THE IMPACT OF THEORETICAL CONSTRUCT VALIDITY ON CAUSAL STRUCTURE MODEL WITHIN BANKING INDUSTRY
– a study of applied multivariate data analysis –

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Abstract

The current analysis is based on Hopkins’ data (1997) used to investigated the causal relations between strategic planning and financial performance within banking industry. The correlation matrix for the seven items developed to capture the construct of strategic planning intensity was used to conduct a confirmatory factor analysis and then, a structural model was fitted to data in order to replicate the model used in the original paper. The results of confirmatory factor analysis showed that: (a) the 7 original items do not measure the specified latent variable, but two separated factors that explain 49% of the variance, (b) the latent variable “strategic planning intensity” might be regarded as one-factor structure measured by 5 items (V1 – determining banks’ mission, V2 – developing major long term objectives, V5 – evaluating strategic options, V6 – implementing strategic options, V7 – controlling the implemented strategic option). Although the results of structural equation modelling were not very clear, the general impression was that strategic planning intensity could be indeed regarded as a mediator between institutional factors (managerial and organisational) and financial performance, because: (a) managerial factors have a strong direct effect (0,82) on strategic planning intensity, and also an indirect effect (0,41) on financial performance, mediated by planning intensity, (b) organisational factors have a direct effect on financial performance (0,77) and also an indirect effect (0,086) mediated by planning intensity. The paper ends with few recommendations regarding alternative strategies that might be used to improve the structural model.

Cuvinte-cheie: analiză factorială confirmatorie, modelare prin ecuaţii structurale, planificare strategică, factori manageriali şi organizaţionali, performanţa financiară.

Keywords: confirmatory factor analysis, structural equation modelling, strategic planning, managerial and organisational factors, financial performance.

1. INTRODUCTION

The purpose of this paper is to illustrate how to apply multivariate data analysis (especially confirmatory factor analysis – CFA and structural equation modelling – SEM) to investigate the factorial validity of a theoretical construct and the validity of a causal structure.

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In the last 15 years, CFA and SEM have been used for analysing a variety of topics in social and behavioural sciences, such as ability growth and decline (Raykov, 2000), academic self concept and achievement (March, Hau & Kong, 2002), achievement tests (Muraishi & Toyoda, 1998), child vocabulary competence (Bornstein & Haynes, 1998), cognitive abilities (Carlstedt, 2001), cognitive screening (Anderson, Burton, Parker & Godding, 2001), cross-cultural measurement equivalence (Byrne & Campbell, 1999), differential item functioning (Chan, 2000). However, there have been errors in using these techniques, because some authors used structural models without paying too much attention to the measurement models. For example, according to Byrne (1994) it is critical that the measurement of each latent variable be psychometrically sound, because the structural portion of a standard full structural equation model involves relations among latent variables and the primary concern in working with a standard full model is to assess the extend to which these relations are valid. Thus, an important preliminary step in the analysis of such models is to test for the validity of the measurement model before making any attempt to evaluate the structural model. Once it is known that the measurement model is operating adequately, one can then have more confidence in findings related to the assessment of the hypothesised structural model.

2. METHOD

This analysis is based on data from a study of Hopkins and Hopkins (1997). The authors investigated the causal relations between strategic planning and financial performance within banking industry and concluded that the intensity with which banks engage in the strategic planning process has a direct, positive effect on banks’ financial performance, and mediates the effects of managerial and organizational factors on banks’ performance. However, the authors did not provide any information about the validity of strategic planning intensity or the coherence of financial performance, although these 2 dependent variables should be regarded as latent constructs.

2.1. OBJECTIVE

The study has two main objectives:

Because the authors do not provide information about the validity of the measure “strategic planning intensity” and their study is entirely based on the importance of this latent variable for explaining financial performance in banks, the first aim of this analysis is to assess whether the variable “strategic planning intensity” represents a valid construct.

The second objective is to assess whether the final model derived in their paper (Figure 3, p. 647) could be improved by using a valid measure of strategic planning intensity.
2.2. DATA COLLECTION

The chief executive officers (CEOs) of 112 banks completed a survey about strategic planning. The survey included items about: strategic planning intensity, financial performance, managerial factors, and organizational factors.

- **Strategic planning intensity.** On a scale ranging from 1 (a weak emphasis) to 10 (a strong emphasis), the CEOs were asked to indicate how much emphasis their bank placed on each component of the strategic planning process. The components included (1) determining banks’ mission, (2) developing major long term objectives, (3) assessing the external environment, (4) assessing the internal environment, (5) evaluating strategic options, (6) implementing strategic options, and (7) controlling the implemented strategic option.

- **Financial performance.** The performance of banks has been measured by three variables: profit, return on equity, deposit growth.

- **Organisational factors.** Bank size and bank structural complexity were the two observed variables used to measure the organisational factors latent variable.

- **Managerial factors.** Beliefs about planning–performance relationships were measured by asking the CEOs to evaluate how critical they feel strategic planning is (or can be) to a bank’s financial success. Strategic planning expertise was measured by asking the CEOs to indicate the level of expertise that exists in their bank to perform strategic planning. The CEOs indicated their beliefs on a 10-point scale ranging from not critical/low (1 point) to very critical/high (10 points).

2.3. DATA ANALYSIS

According to many experts in multivariate analysis (Bartholomew *et al*., 2002) among the most useful computer programmes for CFA and SEM are LISRELL, EQS and MPlus. The current analysis was conducted with the software EQS (Bentler, 2006; Byrne, 1994).

The first objective was achieved by conducting a confirmatory factor analysis to assess the adequacy of the measurement model for “strategic planning intensity”. The analysis used the correlation matrix for the seven items developed to capture this construct. In order to reach the second objective, a structural model, identical with that used by Hopkins and Hopkins (1997), was fitted to data and then few attempts to optimise it have been explored.

3. RESULTS

In this section the main results of both measurement and structural models will be provided and analysed.

3.1. THE MEASUREMENT MODEL

In order to assess the validity of the latent variable “strategic planning intensity” I have started by fitting a one-factor model.
3.1.1. The first measurement model: One-factor structure with 7 items

The diagram for this model, with standardised coefficients, is displayed in Figure 1.1 and seems to indicate a few problems with variables V2, V3 and V4. These variables, namely developing major long term objectives (V2), assessing the external environment (V3), and assessing the internal environment (V4) are not strongly correlated with the latent variable “strategic planning intensity”. Moreover, variable 4 is negatively related with the overall construct.

![EQS diagram for measurement model 1 (one-factor construct).](image)

Furthermore, if we analyse the standardised residual information in Table 1, we see that the average off-diagonal value is 0.078 which does not reflect a good fit to data. The largest off-diagonal values are 0.40, 0.29, 0.21, 0.14, and they reflect model misfit associated with variables V3, V2, V4.

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
<th>V4</th>
<th>V5</th>
<th>V6</th>
<th>V7</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td>0.096</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3</td>
<td>-0.145</td>
<td>0.404</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4</td>
<td>-0.029</td>
<td>0.216</td>
<td>0.297</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5</td>
<td>-0.001</td>
<td>0.000</td>
<td>-0.043</td>
<td>-0.066</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V6</td>
<td>0.024</td>
<td>0.008</td>
<td>0.066</td>
<td>0.040</td>
<td>-0.020</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>V7</td>
<td>-0.045</td>
<td>-0.068</td>
<td>-0.017</td>
<td>-0.030</td>
<td>0.033</td>
<td>0.002</td>
<td>0.000</td>
</tr>
</tbody>
</table>

AVERAGE ABSOLUTE STANDARDIZED RESIDUAL = 0.0590
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL = 0.0786
Finally, Table 2 displays a goodness of fit summary, and we notice statistics reported for several indices, all related with the model as a whole. Among all these values are the chi-square with a value of 68.32 for 14 degrees of freedom ($p = 0.000$), and many fit indexes NFI (0.83), CFI (0.85), GFI (0.86), AGFI (0.72) with a RMSEA of 0.18. Therefore, the indexes are consistent in suggesting that the hypothesised model represents an inadequate fit to data. However, the Cronbach’s alpha for this measure seems to be 0.72.

Table 2

<table>
<thead>
<tr>
<th>Index Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square (model)</td>
<td>68.324</td>
</tr>
<tr>
<td>Degrees of freedom</td>
<td>14</td>
</tr>
<tr>
<td>Probability value</td>
<td>0.00000</td>
</tr>
<tr>
<td>Bentler-Bonett Normed Fit Index</td>
<td>0.832</td>
</tr>
<tr>
<td>Bentler-Bonett Non-Normed Fit Index</td>
<td>0.789</td>
</tr>
<tr>
<td>Comparative Fit Index (CFI)</td>
<td>0.859</td>
</tr>
<tr>
<td>Bollen’s (IFI) Fit Index</td>
<td>0.862</td>
</tr>
<tr>
<td>McDonald’s (MFI) Fit Index</td>
<td>0.785</td>
</tr>
<tr>
<td>Joreskog-Sorbom’s GFI Fit Index</td>
<td>0.862</td>
</tr>
<tr>
<td>Joreskog-Sorbom’s AGFI Fit Index</td>
<td>0.724</td>
</tr>
<tr>
<td>Root Mean-Square Residual (RMR)</td>
<td>0.112</td>
</tr>
<tr>
<td>Standardized RMR</td>
<td>0.112</td>
</tr>
<tr>
<td>Root Mean-Square Error of Approximation (RMSEA)</td>
<td>0.187</td>
</tr>
<tr>
<td>90% Confidence Interval of RMSEA</td>
<td>(0.143–0.231)</td>
</tr>
</tbody>
</table>

3.1.2. The second measurement model: Two distinct factors

Based on the above mentioned results and the correlation matrix, I have conducted an exploratory factor analysis which proved that there are indeed 2 factors:

- the first factor is represented by V1 (determining banks’ mission), V5 (evaluating strategic options), V6 (implementing strategic options), V7 (controlling the implemented strategic option) and
- the second factor is represented by V2 (developing major long term objectives), V3 (assessing the external environment) and V4 (assessing the internal environment).

Therefore, I decided to fit a model with two separated, but correlated factors. The diagram for the two-factor model, with standardised coefficients, is displayed in Figure 2 and it seems to indicate a better fit. However, variable 4 is still not well integrated in factor 2.
If we analyse the goodness of fit summary, we observe the chi-square has a value of 47.53 for 13 degrees of freedom (p = 0.00001) and the fit indexes are not consistent. According to both CFI and IFI the fit is 0.91 and this model might be considered a marginal significant, but good enough model. Nevertheless, based on other indexes, NFI (0.88), GFI (0.89), AGFI (0.77), RMSEA (0.15) we have to admit that this model also represents an inadequate fit to data.

3.1.3. The third measurement model: Two-factor structure with 6 items

Finally, I have decided to assess whether strategic planning intensity could be represented by a two-factor structure.

The diagram is depicted in Figure 3, and if we analyse the goodness of fit summary, we observe a little improvement. The chi-square has a value of 31.98 with 4 degrees of freedom and NFI (0.91), CFI (0.92), IFI (0.92) and GFI (0.91) are consistent in showing that this model fits better the data. However, AGFI (0.57) and RMSEA (0.25) indicate again some possible problems.

3.1.4. The fourth measurement model: One-factor structure with 5 items

In order to reduce these potential problems, we could represent the construct of “strategic planning intensity” as having only one-factor structure with less than 7 items.

After testing models with 6 and 5 items, I decided that the latter solution (where the latent variable is measured by 5 items: V1 – determining banks’ mission, V2 – developing major long term objectives, V5 – evaluating strategic
options, V6 – implementing strategic options, V7 – controlling the implemented strategic option) is better. If we fit such model, then the standardised residual information (Table 3) shows that the average off-diagonal value is .028 which reflects a good fit to data. A review of the frequency distribution indicates that all residual values fall between –0.10 and +0.10.

Figure 3. EQS diagram for measurement model 3 (two-factor structure).

Figure 4. EQS diagram for measurement model 4 (one-factor structure with 5 items).
The impact of construct validity on structural model

Table 3
STANDARDIZED RESIDUAL MATRIX (model 4)

<table>
<thead>
<tr>
<th></th>
<th>V1</th>
<th>V2</th>
<th>V5</th>
<th>V6</th>
<th>V7</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td>0.096</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5</td>
<td>–0.002</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V6</td>
<td>0.022</td>
<td>0.008</td>
<td>–0.019</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>V7</td>
<td>–0.046</td>
<td>–0.068</td>
<td>0.035</td>
<td>0.002</td>
<td>0.000</td>
</tr>
</tbody>
</table>

AVERAGE ABSOLUTE STANDARDIZED RESIDUAL = 0.0199
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUAL = 0.0298

The results of goodness of fit summary (Table 4) show that the chi-square has a value of 11.49 with 5 degrees of freedom, all the fit indexes agree NFI (0.96), CFI (0.98), IFI (0.98), and GFI (0.95), with a RMSEA of 0.10. As a consequence, we have now evidence that the theoretical construct “strategic planning intensity” can be measured in a valid way by 5 items out of 7, and the Cronbach’s alpha for this measure is 0.85.

Table 4
GOODNESS OF FIT SUMMARY FOR METHOD = ML (model 4)

<table>
<thead>
<tr>
<th></th>
<th>INDEPENDENCE MODEL CHI-SQUARE = 343,406 ON 10 DEGREES OF FREEDOM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INDEPENDENCE AIC = 323,406</td>
</tr>
<tr>
<td></td>
<td>INDEPENDENCE CAIC = 286,221</td>
</tr>
<tr>
<td>MODEL AIC</td>
<td>MODEL CAIC = –17,097</td>
</tr>
<tr>
<td></td>
<td>CHI-SQUARE = 11,496 BASED ON 5 DEGREES OF FREEDOM</td>
</tr>
<tr>
<td></td>
<td>PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.04239</td>
</tr>
<tr>
<td></td>
<td>THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 11,839.</td>
</tr>
</tbody>
</table>

FIT INDICES
BENTLER-BONETT NORMED FIT INDEX = 0.967
BENTLER-BONETT NON-NORMED FIT INDEX = 0.961
COMPARATIVE FIT INDEX (CFI) = 0.981
BOLLEN’S (IFI) FIT INDEX = 0.981
MCDONALD’S (MFI) FIT INDEX = 0.971
JORESKOG-SORBOM’S GFI FIT INDEX = 0.959
JORESKOG-SORBOM’S AGFI FIT INDEX = 0.877
ROOT MEAN-SQUARE RESIDUAL (RMR) = 0.035
STANDARDIZED RMR = 0.035
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = 0.108
90% CONFIDENCE INTERVAL OF RMSEA (0.019–0.191)

3.2. THE STRUCTURAL MODEL

For the second part of the analysis a structural model will be fitted in order to explain the relationship among strategic planning intensity (SPInt), financial performance (FPerf), managerial factors (MFact) and organisational factors (OFact). More precisely, we are interested to test whether strategic planning intensity mediates the relationship between financial performance and both managerial and organizational factors.
3.2.1. The first structural model: Planning intensity as a mediator

The diagram for this model, with standardised coefficients, is displayed in Figure 5 and it seems to look like a good model. However, if we analyse the goodness of fit summary (Table 5), we observe a few problems. The chi-square has a value of 104.18 with 46 degrees of freedom (p = 0.0000) and the fit indexes differ. According to CFI (0.91), IFI (0.91) and RMSEA (0.10) the model is good, but NFI (0.85), GFI (0.87), AGFI (0.78) show that it is not an adequate model. If we analyse the standardised residuals we observe that model misfit might be associated with variable 5 (developing major long term objectives) which shows quite high value related with V1 (–0.21), V2 (–0.20), V3 (–0.15) and V15 (–0.25). Therefore a possible improvement could be gained by deleting V5 from the model.

However, apart from these comments, we can certify that strategic planning intensity play a mediating role between managerial and organisational factors, on one side, and financial performance, on other side. So, we can notice:

- a very strong relation between managerial factors and SPInt (0.82), organisational factors and FPerf (0.77), SPI and FP (0.51);
- a week relation (0.17) between organisational factors and SPI.

Figure 5. EQS diagram for structural model 1.
Table 5
GOODNESS OF FIT SUMMARY FOR STRUCTURAL MODEL 1

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Chi-Square</th>
<th>Degrees of Freedom</th>
<th>AIC</th>
<th>CAIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence Model</td>
<td>740,209</td>
<td>66</td>
<td>608,209</td>
<td>362,788</td>
</tr>
<tr>
<td>Model</td>
<td>12,187</td>
<td></td>
<td>12,187</td>
<td>–158,864</td>
</tr>
</tbody>
</table>

Chi-square = 104,187 based on 46 degrees of freedom
Probability value for the Chi-square statistic is 0.00000
The normal theory RLS Chi-square for this ML solution is 95.193.

Fit Indices
- Bentler-Bonett Normed Fit Index = 0.859
- Bentler-Bonett Non-Normed Fit Index = 0.876
- Comparative Fit Index (CFI) = 0.914
- Bollen's (IFI) Fit Index = 0.916
- McDonald's (MFI) Fit Index = 0.771
- Joreskog-Sorbom's GFI Fit Index = 0.875
- Joreskog-Sorbom's AGFI Fit Index = 0.788
- Root Mean-Square Residual (RMR) = 0.078
- Standardized RMR = 0.078
- Root Mean-Square Error of Approximation (RMSEA) = 0.107
- 90% Confidence Interval of RMSEA (0.079–0.133)

![EQS Diagram](image_url) Figure 6. EQS Diagram for Structural Model 2.
3.2.2. The second structural model: Financial performance as a mediator

If we reverse the relation between SPInt and FP we obtain the model depicted in Figure 6. In this case, as we can notice in Table 6, the chi-square has a value of 104.04 with 46 degrees of freedom and again there are some differences among the fit indexes: CFI (0.91), IFI (0.91) and RMSEA (0.10) suggest the model is adequate, but NFI (0.85), GFI (0.87), AGFI (0.79) show that it is not.

If we analyse the standardised residuals of structural model 2 we observe that model misfit might be associated with financial performance:
• variable 1 shows quite high value related with V12 (0.34), V8 (0.22), V4 (0.21);
• variable 2 shows quite high value related with V12 (0.24) and V4 (0.21);
• variable 3 shows quite high value related with V12 (0.27) and V4 (0.21).

Table 6
GOODNESS OF FIT SUMMARY FOR STRUCTURAL MODEL 2
<table>
<thead>
<tr>
<th></th>
<th>INDEPENDENCE MODEL CHI-SQUARE = 740,209 ON 66 DEGREES OF FREEDOM</th>
<th>INDEPENDENCE AIC = 608,209</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CHI-SQUARE = 104,040 BASED ON 46 DEGREES OF FREEDOM</td>
<td>MODEL AIC = 12,040</td>
</tr>
<tr>
<td></td>
<td>PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS 0.00000</td>
<td>MODEL CAIC = −159,010</td>
</tr>
<tr>
<td></td>
<td>THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS 93,423.</td>
<td></td>
</tr>
</tbody>
</table>

FIT INDICES
BENTLER-BONETT NORMED FIT INDEX = 0.859
BENTLER-BONETT NON-NORMED FIT INDEX = 0.876
COMPARATIVE FIT INDEX (CFI) = 0.914
BOLLEN’S (IFI) FIT INDEX = 0.916
MCDONALD’S (MFI) FIT INDEX = 0.772
JORESKOG-SORBOM’S GFI FIT INDEX = 0.877
JORESKOG-SORBOM’S AGFI FIT INDEX = 0.791
ROOT MEAN-SQUARE RESIDUAL (RMR) = 0.120
STANDARDIZED RMR = 0.120
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = 0.107
90% CONFIDENCE INTERVAL OF RMSEA (0.079–0.133)

4. CONCLUDING REMARKS

This study aimed to assess whether the variable “strategic planning intensity”, used and developed by Hopkins and Hopkins (1997), represents a valid construct and to test whether the final model derived in their paper offers a good enough understanding of the relationship between planning intensity and financial performance.

The first hypothesis stated that strategic planning intensity might represent a unidimensional construct which can be adequately measured by seven items proposed.
by Hopkins. As we saw, using confirmatory factor analysis, I found evidences that those 7 items do not measure the specified latent variable, but two separated factors that explain 49% of the variance. After few alternative solutions have been tested (two independent factors, two-factor structure) the results showed that the latent variable “strategic planning intensity” might be regarded as one-factor structure measured by 5 items (V1, V2, V5, V6, V7). This model showed a good agreement of different fit index NFI (.96), CFI (.98), IFI (.98), GFI (.95), RMSEA (.10), and the reliability is 0.85.

Having established the structure of the latent variable, the next hypothesis was that structural model proposed by Hopkins and Hopkins (1997) represents a good explanation for the role of strategic planning intensity. The results of structural equation modelling were not very clear, some fit indexes CFI (0.91), IFI (0.91) and RMSEA (0.10) suggesting the model is good, while others NFI (0.85), GFI (0.87), AGFI (0.78) showing that somewhere there is a misfit. However, the general impression was that strategic planning intensity could be indeed regarded as a mediator between institutional factors (managerial and organisational) and financial performance. Managerial factors proved to have a strong direct effect (0.82) on strategic planning intensity, and also an indirect effect (0.41) on financial performance mediated by planning intensity. In the same time, organisational factors showed to have a direct effect on financial performance (0.77) and also an indirect effect (0.086) mediated by strategic planning intensity. The other possible causal relation from financial performance to strategic planning proved to be also veridical, although it changes the relation between organisational factors and strategic planning, with high organisational factor leading to low planning intensity.

Taking account of these results, future investigation should be directed to analyse the following problems:

a) Regarding the measurement of strategic planning intensity, different attempts might be conducted to develop and validate the construct because this is the most important variable. With present data, if, for instance, we reduce it to only four items, then the results of the structural model changes dramatically.

b) Another possible alternative might be a model where the relation between organisational factors and planning intensity is deleted, because it already showed to be quite week.

c) However, attention must be also focused to the way in which managerial and organisational factors are measured. The present solution does not seem to be a valid measure given the small number of items. In my opinion, at least 3 items should be developed for each construct, otherwise issues associated with measurement errors could easily occur. Otherwise, they could be simply used as observed variables.

d) Finally, an attempt to group the managerial and organisational factors into a single construct might represent a good option.
REFERENCES


REZUMAT

Analiza realizată se bazează pe datele obținute din studiul lui Hopkins (1997) în care s-au investigat relațiile causale dintre planificarea strategică și performanța financiară în domeniul bancar. Matricea corelațiilor pentru cei 7 itemi dezvoltării de a reduce riscurile și măsoarea conceptului de „intensitate a planificării strategice” a fost utilizată pentru a realiza o analiză factorială confirmatorie și apoi un model structural care a fost testat cu scopul de a evalua analiza din articolul original. Rezultatele analizei factoriale confirmatorii au arătat că: (a) cei 7 itemi originări nu măsoară variabile latente specifice, ci doi factori separați care explică 49% din varianță, (b) variabila „intensitatea planificării strategice” poate fi privită ca un factor măsurat de 5 itemi (V1 – determinarea misiunii băncii, V2 – dezvoltarea obiectivelor pe termen lung, V3 – evaluarea opțiunilor strategice, V6 – implementarea opțiunilor strategice, V7 – controlul implementării). Deși rezultatele modelării cu ajutorul ecuațiilor structurale nu au fost foarte clare, impresia generală a fost totuși aceea că intensitatea planificării poate fi considerată un factor care influențează relațiile dintre factorii instituționali și performanța financiară, deoarece: (a) factorii manageriali au un efect direct (0,82) asupra planificării și un efect indirect (0,41) asupra performanței financiare, mediat de planificare; (b) factorii organizaționali au un efect direct (0,77) asupra performanței financiare și un efect indirect (0,086), mediat de planificare. Lucrarea se încheie cu câteva recomandări referitoare la strategii alternative care ar putea fi utilizate pentru a optimiza modelul structural.