correlated because they are measuring the same construct. Previous similar measures of relationship strength, such as Eisenberger and colleagues' (Eisenberger et al., 2001; Eisenberger et al., 1997) Perceived Organisational Support and Donaldson and O'Toole's (2000) relationship strength measure have been treated as single factor constructs. Hence, the literature provides a basis for this, implying that a single first-order factor is a plausible model for representing the data.

Model 2 hypothesizes that the items form eight uncorrelated first-order factors. These are cooperation, balanced power, communication, attachment, shared goals and values, respect, trust and absence of damaging conflict. Each of the concepts has been treated separately in the literature, and therefore could be seen to form an uncorrelated pattern. Therefore, this model was seen as a plausible model for representing the data, although it would be expected to be rejected if the hypothesized model of this research was to be supported, because "if the uncorrelated factors model fits, it means there are no causal relations among the latent variables" (Mulaik & James, 1995, p. 136).

Model 3 hypothesizes that the eight first-order factors are all intercorrelated. This model is plausible as many of the constructs have previously been found to have a direct relationship with outcomes such as commitment. This model assumes that relationship strength as a latent construct does not exist.

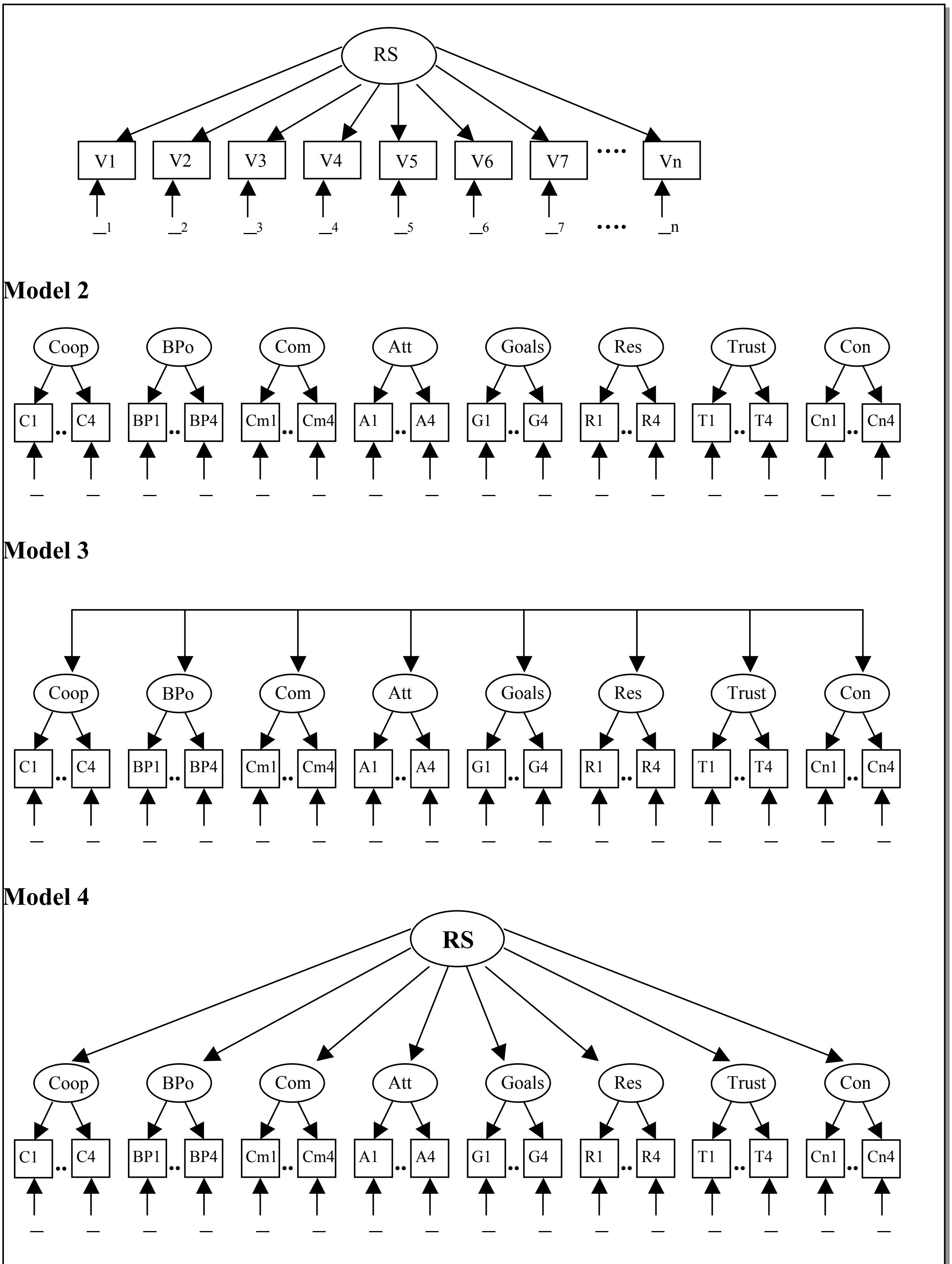
Model 4 hypothesizes the eight first-order factors load onto a single second-order factor called firm-employee relationship strength. This model posits that the individual scales are discriminable and correlated with each other because they are all related to a single, general construct (Hull et al. 1991). This model represents the existing model and is a plausible model based on the assessment of the literature and analysis to this point (see Herington 2003a).

Methodology

Assessment of the models is based on a convenience sample of 816 responses to an on-line survey. Respondents were employees from a single, international tourist firm and covered the gamut of positions and levels within the firm. They are typical of the services industry, being mostly female (73%), aged 20-29 (53%) and working with their employer for an average of three years.

Figure 1 - Alternative models of firm-employee relationship strength

Model 1



Source: Developed from Doll, Xia and Torkzadeh (1994); Hull, Tedlie & Lehn (1995)

This sample size enabled a total disaggregation approach to model assessment. This approach provides the most detailed level of analysis for model testing because each item is treated as a separate indicator of the relevant construct (Bagozzi & Heatherton, 1994; Dabholkar, Thorpe & Rentz, 1996). It also provides psychometric properties for each individual item in the model as well as testing the measurement and structural model at the same time.

Comparisons of the competing models was made using the AIC and overall fit according to the other fit indices. EQS was used for all analyses. This enabled the implementation of the robust CFI (CFI*) and Satorra-Bentler χ^2 (S-Bχ^2) which accounts for non-normality in data distributions, typical with larger sample sizes.

Results

As reported in Table I (Column 2), a satisfactory fit to the data was found for the initial model (model 4), with critical fit indices found to fall within acceptable limits (CFI* = 0.91; NFI = 0.92; SRMR = 0.04). S-B_^{2} was large and non-significant (S-B_$^2_{(df)}$ = 1564.58$_{(584)}$, p = 0.00) which can be expected given the size of the model and the dataset, especially with Mardia's estimate of 106.13 being well above the upper limit of 30.00 and indicating multivariate kurtosis at levels that can be considered problematic (Newsom, 2001). However, no evidence of non-normality was found for any individual item (skewness range = -0.93 to -0.38 and kurtosis range = 0.06 to 1.55), and Mardia's estimate can be significant in a large sample with only small departures from multivariate normality (Kline, 1998). With the CN of 258 exceeding Hoelter's (1983) rule of thumb of 200, further evidence is provided of the likelihood of the non-significant χ^2 being a feature of sample size.

Table 1 – Fit statistics for proposed and alternative models

1	2	3	4	5
Fit index	Model 4 (8 first-order factors, 1 second order factor)	Model 3 (8 correlated factors)	Model 2 (8 uncorrelated factors)	Model 1 (1 single factor)
_^{2} (df)	2045(584)	1866 (558)	9117 (590)	2966(594)
*P**	0.001	0.001	0.001	0.001
S-B_^{2}	1564.583	1436.4083	6982	2245
*P**	0.000	0.000	0.000	0.000
* CFI	0.914	0.930	0.441	0.855
SRMR	0.041	0.039	0.405	0.048
NFI	0.915	0.903	0.525	0.846
Determinant of input matrix	0.33758E-15	0.33758E-15	0.33758E-15	-
Mardia's normalised estimate	106.1279	106.1279	106.1279	106.1279
AIC	874.9999	750.08228	7929	1778
Kurtosis range	0.0604 to 1.5478	0.0604 to 1.5478	0.0604 to 1.5478	0.0604 to 1.5478
Skewness range	-0.9269 to -0.3750	-0.9269 to -0.3750	-0.9269 to -0.3750	-0.9269 to -0.3750

The goodness of fit indices for each of the competing models appears in Table 1 (Columns 3-5). Model 1 (the single factor model) did not evidence an acceptable fit even though the SRMR was < 0.05 (CFI* = 0.86; NFI = 0.85; S-Bχ^2 = 2245(594); p = 0.00; SRMR = 0.05).

Model 2 (uncorrelated factors) provided a very poor fit to the data (CFI* = 0.44; NFI = 0.0.53; S-Bχ^2 = 6982(590); p = 0.00; SRMR = 0.41). Model 3 (correlated factors with no higher-order factor) provided an acceptable fit to the data with NNFI, CFI* and SRMR all reaching acceptable levels (CFI* = 0.93; NFI = 0.90; S-Bχ^2 = 1436.41(558); p = 0.00; SRMR = 0.04).

Discussion

The results show that models 3 and 4 could both be satisfactory representations of the underlying structure. Model 3 actually provided a slightly better fit to the data than the proposed model (Model 4). In addition the model of correlated factors can be seen to provide a more parsimonious solution to the proposed model given the lower AIC evident (Model 3 AIC = 750.08; Model 4 AIC = 875). However, according to Doll, Xia and Torkzadeh (1994), it can be expected that a slightly better fit might be found for a first-order model over a second order model. This is because the second-order model is trying to explain the covariation among the first-order factors in a more parsimonious way. In addition, there can be expected to be some small additional error present with the addition of the higher order factor which would account for the small loss of fit. Doll, Xia and Torkzadeh (1994) tested the existence of the higher order construct by calculating the amount of variance in the first-order factors explained by the higher order latent construct. This was done by calculating a target coefficient, which is the ratio of the 'robust' chi-square of Model 3 to the 'robust' chi-square of Model 4. In this case, the target coefficient was calculated to be 0.92, which means that 92% of the variation in the first-order factors in Model 3 is explained by the firm-employee relationship strength construct. As Model 4 has the additional advantage of providing estimates of the validity and reliability of the latent factors, it provides a more interesting model to use for a small loss of fit.

Further examination of Model 4 revealed that parameter estimates for each variable and the latent construct variables were all significant. With significant standardised coefficients ranging from 0.83 to 0.99, the firm-employee relationship strength latent construct was found to be significantly and strongly positively related to all eight indicator latent constructs.

Conclusion

It is important to verify that a model for which an acceptable fit has been found is not actually better represented by another model (Anderson & Gerbing, 1988; Byrne, 1994; MacCallum, 1995). It is also important to verify the existence of a higher order latent construct. This paper has provided such initial support for a model of firm-employee relationship strength, which has been previously reported (Herington 2003a).

Limitations of the research include the restrictive data sample. This may be overcome by the further collection of data from other industries and firms. Also required is further assessment of the existence of the latent construct, which may be undertaken through utilising the model in larger nomological models which include outcomes of firm-employee relationship strength, such as commitment.

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