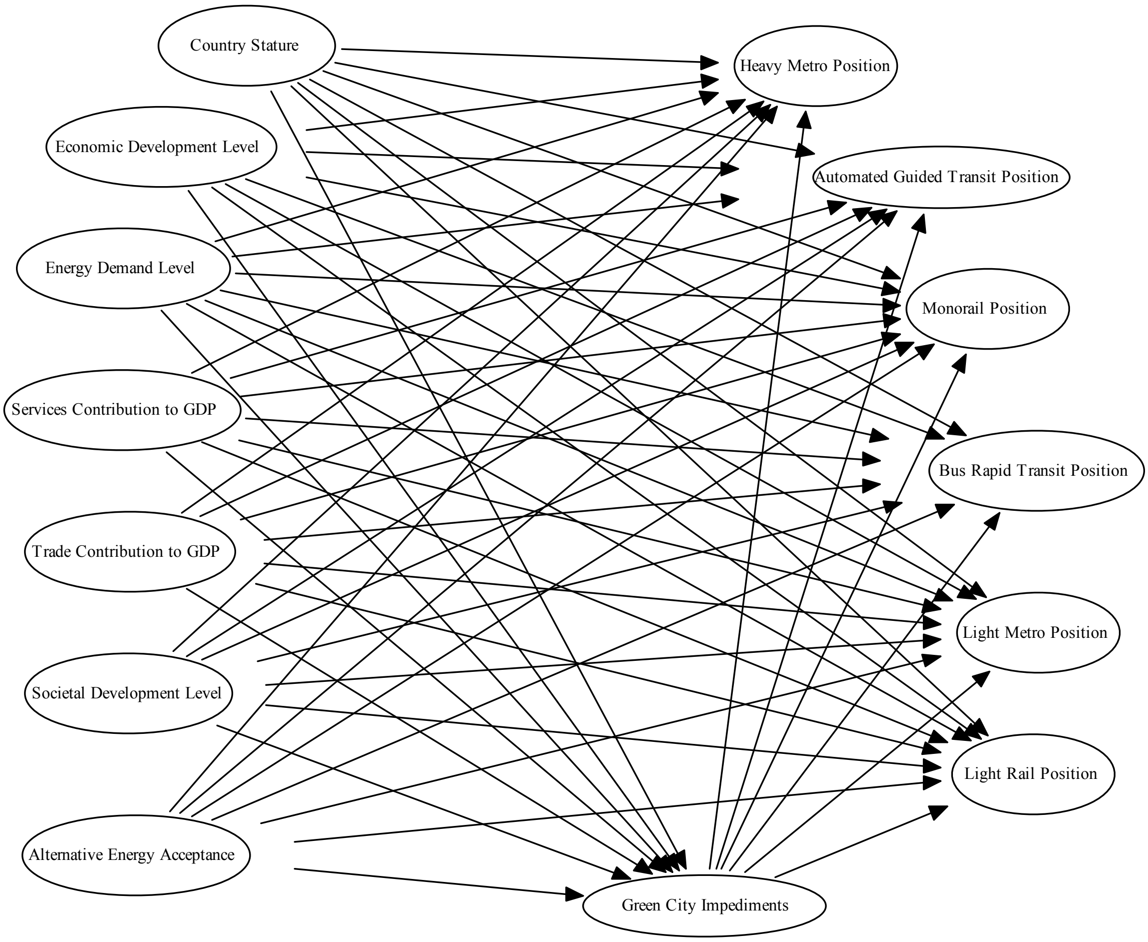

Figure 1. Hypothesized Structural Equation Model

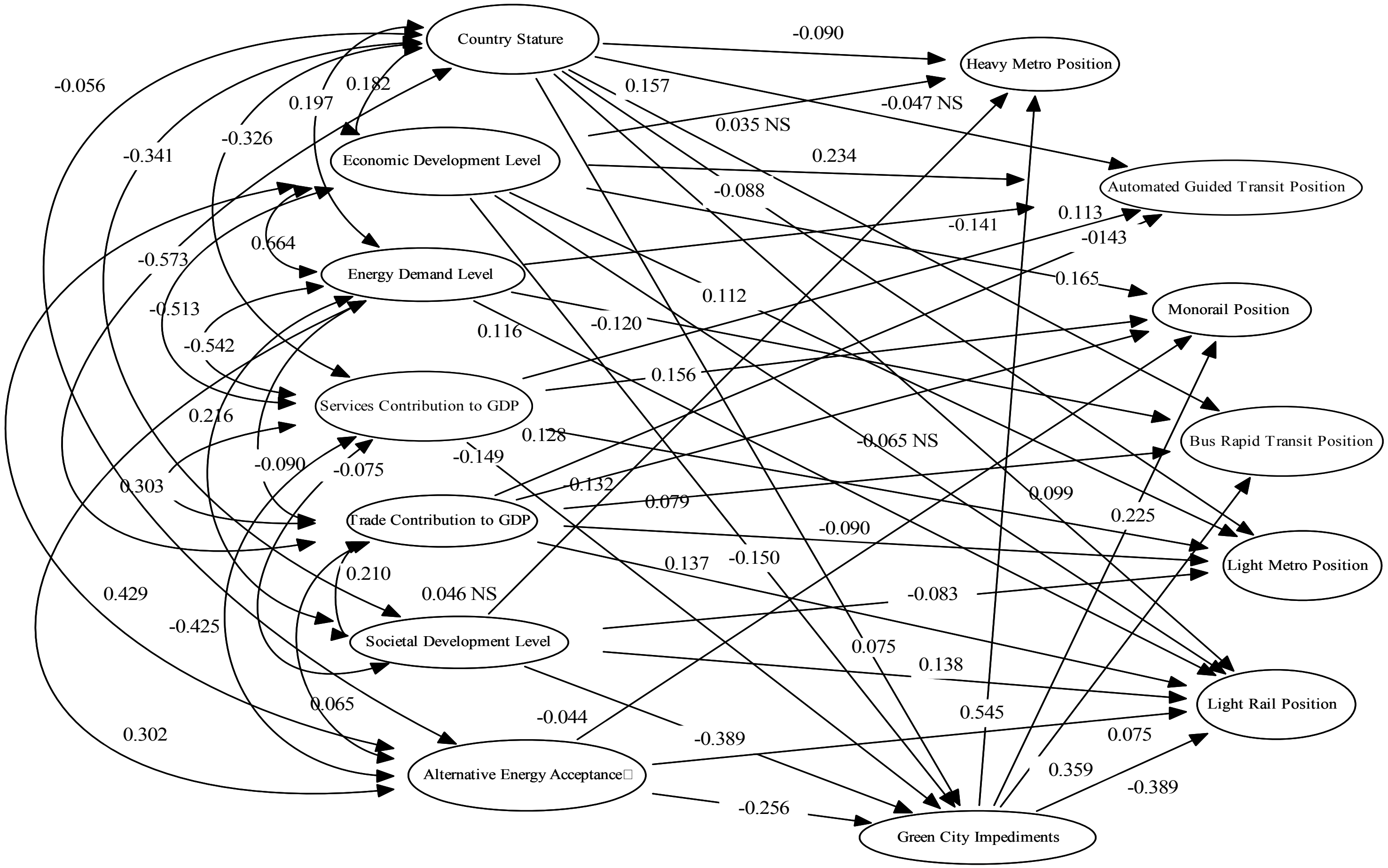

Figure 2. Modified (final) structural equation modelling

Data were analyzed using structural equation modelling (SEM) techniques designed to evaluate how well a theoretical model represents the data. We first tested the initial model shown in Figure 1. The variables in ovals are the latent variables extracted by exploratory factor analysis. The arrows show the causal relation between the variables and the curved arrows (Figure 2) represents the correlation between the independent variables (i.e. latent variables) in predicting the dependent variables (i.e. other latent variables).

The SEM testing was based on Robust Maximum Likelihood (ML) estimation using EQS 6.1 for Windows program (Bentler, 2005). After evaluating the fit of this initial model, we conducted further analyses in an effort to improve the fit of the model according to several fit indices. To identify the most significant and meaningful model, we examined the Lagrange Multiplier (LM) tests and added paths that were most likely improve the fit of the model and which made theoretical sense. To evaluate the fit of the models we focused on different types of fit indices including Bentler-Bonett Normed Fit Index (B-B NFI), Bentler-Bonett Non-Normed Fit Index (B-B NNFI), Comparative Fite Index (CFI), Standardized Root Mean Square Residual (SRMR) and Root Mean-Square Error of Approximation (RMSEA). Following convention, for example, Byrne (2006) models with B-B NFI, B-B NNFI and CFI values greater than 0.90 and a RMSEA less than or equal to 0.10 were judged as providing a reasonable fit to the data. In this study, however, Hu and Bentler (1999) recommendation was used, that is to accept the model if CFI > 0.95 and RMSEA < 0.06. We also examined Satorra-Bentler Scaled Chi-square test (S-B χ^2) and its associated probability value, and probability value greater than 0.05 indicate a reasonable fit of the data.

The path diagrams in Figure 2 shows the standardized regression coefficients, as arrows pointing to the dependent latent variables, and correlations between latent variables. As an example, in Figure 2, 0.182 is the correlation between the Country Stature and Economic Development Level. Note that the model in Figure 2 shows the significant path coefficients and correlations at the 0.05 level and four non-significant path coefficients whose removal (deletion) would affect the non-significance of Satorra-Bentler Scaled Chi-square, still the model includes correlations between measurement errors which are omitted from the diagrams for the sake of simplicity.

Table 1 summarizes the results of the initial theoretical and final models. As can be seen in this table, the initial theoretical models did not fit the data well, for example CFI < 0.90 and RMSEAs > 0.05. Therefore, we modified the initial models by adding paths.

Table 1 Summary of fit indices for initial and final structural models

Fit measures	Initial Model	Final Model
B-B NFI	0.403	0.989
B-B NNFI	-	0.989
CFI	0.398	0.996
RMSEA	0.221	0.018
SRMR	0.164	0.016
P – value for S-B χ^2	< 0.0001	0.0512

Correlations among Disturbance (error) terms related to Cities Factors:

Pair of Cities factors	Correlation
(Light metro position, Light rail position)	-0.254
(Heavy metro position, Light rail position)	0.104
(Monorail position, Light rail position)	-0.159
(Bus rapid transit position, Light rail position)	-0.130
(Heavy metro position, Light metro position)	-0.147
(Monorail position, Light metro position)	-0.087
(Automated guided transit position, Monorail position)	0.154

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Hu, L. And Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6(1), 1-55.