

Økonomistyring

Jakob Hjort Matthiasen

## Perceptions of Justice: Non-Financial Performance Indicators and Trust

Trondheim, mai 2015



HANDELHØYSKOLEN  
I TRONDHEIM

Høgskolen i Sør-Trøndelag  
Handelshøgskolen i Trondheim

Jakob Hjort Matthiasen

# **Rettferdighetsoppfattelsen: Ikke-økonomiske prestasjonsmål og tillit**

## **Perceptions of Justice: Non-financial Performance Indicators and Trust**

**MASTEROPPGAVE - Økonomi og administrasjon/siviløkonom**

**Trondheim, Mai 2015**

Hovedprofil: Økonomistyring

Veileder: Mats Strid



**HANDELHØYSKOLEN  
I TRONDHEIM**

Høgskolen har intet ansvar for synspunkter eller innhold i oppgaven.  
Framstillingen står utelukkende for studentens regning og ansvar.

## **Preface**

This thesis is conducted as the conclusion of my master's degree in management accounting, economics and administration at Trondheim Business School. The aim of my thesis is to research the effects of non-financial performance indicators in performance evaluation on perceived justice and trust. My motivation for this thesis stems from personally being subject to performance evaluation systems, and a wish to understand which elements of a performance evaluation system trigger perception and desirable behaviour.

I would like to thank Gudrun Baldvinsdottir, Christian Heidarson and Mats Strid for excellent supervision and guidance. I would also like to thank Randi Hammervold for input on the statistical analysis.

The contents of this thesis are at the personal expense of the author.

Trondheim, 15/05/15

---

Jakob Hjort Matthiasen

## **Abstract**

This thesis reviews the behavioural effects of one of management accountings most extensively applied control tools: The performance appraisal. Employees are subject to performance appraisal on a regular basis, influencing perceptions of the employer, ourselves and our work life. It is on this perception we act, making appraisal a powerful tool.

The adaption of social exchange theory and a multifoci perspective provides a relevant framework for the thesis, identifying several key variables of human behaviour. The research model presents four variables linked to performance appraisal. It is hypothesized that non-financial performance measures in performance evaluation are positively associated with trust in the superior or with trust in the organization. Furthermore, it is hypothesized that this effect is mediated by perceptions of procedural and interactional justice; whether procedures and processes at work are fair and whether the interpersonal and informational treatment of the employee is fair, respectively.

To examine the research questions, structural equation modelling and the statistical modelling tool LISREL is applied on a data sample gathered at a middle sized European real estate company. The survey and research design facilitates statistical analyses by examining individuals' perceptions of the importance of financial and non-financial performance indicators, trust and justice. The results indicate that performance appraisal based on non-financial performance indicators have a meaningful effect on employees' trust in the organization and in the superior. Additionally, the indirect effect of non-financial performance indicators on justice is substantially larger than the effect of financial indicators, indicating that non-financial performance measures are perceived as more just. Finally, the results indicate that an alternative approach, where focus is shifted towards corporate strategy instead of financial and non-financial indicators, may be more appropriate in explaining the effects of performance appraisal on behaviour.

## Sammendrag

Denne avhandlingen har til hensikt å undersøke de atferdsmessige konsekvensene av et av de mest brukte kontrollverktøyene i økonomistyring – prestasjonsevaluering. Medarbeidere er underlagt prestasjonsevaluering på jevnlig basis, og det påvirker vår oppfattelse av blant annet arbeidsgiver, oss selv og arbeidslivet. Det er ut fra denne oppfattelsen vi handler, og det gjør prestasjonsevaluering til et kraftig verktøy.

Anvendelsen av sosial bytteteori og et flerfokus-perspektiv legger til grunn et relevant rammeverk for avhandlingen, og identifiserer flere nøkkelvariabler i menneskelig atferd. Forskningsmodellen presenterer fire variabler koblet opp mot prestasjonsevaluering. Modellen undersøker om prestasjonsevaluering basert på ikke-økonomiske prestasjonsmål er positivt assosiert med tillit til nærmeste sjef eller tillit til organisasjonens toppledelse. Videre antas det at denne effekten er formidlet av medarbeideres oppfattelse av prosedyrerettferdighet og interaksjonell rettferdighet; henholdsvis om prosedyrer og prosesser i organisasjonen er rettferdige og om den mellommenneskelige- og informative behandlingen av medarbeidere er rettferdig.

SEM-analyse og den statistiske programvaren LISREL er anvendt for å besvare problemstillingen. Utvalget er et mellomstort Europeisk eiendomsmeglerselskap. Spørreundersøkelsen og undersøkelsesdesignet tilrettelegger for statistiske analyser ved å undersøke medarbeideres oppfattelse av viktigheten av økonomiske og ikke-økonomiske prestasjonsmål, tillit og rettferdighet. De empiriske resultatene tyder på at prestasjonsevaluering basert på ikke-økonomiske prestasjonsmål har en meningsfylt effekt på medarbeideres tillit overfor organisasjonen og nærmeste sjef. Videre er den indirekte effekten av ikke-økonomiske prestasjonsmål markant større enn effekten av økonomiske prestasjonsmål, som kan tyde på at ikke-økonomiske prestasjonsmål oppfattes som mer rettferdig. Til slutt antyder resultatene at en alternativ tilnærming, hvor fokuset endres fra økonomiske og ikke-økonomiske prestasjonsmål til strategi og visjon, bedre kan forklare hvordan prestasjonsevaluering påvirker atferd.

# Table of Contents

|  |           |
|--|-----------|
| Preface .....  | I         |
| Abstract .....   | II        |
| Sammendrag .....   | III       |
| <b>1. Introduction .....</b>   | <b>1</b>  |
| 1.1 Background to the research .....   | 1         |
| 1.2 Objectives of the study .....  | 3         |
| 1.3 Research problem .....   | 3         |
| 1.4 Contributions of the research .....  | 4         |
| 1.5 Organization of the thesis .....   | 4         |
| <b>2. Theoretical framework .....</b>  | <b>5</b>  |
| 2.1 Social exchange theory .....   | 5         |
| 2.2 The social exchange model of workplace relations .....                             | 7         |
| 2.3 Contemporary social exchange theory .....  | 8         |
| <b>3. Literature review and hypothesis development.....</b>                            | <b>10</b> |
| 3.1 Organizational justice .....   | 10        |
| 3.1.1 Distributive justice .....   | 11        |
| 3.1.2 Procedural justice .....   | 11        |
| 3.1.3 Interactional justice .....  | 11        |
| 3.1.4 Multifoci justice .....  | 12        |
| 3.2 Non-financial performance measures .....   | 14        |
| 3.3 Non-financial performance measures and organizational justice (link A and B) ..... | 14        |
| 3.4 Procedural justice and interactional justice (link C) .....                        | 15        |
| 3.5 Trust .....  | 16        |
| 3.6 Procedural justice and trust in organization (link D) .....                        | 17        |
| 3.7 Interactional justice and trust in superior (link E) .....                         | 17        |

|           |   |           |
|-----------|---|-----------|
| 3.8       | Spillover effects (link F) .....                              | 18        |
| <b>4.</b> | <b>Methodology .....</b>                                      | <b>19</b> |
| 4.1       | Research method .....   | 19        |
| 4.2       | Development of the questionnaire.....                         | 20        |
| 4.2.1     | Scales.....   | 20        |
| 4.2.2     | Priming of respondents.....                                   | 20        |
| 4.2.3     | Instruments and descriptive statistics .....                  | 21        |
| 4.2.4     | Translation of the instruments .....                          | 25        |
| 4.3       | Model development.....  | 26        |
| 4.3.1     | Exploratory factor analysis.....                              | 26        |
| 4.3.2     | Structural equation modelling (SEM) .....                     | 29        |
| 4.3.3     | Multivariate normality and maximum likelihood estimation..... | 30        |
| 4.4       | Data quality .....  | 30        |
| 4.4.1     | Multicollinearity.....  | 30        |
| 4.4.2     | Reliability .....   | 31        |
| 4.4.3     | Validity.....   | 31        |
| 4.4.4     | Model fit.....  | 32        |
| <b>5.</b> | <b>Results: Structural equation modelling.....</b>            | <b>34</b> |
| 5.1       | The non-financial model .....                                 | 34        |
| 5.1.1     | Measurement model X .....                                     | 36        |
| 5.1.2     | Measurement model Y .....                                     | 36        |
| 5.1.3     | Structural model .....  | 36        |
| 5.1.4     | Standardized residuals.....                                   | 37        |
| 5.1.5     | Indirect effect .....   | 37        |
| 5.1.6     | Model fit.....  | 38        |
| 5.1.7     | Reliability .....   | 39        |
| 5.1.8     | Validity.....   | 40        |

|  |           |
|--|-----------|
| 5.2 The financial model.....   | 41        |
| 5.2.1 Measurement model X .....  | 42        |
| 5.2.2 Measurement model Y .....  | 43        |
| 5.2.3 Structural model .....   | 43        |
| 5.2.4 Standardized residuals .....   | 43        |
| 5.2.5 Indirect effect .....  | 44        |
| 5.2.6 Model fit.....   | 44        |
| 5.2.7 Reliability .....  | 45        |
| 5.2.8 Validity.....  | 45        |
| <b>6. Discussion and conclusion .....</b>  | <b>47</b> |
| 6.1 Discussion of empirical results .....  | 47        |
| 6.2 Alternative model.....   | 50        |
| 6.3 Conclusion.....  | 52        |
| 6.4 Contributions of the study .....   | 52        |
| <b>7. Limitations and suggestions for future research .....</b>                        | <b>54</b> |
| 7.1 Limitations .....  | 54        |
| 7.2 Suggestions for future research .....  | 54        |
| References .....   | 56        |
| Appendix A – The questionnaire .....   | 62        |
| Appendix B – Exploratory factor analyses .....   | 66        |
| Appendix C – Tests of univariate and multivariate normality .....                      | 73        |
| Appendix D – MulticollinearityAppendix E – Correlation matrices .....                  | 75        |
| Appendix F – LISREL path model (standardized solutions) and output .....               | 78        |
| Appendix G – Calculation of composite reliability and average variance extracted ..... | 114       |



## List of tables and figures

|   |    |
|---|----|
| Figure 1: Research model.....   | 2  |
| Figure 2: Descriptive statistics, financial and non-financial indicators .....                | 22 |
| Figure 3: Descriptive statistics, procedural (PJ) and interactional justice (IJ).....         | 23 |
| Figure 4: Descriptive statistics, trust in superior (TS) and trust in organization (TO) ..... | 24 |
| Table 1: Summary table non-financial parameters .....   | 35 |
| Table 2: Goodness-of-fit statistics, non-financial model .....                                | 38 |
| Table 3: Summary table financial parameters .....   | 42 |
| Table 4: Goodness-of-fit statistics, financial model.....                                     | 44 |
| Figure 5: Path coefficients (non-financial model).....  | 48 |
| Figure 6: Path coefficients (financial model) .....   | 48 |

# 1. Introduction

---

This thesis is a study of the importance of non-financial performance indicators in performance appraisal with respect to individuals' perceived justice<sup>1</sup> and the quality of social exchange relationships (defined in this thesis as trust in superior<sup>2</sup> and trust in organization). The research focus is on perceptions of justice, trust and the perceived importance of non-financial indicators used in performance appraisal. The theoretical framework for the thesis is social exchange theory. This thesis is inspired by the article *Financial and nonfinancial performance measures: How do they affect job satisfaction?* by Chong Lau and Mahfud Sholihin (2005). First, background to the research is postulated, followed by the objectives of the study and the research problem. Then the contributions offered by this study are reviewed, and, finally, the structure of the thesis is explained.

## 1.1 Background to the research

The paramount question for the management of any organization is *how well are we doing?* (Fitzgerald, 2007). The answer to this question is generally achieved through performance evaluation, almost ubiquitous in one form or another in corporations. The proliferation of performance measurement controls may be due to the fact that measurement-managed organizations perform better than non-measurement-managed organizations (Fitzgerald, 2007). Performance measurement is traditionally financially oriented; however, the last decades of management accounting developments have advocated the inclusion of non-financial performance measures in performance measurement controls. Critics of financial performance measures uphold that they fail to capture customer quality and the innovation demands required by a competitive environment (Fitzgerald, 2007). In contrast, non-financial performance measures are closely linked to corporate strategy and recognizes the gamut of the organization's operations (Fitzgerald, 2007).

Management accounting controls should engender positive attitudes and behaviour (Merchant and Van Der Stede, 2011). It is argued that non-financial performance measures take employees' concerns and interests into consideration (Lau and Moser, 2008). Naturally, employees' emphasizes conditions beneficial to them. A fair evaluation process, which

---

<sup>1</sup> Justice and fairness are used interchangeably in this thesis.

<sup>2</sup> Superior and supervisor are used interchangeably in this thesis.

determines remuneration and recognition, is vital. Consequently, it is not surprising that employees' are sensitive to how the performance evaluation procedures are designed, and how the process is handled. In this regard, the fairness of the performance evaluation is an important determinant of behaviour, where an expected result is a relationship between employee and employer characterized by trust. Employees who are willing to trust engage in better task performance, perform more citizenship behaviours and commit less counterproductive behaviour (Colquitt et al., 2007).

An interesting distinction is in *whom* one trusts. Whether an employee develops trust in his or her direct superior or in the general leadership of the organization may have different consequences (Fulmer and Gelfand, 2012). It signifies whether the employees recognize fair treatment by the supervisor or the organization with respect to outcome, procedures and interaction. This line of reasoning begets questions: Do trust relationships vary according to whether the trustee is the superior or the organization? Do the relationship between justice perceptions and trust depend on who is seen as accountable? The dogmas of performance measurement is rapidly evolving; survey data indicate that between 40 per cent and 60 per cent of organizations significantly altered their performance measurement systems between just 1995 and 2000 (Fitzgerald, 2007). Finding answers to the above questions is part of the key to developing accurate performance measurement controls, which in turn help the organizations answer the pervading question *how well are we doing?*

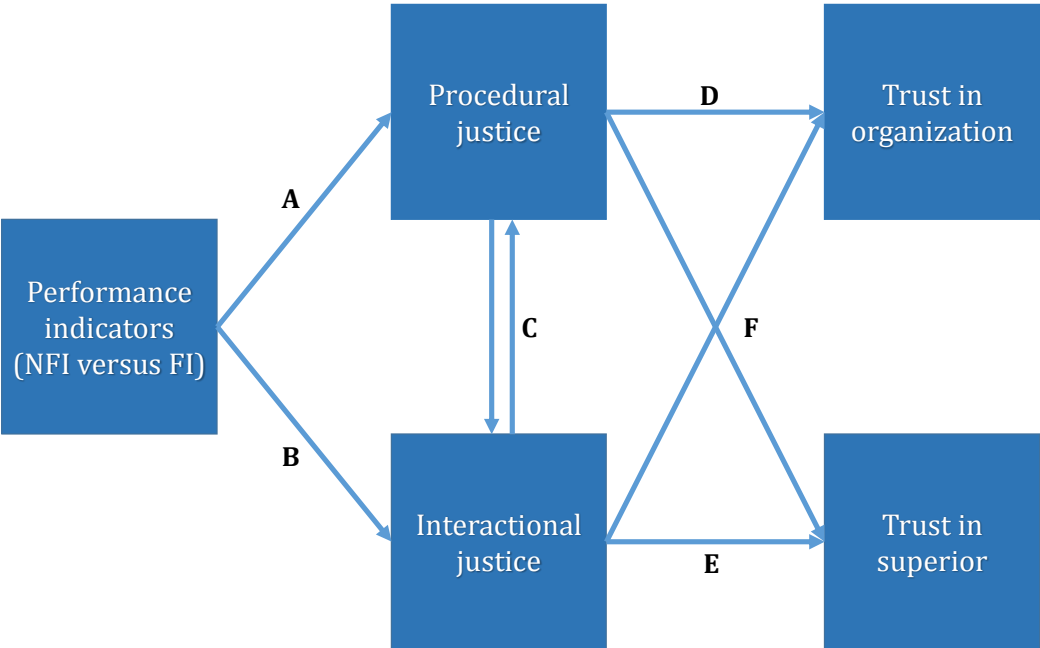


Figure 1: Research model

## 1.2 Objectives of the study

Through a survey in a medium-sized European real estate company, I look at the use of performance indicators and how they relate to perceptions of organizational justice, supervisor-focused trust and organization-focused trust (see figure 1). The relationships between the variables are uncovered through structural equation modelling, a flexible approach appropriate for testing models and theory. This approach relies on strong statistical data and a large sample; however, this is difficult to achieve in practice, and thus limits the results of the analysis. The main objective of this study is to examine whether an appraisal system based on non-financial performance indicators positively associate with employees' level of trust, thereby achieving wanted organizational outcomes. Specifically, the thesis aims to elucidate:

1. Whether the use of non-financial performance indicators in performance appraisal is perceived as fair; and
2. whether perceived fairness is positively associated with trust in superior or trust in organization.

## 1.3 Research problem

This thesis answers the following research problem:

*Are fair perceptions of performance evaluation associated with trust in superior or in organization?*

The research problem is relatively broad in nature; however, the focus of this thesis is narrow. Performance evaluation, justice and trust are complex constructs, spanning several variables, antecedents, theories, models etc. This thesis examines only a miniscule part of extant literature and research, focusing on non-financial indicators for performance evaluation, perceptions of procedural and interactional justice and trust in superior and organization, grounded in a multifoci perspective. Focusing on multifoci justice and trust facilitates deeper insight regarding these variables. The following research sub questions are addressed:

- Is the effect on target similar variables stronger than the effect on target dissimilar variables?
- Is trust in superior and in organization mediated by perceptions of fairness?
- Is non-financial performance measures perceived as more just than financial performance measures in performance appraisal procedures?

Answering these questions illuminates aspects of some of the core questions in organizational justice research identified by Crawshaw et al. (2013). It addresses the consequences of injustice with respect to trust levels and how non-financial performance measures in performance evaluation are an antecedent to justice perceptions.

#### **1.4 Contributions of the research**

First, this study contributes insight on performance appraisal systems. This study illuminates how the use of performance indicators in performance evaluation affects levels of trust. Depending on the desired organizational outcomes of implementation of an appraisal system, inclusion of non-financial indicators might therefore be appropriate. Second, it adds to the knowledge of bleeding edge justice research. By adapting a multifoci perspective, this thesis lucubrates how supervisor-focused and organization-focused perceptions of justice affects the employees' level of trust, respectively towards the organization and the superior. Lastly, but not least, because this thesis employs established instruments it facilitates comparison with prior research.

#### **1.5 Organization of the thesis**

This thesis is structured to provide a review of relevant information regarding fairness perceptions of performance measurement, organizational justice and trust. Chapter 2 provides the theoretical framework explaining how perceptions of fairness affect behaviour. Chapter 3 provides a review of extant research and the relevant theoretical constructs, and formulation of the hypotheses. Chapter 4 presents the methods applied and substantiates choices made. In chapter 5, the results from the statistical analysis are presented, and model fit, reliability and construct validity are discussed. Chapter 6 provides a discussion of the research question with respect to theory, previous literature and the empirical results, and offers a conclusion. Additionally, an alternative model and different approach to the performance measurement instrument is reviewed. Finally, chapter 7 presents limitations afflicting the study and provides suggestions for future research.

## 2. Theoretical framework

---

Traditional emphasis on organizational justice research has been to demonstrate and highlight the strength and resilience of the link between justice and organizational behaviour. However, it has failed to explain why and how justice has such a powerful effect on workers' behaviour (Tyler and Blader, 2005). The theoretical link between justice and behaviour has of late received a great deal of attention in justice literature. Theories like the control model, social exchange theory, relational models of justice, fairness theory and fairness heuristic theory argues how justice perceptions are formed, and aim to elucidate why and how justice can have such a strong effect on behaviour (Colquitt et al., 2013). A common thread to the theories is that they link people's reactions to justice with their desire to attain valuable outcomes from the organization (Tyler and Blader, 2005). This chapter sets the theoretical foundation for the thesis, relying on social exchange theory to explain how justice and behaviour connects.

### 2.1 Social exchange theory

Social exchange theory is a multidisciplinary paradigm with the potential to provide a unitary framework for organizational behaviour (Cropanzano and Mitchell, 2005). Within the context of organizational justice it is adapted to help understand the link between justice and behaviour (Tyler and Blader, 2005). The theory argues that the impact of justice perceptions on behaviour is mediated by the transaction of resources following certain rules.

One of the basic dogmas of social exchange theory is that relationships evolve over time into loyal, trusting and mutual commitments. In order for this to happen, parties must follow specific rules of exchange. The rules and norms functions as guidelines of exchange processes (Cropanzano and Mitchell, 2005). Emerson (1976) defines the rules of exchange as 'normative definitions of the situation that emerge between exchange participants' and can range from competition to reciprocity to altruism (Colquitt et al., 2013, p. 200). Reciprocity is the best-known exchange rule, and the focus of justice research and this thesis<sup>3</sup>. Reciprocity is defined

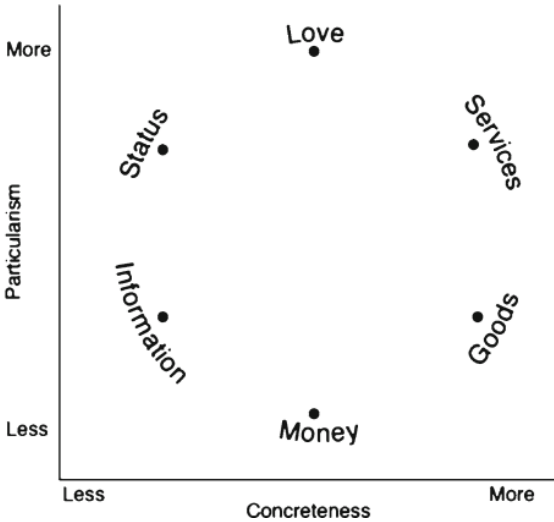
---

<sup>3</sup> It should be noted that other exchange rules (such as rationality, altruism, group gain, status consistency and competition) may explain important aspects of social exchange, and little research has been devoted to the possibility that multiple rules are employed simultaneously (Cropanzano and Mitchell, 2005). Consequently, focusing on only reciprocity and excluding other important notions of exchange provides a limited framework.

by Gouldner (1960) as ‘a universal norm demanding that people should help (and refrain from injuring) those who help them’ (Colquitt et al., 2013, p. 201). Three types of reciprocity are delineated: Reciprocity as interdependent exchanges, reciprocity as a folk belief and reciprocity as a moral norm (Cropanzano and Mitchell, 2005).

Reciprocity as interdependent exchanges involves mutual and complementary arrangements; something has to be given and something returned. Reciprocal interdependence emphasizes interpersonal transactions, whereby an action by a party fosters a response by a second party (Cropanzano and Mitchell, 2005). The exchange process starts when a participant makes a move, expecting reciprocation. If the action is reciprocated, new rounds of exchange follows. Once the process is in motion, each action and repayment can create a self-reinforcing continuous cycle. Because the cycle of actions depend on the participants behaviour, interdependence reduces risk and encourages cooperation (Cropanzano and Mitchell, 2005). Following this definition, social exchange theory purposely omits bargaining. Reciprocity, as opposed to bargaining, begets better work relationships allowing individuals to be more trusting of, and committed to, each other (Molm et al., 2000). Reciprocity as a folk belief revolves around the tenet that “people get what they deserve” (Gouldner, 1960). This expectation shares fundamental principles with the notion of karma, where, over time, all exchanges reach a fair equilibrium (Cropanzano and Mitchell, 2005). Reciprocity as a moral norm describes how participants ought to behave, and how participants following the norm are obligated to behave reciprocally (Cropanzano and Mitchell, 2005). However, it is important to note that a universal moral norm does not exist; individuals and cultures have disparate values of reciprocity. Exchange ideology – whether an individual is likely to favourably return a good deed – affects attitudes and behaviour (Cropanzano and Mitchell, 2005).

Resources are widely defined in social exchange theory, and may be anything transacted in an intra or interorganizational context (Tyler and Blader, 2005). Foa and Foa (1974, 1980) categorize exchange resources as love, status, information, money, goods and services, creating a two-dimensional matrix with particularism (versus universalism) along one axis and concrete resources (versus symbolic resources) along the other. Particularistic resources have



high provider relevance (e.g. love), while universal resources have low provider relevance (e.g. money). Symbolic resources, such as love, convey meaning that surpasses the objective worth. Concrete resources, on the other hand, are tangible and have objective worth (Colquitt et al., 2013; Cropanzano and Mitchell, 2005). Foa and Foa (1974, 1980) further proposed that different resources are exchanged in different ways. Benefits that are particularistic and symbolic are usually exchanged in a diffuse and unconstrained manner, while universal, concrete resources are exchanged in a quid pro quo fashion (Cropanzano and Mitchell, 2005).

## **2.2 The social exchange model of workplace relations**

The social exchange model of workplace relations (Shore et al., 2004) has garnered the most research attention. This model assumes that specific workplace antecedents lead to interpersonal connections, termed social exchange relationships. Social exchange theory stipulates that social exchange relationships are characterized by reciprocal obligations between the parties. The theory posits that employees regard certain resources as a benefit worthy of reciprocation. Therefore, transaction of resources begets an obligation on the part of the employee to reciprocate, fostering the development and maintenance of a social exchange relationship (Tyler and Blader, 2005; Cropanzano and Mitchell, 2005). Social exchange relationships are a mediator or an intervening variable; beneficial and fair transactions between strong relationships prompt these relationships to produce effective work behaviour and positive employee attitudes (Cropanzano and Mitchell, 2005). Social exchange relationships lead to the exchange of valued benefits between individuals, and thus employees will be hesitant to neglect to reciprocate in fear of losing said benefits. Employee reciprocation could be in the form of cooperation or positive attitudes toward the superior or organization, thus explaining why and how justice affects organizational behaviour (Tyler and Blader, 2005).

Fairness reflects the sort of symbolic resource that should foster reciprocative actions (Colquitt et al., 2013). The operative question then becomes how to capture the relationship between justice and reciprocative behaviours – a relationship born through social exchange. Cropanzano and Byrne (2000) noted that any intervening variable needs to capture the dynamics at play in social exchange relationships while also being able to easily adapt to multiple foci (e.g., supervisor and organization). The authors identified five possible constructs that meet the requirements, namely trust, commitment, leader-member exchange, support and psychological contracts. Each construct taps into different aspects of the relationship, and there are important differences between them. However, with respect to justice research, Cropanzano and Byrne



argues that the differences are less significant than the similarities between the constructs (Colquitt et al., 2013). Colquitt et al. (2012) demonstrated how the identified variables were interchangeable; they affect organizational outcomes similarly. This thesis focuses on trust. Commitment, psychological contracts, support and leader-member exchange have therefore been omitted from the subsequent discussion. Colquitt et al. (2013), in their meta-analytic review, corroborates that trust is an indicator of the quality of the social exchange in an interpersonal relationship. Additionally, the work of Molm (2000, 2003) demonstrates that relationships characterized by trust develop from successful reciprocal exchanges. High levels of trust indicates a high quality social exchange relationship characterized by valued transactions. Trust mediate the outcomes of justice, such as performance, organizational citizenship behaviour and job satisfaction (Colquitt et al., 2007).

One of the first studies to utilize social exchange theory within the context of organizational justice was Folger and Konovsky's examination of the antecedents of organizational citizenship behaviour (Folger and Konovsky, 1989). The authors based their arguments on Blau's (1964) discussion on social versus economic exchange. Blau (1964) proposed that social exchange "involves favors that create diffuse future obligations . . . and the nature of the return cannot be bargained" (p. 93) and that "only social exchange tends to engender feelings of personal obligations, gratitude, and trust; purely economic exchange as such does not" (p. 94). Folger and Konovsky thus speculated that fairness was able to foster a social exchange relationship (Folger and Konovsky, 1989). Moorman (1991) likewise argued that fair treatment would cause employees to redefine their working relationship as one of social exchange (Colquitt et al., 2013). These early applications of social exchange theory gave rise to what has been termed *contemporary social exchange theory* (Colquitt et al., 2013).

### **2.3 Contemporary social exchange theory**

Contemporary social exchange theory focuses solely on social exchange in an interpersonal relationship, as opposed to the multidimensional social exchange theory. By resources, the prevailing focus is on symbolic and particularistic resources, such as justice, while reciprocity is the dominant exchange rule (Colquitt et al., 2013). Contemporary social exchange theory explicates why beneficial actions on the part of supervisors and organizations might foster beneficial actions on the part of employees in an organizational setting.

The focus on a specific exchange partner, derived from the original social exchange theorizing, influenced the early wave of contemporary social exchange theorizing. For instance, it was

argued that if a supervisor increased an employee's wage, the employee would reciprocate towards the supervisor. However, this simplistic application of social exchange theory tended to obnubilate important complexities. Organ and Konovsky (1989) linked cognitions about pay to organizational citizenship behaviour targeted towards the organization, towards the supervisor and towards co-workers. The authors' measure of pay cognition did not refer to the supervisor's role in determining pay, thus creating uncertainty as to whether the supervisor was a valid target for reciprocation. Furthermore, there was no reason to suspect that co-workers had any influence on pay levels, yet it was demonstrated that increased pay level resulted in reciprocative actions towards co-workers (Colquitt et al., 2013). Subsequent justice researchers began to hypothesize that relationships between justice variables and reciprocative outcomes were moderated by the focus of the justice; e.g. that supervisor-focused interactional justice would predict trust in superior more strongly than trust in organization (Aryee et al., 2002; Erdogan et al., 2006; Kernan and Hanges, 2002; Masterson et al., 2000; Tekleab et al., 2005; Wayne et al., 2002). The chapter on *multifoci justice* (3.1.4) ventures deeper into this aspect of social exchange theory.

### **3. Literature review and hypothesis development**

---

This chapter documents relevant literature and previous findings in management accounting research. Based on the theoretical framework of social exchange theory and drawing on previous research and findings, hypotheses are developed. The chapter is organized accordingly: First, the concept of organizational justice is reviewed, explaining distributive, procedural, interactional, and multifoci justice. The second section examines how non-financial performance measures relate to perceptions of justice. Third, the relationship between procedural and interactional justice is discussed. Fourth, the concept of trust in superior and trust in organization is explained. The final section reviews how perceptions of justice relate to trust.

#### **3.1 Organizational justice**

The concept of justice is ancient; however, the last half-century justice has experienced a proliferation of attention, especially organizational justice. Employees' concerns with organizational justice are reflected through a myriad of everyday work aspects. First, employees care about their wages, promotions, rewards and the distribution of outcome. This is known as distributive justice (Cropanzano et al., 2002). Second, workers are concerned with the fairness of the procedures, processes or decision-making resulting in allocation or distribution of outcome, and with understanding why or how they came about. This is known as procedural justice (Cropanzano et al., 2002). Third, employees are concerned with the interpersonal treatment between parties in an organization, especially key authorities. This is known as interpersonal justice (Cropanzano et al., 2002). Finally, individuals care about the explanations provided conveying information as to why certain procedures were used or why outcomes were distributed in a certain way. This is known as informational justice (Cropanzano et al., 2002). Interpersonal and informational justice operates under the umbrella term interactional justice, which is the term applied in this thesis. Collectively, these four aspects are known as organizational justice, although the facets in and of themselves are conceptually unique elements (Colquitt et al., 2001; Colquitt et al., 2013). This conceptualization of justice focuses on how individuals perceive justice, and not justice as it objectively should be. Thus, understanding justice requires an understanding of what people deem to be fair (Colquitt et al., 2005).

### ***3.1.1 Distributive justice***

During the distributive justice wave (1950s through the 1970s), justice was equivalent with distributive justice (i.e., whether the allocation or distribution of outcome is fair). Distributive justice proposes that relative satisfaction is explained by fair or unfair distribution of resources within interpersonal relationships. Individuals are not concerned with the absolute level of outcome, but rather whether the outcome is fair considering their contribution (Adams, 1965). Distributive justice focuses solely on outcomes. Allocation rules of equity, equality and need exist (Rupp et al., 2014), but they all share a common denominator in that the ultimate goal is distributive justice (Colquitt et al., 2001).

### ***3.1.2 Procedural justice***

The term procedural fairness was initially used by Thibaut and Walker (1975). They researched third-party dispute resolution procedures within a legal setting. They found that people were willing to give up control regarding the final decision, as long as they retained control in the process stage, i.e. sufficient time to develop a case and collect evidence. In other words, they found that perceptions of procedural fairness affect satisfaction with the outcome. Based on these findings, Thibaut and Walker (1978) proposed that procedures in accordance with societal, and not objective, criteria of fairness should be utilized. The theory elucidates how societal fairness criteria is situation specific, and thus, that different procedures are necessary to resolve different disputes (Sholihin and Pike, 2009).

Leventhal and his colleagues refined Thibaut and Walker's research. They orchestrated the transfer of procedural justice from the legal to the organizational setting, and expanded the criteria necessary to achieve a fair process. Procedures should (a) be applied consistently across people and across time, (b) be unbiased, (c) ensure that accurate information is utilized in decision-making, (d) be able to correct inaccurate decisions, (e) conform to personal and prevailing standards of ethics or morality and (f) ensure that the opinion of every group affected by the decision is taken into consideration (Leventhal, 1980; Leventhal et al., 1980).

### ***3.1.3 Interactional justice***

It was not until Bies and Moag (1986) analysed fairness of interpersonal communication that interactional justice received serious attention. For an extended period, it was uncertain whether interactional justice was a facet of procedural justice, or an independent justice dimension (Colquitt et al., 2005). Moorman (1991) conceptualized interactional justice as an independent

justice element separate from procedural justice, and he created the first widely used measurement instrument used to capture the phenomenon. Greenberg (1993) argued that interactional justice comprised two unique aspects: interpersonal justice and informational justice. A meta-analysis by Colquitt et al. (2001) inferred that the relationship between interpersonal justice and informational justice is as strong as the relationship between distributive justice and procedural justice – two components literature agrees are empirically and conceptually distinct. Consequently, four unique justice dimensions exist, each adding incremental value to the concept of justice.

### ***3.1.4 Multifoci justice***

An emerging trend in organizational justice research is multifoci justice. This trend is based on social exchange theory (Rupp et al., 2014) and posits that individuals consider the different “types” of justice (i.e., distributive, procedural and interactional) as well as the source of the situation perceived as fair or unfair. The concepts of distributive, procedural and interactional justice emerged from multiple disciplines and across several decades. And, despite being commonly treated this way, outcomes, procedures and interaction were not theorized as perceptual targets. Rather, they were labels for a set of normative rules used by perceivers to arrive at justice perceptions. Each set of rules was developed in chronological order, and was argued to mitigate the effect of the current dominant justice construct. Distributive justice effects were moderated by procedural justice, while procedural justice effects were moderated by interactional justice (Rupp et al., 2014). In other words, perceptions of for example distributive injustice lessened if the individual perceived procedural justice. Colquitt and colleagues (2001) noted that the type-based justice measures are employees’ reports on whether the normative rules are violated or not (Rupp et al., 2014). Ambrose and Arnaud (2005) noted that outcomes, procedures and interactions do not constitute perceptual targets, but rather theoretical rules individuals apply to evaluate their working conditions. The multifoci perspective, therefore, posits that asking whether the normative rules are upheld or violated without reference to a “face” – a particular party held responsible – is missing an important piece of the phenomenon. The three sets of justice rules thus constitutes one piece of the justice perception formation process whereby a focal party is considered fair or unfair based on whether the normative rules are upheld or violated (Rupp et al., 2014).

Accountability is a dominant feature in multifoci justice, relating to individuals targeted reactions toward transgressors of the set of rules. Justice perceptions concerning a specific party

are expected to spur behavioural and attitudinal reactions directed specifically at that party (Rupp et al., 2014). It is argued that procedural justice reflects how the organization allocates resources. Because it reflects the organization as an entity, procedural justice should be related to cognitive, affective and behavioural reactions toward the organization or those leading the organization, i.e. top management. Thus, procedural justice is organization-focused (Cohen-Charash and Spector, 2001). Interactional justice comprises elements of interpersonal behaviour of top management's representatives and information conveyed by the representatives. Top management's representatives are often the employee's supervisor. Consequently, interactional justice should relate to employees' cognitive, affective and behavioural reactions towards their superior; it is supervisor-focused (Cohen-Charash and Spector, 2001). The term *target similarity* refer to the alignment of justice source with the "appropriate" response target, while *target dissimilarity* or *bandwidth fidelity* refer to the misalignment of justice source and response target (Lavelle et al., 2007). Early research proposed that the organization would be the implied focal party responsible for procedural justice, while the supervisor would be the implied focal party responsible for interactional justice (Rupp et al., 2014). Some support exists for these predictions (Rupp et al., 2014; Cropanzano et al., 2002; e.g., Masterson et al., 2000). However, subsequent research demonstrates that *supervisory* procedural justice and *organizational* interactional justice exists, as supervisors often develop and utilize their own decision-making procedures and employees' anthropomorphize the organization (Lavelle et al., 2007). Thus, employees can judge the distributive, procedural and interactional justice of any one party, as long as the employee has reason to believe that the party in question is responsible for the situation (Lavelle et al., 2007). The organization, superior, co-workers and customers are parties normally identified as sources of justice (Lavelle et al., 2007; Colquitt et al., 2013; Rupp et al., 2014). This thesis focuses on employees' level of trust in superior and organization. Previous research has linked procedural justice with trust in superior (Sholihin and Pike, 2009; Lau et al., 2008; Lau and Sholihin, 2005), two target dissimilar variables. Researching target similar variables facilitates the use of multifoci research grounded in social exchange theory, allowing hypothesizing concerning the links between key employee perceptions (justice and non-financial performance indicators) and trust to be made with more precision by specifying foci of the psychological process being investigated (Lavelle et al., 2007).

In conclusion, multifoci justice draws upon social exchange theory to argue that despite the proliferation of justice rules (i.e., distributive, procedural, interactional), individuals seek to

hold some party accountable for the transgression or maintenance of the rules, and it is these parties (e.g., superior, organization) that are the recipients of attitudes and behaviours (Rupp et al., 2014).

### **3.2 Non-financial performance measures**

Up until the 1980s, the performance measurement literature focused mainly on traditional financial performance measures, such as productivity, profit and return on investment (Ghalayini et al., 1997). However, in the early 1980s, performance measurement literature started evolving to capture the complex and competitive global market (Taticchi et al., 2010). Managers and employees in these companies needed measures with predictive power, as well as historical financial data (Neely, 1999). Financial measures are criticised of being too late, too aggregated, historical in nature, short-term, incomplete and one-dimensional (Kaplan, 1984; Ittner and Larcker, 1998; Lynch and Cross, 1991). On the other hand, a study by Ittner et al. (2003) demonstrates how companies believe non-financial indicators are associated with several benefits, such as depicting the state of the business before financial metrics are released and providing superior information about the necessary actions needed to achieve strategic objectives.

Performance indicators, whether financial and/or non-financial, are often employed in performance appraisal of employees, which in turn affects employee compensation and reward (Kaplan and Atkinson, 1998). Furthermore, performance appraisals also reflect the employees' success or failure, affecting intrinsic values, such as self-confidence and self-esteem (Kaplan and Atkinson, 1998). It is therefore natural that employees express concern regarding the design of the appraisal system.

### **3.3 Non-financial performance measures and organizational justice (link A and B)**

Whether financial, non-financial or a combination of both indicators are used to evaluate employee performance are important determinants for employees' perceived fairness. Consequently, the design of the appraisal system is vital, as it affects the perceived fairness of the evaluation process. In the context of performance appraisal, the evaluation process is considered fair if it: (1) leads to performance appraisals based on complete and accurate information; (2) reflects the employees' long-term interest; (3) enables appeals against and rectification of unfair appraisals; (4) reflects performance within the employees' control; (5) protects the employees' interests; and (6) facilitates polite and dignified treatment of the employees (Lau and Moser, 2008; Leventhal, 1980). Inclusion of non-financial indicators may

address these criteria. They are broad, varied, long-term, cause-focused and experienced as relevant and meaningful (Lau and Sholihin, 2005; Lau and Moser, 2008). They allow multiple aspects, both tangible and intangible, of the employees' performance to be recognized in the evaluation process, ensuring accurate reflection of effort (Lau and Sholihin, 2005; Lau and Moser, 2008). Furthermore, non-financial indicators are unconstrained by time, whereas financial indicators depends on e.g. quarterly reports (Lau and Moser, 2008; Lau and Sholihin, 2005). Finally, non-financial indicators may provide a better sense of control of the evaluation process; appraisals based on non-financial indicators are subject to flexible interpretations, and subordinates may therefore be in a better position to seek explanations or provide their own interpretations, reducing the chance of unfair appraisals (Lau and Moser, 2008; Thibaut and Walker, 1975). Employees with the possibility to discuss indicators with their superior might infer enhanced interactional justice.

Following this reasoning, the adoption of non-financial indicators should be associated with enhanced perceptions of fairness, both procedural and interactional. The following hypotheses arise:

**H1a** Non-financial performance-based evaluation is positively associated with interactional justice.

**H1b** Non-financial performance-based evaluation is positively associated with procedural justice.

### **3.4 Procedural justice and interactional justice (link C)**

As evident by the research of Moorman (1991) and early justice research, there is a correlation between procedural and interactional justice; it took years before interactional justice was established as a unique facet of organizational justice (Colquitt et al., 2005). Colquitt et al. (2001) established that the concepts are distinct, and that interactional justice comprises both interpersonal and informational justice. However, considering how superiors create their own procedures and employees' attribute human characteristics to the organization (Lavelle et al., 2007), it is assumed that interactional and procedural justice, despite being empirically distinct justice dimensions, still affect each other. If a superior creates personal procedures that affects his or her subordinates, it is natural to assume that statements such as "procedures are designed to provide useful feedback regarding the decision and its implementation" (a procedural justice statement used in this study) could be strongly linked to statements like "my supervisor provides me with timely feedback about decisions and their implications" (an interactional justice



statement used in this study). Both questions could refer to the superior in the mind of the employee. Additionally, if employees regard the organization as an entity with human characteristics, the difference between organization and superior might be diminished, which might create strong similarities between procedural and interactional justice. Consequently, the following hypothesis arises:

**H2** The relationship between procedural and interactional justice is simultaneous. Procedural justice and interactional justice positively correlate.

### **3.5 Trust**

Trust has attracted much research attention among management accounting studies (Lau and Sholihin, 2005). Trust has been defined in numerous ways, yet two key elements recur: Positive expectations of trustworthiness and willingness to accept vulnerability to a trustee irrespective of the ability to control the trustee's actions (Fulmer and Gelfand, 2012). Furthermore, Fulmer and Gelfand (2012) argue there are distinctions between trust *at* a level and *in* a referent. Organizations are multilevel entities, and trust operates at the individual, team, and organizational level. This thesis examines trust at the individual level; it is the employees' perceptions of trust that is important in determining consequences of performance appraisal. Trust in a referent refers to the target of the trust. The superior and the organization are two of several possible targets (Fulmer and Gelfand, 2012). Trust in superior or organization does not equal a general propensity to trust in that the former is directed towards a specific target while the latter concerns people in general (Fulmer and Gelfand, 2012). Trust at the individual level is therefore viewed as 'a personal belief about the degree to which a particular referent is trustworthy and to which one is willing to accept vulnerability vis-à-vis this referent' (Fulmer and Gelfand, 2012, p. 1174). This interpretation of trust fits well within social exchange theory; there is no way to ensure an appropriate return for a favour, and thus social exchange requires trusting others to fulfil their obligations (Blau, 1964). Trust consequently operates as a mediator of the quality of the social exchange relationship.

Considerable extant empirical data suggests a positive relationship between perceived fairness and trust (e.g., Staley and Magner, 2007; Magner and Welker, 1994; Magner et al., 1995; Lau and Sholihin, 2005; Lau and Tan, 2006; Lau et al., 2008; Sholihin and Pike, 2009). On the one hand, it should be noted that these studies fail to address the complexity of the trust construct, usually linking procedural justice to trust in superior without further elaboration. On the other hand, the studies found significant effects between procedural justice and trust in superior, two

target dissimilar variables. These findings indicate a strong relationship between perceptions of justice and trust.

### **3.6 Procedural justice and trust in organization (link D)**

Employees are concerned with the fairness of the procedures, processes or decision-making resulting in allocation or distribution of outcome, and with understanding why or how they came about. Performance appraisal procedures are usually linked to remunerations and rewards. Consequently, it constitutes an important aspect of the employees' job, and it is expected to be executed fairly. When procedural justice is perceived, employees positively reciprocate (e.g., by harbouring favourable attitudes, such as trust (Lau and Sholihin, 2005)) towards the source of the perceived fairness (Colquitt et al., 2013). Cohen-Charash and Spector (2001) argue that procedural justice is organization-focused; it concerns procedures implemented by the organization as an entity. Performance appraisal procedures are implemented across the entirety of the organization, and it is enacted by top management. Therefore, it is expected that performance appraisal procedures primarily affect the employees' trust in the organization. Procedural justice and trust in organization are target similar variables (Rupp et al. 2014). Based on the above discussion, the following hypothesis arises:

**H3** Procedural justice is positively associated with trust in organization.

### **3.7 Interactional justice and trust in superior (link E)**

According to Lau and Moser (2008), fair procedures are associated with respectful and dignified treatment. Additionally, Ilgen et al. (1979) proposed that perceptions of feedback depend on the message received, but also on the individual conveying the message (the rater). The superior inhabits the role of rater when discussing performance with subordinates, and research have demonstrated how the rater is in a position to influence reactions to performance appraisal (Cederblom, 1982; Klein et al., 1987). Nathan et al. (1991) and Pooyan and Eberhardt (1989) asserted that superiors play a critical role in the success or failure of appraisal systems. In accordance with this line of reasoning, it is expected that interpersonal treatment and accurate information will affect behaviour targeted towards the superior (Cohen-Charash and Spector, 2001). Subordinates are likely to perceive fair treatment by superiors who convey truthful and accurate information in a respectful and considerate manner. Based on target similarity and the above discussion, it is hypothesized that interactional justice will be associated with trust in superior.

**H4** Interactional justice is positively associated with trust in superior.

### **3.8 Spillover effects (link F)**

On the one hand, it is expected that target similar effects have greater effects than target dissimilar effects (Rupp et al., 2014): That perceptions of fair performance appraisal procedures will be reciprocated towards the organization, while perceptions of fair interaction during the performance appraisal process will be reciprocated towards the superior. On the other hand, following the line of reasoning proposed by Lavelle et al. (2007), where supervisors create personal procedures and employees anthropomorphize the organization, employees might fail to separate the supervisor from the organization as the source of fairness. It then follows that both procedural justice and interactional justice can affect the attitudes of employees targeted towards the organization and the supervisor, depending on whom the individual perceives as the source of justice. Consequently, the responsible target for fair performance appraisal procedures might partially be superiors in the mind of the employee. Alternatively, the responsible target for fair interpersonal treatment might partially be the organization. Several studies have found significant spillover effects between procedural justice and trust in superior (e.g., Sholihin and Pike, 2009; Lau et al., 2008; Lau and Sholihin, 2005). However, it is specified that on average, target dissimilar effects will be smaller in magnitude than target similar effects (Rupp et al., 2014).

**H5a** Procedural justice is positively associated with trust in superior.

**H5b** Interactional justice is positively associated with trust in organization.

**H5c** Spillover effects are lower in magnitude compared to target similar effects.

## 4. Methodology

---

This this chapter reviews the methodological framework utilized, and describe the process leading up to the empirical analysis. First, the survey research method is reviewed. Second, the development of the questionnaire – scales, priming, instruments and translation – is described. Third, the development and choice of the empirical model is documented. Finally, data quality methods and multicollinearity concerns are reviewed.

The survey questionnaire<sup>4</sup> includes additional organizational concepts excepted in the analysis of this thesis, such as managerial performance and job satisfaction. They were included because we were a few students, as well as my supervisors, researching connected phenomenon. Distributing the same questionnaire to the real estate company and other institutions enables comparison of data and a deeper insight. Additionally, the original blueprint for this thesis included supervisor-focused social exchange, and was supposed to examine trust in superior and commitment towards superior. However, just before distribution of the questionnaire, the real estate company refused the commitment instruments. Consequently, the research model, research problem and hypotheses had to be redesigned, which the extra instruments allowed without a complete reboot.

### 4.1 Research method

This study utilizes a survey to research the perceptions of individuals with respect to organizational justice, non-financial indicators for performance evaluation and trust. The aim of a survey in management accounting is to measure specific behaviours (Nazari et al., 2006). By using a survey, the respondents base their answers on self-reported perceptions of their situation. Even though surveys are associated with limitations (Ringdal, 2013), it matches the purpose of this study, which is to examine the beliefs, attitudes, values and opinions of employees, and not the objective situation. Subjective perceptions of reality may be more powerful than the objective reality because individuals act on their perceptions (Nazari et al., 2006).

---

<sup>4</sup> See appendix A.

## **4.2 Development of the questionnaire**

The questionnaire was designed in Questback and administered to the respondents by e-mail. Norsk samfunnsvitenskapelig datatjeneste (NSD) and the real estate company approved the questionnaire. 193 e-mails were distributed, and follow-up e-mails were sent after two and three weeks. Of the 193 respondents, 50 were ineligible or unable to answer as they were external advisors, summer-interns, on maternity leave or having quit their jobs. 126 responses were returned, yielding a response-rate of ~88 %. 5 responses were wrongly or unsatisfactorily completed, and removed from further analysis.

### ***4.2.1 Scales***

The questionnaire employs Likert scales. Distributive justice, procedural justice, interactional justice, affective commitment and trust use the range 1-7 (strongly disagree to strongly agree). Managerial performance uses the range 1-7 (very low to very high), while job satisfaction uses the range 1-9 with different wording for each question (e.g., not at all satisfied to extremely satisfied). The original phrasing of the instrument developed by Rusbult and Farrell (1983) is used. I debated whether to use the scale 1-7 throughout the questionnaire for consistency, but decided to keep the original scale of 1-9 in the job satisfaction instrument to make the respondent aware that job satisfaction used a different phrasing than the rest of the questionnaire. Furthermore, because the questionnaire asks for the respondent's perception, an "I don't know" or "No basis to respond" is omitted (except for the KPI instrument, where, after consultation with the real estate company, a "Not applicable" category was added).

### ***4.2.2 Priming of respondents***

When responding to a stimulus such as a questionnaire item, the respondent engages in a search for information until they encounter a piece of information they consider relevant (Wyer and Hartwick, 1980). This suggests that the answer may be greatly influenced by factors that affect which information the respondent will retrieve (Vitale et al., 2008). It is vital that the respondents answer the items with concern to their own situation at the company, and do not consider for instance friends, co-workers or companies in general. Additionally, it is paramount that the respondents consider the context the items refer to. For instance, the procedural justice instrument refers to procedures concerning performance appraisal and the organizational trust instrument refers to the general leadership of the organization when asking about the respondent's employer. To ascertain that the respondents regard their own situation at the

company, and keep the correct setting in mind, priming of the respondents was applied before each instrument<sup>5</sup> (except job satisfaction – the instrument was considered highly self-explanatory and direct). Priming refers to the cognitive mechanism by which an attitude is created or influenced by a preceding question or statement (Moss and Lawrence, 1997). By including priming in the questionnaire a source of information is added that the respondents can draw upon in order to arrive at a useful and informative answer (Schwarz, 1999). Priming may therefore help the validity and reliability of the answers.

#### ***4.2.3 Instruments and descriptive statistics***

A key principle in this study is the ability to compare and contrast results with reference works, which the usage of already established and thoroughly tested instruments facilitates. A faulty questionnaire construction may result in measurement error (Dillman et al., 2008). Consequently, the instruments were carefully chosen to fit the research objective while being comparative to previous research. The instruments have been widely used and cited, and demonstrated to be of high construct validity and reliability.

It is noted that the originality of the instruments have been compromised, as the instrument have been translated and a few of the original items altered. The translation process is discussed in the following section (4.2.4). Organizational trust item number six was removed from the questionnaire. In the original work by Robinson and Rousseau (1994) the item was removed in the analysis because it was perceived as too close to procedural justice. Therefore, it was removed first-hand from this study. Three of the original instruments included reverse-scored items. However, the pilot questionnaire received heavy pushback from the real estate company regarding the reverse-scored items. On the one hand, it is argued that reverse-scored items keep the respondent alert, thus reducing response bias (Spector, 1992). On the other hand, it is suggested that reverse-scored items are associated with lower validity and the possibility of increased systematic error (Jackson et al., 1993; Schriesheim and Hill, 1981; Hinkin, 1995). Additionally, it is believed that positively worded items are more reliable and accurate than reverse-scored items (Schriesheim et al., 1991). It has been debated whether the inclusion of reverse-scored items is really necessary (Magazine et al., 1996). Finally, it has been demonstrated that removing the reverse-scored items helps, rather than obstructs, the psychometric properties (Rodebaugh et al., 2007). Based on the above arguments, and

---

<sup>5</sup> Priming of the respondents is included in appendix A.

consultation with the real estate company, it was decided that the reverse-scored questions be rephrased in a positive way.

### **Non-financial and financial performance indicators – KPI (key performance indicators)**

To measure the importance of non-financial indicators vis-à-vis financial indicators the instrument developed by Hoque et al. (2001) was used. The instrument has been reliable and valid in previous research (Lau and Sholihin, 2005; Hoque et al., 2001; Hoque and James, 2000). In order to fit the real estate company’s appraisal system, different financial and non-financial KPIs had to be used than those constituting the original instrument. The KPI scale in this thesis was developed in cooperation with the real estate company in order to ensure meaningful and relevant KPIs to the employees. This instrument investigates the perceived importance of non-financial and financial indicators in performance evaluation of individuals. Therefore, it asks respondents what they believe. The order of the KPIs was randomized to hide the fact that two separate constructs (non-financial indicators and financial indicators) were measured. The randomization process was conducted through Excel and the random() function<sup>6</sup>. The first item on the list (management income) was assigned a random number. Then the second item on the list was assigned a random number, and so forth, until all fourteen items were placed in haphazard order.

| Descriptive Statistics  |     |         |         |      |                |          |
|-------------------------|-----|---------|---------|------|----------------|----------|
|                         | N   | Minimum | Maximum | Mean | Std. Deviation | Variance |
| Renewal_leases          | 104 | 1       | 8       | 6,08 | 1,989          | 3,955    |
| Rent_receivable         | 104 | 1       | 8       | 5,88 | 2,233          | 4,984    |
| Hours_inservice         | 104 | 1       | 8       | 4,60 | 2,219          | 4,923    |
| Green_property          | 104 | 1       | 8       | 5,07 | 2,137          | 4,568    |
| Management_result       | 104 | 1       | 8       | 6,34 | 1,398          | 1,954    |
| Customer_satisfaction   | 104 | 1       | 8       | 6,33 | 1,347          | 1,814    |
| Interest_expense        | 104 | 1       | 8       | 5,02 | 2,550          | 6,504    |
| Operating_cost          | 104 | 1       | 8       | 5,96 | 1,832          | 3,358    |
| ROI                     | 104 | 1       | 8       | 5,81 | 1,946          | 3,788    |
| Number_green_leases     | 104 | 1       | 8       | 4,92 | 2,326          | 5,412    |
| New_leases              | 104 | 1       | 8       | 5,95 | 1,754          | 3,075    |
| Coworker_satisfaction   | 104 | 1       | 8       | 5,98 | 1,558          | 2,427    |
| Economic_occupancy      | 104 | 1       | 8       | 5,91 | 1,801          | 3,245    |
| Adm.cost_to_lease_value | 104 | 1       | 8       | 5,45 | 2,167          | 4,697    |
| Valid N (listwise)      | 104 |         |         |      |                |          |

Figure 2: Descriptive statistics, financial and non-financial indicators

<sup>6</sup> In order to generate a random number between 1 and 14, the formula random()\*(1-14)+14 was used in Excel.

### Distributive, procedural, and interactional justice

The instrument developed by Moorman (1991) was chosen to measure organizational justice. It considers the three justice dimensions (distributive, procedural and interactional). In retrospect, the measure developed by Moorman have helped confirm interactional justice as a separate element of justice (Colquitt et al., 2005). However, the instrument measures aspects of both procedural and interactional justice, and as a result, procedural and interactional justice are often highly correlated (Colquitt et al., 2005). Lau and Sholihin (2005) used the instrument devised by Mcfarlin and Sweeney (1992), which do not consider interactional justice. Moorman’s instrument measures the respondent’s perceptions of the fairness of the procedures employed for evaluation of the employees’ performance, just like the instrument by Mcfarlin and Sweeney, while also measuring the employees’ perceptions of interactional treatment. Interactional justice is an integrative part of this thesis, and the instrument developed by Moorman recognizes this facet of organizational justice.

The instrument does not define “fairly”. The objective of this thesis is to address the perceptions of employees and the entailed consequences, and therefore, what matters is the individuals’ definitions of “fair”. Following the same line of reasoning, “rewards” are undefined. Whether rewards are pay, bonus, praise, recognition etc. depends on the individual, and his or her perceptions. A limitation with not defining ambiguous expressions could be misinterpretation. For example, a respondent might feel unfairly rewarded because he or she only considers rewards to be material. However, if the respondent would have realized that rewards were both

| Descriptive Statistics |     |     |     |      |                |          | Descriptive Statistics |     |     |     |      |                |          |
|------------------------|-----|-----|-----|------|----------------|----------|------------------------|-----|-----|-----|------|----------------|----------|
|                        | N   | Min | Max | Mean | Std. Deviation | Variance |                        | N   | Min | Max | Mean | Std. Deviation | Variance |
| PJ1                    | 104 | 1   | 7   | 4,87 | 1,293          | 1,671    | IJ1                    | 104 | 1   | 7   | 5,85 | 1,342          | 1,801    |
| PJ2                    | 104 | 1   | 7   | 4,31 | 1,330          | 1,768    | IJ2                    | 104 | 1   | 7   | 5,84 | 1,401          | 1,963    |
| PJ3                    | 104 | 1   | 7   | 4,55 | 1,372          | 1,881    | IJ3                    | 104 | 1   | 7   | 5,34 | 1,492          | 2,225    |
| PJ4                    | 104 | 1   | 7   | 4,76 | 1,318          | 1,738    | IJ4                    | 104 | 1   | 7   | 6,19 | 1,278          | 1,633    |
| PJ5                    | 104 | 1   | 7   | 4,33 | 1,333          | 1,776    | IJ5                    | 104 | 1   | 7   | 6,20 | 1,218          | 1,483    |
| PJ6                    | 104 | 1   | 7   | 4,46 | 1,343          | 1,804    | IJ6                    | 104 | 1   | 7   | 6,26 | 1,262          | 1,592    |
| PJ7                    | 104 | 1   | 7   | 4,35 | 1,221          | 1,491    | Valid N                | 104 |     |     |      |                |          |
| Valid N                | 104 |     |     |      |                |          |                        |     |     |     |      |                |          |

Figure 3: Descriptive statistics, procedural (PJ) and interactional justice (IJ)



tangible and intangible, he or she might have answered differently. Consequently, the validity of the answers may be lowered, as I measure a slightly different phenomenon than is the objective of my study.

### Trust in supervisor

Read's (1962) instrument was chosen because it has been widely used in management accounting studies (e.g., Hopwood, 1972; Otley, 1978; Magner and Welker, 1994; Magner et al., 1995; Lau and Tan, 2006), and it is the instrument adopted by Lau and Sholihin (2005). The instrument reflects employees' perception of their supervisors' motives and intentions with respect to matters relevant to the employees' career and status. Adopting an extensively used instrument facilitates comparison of results.

| Descriptive Statistics |     |     |     |      |                |          | Descriptive Statistics |     |     |     |      |                |          |
|------------------------|-----|-----|-----|------|----------------|----------|------------------------|-----|-----|-----|------|----------------|----------|
|                        | N   | Min | Max | Mean | Std. Deviation | Variance |                        | N   | Min | Max | Mean | Std. Deviation | Variance |
| TS1                    | 104 | 1   | 7   | 5,29 | 1,512          | 2,285    | TO1                    | 104 | 1   | 7   | 5,97 | 1,273          | 1,621    |
| TS2                    | 104 | 1   | 7   | 5,98 | 1,441          | 2,077    | TO2                    | 104 | 1   | 7   | 5,87 | 1,285          | 1,652    |
| TS3                    | 104 | 1   | 7   | 5,65 | 1,575          | 2,481    | TO3                    | 104 | 1   | 7   | 6,04 | 1,206          | 1,455    |
| TS4                    | 104 | 1   | 7   | 5,70 | 1,624          | 2,638    | TO4                    | 104 | 1   | 7   | 6,23 | 1,063          | 1,131    |
| Valid N                | 104 |     |     |      |                |          | TO5                    | 104 | 1   | 7   | 6,03 | 1,273          | 1,621    |
|                        |     |     |     |      |                |          | TO6                    | 104 | 1   | 7   | 6,24 | 1,170          | 1,369    |
|                        |     |     |     |      |                |          | Valid N                | 104 |     |     |      |                |          |

Figure 4: Descriptive statistics, trust in superior (TS) and trust in organization (TO)

### Trust in organization

The instrument developed by Robinson and Rousseau (1994) was chosen. It is based on the tenet that violation of reciprocal obligations and psychological contracts can generate distrust, dissatisfaction and even dissolution of the relationship, playing along with social exchange theorizing. An important attribute of the instrument is that it refers to trust in employer (i.e., the organization), and not supervisor. Thus, it enables distinction between the superior and the organization, referring to two different referents of trust, necessary in order to apply a multifoci perspective.

### Managerial performance

Mahoney's (1965) instrument was chosen because it is a much used and recognized instrument (e.g., Sholihin and Pike, 2009; Lau et al., 2008; Lau and Moser, 2008). It captures the

multidimensionality of managerial performance without excessive complexity (Brownell, 1982). Because it is extensively applied in management accounting research, it enables comparison of results.

### **Job satisfaction**

Lau and Sholihin (2005) applied the extensively used Minnesota Satisfaction Questionnaire developed by Weiss et al. (1967). The instrument is copyrighted and thus not available. Therefore, the instrument developed by Rusbult and Farrell (1983) was adopted to measure job satisfaction. The instrument is one of the few job satisfaction questionnaires available in its entirety with proven levels of construct validity and reliability.

#### ***4.2.4 Translation of the instruments***

In order to ensure understandability on the part of the respondents, the instruments were translated to the employees' mother tongue. Two bilingual researchers and three students translated the instruments. Opining different versions and challenging each other's translations increased the quality and accuracy of the translations. The preliminary translations were sent to the real estate company, co-workers and family, and reworked to fit the organization and to ensure understandability and coherence. Testing the questionnaire on both academics and non-academics ascertained that the items were understandable with and without an academic degree.

In the translation process, one item was translated in a slightly deviating manner from the original version. Item number seven in the procedural justice instrument (Moorman, 1991) goes as follows: *Procedures are designed to allow for requests for clarification*. However, if the translated version would be translated back to English it would be closer to *Procedures are designed in a way that invites requests for clarification*. The phrasing was altered procedures rarely out-of-hand denies requests for clarification. If an employee sought explanations, it could most likely be obtained through supervisor, HR-department or similar authorities. Consequently, the original phrasing does not describe a fair or unfair procedure, and thus it makes no sense for the respondent to disagree with the statement. The instrument was "designed to measure the degree to which fair procedures are used in the organization" (Moorman, 1991, p. 847). By rephrasing the item, the wording reflects a fair procedure and the original intent of the authors.

## **4.3 Model development**

### ***4.3.1 Exploratory factor analysis***

An exploratory factor analysis is a technique used to uncover the underlying structure of the observed variables. The analysis identifies latent factors, and examines how closely related the variables are to the factors. The factor analysis simplifies a complex data set to a smaller set of latent factors (Ringdal, 2013). An exploratory factor analysis was applied to the KPI instrument, the justice instruments and the trust instruments<sup>7</sup>.

#### **KPI instrument**

The KPI instrument was designed to accommodate the real estate company. Consequently, this particular set of performance indicators have not been applied previously. The instrument was designed with seven financial items and seven non-financial items, in cooperation with the real estate company. However, because no prior research exists, the statistical data drives the interpretation of the latent variables. Therefore, an exploratory factor analysis was undertaken to uncover the latent variables, and the results compared with theory.

To facilitate the factor analysis, I divided the data into managers and non-managers. The real estate company's evaluation system of managers is financially oriented, while the evaluation system for the blue-collar workers is to a higher degree non-financially oriented. The main point of interest in my thesis is the non-financial aspect of performance evaluation. Furthermore, the 'not applicable' category (originally value 8 which indicates great importance) was recoded as unimportant. An item that is perceived as not applicable to an employee's performance evaluation is assumed equivalent to highly unimportant when determining performance.

The factor analysis was conducted with principal axis factoring. If the assumption of normality is violated, principal axis factoring will, in general, give better results than principal components (Costello and Osborne, 2005). Because the instrument was designed in a way that the respondents would find some few of the items to be important while the majority would be unimportant or less important, the KPI instrument is characterized by non-normality<sup>8</sup>. Furthermore, the oblique rotation method promax was used. The distinction between certain non-financial and financial indicators is ambiguous, which may create correlating factors.

---

<sup>7</sup> See appendix B1 for exploratory factor analysis of the justice and trust instruments.

<sup>8</sup> See appendix C for normality test.

Additionally, Costello and Osborne (2005) recommend oblique rotation methods, because if the factors do not correlate the results will be more or less the same with oblique and orthogonal rotation.

The sample size is relatively small. A factor analysis operates well with large samples. However, strong data may make up for this. Strong data have high communalities ( $> 0.8$ ) and several variables loading strongly on each factor without cross-loadings (Costello and Osborne, 2005). This is rarely achieved in practice. The communalities of the initial factor analysis ranged from low (0.302) to high (0.908). Some practitioners advise removing variables with communalities below 0.4 from further analysis as it is argued the variable does not relate to the other items or that an additional factor should be explored (Costello and Osborne, 2005). On the other hand, it is argued that factors with communality of 0.32 or above should be kept, as a loading of 0.32 approximately equals 10 % overlapping variance with other items in that factor (Costello and Osborne, 2005). An analysis without coworker\_satisfaction (low loading of 0.302) was conducted, but the initial analysis showed stronger results<sup>9</sup>. Therefore, the analysis proceeded with all variables; keeping all the variables improves maneuverability, which is an advantage when working without the guidance of extant literature.

This factor analysis was undertaken based on the eigenvalue above 1 criterion. Analyses with forced factor extraction was undertaken, as Costello and Osborne (2005) show that the eigenvalue criterion is among the least accurate methods. However, forcing the numbers of factors to two, three and five did not yield better statistical results nor results more theoretically correct. Cross-loading items should be dropped if there are several adequate to strong loaders (above 0.50) (Costello and Osborne, 2005). In order to clean the pattern matrix, number\_green\_leases was removed as it cross-loaded and additional adequate loaders existed. This yielded a clean matrix with moderate to strong loadings. However, with respect to theory, it loaded confusingly with mixed financial and non-financial indicators. Thus, items that theoretically did not belong in a factor was attempted removed. The final result was a four-factor model, with adequate to strong loadings<sup>10</sup>. Renewal\_leases loaded 0.433 and ROI cross-loaded. Despite this, the result is adequate and according to theory. The instrument was designed with seven financial and seven non-financial factors, which should be reflected in the interpretation of the factors. Because this instrument relates to one specific real estate company,

---

<sup>9</sup> The factors explained slightly more of the variance of the variables, but three more variables cross-loaded.

<sup>10</sup> See appendix B2.

the methodology used by Hoque et al. (2001), whom distributed questionnaires to a century of companies, cannot be utilized here. Therefore, the results cannot be expected to be along the same lines either.

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.793, signifying significant gains from data reduction. The p-value is 0.000, confirming that the variables correlate, and that data reduction is OK. The four-factor model explains approximately 60.5 % of the variance in the eleven variables. The factors correlate strongly, posing concerns for discriminate validity (Farrell and Rudd, 2009). However, the correlations are below the critical benchmark of 0.7, indicating that the factors measure different constructs.

Factor 1 comprises operating costs, return on investment, management result and number of environmentally certified properties. The factor is financially oriented, apart from the number of environmentally green properties, signifying financial importance in performance evaluation. The item `green_property` was eliminated from further analysis. Factor 2 comprises customer satisfaction and co-worker satisfaction, and is non-financially oriented. Factor 3 constitutes hours of in-service training, interest expense and administrative cost compared to lease value. It is financially oriented apart from the hours of in-service training, which was eliminated from further analysis. The final factor consists of number of new leases and renewal of existing leases, and is non-financially oriented. This result fits the theoretical foundation with a distinction between financial and non-financial indicators. Rent receivable, number of green leases, economic occupancy, hours of in-service training and number of environmentally certified properties were removed from further analysis, leaving four non-financial performance indicators and five financial performance indicators.

### **Interactional justice instrument and trust in superior instrument**

In the exploratory factor analysis, interactional justice and trust in superior converged<sup>11</sup>. This indicates that the items measure the same construct, which is contrary to theory. A forced two-factor analysis was conducted, separating the two constructs<sup>12</sup>. The result was a clean pattern matrix with strong loadings, high communalities and significant gain from data reduction. The two-factor model explains 85.6 % of the variance in the six variables.

---

<sup>11</sup> See appendix B1.

<sup>12</sup> See appendix B3.

A severe issue with these factors is redundancy (Farrell and Rudd, 2009). The two factors are practically measuring the same construct. Squared correlation equals 0.645: Almost two thirds of the variance in the items of one factor can be explained by the variance in the other factor. Thus, the discriminate validity of the instrument is low. This will cause problems with the structural equation modelling (SEM), as the software is more likely to reject models with redundancy. Therefore, instead of basing the SEM analysis on the factor analysis of interactional justice and trust in superior, variables were removed during the SEM analysis based on modification indices and loading strength. This ensured a model with good fit to the data.

#### ***4.3.2 Structural equation modelling (SEM)***

In order to test my model and hypothesizes, SEM is appropriate. With simultaneous dependent latent variables (procedural justice and interactional justice), regression analysis cannot be employed. SEM is a multivariate technique that combines multivariate regression and confirmatory factor analysis to explain the relationship between multiple variables (Hair et al., 2006). It allows researchers to model the relationship among variables after accounting for the measurement error and it provides goodness-of-fit statistics. Adequate goodness-of-fit statistics signifies that the relationships between the variables in the research model are supported by the data.

The original specification of the model, with direct paths between procedural justice and interactional justice (link C), did not meet the order condition required for simultaneous equations (Bollen, 1989). Consequently, LISREL could not identify specific parameters, as there was no unique solution to the equations set. To satisfy the order condition, the direct paths between procedural justice and interactional justice were removed, and instead correlation between the two constructs was opened. Thus, the direct effect of procedural justice on interactional justice and vice versa cannot be quantified. However, the correlation is a token of the characteristics of the relationship. Other methods of dealing with an identification issue exists (Bollen, 1989), but this procedure gave the best fit to data.

A number of variables were removed from the final analysis. The modification indices provided by LISREL indicate data misfit by indicating how much the chi-square value would be lowered if the constrained parameter were freed (Jöreskog and Sörbom, 1993). LISREL suggested freeing variables (e.g., interactional justice item 6) to latent variables (e.g., procedural justice) that theoretically do not belong. These variables were removed from the analysis, in order to

improve the model fit without compromising theory. Furthermore, LISREL suggested freeing the covariance between error-terms of variables belonging to different constructs. However, it is undesired that the error-terms of variables correlate, especially between different constructs (Hooper et al., 2008). To improve the model fit without compromising theory, the offending variables were removed from the analysis. Removing PJ5, PJ7, IJ1, IJ3, IJ4, IJ6, TS1, TS4, TO2 and TO4 provided the best fit to data.

### ***4.3.3 Multivariate normality and maximum likelihood estimation***

Normality refers to the distribution of sample data that corresponds to a normal distribution (Ringdal, 2013). Multivariate normality exists if the collected variables have neither significant skewness nor kurtosis, and is a requirement in maximum likelihood estimation. With continuous variables in structural equation modelling, maximum likelihood estimation is the preferred choice (Sharma, 1996). The sample consists of continuous data, but is characterized by non-normality<sup>13</sup>. Therefore, the analysis conducted in LISREL is done with robust maximum likelihood estimation. This technique utilizes the covariance matrix and the asymptotic covariance matrix and accounts for skewness and kurtosis (Sharma, 1996). However, robust maximum likelihood operates well with a large sample size, preferably above 400. My sample size is well below the threshold, which may have large effects on standard errors and tests of significance in the analysis.

## **4.4 Data quality**

### ***4.4.1 Multicollinearity***

Multicollinearity is the extent to which one construct may be explained by the other constructs in the analysis (Ringdal, 2013). Multicollinearity affects regressions, leading to inaccurate estimates of coefficients and standard errors, as well as inference errors. Multicollinearity is an ambiguous challenge as SEM incorporates measurement error. Therefore, the impact of multicollinearity on parameter estimates is difficult to ascertain (Grewal et al., 2004).

The data is characterized by multicollinearity: Independent variables are insignificant despite a high r-squared; standard errors are higher than the beta values; several beta weights are bizarre with negative beta values but positive correlation; the correlation matrix shows high

---

<sup>13</sup> See appendix C for tests of multivariate normality.

correlations; the variance inflation factor (VIF) is above the problematic threshold of 10 for several variables<sup>14</sup> (Grewal et al., 2004).

Grewal et al. (2004) concludes that a high degree of multicollinearity combined with low measure reliability, a small sample size and low explained variance in endogenous constructs causes severe problems in structural equation modelling. The composite reliability measure of the constructs is high and the explained variance is high. Therefore, despite moderate multicollinearity and a small sample size, no steps are taken to address the issue prior to the SEM analysis. During the SEM analysis, variables were removed based on modification indices and loading strength; removing variables that strongly correlate is a recognized method to reduce multicollinearity (Kline, 2012). Therefore, it is assumed that multicollinearity poses a low threat to statistical conclusions. An acceptably low condition number (12.186) supports this conclusion (Belsley et al., 2005).

#### ***4.4.2 Reliability***

Reliability is the degree to which the observed variable measures the ‘true’ value – whether several measures with the same instrument gives the same result (Ringdal, 2013). There are several ways to test the reliability of the data. The composite reliability (CR) is a measure of scale reliability, checking how closely related a set of items are as a group (Ringdal, 2013). The average variance extracted (AVE) estimate is the average amount of variation a latent variable is able to explain in the observed variables to which it is theoretically related (Farrell, 2010). A CR value above 0.7 and an AVE value above 0.5 is considered good (Chin, 1998).

#### ***4.4.3 Validity***

Construct validity is the accuracy of the observed variables, specifically whether they measure the intended construct (Ringdal, 2013). Construct validity is a necessity in order to obtain meaningful and relevant results. This relationship is difficult to measure, and a solid theoretical foundation is vital when the measurement instrument is developed. This thesis utilizes recognized measurement instruments with proven construct validity. However, translating the instrument poses a challenge to the construct validity, as nuances and distinctions extant in the original phrasing may have been lost.

---

<sup>14</sup> See appendix E for correlation matrices and appendix D for collinearity statistics.



Construct validity is often defined by the subcategories convergent validity and discriminant validity. Convergent validity refers to the degree to which two measures of a construct that theoretically should be related, in fact are related. Discriminant validity, on the other hand, examines whether two measures that should not be related are unrelated.

#### **4.4.4 Model fit**

A model is said fit the observed data to the extent that the model-implied covariance matrix is equivalent to the empirical covariance matrix (Schermelleh-Engel et al., 2003, p. 23). However, there is no consensus regarding what constitutes a “good fit”. Therefore, the fit indices should be considered simultaneously (Schermelleh-Engel et al., 2003). A multitude of fit measures exist; the ones considered in this thesis are recommended by Schermelleh-Engel et al. (2003) and Hammervold and Olsson (2012).

##### **The chi-square test ( $\chi^2$ -test)**

The chi-square test examines if the population’s covariance matrix is equal to the model-implied covariance matrix. The empirical covariance matrix is used as a proxy for the population’s covariance matrix. The null-hypothesis is that the covariance matrices are equivalent, and that the model perfectly fits the data. Thus, a low chi-square and a high p-value ( $> 0.05$ ) is desirable. The prerequisite that the matrices are equivalent is strict; acceptance of the model from the chi-square test is hard to achieve. It presupposes that the data is characterized by multivariate normality and a large sample size. Since my data is non-normal, the Satorra-Bentler Scaled Chi-square (C3) is utilized as it is correct even with multivariate non-normal data. However, it is sensitive to kurtosis and works best with very large samples ( $> 1000$ ). The low sample size poses inference limitations, regardless of whether normal or robust estimation is applied.

Additionally, the  $\chi^2/df$  measure is calculated. The degrees of freedom in the model are constant, and therefore the measure indicates fit without regard to sample size. A value below 2 indicates good fit, while a value between 2 and 3 is acceptable.

##### **Root mean square of approximation (RMSEA) and the close-fit test**

RMSEA is a fit index used in the close-fit test. The test estimates the error of approximation and represents the degree of fit to the population’s covariance matrix, as opposed to the dichotomous chi-square test (perfect fit or no fit). A RMSEA value below 0.05 indicates a good

fit, and a value below 0.08 indicates an acceptable fit. Additionally, a p-value of the close-fit test above 0.10 indicates good fit and a p-value between 0.05 and 0.10 indicates acceptable fit.

### **Standardized root mean square residual (SRMR)**

SRMR evince the remaining residuals between the empirical covariance matrix and the model-implied covariance matrix after the estimation of the parameters. The measure depends on sample size and is sensitive to wrongly specified models. Therefore, it is difficult to create consistent rules of thumb, but a value below 0.05 is recognized as good, while below 0.10 is seen as acceptable.

### **Goodness of fit index (GFI) and adjusted goodness of fit index (AGFI)**

GFI compares the model with a null-model (all parameters specified as zero), indicating how well theory and data conform. GFI ranges between 0 and 1 (although negative values may occur, which suggests that the proposed model is worse than no model). The closer to 1 the better the model-implied covariance matrix conform to the empirical covariance matrix. GFI of 0.95 or above is good, while above 0.90 is acceptable. AGFI is adjusted for degrees of freedom. Values above 0.90 indicate good fit, while values above 0.85 indicate acceptable fit.

### **Comparative fit index (CFI)**

CFI compares the model with a null-model, and compares the null-model's covariance matrix with the observed covariance matrix. CFI ranges between 0 and 1, and values above 0.97 indicate good fit, while values above 0.95 indicate acceptable fit.

### **Normal fit index (NFI)**

NFI is affected by small sample sizes. Therefore, it may be lower than the data suggests, even though the model is correctly specified. NFI ranges between 0 and 1, and a value above 0.95 indicates good fit and a value above 0.90 indicates acceptable fit.

## 5. Results: Structural equation modelling

In this chapter the results of the SEM analysis is presented. The analysis was conducted on two models, one with non-financial indicators and one with financial indicators. The two-model approach facilitates comparison of the use of non-financial indicators versus financial indicators in performance evaluation. First, the non-financial model is presented and discussed with summary tables, standardized residuals, indirect effects, model fit, reliability and validity. Then the financial model is presented and discussed.

### 5.1 The non-financial model

Table 1 presents the standardized solutions, standard errors, t-values and the explained variance of the parameters by the latent factor (r-squared).

| Indicator                        | Parameter          | Standardized solution | Standard error | t-value | r <sup>2</sup> |
|----------------------------------|--------------------|-----------------------|----------------|---------|----------------|
| <b>Measurement model X</b>       |                    |                       |                |         |                |
| Renewal of leases                | $\lambda_{11}^x$   | 0.64                  | 0.215          | 5.894*  | 0.405          |
| Customer satisfaction            | $\lambda_{21}^x$   | 0.62                  | 0.245          | 3.416*  | 0.386          |
| New leases                       | $\lambda_{31}^x$   | 0.71                  | 0.187          | 6.653*  | 0.505          |
| Co-worker satisfaction           | $\lambda_{41}^x$   | 0.55                  | 0.220          | 3.883*  | 0.300          |
| Variance error-term <sub>1</sub> | $\delta_1$         | 0.60                  | 0.528          | 4.459*  | -              |
| Variance error-term <sub>2</sub> | $\delta_2$         | 0.61                  | 0.235          | 4.750*  | -              |
| Variance error-term <sub>3</sub> | $\delta_3$         | 0.50                  | 0.351          | 4.340*  | -              |
| Variance error-term <sub>4</sub> | $\delta_4$         | 0.70                  | 0.313          | 5.423*  | -              |
| <b>Measurement model Y</b>       |                    |                       |                |         |                |
| PJ2                              | $\lambda_{21}^y$   | 0.73                  | 0.129          | 7.526*  | 0.530          |
| PJ3                              | $\lambda_{31}^y$   | 0.90                  | 0.103          | 11.960* | 0.806          |
| PJ4                              | $\lambda_{41}^y$   | 0.84                  | 0.105          | 10.604* | 0.713          |
| PJ6                              | $\lambda_{51}^y$   | 0.81                  | 0.113          | 9.552*  | 0.648          |
| IJ5                              | $\lambda_{72}^y$   | 0.92                  | 0.102          | 10.972* | 0.849          |
| TS3                              | $\lambda_{93}^y$   | 0.93                  | 0.091          | 16.075* | 0.868          |
| TO3                              | $\lambda_{11,4}^y$ | 0.91                  | 0.081          | 13.507* | 0.833          |

|                                   |                    |       |       |         |       |
|-----------------------------------|--------------------|-------|-------|---------|-------|
| TO5                               | $\lambda_{12,5}^y$ | 0.96  | 0.059 | 20.845* | 0.923 |
| TO6                               | $\lambda_{13,4}^y$ | 0.80  | 0.128 | 7.257*  | 0.632 |
| Variance error-term <sub>1</sub>  | $\varepsilon_1$    | 0.37  | 0.134 | 4.619*  | -     |
| Variance error-term <sub>2</sub>  | $\varepsilon_2$    | 0.47  | 0.170 | 4.890*  | -     |
| Variance error-term <sub>3</sub>  | $\varepsilon_3$    | 0.19  | 0.080 | 4.578*  | -     |
| Variance error-term <sub>4</sub>  | $\varepsilon_4$    | 0.29  | 0.103 | 4.852*  | -     |
| Variance error-term <sub>5</sub>  | $\varepsilon_5$    | 0.35  | 0.132 | 4.790*  | -     |
| Variance error-term <sub>6</sub>  | $\varepsilon_6$    | 0.29  | 0.323 | 1.788   | -     |
| Variance error-term <sub>7</sub>  | $\varepsilon_7$    | 0.15  | 0.049 | 4.550*  | -     |
| Variance error-term <sub>8</sub>  | $\varepsilon_8$    | 0.15  | 0.095 | 3.381*  | -     |
| Variance error-term <sub>9</sub>  | $\varepsilon_9$    | 0.13  | 0.104 | 3.138*  | -     |
| Variance error-term <sub>10</sub> | $\varepsilon_{10}$ | 0.07  | 0.039 | 3.088*  | -     |
| Variance error-term <sub>11</sub> | $\varepsilon_{11}$ | 0.17  | 0.057 | 4.306*  | -     |
| Variance error-term <sub>12</sub> | $\varepsilon_{12}$ | 0.08  | 0.037 | 3.397*  | -     |
| Variance error-term <sub>13</sub> | $\varepsilon_{13}$ | 0.37  | 0.127 | 3.972*  | -     |
| <b>Structural model</b>           |                    |       |       |         |       |
| NFI → PJ                          | $\gamma_{11}$      | 0.25  | 0.150 | 1.669   | -     |
| NFI → IJ                          | $\gamma_{21}$      | 0.21  | 0.176 | 1.183   | -     |
| PJ → TS                           | $\beta_{31}$       | -0.08 | 0.060 | -1.306  | -     |
| PJ → TO                           | $\beta_{41}$       | 0.33  | 0.085 | 3.942*  | -     |
| IJ → TS                           | $\beta_{32}$       | 1.00  | 0.092 | 10.946* | -     |
| IJ → TO                           | $\beta_{42}$       | 0.57  | 0.131 | 4.336*  | -     |
| PJ ↔ IJ                           | $\psi_{21}$        | 0.56  | 0.191 | 2.671*  | -     |
| PJ                                | $\eta_1$           | -     | -     | -       | 0.063 |
| IJ                                | $\eta_2$           | -     | -     | -       | 0.044 |
| TS                                | $\eta_3$           | -     | -     | -       | 0.918 |
| TO                                | $\eta_4$           | -     | -     | -       | 0.668 |

Table 1: Summary table non-financial parameters. Asterisk (\*) marked parameters are significant at a 5 % level.

### ***5.1.1 Measurement model X***

The t-values of the standardized solutions are all above the critical value of  $|1.98|^{15}$ . The data indicates that the non-financial performance measurements renewal of leases, customer satisfaction, new leases and co-worker satisfaction are significant variables indicating the importance of non-financial measures in performance evaluation. The factor loadings are moderate to high with low standard errors, yielding high t-values. The variance of the error-terms is significant.

### ***5.1.2 Measurement model Y***

The parameters of the observed variables,  $\lambda_{ij}^y$ , are significant. The data signals that procedural justice items 2, 3, 4 and 6 are significant indicators of procedural justice; that interactional justice item 5 is a significant indicator of interactional justice; that trust in superior item 3 is a significant indicator of trust in superior; and that trust in organization items 3, 5 and 6 are significant indicators of trust in organization. The loadings are high and the standard errors are low. The variance to IJ2's error term is not significant. The error term presents the amount at which the equation may differ during the analysis, but this variance is not trustworthy in the case of IJ2, which is a weakness.

### ***5.1.3 Structural model***

The effect of non-financial performance measures in performance evaluation on procedural justice and interactional justice is not significant. Neither is the effect of procedural justice on trust in superior, which also indicates a negative relationship between the constructs. The effects of procedural justice and interactional justice on trust in organization and interactional justice on trust in superior are significant, with moderate to high loadings. The data indicates that interactional justice explains 100 % of the variance of trust in superior. Furthermore, it indicates that interactional justice explains the majority of the variance of trust in organization. The correlation between procedural justice and interactional justice is positive and strong. This indicates that if procedural justice increases by 'one', interactional justice will on average increase by 0.561.

---

<sup>15</sup> 112 degrees of freedom give approximately  $|1.98|$  critical value from the Students' t-Distribution Critical Points table.

#### 5.1.4 Standardized residuals

Residuals are the estimated difference between observed value and predicted value. The standardized residuals are residuals divided by estimated standard error. The standardized residual matrix may reveal misfit; it is the difference between the empirical covariance matrix and the model-implied covariance matrix that drives tests of overall fit (Schermelleh-Engel et al., 2003). Standardized residuals with an absolute value above 2 may indicate misfit; however, the largest standardized value is  $|1.440|^{16}$ .

#### 5.1.5 Indirect effect

The indirect effect of non-financial measures-based performance evaluation on trust in organization and trust in superior were calculated as follows:

---

Trust in organization:

|                 |           |                    |        |
|-----------------|-----------|--------------------|--------|
| Path (1)        | NFI-PJ-TO | $0.25 \times 0.33$ | 0.0825 |
| Path (2)        | NFI-IJ-TO | $0.21 \times 0.57$ | 0.1197 |
| Indirect effect |           |                    | 0.2022 |

---

Trust in superior:

|                 |           |                     |        |
|-----------------|-----------|---------------------|--------|
| Path (1)        | NFI-PJ-TS | $0.25 \times -0.08$ | -0.020 |
| Path (2)        | NFI-IJ-TS | $0.21 \times 1.00$  | 0.2100 |
| Indirect effect |           |                     | 0.1900 |

---

---

<sup>16</sup> See appendix F1 for standardized residuals matrix.

### 5.1.6 Model fit

| Goodness-of-fit measure   | Value   | Assessment        |
|---------------------------|---------|-------------------|
| Chi-square (C3)           | 136.774 | Good fit          |
| Chi-square test (p-value) | 0.0558  | Accepts the model |
| $\chi^2/df$               | 1.221   | Good fit          |
| Close-fit test (p-value)  | 0.0748  | Acceptable fit    |
| RMSEA                     | 0.0696  | Acceptable fit    |
| SRMR                      | 0.0624  | Acceptable fit    |
| GFI                       | 0.848   | Bad fit           |
| AGFI                      | 0.792   | Bad fit           |
| CFI                       | 0.960   | Acceptable fit    |
| NFI                       | 0.892   | Bad fit           |

Table 2: Goodness-of-fit statistics, non-financial model

The chi-square test accepts the model based on the Satorra-Bentler Scaled Chi-square, which indicates that the model-implied covariance matrix is equal to the empirical covariance matrix. However, it should be noted that the chi-square test is compromised due to a small sample size, which may affect the inference.

LISREL suggests opening correlation between the error terms of the  $\lambda_{ij}^x$  variables (renewal of leases, new leases, customer and co-worker satisfaction). The potential chi-square reduction gain from opening correlation between e.g. renewal of leases's error term and new leases's error term is significant, with a modification value of 57.42. This would improve the model's fit to the data. However, correlation between the error terms is not justified from a theoretical perspective. Correlating error terms represents some issues not specified in the model causing the covariation (Hooper et al., 2008). It could represent an unaccounted for common factor, or that one item partly causes the other. The theoretical framework does not imply any reason for correlating error terms, and freeing correlation is a step that needs to be clearly substantiated (Hooper et al., 2008). Therefore, the correlation between the error terms is fixed.

RMSEA, the close-fit test, SRMR and CFI indicates acceptable fit. GFI, AGFI and NFI indicate bad fit. However, these rules of thumb criteria are arbitrary (Schermelleh-Engel et al., 2003). Misspecification, small sample bias, effects of violation of normality and estimation-method effects may affect fit indices. The NFI is just below the threshold of 0.9, and is sensitive to small samples. NFI and GFI should be interpreted simultaneously as a measure of noise in the

data (Hammervold and Olsson, 2012). The difference between NFI and GFI is 0.044, indicating a relatively low degree of noise. In conclusion, the model has an acceptable fit when the low sample size and multivariate non-normality is taken into account.

### ***5.1.7 Reliability***

The composite reliability and the average variance extracted measures were satisfactory<sup>17</sup>. They were all above 0.7 (CR) and 0.5 (AVE), with the exception of the average variance extracted for non-financial performance indicators (0.399).

Another measure of reliability is r-squared, which indicates the degree of variance in the observed variables explained by the latent variable. Values between 0.35 and 0.5 indicate moderate reliability, while values above 0.5 indicate high reliability. Co-worker satisfaction has low reliability. 30 % of the variance in co-worker satisfaction is explained by the latent variable NFI. Renewal of leases and customer satisfaction have moderate reliability, and new leases and the remaining observed variables explaining PJ, IJ, TS and TO show high reliability.

The r-squared of the structural model varies. The latent variables procedural justice and interactional justice have an r-squared of 0.063 and 0.044 respectively. These values are very low, indicating that NFI does not adequately explain the variance in procedural and interactional justice. This is connected to the fact that the estimates are not significant; NFI cannot explain the variance of PJ and IJ when it does not significantly affect them. The r-squared of trust in organization is 0.668, which is high. However, it indicates that the model misses some facets explaining the variance of trust in organization. The r-squared of trust in superior is 0.918, which is great. The model captures almost all the variance of trust in superior.

In conclusion, it looks like the non-financial performance indicators suffer from lower reliability than the rest of the instruments. This may be because the KPIs had to be altered to fit the real estate company. However, all things considered, the reliability of the model seems to be relatively high.

---

<sup>17</sup> See appendix G for calculation of composite reliability and average variance extracted.



### ***5.1.8 Validity***

There is no simple method to measure construct validity. The usage of established instruments works in favour of construct validity. The correlation matrix indicates partially strong convergent validity<sup>18</sup>. The observed variables of procedural justice correlate; the observed variables of interactional justice correlate; the observed variables of trust in superior correlate; and the observed variables of trust in organization correlate, indicating that the observed variables measure the correct construct. The non-financial indicators and the financial indicators are slightly more problematic, with lower correlations. This indicates that the variables may be measuring slightly different constructs, which is further emphasized by the difficulty of performing a theoretically sound exploratory factor analysis on the KPI instrument.

Additionally, the exploratory factor analysis and the correlation matrix express concerns with regard to discriminant validity. Trust in superior and interactional justice converge on the same factor, when in theory there should be two. This indicates low discriminant validity, as the observed variables of two unrelated constructs relate. In the final analysis, several variables were removed, reducing the intercorrelation between the constructs which may improve discriminant validity. Even so, the fact that interactional justice's effect on trust in superior is 1.00 corroborates low discriminant validity.

In conclusion, although established instrument were used in order to ascertain construct validity, the model appears to suffer from limitations. The KPI instrument faces concerns with regard to convergent validity, while interactional justice and trust in superior's discriminant validity is problematic.

---

<sup>18</sup> See appendix E for correlation matrix.

## 5.2 The financial model

Table 3 presents the standardized solutions, standard errors, t-values and the explained variance of the parameters by the latent factor (r-squared).

| Indicator                                   | Parameter          | Standardized solution | Standard error | t-value | r <sup>2</sup> |
|---|--------------------|-----------------------|----------------|---------|----------------|
| <b>Measurement model X</b>                  |                    |                       |                |         |                |
| Management profit                           | $\lambda_{11}^x$   | 0.63                  | 0.175          | 5.052*  | 0.399          |
| Interest expense                            | $\lambda_{21}^x$   | 0.73                  | 0.213          | 8.739 * | 0.531          |
| Operating costs                             | $\lambda_{31}^x$   | 0.73                  | 0.185          | 7.251*  | 0.539          |
| Return on investment                        | $\lambda_{41}^x$   | 0.77                  | 0.189          | 7.959*  | 0.600          |
| Administrative cost compared to lease value | $\lambda_{51}^x$   | 0.83                  | 0.128          | 13.953* | 0.682          |
| Variance error-term <sub>1</sub>            | $\delta_1$         | 0.60                  | 0.233          | 5.028*  | -              |
| Variance error-term <sub>2</sub>            | $\delta_2$         | 0.47                  | 0.640          | 4.761*  | -              |
| Variance error-term <sub>3</sub>            | $\delta_3$         | 0.46                  | 0.328          | 4.726*  | -              |
| Variance error-term <sub>4</sub>            | $\delta_4$         | 0.40                  | 0.257          | 5.894*  | -              |
| Variance error-term <sub>5</sub>            | $\delta_5$         | 0.32                  | 0.307          | 4.854*  |                |
| <b>Measurement model Y</b>                  |                    |                       |                |         |                |
| PJ2   | $\lambda_{21}^y$   | 0.73                  | 0.128          | 7.564*  | 0.531          |
| PJ3   | $\lambda_{31}^y$   | 0.90                  | 0.103          | 11.982* | 0.807          |
| PJ4   | $\lambda_{41}^y$   | 0.84                  | 0.105          | 10.605* | 0.713          |
| PJ6   | $\lambda_{51}^y$   | 0.80                  | 0.113          | 9.552*  | 0.645          |
| IJ5   | $\lambda_{72}^y$   | 0.92                  | 0.102          | 11.030* | 0.846          |
| TS3   | $\lambda_{93}^y$   | 0.93                  | 0.092          | 16.018* | 0.868          |
| TO3   | $\lambda_{11,4}^y$ | 0.91                  | 0.081          | 13.508* | 0.832          |
| TO5   | $\lambda_{12,5}^y$ | 0.96                  | 0.059          | 20.859* | 0.923          |
| TO6   | $\lambda_{13,4}^y$ | 0.80                  | 0.128          | 7.256*  | 0.632          |
| Variance error-term <sub>1</sub>            | $\varepsilon_1$    | 0.37                  | 0.134          | 4.619*  | -              |
| Variance error-term <sub>2</sub>            | $\varepsilon_2$    | 0.47                  | 0.170          | 4.878*  | -              |
| Variance error-term <sub>3</sub>            | $\varepsilon_3$    | 0.19                  | 0.080          | 4.523*  | -              |
| Variance error-term <sub>4</sub>            | $\varepsilon_4$    | 0.29                  | 0.102          | 4.872*  | -              |

|                                   |                    |       |       |         |       |
|-----------------------------------|--------------------|-------|-------|---------|-------|
| Variance error-term <sub>5</sub>  | $\varepsilon_5$    | 0.35  | 0.134 | 4.768*  | -     |
| Variance error-term <sub>6</sub>  | $\varepsilon_6$    | 0.29  | 0.323 | 1.785   | -     |
| Variance error-term <sub>7</sub>  | $\varepsilon_7$    | 0.15  | 0.050 | 4.540*  | -     |
| Variance error-term <sub>8</sub>  | $\varepsilon_8$    | 0.15  | 0.094 | 3.399*  | -     |
| Variance error-term <sub>9</sub>  | $\varepsilon_9$    | 0.13  | 0.104 | 3.162*  | -     |
| Variance error-term <sub>10</sub> | $\varepsilon_{10}$ | 0.07  | 0.039 | 3.090*  | -     |
| Variance error-term <sub>11</sub> | $\varepsilon_{11}$ | 0.17  | 0.057 | 4.308*  | -     |
| Variance error-term <sub>12</sub> | $\varepsilon_{12}$ | 0.08  | 0.037 | 3.396*  | -     |
| Variance error-term <sub>13</sub> | $\varepsilon_{13}$ | 0.37  | 0.127 | 3.972*  | -     |
| <b>Structural model</b>           |                    |       |       |         |       |
| NFI → PJ                          | $\gamma_{11}$      | 0.17  | 0.126 | 1.343   | -     |
| NFI → IJ                          | $\gamma_{21}$      | 0.03  | 0.137 | 0.199   | -     |
| PJ → TS                           | $\beta_{31}$       | -0.08 | 0.060 | -1.346  | -     |
| PJ → TO                           | $\beta_{41}$       | 0.33  | 0.084 | 3.933*  | -     |
| IJ → TS                           | $\beta_{32}$       | 1.01  | 0.092 | 10.995* | -     |
| IJ → TO                           | $\beta_{42}$       | 0.57  | 0.131 | 4.361*  | -     |
| PJ ↔ IJ                           | $\psi_{21}$        | 0.61  | 0.191 | 2.671*  | -     |
| PJ                                | $\eta_1$           | -     | -     | -       | 0.029 |
| IJ                                | $\eta_2$           | -     | -     | -       | 0.001 |
| TS                                | $\eta_3$           | -     | -     | -       | 0.921 |
| TO                                | $\eta_4$           | -     | -     | -       | 0.668 |

Table 3: Summary table financial parameters. Asterisk (\*) marked parameters are significant at a 5 % level.

### 5.2.1 Measurement model X

Management profit, interest expense, operating costs, return on investment and administrative cost compared to lease value all have t-values above the critical threshold, strong loadings and low standard errors. The data indicates that the observed variables significantly affect financial measures-based performance evaluation. Furthermore, the variance of the error terms is significant. The financial measurement model X show stronger statistical results than the non-financial model, with stronger standardized solutions and lower standard errors.

### ***5.2.2 Measurement model Y***

The parameters of the observed variables,  $\lambda_{ij}^y$ , are significant, with strong standardized solutions and low standard errors. The variance of the error terms is significant, except for IJ2. Measurement model Y is unchanged compared to the non-financial measurement model Y, and the results are accordingly.

### ***5.2.3 Structural model***

The financial model share strong similarities with the non-financial model. The effect of financial measures-based performance evaluation on procedural justice and interactional justice is not significant. The effect of procedural justice on trust in superior is negative, and not significant. The effects of procedural justice and interactional justice on trust in organization are significant, with interactional justice explaining the majority of the variance. The effect of interactional justice on trust in superior is significant, with a standardized solution of 1.01. Generally, having effects above one, which in this case indicates that interactional justice explains 101 % of the variance of trust in superior, is considered a weakness, considering it is an impossibility. However, such a small discrepancy should not be problematic. The correlation between interactional and procedural justice is strong and significant.

### ***5.2.4 Standardized residuals***

Standardized residuals with an absolute value above 2 may indicate misfit. The largest standardized value in the data is  $|2.422|^{19}$ . However, there is only one absolute value above 2, which may indicate an anomaly. A standardized variable have a mean of 0 and a standard deviation of 1, no matter what the initial units were (Studenmund, 2011). Thus, a standardized residual have 5 % chance of being above  $|2|$ , and may be considered as an anomaly without consequences to data fit. It is noted, however, that the financial model on average have larger standardized values than the non-financial model, indicating a worse fit compared to the non-financial model.

---

<sup>19</sup> See appendix F2 for standardized residuals matrix.

### 5.2.5 Indirect effect

The indirect effect of financial measures-based performance evaluation on trust in organization and trust in superior were calculated as follows:

Trust in organization:

|                 |          |           |        |
|-----------------|----------|-----------|--------|
| Path (1)        | FI-PJ-TO | 0.17×0.33 | 0.0561 |
| Path (2)        | FI-IJ-TO | 0.03×0.57 | 0.0171 |
| Indirect effect |          |           | 0.0732 |

Trust in superior:

|                 |          |            |         |
|-----------------|----------|------------|---------|
| Path (1)        | FI-PJ-TS | 0.17×-0.08 | -0.0136 |
| Path (2)        | FI-IJ-TS | 0.03×1.01  | 0.0303  |
| Indirect effect |          |            | 0.0167  |

### 5.2.6 Model fit

| Goodness-of-fit measure   | Value   | Assessment        |
|---------------------------|---------|-------------------|
| Chi-square (C3)           | 162.675 | Good fit          |
| Chi-square test (p-value) | 0.0208  | Rejects the model |
| $\chi^2/df$               | 1.271   | Good fit          |
| Close-fit test (p-value)  | 0.0545  | Acceptable fit    |
| RMSEA                     | 0.0704  | Acceptable fit    |
| SRMR                      | 0.0589  | Acceptable fit    |
| GFI                       | 0.823   | Bad fit           |
| AGFI                      | 0.764   | Bad fit           |
| CFI                       | 0.958   | Acceptable fit    |
| NFI                       | 0.887   | Bad fit           |

Table 4: Goodness-of-fit statistics, financial model

The chi-square test rejects the financial model, which indicates that the model-implied covariance matrix diverge from the empirical covariance matrix. The chi-square could be

reduced by opening correlation between the error terms of the financial performance indicator-variables, as suggested by the theta-delta modification index. Although this would improve fit, there is not theoretical justification for freeing the covariation, and it should therefore remain fixed (Hooper et al., 2008).

RMSEA, the close-fit test, SRMR and CFI indicates acceptable fit. GFI, AGFI and NFI indicate bad fit. The difference between NFI and GFI is 0.064. It is higher than the non-financial model, indicating a slightly higher degree of noise in the data. The only difference between the two models are the non-financial and the financial indicators; the non-financial model have slightly better goodness-of-fit indices, as well as being accepted by the chi-square test, indicating a stronger model. In conclusion, the financial model has an acceptable fit when the low sample size and multivariate non-normality is taken into account.

### ***5.2.7 Reliability***

The composite reliability and the average variance extracted measures were satisfactory<sup>20</sup>, being above 0.7 and 0.5 respectively. The r-squared of the observed variables are high, indicating good reliability. The financial variables have high reliability, except for management profit which is moderate. The reliability of the remaining observed variables are high.

The same limitations afflicting the non-financial model trouble the financial model. The effect of financial measures-based performance evaluation on procedural and interactional justice is not significant, resulting in very low r-squared values, 0.029 and 0.001 respectively. The r-squared of trust in organization is 0.668, equal to the non-financial model. The r-squared of trust in superior is 0.921, which is slightly higher than the non-financial model.

Summed up, the reliability of the model is sound. The financial variables are strong, although less reliable than the justice and trust variables. The financial model is more reliable than the non-financial model, but the goodness of fit is worse.

### ***5.2.8 Validity***

The financial model suffers from the limitations plaguing the non-financial model. For a discussion of validity, see section 5.1.9. In conclusion, the model suffers from reduced construct

---

<sup>20</sup> See appendix G.

validity. The KPI instrument suffers from low convergent validity, while interactional justice and trust in superior suffer from low discriminant validity.

## **6. Discussion and conclusion**

---

In this chapter, the research problem is debated with respect to the empirical results, theory and previous research. In discussing the results, concerns of reliability and validity are emphasized. An alternative model is discussed, where a different interpretation of the KPI instrument is applied and the focus is shifted from financial and non-financial performance indicators to corporate strategy. Finally, a conclusion is offered and contributions of the research reviewed.

### **6.1 Discussion of empirical results**

The empirical results found positive effects of both financial and non-financial measures-based performance evaluation on interactional and procedural justice, as hypothesized. However, the effects were not significant. Financial and non-financial indicators did not significantly explain variance in perceived justice. The direct effects of financial indicators on justice were weaker, indicating that non-financial performance measures are perceived as fairer vis-à-vis financial indicators. Especially the effect on interactional justice was markedly lower (from 0.21 to 0.03), indicating that non-financial indicators may be more open to interpretation and flexibility, facilitating communication between subordinate and superior, and a more just performance appraisal process.

Procedural and interactional justice strongly and positively correlates, as hypothesized, indicating that the distinction between superior and the general leadership of the organization may be arbitrary. Employees may be unable to discern the accountable party with respect to procedures and interaction. However, it is noted how Colquitt et al. (2005) demonstrate that the instrument used (Moorman, 1991) often achieve high correlations.

Regardless of whether financial or non-financial indicators were used, the results were significant, positive effects of procedural justice on trust in organization and of interactional justice on trust in superior and in organization. The effect of procedural justice on trust in superior was negative, contrary to the hypothesized positive effect, but insignificant. Thus, perceived fairness is associated with both trust in superior and in organization: Procedural justice is associated with trust in organization, and interactional justice is associated with both trust in superior and in organization, in accordance with the theoretical framework. Just



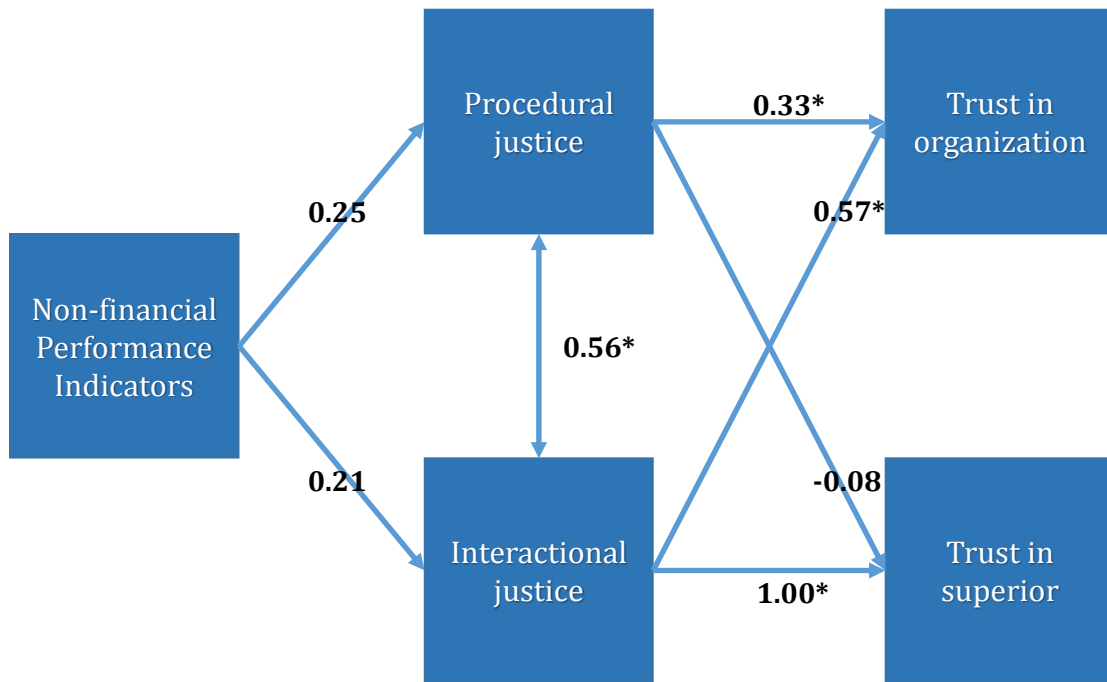


Figure 5: Path coefficients (non-financial model). Asterisk (\*) marked coefficients are significant at a 5 % level.

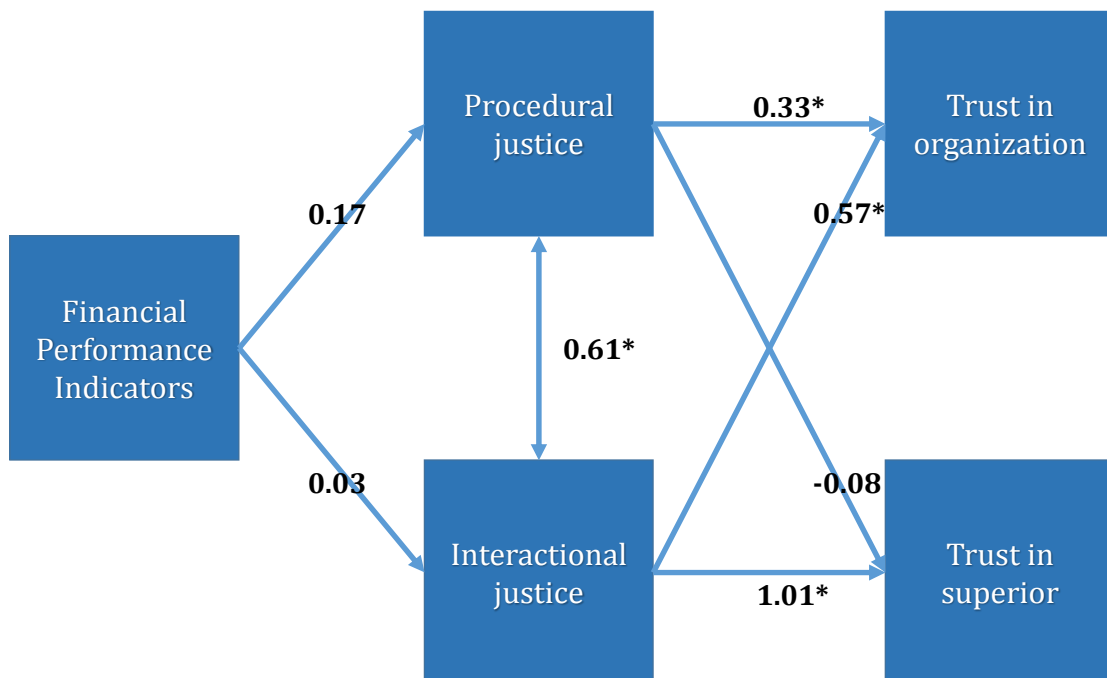


Figure 6: Path coefficients (financial model). Asterisk (\*) marked coefficients are significant at a 5 % level.

treatment influences individuals' trust towards the accountable party; procedural justice is organization focused and interactional justice is supervisor focused.

The effect of interactional justice is stronger than the effect of procedural justice on trust in organization. Spillover effects of this magnitude may indicate that the immediate superior's treatment of subordinates may be more important in promoting trust in the top management of the organization than the fairness of the procedures set down by top management. Furthermore, it may indicate that employees' anthropomorphize the leadership of the organization, projecting the immediate superior's qualities on top management. Therefore, it might be that freeing the effect of trust in superior on trust in organization may better explain the relationship between justice and trust; however, the result was unsatisfactory<sup>21</sup>. Freeing correlation between the two trust constructs did not improve the results, although there is some support for such effects in management literature (Fulmer and Gelfand, 2012).

Albeit the spillover effect was significant and strong in the case of interactional justice on trust in organization, the spillover effects are invariably lower in magnitude than the effect between target similar variables. The result is according to contemporary social exchange theory, indicating that individuals perceiving procedural justice reciprocate primarily towards the organization, and individuals experiencing interactional justice reciprocate primarily towards the superior.

The research model presents how interactional justice perfectly explains trust in superior and how the constructs correlate exceedingly strong (0.956). Although previous literature have found strong effects of interactional justice on trust in superior and strong positive correlations between the constructs (see for instance Colquitt et al., 2012; Aryee et al., 2002; Wu et al., 2011; Ertürk, 2007), the relationship has not been explicitly discussed. When interactional justice perfectly explains trust in superior, it indicates that the two constructs are identical. The exploratory factor analysis corroborates this assumption. This may be problematic as it infers that researchers research two constructs that may be more similar than anticipated, perhaps even to the point where there is no empirical distinction. A model with reversed effects (i.e. trust in superior affected interactional justice instead of the opposite) was conducted<sup>22</sup>, yielding a direct significant effect of 0.88; trust in superior explained 88 % of the variance in interactional justice while the correlation between interactional and procedural justice became insignificant and 0.11

---

<sup>21</sup> See appendix F3.

<sup>22</sup> See appendix F4.

(from 0.56\*). However, as this relationship has not previously been scrutinized, nor such strong effects achieved, it may indicate that the problem originates from the instruments applied. The instruments devised by Moorman (1991) and Read (1962), two instruments that hardly ever have been applied simultaneously, may be empirically very similar, although they attempt to measure two unique constructs. Therefore, they should be applied with caution. When used simultaneously, the empirical distinction between interactional justice and trust in superior may be tenuous. This may also infer complications when they are used alone, i.e. they might not measure the intended construct as well as anticipated.

The *indirect effect* on trust depended heavily on whether non-financial or financial indicators were applied. The indirect effect of non-financial measures-based performance evaluation on trust in organization was 0.2022, and the indirect effect on trust in superior was 0.1900. The equivalent results for financial measures-based performance evaluation were 0.0732 and 0.0167, respectively. Indirect effect values in excess of 0.05 can be considered meaningful, according to Pedhazur and Kerlinger (1982, p. 617) and Bartol (1983, p. 803). The impact of non-financial performance indicators on trust in superior and trust in organization is far above the meaningful threshold of 0.05. The impact of financial performance indicators on trust in organization is meaningful, although substantially lower than the impact of non-financial indicators. The impact of financial indicators on trust in superior is not meaningful.

## **6.2 Alternative model**

As evidence by the exploratory factor analysis and the reliability and validity discussions, the KPI instrument is problematic. It did not conform to theory as expected. When the original instrument (Hoque et al., 2001) has been applied in previous research, it has been mailed to more than a hundred unique companies and used to categorize these companies based on usage of multiple performance measures. Moreover, the participants – the CEOs – of these studies found the instrument to be meaningful and relevant to the organization's strategy (Hoque et al., 2001). When applied within a single company, as in this thesis, and employees of different levels participate, the instrument does not categorize the company based on financial or non-financial importance; it reflects the perceived importance of the different measures, most likely reflecting the organization's chosen strategic vision. And the strategic vision of the company may not relate to financial and non-financial performance indicators as presumed in this thesis.

An exploratory factor analysis was conducted without dividing the sample into managers and non-managers and without forcing it to conform to theory. The result<sup>23</sup> was four factors, of which two (factor 1 and 2, explaining 55.6 % of the variance) relate to the real estate company's strategic vision, as elucidated in their annual corporate report. Factor 1 consisted of economic occupancy, new leases, renewal of existing leases and rents receivable, four variables relating to "leasing and property management", which is one of three defined strategic aspects of the real estate company's business model. Factor 2 comprised return on investment, number of environmentally certified properties, operating costs and number of green leases, which may relate to a second defined aspect of the business model, "development through investment". The real estate company's strategic focus is environmentally oriented, and the factor reflects green investments and the associated return and expense of this strategic vision.

When the KPI instrument is aligned with the company's strategy, it may work as intended. The latent variable "development through investment" significantly affected procedural justice<sup>24</sup>. It may be that employees' feel fairly treated in the performance appraisal process when they feel that the performance measures reflecting the strategy and vision promulgated by top management are important. Therefore, a study should be undertaken using this approach; however, the focus shift away from financial/non-financial indicators involves an adjustment of the theoretical framework.

It may be that e.g. environmental management accounting and environmental performance indicators illuminate relationships between the performance appraisal process and behaviour more clearly than financial and non-financial performance indicators. Little research focus on environmental management accounting and behavioural consequences, although Henri and Journeault (2010) note that 'eco-control is used to guard against undesirable behaviour and to encourage desirable actions' (p. 66) and that it 'motivates people to align their behaviour with the environmental goals of the organization, and to exert additional effort, which in turn should improve environmental performance' (p. 68). Moreover, employee morale and motivation is associated with an environmental strategy (Henri and Journeault, 2010; Epstein and Roy, 2001). The study could benefit from a refashioning, examining how the performance appraisal process is perceived with respect to organizational strategy and how it relates to behavioural aspects and organizational outcomes.

---

<sup>23</sup> See appendix B4.

<sup>24</sup> See appendix F5.

### **6.3 Conclusion**

Usage of financial and non-financial performance indicators in performance evaluation did not significantly affect employees' perceptions of organizational justice. Therefore, the conclusion that fair perceptions of performance evaluation associate with trust in superior and trust in organization cannot be made with certainty. Nor can it be concluded that justice mediates the effect of performance appraisal on trust. However, the indirect effects indicate that a change in the perceived importance of non-financial performance indicators in performance evaluation meaningfully affects trust in superior and organization through perceived justice, and that this effect is greater vis-à-vis an equal perceived change of the importance of financial performance indicators. Thus, it may seem that non-financial performance indicators are perceived as more just.

When the KPI instrument is used to categorize an organization as financially or non-financially oriented, with respect to performance appraisal, it may not work as intended. When applied within a single company, it should relate to the organization's strategy and vision. The perceived importance of performance measures most likely reflect management's promulgated vision, which may not associate with a dichotomous financial or non-financial perspective. If, on the other hand, the goal is to categorize a multitude of organizations, the KPI instrument and the methodology developed by Hoque et al. (2001) works.

### **6.4 Contributions of the study**

Performance measurement systems should reflect the organization's vision and strategy. The alternative model demonstrates how performance measures associated with the organizational vision and strategy influences employees' perceptions of justice, which in turn affects trust and, ultimately, performance. Whether the measures are financial or non-financial are of less importance, although it may seem that non-financial performance measures are perceived as more just. Moreover, an instrument tailored to fit the particular organization's vision and strategy helps ensure reliable results.

The instruments developed by William Read (1962) and Robert Moorman (1991) should be applied with caution. The empirical distinction between trust in superior and interactional justice as formulated by the authors may be insubstantial.

Finally, the results from this study corroborates findings in previous literature. In accordance with social exchange theory and target similarity, it is demonstrated that procedural justice is

organizational-focused and interactional justice is supervisor-focused. Additionally, it is demonstrated how target-similar effects are stronger than spillover effects.

## **7. Limitations and suggestions for future research**

---

### **7.1 Limitations**

There are limitations associated with this study. First, a major weakness is the low sample size. Statistical analyses, especially with multivariate non-normality, desire several hundred respondents. This study had 104 after filtering by managers and unsatisfactory responses. Second, the alteration of the instruments may have influenced reliability and validity; never-before used performance measures in the KPI instrument and translation of the other instruments may have led to loss of vital linguistic nuances. Reduced construct validity and reliability suggests that the empirical results cannot be made with certainty. Third, the division of the sample into non-managers may work favourably for the importance of non-financial indicators. The real estate company's appraisal system of the blue-collar workers is more non-financially oriented than the manager's appraisal system, which may influence the result. Fourth, no control variables were applied in this study. How long an individual have worked in their current position or for their current superior is likely to affect for instance trust towards the organizational authorities. The importance of the design of the performance appraisal may be greatly reduced, with respect to trust, when these variables are controlled for. Finally, because the sample comprises one medium-sized real estate company, generalization should be done with caution.

### **7.2 Suggestions for future research**

Future studies should continue to explore how the performance appraisal system affects behaviour. In this respect, the current study should be redone with the KPI instrument linked to organizational strategy and a corresponding theoretical framework.

Future research could also benefit from focusing on interactional justice. The dominant justice constructs in research are procedural and distributive justice. However, it may seem like interactional justice play a vital part in forming individuals' perceptions. The link between interactional justice and trust should be further explored. The empirical distinction between interactional justice and trust in superior should also be scrutinized further.

Finally, organizational justice research should be approached with a more comprehensive use of the exchange rules of social exchange theory. It is unlikely that reciprocity fully explicates

human behaviour. Adding additional or focusing on different exchange rules should be explored.



## References

- Adams, J. S. (1965) Inequity in Social Exchange, *Advances in Experimental Social Psychology*, 2, 267-299.
- Ambrose, M. L. & Arnaud, A. (2005) Distributive and Procedural Justice: Construct Distinctiveness, Construct Interdependence, and Overall Justice, *In: Greenberg, J. & Colquitt, J. A. (eds.) Handbook of organizational justice*. New Jersey: Lawrence Erlbaum Associates, 59-84.
- Aryee, S., Budhwar, P. S. & Chen, Z. X. (2002) Trust as a mediator of the relationship between organizational justice and work outcomes: Test of a social exchange model, *Journal of Organizational Behavior*, 23, 267-285.
- Bartol, K. M. (1983) Turnover among DP personnel: a casual analysis, *Communications of the ACM*, 26, 807-811.
- Belsley, D. A., Kuh, E. & Welsch, R. E. (2005) *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*. Hoboken, N.J.: John Wiley & Sons, Inc.
- Bies, R. J. & Moag, J. S. (1986) Interactional justice: Communication criteria of fairness, *Research on Negotiation in Organizations*, 1, 43-55.
- Blau, P. M. (1964) *Exchange and Power in Social Life*. New York: Wiley.
- Bollen, K. A. (1989) *Structural equations with latent variables*. Canada: John Wiley & Sons, Inc.
- Brownell, P. (1982) The Role of Accounting Data in Performance Evaluation, Budgetary Participation, and Organizational Effectiveness, *Journal of Accounting Research*, 20, 12-27.
- Cederblom, D. (1982) The performance appraisal interview: A review, implications, and suggestions, *Academy of Management Review*, 7, 219-227.
- Chin, W. W. (1998) Issues and opinion on structural equation modeling, *MIS Quarterly: Management Information Systems*, 22, vii-xvi.
- Cohen-Charash, Y. & Spector, P. E. (2001) The Role of Justice in Organizations: A Meta-Analysis, *Organizational Behavior and Human Decision Processes*, 86, 278-321.
- Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O. L. H., Yee Ng, K. & Murphy, K. R. (2001) Justice at the Millennium: A Meta-Analytic Review of 25 Years of Organizational Justice Research, *Journal of Applied Psychology*, 86, 425-445.
- Colquitt, J. A., Greenberg, J. & Zapata-Phelan, C. P. (2005) What Is Organizational Justice? A Historical Overview, *In: Greenberg, J. & Colquitt, J. A. (eds.) Handbook of Organizational Justice*. New Jersey: Lawrence Erlbaum Associates, 3-58.
- Colquitt, J. A., Lepine, J. A., Piccolo, R. F., Zapata, C. P. & Rich, B. L. (2012) Explaining the Justice-Performance Relationship: Trust as Exchange Deepener or Trust as Uncertainty Reducer?, *Journal of Applied Psychology*, 97, 1-15.
- Colquitt, J. A., Scott, B. A. & Lepine, J. A. (2007) Trust, Trustworthiness, and Trust Propensity: A Meta-Analytic Test of Their Unique Relationships With Risk Taking and Job Performance, *Journal of Applied Psychology*, 92, 909-927.
- Colquitt, J. A., Scott, B. A., Rodell, J. B., Long, D. M., Zapata, C. P., Conlon, D. E. & Wesson, M. J. (2013) Justice at the Millennium, a Decade Later: A Meta-Analytic Test of Social Exchange and Affect-Based Perspectives, *Journal of Applied Psychology*, 98, 199-236.
- Costello, A. B. & Osborne, J. W. (2005) Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis, *Practical Assessment, Research & Evaluation*, 10, 1-9.
- Crawshaw, J. R., Cropanzano, R., Bell, C. M. & Nadisic, T. (2013) Organizational justice: New insights from behavioural ethics, *Human Relations*, 0, 1-20.

- Cropanzano, R. & Byrne, Z. S. (2000) Workplace justice and the dilemma of organizational citizenship, *In: Vanvugt, M., Tyler, T. R. & Biel, A. (eds.) Collective problems in modern society: Dilemmas and solutions*. London: Routledge, 142-161.
- Cropanzano, R. & Mitchell, M. S. (2005) Social Exchange Theory: An Interdisciplinary Review, *Journal of Management*, 31, 874-900.
- Cropanzano, R., Prehar, C. A. & Chen, P. Y. (2002) Using Social Exchange Theory to Distinguish Procedural From Interactional Justice, *Group & Organization Management*, 27, 324-351.
- Dillman, D. A., Smyth, J. D. & Christian, L. M. (2008) *Internet, Phone, Mail and Mixed-Mode Surveys: The Tailored Design Method*. 3. Hoboken, N.J.: John Wiley & Sons, Inc.
- Emerson, R. M. (1976) Social Exchange Theory, *Annual Review of Sociology*, 2, 335-362.
- Epstein, M. J. & Roy, M.-J. (2001) Sustainability in Action: Identifying and Measuring the Key Performance Drivers, *Long Range Planning*, 34, 585-604.
- Erdogan, B., Liden, R. C. & Kraimer, M. L. (2006) Justice and leader-member exchange: The moderating role of organizational culture, *Academy of Management Journal*, 49, 395-406.
- Ertürk, A. (2007) Increasing organizational citizenship behaviors of Turkish academicians: Mediating role of trust in supervisor on the relationship between organizational justice and citizenship behaviors, *Journal of Managerial Psychology*, 22, 257-270.
- Farrell, A. M. (2010) Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009), *Journal of Business Research*, 63, 324-327.
- Farrell, A. M. & Rudd, J. M. (2009) *Factor Analysis and Discriminant Validity: A Brief Review of Some Practical Issues*. *In: Tojib, D., ed. ANZMAC 2009 conference proceedings*. Melbourne, Australia.
- Fitzgerald, L. (2007) Performance measurement, *In: Hopper, T., Northcott, D. & Scapens, R. (eds.) Issues In Management Accounting*. 3 ed. Essex, England: Pearson Education Limited, 223-241.
- Foa, E. B. & Foa, U. G. (1980) Resource Theory: Interpersonal Behavior as Exchange, *In: Gergen, K. J., Greenberg, J. & Willis, R. H. (eds.) Social Exchange: Advances in Theory and Research*. New York: Plenum Press, 77-94.
- Foa, U. G. & Foa, E. B. (1974) *Societal structures of the mind*. Springfield, IL.: Charles, C. Thomas.
- Folger, R. & Konovsky, M. A. (1989) Effects of Procedural and Distributive Justice on Reactions To Pay Raise Decisions, *Academy of Management Journal*, 32, 115-130.
- Fulmer, C. A. & Gelfand, M. J. (2012) At What Level (and in Whom) We Trust: Trust Across Multiple Organizational Levels, *Journal of Management*, 38, 1167-1230.
- Ghalayini, A. M., Noble, J. S. & Crowe, T. J. (1997) An integrated dynamic performance measurement system for improving manufacturing competitiveness, *International Journal of Production Economics*, 48, 207-225.
- Gouldner, A. W. (1960) The Norm of Reciprocity: A Preliminary Statement, *American Sociological Review*, 25, 161-178.
- Greenberg, J. (1993) The Social Side of Fairness: Interpersonal and Informational Classes of Organizational Justice, *In: Cropanzano, R. (ed.) Justice in the Workplace: Approaching Fairness in Human Resource Management*. Hillsdale, N.J.: Lawrence Erlbaum Associates, 79-103.
- Grewal, R., Cote, J. A. & Baumgartner, H. (2004) Multicollinearity and measurement error in structural equation models: Implications for theory testing, *Marketing Science*, 23, 519-529.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E. & Tatham, R. L. (2006) *Multivariate data analysis*. 6. New Jersey: Prentice Hall, Pearson Education, Inc.

- Hammervold, R. & Olsson, U. H. (2012) Testing structural equation models: the impact of error variances in the data generating process, *Quality & Quantity*, 46, 1547-1570.
- Henri, J.-F. & Journeault, M. (2010) Eco-control: The influence of management control systems on environmental and economic performance, *Accounting, Organizations and Society*, 35, 63-80.
- Hinkin, T. R. (1995) A Review of Scale Development Practices in the Study of Organizations, *Journal of Management*, 21, 967-988.
- Hooper, D., Coughlan, J. & Mullen, M. (2008) Structural Equation Modelling: Guidelines for Determining Model Fit, *Electronic Journal of Business Research Methods*, 6, 53-60.
- Hopwood, A. G. (1972) An Empirical Study of the Role of Accounting Data in Performance Evaluation, *Journal of Accounting Research*, 10, 156-182.
- Hoque, Z. & James, W. (2000) Linking Balanced Scorecard Measures to Size and Market Factors: Impact on Organizational Performance, *Journal of Management Accounting Research*, 12, 1-17.
- Hoque, Z., Mia, L. & Alam, M. (2001) Market competition, computer-aided manufacturing and use of multiple performance measures: an empirical study, *The British Accounting Review*, 33, 23-45.
- Ilggen, D. R., Fisher, C. D. & Taylor, M. S. (1979) Consequences of Individual Feedback on Behavior in Organizations, *Journal of Applied Psychology*, 64, 349-371.
- Ittner, C. D. & Larcker, D. F. (1998) Are Nonfinancial Measures Leading Indicators of Financial Performance? An Analysis of Customer Satisfaction, *Journal of Accounting Research*, 36, 1-35.
- Ittner, C. D., Larcker, D. F. & Randall, T. (2003) Performance implications of strategic performance measurement in financial services firms, *Accounting, Organizations and Society*, 28, 715-741.
- Jackson, P. R., Wall, T. D., Martin, R. & Davids, K. (1993) New measures of Job Control, Cognitive Demand, and Production Responsibility, *Journal of Applied Psychology*, 78, 753-762.
- Jöreskog, K. & Sörbom, D. (1993) *LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language*. Lincolnwood, IL: Scientific Software International.
- Kaplan, R. S. (1984) The Evolution of Management Accounting, *The Accounting Review*, 59, 390-418.
- Kaplan, R. S. & Atkinson, A. A. (1998) *Advanced Management Accounting*. 3. Upper Saddle River, N.J.: Prentice Hall.
- Kernan, M. C. & Hanges, P. J. (2002) Survivor Reactions to Reorganization: Antecedents and Consequences of Procedural, Interpersonal, and Informational Justice, *Journal of Applied Psychology*, 87, 916-928.
- Klein, H. J., Snell, S. A. & Wexley, K. N. (1987) Systems model of the performance appraisal interview process, *Industrial Relations: A Journal of Economy and Society*, 26, 267-280.
- Kline, R. B. (2012) Principles and Practice of Structural Equation Modeling, *Structural Equation Modeling: A Multidisciplinary Journal*, 19, 509-512.
- Lau, C. M. & Moser, A. (2008) Behavioral Effects of Nonfinancial Performance Measures: The Role of Procedural Fairness, *Behavioral Research in Accounting*, 20, 55-71.
- Lau, C. M. & Sholihin, M. (2005) Financial and nonfinancial performance measures: How do they affect job satisfaction?, *The British Accounting Review*, 37, 389-413.
- Lau, C. M. & Tan, S. L. C. (2006) The effects of procedural fairness and interpersonal trust on job tension in budgeting, *Management Accounting Research*, 17, 171-186.

- Lau, C. M., Wong, K. M. & Eggleton, I. R. C. (2008) Fairness of performance evaluation procedures and job satisfaction: The role of outcome-based and non-outcome-based effects, *Accounting and Business Research*, 38, 121-135.
- Lavelle, J. J., Rupp, D. E. & Brockner, J. (2007) Taking a Multifoci Approach to the Study of Justice, Social Exchange, and Citizenship Behavior: The Target Similarity Model†, *Journal of Management*, 33, 841-866.
- Leventhal, G. S. (1980) What Should Be Done With Equity Theory? New Approaches to the Study of Fairness in Social Relationships, *Social Exchange: Advances in Experimental and Social Psychology*, 9, 91-113.
- Leventhal, G. S., Karuza, J. & Fry, W. R. (1980) Beyond Fairness: A Theory of Allocation Preferences, *Justice and Social Interaction*, 3, 167-218.
- Lynch, R. L. & Cross, K. F. (1991) *Measure Up*. London, U.K.: Blackwell Publishers.
- Magazine, S. L., Williams, L. J. & Williams, M. L. (1996) A Confirmatory Factor Analysis Examination of Reverse Coding Effects In Meyer And Allen's Affective And Continuance Commitment Scales, *Educational and Psychological Measurement*, 56, 241-250.
- Magner, N. & Welker, R. (1994) Responsibility center managers' reactions to justice in budgetary resource allocation, *Advances in Management Accounting*, 3, 237-253.
- Magner, N., Welker, R. B. & Campbell, T. L. (1995) The interactive effect of budgetary participation and budget favorability on attitudes toward budgetary decision makers: a research note, *Accounting, Organizations and Society*, 20, 611-618.
- Masterson, S. S., Lewis, K., Goldman, B. M. & Taylor, M. S. (2000) Integrating justice and social exchange: The differing effects of fair procedures and treatment on work relationships, *Academy of Management journal*, 43, 738-748.
- Mcfarlin, D. B. & Sweeney, P. D. (1992) Research Notes. Distributive and Procedural Justice as Predictors of Satisfaction With Personal and Organizational Outcomes, *Academy of Management Journal*, 35, 626-637.
- Merchant, K. & Van Der Stede, W. (2011) *Management Control Systems: Performance Measurement, Evaluation and Incentives*. 3. Pearson Education Limited.
- Molm, L. D. (2000) Theories of Social Exchange And Exchange Networks, In: Ritzer, G. & Smart, B. (eds.) *Hanbook of Social Theory*. Sage, CA.: Thousand Oaks, 260-272.
- Molm, L. D. (2003) Theoretical Comparisons of Forms of Exchange, *Sociological Theory*, 21, 1-17.
- Molm, L. D., Takahashi, N. & Peterson, G. (2000) Risk and Trust in Social Exchange: An Experimental Test of a Classical Proposition, *American Journal of Sociology*, 105, 1396-1427.
- Moorman, R. H. (1991) Relationship Between Organizational Justice and Organizational Citizenship Behaviors: Do Fairness Perceptions Influence Employee Citizenship?, *Journal of Applied Psychology*, 76, 845-855.
- Moss, S. E. & Lawrence, K. G. (1997) The Effects of Priming on The Self-reporting of Perceived Stressors and Strains, *Journal of Organizational Behavior*, 18, 393-403.
- Nathan, B. R., Mohrman, A. M. & Milliman, J. (1991) Interpersonal relations as a context for the effects of appraisal interviews on performance and satisfaction: A longitudinal study, *Academy of Management Journal*, 34, 352-369.
- Nazari, J., Kline, T. & Herremans, I. (2006) Conducting Survey Research in Management Accounting, In: Hoque, Z. (ed.) *Methodological Issues in Accounting Research: Theories and Methods*. London: Spiramus Press Ltd., 427-459.
- Neely, A. (1999) The performance measurement revolution: why now and what next?, *International Journal of Operations & Production Management*, 19, 205-228.

- Otley, D. T. (1978) Budget Use and Managerial Performance, *Journal of Accounting Research*, 16, 122-149.
- Pedhazur, E. J. & Kerlinger, F. N. (1982) *Multiple Regression in Behavioral Research*. Holt, Rinehart and Winston.
- Pooyan, A. & Eberhardt, B. J. (1989) Correlates of Performance Appraisal Satisfaction Among Supervisory and Nonsupervisory Employees, *Journal of Business Research*, 19, 215-226.
- Read, W. H. (1962) Upward Communication in Industrial Hierarchies, *Human Relations*, 15, 3-15.
- Ringdal, K. (2013) *Enhet og mangfold. Samfunnsvitenskapelig forskning og kvantitativ metode*. Fagbokforlaget Vigmostad & Bjørke AS.
- Robinson, S. L. & Rousseau, D. M. (1994) Violating the Psychological Contract: Not the Exception but the Norm, *Journal of Organizational Behavior*, 15, 245-259.
- Rodebaugh, T. L., Woods, C. M. & Heimberg, R. G. (2007) The Reverse of Social Anxiety Is Not Always the Opposite: The Reverse-Scored Items of the Social Interaction Anxiety Scale Do Not Belong, *Behavior Therapy*, 38, 192-206.
- Rupp, D. E., Shao, R., Jones, K. S. & Liao, H. (2014) The utility of a multifoci approach to the study of organizational justice: A meta-analytic investigation into the consideration of normative rules, moral accountability, bandwidth-fidelity, and social exchange, *Organizational Behavior and Human Decision Processes*, 123, 159-185.
- Rusbult, C. E. & Farrell, D. (1983) A Longitudinal Test of the Investment Model: The Impact on Job Satisfaction, Job Commitment, and Turnover of Variations in Rewards, Costs, Alternatives, and Investments, *Journal of Applied Psychology*, 68, 429-438.
- Schermelleh-Engel, K., Moosbrugger, H. & Müller, H. (2003) Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures, *Methods of Psychological Research*, 8, 23-74.
- Schriesheim, C. A., Eisenbach, R. J. & Hill, K. D. (1991) The Effect of Negation and Polar Opposite Item Reversals on Questionnaire Reliability and Validity: An Experimental Investigation, *Educational and Psychological Measurement*, 51, 67-78.
- Schriesheim, C. A. & Hill, K. D. (1981) Controlling a Acquiescence Response Bias By Item Reversals: The Effect on Questionnaire Validity, *Educational and Psychological Measurement*, 41, 1101-1114.
- Schwarz, N. (1999) Self-Reports: How the Questions Shape the Answers, *American Psychologist*, 54, 93-105.
- Sharma, S. (1996) *Applied Multivariate Techniques*. Canada: John Wiley & Sons, Inc.
- Sholihin, M. & Pike, R. (2009) Fairness in performance evaluation and its behavioural consequences, *Accounting and Business Research*, 39, 397-413.
- Shore, L. M., Tetrick, L. E., Taylor, M., Coyle-Shapiro, J. A., Liden, R. C., Mclean, J., Morrison, E., Porter, L., Robinson, S., Roehling, M., Rosseau, D. M., Schalk, R., Tsui, A. S. & Dyne, L. V. (2004) The Employee-organization Relationship: A Timely Concept in a Period of Transition, *Research in Personnel and Human Resources Management*, 23, 291-370.
- Spector, P. E. (1992) *Summated Rating Scale Construction: An Introduction*. Sage Publications, Inc.
- Staley, A. B. & Magner, N. R. (2007) Budgetary Fairness, Supervisory Trust, and the Propensity to Create Budgetary Slack: Testing a Social Exchange Model in a Government Budgeting Context, *Advances in Accounting Behavioral Research*, 10, 159-182.
- Studenmund, A. H. (2011) *Using Econometrics: A Practical Guide*. 6. Pearson Education.

- Taticchi, P., Tonelli, F. & Cagnazzo, L. (2010) Performance measurement and management: a literature review and a research agenda, *Measuring Business Excellence*, 14, 4-18.
- Tekleab, A. G., Takeuchi, R. & Taylor, M. S. (2005) Extending the Chain of Relationships Among Organizational Justice, Social Exchange, and Employee Reactions: The Role of Contract Violations, *Academy of Management Journal*, 48, 146-157.
- Thibaut, J. W. & Walker, L. (1975) *Procedural Justice: A Psychological Analysis*. New Jersey: Lawrence Erlbaum Associates.
- Thibaut, J. W. & Walker, L. (1978) A Theory of Procedure, *California Law Review*, 66, 541-566.
- Tyler, T. R. & Blader, S. L. (2005) How Can Theories of Organizational Justice Explain the Effects of Fairness?, In: Greenberg, J. & Colquitt, J. A. (eds.) *Handbook of Organizational Justice*. Lawrence Erlbaum Associates, 329-354.
- Vitale, D. C., Armenakis, A. A. & Feild, H. S. (2008) Integrating Qualitative and Quantitative Methods for Organizational Diagnosis Possible Priming Effects?, *Journal of Mixed Methods Research*, 2, 87-105.
- Wayne, S. J., Shore, L. M., Bommer, W. H. & Tetrick, L. E. (2002) The Role of Fair Treatment and Rewards in Perceptions of Organizational Support and Leader-Member Exchange, *Journal of Applied Psychology*, 87, 590-598.
- Weiss, D., Dawis, R., England, G. & Lofquist, L. (1967) Minnesota studies in vocational rehabilitation, *Manual for the Minnesota satisfaction questionnaire*, 22.
- Wu, M., Huang, X., Li, C. & Liu, W. (2011) Perceived Interactional Justice and Trust-in-supervisor as Mediators for Paternalistic Leadership, *Management and Organization Review*, 8, 97-121.
- Wyer, R. S. & Hartwick, J. (1980) The Role of Information Retrieval and Conditional Inference Processes in Belief Formation and Change, *Advances in Experimental Social Psychology*, 13, 241-284.

## Appendix A – The questionnaire

The questionnaire comprising the original instruments, with priming, reverse-scored items and variable names used in SPSS/LISREL.

| R | Q# | D# | #LIS REL                | Original instrument (except the performance measurement instrument)  |
|---|----|----|-------------------------|--|
|   |    |    |                         | <b>Performance measurement instruments - KPI</b><br>Financial vs. non-financial indicators<br>Hoque, Mia and Alam (2001)   |
|   |    |    |                         | When you discuss your performance with your superior, how important are the following indicators? (1 = not important at all, 7 = very important)                               |
|   | 1  | 1  | Manageme_income         | Management income  |
|   | 2  | 2  | ROI                     | Return on investment   |
|   | 3  | 3  | Rent_receivable         | Outstanding rents receivable   |
|   | 4  | 4  | Interest_expense        | Interest expenses  |
|   | 5  | 5  | Operating_costs         | Operating costs  |
|   | 6  | 6  | Economic_occupancy      | Economic occupancy rate  |
|   | 7  | 7  | Adm.cost_to_lease.value | Administrative costs compared to lease values  |
|   | 8  | 8  | Customer_satisfaction   | Customer satisfaction index  |
|   | 9  | 9  | New_leases              | Number of new leases   |
|   | 10 | 10 | Renewal_leases          | Number of tenants who renew their contracts  |
|   | 11 | 11 | Hours_inservice         | Hours of in-service education  |
|   | 12 | 12 | Coworker_satisfaction   | Co-worker satisfaction index   |
|   | 13 | 13 | Green_property          | Number of environmentally certified properties   |
|   | 14 | 14 | Number_green_leases     | Number of green leases   |
|   |    |    |                         | <b>Procedural justice</b><br>Moorman (1991)  |
|   |    |    |                         | When you think of how your performance appraisal procedures are done at your company, how would you rate the following statements? (1 = strongly disagree, 7 = strongly Agree) |
|   | 15 | 1  | PJ1                     | Procedures are designed to collect accurate information necessary for making decisions   |
|   | 16 | 2  | PJ2                     | Procedures are designed to provide opportunities to appeal or challenge the decision   |
|   | 17 | 3  | PJ3                     | Procedures are designed to have all sides affected by the decision represented   |
|   | 18 | 4  | PJ4                     | Procedures are designed to generate standards so that decisions could be made with consistency   |
|   | 19 | 5  | PJ5                     | Procedures are designed to hear the concerns of all those affected by the decision.  |
|   | 20 | 6  | PJ6                     | Procedures are designed to provide useful feedback regarding the decision and its implementation.  |
|   | 21 | 7  | PJ7                     | Procedures are designed to allow for requests for clarification  |
|   |    |    |                         | <b>Distributive justice</b>  |

|   |    |   |     |   |
|---|----|---|-----|---|
|   |    |   |     | Moorman (1991)  |
|   |    |   |     | When you think about how you are rewarded at your company, how would you rate the following statements? (1 = strongly disagree, 7 = strongly Agree)           |
|   | 22 | 1 |     | I am fairly rewarded considering the responsibilities I have  |
|   | 23 | 2 |     | I am fairly rewarded in view of the amount of experience I have   |
|   | 24 | 3 |     | I am fairly rewarded for the amount of effort I put forth   |
|   | 25 | 4 |     | I am fairly rewarded for the work I have done well  |
|   | 26 | 5 |     | I am fairly rewarded for the stresses and strains of my job   |
|   |    |   |     | <b>Interactional justice</b><br>Moorman (1991)  |
|   |    |   |     | When you think about how your supervisor evaluates your performance, how would you rate the following statements? (1 = strongly disagree, 7 = strongly Agree) |
|   | 27 | 1 | IJ1 | My supervisor considers my viewpoints   |
|   | 28 | 2 | IJ2 | My supervisor is able to suppress personal biases   |
|   | 29 | 3 | IJ3 | My supervisor provides me with timely feedback about decision and their implications  |
|   | 30 | 4 | IJ4 | My supervisor treats me with kindness and consideration   |
|   | 31 | 5 | IJ5 | My supervisor shows concern for my rights as an employee  |
|   | 32 | 6 | IJ6 | My supervisor takes steps to deal with me in a truthful manner  |
|   |    |   |     | <b>Affective commitment towards organization</b><br>Meyer and Allen (2001)  |
|   |    |   |     | When you think about your organization, how would you rate the following statements? (1 = strongly disagree, 7 = strongly agree)                              |
|   | 33 | 1 |     | I would be very happy to spend the rest of my career with this organization   |
|   | 34 | 2 |     | I really feel as if this organization's problem are my own  |
| R | 35 | 3 |     | I do not feel a strong sense of belonging to my organization  |
| R | 36 | 4 |     | I do not feel emotionally attached to this organization   |
| R | 37 | 5 |     | I do not feel like part of the "family" at my organization  |
|   | 38 | 6 |     | This organization has a great deal of personal meaning for me   |
|   | 39 | 7 |     | I really feel an overall commitment to my organization  |
|   |    |   |     | <b>Affective commitment towards superior</b><br>Meyer and Allen (2001)  |
|   |    |   |     | When you think about your superior, how would you rate the following statements? (1 = strongly disagree, 7 = strongly agree)                                  |
|   | 40 | 1 |     | I would be very happy to spend the rest of my career under the guidance of my supervisor  |
|   | 41 | 2 |     | I really feel as if my supervisor's problems are my own   |
| R | 42 | 3 |     | I do not feel a strong sense of connection to my supervisor   |
| R | 43 | 4 |     | I do not feel emotionally attached to my supervisor   |
| R | 44 | 5 |     | I do not feel like part of the "family" of my supervisor  |
|   | 45 | 6 |     | My supervisor has a great deal of personal meaning for me   |
|   | 46 | 7 |     | I really feel an overall commitment to my supervisor  |
|   |    |   |     | <b>Trust in supervisor</b><br>Read (1962)   |
|   |    |   |     | When you think about your superior, how would you rate the following statements? (1 = strongly disagree, 7 = strongly agree)                                  |
|   | 47 | 1 | TS1 | Your superior takes advantage of opportunities to further your interest   |



|   |    |   |     |  |
|---|----|---|-----|--|
|   | 48 | 2 | TS2 | You feel free to discuss with your superior the problems and difficulties in your job without jeopardizing your position   |
|   | 49 | 3 | TS3 | You feel confident that your superior keeps you fully and frankly informed   |
|   | 50 | 4 | TS4 | You feel confident that your superior's decisions are justified, even when they seem to go against your interests  |
|   |    |   |     | <b>Organizational trust</b><br>Robinson (1994, 1996)   |
|   |    |   |     | When you think about your organization, how would you rate the following statements? (1 = strongly disagree, 7 = strongly agree)   |
| R | 51 | 1 | TO1 | I am not sure I fully trust my employer  |
|   | 52 | 2 | TO2 | My employer is open and upfront with me.   |
|   | 53 | 3 | TO3 | I believe my employer has high integrity.  |
|   | 54 | 4 | TO4 | In general, I believe my employer's motives and intentions are good  |
| R | 55 | 5 | TO5 | My employer is not always honest and truthful  |
| R | 56 | 6 |     | <del>I don't think my employer treats me fairly</del>  |
|   | 57 | 7 | TO6 | I can expect my employer to treat me in a consistent and predictable fashion   |
|   |    |   |     | <b>Managerial performance – sub dimensions</b><br>Mahoney et al. (1965)  |
|   |    |   |     | How would you rate your performance in the following areas? (1 = very low, 7 = very high)  |
|   | 58 | 1 |     | Planning (Determining goals, policies and course of action, work scheduling, budgeting, setting up procedures, setting goals or standards, preparing agendas, projects/programs)   |
|   | 59 | 2 |     | Investigating (Collecting and preparing information, inventorying, measuring output, preparing financial statements, recordkeeping, performing research, job analysis)   |
|   | 60 | 3 |     | Coordinating (Exchanging information with people in the organization other than subordinates in order to relate and adjust programs, advising other departments, expediting, liaison with other managers, arranging meetings, informing superiors, seeking other departments' cooperation) |
|   | 61 | 4 |     | Evaluating (Assessment and appraisal of proposals or of reported or observed performance, employee appraisals, judging output records, judging financial reports, product inspection, approving requests, judging proposals and suggestions)   |
|   | 62 | 5 |     | Supervising (Directing, leading, and developing subordinates, counselling subordinates, training subordinates, explaining work rules, assigning work, disciplining, handling of complaints of subordinates)  |
|   | 63 | 6 |     | Staffing (Maintaining the work force of a unit or of several units. Recruiting, employment interviewing, selecting employees, placing employees, promoting employees, transferring employees)  |
|   | 64 | 7 |     | Negotiating (Purchasing, selling or contracting for goods or services. Tax negotiations, contacting suppliers, dealing with sales representatives, advertising products, collective bargaining, selling to dealers or customers)   |
|   | 65 | 8 |     | Representing (Advancing general organizational interests through speeches, consultation and contacts with individuals or groups outside the organization. Public speeches, community drives, news releases, attending conventions, business club meetings)                                 |
|   |    |   |     | <b>Managerial performance – overall</b><br>Mahoney et al. (1965)   |

|  |    |   |  |  |
|--|----|---|--|--|
|  | 66 | 1 |  | How would you rate your overall performance? (1 = very low, 7 = very high)   |
|  |    |   |  | <b>Job satisfaction</b><br>Rusbult and Farrell (1983)  |
|  | 67 | 1 |  | All things considered, how satisfied are you with your current job? (1 = not at all satisfied, 9 = extremely satisfied)  |
|  | 68 | 2 |  | In general, how much do you like your job? (1 = don't like it at all, 9 = like it very much)   |
|  | 69 | 3 |  | Knowing what you now know, if you had to decide all over again whether to take the job you now have, what would you decide? (1 = definitely would not take this job, 9 = would take this job without hesitation) |
|  | 70 | 4 |  | If a good friend of yours told you that he/she was interested in working in a job like yours for your employer, what would you tell him/her? (1 = advise against it, 9 = strongly recommend it)                  |
|  | 71 | 5 |  | How does this job compare to your ideal job? (1 = far from ideal, 9 = close to ideal)  |
|  | 72 | 6 |  | How does your job measure up to the sort of job you wanted when you took it? (1 = not at all like the job I wanted, 9 = very much like the job I wanted)   |

## Appendix B – Exploratory factor analyses

**B1.** Exploratory factor analysis of procedural justice, interactional justice, trust in superior and trust in organization.

**KMO and Bartlett's Test**

|  |                    |          |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | ,947     |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 3600,702 |
|  | df                 | 253      |
|  | Sig.               | 0,000    |

**Factor Correlation Matrix**

| Factor | 1     | 2     | 3     |
|--------|-------|-------|-------|
| 1      | 1,000 | ,726  | ,588  |
| 2      | ,726  | 1,000 | ,615  |
| 3      | ,588  | ,615  | 1,000 |

Extraction Method: Principal Axis Factoring.  
Rotation Method: Promax with Kaiser Normalization.

**Communalities**

|     | Initial | Extraction |
|-----|---------|------------|
| PJ1 | ,697    | ,641       |
| PJ2 | ,614    | ,545       |
| PJ3 | ,801    | ,823       |
| PJ4 | ,774    | ,701       |
| PJ5 | ,730    | ,716       |
| PJ6 | ,709    | ,708       |
| PJ7 | ,605    | ,556       |
| IJ1 | ,860    | ,816       |
| IJ2 | ,840    | ,781       |
| IJ3 | ,809    | ,740       |
| IJ4 | ,896    | ,851       |
| IJ5 | ,896    | ,829       |
| IJ6 | ,871    | ,778       |
| TS1 | ,818    | ,700       |
| TS2 | ,846    | ,835       |
| TS3 | ,892    | ,849       |
| TS4 | ,859    | ,794       |
| TO1 | ,923    | ,916       |
| TO2 | ,914    | ,875       |
| TO3 | ,886    | ,863       |
| TO4 | ,906    | ,896       |
| TO5 | ,906    | ,910       |
| TO6 | ,750    | ,679       |

Extraction Method: Principal Axis Factoring.

**Pattern Matrix<sup>a</sup>**

|     | Factor |      |      |
|-----|--------|------|------|
|     | 1      | 2    | 3    |
| IJ4 | ,950   |      |      |
| TS2 | ,940   |      |      |
| TS3 | ,905   |      |      |
| IJ6 | ,893   |      |      |
| IJ2 | ,854   |      |      |
| IJ1 | ,854   |      |      |
| IJ3 | ,821   |      |      |
| TS1 | ,804   |      |      |
| IJ5 | ,773   |      |      |
| TS4 | ,697   |      |      |
| TO4 |        | ,953 |      |
| TO3 |        | ,945 |      |
| TO5 |        | ,910 |      |
| TO1 |        | ,900 |      |
| TO2 |        | ,833 |      |
| TO6 |        | ,775 |      |
| PJ6 |        |      | ,868 |
| PJ3 |        |      | ,855 |
| PJ5 |        |      | ,812 |
| PJ2 |        |      | ,801 |
| PJ7 |        |      | ,793 |
| PJ4 |        |      | ,689 |
| PJ1 |        |      | ,629 |

**Total Variance Explained**

| Factor | Initial Eigenvalues |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings <sup>a</sup> |
|--------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|--|
|        | Total               | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total  |
| 1      | 14,435              | 62,763        | 62,763       | 14,230                              | 61,869        | 61,869       | 12,529   |
| 2      | 2,445               | 10,630        | 73,393       | 2,156                               | 9,372         | 71,241       | 11,574   |
| 3      | 1,599               | 6,950         | 80,343       | 1,419                               | 6,169         | 77,409       | 9,518  |
| 4      | ,621                | 2,701         | 83,044       |                                     |               |              |  |
| 5      | ,554                | 2,410         | 85,454       |                                     |               |              |  |
| 6      | ,481                | 2,092         | 87,546       |                                     |               |              |  |
| 7      | ,386                | 1,677         | 89,223       |                                     |               |              |  |
| 8      | ,349                | 1,518         | 90,741       |                                     |               |              |  |
| 9      | ,334                | 1,451         | 92,192       |                                     |               |              |  |
| 10     | ,251                | 1,091         | 93,283       |                                     |               |              |  |
| 11     | ,216                | ,940          | 94,223       |                                     |               |              |  |
| 12     | ,190                | ,828          | 95,051       |                                     |               |              |  |
| 13     | ,186                | ,811          | 95,861       |                                     |               |              |  |
| 14     | ,159                | ,691          | 96,552       |                                     |               |              |  |
| 15     | ,137                | ,594          | 97,146       |                                     |               |              |  |
| 16     | ,130                | ,566          | 97,712       |                                     |               |              |  |
| 17     | ,126                | ,548          | 98,261       |                                     |               |              |  |
| 18     | ,092                | ,401          | 98,661       |                                     |               |              |  |
| 19     | ,074                | ,321          | 98,983       |                                     |               |              |  |
| 20     | ,069                | ,302          | 99,285       |                                     |               |              |  |
| 21     | ,064                | ,280          | 99,564       |                                     |               |              |  |
| 22     | ,051                | ,223          | 99,787       |                                     |               |              |  |
| 23     | ,049                | ,213          | 100,000      |                                     |               |              |  |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**B2. Exploratory factor analysis of the KPI instrument.**

**KMO and Bartlett's Test**

|  |                    |         |
|--|--------------------|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | ,793    |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 475,354 |
|  | df                 | 55      |
|  | Sig.               | ,000    |

**Factor Correlation Matrix**

| Factor | 1     | 2     | 3     | 4     |
|--------|-------|-------|-------|-------|
| 1      | 1,000 | ,403  | ,427  | ,575  |
| 2      | ,403  | 1,000 | ,297  | ,247  |
| 3      | ,427  | ,297  | 1,000 | ,327  |
| 4      | ,575  | ,247  | ,327  | 1,000 |

Extraction Method: Principal Axis Factoring.  
Rotation Method: Promax with Kaiser Normalization.

**Communalities**

|                         | Initial | Extraction |
|-------------------------|---------|------------|
| Renewal_leases          | ,515    | ,511       |
| Management_result       | ,619    | ,698       |
| Customer_satisfaction   | ,581    | ,896       |
| Interest_expense        | ,486    | ,644       |
| Operating_cost          | ,644    | ,805       |
| New_leases              | ,381    | ,503       |
| Adm.cost_to_lease_value | ,470    | ,538       |
| Hours_inservice         | ,430    | ,550       |
| Green_property          | ,517    | ,550       |
| Coworker_satisfaction   | ,385    | ,357       |
| ROI                     | ,466    | ,610       |

Extraction Method: Principal Axis Factoring.

**Pattern Matrix<sup>a</sup>**

|                         | Factor |       |      |      |
|-------------------------|--------|-------|------|------|
|                         | 1      | 2     | 3    | 4    |
| Operating_cost          | ,887   |       |      |      |
| Green_property          | ,736   |       |      |      |
| ROI                     | ,667   | -,335 |      |      |
| Management_result       | ,630   |       |      |      |
| Customer_satisfaction   |        | ,919  |      |      |
| Coworker_satisfaction   |        | ,541  |      |      |
| Hours_inservice         |        |       | ,725 |      |
| Interest_expense        |        |       | ,674 |      |
| Adm.cost_to_lease_value |        |       | ,594 |      |
| New_leases              |        |       |      | ,721 |
| Renewal_leases          |        |       |      | ,433 |

**Total Variance Explained**

| Factor | Initial Eigenvalues |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings <sup>a</sup> |
|--------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|--|
|        | Total               | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total  |
| 1      | 4,501               | 40,921        | 40,921       | 4,135                               | 37,588        | 37,588       | 3,431  |
| 2      | 1,368               | 12,440        | 53,361       | 1,004                               | 9,124         | 46,713       | 2,303  |
| 3      | 1,312               | 11,926        | 65,287       | ,940                                | 8,550         | 55,263       | 2,369  |
| 4      | 1,004               | 9,126         | 74,413       | ,582                                | 5,291         | 60,554       | 2,361  |
| 5      | ,686                | 6,232         | 80,645       |                                     |               |              |  |
| 6      | ,570                | 5,185         | 85,830       |                                     |               |              |  |
| 7      | ,399                | 3,631         | 89,460       |                                     |               |              |  |
| 8      | ,350                | 3,180         | 92,640       |                                     |               |              |  |
| 9      | ,325                | 2,959         | 95,599       |                                     |               |              |  |
| 10     | ,257                | 2,333         | 97,932       |                                     |               |              |  |
| 11     | ,228                | 2,068         | 100,000      |                                     |               |              |  |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**B3. Forced 2-factor exploratory analysis of trust in superior and interactional justice.**

**KMO and Bartlett's Test**

|  |         |
|--|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | ,899    |
| Bartlett's Test of Approx. Chi-Sphericity        | 882,355 |
| df   | 15      |
| Sig.   | ,000    |

**Factor Correlation Matrix**

| Factor | 1     | 2     |
|--------|-------|-------|
| 1      | 1,000 | ,803  |
| 2      | ,803  | 1,000 |

Extraction Method: Principal Axis Factoring.  
Rotation Method: Promax with Kaiser Normalization.

**Communalities**

|     | Initial | Extraction |
|-----|---------|------------|
| IJ4 | ,871    | ,909       |
| IJ5 | ,870    | ,907       |
| IJ6 | ,841    | ,884       |
| TS1 | ,634    | ,671       |
| TS3 | ,843    | ,888       |
| TS4 | ,802    | ,880       |

Extraction Method: Principal Axis Factoring.

**Pattern Matrix<sup>a</sup>**

|     | Factor |      |
|-----|--------|------|
|     | 1      | 2    |
| IJ6 | ,924   |      |
| IJ5 | ,850   |      |
| IJ4 | ,842   |      |
| TS4 |        | ,906 |
| TS1 |        | ,766 |
| TS3 |        | ,738 |

Extraction Method: Principal Axis Factoring.  
Rotation Method: Promax with Kaiser Normalization.<sup>a</sup>

a. Rotation converged in 3 iterations.

**Total Variance Explained**

| Factor | Initial Eigenvalues |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings <sup>a</sup> |
|--------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|--|
|        | Total               | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total  |
| 1      | 4,948               | 82,474        | 82,474       | 4,812                               | 80,207        | 80,207       | 4,434  |
| 2      | ,497                | 8,276         | 90,750       | ,325                                | 5,420         | 85,627       | 4,305  |
| 3      | ,243                | 4,048         | 94,798       |                                     |               |              |  |
| 4      | ,126                | 2,103         | 96,901       |                                     |               |              |  |
| 5      | ,100                | 1,667         | 98,568       |                                     |               |              |  |
| 6      | ,086                | 1,432         | 100,000      |                                     |               |              |  |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

**B4. Unguided exploratory factor analysis of the KPI instrument.**

**KMO and Bartlett's Test**

|  |                    |         |
|--|--------------------|---------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | ,835    |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 862,517 |
|  | df                 | 78      |
|  | Sig.               | ,000    |

**Factor Correlation Matrix**

| Factor | 1     | 2     | 3     | 4     |
|--------|-------|-------|-------|-------|
| 1      | 1,000 | ,622  | ,559  | ,461  |
| 2      | ,622  | 1,000 | ,588  | ,407  |
| 3      | ,559  | ,588  | 1,000 | ,433  |
| 4      | ,461  | ,407  | ,433  | 1,000 |

Extraction Method: Principal Axis Factoring.  
Rotation Method: Promax with Kaiser Normalization.

**Communalities**

|                         | Initial | Extraction |
|-------------------------|---------|------------|
| Renewal_leases          | ,652    | ,620       |
| Rent_receivable         | ,646    | ,585       |
| Hours_inservice         | ,414    | ,465       |
| Green_property          | ,605    | ,616       |
| Customer_satisfaction   | ,590    | ,939       |
| Interest_expense        | ,544    | ,643       |
| Operating_costs         | ,637    | ,650       |
| ROI                     | ,548    | ,628       |
| Green_leases            | ,637    | ,591       |
| New_leases              | ,565    | ,586       |
| Coworker_satisfaction   | ,518    | ,379       |
| Economic_occupancy      | ,613    | ,682       |
| Adm.cost_to_leave.value | ,520    | ,578       |

Extraction Method: Principal Axis Factoring.

**Pattern Matrix<sup>a</sup>**

|                         | Factor |      |      |      |
|-------------------------|--------|------|------|------|
|                         | 1      | 2    | 3    | 4    |
| Economic_occupancy      | ,793   |      |      |      |
| New_leases              | ,779   |      |      |      |
| Renewal_leases          | ,600   |      |      |      |
| Rent_receivable         | ,569   |      |      |      |
| ROI                     |        | ,805 |      |      |
| Green_property          |        | ,741 |      |      |
| Operating_costs         |        | ,665 |      |      |
| Green_leases            |        | ,580 |      |      |
| Adm.cost_to_leave.value |        |      | ,722 |      |
| Hours_inservice         |        |      | ,696 |      |
| Interest_expense        |        |      | ,651 |      |
| Customer_satisfaction   |        |      |      | ,938 |
| Coworker_satisfaction   |        |      |      | ,508 |

Extraction Method: Principal Axis Factoring.  
Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 7 iterations.



**Total Variance Explained**

| Factor | Initial Eigenvalues |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings <sup>a</sup> |
|--------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|--|
|        | Total               | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total  |
| 1      | 5,956               | 45,816        | 45,816       | 5,582                               | 42,936        | 42,936       | 4,362  |
| 2      | 1,275               | 9,807         | 55,623       | ,934                                | 7,186         | 50,122       | 4,271  |
| 3      | 1,143               | 8,789         | 64,412       | ,756                                | 5,812         | 55,934       | 3,720  |
| 4      | 1,070               | 8,233         | 72,645       | ,689                                | 5,303         | 61,237       | 2,979  |
| 5      | ,826                | 6,355         | 79,000       |                                     |               |              |  |
| 6      | ,570                | 4,383         | 83,383       |                                     |               |              |  |
| 7      | ,542                | 4,167         | 87,550       |                                     |               |              |  |
| 8      | ,393                | 3,027         | 90,577       |                                     |               |              |  |
| 9      | ,312                | 2,401         | 92,977       |                                     |               |              |  |
| 10     | ,267                | 2,052         | 95,029       |                                     |               |              |  |
| 11     | ,256                | 1,972         | 97,002       |                                     |               |              |  |
| 12     | ,214                | 1,644         | 98,646       |                                     |               |              |  |
| 13     | ,176                | 1,354         | 100,000      |                                     |               |              |  |

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

## Appendix C – Tests of univariate and multivariate normality

Total Sample Size(N) = 104

### Test of Univariate Normality for Continuous Variables

| Variable | Skewness |         | Kurtosis |         | Skewness and Kurtosis |         |
|----------|----------|---------|----------|---------|-----------------------|---------|
|          | Z-Score  | P-Value | Z-Score  | P-Value | Chi-Square            | P-Value |
| Renewal_ | -3.792   | 0.000   | 0.470    | 0.639   | 14.603                | 0.001   |
| Rent_rec | -2.884   | 0.004   | -2.183   | 0.029   | 13.087                | 0.001   |
| Hours_in | 0.367    | 0.713   | -4.851   | 0.000   | 23.665                | 0.000   |
| Green_pr | -0.756   | 0.450   | -3.187   | 0.001   | 10.731                | 0.005   |
| Manageme | -5.294   | 0.000   | 3.655    | 0.000   | 41.387                | 0.000   |
| Customer | -5.863   | 0.000   | 4.081    | 0.000   | 51.032                | 0.000   |
| Interest | -0.592   | 0.554   | -10.931  | 0.000   | 119.830               | 0.000   |
| Operatin | -4.349   | 0.000   | 1.731    | 0.083   | 21.907                | 0.000   |
| ROI      | -3.856   | 0.000   | 0.734    | 0.463   | 15.411                | 0.000   |
| Number_g | -0.306   | 0.760   | -5.177   | 0.000   | 26.891                | 0.000   |
| New_leas | -3.418   | 0.001   | 0.320    | 0.749   | 11.784                | 0.003   |
| Coworker | -4.864   | 0.000   | 2.698    | 0.007   | 30.938                | 0.000   |
| Economic | -3.059   | 0.002   | -0.003   | 0.998   | 9.358                 | 0.009   |
| Adm.cost | -1.180   | 0.238   | -4.512   | 0.000   | 21.751                | 0.000   |
| PJ1      | -2.033   | 0.042   | 0.667    | 0.505   | 4.578                 | 0.101   |
| PJ2      | -0.679   | 0.497   | -0.208   | 0.835   | 0.504                 | 0.777   |
| PJ3      | -1.607   | 0.108   | 0.054    | 0.957   | 2.585                 | 0.275   |
| PJ4      | -2.388   | 0.017   | 0.826    | 0.409   | 6.385                 | 0.041   |
| PJ5      | 0.563    | 0.573   | -0.620   | 0.536   | 0.701                 | 0.704   |
| PJ6      | 0.257    | 0.797   | -0.543   | 0.587   | 0.360                 | 0.835   |
| PJ7      | 0.526    | 0.599   | 0.574    | 0.566   | 0.606                 | 0.739   |
| IJ1      | -4.853   | 0.000   | 2.667    | 0.008   | 30.669                | 0.000   |
| IJ2      | -5.103   | 0.000   | 2.910    | 0.004   | 34.509                | 0.000   |
| IJ3      | -3.362   | 0.001   | 1.066    | 0.286   | 12.443                | 0.002   |
| IJ4      | -6.219   | 0.000   | 4.227    | 0.000   | 56.543                | 0.000   |
| IJ5      | -6.271   | 0.000   | 4.424    | 0.000   | 58.894                | 0.000   |
| IJ6      | -6.840   | 0.000   | 4.718    | 0.000   | 69.046                | 0.000   |
| TS1      | -3.783   | 0.000   | 1.023    | 0.306   | 15.356                | 0.000   |
| TS2      | -5.524   | 0.000   | 3.165    | 0.002   | 40.528                | 0.000   |
| TS3      | -4.532   | 0.000   | 1.601    | 0.109   | 23.098                | 0.000   |
| TS4      | -4.872   | 0.000   | 2.076    | 0.038   | 28.048                | 0.000   |
| TO1      | -5.678   | 0.000   | 3.845    | 0.000   | 47.020                | 0.000   |
| TO2      | -5.328   | 0.000   | 3.499    | 0.000   | 40.631                | 0.000   |
| TO3      | -5.135   | 0.000   | 3.147    | 0.002   | 36.274                | 0.000   |
| TO4      | -6.356   | 0.000   | 4.678    | 0.000   | 62.279                | 0.000   |
| TO5      | -6.104   | 0.000   | 4.212    | 0.000   | 54.999                | 0.000   |
| TO6      | -6.994   | 0.000   | 5.098    | 0.000   | 74.908                | 0.000   |

Relative Multivariate Kurtosis = 1.090

Test of Multivariate Normality for Continuous Variables

| Skewness |         |         | Kurtosis |         |         | Skewness and Kurtosis |         |
|----------|---------|---------|----------|---------|---------|-----------------------|---------|
| Value    | Z-Score | P-Value | Value    | Z-Score | P-Value | Chi-Square            | P-Value |
| 698.710  | 19.960  | 0.000   | 1572.353 | 8.652   | 0.000   | 473.255               | 0.000   |

## Appendix D – Multicollinearity

**Coefficients<sup>a</sup>**

| Model |                             | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. | Collinearity Statistics |        |
|-------|-----------------------------|-----------------------------|------------|---------------------------|--------|------|-------------------------|--------|
|       |                             | B                           | Std. Error | Beta                      |        |      | Tolerance               | VIF    |
| 1     | (Constant)                  | .844                        | .588       |                           | 1.435  | .155 |                         |        |
|       | Management_result           | .147                        | .081       | .175                      | 1.806  | .075 | .362                    | 2.764  |
|       | Interest_expense            | .022                        | .045       | .048                      | .484   | .630 | .351                    | 2.852  |
|       | Operating_cost              | -.083                       | .062       | -.130                     | -1.344 | .183 | .365                    | 2.741  |
|       | ROI                         | -.013                       | .059       | -.022                     | -.220  | .826 | .350                    | 2.861  |
|       | Adm.<br>cost_to_lease_value | .013                        | .057       | .023                      | .220   | .826 | .306                    | 3.267  |
|       | Renewal_leases              | -.031                       | .051       | -.053                     | -.608  | .545 | .451                    | 2.217  |
|       | Customer_satisfaction       | -.049                       | .078       | -.056                     | -.631  | .530 | .427                    | 2.344  |
|       | New_leases                  | -.078                       | .061       | -.116                     | -1.278 | .205 | .411                    | 2.436  |
|       | Coworker_satisfaction       | .103                        | .062       | .137                      | 1.670  | .099 | .504                    | 1.986  |
|       | PJ1                         | .240                        | .089       | .265                      | 2.687  | .009 | .349                    | 2.865  |
|       | PJ2                         | .054                        | .081       | .061                      | .665   | .508 | .400                    | 2.498  |
|       | PJ3                         | .016                        | .105       | .019                      | .153   | .879 | .225                    | 4.453  |
|       | PJ4                         | -.114                       | .101       | -.128                     | -1.125 | .264 | .261                    | 3.835  |
|       | PJ6                         | -.025                       | .100       | -.028                     | -.245  | .807 | .258                    | 3.875  |
|       | IJ2                         | -.100                       | .092       | -.120                     | -1.088 | .280 | .281                    | 3.555  |
|       | IJ5                         | .085                        | .143       | .089                      | .598   | .552 | .154                    | 6.506  |
|       | TS2                         | -.118                       | .120       | -.145                     | -.983  | .329 | .157                    | 6.380  |
|       | TS3                         | .053                        | .104       | .071                      | .508   | .613 | .173                    | 5.766  |
|       | TO1                         | .447                        | .211       | .487                      | 2.123  | .037 | .065                    | 15.470 |
|       | TO2                         | -.114                       | .180       | -.126                     | -.636  | .527 | .087                    | 11.505 |
|       | TO3                         | -.143                       | .168       | -.147                     | -.850  | .398 | .114                    | 8.792  |
|       | TO4                         | .528                        | .186       | .480                      | 2.845  | .006 | .120                    | 8.367  |
|       | TO5                         | .068                        | .180       | .074                      | .377   | .707 | .088                    | 11.313 |

a. Dependent Variable: TO6

# Appendix E – Correlation matrices

## E1. Correlation matrix of financial and non-financial performance indicators.

|                         | Renewal_leases                              | Rent_receivable       | Hours_inservice       | Green_property        | Management_result     | Customer_satisfaction | Interest_expense      | Operating_cost        | ROI                   | Number_green_leases   | New_Leases            | Coworker_satisfaction | Economic_occupancy    | Adm_cost_to_lease_value |
|-------------------------|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------------|
| Renewal_leases          | Pearson Correlation<br>Sig. (2-tailed)<br>N | 1                     | .750**<br>.000<br>104 | .273**<br>.005<br>104 | .435**<br>.000<br>104 | .469**<br>.002<br>104 | .302**<br>.002<br>104 | .434**<br>.000<br>104 | .568**<br>.000<br>104 | .570**<br>.000<br>104 | .530**<br>.000<br>104 | .336**<br>.000<br>104 | .501**<br>.000<br>104 | .499**<br>.000<br>104   |
| Rent_receivable         | Pearson Correlation<br>Sig. (2-tailed)<br>N | .750**<br>.000<br>104 | 1                     | .405**<br>.000<br>104 | .476**<br>.000<br>104 | .515**<br>.000<br>104 | .259**<br>.008<br>104 | .584**<br>.000<br>104 | .567**<br>.000<br>104 | .523**<br>.000<br>104 | .482**<br>.000<br>104 | .309**<br>.001<br>104 | .521**<br>.000<br>104 | .660**<br>.000<br>104   |
| Hours_inservice         | Pearson Correlation<br>Sig. (2-tailed)<br>N | .273**<br>.005<br>104 | .405**<br>.000<br>104 | 1                     | .567**<br>.000<br>104 | .155**<br>.012<br>104 | .116**<br>.000<br>104 | .390**<br>.000<br>104 | .281**<br>.004<br>104 | .387**<br>.000<br>104 | .287**<br>.003<br>104 | .018**<br>.000<br>104 | .346**<br>.000<br>104 | .487**<br>.000<br>104   |
| Green_property          | Pearson Correlation<br>Sig. (2-tailed)<br>N | .435**<br>.000<br>104 | .476**<br>.000<br>104 | .567**<br>.000<br>104 | 1                     | .382**<br>.000<br>104 | .286**<br>.003<br>104 | .477**<br>.000<br>104 | .477**<br>.000<br>104 | .659**<br>.000<br>104 | .369**<br>.000<br>104 | .394**<br>.000<br>104 | .445**<br>.000<br>104 | .568**<br>.000<br>104   |
| Management_result       | Pearson Correlation<br>Sig. (2-tailed)<br>N | .469**<br>.000<br>104 | .515**<br>.000<br>104 | .155**<br>.012<br>104 | .382**<br>.000<br>104 | 1                     | .627**<br>.000<br>104 | .566**<br>.000<br>104 | .627**<br>.000<br>104 | .432**<br>.000<br>104 | .482**<br>.000<br>104 | .245**<br>.012<br>104 | .555**<br>.000<br>104 | .494**<br>.000<br>104   |
| Customer_satisfaction   | Pearson Correlation<br>Sig. (2-tailed)<br>N | .302**<br>.002<br>104 | .259**<br>.008<br>104 | .116**<br>.000<br>104 | .286**<br>.003<br>104 | .627**<br>.000<br>104 | 1                     | .426**<br>.000<br>104 | .426**<br>.000<br>104 | .327**<br>.001<br>104 | .446**<br>.000<br>104 | .155**<br>.016<br>104 | .380**<br>.000<br>104 | .321**<br>.001<br>104   |
| Interest_expense        | Pearson Correlation<br>Sig. (2-tailed)<br>N | .434**<br>.000<br>104 | .584**<br>.000<br>104 | .390**<br>.000<br>104 | .477**<br>.000<br>104 | .426**<br>.000<br>104 | .517**<br>.000<br>104 | 1                     | .509**<br>.000<br>104 | .599**<br>.000<br>104 | .443**<br>.000<br>104 | .468**<br>.000<br>104 | .590**<br>.000<br>104 | .713**<br>.000<br>104   |
| Operating_cost          | Pearson Correlation<br>Sig. (2-tailed)<br>N | .434**<br>.000<br>104 | .584**<br>.000<br>104 | .390**<br>.000<br>104 | .477**<br>.000<br>104 | .426**<br>.000<br>104 | .517**<br>.000<br>104 | 1                     | .608**<br>.000<br>104 | .421**<br>.000<br>104 | .296**<br>.002<br>104 | .472**<br>.000<br>104 | .437**<br>.000<br>104 | .540**<br>.000<br>104   |
| ROI                     | Pearson Correlation<br>Sig. (2-tailed)<br>N | .568**<br>.000<br>104 | .567**<br>.000<br>104 | .281**<br>.004<br>104 | .477**<br>.000<br>104 | .426**<br>.000<br>104 | .509**<br>.000<br>104 | .608**<br>.000<br>104 | 1                     | .505**<br>.000<br>104 | .373**<br>.000<br>104 | .399**<br>.000<br>104 | .627**<br>.000<br>104 | .622**<br>.000<br>104   |
| Number_green_leases     | Pearson Correlation<br>Sig. (2-tailed)<br>N | .570**<br>.000<br>104 | .523**<br>.000<br>104 | .387**<br>.000<br>104 | .659**<br>.000<br>104 | .327**<br>.001<br>104 | .599**<br>.000<br>104 | .421**<br>.000<br>104 | .505**<br>.000<br>104 | 1                     | .425**<br>.000<br>104 | .498**<br>.000<br>104 | .524**<br>.000<br>104 | .542**<br>.000<br>104   |
| New_Leases              | Pearson Correlation<br>Sig. (2-tailed)<br>N | .530**<br>.000<br>104 | .482**<br>.000<br>104 | .287**<br>.003<br>104 | .369**<br>.000<br>104 | .446**<br>.000<br>104 | .443**<br>.000<br>104 | .296**<br>.002<br>104 | .373**<br>.000<br>104 | .425**<br>.000<br>104 | 1                     | .273**<br>.005<br>104 | .638**<br>.000<br>104 | .542**<br>.000<br>104   |
| Coworker_satisfaction   | Pearson Correlation<br>Sig. (2-tailed)<br>N | .336**<br>.000<br>104 | .309**<br>.001<br>104 | .018**<br>.000<br>104 | .394**<br>.000<br>104 | .155**<br>.016<br>104 | .468**<br>.000<br>104 | .472**<br>.000<br>104 | .399**<br>.000<br>104 | .498**<br>.000<br>104 | .273**<br>.005<br>104 | 1                     | .425**<br>.000<br>104 | .434**<br>.000<br>104   |
| Economic_occupancy      | Pearson Correlation<br>Sig. (2-tailed)<br>N | .501**<br>.000<br>104 | .521**<br>.000<br>104 | .346**<br>.000<br>104 | .445**<br>.000<br>104 | .380**<br>.000<br>104 | .590**<br>.000<br>104 | .437**<br>.000<br>104 | .627**<br>.000<br>104 | .524**<br>.000<br>104 | .638**<br>.000<br>104 | .425**<br>.000<br>104 | 1                     | .687**<br>.000<br>104   |
| Adm_cost_to_lease_value | Pearson Correlation<br>Sig. (2-tailed)<br>N | .499**<br>.000<br>104 | .660**<br>.000<br>104 | .487**<br>.000<br>104 | .568**<br>.000<br>104 | .321**<br>.001<br>104 | .713**<br>.000<br>104 | .540**<br>.000<br>104 | .622**<br>.000<br>104 | .542**<br>.000<br>104 | .542**<br>.000<br>104 | .434**<br>.000<br>104 | .687**<br>.000<br>104 | 1                       |

\*\* Correlation is significant at the 0.01 level (2-tailed).  
\* Correlation is significant at the 0.05 level (2-tailed).

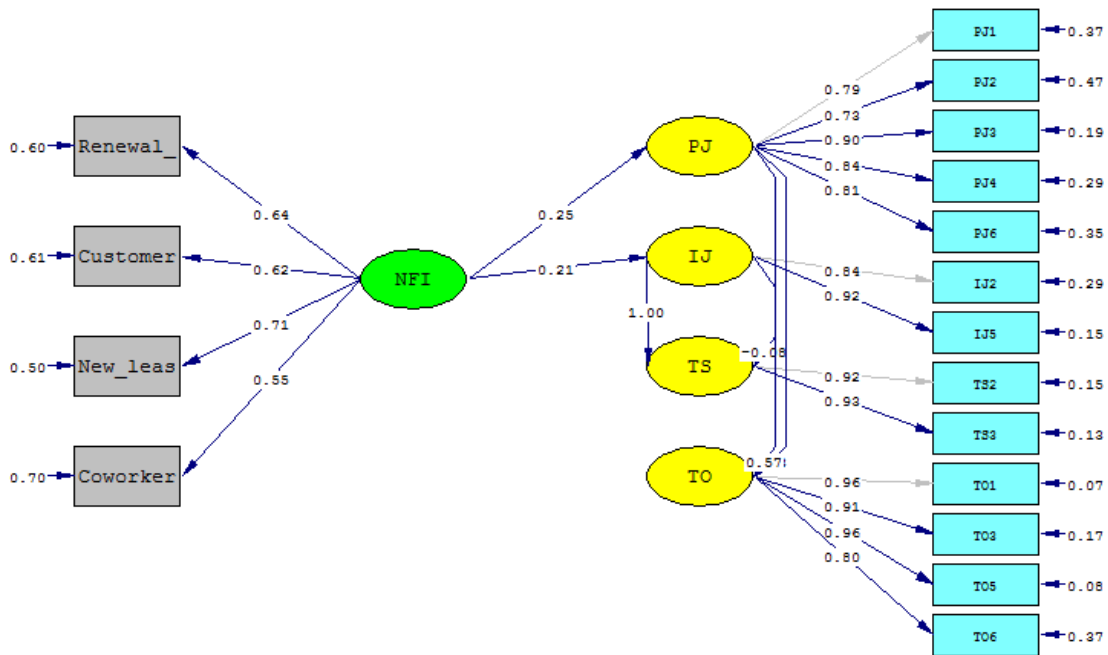
## E2. Correlation matrix of procedural and interactional justice, trust in superior and trust in organization.

|     | Correlations |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|-----|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | PJ1          | PJ2    | PJ3    | PJ4    | PJ5    | PJ6    | PJ7    | U1     | U2     | U3     | U4     | U5     | U6     | TS1    | TS2    | TS3    | TS4    | TO1    | TO2    | TO3    | TO4    | TO5    | TO6    |
| PJ1 | 1            | .567** | .688** | .716** | .668** | .595** | .516** | .538** | .481** | .487** | .474** | .542** | .438** | .482** | .410** | .449** | .410** | .449** | .570** | .566** | .528** | .503** | .567** |
|     |              | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| PJ2 | .567**       | 1      | .705** | .547** | .595** | .643** | .538** | .368** | .366** | .363** | .315** | .315** | .241** | .376** | .297** | .278** | .248** | .297** | .360** | .362** | .362** | .362** | .362** |
|     |              |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| PJ3 | .688**       | .705** | 1      | .739** | .719** | .739** | .610** | .505** | .487** | .427** | .427** | .356** | .356** | .297** | .278** | .248** | .297** | .360** | .362** | .362** | .362** | .362** | .362** |
|     |              |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| PJ4 | .716**       | .547** | .739** | 1      | .702** | .683** | .583** | .445** | .457** | .448** | .514** | .382** | .370** | .407** | .366** | .366** | .366** | .366** | .366** | .366** | .366** | .366** | .366** |
|     |              |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| PJ5 | .688**       | .595** | .719** | .702** | 1      | .691** | .628** | .501** | .424** | .424** | .349** | .307** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** |
|     |              |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| PJ6 | .595**       | .643** | .739** | .683** | .691** | 1      | .713** | .428** | .365** | .365** | .307** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** | .262** |
|     |              |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| PJ7 | .516**       | .538** | .610** | .583** | .628** | .713** | 1      | .448** | .374** | .355** | .349** | .370** | .382** | .412** | .408** | .397** | .376** | .361** | .356** | .352** | .352** | .352** | .352** |
|     |              |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| U1  | .538**       | .386** | .505** | .445** | .501** | .428** | .448** | 1      | .838** | .787** | .816** | .791** | .769** | .821** | .817** | .815** | .829** | .815** | .862** | .869** | .869** | .869** | .869** |
|     |              |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| U2  | .487**       | .366** | .487** | .457** | .424** | .365** | .374** | .838** | 1      | .733** | .777** | .759** | .785** | .838** | .838** | .753** | .746** | .618** | .608** | .608** | .608** | .608** | .608** |
|     |              |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| U3  | .487**       | .366** | .487** | .457** | .424** | .365** | .374** | .787** | .733** | 1      | .770** | .732** | .722** | .719** | .771** | .835** | .807** | .588** | .637** | .637** | .637** | .637** | .637** |
|     |              |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| U4  | .474**       | .279** | .427** | .448** | .402** | .349** | .355** | .816** | .777** | .770** | 1      | .923** | .886** | .890** | .861** | .829** | .776** | .654** | .654** | .654** | .654** | .654** | .654** |
|     |              |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| U5  | .542**       | .315** | .485** | .514** | .461** | .382** | .370** | .791** | .759** | .732** | .923** | 1      | .882** | .875** | .810** | .827** | .782** | .718** | .718** | .718** | .718** | .718** | .718** |
|     |              |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| U6  | .438**       | .241** | .355** | .423** | .405** | .335** | .322** | .755** | .722** | .722** | .882** | .882** | 1      | .632** | .777** | .793** | .711** | .627** | .627** | .627** | .627** | .627** | .627** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| TS1 | .462**       | .376** | .532** | .405** | .493** | .412** | .356** | .821** | .838** | .719** | .690** | .675** | .632** | .774** | .774** | .768** | .857** | .874** | .874** | .874** | .874** | .874** | .874** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| TS2 | .410**       | .297** | .482** | .427** | .458** | .407** | .366** | .817** | .763** | .771** | .861** | .810** | .777** | .714** | 1      | .887** | .814** | .608** | .643** | .643** | .643** | .643** | .643** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| TS3 | .449**       | .278** | .466** | .408** | .512** | .387** | .376** | .815** | .753** | .835** | .829** | .821** | .793** | .788** | .857** | 1      | .874** | .663** | .672** | .672** | .672** | .672** | .672** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   | .000   | .000   |
| TS4 | .512**       | .398** | .588** | .510** | .530** | .469** | .361** | .829** | .746** | .807** | .776** | .782** | .711** | .814** | .874** | .874** | 1      | .724** | .729** | .685** | .685** | .685** | .685** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   | .000   |
| TO1 | .570**       | .390** | .571** | .596** | .521** | .490** | .366** | .618** | .568** | .654** | .654** | .627** | .600** | .643** | .874** | .874** | .724** | 1      | .935** | .873** | .866** | .923** | .780** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   | .000   |
| TO2 | .566**       | .360** | .582** | .600** | .549** | .475** | .352** | .608** | .637** | .651** | .687** | .656** | .625** | .643** | .874** | .874** | .724** | .935** | 1      | .868** | .833** | .868** | .713** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   | .000   |
| TO3 | .526**       | .382** | .556** | .610** | .468** | .492** | .331** | .597** | .567** | .581** | .656** | .623** | .585** | .643** | .874** | .874** | .724** | .935** | .868** | 1      | .844** | .868** | .716** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   | .000   |
| TO4 | .503**       | .344** | .492** | .580** | .428** | .387** | .282** | .644** | .606** | .639** | .713** | .621** | .579** | .654** | .874** | .874** | .724** | .935** | .868** | .844** | 1      | .892** | .774** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      | .000   |
| TO5 | .569**       | .413** | .580** | .623** | .468** | .446** | .318** | .640** | .647** | .647** | .710** | .582** | .614** | .620** | .874** | .874** | .724** | .935** | .868** | .844** | .892** | 1      | .751** |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      |
| TO6 | .567**       | .376** | .486** | .504** | .373** | .380** | .301** | .588** | .492** | .504** | .553** | .613** | .510** | .444** | .435** | .525** | .574** | .789** | .713** | .716** | .774** | .751** | 1      |
|     |              |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | N      |

\*\* Correlation is significant at the 0.01 level (2-tailed).  
\* Correlation is significant at the 0.05 level (2-tailed).

## Appendix F – LISREL path model (standardized solutions) and output

### F1. The robust non-financial model.



Chi-Square=136.77, df=112, P-value=0.05584, RMSEA=0.070

DATE: 4/28/2015

TIME: 9:55

L I S R E L 9.20 (32 Bit)

BY

Karl G. Jöreskog & Dag Sörbom

This program is published exclusively by  
Scientific Software International, Inc.  
<http://www.ssicentral.com>

Copyright by Scientific Software International, Inc., 1981-2014  
Use of this program is subject to the terms specified in the  
Universal Copyright Convention.

The following lines were read from file C:\Users\Jakob\Desktop\DATA\_final\Real deal\NFI\_5.lpj:

```
Robust Non-financial Model
DA NI=17 NO=104 MA=CM
RA FI='C:\Users\Jakob\Desktop\DATA_final\Real deal\DATA_BRUK_5.lsf'
SE
5 6 7 8 9 10 11 12 13 14 15 16 17 1 2 3 4 /
MO NX=4 NY=13 NK=1 NE=4 BE=FU,FI GA=FU,FI PS=SY,FR TE=DI,FR TD=DI,FR

MO NX=4 NY=13 NK=1 NE=4 BE=FU,FI GA=FU,FI PS=SY,FR TE=DI,FR TD=DI,FR
LE
PJ IJ TS TO
LK
```

NFI  
FR LY(1,1) LY(2,1) LY(3,1) LY(4,1) LY(5,1) LY(6,2) LY(7,2) LY(8,3) LY(9,3)  
FR LY(10,4) LY(11,4) LY(12,4) LY(13,4) LX(1,1) LX(2,1) LX(3,1) LX(4,1) BE(3,1)  
FR BE(3,2) BE(4,1) BE(4,2) GA(1,1) GA(2,1)  
FI PS(1,3) PS(1,4) PS(2,3) PS(2,4) PS(3,4)  
PD  
RO  
OU MI RS FT

Robust Non-financial Model

Number of Input Variables 17  
Number of Y - Variables 13  
Number of X - Variables 4  
Number of ETA - Variables 4  
Number of KSI - Variables 1  
Number of Observations 104

Robust Non-financial Model

Covariance Matrix

|                      | PJ1   | PJ2    | PJ3   | PJ4   | PJ6   | IJ2    |
|----------------------|-------|--------|-------|-------|-------|--------|
| PJ1                  | 1.671 |        |       |       |       |        |
| PJ2                  | 0.964 | 1.768  |       |       |       |        |
| PJ3                  | 1.220 | 1.286  | 1.881 |       |       |        |
| PJ4                  | 1.220 | 0.958  | 1.337 | 1.738 |       |        |
| PJ6                  | 1.034 | 1.148  | 1.366 | 1.209 | 1.804 |        |
| IJ2                  | 0.871 | 0.662  | 0.935 | 0.844 | 0.688 | 1.963  |
| IJ5                  | 0.853 | 0.510  | 0.811 | 0.826 | 0.624 | 1.295  |
| TS2                  | 0.764 | 0.569  | 0.914 | 0.811 | 0.786 | 1.541  |
| TS3                  | 0.914 | 0.583  | 1.007 | 0.848 | 0.841 | 1.661  |
| TO1                  | 0.938 | 0.659  | 0.997 | 1.003 | 0.839 | 1.102  |
| TO3                  | 0.821 | 0.580  | 0.920 | 0.971 | 0.798 | 0.958  |
| TO5                  | 0.936 | 0.700  | 1.013 | 1.046 | 0.763 | 1.141  |
| TO6                  | 0.858 | 0.586  | 0.780 | 0.777 | 0.597 | 0.807  |
| Renewal_<br>Customer | 0.515 | -0.004 | 0.472 | 0.504 | 0.217 | -0.094 |
| New_leas             | 0.200 | -0.034 | 0.072 | 0.176 | 0.149 | -0.004 |
| Coworker             | 0.440 | 0.083  | 0.376 | 0.280 | 0.430 | 0.361  |
|                      | 0.444 | 0.142  | 0.545 | 0.490 | 0.271 | 0.473  |

Covariance Matrix

|                      | IJ5   | TS2    | TS3   | TO1   | TO3   | TO5   |
|----------------------|-------|--------|-------|-------|-------|-------|
| IJ5                  | 1.483 |        |       |       |       |       |
| TS2                  | 1.421 | 2.077  |       |       |       |       |
| TS3                  | 1.575 | 1.945  | 2.481 |       |       |       |
| TO1                  | 1.113 | 1.116  | 1.330 | 1.621 |       |       |
| TO3                  | 0.963 | 0.952  | 1.130 | 1.341 | 1.455 |       |
| TO5                  | 1.101 | 1.127  | 1.243 | 1.496 | 1.358 | 1.621 |
| TO6                  | 0.873 | 0.733  | 0.968 | 1.162 | 1.010 | 1.119 |
| Renewal_<br>Customer | 0.130 | 0.099  | 0.007 | 0.080 | 0.279 | 0.153 |
| New_leas             | 0.234 | -0.071 | 0.017 | 0.136 | 0.181 | 0.088 |
| Coworker             | 0.486 | 0.378  | 0.440 | 0.105 | 0.118 | 0.128 |
|                      | 0.548 | 0.398  | 0.576 | 0.300 | 0.282 | 0.253 |

Covariance Matrix

|                      | TO6    | Renewal_<br>Customer | Customer | New_leas | Coworker |
|----------------------|--------|----------------------|----------|----------|----------|
| TO6                  | 1.369  |                      |          |          |          |
| Renewal_<br>Customer | -0.028 | 3.955                |          |          |          |
| New_leas             | 0.134  | 0.810                | 1.814    |          |          |
| Coworker             | -0.066 | 1.848                | 1.055    | 3.075    |          |
|                      | 0.393  | 1.040                | 1.016    | 0.747    | 2.427    |



Total Variance = 34.204 Generalized Variance = 0.0221

Largest Eigenvalue = 14.278 Smallest Eigenvalue = 0.096

Condition Number = 12.186

Parameter Specifications

LAMBDA-Y

|     | PJ    | IJ    | TS    | TO    |
|-----|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- |
| PJ1 | 0     | 0     | 0     | 0     |
| PJ2 | 1     | 0     | 0     | 0     |
| PJ3 | 2     | 0     | 0     | 0     |
| PJ4 | 3     | 0     | 0     | 0     |
| PJ6 | 4     | 0     | 0     | 0     |
| IJ2 | 0     | 0     | 0     | 0     |
| IJ5 | 0     | 5     | 0     | 0     |
| TS2 | 0     | 0     | 0     | 0     |
| TS3 | 0     | 0     | 6     | 0     |
| TO1 | 0     | 0     | 0     | 0     |
| TO3 | 0     | 0     | 0     | 7     |
| TO5 | 0     | 0     | 0     | 8     |
| TO6 | 0     | 0     | 0     | 9     |

LAMBDA-X

|          | NFI   |
|----------|-------|
|          | ----- |
| Renewal_ | 10    |
| Customer | 11    |
| New_leas | 12    |
| Coworker | 13    |

BETA

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | 0     | 0     | 0     | 0     |
| IJ | 0     | 0     | 0     | 0     |
| TS | 14    | 15    | 0     | 0     |
| TO | 16    | 17    | 0     | 0     |

GAMMA

|    | NFI   |
|----|-------|
|    | ----- |
| PJ | 18    |
| IJ | 19    |
| TS | 0     |
| TO | 0     |

PSI

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | 20    |       |       |       |
| IJ | 21    | 22    |       |       |
| TS | 0     | 0     | 23    |       |
| TO | 0     | 0     | 0     | 24    |

THETA-EPS

| PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-------|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- |
| 25    | 26    | 27    | 28    | 29    | 30    |

THETA-EPS

| IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|-------|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- |
| 31    | 32    | 33    | 34    | 35    | 36    |

THETA-EPS

| TO6   |
|-------|
| ----- |
| 37    |

THETA-DELTA

| Renewal_ | Customer | New_leas | Coworker |
|----------|----------|----------|----------|
| -----    | -----    | -----    | -----    |
| 38       | 39       | 40       | 41       |

Number of Iterations = 15

LISREL Estimates (Robust Maximum Likelihood)

LAMBDA-Y

|     | PJ                         | IJ                         | TS                         | TO                         |
|-----|----------------------------|----------------------------|----------------------------|----------------------------|
|     | -----                      | -----                      | -----                      | -----                      |
| PJ1 | 1.026                      | - -                        | - -                        | - -                        |
| PJ2 | 0.968<br>(0.129)<br>7.526  | - -                        | - -                        | - -                        |
| PJ3 | 1.231<br>(0.103)<br>11.960 | - -                        | - -                        | - -                        |
| PJ4 | 1.113<br>(0.105)<br>10.604 | - -                        | - -                        | - -                        |
| PJ6 | 1.082<br>(0.113)<br>9.552  | - -                        | - -                        | - -                        |
| IJ2 | - -                        | 1.177                      | - -                        | - -                        |
| IJ5 | - -                        | 1.122<br>(0.102)<br>10.972 | - -                        | - -                        |
| TS2 | - -                        | - -                        | 1.325                      | - -                        |
| TS3 | - -                        | - -                        | 1.467<br>(0.091)<br>16.075 | - -                        |
| TO1 | - -                        | - -                        | - -                        | 1.225                      |
| TO3 | - -                        | - -                        | - -                        | 1.101<br>(0.081)<br>13.507 |
| TO5 | - -                        | - -                        | - -                        | 1.223<br>(0.059)<br>20.845 |

|     |     |     |     |                           |
|-----|-----|-----|-----|---------------------------|
| TO6 | - - | - - | - - | 0.930<br>(0.128)<br>7.257 |
|-----|-----|-----|-----|---------------------------|

LAMBDA-X

|          | NFI                       |
|----------|---------------------------|
|          | -----                     |
| Renewal_ | 1.266<br>(0.215)<br>5.894 |
| Customer | 0.836<br>(0.245)<br>3.416 |
| New_leas | 1.246<br>(0.187)<br>6.653 |
| Coworker | 0.853<br>(0.220)<br>3.883 |

BETA

|    | PJ                          | IJ                         | TS    | TO    |
|----|-----------------------------|----------------------------|-------|-------|
|    | -----                       | -----                      | ----- | ----- |
| PJ | - -                         | - -                        | - -   | - -   |
| IJ | - -                         | - -                        | - -   | - -   |
| TS | -0.078<br>(0.060)<br>-1.306 | 1.004<br>(0.092)<br>10.946 | - -   | - -   |
| TO | 0.334<br>(0.085)<br>3.942   | 0.569<br>(0.131)<br>4.336  | - -   | - -   |

GAMMA

|    | NFI                       |
|----|---------------------------|
|    | -----                     |
| PJ | 0.251<br>(0.150)<br>1.669 |
| IJ | 0.209<br>(0.176)<br>1.183 |
| TS | - -                       |
| TO | - -                       |

Covariance Matrix of ETA and KSI

|     | PJ    | IJ    | TS    | TO    | NFI   |
|-----|-------|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- | ----- |
| PJ  | 1.000 |       |       |       |       |
| IJ  | 0.614 | 1.000 |       |       |       |
| TS  | 0.538 | 0.956 | 1.000 |       |       |
| TO  | 0.683 | 0.774 | 0.723 | 1.000 |       |
| NFI | 0.251 | 0.209 | 0.190 | 0.202 | 1.000 |

PHI

| NFI | ----- |
|-----|-------|
|     | 1.000 |

PSI

|    | PJ                        | IJ                        | TS                        | TO                        |
|----|---------------------------|---------------------------|---------------------------|---------------------------|
|    | -----                     | -----                     | -----                     | -----                     |
| PJ | 0.937<br>(0.236)<br>3.977 |                           |                           |                           |
| IJ | 0.561<br>(0.194)<br>2.889 | 0.956<br>(0.250)<br>3.829 |                           |                           |
| TS | - -                       | - -                       | 0.082<br>(0.045)<br>1.814 |                           |
| TO | - -                       | - -                       | - -                       | 0.332<br>(0.088)<br>3.777 |

Squared Multiple Correlations for Structural Equations

|  | PJ    | IJ    | TS    | TO    |
|--|-------|-------|-------|-------|
|  | ----- | ----- | ----- | ----- |
|  | 0.063 | 0.044 | 0.918 | 0.668 |

NOTE: R<sup>2</sup> for Structural Equations are Hayduk's (2006) Blocked-Error R<sup>2</sup>

Reduced Form

|    | NFI                       |
|----|---------------------------|
|    | -----                     |
| PJ | 0.251<br>(0.151)<br>1.661 |
| IJ | 0.209<br>(0.177)<br>1.177 |
| TS | 0.190<br>(0.171)<br>1.111 |

TO  
 0.202  
 (0.144)  
 1.410

Squared Multiple Correlations for Reduced Form

| PJ    | IJ    | TS    | TO    |
|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- |
| 0.063 | 0.044 | 0.036 | 0.041 |

THETA-EPS

| PJ1     | PJ2     | PJ3     | PJ4     | PJ6     | IJ2     |
|---------|---------|---------|---------|---------|---------|
| -----   | -----   | -----   | -----   | -----   | -----   |
| 0.618   | 0.831   | 0.366   | 0.499   | 0.635   | 0.578   |
| (0.134) | (0.170) | (0.080) | (0.103) | (0.132) | (0.323) |
| 4.619   | 4.890   | 4.578   | 4.852   | 4.790   | 1.788   |

THETA-EPS

| IJ5     | TS2     | TS3     | TO1     | TO3     | TO5     |
|---------|---------|---------|---------|---------|---------|
| -----   | -----   | -----   | -----   | -----   | -----   |
| 0.223   | 0.321   | 0.328   | 0.121   | 0.244   | 0.124   |
| (0.049) | (0.095) | (0.104) | (0.039) | (0.057) | (0.037) |
| 4.550   | 3.381   | 3.138   | 3.088   | 4.306   | 3.397   |

THETA-EPS

TO6  
 -----  
 0.503  
 (0.127)  
 3.972

Squared Multiple Correlations for Y - Variables

| PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-------|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- |
| 0.630 | 0.530 | 0.806 | 0.713 | 0.648 | 0.706 |

Squared Multiple Correlations for Y - Variables

| IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|-------|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- |
| 0.849 | 0.846 | 0.868 | 0.925 | 0.833 | 0.923 |

Squared Multiple Correlations for Y - Variables

TO6  
 -----  
 0.632

THETA-DELTA

| Renewal_ | Customer | New_leas | Coworker |
|----------|----------|----------|----------|
| -----    | -----    | -----    | -----    |
| 2.353    | 1.115    | 1.523    | 1.699    |
| (0.528)  | (0.235)  | (0.351)  | (0.313)  |
| 4.459    | 4.750    | 4.340    | 5.423    |

Squared Multiple Correlations for X - Variables

| Renewal_ | Customer | New_leas | Coworker |
|----------|----------|----------|----------|
| -----    | -----    | -----    | -----    |
| 0.405    | 0.386    | 0.505    | 0.300    |

Log-likelihood Values

|                              | Estimated Model<br>----- | Saturated Model<br>----- |
|------------------------------|--------------------------|--------------------------|
| Number of free parameters(t) | 41                       | 153                      |
| -2ln(L)                      | 1539.871                 | 1371.383                 |
| AIC (Akaike, 1974)*          | 1621.871                 | 1677.383                 |
| BIC (Schwarz, 1978)*         | 1730.291                 | 2081.974                 |

\*LISREL uses  $AIC = 2t - 2\ln(L)$  and  $BIC = t\ln(N) - 2\ln(L)$

Goodness-of-Fit Statistics

|   |                      |
|---|----------------------|
| Degrees of Freedom for (C1)-(C3)                | 112                  |
| Maximum Likelihood Ratio Chi-Square (C1)        | 168.488 (P = 0.0004) |
| Browne's (1984) ADF Chi-Square (C2_NT)          | 158.914 (P = 0.0024) |
| Satorra-Bentler (1988) Scaled Chi-Square (C3)   | 136.774 (P = 0.0558) |
| Satorra-Bentler (1988) Adjusted Chi-Square (C4) | 28.073 (P = 0.2125)  |
| Degrees of Freedom for C4                       | 22.988               |
| Estimated Non-centrality Parameter (NCP)        | 56.488               |
| 90 Percent Confidence Interval for NCP          | (25.527 ; 95.420)    |
| Minimum Fit Function Value                      | 1.620                |
| Population Discrepancy Function Value (F0)      | 0.543                |
| 90 Percent Confidence Interval for F0           | (0.245 ; 0.917)      |
| Root Mean Square Error of Approximation (RMSEA) | 0.0696               |
| 90 Percent Confidence Interval for RMSEA        | (0.0468 ; 0.0905)    |
| P-Value for Test of Close Fit (RMSEA < 0.05)    | 0.0748               |
| Expected Cross-Validation Index (ECVI)          | 2.409                |
| 90 Percent Confidence Interval for ECVI         | (2.111 ; 2.783)      |
| ECVI for Saturated Model                        | 2.942                |
| ECVI for Independence Model                     | 15.342               |
| Chi-Square for Independence Model (136 df)      | 1561.609             |
| Normed Fit Index (NFI)                          | 0.892                |
| Non-Normed Fit Index (NNFI)                     | 0.952                |
| Parsimony Normed Fit Index (PNFI)               | 0.735                |
| Comparative Fit Index (CFI)                     | 0.960                |
| Incremental Fit Index (IFI)                     | 0.961                |
| Relative Fit Index (RFI)                        | 0.869                |
| Critical N (CN)                                 | 92.531               |
| Root Mean Square Residual (RMR)                 | 0.133                |
| Standardized RMR                                | 0.0624               |
| Goodness of Fit Index (GFI)                     | 0.848                |
| Adjusted Goodness of Fit Index (AGFI)           | 0.792                |
| Parsimony Goodness of Fit Index (PGFI)          | 0.620                |

Fitted Covariance Matrix

|           | PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-----------|-------|-------|-------|-------|-------|-------|
| PJ1       | 1.671 |       |       |       |       |       |
| PJ2       | 0.994 | 1.768 |       |       |       |       |
| PJ3       | 1.263 | 1.192 | 1.881 |       |       |       |
| PJ4       | 1.142 | 1.078 | 1.370 | 1.738 |       |       |
| PJ6       | 1.110 | 1.047 | 1.331 | 1.204 | 1.804 |       |
| IJ2       | 0.741 | 0.699 | 0.889 | 0.804 | 0.781 | 1.963 |
| IJ5       | 0.707 | 0.667 | 0.848 | 0.766 | 0.745 | 1.321 |
| TS2       | 0.732 | 0.691 | 0.878 | 0.794 | 0.771 | 1.492 |
| TS3       | 0.810 | 0.765 | 0.972 | 0.879 | 0.854 | 1.651 |
| TO1       | 0.858 | 0.810 | 1.029 | 0.931 | 0.904 | 1.115 |
| TO3       | 0.771 | 0.728 | 0.925 | 0.836 | 0.813 | 1.002 |
| TO5       | 0.857 | 0.809 | 1.028 | 0.929 | 0.903 | 1.114 |
| TO6       | 0.652 | 0.615 | 0.782 | 0.707 | 0.687 | 0.847 |
| Renewal_  | 0.326 | 0.308 | 0.391 | 0.354 | 0.344 | 0.311 |
| Customer_ | 0.216 | 0.203 | 0.259 | 0.234 | 0.227 | 0.205 |
| New_leas  | 0.321 | 0.303 | 0.385 | 0.348 | 0.338 | 0.306 |
| Coworker  | 0.220 | 0.208 | 0.264 | 0.238 | 0.232 | 0.210 |

Fitted Covariance Matrix

|           | IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|-----------|-------|-------|-------|-------|-------|-------|
| IJ5       | 1.483 |       |       |       |       |       |
| TS2       | 1.422 | 2.077 |       |       |       |       |
| TS3       | 1.575 | 1.945 | 2.481 |       |       |       |
| TO1       | 1.063 | 1.174 | 1.300 | 1.621 |       |       |
| TO3       | 0.956 | 1.055 | 1.168 | 1.348 | 1.455 |       |
| TO5       | 1.062 | 1.173 | 1.298 | 1.498 | 1.346 | 1.621 |
| TO6       | 0.808 | 0.892 | 0.987 | 1.139 | 1.024 | 1.138 |
| Renewal_  | 0.296 | 0.318 | 0.353 | 0.314 | 0.282 | 0.313 |
| Customer_ | 0.196 | 0.210 | 0.233 | 0.207 | 0.186 | 0.207 |
| New_leas  | 0.292 | 0.313 | 0.347 | 0.309 | 0.278 | 0.309 |
| Coworker  | 0.200 | 0.215 | 0.238 | 0.212 | 0.190 | 0.211 |

Fitted Covariance Matrix

|           | TO6   | Renewal_ | Customer_ | New_leas | Coworker |
|-----------|-------|----------|-----------|----------|----------|
| TO6       | 1.369 |          |           |          |          |
| Renewal_  | 0.238 | 3.955    |           |          |          |
| Customer_ | 0.158 | 1.059    | 1.814     |          |          |
| New_leas  | 0.235 | 1.577    | 1.042     | 3.075    |          |
| Coworker  | 0.161 | 1.080    | 0.714     | 1.063    | 2.427    |

Fitted Residuals

|           | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|-----------|--------|--------|--------|--------|--------|--------|
| PJ1       | 0.000  |        |        |        |        |        |
| PJ2       | -0.030 | 0.000  |        |        |        |        |
| PJ3       | -0.043 | 0.094  | 0.000  |        |        |        |
| PJ4       | 0.078  | -0.120 | -0.033 | 0.000  |        |        |
| PJ6       | -0.076 | 0.101  | 0.035  | 0.006  | 0.000  |        |
| IJ2       | 0.130  | -0.037 | 0.046  | 0.040  | -0.093 | 0.000  |
| IJ5       | 0.146  | -0.157 | -0.037 | 0.059  | -0.121 | -0.026 |
| TS2       | 0.033  | -0.122 | 0.036  | 0.017  | 0.014  | 0.049  |
| TS3       | 0.104  | -0.181 | 0.035  | -0.031 | -0.013 | 0.010  |
| TO1       | 0.080  | -0.150 | -0.033 | 0.072  | -0.066 | -0.013 |
| TO3       | 0.050  | -0.147 | -0.005 | 0.134  | -0.015 | -0.044 |
| TO5       | 0.079  | -0.109 | -0.015 | 0.116  | -0.140 | -0.027 |
| TO6       | 0.206  | -0.030 | -0.002 | 0.070  | -0.090 | -0.040 |
| Renewal_  | 0.189  | -0.312 | 0.081  | 0.150  | -0.127 | -0.405 |
| Customer_ | -0.016 | -0.237 | -0.187 | -0.057 | -0.079 | -0.210 |
| New_leas  | 0.119  | -0.220 | -0.009 | -0.069 | 0.092  | 0.055  |
| Coworker  | 0.224  | -0.066 | 0.281  | 0.252  | 0.039  | 0.263  |





Standardized Residuals

|           | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|-----------|--------|--------|--------|--------|--------|--------|
|           | -----  | -----  | -----  | -----  | -----  | -----  |
| PJ1       | 0.000  |        |        |        |        |        |
| PJ2       | -0.135 | 0.000  |        |        |        |        |
| PJ3       | -0.196 | 0.411  | 0.000  |        |        |        |
| PJ4       | 0.350  | -0.572 | -0.149 | 0.000  |        |        |
| PJ6       | -0.358 | 0.675  | 0.166  | 0.025  | 0.000  |        |
| IJ2       | 0.523  | -0.162 | 0.186  | 0.144  | -0.449 | 0.000  |
| IJ5       | 0.570  | -0.973 | -0.159 | 0.230  | -0.598 | -0.084 |
| TS2       | 0.125  | -0.536 | 0.226  | 0.074  | 0.059  | 0.138  |
| TS3       | 0.397  | -0.773 | 0.220  | -0.113 | -0.057 | 0.036  |
| TO1       | 0.303  | -0.706 | -0.129 | 0.271  | -0.355 | -0.040 |
| TO3       | 0.229  | -0.757 | -0.024 | 0.587  | -0.080 | -0.162 |
| TO5       | 0.358  | -0.447 | -0.061 | 0.406  | -0.665 | 0.090  |
| TO6       | 0.735  | -0.173 | -0.011 | 0.259  | -0.447 | -0.133 |
| Renewal_  | 0.702  | -1.338 | 0.277  | 0.587  | -0.479 | -1.440 |
| Customer_ | -0.061 | -1.398 | -0.749 | -0.220 | -0.373 | -0.835 |
| New_leas  | 0.531  | -1.089 | -0.034 | -0.269 | 0.399  | 0.208  |
| Coworker  | 0.952  | -0.350 | 1.139  | 1.054  | 0.167  | 0.973  |

Standardized Residuals

|           | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|-----------|--------|--------|--------|--------|--------|--------|
|           | -----  | -----  | -----  | -----  | -----  | -----  |
| IJ5       | 0.000  |        |        |        |        |        |
| TS2       | -0.002 | 0.000  |        |        |        |        |
| TS3       | 0.002  | 0.000  | 0.000  |        |        |        |
| TO1       | 0.135  | -0.175 | 0.085  | 0.000  |        |        |
| TO3       | 0.025  | -0.366 | -0.133 | -0.022 | 0.000  |        |
| TO5       | 0.115  | -0.126 | -0.155 | -0.005 | 0.037  | 0.000  |
| TO6       | 0.177  | -0.479 | -0.058 | 0.062  | -0.043 | -0.050 |
| Renewal_  | -0.634 | -0.913 | -1.027 | -0.812 | -0.012 | -0.537 |
| Customer_ | 0.127  | -1.157 | -0.690 | -0.231 | -0.016 | -0.398 |
| New_leas  | 0.813  | 0.228  | 0.266  | -0.714 | -0.540 | -0.677 |
| Coworker  | 1.197  | 0.655  | 0.990  | 0.290  | 0.319  | 0.144  |

Standardized Residuals

|           | TO6    | Renewal_ | Customer_ | New_leas | Coworker |
|-----------|--------|----------|-----------|----------|----------|
|           | -----  | -----    | -----     | -----    | -----    |
| TO6       | 0.000  |          |           |          |          |
| Renewal_  | -1.054 | 0.000    |           |          |          |
| Customer_ | -0.076 | -0.597   | 0.000     |          |          |
| New_leas  | -1.202 | 0.617    | 0.046     | - -      |          |
| Coworker  | 0.802  | -0.107   | 0.827     | -0.869   | 0.000    |

Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -1.440  
 Median Standardized Residual = 0.000  
 Largest Standardized Residual = 1.197

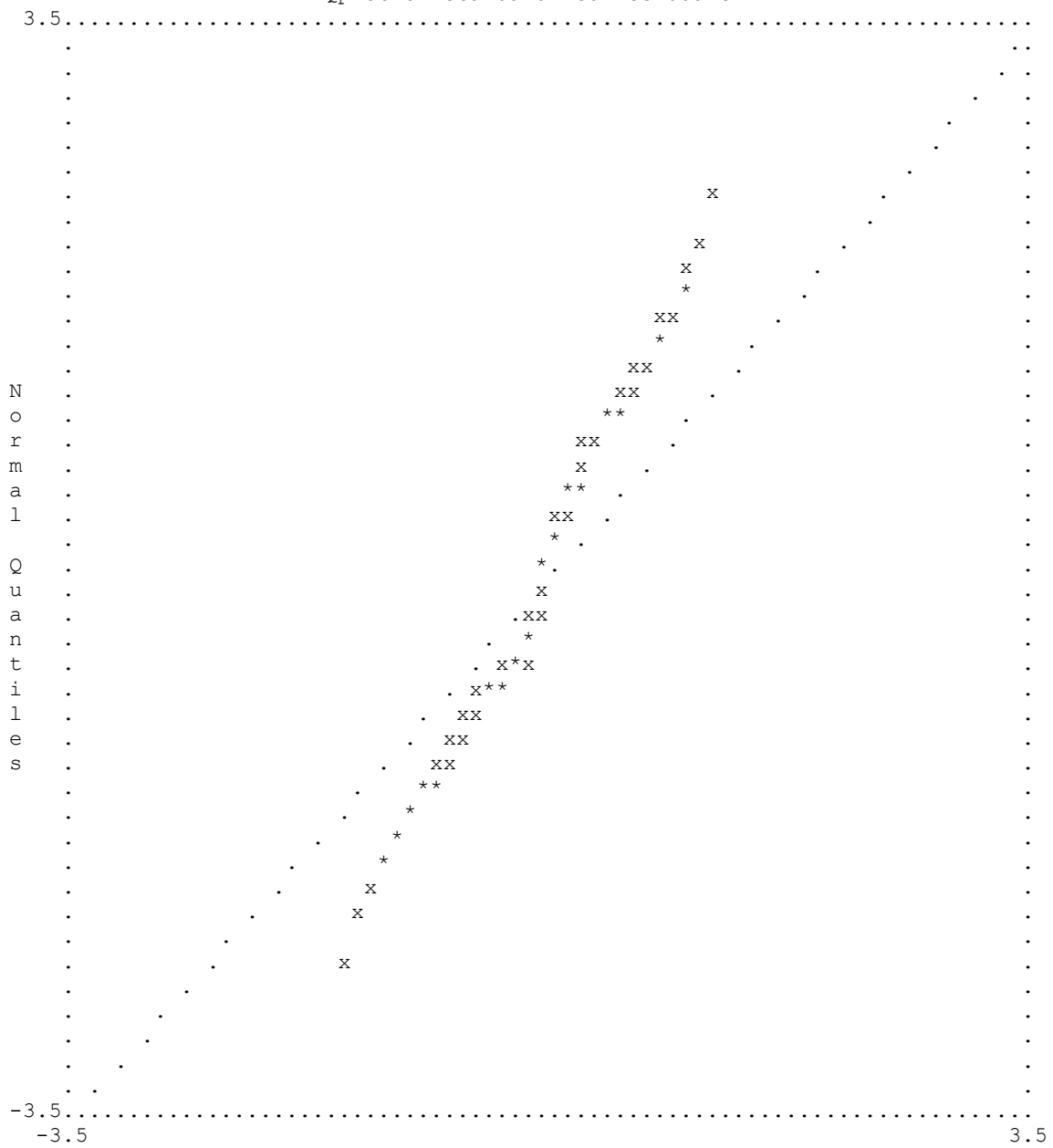
Stemleaf Plot

```

-14|40
-12|40
-10|6953
- 8|71741
- 6|76511986300
- 4|7444885550
- 2|776557320
- 0|8766655333331188866665443222111000000000000000000
  0|224456679923334447789
  2|123333677890256
  4|001123799
  6|26803
  8|013579
 10|54
 12|0

```

Qplot of Standardized Residuals



Modification Indices and Expected Change

Modification Indices for LAMBDA-Y

|     | PJ    | IJ    | TS    | TO    |
|-----|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- |
| PJ1 | - -   | 2.316 | 1.304 | 1.664 |
| PJ2 | - -   | 3.762 | 3.073 | 5.120 |
| PJ3 | - -   | 0.004 | 0.135 | 0.199 |
| PJ4 | - -   | 0.382 | 0.056 | 3.125 |
| PJ6 | - -   | 0.911 | 0.211 | 1.542 |
| IJ2 | 0.109 | - -   | 0.053 | 0.007 |
| IJ5 | - -   | - -   | - -   | - -   |
| TS2 | 0.006 | - -   | - -   | 2.123 |
| TS3 | 0.005 | - -   | - -   | 0.017 |
| TO1 | 0.249 | 0.495 | 0.942 | - -   |
| TO3 | - -   | - -   | - -   | - -   |
| TO5 | 0.037 | - -   | - -   | - -   |
| TO6 | - -   | - -   | - -   | - -   |

Expected Change for LAMBDA-Y

|     | PJ     | IJ     | TS     | TO     |
|-----|--------|--------|--------|--------|
|     | -----  | -----  | -----  | -----  |
| PJ1 | - -    | 0.163  | 0.115  | 0.146  |
| PJ2 | - -    | -0.296 | -0.234 | -0.404 |
| PJ3 | - -    | 0.006  | 0.035  | -0.048 |
| PJ4 | - -    | 0.064  | 0.023  | 0.194  |
| PJ6 | - -    | -0.103 | -0.047 | -0.137 |
| IJ2 | 0.035  | - -    | 0.031  | -0.010 |
| IJ5 | - -    | - -    | - -    | - -    |
| TS2 | 0.007  | - -    | - -    | -0.176 |
| TS3 | -0.007 | - -    | - -    | 0.015  |
| TO1 | -0.036 | 0.063  | 0.076  | - -    |
| TO3 | - -    | - -    | - -    | - -    |
| TO5 | -0.025 | - -    | - -    | - -    |
| TO6 | - -    | - -    | - -    | - -    |

No Non-Zero Modification Indices for LAMBDA-X

Modification Indices for BETA

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | - -   | - -   | - -   | 0.132 |
| IJ | - -   | - -   | - -   | - -   |
| TS | - -   | - -   | - -   | 1.737 |
| TO | - -   | - -   | - -   | - -   |

Expected Change for BETA

|    | PJ    | IJ    | TS    | TO     |
|----|-------|-------|-------|--------|
|    | ----- | ----- | ----- | -----  |
| PJ | - -   | - -   | - -   | 0.113  |
| IJ | - -   | - -   | - -   | - -    |
| TS | - -   | - -   | - -   | -0.121 |
| TO | - -   | - -   | - -   | - -    |

Modification Indices for GAMMA

|    | NFI   |
|----|-------|
|    | ----- |
| PJ | - -   |
| IJ | - -   |
| TS | 1.094 |
| TO | 1.724 |

Expected Change for GAMMA

|    | NFI    |
|----|--------|
|    | -----  |
| PJ | - -    |
| IJ | - -    |
| TS | -0.066 |
| TO | -0.104 |

No Non-Zero Modification Indices for PHI

Modification Indices for PSI

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | - -   |       |       |       |
| IJ | - -   | - -   |       |       |
| TS | 0.053 | - -   | - -   |       |
| TO | 0.337 | - -   | 3.697 | - -   |

Expected Change for PSI

|    | PJ    | IJ    | TS     | TO    |
|----|-------|-------|--------|-------|
|    | ----- | ----- | -----  | ----- |
| PJ | - -   |       |        |       |
| IJ | - -   | - -   |        |       |
| TS | 0.015 | - -   | - -    |       |
| TO | 0.096 | - -   | -0.086 | - -   |

Modification Indices for THETA-EPS

|     | PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-----|-------|-------|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- | ----- | ----- |
| PJ1 | - -   |       |       |       |       |       |
| PJ2 | 0.261 | - -   |       |       |       |       |
| PJ3 | 2.961 | 7.491 | - -   |       |       |       |
| PJ4 | 4.475 | 5.902 | 3.117 | - -   |       |       |
| PJ6 | 2.484 | 2.963 | 1.682 | 0.019 | - -   |       |
| IJ2 | 0.052 | 1.228 | 0.404 | 0.093 | 0.880 | - -   |
| IJ5 | 4.347 | 1.129 | 2.753 | 2.114 | 3.427 | - -   |
| TS2 | 3.096 | 0.170 | 0.398 | 0.002 | 1.993 | 5.907 |
| TS3 | 0.043 | 0.367 | 0.645 | 2.565 | 0.822 | 0.479 |
| TO1 | 0.048 | 0.523 | 0.124 | 0.673 | 1.968 | 1.053 |
| TO3 | 1.379 | 1.453 | 0.033 | 1.442 | 2.056 | 0.260 |
| TO5 | 0.020 | 0.539 | 0.139 | 1.691 | 6.660 | 2.382 |
| TO6 | 5.637 | 0.526 | 0.257 | 0.430 | 1.018 | 0.364 |

Modification Indices for THETA-EPS

|     | IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|-----|-------|-------|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- | ----- | ----- |
| IJ5 | - -   |       |       |       |       |       |
| TS2 | - -   | - -   |       |       |       |       |
| TS3 | 0.002 | - -   | - -   |       |       |       |
| TO1 | 0.041 | 1.036 | 4.034 | - -   |       |       |
| TO3 | 0.024 | 0.480 | 0.242 | 2.971 | - -   |       |
| TO5 | 0.003 | 3.072 | 7.323 | - -   | 3.288 | - -   |
| TO6 | 3.014 | 5.856 | 0.850 | 2.631 | 0.231 | 1.661 |

Modification Indices for THETA-EPS

TO6  
-----  
TO6 - -

Expected Change for THETA-EPS

|     | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|-----|--------|--------|--------|--------|--------|--------|
|     | -----  | -----  | -----  | -----  | -----  | -----  |
| PJ1 | - -    |        |        |        |        |        |
| PJ2 | -0.044 | - -    |        |        |        |        |
| PJ3 | -0.150 | 0.235  | - -    |        |        |        |
| PJ4 | 0.172  | -0.199 | -0.167 | - -    |        |        |
| PJ6 | -0.124 | 0.151  | 0.110  | 0.010  | - -    |        |
| IJ2 | 0.016  | 0.086  | 0.038  | -0.019 | -0.065 | - -    |
| IJ5 | 0.101  | -0.058 | -0.070 | 0.066  | -0.092 | - -    |
| TS2 | -0.100 | 0.026  | 0.031  | -0.002 | 0.082  | 0.294  |
| TS3 | 0.012  | -0.041 | 0.042  | -0.090 | 0.056  | -0.232 |
| TO1 | 0.008  | -0.030 | -0.011 | -0.028 | 0.052  | -0.037 |
| TO3 | -0.052 | -0.061 | -0.007 | 0.050  | 0.065  | -0.022 |
| TO5 | -0.005 | 0.030  | 0.012  | 0.044  | -0.096 | 0.056  |
| TO6 | 0.144  | 0.050  | -0.027 | -0.037 | -0.062 | -0.036 |

Expected Change for THETA-EPS

|     | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|-----|--------|--------|--------|--------|--------|--------|
|     | -----  | -----  | -----  | -----  | -----  | -----  |
| IJ5 | - -    |        |        |        |        |        |
| TS2 | - -    | - -    |        |        |        |        |
| TS3 | 0.002  | - -    | - -    |        |        |        |
| TO1 | 0.005  | -0.030 | 0.063  | - -    |        |        |
| TO3 | -0.005 | -0.025 | 0.019  | -0.124 | - -    |        |
| TO5 | 0.001  | 0.052  | -0.085 | - -    | 0.081  | - -    |
| TO6 | 0.073  | -0.118 | 0.048  | 0.067  | -0.020 | -0.054 |

Expected Change for THETA-EPS

TO6  
-----  
TO6 - -

Modification Indices for THETA-DELTA-EPS

|          | PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|----------|-------|-------|-------|-------|-------|-------|
|          | ----- | ----- | ----- | ----- | ----- | ----- |
| Renewal_ | 0.589 | 1.262 | 0.673 | 1.383 | 1.542 | 1.568 |
| Customer | 0.038 | 0.069 | 2.787 | 0.146 | 0.201 | 0.850 |
| New_leas | 0.201 | 0.052 | 0.003 | 1.773 | 2.449 | 0.247 |
| Coworker | 0.001 | 0.699 | 1.878 | 0.525 | 1.770 | 0.294 |

Modification Indices for THETA-DELTA-EPS

|          | IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|----------|-------|-------|-------|-------|-------|-------|
|          | ----- | ----- | ----- | ----- | ----- | ----- |
| Renewal_ | 0.772 | 1.503 | 0.595 | 1.455 | 2.835 | 0.523 |
| Customer | 4.843 | 3.556 | 0.204 | 0.532 | 0.720 | 1.122 |
| New_leas | 0.478 | 0.136 | 0.030 | 0.055 | 0.780 | 0.295 |
| Coworker | 0.718 | 0.928 | 0.902 | 0.014 | 0.203 | 1.557 |

Modification Indices for THETA-DELTA-EPS

TO6  
-----  
Renewal\_ 1.233  
Customer 0.778  
New\_leas 3.406  
Coworker 4.650

Expected Change for THETA-DELTA-EPS

|          | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|----------|--------|--------|--------|--------|--------|--------|
| Renewal_ | 0.108  | -0.179 | 0.100  | 0.154  | -0.178 | -0.172 |
| Customer | 0.019  | -0.028 | -0.139 | 0.034  | 0.044  | -0.086 |
| New_leas | 0.054  | -0.031 | -0.005 | -0.149 | 0.191  | 0.058  |
| Coworker | -0.003 | -0.109 | 0.137  | 0.077  | -0.156 | 0.061  |

Expected Change for THETA-DELTA-EPS

|          | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|----------|--------|--------|--------|--------|--------|--------|
| Renewal_ | -0.086 | 0.140  | -0.093 | -0.088 | 0.150  | 0.053  |
| Customer | 0.146  | -0.146 | -0.037 | 0.036  | 0.052  | -0.053 |
| New_leas | 0.058  | 0.036  | 0.018  | -0.015 | -0.067 | 0.034  |
| Coworker | 0.067  | -0.090 | 0.094  | 0.007  | -0.033 | -0.075 |

Expected Change for THETA-DELTA-EPS

|          | TO6    |
|----------|--------|
| Renewal_ | -0.135 |
| Customer | 0.073  |
| New_leas | -0.191 |
| Coworker | 0.214  |

Modification Indices for THETA-DELTA

|          | Renewal_ | Customer | New_leas | Coworker |
|----------|----------|----------|----------|----------|
| Renewal_ | - -      |          |          |          |
| Customer | 10.316   | - -      |          |          |
| New_leas | 57.421   | 0.068    | - -      |          |
| Coworker | 0.087    | 13.397   | 15.989   | - -      |

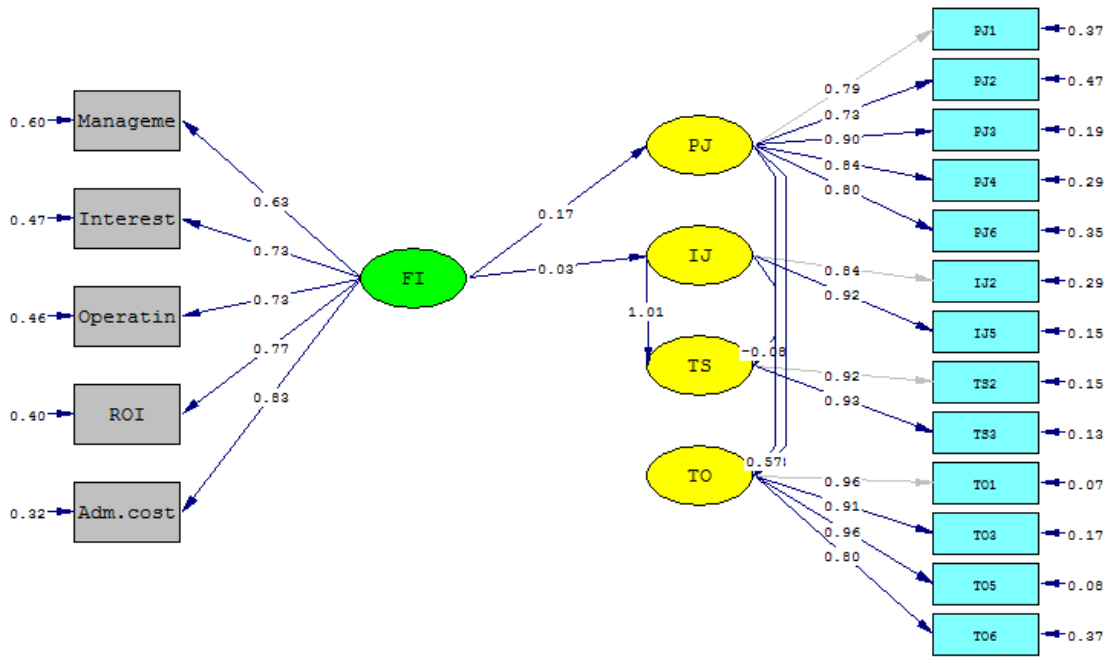
Expected Change for THETA-DELTA

|          | Renewal_ | Customer | New_leas | Coworker |
|----------|----------|----------|----------|----------|
| Renewal_ | - -      |          |          |          |
| Customer | -1.055   | - -      |          |          |
| New_leas | 7.357    | 0.089    | - -      |          |
| Coworker | -0.085   | 0.815    | -1.269   | - -      |

Maximum Modification Index is 57.42 for Element ( 3, 1) of THETA-DELTA

Time used 3.838 seconds

**F2. The robust financial model.**



Chi-Square=162.67, df=128, P-value=0.02076, RMSEA=0.070

DATE: 4/28/2015  
TIME: 10:48

L I S R E L 9.20 (32 Bit)

BY

Karl G. Jöreskog & Dag Sörbom

This program is published exclusively by  
Scientific Software International, Inc.  
<http://www.ssicentral.com>

Copyright by Scientific Software International, Inc., 1981-2014  
Use of this program is subject to the terms specified in the  
Universal Copyright Convention.

The following lines were read from file C:\Users\Jakob\Desktop\DATA\_final\Real deal\FI\_3.lpj:

```
Robust Financial Model
DA NI=18 NO=104 MA=CM
RA FI='C:\Users\Jakob\Desktop\DATA_final\Real deal\DATA_BRUK_FI_3.lsf'
SE
6 7 8 9 10 11 12 13 14 15 16 17 18 1 2 3 4 5 /
MO NX=5 NY=13 NK=1 NE=4 BE=FU,FI GA=FU,FI PS=SY,FR TE=DI,FR TD=DI,FR
```

```
MO NX=5 NY=13 NK=1 NE=4 BE=FU,FI GA=FU,FI PS=SY,FR TE=DI,FR TD=DI,FR
LE
PJ IJ TS TO
LK
```

FI  
 FR LY(1,1) LY(2,1) LY(3,1) LY(4,1) LY(5,1) LY(6,2) LY(7,2) LY(8,3) LY(9,3)  
 FR LY(10,4) LY(11,4) LY(12,4) LY(13,4) LX(1,1) LX(2,1) LX(3,1) LX(4,1) LX(5,1)  
 FR BE(3,1) BE(3,2) BE(4,1) BE(4,2) GA(1,1) GA(2,1)  
 FI PS(1,3) PS(1,4) PS(2,3) PS(2,4) PS(3,4)  
 PD  
 RO  
 OU MI RS FT

Robust Financial Model

Number of Input Variables 18  
 Number of Y - Variables 13  
 Number of X - Variables 5  
 Number of ETA - Variables 4  
 Number of KSI - Variables 1  
 Number of Observations 104

Robust Financial Model

Covariance Matrix

|          | PJ1   | PJ2    | PJ3   | PJ4   | PJ6    | IJ2    |
|----------|-------|--------|-------|-------|--------|--------|
| PJ1      | 1.671 |        |       |       |        |        |
| PJ2      | 0.964 | 1.768  |       |       |        |        |
| PJ3      | 1.220 | 1.286  | 1.881 |       |        |        |
| PJ4      | 1.220 | 0.958  | 1.337 | 1.738 |        |        |
| PJ6      | 1.034 | 1.148  | 1.366 | 1.209 | 1.804  |        |
| IJ2      | 0.871 | 0.662  | 0.935 | 0.844 | 0.688  | 1.963  |
| IJ5      | 0.853 | 0.510  | 0.811 | 0.826 | 0.624  | 1.295  |
| TS2      | 0.764 | 0.569  | 0.914 | 0.811 | 0.786  | 1.541  |
| TS3      | 0.914 | 0.583  | 1.007 | 0.848 | 0.841  | 1.661  |
| TO1      | 0.938 | 0.659  | 0.997 | 1.003 | 0.839  | 1.102  |
| TO3      | 0.821 | 0.580  | 0.920 | 0.971 | 0.798  | 0.958  |
| TO5      | 0.936 | 0.700  | 1.013 | 1.046 | 0.763  | 1.141  |
| TO6      | 0.858 | 0.586  | 0.780 | 0.777 | 0.597  | 0.807  |
| Manageme | 0.211 | -0.066 | 0.202 | 0.208 | 0.125  | 0.162  |
| Interest | 0.304 | 0.324  | 0.378 | 0.344 | 0.370  | -0.016 |
| Operatin | 0.529 | 0.196  | 0.497 | 0.389 | 0.154  | -0.045 |
| ROI      | 0.391 | -0.086 | 0.281 | 0.448 | -0.143 | 0.085  |
| Adm.cost | 0.411 | 0.248  | 0.391 | 0.304 | 0.217  | 0.278  |

Covariance Matrix

|          | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|----------|--------|--------|--------|--------|--------|--------|
| IJ5      | 1.483  |        |        |        |        |        |
| TS2      | 1.421  | 2.077  |        |        |        |        |
| TS3      | 1.575  | 1.945  | 2.481  |        |        |        |
| TO1      | 1.113  | 1.116  | 1.330  | 1.621  |        |        |
| TO3      | 0.963  | 0.952  | 1.130  | 1.341  | 1.455  |        |
| TO5      | 1.101  | 1.127  | 1.243  | 1.496  | 1.358  | 1.621  |
| TO6      | 0.873  | 0.733  | 0.968  | 1.162  | 1.010  | 1.119  |
| Manageme | 0.223  | 0.016  | 0.098  | 0.233  | 0.298  | 0.204  |
| Interest | -0.140 | -0.029 | -0.197 | -0.563 | -0.360 | -0.360 |
| Operatin | 0.095  | -0.069 | -0.178 | 0.183  | 0.118  | 0.215  |
| ROI      | 0.107  | 0.190  | 0.088  | 0.053  | 0.037  | 0.103  |
| Adm.cost | 0.034  | -0.020 | 0.100  | -0.191 | -0.105 | -0.071 |

Covariance Matrix

|          | TO6    | Manageme | Interest | Operatin | ROI   | Adm.cost |
|----------|--------|----------|----------|----------|-------|----------|
| TO6      | 1.369  |          |          |          |       |          |
| Manageme | 0.258  | 1.954    |          |          |       |          |
| Interest | -0.432 | 1.110    | 6.504    |          |       |          |
| Operatin | 0.174  | 1.450    | 2.418    | 3.358    |       |          |
| ROI      | 0.018  | 1.541    | 2.528    | 2.167    | 3.788 |          |
| Adm.cost | -0.100 | 1.497    | 3.943    | 2.144    | 2.622 | 4.697    |



Total Variance = 43.233 Generalized Variance = 0.0658

Largest Eigenvalue = 14.473 Smallest Eigenvalue = 0.093

Condition Number = 12.480

Parameter Specifications

LAMBDA-Y

|     | PJ    | IJ    | TS    | TO    |
|-----|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- |
| PJ1 | 0     | 0     | 0     | 0     |
| PJ2 | 1     | 0     | 0     | 0     |
| PJ3 | 2     | 0     | 0     | 0     |
| PJ4 | 3     | 0     | 0     | 0     |
| PJ6 | 4     | 0     | 0     | 0     |
| IJ2 | 0     | 0     | 0     | 0     |
| IJ5 | 0     | 5     | 0     | 0     |
| TS2 | 0     | 0     | 0     | 0     |
| TS3 | 0     | 0     | 6     | 0     |
| TO1 | 0     | 0     | 0     | 0     |
| TO3 | 0     | 0     | 0     | 7     |
| TO5 | 0     | 0     | 0     | 8     |
| TO6 | 0     | 0     | 0     | 9     |

LAMBDA-X

|          | FI    |
|----------|-------|
|          | ----- |
| Manageme | 10    |
| Interest | 11    |
| Operatin | 12    |
| ROI      | 13    |
| Adm.cost | 14    |

BETA

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | 0     | 0     | 0     | 0     |
| IJ | 0     | 0     | 0     | 0     |
| TS | 15    | 16    | 0     | 0     |
| TO | 17    | 18    | 0     | 0     |

GAMMA

|    | FI    |
|----|-------|
|    | ----- |
| PJ | 19    |
| IJ | 20    |
| TS | 0     |
| TO | 0     |

PSI

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | 21    |       |       |       |
| IJ | 22    | 23    |       |       |
| TS | 0     | 0     | 24    |       |
| TO | 0     | 0     | 0     | 25    |

THETA-EPS

| PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-------|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- |
| 26    | 27    | 28    | 29    | 30    | 31    |

THETA-EPS

| IJ5         | TS2         | TS3         | TO1         | TO3         | TO5         |
|-------------|-------------|-------------|-------------|-------------|-------------|
| -----<br>32 | -----<br>33 | -----<br>34 | -----<br>35 | -----<br>36 | -----<br>37 |

THETA-EPS

| TO6         |
|-------------|
| -----<br>38 |

THETA-DELTA

| Manageme    | Interest    | Operatin    | ROI         | Adm.cost    |
|-------------|-------------|-------------|-------------|-------------|
| -----<br>39 | -----<br>40 | -----<br>41 | -----<br>42 | -----<br>43 |

Number of Iterations = 13

LISREL Estimates (Robust Maximum Likelihood)

LAMBDA-Y

|     | PJ                         | IJ                         | TS                         | TO                         |
|-----|----------------------------|----------------------------|----------------------------|----------------------------|
| PJ1 | 1.027                      | - -                        | - -                        | - -                        |
| PJ2 | 0.969<br>(0.128)<br>7.564  | - -                        | - -                        | - -                        |
| PJ3 | 1.232<br>(0.103)<br>11.982 | - -                        | - -                        | - -                        |
| PJ4 | 1.113<br>(0.105)<br>10.605 | - -                        | - -                        | - -                        |
| PJ6 | 1.079<br>(0.113)<br>9.552  | - -                        | - -                        | - -                        |
| IJ2 | - -                        | 1.178                      | - -                        | - -                        |
| IJ5 | - -                        | 1.120<br>(0.102)<br>11.030 | - -                        | - -                        |
| TS2 | - -                        | - -                        | 1.325                      | - -                        |
| TS3 | - -                        | - -                        | 1.467<br>(0.092)<br>16.018 | - -                        |
| TO1 | - -                        | - -                        | - -                        | 1.225                      |
| TO3 | - -                        | - -                        | - -                        | 1.100<br>(0.081)<br>13.508 |
| TO5 | - -                        | - -                        | - -                        | 1.223<br>(0.059)<br>20.859 |

|     |     |     |     |         |
|-----|-----|-----|-----|---------|
| TO6 | - - | - - | - - | 0.930   |
|     |     |     |     | (0.128) |
|     |     |     |     | 7.256   |

LAMBDA-X

|          |         |
|----------|---------|
|          | FI      |
|          | -----   |
| Manageme | 0.883   |
|          | (0.175) |
|          | 5.052   |
| Interest | 1.859   |
|          | (0.213) |
|          | 8.739   |
| Operatin | 1.345   |
|          | (0.185) |
|          | 7.251   |
| ROI      | 1.508   |
|          | (0.189) |
|          | 7.959   |
| Adm.cost | 1.790   |
|          | (0.128) |
|          | 13.953  |

BETA

|    |         |         |       |       |
|----|---------|---------|-------|-------|
|    | PJ      | IJ      | TS    | TO    |
|    | -----   | -----   | ----- | ----- |
| PJ | - -     | - -     | - -   | - -   |
| IJ | - -     | - -     | - -   | - -   |
| TS | -0.080  | 1.007   | - -   | - -   |
|    | (0.060) | (0.092) |       |       |
|    | -1.346  | 10.995  |       |       |
| TO | 0.332   | 0.570   | - -   | - -   |
|    | (0.084) | (0.131) |       |       |
|    | 3.933   | 4.361   |       |       |

GAMMA

|    |         |
|----|---------|
|    | FI      |
|    | -----   |
| PJ | 0.169   |
|    | (0.126) |
|    | 1.343   |
| IJ | 0.027   |
|    | (0.137) |
|    | 0.199   |
| TS | - -     |
| TO | - -     |

Covariance Matrix of ETA and KSI

|    | PJ    | IJ    | TS    | TO    | FI    |
|----|-------|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- | ----- |
| PJ | 1.000 |       |       |       |       |
| IJ | 0.615 | 1.000 |       |       |       |
| TS | 0.538 | 0.957 | 1.000 |       |       |
| TO | 0.683 | 0.774 | 0.725 | 1.000 |       |
| FI | 0.169 | 0.027 | 0.014 | 0.072 | 1.000 |

PHI

| FI    | ----- |
|-------|-------|
| 1.000 |       |

PSI

|    | PJ                        | IJ                        | TS                        | TO                        |
|----|---------------------------|---------------------------|---------------------------|---------------------------|
|    | -----                     | -----                     | -----                     | -----                     |
| PJ | 0.971<br>(0.236)<br>4.115 |                           |                           |                           |
| IJ | 0.610<br>(0.188)<br>3.241 | 0.999<br>(0.247)<br>4.038 |                           |                           |
| TS | - -                       | - -                       | 0.079<br>(0.045)<br>1.762 |                           |
| TO | - -                       | - -                       | - -                       | 0.332<br>(0.088)<br>3.792 |

Squared Multiple Correlations for Structural Equations

|  | PJ    | IJ    | TS    | TO    |
|--|-------|-------|-------|-------|
|  | ----- | ----- | ----- | ----- |
|  | 0.029 | 0.001 | 0.921 | 0.668 |

NOTE: R<sup>2</sup> for Structural Equations are Hayduk's (2006) Blocked-Error R<sup>2</sup>

Reduced Form

|    | FI                        | ----- |
|----|---------------------------|-------|
| PJ | 0.169<br>(0.126)<br>1.336 |       |
| IJ | 0.027<br>(0.138)<br>0.198 |       |
| TS | 0.014<br>(0.134)<br>0.104 |       |
| TO | 0.072<br>(0.110)<br>0.649 |       |

Squared Multiple Correlations for Reduced Form

| PJ    | IJ    | TS    | TO    |
|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- |
| 0.029 | 0.001 | 0.000 | 0.005 |

THETA-EPS

| PJ1     | PJ2     | PJ3     | PJ4     | PJ6     | IJ2     |
|---------|---------|---------|---------|---------|---------|
| -----   | -----   | -----   | -----   | -----   | -----   |
| 0.617   | 0.829   | 0.364   | 0.499   | 0.640   | 0.576   |
| (0.134) | (0.170) | (0.080) | (0.102) | (0.134) | (0.323) |
| 4.619   | 4.878   | 4.523   | 4.872   | 4.768   | 1.785   |

THETA-EPS

| IJ5     | TS2     | TS3     | TO1     | TO3     | TO5     |
|---------|---------|---------|---------|---------|---------|
| -----   | -----   | -----   | -----   | -----   | -----   |
| 0.228   | 0.321   | 0.328   | 0.121   | 0.244   | 0.124   |
| (0.050) | (0.094) | (0.104) | (0.039) | (0.057) | (0.037) |
| 4.540   | 3.399   | 3.162   | 3.090   | 4.308   | 3.396   |

THETA-EPS

| TO6     |
|---------|
| -----   |
| 0.503   |
| (0.127) |
| 3.972   |

Squared Multiple Correlations for Y - Variables

| PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-------|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- |
| 0.631 | 0.531 | 0.807 | 0.713 | 0.645 | 0.707 |

Squared Multiple Correlations for Y - Variables

| IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|-------|-------|-------|-------|-------|-------|
| ----- | ----- | ----- | ----- | ----- | ----- |
| 0.846 | 0.846 | 0.868 | 0.925 | 0.832 | 0.923 |

Squared Multiple Correlations for Y - Variables

| TO6   |
|-------|
| ----- |
| 0.632 |

THETA-DELTA

| Manageme | Interest | Operatin | ROI     | Adm.cost |
|----------|----------|----------|---------|----------|
| -----    | -----    | -----    | -----   | -----    |
| 1.173    | 3.047    | 1.549    | 1.515   | 1.492    |
| (0.233)  | (0.640)  | (0.328)  | (0.257) | (0.307)  |
| 5.028    | 4.761    | 4.726    | 5.894   | 4.854    |

Squared Multiple Correlations for X - Variables

| Manageme | Interest | Operatin | ROI   | Adm.cost |
|----------|----------|----------|-------|----------|
| -----    | -----    | -----    | ----- | -----    |
| 0.399    | 0.531    | 0.539    | 0.600 | 0.682    |

Log-likelihood Values

|                              | Estimated Model<br>----- | Saturated Model<br>----- |
|------------------------------|--------------------------|--------------------------|
| Number of free parameters(t) | 43                       | 171                      |
| -2ln(L)                      | 1783.060                 | 1588.990                 |
| AIC (Akaike, 1974)*          | 1869.060                 | 1930.990                 |
| BIC (Schwarz, 1978)*         | 1982.768                 | 2383.181                 |

\*LISREL uses  $AIC = 2t - 2\ln(L)$  and  $BIC = t\ln(N) - 2\ln(L)$

Goodness-of-Fit Statistics

|   |                      |
|---|----------------------|
| Degrees of Freedom for (C1)-(C3)                | 128                  |
| Maximum Likelihood Ratio Chi-Square (C1)        | 194.070 (P = 0.0001) |
| Browne's (1984) ADF Chi-Square (C2_NT)          | 200.685 (P = 0.0000) |
| Satorra-Bentler (1988) Scaled Chi-Square (C3)   | 162.675 (P = 0.0208) |
| Satorra-Bentler (1988) Adjusted Chi-Square (C4) | 30.931 (P = 0.1673)  |
| Degrees of Freedom for C4                       | 24.338               |
| Estimated Non-centrality Parameter (NCP)        | 66.070               |
| 90 Percent Confidence Interval for NCP          | (32.481 ; 107.622)   |
| Minimum Fit Function Value                      | 1.866                |
| Population Discrepancy Function Value (F0)      | 0.635                |
| 90 Percent Confidence Interval for F0           | (0.312 ; 1.035)      |
| Root Mean Square Error of Approximation (RMSEA) | 0.0704               |
| 90 Percent Confidence Interval for RMSEA        | (0.0494 ; 0.0899)    |
| P-Value for Test of Close Fit (RMSEA < 0.05)    | 0.0545               |
| Expected Cross-Validation Index (ECVI)          | 2.693                |
| 90 Percent Confidence Interval for ECVI         | (2.370 ; 3.093)      |
| ECVI for Saturated Model                        | 3.288                |
| ECVI for Independence Model                     | 16.921               |
| Chi-Square for Independence Model (153 df)      | 1723.739             |
| Normed Fit Index (NFI)                          | 0.887                |
| Non-Normed Fit Index (NNFI)                     | 0.950                |
| Parsimony Normed Fit Index (PNFI)               | 0.742                |
| Comparative Fit Index (CFI)                     | 0.958                |
| Incremental Fit Index (IFI)                     | 0.959                |
| Relative Fit Index (RFI)                        | 0.865                |
| Critical N (CN)                                 | 90.235               |
| Root Mean Square Residual (RMR)                 | 0.155                |
| Standardized RMR                                | 0.0589               |
| Goodness of Fit Index (GFI)                     | 0.823                |
| Adjusted Goodness of Fit Index (AGFI)           | 0.764                |
| Parsimony Goodness of Fit Index (PGFI)          | 0.616                |

Robust Financial Model

Fitted Covariance Matrix

|          | PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|----------|-------|-------|-------|-------|-------|-------|
| PJ1      | 1.671 |       |       |       |       |       |
| PJ2      | 0.995 | 1.768 |       |       |       |       |
| PJ3      | 1.265 | 1.194 | 1.881 |       |       |       |
| PJ4      | 1.143 | 1.079 | 1.371 | 1.738 |       |       |
| PJ6      | 1.108 | 1.046 | 1.329 | 1.201 | 1.804 |       |
| IJ2      | 0.743 | 0.702 | 0.892 | 0.806 | 0.781 | 1.963 |
| IJ5      | 0.707 | 0.667 | 0.848 | 0.766 | 0.743 | 1.319 |
| TS2      | 0.732 | 0.692 | 0.879 | 0.794 | 0.770 | 1.495 |
| TS3      | 0.811 | 0.766 | 0.973 | 0.879 | 0.852 | 1.655 |
| TO1      | 0.858 | 0.810 | 1.030 | 0.931 | 0.902 | 1.117 |
| TO3      | 0.771 | 0.728 | 0.925 | 0.836 | 0.811 | 1.004 |
| TO5      | 0.857 | 0.809 | 1.028 | 0.929 | 0.901 | 1.115 |
| TO6      | 0.652 | 0.616 | 0.782 | 0.707 | 0.685 | 0.848 |
| Manageme | 0.153 | 0.145 | 0.184 | 0.166 | 0.161 | 0.028 |
| Interest | 0.322 | 0.304 | 0.387 | 0.349 | 0.339 | 0.060 |
| Operatin | 0.233 | 0.220 | 0.280 | 0.253 | 0.245 | 0.043 |
| ROI      | 0.261 | 0.247 | 0.314 | 0.283 | 0.275 | 0.048 |
| Adm.cost | 0.310 | 0.293 | 0.372 | 0.336 | 0.326 | 0.058 |

Fitted Covariance Matrix

|          | IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|----------|-------|-------|-------|-------|-------|-------|
| IJ5      | 1.483 |       |       |       |       |       |
| TS2      | 1.421 | 2.077 |       |       |       |       |
| TS3      | 1.574 | 1.945 | 2.481 |       |       |       |
| TO1      | 1.062 | 1.176 | 1.302 | 1.621 |       |       |
| TO3      | 0.954 | 1.057 | 1.170 | 1.348 | 1.455 |       |
| TO5      | 1.061 | 1.175 | 1.301 | 1.498 | 1.346 | 1.621 |
| TO6      | 0.807 | 0.893 | 0.989 | 1.139 | 1.024 | 1.138 |
| Manageme | 0.027 | 0.016 | 0.018 | 0.078 | 0.070 | 0.077 |
| Interest | 0.057 | 0.034 | 0.038 | 0.163 | 0.147 | 0.163 |
| Operatin | 0.041 | 0.025 | 0.027 | 0.118 | 0.106 | 0.118 |
| ROI      | 0.046 | 0.028 | 0.031 | 0.132 | 0.119 | 0.132 |
| Adm.cost | 0.055 | 0.033 | 0.037 | 0.157 | 0.141 | 0.157 |

Fitted Covariance Matrix

|          | TO6   | Manageme | Interest | Operatin | ROI   | Adm.cost |
|----------|-------|----------|----------|----------|-------|----------|
| TO6      | 1.369 |          |          |          |       |          |
| Manageme | 0.059 | 1.954    |          |          |       |          |
| Interest | 0.124 | 1.642    | 6.504    |          |       |          |
| Operatin | 0.090 | 1.188    | 2.501    | 3.358    |       |          |
| ROI      | 0.101 | 1.332    | 2.803    | 2.028    | 3.788 |          |
| Adm.cost | 0.119 | 1.581    | 3.328    | 2.407    | 2.699 | 4.697    |

Fitted Residuals

|     | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|-----|--------|--------|--------|--------|--------|--------|
| PJ1 | 0.000  |        |        |        |        |        |
| PJ2 | -0.031 | 0.000  |        |        |        |        |
| PJ3 | -0.044 | 0.092  | 0.000  |        |        |        |
| PJ4 | 0.077  | -0.121 | -0.034 | 0.000  |        |        |
| PJ6 | -0.074 | 0.102  | 0.037  | 0.008  | 0.000  |        |
| IJ2 | 0.128  | -0.039 | 0.044  | 0.038  | -0.093 | 0.000  |
| IJ5 | 0.146  | -0.157 | -0.037 | 0.059  | -0.118 | -0.024 |
| TS2 | 0.032  | -0.122 | 0.035  | 0.017  | 0.016  | 0.046  |
| TS3 | 0.103  | -0.182 | 0.034  | -0.031 | -0.011 | 0.007  |
| TO1 | 0.080  | -0.151 | -0.033 | 0.072  | -0.063 | -0.015 |

|          |        |        |        |        |        |        |
|----------|--------|--------|--------|--------|--------|--------|
| TO3      | 0.050  | -0.148 | -0.005 | 0.134  | -0.013 | -0.046 |
| TO5      | 0.079  | -0.110 | -0.015 | 0.116  | -0.138 | 0.025  |
| TO6      | 0.206  | -0.030 | -0.003 | 0.070  | -0.088 | -0.042 |
| Manageme | 0.058  | -0.210 | 0.018  | 0.042  | -0.036 | 0.134  |
| Interest | -0.019 | 0.020  | -0.009 | -0.005 | 0.031  | -0.076 |
| Operatin | 0.296  | -0.024 | 0.217  | 0.136  | -0.091 | -0.088 |
| ROI      | 0.130  | -0.333 | -0.032 | 0.165  | -0.418 | 0.036  |
| Adm.cost | 0.101  | -0.045 | 0.018  | -0.033 | -0.110 | 0.221  |

Fitted Residuals

|          | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|----------|--------|--------|--------|--------|--------|--------|
|          | -----  | -----  | -----  | -----  | -----  | -----  |
| IJ5      | 0.000  |        |        |        |        |        |
| TS2      | 0.000  | 0.000  |        |        |        |        |
| TS3      | 0.002  | 0.000  | 0.000  |        |        |        |
| TO1      | 0.051  | -0.060 | 0.028  | 0.000  |        |        |
| TO3      | 0.009  | -0.105 | -0.040 | -0.007 | 0.000  |        |
| TO5      | 0.040  | -0.048 | -0.058 | -0.002 | 0.012  | 0.000  |
| TO6      | 0.067  | -0.161 | -0.022 | 0.023  | -0.014 | -0.019 |
| Manageme | 0.196  | 0.000  | 0.080  | 0.156  | 0.228  | 0.126  |
| Interest | -0.197 | -0.063 | -0.235 | -0.726 | -0.507 | -0.523 |
| Operatin | 0.054  | -0.093 | -0.206 | 0.065  | 0.012  | 0.097  |
| ROI      | 0.061  | 0.163  | 0.057  | -0.080 | -0.082 | -0.029 |
| Adm.cost | -0.021 | -0.053 | 0.063  | -0.348 | -0.246 | -0.228 |

Fitted Residuals

|          | TO6    | Manageme | Interest | Operatin | ROI    | Adm.cost |
|----------|--------|----------|----------|----------|--------|----------|
|          | -----  | -----    | -----    | -----    | -----  | -----    |
| TO6      | 0.000  |          |          |          |        |          |
| Manageme | 0.199  | 0.000    |          |          |        |          |
| Interest | -0.556 | -0.532   | 0.000    |          |        |          |
| Operatin | 0.085  | 0.262    | -0.082   | 0.000    |        |          |
| ROI      | -0.083 | 0.209    | -0.275   | 0.140    | 0.000  |          |
| Adm.cost | -0.219 | -0.084   | 0.614    | -0.264   | -0.077 | 0.000    |

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -0.726  
Median Fitted Residual = 0.000  
Largest Fitted Residual = 0.614

Stemleaf Plot

```

- 7|3
- 6|
- 5|6321
- 4|2
- 3|53
- 2|865432110
- 1|866554222110
- 0|99999888888876666555544444333333322222211111000000000000000000000000
0|1111122222333334444445555666667777888889
1|0000233333445667
2|00112236
3|0
4|
5|
6|1

```



Standardized Residuals

|          | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|----------|--------|--------|--------|--------|--------|--------|
| PJ1      | 0.000  |        |        |        |        |        |
| PJ2      | -0.127 | 0.000  |        |        |        |        |
| PJ3      | -0.186 | 0.398  | 0.000  |        |        |        |
| PJ4      | 0.317  | -0.574 | -0.148 | 0.000  |        |        |
| PJ6      | -0.344 | 0.474  | 0.163  | 0.035  | 0.000  |        |
| IJ2      | 0.515  | -0.172 | 0.179  | 0.138  | -0.395 | 0.000  |
| IJ5      | 0.588  | -0.719 | -0.158 | 0.214  | -0.657 | -0.070 |
| TS2      | 0.182  | -0.593 | 0.166  | 0.055  | 0.065  | 0.125  |
| TS3      | 0.516  | -0.976 | 0.286  | -0.133 | -0.054 | 0.020  |
| TO1      | 0.270  | -0.725 | -0.131 | 0.261  | -0.291 | -0.043 |
| TO3      | 0.229  | -0.765 | -0.023 | 0.564  | -0.068 | -0.159 |
| TO5      | 0.287  | -0.448 | -0.060 | 0.426  | -0.591 | 0.075  |
| TO6      | 0.881  | -0.200 | -0.013 | 0.341  | -0.470 | -0.131 |
| Manageme | 0.209  | -1.239 | 0.071  | 0.164  | -0.176 | 0.534  |
| Interest | -0.061 | 0.058  | -0.027 | -0.016 | 0.105  | -0.228 |
| Operatin | 1.298  | -0.499 | 0.825  | 0.551  | -0.344 | -0.349 |
| ROI      | 0.459  | -1.414 | -0.113 | 0.611  | -1.462 | 0.130  |
| Adm.cost | 0.366  | -0.212 | 0.058  | -0.121 | -0.387 | 0.717  |

Standardized Residuals

|          | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|----------|--------|--------|--------|--------|--------|--------|
| IJ5      | 0.000  |        |        |        |        |        |
| TS2      | 0.000  | 0.000  |        |        |        |        |
| TS3      | 0.005  | 0.000  | 0.000  |        |        |        |
| TO1      | 0.137  | -0.170 | 0.077  | 0.000  |        |        |
| TO3      | 0.027  | -0.354 | -0.126 | -0.021 | 0.000  |        |
| TO5      | 0.120  | -0.148 | -0.156 | -0.005 | 0.039  | 0.000  |
| TO6      | 0.180  | -0.493 | -0.066 | 0.061  | -0.043 | -0.052 |
| Manageme | 0.647  | 0.000  | 0.247  | 0.503  | 0.753  | 0.421  |
| Interest | -0.738 | -0.165 | -0.614 | -2.422 | -1.920 | -1.698 |
| Operatin | 0.198  | -0.341 | -0.594 | 0.206  | 0.038  | 0.308  |
| ROI      | 0.197  | 0.559  | 0.166  | -0.251 | -0.269 | -0.089 |
| Adm.cost | -0.076 | -0.168 | 0.169  | -1.209 | -1.113 | -1.199 |

Standardized Residuals

|          | TO6    | Manageme | Interest | Operatin | ROI    | Adm.cost |
|----------|--------|----------|----------|----------|--------|----------|
| TO6      | 0.000  |          |          |          |        |          |
| Manageme | 0.637  | 0.000    |          |          |        |          |
| Interest | -1.969 | -        | 0.000    |          |        |          |
| Operatin | 0.274  | 0.629    | -0.180   | 0.000    |        |          |
| ROI      | -0.266 | 0.508    | -0.577   | 0.283    | 0.000  |          |
| Adm.cost | -0.827 | -0.245   | 1.321    | -0.691   | -0.180 | 0.000    |

Summary Statistics for Standardized Residuals

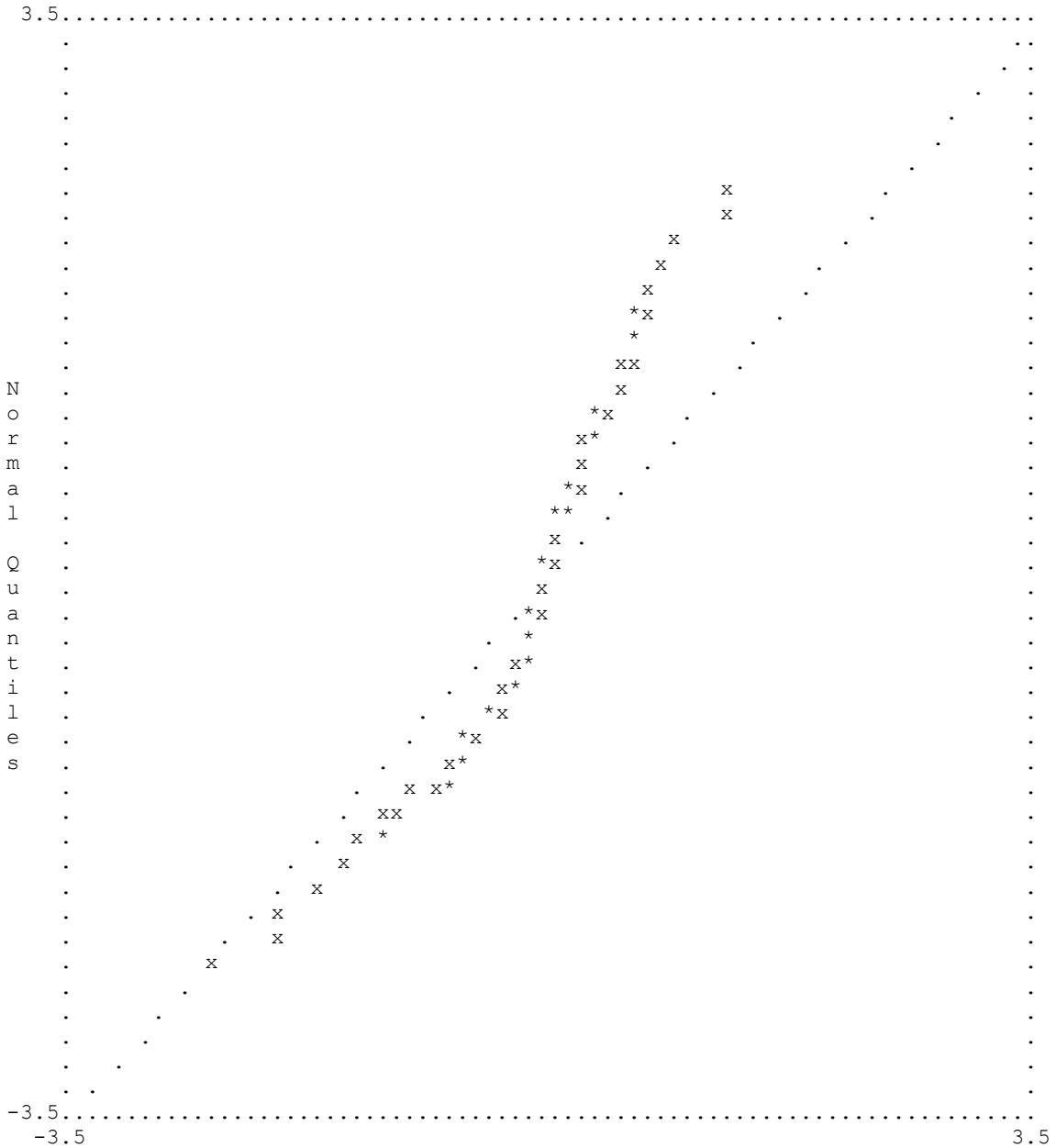
Smallest Standardized Residual = -2.422  
 Median Standardized Residual = 0.000  
 Largest Standardized Residual = 1.321

Stemleaf Plot

```

-24|2
-22|
-20|
-18|72
-16|0
-14|61
-12|410
-10|1
- 8|83
- 6|6422961
- 4|999870975
- 2|995544497755310
- 0|988877776665533332198777665544322211000000000000000000000
  0|1233446666677802234466777888
  2|00111356778991247
  4|02367012235669
  6|134525
  8|38
 10|
 12|02
  
```

Qplot of Standardized Residuals



Modification Indices and Expected Change

Modification Indices for LAMBDA-Y

|     | PJ    | IJ    | TS    | TO    |
|-----|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- |
| PJ1 | - -   | 2.213 | 1.274 | 1.653 |
| PJ2 | - -   | 3.664 | 3.059 | 5.070 |
| PJ3 | - -   | 0.003 | 0.123 | 0.206 |
| PJ4 | - -   | 0.353 | 0.052 | 3.137 |
| PJ6 | - -   | 0.810 | 0.188 | 1.444 |
| IJ2 | 0.110 | - -   | 0.037 | 0.012 |
| IJ5 | - -   | - -   | - -   | - -   |
| TS2 | 0.007 | - -   | - -   | 2.171 |
| TS3 | 0.007 | - -   | - -   | 0.008 |
| TO1 | 0.266 | 0.520 | 0.943 | - -   |
| TO3 | - -   | - -   | - -   | - -   |
| TO5 | 0.016 | - -   | - -   | - -   |
| TO6 | - -   | - -   | - -   | - -   |

Expected Change for LAMBDA-Y

|     | PJ     | IJ     | TS     | TO     |
|-----|--------|--------|--------|--------|
|     | -----  | -----  | -----  | -----  |
| PJ1 | - -    | 0.160  | 0.114  | 0.145  |
| PJ2 | - -    | -0.291 | -0.233 | -0.398 |
| PJ3 | - -    | 0.005  | 0.034  | -0.049 |
| PJ4 | - -    | 0.062  | 0.022  | 0.195  |
| PJ6 | - -    | -0.097 | -0.045 | -0.133 |
| IJ2 | 0.035  | - -    | 0.025  | -0.013 |
| IJ5 | - -    | - -    | - -    | - -    |
| TS2 | 0.008  | - -    | - -    | -0.175 |
| TS3 | -0.008 | - -    | - -    | 0.011  |
| TO1 | -0.037 | 0.065  | 0.076  | - -    |
| TO3 | - -    | - -    | - -    | - -    |
| TO5 | -0.017 | - -    | - -    | - -    |
| TO6 | - -    | - -    | - -    | - -    |

No Non-Zero Modification Indices for LAMBDA-X

Modification Indices for BETA

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | - -   | - -   | - -   | 0.285 |
| IJ | - -   | - -   | - -   | - -   |
| TS | - -   | - -   | - -   | 1.977 |
| TO | - -   | - -   | - -   | - -   |

Expected Change for BETA

|    | PJ    | IJ    | TS    | TO     |
|----|-------|-------|-------|--------|
|    | ----- | ----- | ----- | -----  |
| PJ | - -   | - -   | - -   | 0.187  |
| IJ | - -   | - -   | - -   | - -    |
| TS | - -   | - -   | - -   | -0.129 |
| TO | - -   | - -   | - -   | - -    |

Modification Indices for GAMMA

|    | FI    |
|----|-------|
|    | ----- |
| PJ | - -   |
| IJ | - -   |
| TS | 0.070 |
| TO | 1.517 |

Expected Change for GAMMA

|    | FI     |
|----|--------|
|    | -----  |
| PJ | - -    |
| IJ | - -    |
| TS | -0.015 |
| TO | -0.084 |

No Non-Zero Modification Indices for PHI

Modification Indices for PSI

|    | PJ    | IJ    | TS    | TO    |
|----|-------|-------|-------|-------|
|    | ----- | ----- | ----- | ----- |
| PJ | - -   |       |       |       |
| IJ | - -   | - -   |       |       |
| TS | 0.006 | - -   | - -   |       |
| TO | 0.448 | - -   | 4.402 | - -   |

Expected Change for PSI

|    | PJ    | IJ    | TS     | TO    |
|----|-------|-------|--------|-------|
|    | ----- | ----- | -----  | ----- |
| PJ | - -   |       |        |       |
| IJ | - -   | - -   |        |       |
| TS | 0.005 | - -   | - -    |       |
| TO | 0.097 | - -   | -0.095 | - -   |

Modification Indices for THETA-EPS

|     | PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-----|-------|-------|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- | ----- | ----- |
| PJ1 | - -   |       |       |       |       |       |
| PJ2 | 0.287 | - -   |       |       |       |       |
| PJ3 | 3.219 | 7.318 | - -   |       |       |       |
| PJ4 | 4.360 | 6.049 | 3.462 | - -   |       |       |
| PJ6 | 2.331 | 3.017 | 1.908 | 0.038 | - -   |       |
| IJ2 | 0.054 | 1.101 | 0.324 | 0.106 | 1.002 | - -   |
| IJ5 | 4.649 | 1.181 | 2.531 | 2.290 | 3.364 | - -   |
| TS2 | 3.081 | 0.141 | 0.379 | 0.002 | 1.907 | 5.903 |
| TS3 | 0.055 | 0.398 | 0.678 | 2.515 | 0.803 | - -   |
| TO1 | 0.058 | 0.512 | 0.106 | 0.634 | 1.997 | 1.108 |
| TO3 | 1.319 | 1.417 | 0.020 | 1.521 | 2.110 | 0.258 |
| TO5 | 0.028 | 0.498 | 0.102 | 1.607 | 6.745 | 2.383 |
| TO6 | 5.616 | 0.516 | 0.273 | 0.441 | 1.019 | 0.359 |

Modification Indices for THETA-EPS

|     | IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|-----|-------|-------|-------|-------|-------|-------|
|     | ----- | ----- | ----- | ----- | ----- | ----- |
| IJ5 | - -   |       |       |       |       |       |
| TS2 | - -   | - -   |       |       |       |       |
| TS3 | 0.007 | - -   | - -   |       |       |       |
| TO1 | 0.035 | 1.072 | 3.966 | - -   |       |       |
| TO3 | 0.018 | 0.478 | 0.245 | 2.848 | - -   |       |
| TO5 | 0.005 | 3.036 | 7.366 | - -   | 3.287 | - -   |
| TO6 | 2.961 | 5.880 | 0.840 | 2.631 | 0.229 | 1.666 |

Modification Indices for THETA-EPS

|     | TO6   |
|-----|-------|
|     | ----- |
| TO6 | - -   |

Expected Change for THETA-EPS

|     | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|-----|--------|--------|--------|--------|--------|--------|
|     | -----  | -----  | -----  | -----  | -----  | -----  |
| PJ1 | - -    |        |        |        |        |        |
| PJ2 | -0.046 | - -    |        |        |        |        |
| PJ3 | -0.158 | 0.233  | - -    |        |        |        |
| PJ4 | 0.169  | -0.201 | -0.178 | - -    |        |        |
| PJ6 | -0.120 | 0.152  | 0.117  | 0.015  | - -    |        |
| IJ2 | 0.016  | 0.081  | 0.034  | -0.021 | -0.070 | - -    |
| IJ5 | 0.105  | -0.060 | -0.068 | 0.069  | -0.091 | - -    |
| TS2 | -0.099 | 0.024  | 0.030  | -0.003 | 0.080  | 0.304  |
| TS3 | 0.014  | -0.043 | 0.043  | -0.089 | 0.055  | - -    |
| TO1 | 0.009  | -0.029 | -0.010 | -0.027 | 0.052  | -0.038 |
| TO3 | -0.051 | -0.060 | -0.005 | 0.051  | 0.066  | -0.022 |
| TO5 | -0.006 | 0.029  | 0.010  | 0.043  | -0.097 | 0.056  |
| TO6 | 0.143  | 0.049  | -0.027 | -0.037 | -0.062 | -0.035 |

Expected Change for THETA-EPS

|     | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|-----|--------|--------|--------|--------|--------|--------|
|     | -----  | -----  | -----  | -----  | -----  | -----  |
| IJ5 | - -    |        |        |        |        |        |
| TS2 | - -    | - -    |        |        |        |        |
| TS3 | 0.005  | - -    | - -    |        |        |        |
| TO1 | 0.005  | -0.031 | 0.062  | - -    |        |        |
| TO3 | -0.004 | -0.025 | 0.019  | -0.120 | - -    |        |
| TO5 | 0.002  | 0.052  | -0.085 | - -    | 0.081  | - -    |
| TO6 | 0.072  | -0.119 | 0.048  | 0.067  | -0.020 | -0.054 |

Expected Change for THETA-EPS

|     | TO6   |
|-----|-------|
|     | ----- |
| TO6 | - -   |

Modification Indices for THETA-DELTA-EPS

|           | PJ1   | PJ2   | PJ3   | PJ4   | PJ6   | IJ2   |
|-----------|-------|-------|-------|-------|-------|-------|
|           | ----- | ----- | ----- | ----- | ----- | ----- |
| Managemen | 0.040 | 3.213 | 0.114 | 0.001 | 0.100 | 0.043 |
| Interest  | 0.791 | 1.927 | 0.001 | 0.052 | 3.782 | 0.138 |
| Operatin  | 1.247 | 0.115 | 0.853 | 0.185 | 1.333 | 1.952 |
| ROI       | 0.931 | 3.553 | 0.022 | 5.866 | 8.889 | 0.854 |
| Adm.cost  | 0.000 | 1.334 | 0.002 | 1.180 | 0.658 | 4.697 |

Modification Indices for THETA-DELTA-EPS

|          | IJ5   | TS2   | TS3   | TO1   | TO3   | TO5   |
|----------|-------|-------|-------|-------|-------|-------|
|          | ----- | ----- | ----- | ----- | ----- | ----- |
| Manageme | 3.337 | 3.337 | 0.010 | 0.693 | 3.503 | 2.221 |
| Interest | 0.550 | 2.152 | 0.064 | 4.525 | 0.042 | 0.445 |
| Operatin | 1.933 | 0.006 | 2.955 | 1.363 | 0.862 | 0.118 |
| ROI      | 0.042 | 2.300 | 0.104 | 0.505 | 0.352 | 0.060 |
| Adm.cost | 1.310 | 1.620 | 2.941 | 1.423 | 0.036 | 0.109 |

Modification Indices for THETA-DELTA-EPS

|          | TO6   |
|----------|-------|
|          | ----- |
| Manageme | 1.417 |
| Interest | 0.951 |
| Operatin | 0.263 |
| ROI      | 0.179 |
| Adm.cost | 0.024 |

Expected Change for THETA-DELTA-EPS

|          | PJ1    | PJ2    | PJ3    | PJ4    | PJ6    | IJ2    |
|----------|--------|--------|--------|--------|--------|--------|
|          | -----  | -----  | -----  | -----  | -----  | -----  |
| Manageme | -0.019 | -0.191 | -0.027 | -0.002 | 0.031  | -0.019 |
| Interest | -0.140 | 0.246  | -0.004 | -0.033 | 0.312  | 0.057  |
| Operatin | 0.125  | -0.043 | 0.090  | -0.045 | -0.133 | -0.153 |
| ROI      | 0.110  | -0.243 | -0.015 | 0.257  | -0.348 | -0.103 |
| Adm.cost | 0.000  | 0.156  | 0.004  | -0.121 | 0.099  | 0.253  |

Expected Change for THETA-DELTA-EPS

|          | IJ5    | TS2    | TS3    | TO1    | TO3    | TO5    |
|----------|--------|--------|--------|--------|--------|--------|
|          | -----  | -----  | -----  | -----  | -----  | -----  |
| Manageme | 0.119  | -0.139 | -0.008 | 0.041  | 0.112  | -0.073 |
| Interest | -0.081 | 0.186  | -0.034 | -0.173 | 0.020  | 0.055  |
| Operatin | 0.108  | -0.007 | -0.165 | 0.068  | -0.066 | 0.020  |
| ROI      | -0.016 | 0.140  | -0.031 | 0.042  | -0.043 | 0.015  |
| Adm.cost | -0.095 | -0.123 | 0.176  | -0.074 | -0.014 | 0.021  |

Expected Change for THETA-DELTA-EPS

|          | TO6    |
|----------|--------|
|          | -----  |
| Manageme | 0.097  |
| Interest | -0.132 |
| Operatin | 0.050  |
| ROI      | -0.042 |
| Adm.cost | -0.016 |

Modification Indices for THETA-DELTA

|          | Manageme | Interest | Operatin | ROI   | Adm.cost |
|----------|----------|----------|----------|-------|----------|
|          | -----    | -----    | -----    | ----- | -----    |
| Manageme | - -      |          |          |       |          |
| Interest | 13.771   | - -      |          |       |          |
| Operatin | 6.454    | 0.345    | - -      |       |          |
| ROI      | 4.207    | 3.814    | 2.112    | - -   |          |
| Adm.cost | 0.816    | 44.301   | 8.891    | 1.167 | - -      |

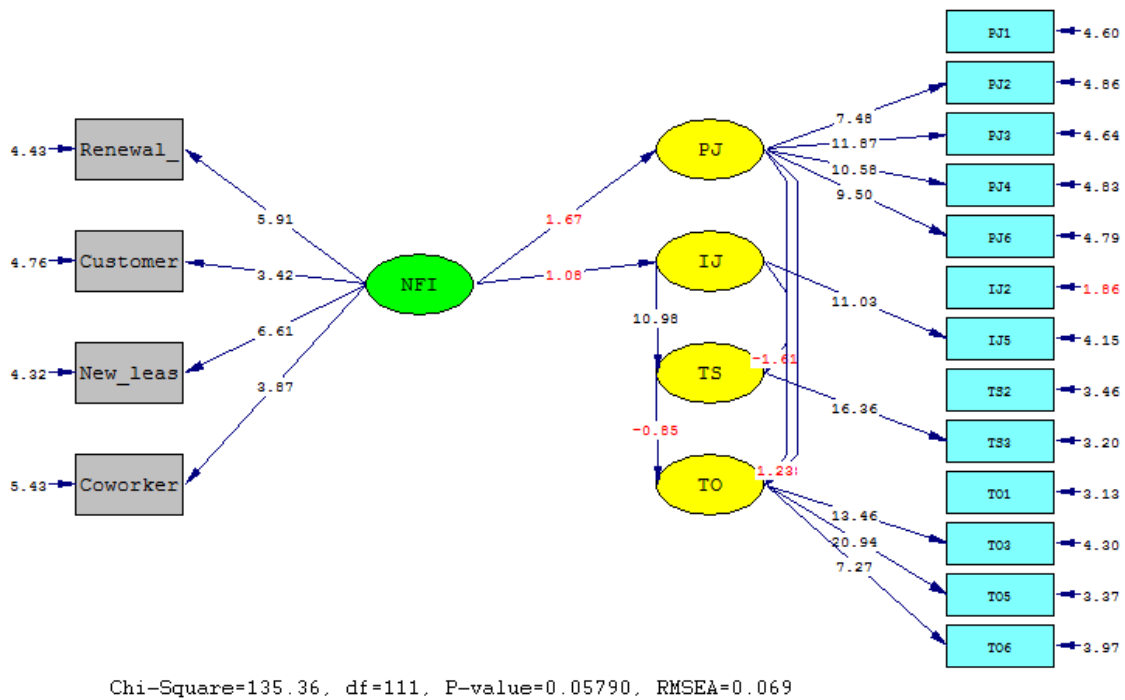
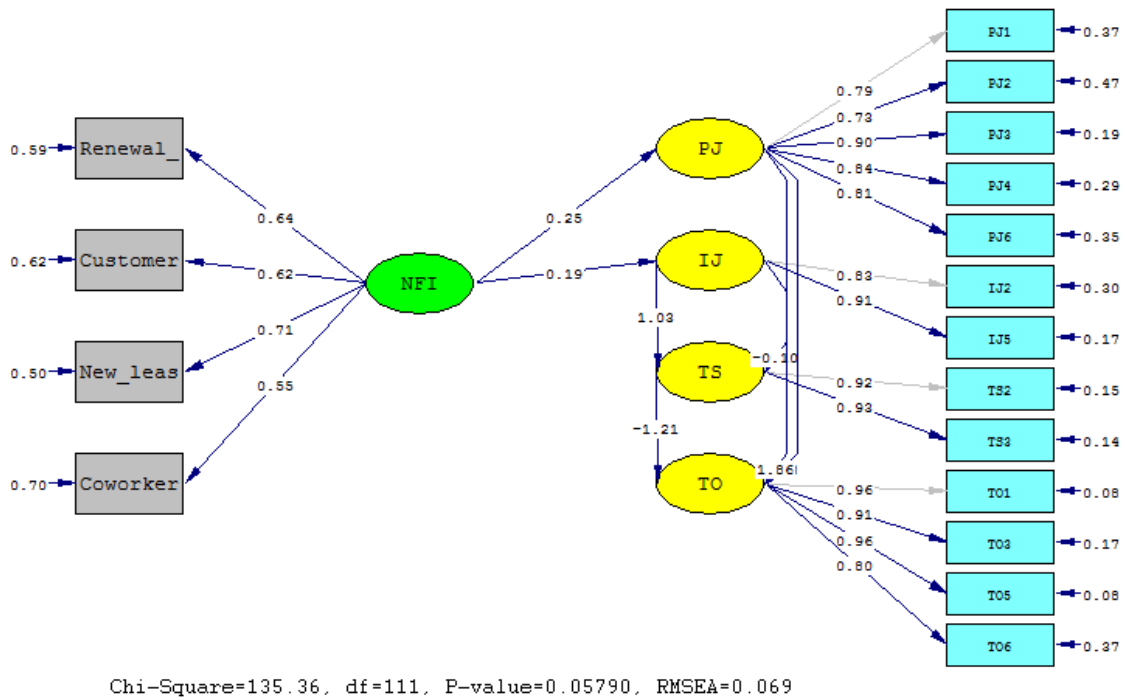
Expected Change for THETA-DELTA

|          | Manageme | Interest | Operatin | ROI    | Adm.cost |
|----------|----------|----------|----------|--------|----------|
|          | -----    | -----    | -----    | -----  | -----    |
| Manageme | - -      |          |          |        |          |
| Interest | -0.898   | - -      |          |        |          |
| Operatin | 0.435    | -0.192   | - -      |        |          |
| ROI      | 0.347    | -0.621   | 0.345    | - -    |          |
| Adm.cost | -0.164   | 3.184    | -0.757   | -0.332 | - -      |

Maximum Modification Index is 44.30 for Element ( 5, 2) of THETA-DELTA

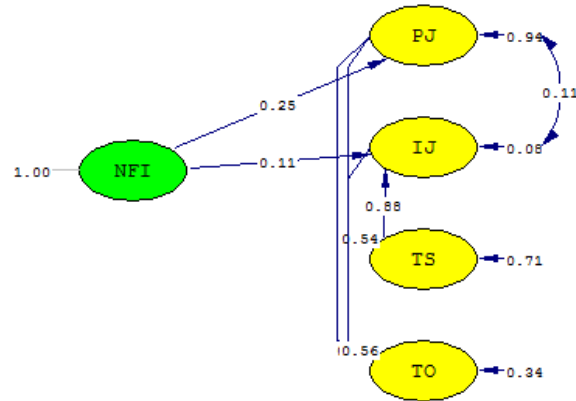
Time used 6.053 seconds

**F3.** Path diagram (standardized values and T-values) of model with direct effect of trust in superior on trust in organization.

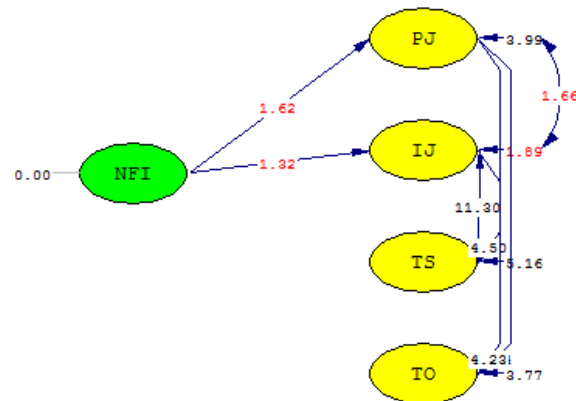




**F4.** Path diagram (standardized values and T-values) of model with reversed effect of trust in superior on interactional justice (i.e. TS → IJ). Structural model for clarity.

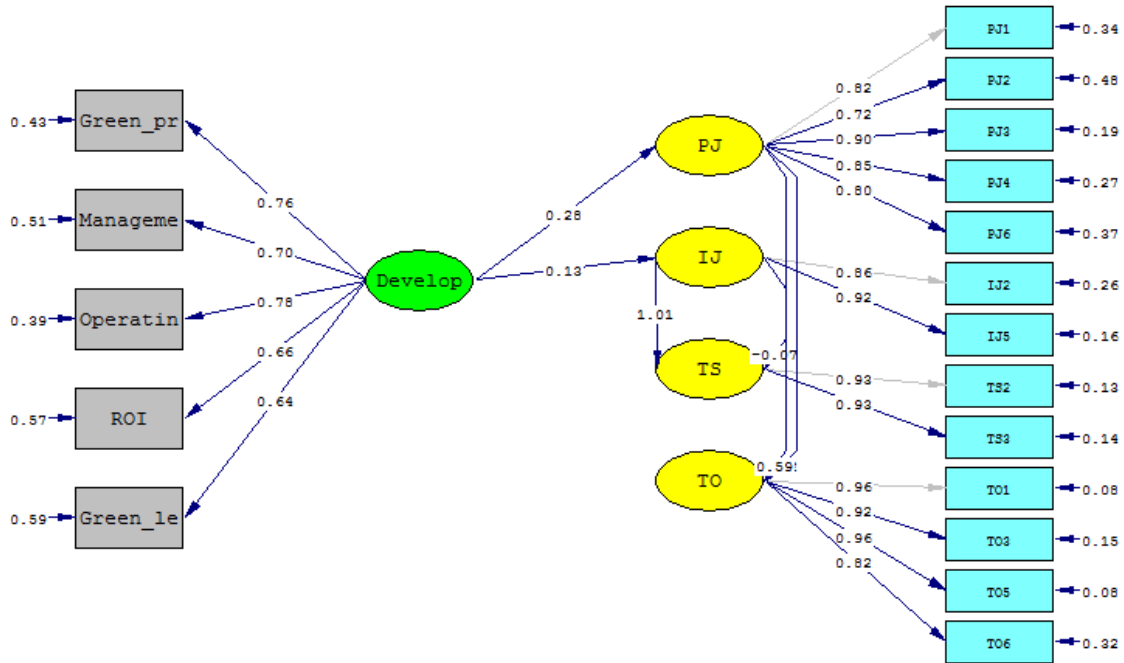


Chi-Square=136.28, df=112, P-value=0.05918, RMSEA=0.069

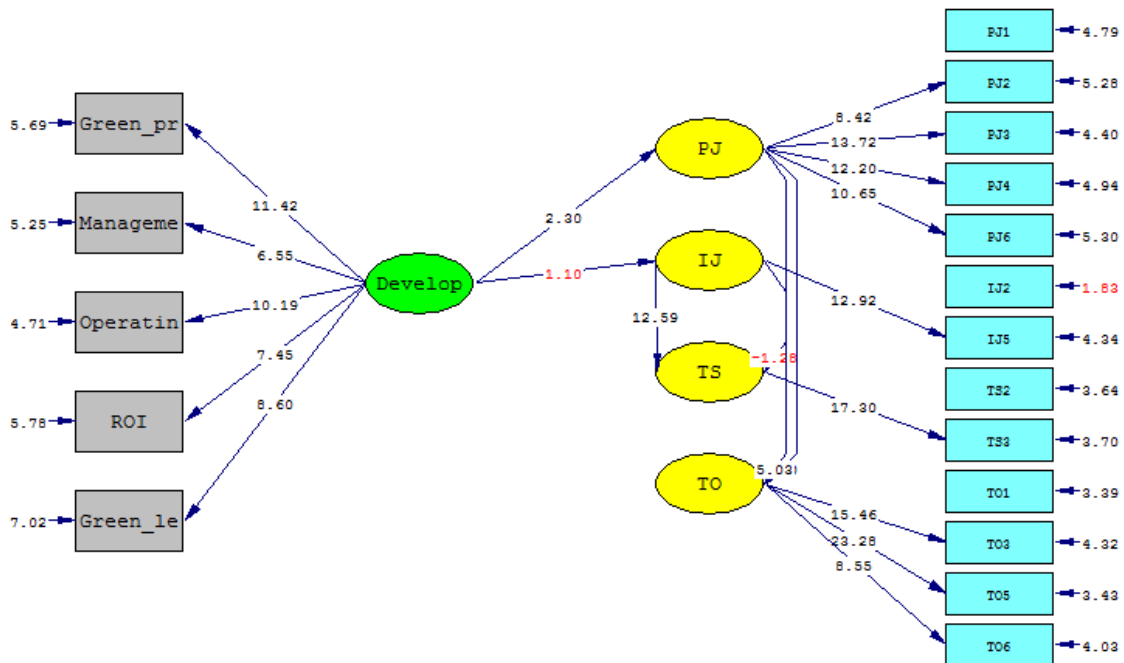


Chi-Square=136.28, df=112, P-value=0.05918, RMSEA=0.069

**F5.** Path diagram (standardized values and T-values) of model with KPIs according to organizational strategy. The latent variable “development through investment” reflects the organization’s green vision, with return and expenses related to accompanying investment.



Chi-Square=175.54, df=128, P-value=0.00339, RMSEA=0.075



Chi-Square=175.54, df=128, P-value=0.00339, RMSEA=0.075

## Appendix G – Calculation of composite reliability and average variance extracted

**G1.** Calculation of composite reliability measure. Calculated based on standardized estimates<sup>25</sup>:

$$\rho_c = \frac{(\sum_i^r \lambda_i)^2}{(\sum_i^r \lambda_i)^2 + \sum_i^r Var(\delta_i)}$$

*NFI:*

$$\rho_c = \frac{(0.64 + 0.62 + 0.71 + 0.55)^2}{(0.64 + 0.62 + 0.71 + 0.55)^2 + (0.60 + 0.61 + 0.50 + 0.70)} = 0.725$$

*FI:*

$$\rho_c = \frac{(0.63 + 0.73 + 0.73 + 0.77 + 0.83)^2}{(0.63 + 0.73 + 0.73 + 0.77 + 0.83)^2 + (0.60 + 0.47 + 0.46 + 0.40 + 0.32)} = 0.855$$

*PJ:*

$$\rho_c = \frac{(0.73 + 0.90 + 0.84 + 0.81)^2}{(0.73 + 0.90 + 0.84 + 0.81)^2 + (0.47 + 0.19 + 0.29 + 0.35)} = 0.892$$

*IJ:*

$$\rho_c = \frac{(0.92)^2}{(0.92)^2 + (0.15)} = 0.849$$

*TS:*

$$\rho_c = \frac{(0.93)^2}{(0.93)^2 + (0.13)} = 0.869$$

*TO:*

$$\rho_c = \frac{(0.91 + 0.96 + 0.80)^2}{(0.91 + 0.96 + 0.80)^2 + (0.17 + 0.08 + 0.37)} = 0.920$$

---

<sup>25</sup> CR calculation of PJ, IJ, TS and TO is calculated with the non-financial model estimates. The estimates between the non-financial and financial models are almost equivalent, yielding the same conclusion.

**G2.** Calculation of average variance extracted. Calculated based on standardized estimates<sup>26</sup>:

$$\rho_c = \frac{\sum_i^r \lambda_i^2}{\sum_i^r \lambda_i^2 + \sum_i^r Var(\delta_i)}$$

*NFI:*

$$\rho_c = \frac{0.64^2 + 0.62^2 + 0.71^2 + 0.55^2}{0.64^2 + 0.62^2 + 0.71^2 + 0.55^2 + (0.60 + 0.61 + 0.50 + 0.70)} = 0.399$$

*FI:*

$$\begin{aligned} \rho_c &= \frac{0.63^2 + 0.73^2 + 0.73^2 + 0.77^2 + 0.83^2}{0.63^2 + 0.73^2 + 0.73^2 + 0.77^2 + 0.83^2 + (0.60 + 0.47 + 0.46 + 0.40 + 0.32)} \\ &= 0.550 \end{aligned}$$

*PJ:*

$$\rho_c = \frac{0.73^2 + 0.90^2 + 0.84^2 + 0.81^2}{0.73^2 + 0.90^2 + 0.84^2 + 0.81^2 + (0.47 + 0.19 + 0.29 + 0.35)} = 0.675$$

*IJ:*

$$\rho_c = \frac{0.92^2}{0.92^2 + (0.15)} = 0.849$$

*TS:*

$$\rho_c = \frac{0.93^2}{0.93^2 + (0.13)} = 0.869$$

*TO:*

$$\rho_c = \frac{0.91^2 + 0.96^2 + 0.80^2}{0.91^2 + 0.96^2 + 0.80^2 + (0.17 + 0.08 + 0.37)} = 0.794$$

---

<sup>26</sup> AVE calculation of PJ, IJ, TS and TO is calculated with the non-financial model estimates. The estimates between the non-financial and financial models are almost equivalent, yielding the same conclusion.