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**LEADERSHIP STYLES AND SAFETY BEHAVIOURS  
WITH SAFETY CLIMATE AS A MEDIATOR AMONG  
OIL AND GAS WORKERS**



**UUM**

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UNIVERSITY UTARA MALAYSIA  
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**LEADERSHIP STYLES AND SAFETY BEHAVIOURS WITH SAFETY  
CLIMATE AS A MEDIATOR A MONG OIL AND GAS WORKERS**



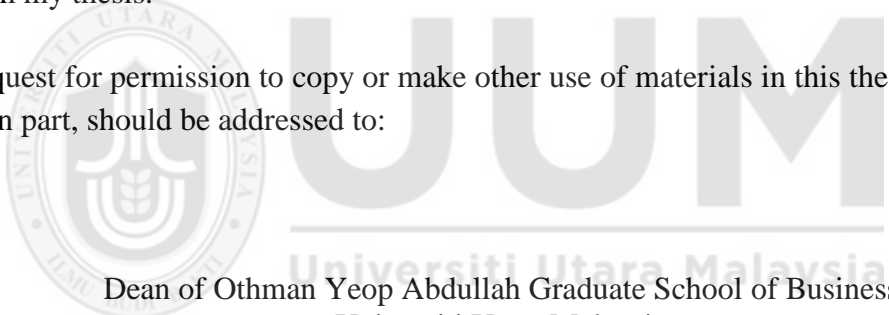
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**Thesis submitted to  
Othman Yeop Abdullah Graduate School of Business  
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In Fulfillment of the Requirement for the Degree of Doctor of Philosophy**

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## ABSTRACT

Existing submissions from industry practitioners and researchers suggest a high rate of occupational accidents, injuries and fatalities occasioned by poor safety and health management systems, and attendant safety-related behaviours in the Nigerian oil and gas industry. In an attempt to improve employees' safety behaviours, this study investigated the relationship between leadership styles, safety climate and safety behaviours in the Nigerian O & G industry. Specifically, this study examines the influence of authentic leadership, inclusive leadership, safety climate on components of safety behaviours namely, safety compliance, safety participation and risky behaviour. Via a cross-sectional design and quantitative approach, the study was conducted among 319 systematically selected O & G workers in Rivers State, Nigeria. The PLS-SEM tool (SmartPLS 3.0) was used in analyzing the data collected from the respondents. The findings of the study indicated that the direct relationships between authentic and inclusive leadership styles with safety climate were positively significant. Also, the study found direct significantly positive relationships between safety climate and safety compliance and safety participation. However, the relationship between safety climate and risky behaviour was negative. Similarly, safety climate mediated the relationship between the authentic and inclusive leadership styles with safety compliance and safety participation, but not with risky behaviour. Based on the findings, it can be concluded that the authentic leadership and inclusive leadership styles are critical to positively shaping the safety climate perceptions of O & G workers. Positively shaped safety climate perceptions should in-turn determine the positive safety behaviours of the workers. Consequently, theoretical and practical implications, in addition to recommendations for future research are holistically discussed.

**Keywords:** Authentic Leadership, Inclusive Leadership, Safety Climate, Safety Behaviour, Oil and Gas Industry, Nigeria

## ABSTRAK

Maklumat sedia ada daripada pengamal industri dan penyelidik menunjukkan kadar kemalangan, kecederaan dan kematian yang tinggi dalam pekerjaan. Hal ini berpunca daripada sistem pengurusan keselamatan dan kesihatan yang lemah, dan tingkah laku berkaitan keselamatan atendan dalam industri minyak dan gas di Nigeria. Dalam usaha untuk meningkatkan aspek tingkah laku keselamatan pekerja, kajian ini menyelidik hubungan antara gaya kepimpinan, iklim keselamatan dan tingkah laku keselamatan dalam industri minyak dan gas di Nigeria. Kajian ini menyelidik secara menyeluruh pengaruh kepimpinan autentik, kepimpinan inklusif, iklim keselamatan dan komponen tingkah laku keselamatan iaitu, pematuhan keselamatan, penyertaan keselamatan dan tingkah laku berisiko. Melalui reka bentuk keratan rentas dan pendekatan kuantitatif, kajian ini dijalankan ke atas 319 orang pekerja minyak dan gas yang dipilih secara sistematik di Rivers State, Nigeria. Perisian PLS-SEM (SmartPLS 3.0) digunakan untuk menganalisis data yang diperoleh daripada responden. Dapatan kajian menunjukkan bahawa hubungan langsung antara gaya kepimpinan autentik dan gaya kepimpinan inklusif dengan iklim keselamatan adalah positif secara signifikan. Kajian ini juga menemui hubungan langsung yang positif dan signifikan antara iklim keselamatan dan pematuhan keselamatan, serta penyertaan keselamatan. Walau bagaimanapun, hubungan di antara persekitaran keselamatan dan tingkah laku berisiko adalah negatif. Iklim keselamatan juga didapati mengantarakan hubungan antara gaya kepimpinan autentik dan gaya kepimpinan inklusif dengan pematuhan keselamatan serta penyertaan keselamatan, tetapi tidak bagi tingkah laku berisiko. Berdasarkan hasil kajian, dapat disimpulkan bahawa gaya kepimpinan autentik dan gaya kepimpinan inklusif adalah penting untuk membentuk persepsi positif iklim keselamatan pekerja industri minyak dan gas. Persepsi positif iklim keselamatan ini seterusnya menentukan tingkah laku positif keselamatan pekerja. Seterusnya, selain cadangan untuk kajian akan datang, implikasi teori dan praktikal turut dibincangkan secara holistik.

Kata kunci: kepimpinan autentik, kepimpinan inklusif, iklim keselamatan, tingkah laku keselamatan, industri minyak dan gas, Nigeria

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-- John F. Kennedy.*

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## LIST OF ABBREVIATIONS

O & G	Oil and Gas
GDP	Gross Domestic Product
OSH	Occupational Safety and Health
HSE	Health, Safety and Environment
NNPC	Nigerian National Petroleum Corporation
OPEC	Organization of the Petroleum Exporting Countries
SET	Social Exchange Theory
SST	Social Systems Theory
HPWS	High Performance Work Systems
SMPs	Safety Management Practices
DPR	Department of Petroleum Resources
CMV	Common Method Variance
AVE	Average Variance Extracted
MV	Common Method Variance
PhD	Doctor of Philosophy
PLS	Partial Least Squares
Q <sup>2</sup>	Construct Cross-validated Redundancy
R <sup>2</sup>	R-squared values
SEM	Structural Equation Modelling
SET	Social Exchange Theory
SPSS	Statistical Package for the Social Sciences

## CHAPTER ONE

### INTRODUCTION

#### 1.1 BACKGROUND OF STUDY

Workplace safety has been identified as an integral part of organizational activities (Beus, Payne, Bergman, & Arthur, 2010; Cagno, Micheli, Jacinto, & Masi, 2014; Sinelnikov, Inouye, & Kerper, 2015), yet remains a serious challenge in view of workers' continuous exposure to chemical, ergonomic, biological, psychosocial and related hazards (Leka, Jain, Iavicoli, Vartia, & Ertel, 2011; Lievens & Vlerick, 2013). Interestingly, the increasing cases of major accidents, injuries and work-related incidences have contributed to the growing concern among industry practitioners and researchers on the need to improve safety in workplaces (Cavazza & Serpe, 2009; Goh, Love, Stagbouer, & Annesley, 2012; Li, Jiang, Yao, & Li, 2013). Also, the increasing direct and indirect costs associated with these occurrences of workplace accidents, injuries and possible eventual fatalities have further contributed to the growing attention being paid to improving workplace safety (Neal & Griffin, 2002; Shalini, 2009).

Direct costs associated with workplace incidents accrue to companies in the form of medical and health bills, claims for permanent incapacitation and death, damages to work equipment, forfeitures, penalties, legal liabilities and continuous expenses for improvements to HSE activities (Pessemier, 2009; Moore, 2009; Battaglia, Marco, & Passetti, 2014). On the contrary, indirect costs accruable as a result of workplace incidents accrue in the form of production losses, increases in insurance costs, loss of confidence, absenteeism, increased staff turnover and denting of corporate image

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## Research Questionnaire



15<sup>th</sup> May, 2016.

Dear Respondent,

### ACADEMIC RESEARCH QUESTIONNAIRE

I am a PhD candidate at the Universiti Utara Malaysia, and currently conducting a research on leadership, safety climate and safety behaviours in the Oil & Gas industry in Rivers State, Nigeria as part of the requirements for the award of a Ph.D. degree.

I realize that your time is valuable and many demands are made upon it by your heavy workload. However, your participation in this survey, which will require only about 10-15 minutes of your time, is vital to the success of this study and would be greatly appreciated. Please be assured that your responses will be treated with utmost confidentiality and used purely for academic purposes.

Thanking you for your kind co-operation.

Yours truly,

### **Bara Kabaka Brown**

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### **SECTION A: DEMOGRAPHIC INFORMATION**

Please tick (✓) in the appropriate boxes that correspond to the questions below.

1. Gender:  Male  Female
2. Marital Status:  Single  Married  
 Divorced  Widowed
3. Age (in years):  Less than 20  21 – 24  
 25 – 29  30 – 34  
 35 – 39  40 - 44  
 45 – 49  50 and above
4. Level of Education:  High School  Technical/Diploma  
 Bachelors  Masters and above

5. Work experience in this company: Year (s):.....Month(s):.....

6. Work experience in the Oil and Gas Industry: Year (s):.....

7. Occupation:

- Technician/Millwright  Engineer  Equipment Handler
- Scaffolder  Electrician  Operator
- Pipe/Steel Worker  HVAC  Plant Maintenance
- Mechanic  Welder  Driller
- Rigger  Safety Personnel  Concrete Worker
- Transportation/Logistics  Others:.....

8. How often do you attend safety trainings?

- Never  Rarely  
 Sometimes  Often  
 Always

9. How many times have you been involved in a workplace accident in the last 12 months? \_\_\_\_\_

## Section B

The following are statements pertaining to your leader. Please note the term “leader” refers to your **immediate supervisor**. On a five-point scale, indicate your level of

agreement on the statements stated hereunder by circling the responses according to the scale below:

- 1 - Strongly Disagree  
 2 - Disagree  
 3 - Neither Agree nor Disagree  
 4 - Agree  
 5 - Strongly Agree

**My Leader...**

		1	2	3	4	5
<b>1</b>	<b>solicits feedback for improving his/her dealings with others.</b>					
<b>2</b>	is available for professional questions I would like to consult with him/her.	1	2	3	4	5
<b>3</b>	encourages others to voice opposing points of view.	1	2	3	4	5
<b>4</b>	shows interest in the safety of workers in the workplace.	1	2	3	4	5
<b>5</b>	describes accurately the way that others view his/her abilities.	1	2	3	4	5
<b>6</b>	ensures there is sufficient opportunity to discuss and deal with safety issues in meetings.	1	2	3	4	5
<b>7</b>	uses his/her core beliefs to make decisions.	1	2	3	4	5
<b>8</b>	ensures newly recruits are trained adequately to learn safety rules and procedures.	1	2	3	4	5
<b>9</b>	shows that he/she understands his/her strengths and weaknesses.	1	2	3	4	5
<b>10</b>	asks for ideas that challenge his/her core beliefs.	1	2	3	4	5
<b>11</b>	resists pressures on him/her to do things contrary to his/her beliefs.	1	2	3	4	5
<b>12</b>	gives high priority to safety in training programmes.	1	2	3	4	5
<b>13</b>	is clearly aware of the impact he/she has on others.	1	2	3	4	5
<b>14</b>	ensures the safety rules and procedures followed in the company are sufficient to prevent incidents from occurring.	1	2	3	4	5
<b>15</b>	is guided in his/her actions by internal moral standards.	1	2	3	4	5
<b>16</b>	considers safety to be equally important as production/work targets.	1	2	3	4	5

17	is open to hearing new ideas.	1	2	3	4	5
18	gives high priority to safety in the workplace.	1	2	3	4	5
19	is open to discuss the desired goals and new ways to achieve them.	1	2	3	4	5
20	ensures that employees can communicate hazard information before incidents occur through the hazard reporting system.	1	2	3	4	5
21	is an ongoing 'presence' in this team—someone who is readily available.	1	2	3	4	5
22	ensures the safety training given to employees is adequate to enable them to assess hazards in work areas.	1	2	3	4	5
23	is ready to listen to my requests.	1	2	3	4	5
24	encourages me to access him/her on emerging issues.	1	2	3	4	5
25	is accessible for discussing emerging problems.	1	2	3	4	5
26	ensures that the company's open door policy on safety issues is practiced.	1	2	3	4	5
27	clearly states what he/she means.	1	2	3	4	5
28	encourages workers to attend safety training programmes.	1	2	3	4	5
29	carefully listens to alternative perspectives before reaching a conclusion.	1	2	3	4	5
30	ensures comprehensive training is given to the employees in workplace health and safety issues.	1	2	3	4	5
31	expresses his/her ideas and thoughts clearly to others.	1	2	3	4	5
32	attends safety meetings.	1	2	3	4	5
33	takes corrective action when told about unsafe practices.	1	2	3	4	5
34	ensures the facilities in the safety department are adequate to meet the needs of the organization.	1	2	3	4	5
35	shows consistency between his/her beliefs and actions.	1	2	3	4	5
36	ensures the target and goals for safety performance in the organization is clear to workers.	1	2	3	4	5
37	ensures participation of employees in regular safety inspections.	1	2	3	4	5

<b>38</b>	openly shares information with others.	1	2	3	4	5
<b>39</b>	is attentive to new opportunities to improve work processes.	1	2	3	4	5
<b>40</b>	always try to enforce safe working procedures.	1	2	3	4	5
<b>41</b>	admits mistakes when they occur.	1	2	3	4	5
<b>42</b>	ensures open communication about safety issues in the workplace.	1	2	3	4	5
<b>43</b>	acts quickly to solve the problems when near-miss accidents are reported.	1	2	3	4	5
<b>44</b>	objectively analyzes relevant data before making a decision.	1	2	3	4	5
<b>45</b>	is available for consultation on problems.	1	2	3	4	5

### Section C

The following are statements pertaining to your own behaviour at the workplace. On a five-point scale, please indicate your level of agreement on the statements stated hereunder by circling the responses according to the scale below:

- |   |   |                                   |
|---|---|-----------------------------------|
| 1 | - | <i>Strongly Disagree</i>          |
| 2 | - | <i>Disagree</i>                   |
| 3 | - | <i>Neither Agree nor Disagree</i> |
| 4 | - | <i>Agree</i>                      |
| 5 | - | <i>Strongly Agree.</i>            |

<b>1</b>	<b>I use all necessary safety equipment to do my job.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>2</b>	I help my co-workers when they are working under risky or hazardous conditions.	1	2	3	4	5
<b>3</b>	I voluntarily carryout tasks or activities that help to improve workplace safety.	1	2	3	4	5
<b>4</b>	I ensure the highest levels of safety when I carry out my job.	1	2	3	4	5
<b>5</b>	I break rules due to management pressure.	1	2	3	4	5
<b>6</b>	I take shortcuts that involve little or no risk.	1	2	3	4	5



<b>7</b>	I always point out to the management if any safety related matters are noticed in my company.	1	2	3	4	5
<b>8</b>	I put extra effort to improve the safety of the workplace.	1	2	3	4	5
<b>9</b>	I take chances to get the job done.	1	2	3	4	5
<b>10</b>	I encourage my co-workers to work safely.	1	2	3	4	5
<b>11</b>	I ignore safety regulations to get the job done.	1	2	3	4	5
<b>12</b>	I break work procedures.	1	2	3	4	5
<b>13</b>	I follow correct safety rules and procedures while carrying out my job.	1	2	3	4	5
<b>14</b>	I bend safety rules to achieve a target.	1	2	3	4	5
<b>15</b>	I get the job done better by ignoring some rules.	1	2	3	4	5
<b>16</b>	Conditions at the workplace keep me from working according to the rules.	1	2	3	4	5
<b>17</b>	I carry out my work in a safe manner.	1	2	3	4	5
<b>18</b>	It is always practical to follow all safety rules and procedures while doing a job.	1	2	3	4	5
<b>19</b>	I am pressured by my workmates to break rules.	1	2	3	4	5

**Thank you for your time.**

**REVIEW OF ARTICLES**



<b>S/No</b>	<b>Author(s), Title,</b>	<b>Research Issue(s), Study Variables</b>	<b>Method</b>	<b>Finding</b>	<b>Issues, Gaps and Future Research</b>
1.	Nielsen <i>et al.</i> (2013). Authentic leadership and its relationship with risk perception and safety climate.	This study aims to examine how authentic leadership relates to risk perception in safety critical organizations (SCOs). It is hypothesized that authentic leaders influence risk perception through the mediating effect of safety climate.	Using a survey design, the variables were assessed in a cross-sectional sample of 293 offshore oil installation workers from a single company.	Authentic leadership are negatively related to risk perception and positively associated with ratings of safety climate. Controlling for personality characteristics and leadership responsibility among respondents, the results confirm the hypothesis in that safety climate mediates the relationship between authentic leadership and risk perception. Safety climate had the strongest relationship with risk perception when assessed as a higher order construct.	More research is clearly necessary to fully comprehend the nature of the relationship between the variables. Supported basis for hypotheses
2.	Eid, <i>et al.</i> (2012). Leadership, psychological capital and safety research: Conceptual issues and future research questions.	Identify potential mechanisms that can explain how leadership affects safety outcomes. Authentic leadership – safety climate – Safety outcomes	Literature review on AL and safety outcomes with specific focus on the offshore O & G industry	From this we offer a research model and five research propositions implicating that authentic leadership directly affects safety outcomes via promoting positive safety climate perceptions.	Need to examine the relationship between authentic leadership and safety climate in safety critical organizations.
3.	Peus <i>et al.</i> (2012). Authentic Leadership: An Empirical Test of Its	Examine the antecedents and individual as well as group-level outcomes of AL in business as well	Longitudinal analysis. (Study 1; n = 306; (Study 2; n = 105).	Findings reveal leader self-knowledge and self-consistency as antecedents of authentic leadership and followers'	Further studies to determine exactly what components of authentic leadership

	Antecedents, Consequences, and Mediating Mechanisms.	as research organizations. First, we sought to investigate if the relation between perceived AL, leader predictability and followers' work-related attitudes could be replicated.		satisfaction with supervisor, organizational commitment, and extra effort as well as perceived team effectiveness as outcomes. The relations between authentic leadership and followers' work-related attitudes as well as perceived team effectiveness are mediated by perceived predictability of the leader, a particular facet of trust.	are crucial for follower attitudes and how they are influenced by situational variables. Deeper understanding of how AL impacts followers, their organizations, and the leaders themselves and how this type of leadership can be developed.
4.	Cavazotte, <i>et al.</i> (2013). Authentic leader, safe work: the influence of leadership on safety performance.	This study analyzed the influence of authentic leadership on the workers' safety performance, investigating the psychological mechanisms that explain the connection between authenticity and workplace safety.	The study was conducted based on a sample of 186 workers involved in projects within the oil industry in Brazil. Positivist approach.	Results suggested that authentic leadership is associated with the feedback provided by supervisors as well as with worker's perception of justice and their safety performance. Furthermore, perception of justice seems to be a relevant route through which more authentic leaders would promote safe behaviors among their followers. It was also observed that individuals who are more conscientious and less prone to take risks are also those who engage more frequently in safe behavior in the workplace.	This work represents a contribution to the advancement of knowledge about authentic leadership and safety performance because empirical studies investigating the association between the two are rare until now. More studies on AL with specific focus on workplace safety.
5.	Borgersen, <i>et al.</i>	This study examined	Positivist.	AL made a statistically	AL scarcely


	(2014). Authentic leadership and safety climate among seafarers.	relationships between <i>authentic leadership</i> and <i>safety climate</i> among 463 seafarers sailing on 23 merchant vessels in the international shipping industry. Philippines	Questionnaires administration. Regression	significant contribution to explaining variance in safety climate, controlling for age, rank on board, and social desirable responding. The present study contributes to the literature in that AL emerged as a significant predictor of perceived safety climate variance in a research setting which has not been investigated earlier.	examined. Need for further studies.
6.	Hystad, <i>et al.</i> (2014). Positive organizational behavior and safety in the offshore oil industry: Exploring the determinants of positive safety climate.	Test workplace and individual factors that may affect safety climate. Specifically, we explore the potential influence of AL and psychological capital on safety climate and risk outcomes.	Norway Offshore O & G workers. Positivist. Questionnaire administration. SEM used for analysis	Across two samples of offshore oil-workers and seafarers working on oil platform supply ships, structural equation modeling yielded results that support a model in which AL exerts a direct effect on safety climate, as well as an indirect effect via psychological capital.	Scant attention to the question of what factors might be responsible for positive or negative safety climate. Additional studies encouraged.
7.	Neider and Schreisheim (2011). The Authentic Leadership Inventory (ALI): Development and empirical tests.	This paper presents the development and preliminary validation of a new measure of authentic leadership, the Authentic Leadership Inventory (ALI).	Positivist. Instrument development and validation	Results indicate some concerns with the ALQ but support the content validity, reliability, factor structure, convergent and discriminant validity, concurrent validity, and freedom from impression management response bias of the ALI	Future research would better be served by using separate authentic and transformational dimensions (rather than aggregate or global measures) to understand the unique aspects of

					both leadership constructs.
8.	Laschinger, <i>et al.</i> (2012). The influence of authentic leadership on newly graduated nurses' experiences of workplace bullying, burnout and retention outcomes: A cross-sectional study.	The purpose of this study is to test a model linking authentic leadership to new graduate nurses' experiences of workplace bullying and burnout, and subsequently, job satisfaction and intentions to leave their jobs.	Cross-sectional survey design with 342 new graduate nurses working in acute care hospitals in Ontario, Canada. The model was tested using path analysis techniques plus SEM.	AL had a negative direct effect on workplace bullying, which in turn had a direct positive effect on emotional exhaustion. Authentic leadership also influenced job satisfaction indirectly through bullying and emotional exhaustion. Authentic leadership, workplace bullying and emotional exhaustion all had significant direct effects on job satisfaction, which in turn, was related to lower turnover intentions.	The findings from this study demonstrate the fundamental importance of AL in creating supportive working environments. Additional literature on AL.
9.	Carmeli, <i>et al.</i> (2010). Inclusive leadership and employee involvement in creative tasks in the workplace: The mediating role of psychological safety.	This study examines how IL (manifested by openness, accessibility, and availability of a leader) fosters employee creativity in the workplace.	Quantitative. SEM analysis	The results of structural equation modeling (SEM) analysis indicate that IL is positively related to psychological safety, which, in turn, engenders employee involvement in creative work.	Further studies expecting on IL with related organizational factors and outcomes
10.	Choi <i>et al.</i> (2015). Inclusive leadership and work engagement:	Examined the mediating roles of affective organizational commitment and	Quantitative. Use of questionnaire among employees	We found that inclusive leadership was positively related to employee work engagement, and that both affective	Theoretical contribution to SET and provide useful managerial

	mediating roles of affective organizational commitment and creativity.	employee creativity in the relationship IL and employee work engagement.		organizational commitment and employee creativity mediated this relationship.	implications for organizations to improve work engagement among employees.
11	Wuffli, P. A. (2016). Introduction: A Framework for Inclusive Leadership. In	Definition. Theoretical perspectives			Need to really examine IL
12.	Hollander, E. (2012). <i>Inclusive leadership: The essential leader-follower relationship</i> . New York, NY:	Insights into IL			Need to examine IL
13.	Neal and Griffin (2006). A Study of the Lagged Relationships Among Safety Climate, Safety Motivation, Safety Behavior, and Accidents at the Individual and Group Levels.	Perceptions of safety climate, motivation, and behavior at 2 time points and linked them to prior and subsequent levels of accidents over a 5-year period.  Safety Climate, Motivation and Safety Behaviour	Longitudinal survey in the healthcare industry. Questionnaire used	In terms of top-down effects, average levels of safety climate within groups at one point in time predicted subsequent changes in individual safety motivation. Individual safety motivation, in turn, was associated with subsequent changes in self-reported safety behavior. In terms of bottom-up effects, improvements in the average level of safety behavior within groups were associated with a subsequent reduction in accidents at the group level.	Historical perspectives of safety behaviours
14.	Zohar (2002). The	This study is based on	Within-group split	(a) Leadership style affects the	Exposes on safety

	effects of leadership dimensions, safety climate, and assigned priorities on minor injuries in work groups.	three premises: (a) Leadership style affects the level of concern for subordinate safety; (b) Concern for safety, operationalized with supervisory practices, provides the source for safety climate perceptions; and (c) Safety priority as assigned by higher superiors' influences supervisory safety practice independently of leadership style.	sample analysis. Step-wise and group-wise regression	level of concern for subordinate safety; (b) Concern for safety, operationalized with supervisory practices, provides the source for safety climate perceptions; and (c) Safety priority as assigned by higher superiors' influences supervisory safety practice independently of leadership style. Leadership effects were moderated by assigned safety priorities and mediated by commensurate safety-climate variables. The results suggest that transformational and transactional leadership provide complementary modes of (mediated and moderated) influence on safety behavior.	climate. Dimensions and importance of safety climate in predicting safety outcomes. How leadership is related to safety climate and safety outcomes also discussed and need for further studies highlighted.
15.	Tholen <i>et al.</i> (2013) - Causal relations between psychosocial conditions, safety climate and safety behaviour – A multi-level investigation	289 construction employees	Positivist	Results showed that individual perceptions of safety climate exerted a causal effect on individual safety behaviour, but we also found some evidence of a reversed relationship, where safety behaviour influenced safety climate. Furthermore, we found that work unit average perceptions of safety climate predicted the growth of the individual safety behavior but this influence was mediated by	SB and reverse. SB influencing SC SC



				the individual's perception of the safety climate. The results also indicate that supportive psychosocial conditions within an organisation influence individual safety perceptions but do not per se have an impact on safety behaviour.	
16.	Huang <i>et al.</i> (2006) - Safety climate and self-reported injury: Assessing the mediating role of employee safety control		Positivist	Factorial evidence substantiated that management commitment to safety, return-to-work policies, post-injury administration, and safety training are important dimensions of safety climate. In addition, the data support that safety climate is a critical factor predicting the history of a self-reported occupational injury, and that employee safety control mediates the relationship between safety climate and occupational injury.	Safety behaviours and self-reported injury MCS, RTW policies etc
17.	Griffin and Neal (2000) - Perceptions of Safety at Work: A Framework for Linking Safety Climate to Safety Performance, Knowledge, and Motivation	1403 Australian manufacturing	Positivist	Perceptions of knowledge about safety and motivation to perform safely influenced individual reports of safety performance and also mediated the link between SC and safety performance. Specific dimensions of safety climate were identified and constituted a	Safety behaviour Proposed framework, early insights on conceptualization of safety behaviour.

				higher order safety climate factor. The results support conceptualizing safety climate as an antecedent to safety performance in organizations.	
18.	Olsen (2010) - Exploring the possibility of a common structural model measuring associations between safety climate factors and safety behaviour in health care and the petroleum sectors	1919 and 1806 health care and petroleum questionnaire	Longitudinal. Positivist	SC Validation on SC factors	Safety behaviours explained and need to for further studies explained.
19.	Huang <i>et al.</i> (2012) Management commitment to safety vs. employee perceived safety training and association with future injury	MCS and SC	Positivist	Even though results showed that the correlation between employees' perceived safety training and management commitment to safety was high, CFA of measurement models showed that two separate factors fit the model better than as two dimensions of a single factor	Injuries compliance and participation
20.	Evans <i>et al.</i> (2007) - Development and initial validation of an Aviation Safety Climate Scale.	A need was identified for a consistent set of safety climate factors to provide a basis for aviation industry benchmarking.	Positivist	The results of this study have produced a scale of safety climate for aviation that is both reliable and valid.	Safety behaviours MCS, ST, Communication, equipment and maintenance. Need to further study safety climate.

21.	Morrow <i>et al.</i> (2014) Exploring the relationship between safety culture and safety performance in U.S. nuclear power operations	Safety Culture, Safety Climate, safety behaviours	Positivist	Correlations suggested meaningful, statistically significant relationships between safety culture, as measured by the survey, and multiple nuclear power plant performance indicators.	Safety Compliance and safety participation. Further studies needed.
22.	Seo <i>et al.</i> (2004) - A cross-validation of safety climate scale using confirmatory factor analytic approach.	This study tested the stability of a factor structure of a safety climate scale developed through an extensive literature review using confirmatory factor analytic approach and cross-validation.	Meta-analysis	Each item of safety climate showed proper discriminative power based on both internal and external criteria. Criterion validity was manifested by the significant positive correlation of the scale with five criteria. Evidence of construct validity was provided by both exploratory and confirmatory factor analyses. Both calibration and validation samples supported a consistent factor structure. Management commitment and supervisor support were found to influence other dimensions of safety climate.	Safety behaviours - compliance and participation and reduction of injuries. Gap on consistent factor structure of safety climate.
23.	Fernandez-Muniz <i>et al.</i> (2012). Safety climate in - OHSAS 18001-certified	To analyse the safety climate in these organisations, identify its dimensions, and	Meta-analysis	The results show that management's commitment, and particularly communication, have an effect	Employee satisfaction and firm competitiveness. Different

	organisations: Antecedents and consequences of safety behavior.	propose and test a structural equation model that will help determine the antecedents and consequences of employees' safety behaviour. MCS, SC		on safety behaviour and on safety performance, employee satisfaction, and firm competitiveness	dimensions of safety performance. Gaps. Additional studies on safety performance.
24.	Bosak <i>et al</i> (2013) - Safety climate dimensions as predictors for risk behavior.	This study examines the interactive relationship between three dimensions of safety climate (management commitment to safety, priority of safety, and pressure for production), and their impact on risk behavior reported by employees.		The results showed that, employees' risk behavior was negatively related to MCS and priority of safety and positively related to pressure for production. Moreover, the three-way interaction between MCS, priority of safety and pressure for production was significant. When pressure for production was high, MCS was negatively related to risk behavior, regardless of level of priority of safety on plant. When pressure for production was low, the effect of MCS on risk behavior was nullified under conditions of high, as compared to low priority of safety on plant.	Risky behaviour. Additional study needed. These findings highlight the importance of managerial commitment to safety in contexts where employees experience tensions between production deadlines and safety procedures.
25.	Kapp (2012) - The influence of supervisor leadership practices and perceived group	Leadership practices and safety behaviour	Positivist. Use of questionnaire	Results indicate that greater levels of transformational and contingent reward leadership are both associated with greater levels of safety compliance and	Future studies

	safety climate on employee safety performance			safety participation behavior, however group safety climate moderates the leadership-safety compliance relationships.	
26.	Zohar and Luria (2010) Group Leaders as Gatekeepers: Testing Safety Climate Variations across Levels of Analysis.	The moderating effect of transformational supervisory leadership on the relationship between organisational and group climates, using safety climate in risky operations as an exemplar.		Results indicated that under low or poor organisational climate, indicative of limited organisational commitment to employee safety, transformational leaders promoted a higher group climate as compared to the organisational climate. Similarly, under a weak organisational climate, indicative of limited consensus among company employees regarding the priority of safety, transformational leaders promoted a stronger group climate, reflecting greater consensus among group members.	Compliance and Participation. The need for further studies on leadership in the safety management. Leadership as an antecedent of safety climate.
27.	Kines <i>et al.</i> (2010) Improving construction site safety through leader-based verbal safety communication.	This paper tests the effect of increasing leader-based on-site verbal safety communication on the level of safety and safety climate at construction sites.	Quantitative	Coaching construction site foremen to include safety in their daily verbal exchanges with workers has a significantly positive and lasting effect on the level of safety, which is a proximal estimate for work-related accidents.	Safety performance: compliance and participation. Leadership based communication.
28.	Lievens & Vlerick (2013) -	To report the impact of transformational	Cross-sectional survey with use of	The results show that transformational leadership	Compliance and Participation.

	Transformational leadership and safety performance among nurses: the mediating role of knowledge-related job characteristics.	leadership on two dimensions of nurses' safety performance (i.e. safety compliance and safety participation) and to study the mediating role of knowledge-related job characteristics in this relationship.	questionnaire	exerted a significant positive impact on both dimensions of nurses' safety performance. This positive relation was mediated by knowledge-related job characteristics, supporting our second hypothesis.	Transformational leadership and knowledge related job-characteristics as mediators. Further studies needed on leadership in safety management.
29.	Zohar (2010) - Thirty years of safety climate research: Reflections and future directions			The need to study the antecedents of safety climate in relation to safety behaviours	
30.	Vinodkumar and Bhasi (2010) - Safety management practices and safety behaviour: Assessing the mediating role of safety knowledge and motivation.	Measuring employees' perceptions on 6 SMPs and self-reported safety knowledge, safety motivation, safety compliance and safety participation.	Quantitative study done in a safety critical organization in India	Path analysis showed that some of the safety management practices have direct and indirect relations with the safety performance components, namely, safety compliance and safety participation. Safety knowledge and safety motivation were found to be the key mediators in explaining these relationships. Safety training was identified as the most important safety management practice that predicts safety knowledge, safety motivation, safety compliance and safety participation.	Additional studies in safety management with specific focus on safety behaviours.

31.	Mearns <i>et al.</i> (2003) - Safety climate, safety management practice and safety performance in offshore environments.	The present study reports on a cross-organisational survey designed to benchmark participating offshore installations on their safety climate, and to identify best safety management practices.	Cross-organizational survey	Proficiency in some safety management practices was associated with lower official accident rates and fewer respondents reporting accidents.	Safety Climate & Safety Management Practices. Additional studies needed.
32.	Cigularov <i>et al.</i> (2013) - Measurement equivalence and mean comparisons of a safety climate measure across construction trades.	This study used multi-group confirmatory factor analyses to investigate the measurement equivalence of a multidimensional safety climate measure across ten construction trade groups	Cross-sectional survey among 4725 construction trades. Use of CFA	Results revealed strong measurement equivalence of the safety climate measure across the construction trade groups	SC measures. Further insights to assess the relationship between SC and safety behaviours
33.	Cooper & Phillips (2004) - Exploratory analysis of the safety climate and safety behavior relationship.	Exploring the relationship between SC and safety behaviour	Questionnaire. 540 packaging production plant, manufacturing. Regression analysis.	Perceptions of the importance of safety training were predictive of actual levels of safety behavior. The results also demonstrate that the magnitude of change in perceptual safety climate scores will not necessarily match actual changes in employee's safety behavior.	Behaviours. Early studies in safety behaviours based on Borman and Motowidlo (1993).
34.	Martinez-Corcoles <i>et al.</i> (2013) - Empowering team leadership and safety	Team Leadership DV Compliance and	479 workers in 2 Spanish nuclear power plants.	Leaders' empowering behaviors generated higher safety compliance behaviors and higher safety participation	Team leader behaviors. Further asserts need to study risky behaviour as a

	performance in nuclear power plants: A multilevel approach.	Participation and Risky Behaviour		behaviors by team members, whereas risky behaviors were reduced.	component of safety behaviour
35.	Lu & Tsai (2010) - The effect of safety climate on seafarers' safety behaviors in container shipping.	This study empirically examined safety climate and its effects on safety behaviors from seafarers' perceptions in the container shipping context.  DV Compliance and participation and accidents and injuries recorded	Stratified sampling Use of questionnaire among 608 seafarers. Meta-Analysis	A structural equation model was used to examine the effect of safety climate dimensions, namely, safety policy, perceived supervisor safety behavior, and safety management, on safety behavior. The results revealed a positive association between safety climate and seafarers' safety behavior.	Safety climate dimensions, namely, safety policy, perceived supervisor safety behavior, and safety management, on safety behavior. Refer for gaps on safety climate measures...and also safety performance measures
36.	Hon <i>et al.</i> (2014) - Relationships between safety climate and safety performance of building repair, maintenance, minor alteration, and addition (RMAA) works.	The present study aims to determine the relationships between safety climate and safety performance of RMAA works, thereby offering recommendations on improving RMAA safety.	Questionnaires analysed from 396 repairs and maintenance personnel	A significant negative relationship between RMAA safety climate and incidence of self-reported near misses and injuries, and significant positive relationships between RMAA safety climate and safety participation and safety compliance respectively. Higher RMAA safety climate was positively associated with a lower incidence of self-reported near misses and injuries and higher levels of safety participation and safety compliance.	Near misses and injuries and safety compliance and participation. Information on safety climate and safety performance measures. History of safety performance.



37.	Wu (2008) - Safety leadership in the teaching laboratories of electrical and electronic engineering departments at Taiwanese Universities.	The study discusses the factors affecting safety leadership in teaching laboratories. Safety leadership	Mail questionnaire survey among 147 university faculty in various departments.	The descriptive statistics also reveals that among faculty, the perception of department heads' safety leadership is in general positive. A two-way MANOVA shows that there are interaction effects on safety leadership between university size and instructor age; there are also interaction effects between presence of a safety committee and faculty gender and faculty age.	Safety leadership. Leadership in safety management
38.	Fernandez-Muniz <i>et al.</i> (2014) - Safety leadership, risk management and safety performance in Spanish firms.	The role of the safety leadership and of the proactive risk management in the improvement of occupational safety performance. Safety Leadership & risk management	Questionnaire and data analyzed among 159 construction and services workers in Spain	The results show the importance of employees' safety behaviour in the improvement of safety outcomes, as well as the importance of the proactive risk management and transformational leadership in promoting safety behaviour.	Compliance and Participation. Refer for study on safety leadership. Transactional or transformational leadership
39.	Bahari & Clarke (2013) Cross-validation of an employee safety climate model in Malaysia.	The current study focuses on the cross-validation of a safety climate model in the non-Western industrial context of Malaysian manufacturing.	50 employees from manufacturing companies. CFA	Results showed that the model fit indices were below accepted levels, indicating that the original Cheyne <i>et al.</i> (1998) safety climate model was not supported. An alternative three-factor model was developed using exploratory factor analysis.	Justification for studying the Nigerian setting. Inconsistencies noted. Model not supported. cross-cultural study.
40.	Huang <i>et al.</i> (2012)	Explore and examine,	Questionnaires of	Even though results showed that	Refer for questions

	Management commitment to safety vs. employee perceived safety training and association with future injury.	specific to the restaurant industry, two important constructs emerging from the safety climate literature: employee perceptions of safety training and management commitment to safety. MCS and SC Injuries compliance and participation	419 restaurant workers. With the use of multivariate binomial equation.	the correlation between employees' perceived safety training and management commitment to safety was high, confirmatory factor analysis of measurement models showed that two separate factors fit the model better than as two dimensions of a single factor	on MCS and ST. safety training and MCS as important components of SC
41.	Zohar and Luria (2010) Group Leaders as Gatekeepers: Testing Safety Climate Variations across Levels of Analysis.	This paper tests the moderating effect of transformational supervisory leadership on the relationship between organisational and group climates, using safety climate in risky operations as an exemplar.	Associational design. Testing a relationship among 3952 production workers	Results indicated that under low or poor organisational climate, indicative of limited organisational commitment to employee safety, transformational leaders promoted a higher group climate as compared to the organisational climate. Similarly, under a weak organisational climate, indicative of limited consensus among company employees regarding the priority of safety, transformational leaders promoted a stronger group climate, reflecting greater consensus among group member	Fragmentations exist. Further study on group level safety climate vis-à-vis improving organizational level safety climate
42.	Clarke (2013)	A theoretical model of safety leadership, which incorporated both	Meta-Analysis	The final model showed that transformational leadership had a positive association with both	The findings suggest that active transactional

		<p>transformational and active transactional leadership styles, was tested using meta-analytic path analysis.</p>		<p>perceived safety climate and safety participation, with perceived safety climate partially mediating the effect of leadership on safety participation. Active transactional leadership had a positive association with perceived safety climate, safety participation and safety compliance. The effect of leadership on safety compliance was partially mediated by perceived safety climate and the effect on safety participation fully mediated by perceived safety climate.</p>	<p>leadership is important in ensuring compliance with rules and regulations, whereas transformational leadership is primarily associated with encouraging employee participation in safety. Therefore, in line with the augmentation hypothesis of leadership, a combination of both transformational and transactional styles appeared to be most beneficial for safety. There is little guidance available on leadership interventions that focus on a wider range of leader behaviour or focus on the ability to change between leadership styles to fit the requirements of the situation.</p>
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43.	Martinez-Corcoles <i>et al.</i> (2011). Leadership and employees' perceived safety behaviours in a nuclear power plant: A structural equation model	Study is to find out how leader behaviours influence employees' safety behaviours (perceived safety behaviours) in the nuclear field.	566 employees from a nuclear power plant	The results indicated that when safety culture was strong, leader behaviour generated a higher safety climate among the members, which predicted their perceived safety behaviours. Support was found for a structural model linking leadership and safety behaviour to safety culture and safety climate.	Further antecedents of safety climate. Formed foundation for present study.
<p>Other studies that formed strong foundation for the present study.</p> <p>Barling <i>et al.</i> (2002)  Clarke and Ward (2006)  Kelloway <i>et al.</i> (2006)  Beus <i>et al.</i> (2016)  Bosak <i>et al.</i> (2013)</p>					



SPSS OUTPUTS

**Gender**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	288	90.3	90.3	90.3
Female	31	9.7	9.7	100.0
Total	319	100.0	100.0	

**Marital Status**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Single	92	28.8	28.8	28.8
Married	205	64.3	64.3	93.1
Divorced	12	3.8	3.8	96.9
Widowed	10	3.1	3.1	100.0
Total	319	100.0	100.0	

**Age**

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 20	4	1.3	1.3	1.3
21-24	17	5.3	5.3	6.6
25-29	66	20.7	20.7	27.3
30-34	105	32.9	32.9	60.2
Valid 35-39	77	24.1	24.1	84.3
40-44	36	11.3	11.3	95.6
45-49	10	3.1	3.1	98.7
50 and above	4	1.3	1.3	100.0
Total	319	100.0	100.0	

**Level of Education**

	Frequency	Percent	Valid Percent	Cumulative Percent
High School	57	17.9	17.9	17.9
Technical/Diploma	217	68.0	68.0	85.9
Valid Bachelors'	42	13.2	13.2	99.1
Masters and Above	3	.9	.9	100.0
Total	319	100.0	100.0	

**Present Company Work Experience**

	Frequency	Percent	Valid Percent	Cumulative Percent
0-5	157	49.2	49.2	49.2
Valid 6-10	136	42.6	42.6	91.8
11-15	26	8.2	8.2	100.0
Total	319	100.0	100.0	

**Oil and Gas Work Experience**

	Frequency	Percent	Valid Percent	Cumulative Percent
0-5	101	31.7	31.7	31.7
6-10	181	56.7	56.7	88.4
11-15	37	11.6	11.6	100.0
Total	319	100.0	100.0	

**Occupation**

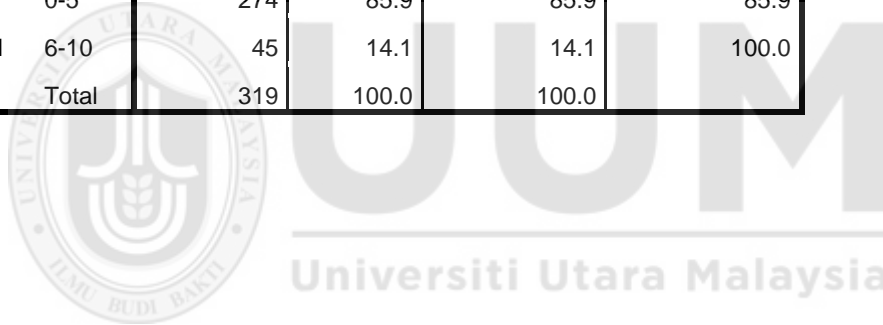
	Frequency	Percent	Valid Percent	Cumulative Percent
Technician/Millwright	44	13.8	13.8	13.8
Engineer	6	1.9	1.9	15.7
Equipment Handler	27	8.5	8.5	24.1
Scaffolder	18	5.6	5.6	29.8
Electrician	33	10.3	10.3	40.1
Operator	23	7.2	7.2	47.3
Pipe/Steel Worker	10	3.1	3.1	50.5
HVAC Operator	9	2.8	2.8	53.3
Plant Maintenance	50	15.7	15.7	69.0
Mechanic	13	4.1	4.1	73.0
Welder	7	2.2	2.2	75.2
Driller	39	12.2	12.2	87.5
Rigger	8	2.5	2.5	90.0
Safety Personnel and First Aider	5	1.6	1.6	91.5
Concrete Worker	11	3.4	3.4	95.0
Transportation and Logistics	13	4.1	4.1	99.1
Others	3	.9	.9	100.0
Total	319	100.0	100.0	

**Frequency of attendance of Safety Training**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	17	5.3	5.3
	Often	151	47.3	52.7
	Always	151	47.3	100.0
	Total	319	100.0	100.0

**Number of Times involved in Workplace Accident**

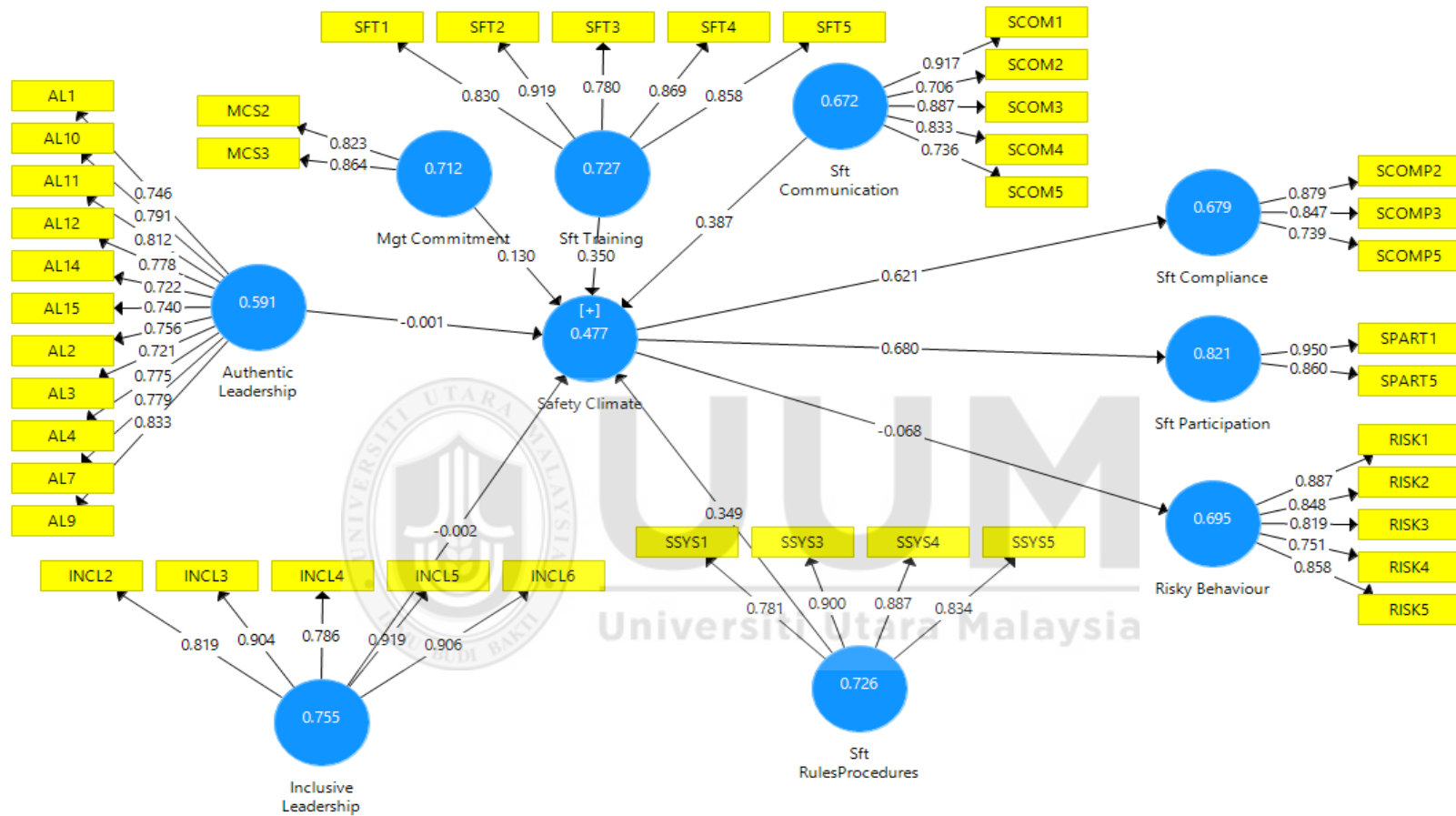
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-5	274	85.9	85.9
	6-10	45	14.1	100.0
	Total	319	100.0	100.0



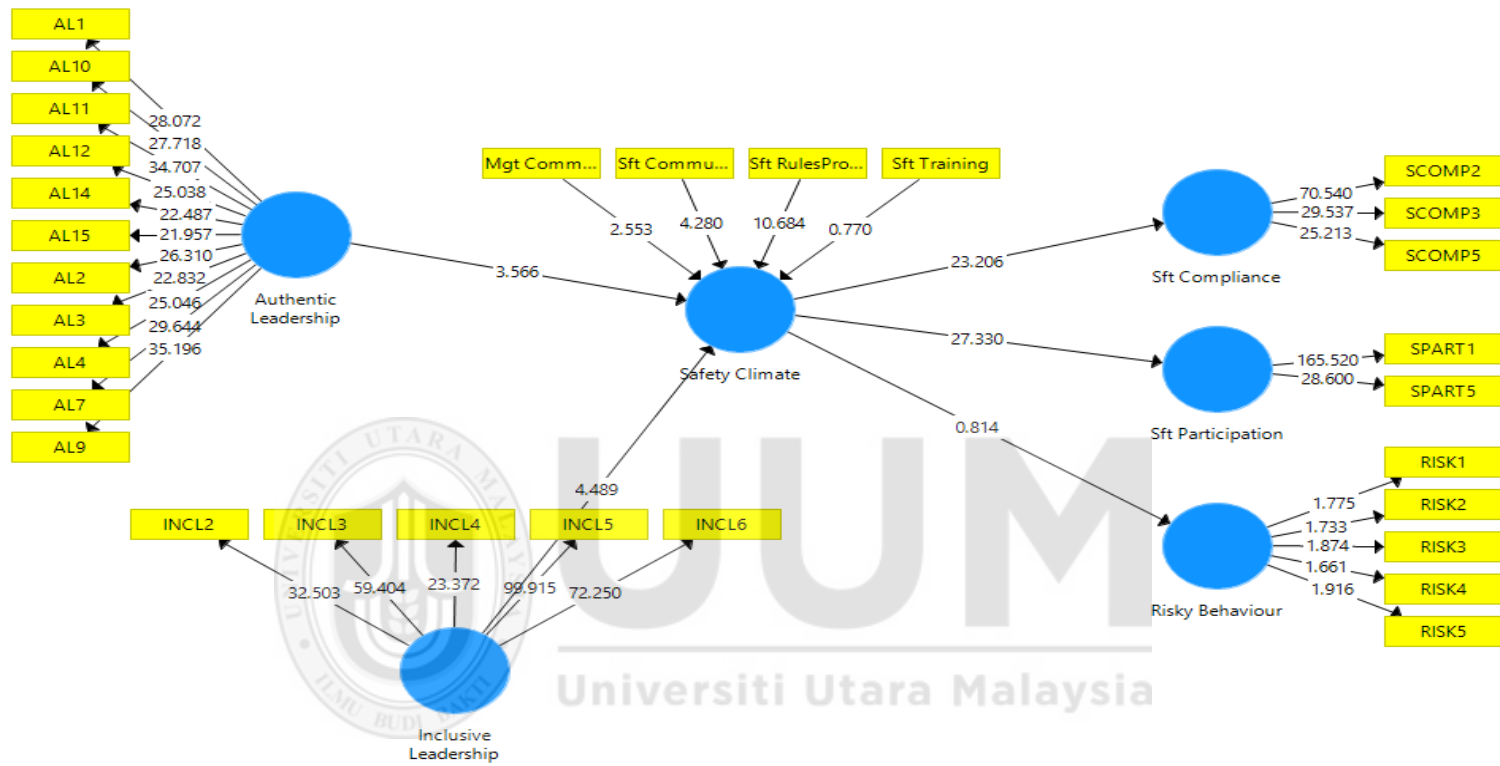


**PLS OUTPUTS**

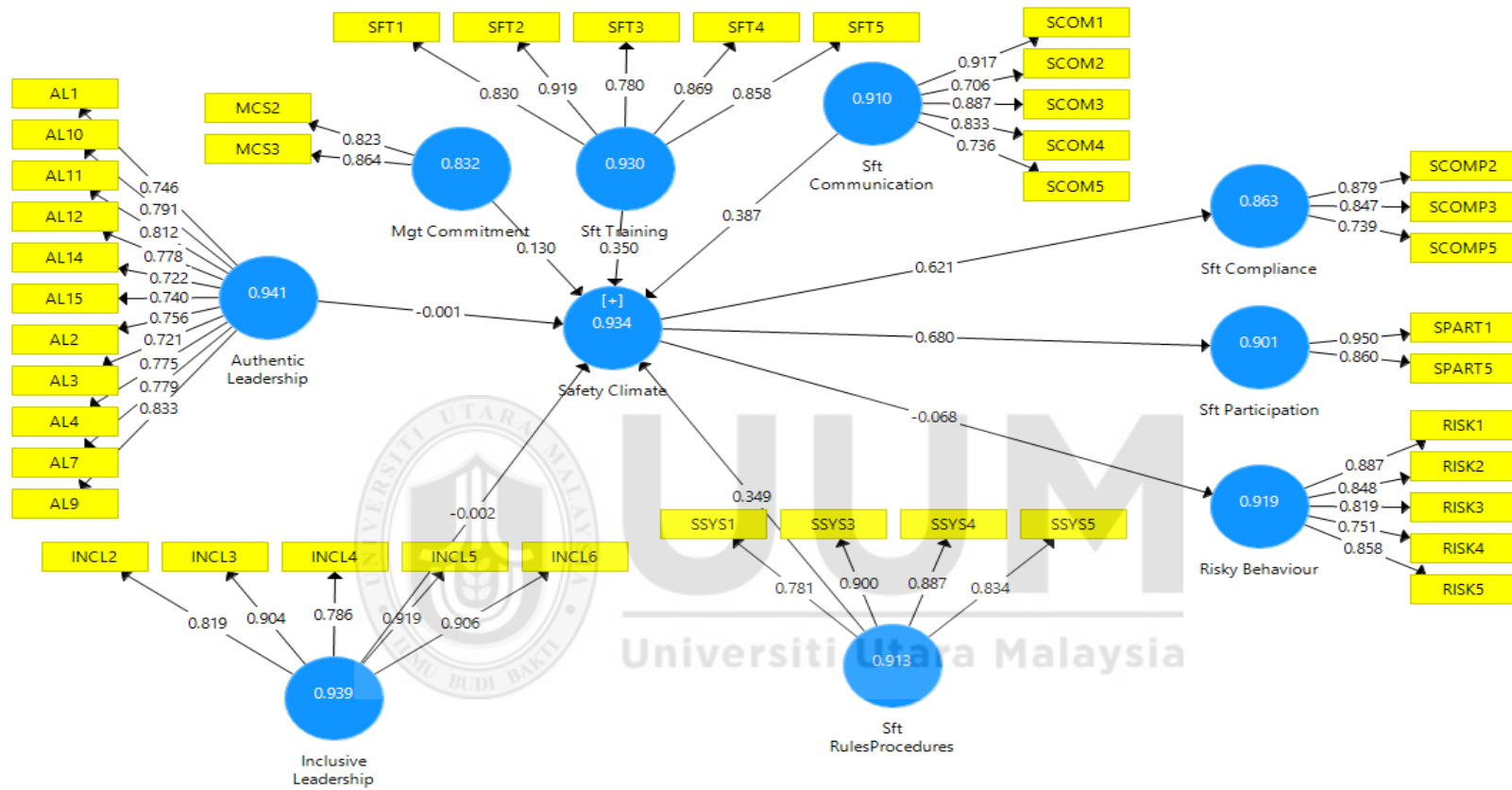




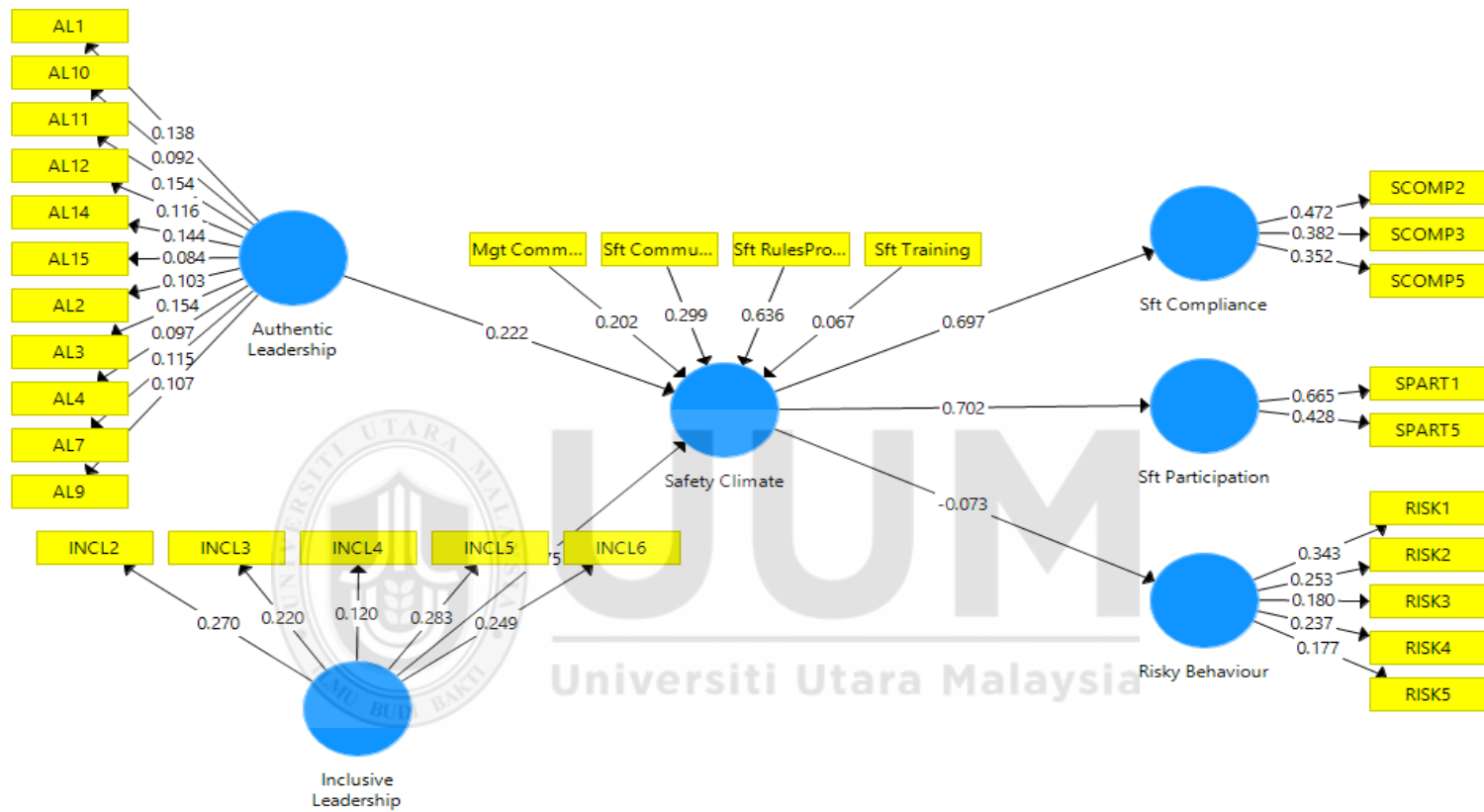
Average variance extracted



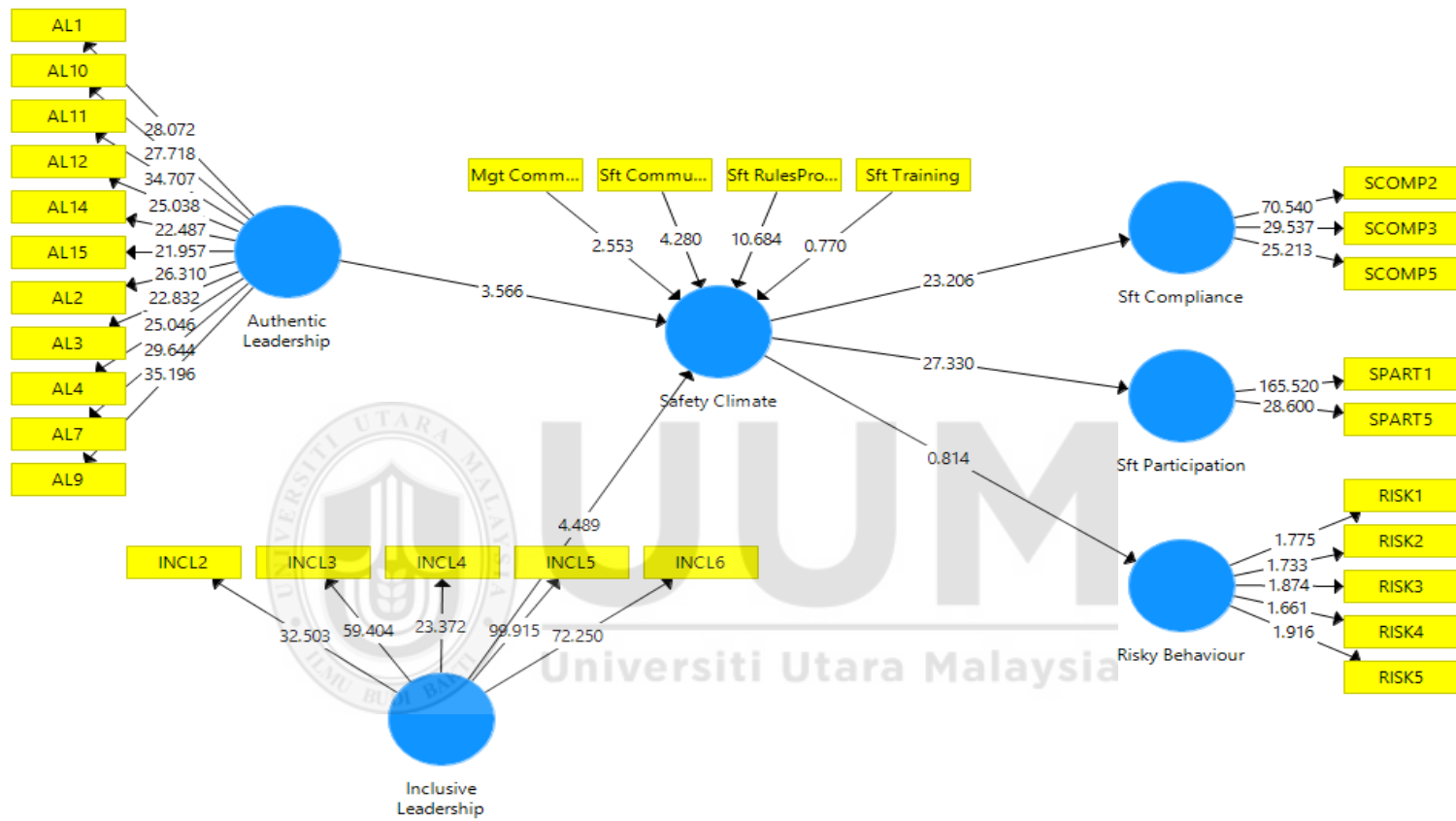
Bootstrap for hypotheses test



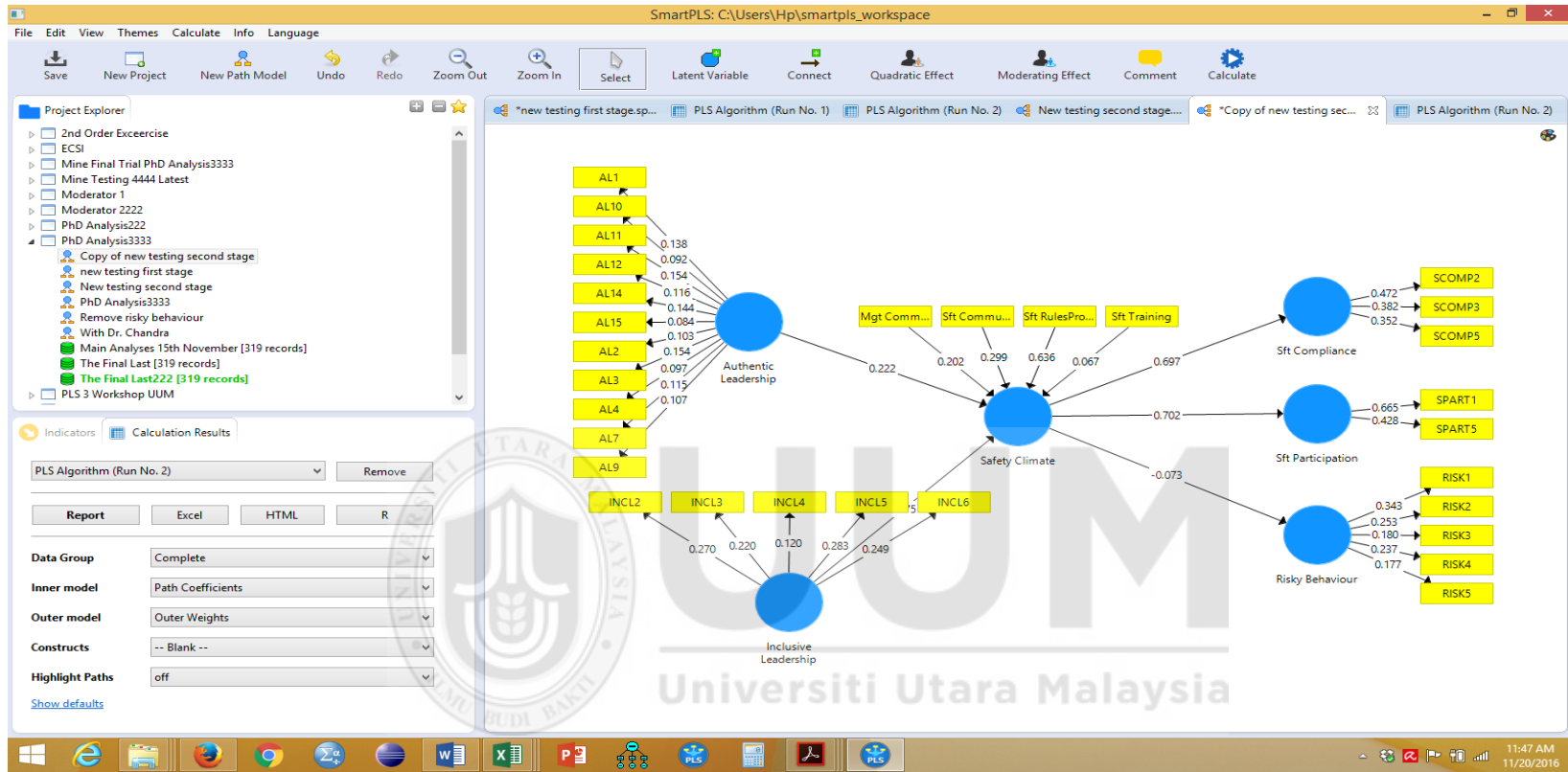
Composite reliability



Second stage model weights



Structural model



Second order stage model

Measurement and structural model outputs

	AL->SC->SComp	AL->SC->SP	AL->SC->RB	IL->SC->Scomp	IL->SC->SP	IL->SC->RB
<b>Sample 1</b>	0.158000	0.168889	-0.034331	0.190455	0.203580	-0.041383
<b>Sample 2</b>	0.087349	0.083683	0.006697	0.210329	0.201502	0.016126
<b>Sample 3</b>	0.155335	0.156263	-0.022823	0.186453	0.187567	-0.027395
<b>Sample 4</b>	0.119727	0.122172	0.012436	0.173240	0.176778	0.017995
<b>Sample 5</b>	0.174554	0.171805	0.020391	0.194183	0.191125	0.022684
<b>Sample 6</b>	0.174849	0.174548	-0.027376	0.184545	0.184227	-0.028894
<b>Sample 7</b>	0.195489	0.199841	-0.036786	0.152757	0.156158	-0.028745
<b>Sample 8</b>	0.215866	0.235922	-0.039385	0.124790	0.136384	-0.022768
<b>Sample 9</b>	0.066073	0.070904	-0.008609	0.313460	0.336379	-0.040845
<b>Sample 10</b>	0.091080	0.087251	-0.016335	0.212935	0.203983	-0.038189
<b>Sample 11</b>	0.066383	0.067126	0.005564	0.196968	0.199173	0.016511
<b>Sample 12</b>	0.102620	0.105982	-0.017526	0.240425	0.248302	-0.041061
<b>Sample 13</b>	0.195586	0.191741	-0.021284	0.186810	0.183137	-0.020329
<b>Sample 14</b>	0.171646	0.167482	-0.043915	0.164754	0.160757	-0.042151
<b>Sample 15</b>	0.078099	0.081118	-0.013073	0.274251	0.284850	-0.045906
<b>Sample 16</b>	0.174425	0.176676	0.032968	0.191924	0.194401	0.036275
<b>Sample 17</b>	0.163977	0.156910	0.013362	0.159934	0.153042	0.013033
<b>Sample 18</b>	0.193753	0.206847	-0.025890	0.187296	0.199953	-0.025027
<b>Sample 19</b>	0.130788	0.130562	-0.026925	0.204286	0.203932	-0.042056
<b>Sample 20</b>	0.127856	0.134748	-0.008261	0.207299	0.218474	-0.013394



<b>Sample 21</b>	0.119691	0.117722	0.023873	0.266076	0.261700	0.053070
<b>Sample 22</b>	0.113469	0.119925	-0.023669	0.214287	0.226480	-0.044699
<b>Sample 23</b>	0.164871	0.157207	-0.039062	0.191319	0.182425	-0.045328
<b>Sample 24</b>	0.146354	0.157415	-0.024092	0.226481	0.243599	-0.037283
<b>Sample 25</b>	0.113807	0.122962	-0.015817	0.180001	0.194482	-0.025016
<b>Sample 26</b>	0.179295	0.182457	-0.011570	0.169748	0.172742	-0.010954
<b>Sample 27</b>	0.121415	0.122137	-0.017428	0.195812	0.196976	-0.028106
<b>Sample 28</b>	0.226573	0.243272	-0.052043	0.160085	0.171883	-0.036771
<b>Sample 29</b>	0.102263	0.099104	-0.009698	0.158260	0.153370	-0.015009
<b>Sample 30</b>	0.179424	0.178516	-0.052923	0.155011	0.154227	-0.045722
<b>Sample 31</b>	0.137552	0.136883	-0.015492	0.181386	0.180504	-0.020429
<b>Sample 32</b>	0.186704	0.183699	-0.026923	0.182541	0.179604	-0.026323
<b>Sample 33</b>	0.123830	0.120974	0.011763	0.205639	0.200896	0.019534
<b>Sample 34</b>	0.059881	0.061469	-0.008856	0.268492	0.275612	-0.039710
<b>Sample 35</b>	0.110055	0.109183	0.012896	0.133918	0.132857	0.015692
<b>Sample 36</b>	0.070765	0.074839	0.014105	0.204229	0.215987	0.040707
<b>Sample 37</b>	0.009544	0.009486	-0.001364	0.286480	0.284736	-0.040934
<b>Sample 38</b>	0.175304	0.185437	-0.016395	0.211012	0.223210	-0.019735
<b>Sample 39</b>	0.113465	0.118250	-0.014114	0.198782	0.207165	-0.024727
<b>Sample 40</b>	0.139350	0.150987	0.035515	0.164305	0.178026	0.041875
<b>Sample 41</b>	0.152867	0.147343	-0.017614	0.197359	0.190227	-0.022741
<b>Sample 42</b>	0.218173	0.231081	-0.048041	0.169835	0.179883	-0.037397
<b>Sample 43</b>	0.083649	0.080267	-0.023125	0.288553	0.276884	-0.079772
<b>Sample 44</b>	0.210229	0.208887	-0.021377	0.193274	0.192040	-0.019653
<b>Sample 45</b>	0.144437	0.140657	-0.023749	0.183710	0.178902	-0.030206
<b>Sample 46</b>	0.162160	0.170933	-0.018700	0.192118	0.202512	-0.022154
<b>Sample 47</b>	0.170373	0.173387	-0.036187	0.196846	0.200328	-0.041809

<b>Sample 48</b>	0.179769	0.174743	-0.025803	0.219707	0.213564	-0.031536
<b>Sample 49</b>	0.162167	0.165205	-0.019060	0.187576	0.191090	-0.022046
<b>Sample 50</b>	0.222220	0.218534	-0.032122	0.115474	0.113558	-0.016692
<b>Sample 51</b>	0.185848	0.181051	-0.034193	0.155761	0.151741	-0.028657
<b>Sample 52</b>	0.138960	0.149574	-0.028231	0.204970	0.220627	-0.041641
<b>Sample 53</b>	0.130586	0.123630	-0.013966	0.178228	0.168734	-0.019061
<b>Sample 54</b>	0.068390	0.069629	-0.008835	0.237133	0.241428	-0.030635
<b>Sample 55</b>	0.124089	0.128958	-0.016747	0.195319	0.202983	-0.026360
<b>Sample 56</b>	0.129882	0.122333	-0.034027	0.196583	0.185158	-0.051502
<b>Sample 57</b>	0.201875	0.202047	-0.037584	0.185529	0.185687	-0.034540
<b>Sample 58</b>	0.134177	0.132942	-0.013648	0.135608	0.134359	-0.013794
<b>Sample 59</b>	0.139169	0.129858	-0.017442	0.138187	0.128941	-0.017318
<b>Sample 60</b>	0.123707	0.126738	-0.020322	0.186574	0.191145	-0.030649
<b>Sample 61</b>	0.047755	0.047198	-0.005568	0.228318	0.225653	-0.026620
<b>Sample 62</b>	0.066156	0.070556	-0.026020	0.265078	0.282708	-0.104260
<b>Sample 63</b>	0.191154	0.190233	-0.017626	0.193822	0.192888	-0.017872
<b>Sample 64</b>	0.226955	0.220353	-0.039147	0.195381	0.189697	-0.033701
<b>Sample 65</b>	0.168154	0.165256	-0.027100	0.153527	0.150882	-0.024743
<b>Sample 66</b>	0.203114	0.214076	-0.042167	0.165701	0.174644	-0.034400
<b>Sample 67</b>	0.136994	0.148516	0.025482	0.162157	0.175797	0.030162
<b>Sample 68</b>	0.209183	0.219566	-0.042904	0.179234	0.188130	-0.036761
<b>Sample 69</b>	0.131602	0.143823	0.015640	0.255799	0.279555	0.030400
<b>Sample 70</b>	0.113087	0.121938	-0.013716	0.194800	0.210046	-0.023627
<b>Sample 71</b>	0.199823	0.195919	-0.019503	0.148353	0.145455	-0.014480
<b>Sample 72</b>	0.145288	0.147839	-0.026170	0.286128	0.291153	-0.051539
<b>Sample 73</b>	0.150714	0.162246	-0.015368	0.238549	0.256802	-0.024324
<b>Sample 74</b>	0.169221	0.168835	-0.019590	0.180243	0.179832	-0.020866

<b>Sample 75</b>	0.123545	0.121592	-0.010012	0.216242	0.212824	-0.017525
<b>Sample 76</b>	0.195291	0.212840	-0.024320	0.169937	0.185208	-0.021162
<b>Sample 77</b>	0.140709	0.139883	-0.021967	0.175383	0.174353	-0.027381
<b>Sample 78</b>	0.191074	0.196883	-0.058958	0.177657	0.183058	-0.054818
<b>Sample 79</b>	0.186107	0.191856	-0.031823	0.169900	0.175148	-0.029051
<b>Sample 80</b>	0.235115	0.225676	-0.050060	0.084774	0.081371	-0.018050
<b>Sample 81</b>	0.116505	0.126001	-0.017901	0.255530	0.276356	-0.039261
<b>Sample 82</b>	0.144265	0.139498	-0.017786	0.174302	0.168542	-0.021489
<b>Sample 83</b>	0.161064	0.166262	-0.020407	0.182555	0.188445	-0.023129
<b>Sample 84</b>	0.105719	0.111615	-0.016227	0.174790	0.184538	-0.026828
<b>Sample 85</b>	0.144922	0.159311	-0.017434	0.231888	0.254912	-0.027897
<b>Sample 86</b>	0.131410	0.132349	-0.016960	0.239863	0.241577	-0.030957
<b>Sample 87</b>	0.158727	0.157641	-0.012590	0.166861	0.165720	-0.013235
<b>Sample 88</b>	0.152424	0.147252	-0.018534	0.213487	0.206244	-0.025958
<b>Sample 89</b>	0.147498	0.142572	-0.019628	0.172515	0.166754	-0.022957
<b>Sample 90</b>	0.118961	0.116705	-0.021099	0.226348	0.222056	-0.040145
<b>Sample 91</b>	0.175422	0.172738	-0.029020	0.210326	0.207108	-0.034795
<b>Sample 92</b>	0.083055	0.085491	-0.015145	0.218539	0.224949	-0.039849
<b>Sample 93</b>	0.158600	0.162174	-0.029543	0.278441	0.284716	-0.051866
<b>Sample 94</b>	0.227550	0.235538	-0.034398	0.167896	0.173790	-0.025380
<b>Sample 95</b>	0.101396	0.096966	-0.011047	0.181716	0.173778	-0.019798
<b>Sample 96</b>	0.167401	0.177964	0.043533	0.203405	0.216239	0.052895
<b>Sample 97</b>	0.151457	0.143897	0.013858	0.184336	0.175134	0.016867
<b>Sample 98</b>	0.099971	0.093548	-0.015213	0.165475	0.154843	-0.025181
<b>Sample 99</b>	0.210092	0.205984	-0.054063	0.168927	0.165623	-0.043470
<b>Sample 100</b>	0.141891	0.154924	-0.020308	0.268811	0.293503	-0.038473
<b>Sample 101</b>	0.174014	0.166449	-0.027495	0.206818	0.197827	-0.032678

<b>Sample 102</b>	0.132525	0.126679	0.013706	0.256843	0.245512	0.026564
<b>Sample 103</b>	0.114870	0.115842	-0.014208	0.228197	0.230128	-0.028225
<b>Sample 104</b>	0.234965	0.237883	-0.058562	0.161203	0.163205	-0.040177
<b>Sample 105</b>	0.233490	0.241607	-0.030572	0.186127	0.192598	-0.024371
<b>Sample 106</b>	0.110347	0.115898	-0.027155	0.214710	0.225510	-0.052838
<b>Sample 107</b>	0.156714	0.151146	-0.025384	0.208944	0.201521	-0.033844
<b>Sample 108</b>	0.115671	0.113279	-0.014760	0.210649	0.206291	-0.026879
<b>Sample 109</b>	0.119985	0.125185	0.014449	0.193686	0.202080	0.023325
<b>Sample 110</b>	0.162329	0.158322	-0.041629	0.195485	0.190660	-0.050132
<b>Sample 111</b>	0.217499	0.206936	-0.020964	0.154507	0.147003	-0.014892
<b>Sample 112</b>	0.163648	0.164659	-0.031730	0.194148	0.195348	-0.037644
<b>Sample 113</b>	0.149120	0.156748	0.018599	0.223832	0.235281	0.027917
<b>Sample 114</b>	0.165168	0.177134	0.020901	0.198377	0.212748	0.025104
<b>Sample 115</b>	0.186045	0.190225	-0.028715	0.158391	0.161949	-0.024446
<b>Sample 116</b>	0.183463	0.184837	-0.032007	0.135303	0.136317	-0.023605
<b>Sample 117</b>	0.138747	0.147779	-0.023467	0.199255	0.212225	-0.033700
<b>Sample 118</b>	0.146583	0.145425	-0.016922	0.241916	0.240006	-0.027928
<b>Sample 119</b>	0.190219	0.198482	0.029399	0.186761	0.194874	0.028864
<b>Sample 120</b>	0.070901	0.073505	-0.008707	0.295305	0.306154	-0.036266
<b>Sample 121</b>	0.100585	0.103989	-0.025708	0.233678	0.241587	-0.059726
<b>Sample 122</b>	0.203047	0.205172	0.012111	0.115312	0.116518	0.006878
<b>Sample 123</b>	0.128628	0.128574	-0.008515	0.143626	0.143566	-0.009508
<b>Sample 124</b>	0.214765	0.220135	-0.053866	0.210366	0.215626	-0.052763
<b>Sample 125</b>	0.214618	0.229461	-0.021204	0.155000	0.165720	-0.015314
<b>Sample 126</b>	0.085831	0.082428	-0.012538	0.256069	0.245916	-0.037405
<b>Sample 127</b>	0.204176	0.204769	-0.019673	0.198411	0.198988	-0.019117
<b>Sample 128</b>	0.077860	0.081585	-0.011415	0.208997	0.218996	-0.030641

<b>Sample 129</b>	0.159740	0.156143	-0.019740	0.183097	0.178974	-0.022627
<b>Sample 130</b>	0.155396	0.156183	-0.024581	0.177839	0.178740	-0.028131
<b>Sample 131</b>	0.156435	0.168745	0.018960	0.163355	0.176209	0.019799
<b>Sample 132</b>	0.172547	0.171195	-0.021599	0.222359	0.220617	-0.027834
<b>Sample 133</b>	0.186038	0.175621	0.019630	0.155159	0.146471	0.016372
<b>Sample 134</b>	0.191318	0.188123	-0.018300	0.179378	0.176382	-0.017158
<b>Sample 135</b>	0.203604	0.215879	-0.039325	0.118816	0.125980	-0.022949
<b>Sample 136</b>	0.176431	0.190131	0.009192	0.171469	0.184784	0.008934
<b>Sample 137</b>	0.194352	0.182670	-0.015701	0.148170	0.139264	-0.011970
<b>Sample 138</b>	0.206736	0.207171	-0.039705	0.175101	0.175470	-0.033629
<b>Sample 139</b>	0.132620	0.137133	-0.017792	0.222934	0.230520	-0.029908
<b>Sample 140</b>	0.210601	0.204391	-0.038060	0.136772	0.132739	-0.024717
<b>Sample 141</b>	0.211898	0.207735	0.021061	0.130744	0.128175	0.012995
<b>Sample 142</b>	0.211154	0.207016	-0.030569	0.123597	0.121176	-0.017894
<b>Sample 143</b>	0.173121	0.174348	-0.024003	0.134078	0.135029	-0.018590
<b>Sample 144</b>	0.121888	0.124166	-0.020217	0.264100	0.269037	-0.043805
<b>Sample 145</b>	0.246402	0.248106	-0.053631	0.156623	0.157706	-0.034090
<b>Sample 146</b>	0.172601	0.174065	-0.017152	0.230904	0.232864	-0.022946
<b>Sample 147</b>	0.145311	0.153835	-0.022896	0.197099	0.208661	-0.031056
<b>Sample 148</b>	0.142720	0.147587	-0.009502	0.239704	0.247877	-0.015960
<b>Sample 149</b>	0.169505	0.163715	-0.030474	0.221198	0.213642	-0.039768
<b>Sample 150</b>	0.172595	0.173396	-0.012357	0.247874	0.249024	-0.017747
<b>Sample 151</b>	0.072566	0.073928	-0.017264	0.267525	0.272546	-0.063646
<b>Sample 152</b>	0.152428	0.156495	-0.013844	0.170053	0.174589	-0.015444
<b>Sample 153</b>	0.217622	0.201307	-0.051181	0.145008	0.134137	-0.034104
<b>Sample 154</b>	0.134755	0.140568	-0.023076	0.213889	0.223116	-0.036627
<b>Sample 155</b>	0.142636	0.151316	0.017091	0.219729	0.233101	0.026329

<b>Sample 156</b>	0.143329	0.151371	-0.017364	0.236957	0.250251	-0.028706
<b>Sample 157</b>	0.191649	0.186426	0.029612	0.187505	0.182395	0.028972
<b>Sample 158</b>	0.163506	0.171814	-0.054249	0.235051	0.246995	-0.077987
<b>Sample 159</b>	0.086705	0.087507	-0.006981	0.225764	0.227851	-0.018178
<b>Sample 160</b>	0.205913	0.202548	-0.034915	0.125567	0.123515	-0.021292
<b>Sample 161</b>	0.118725	0.114215	0.008102	0.152392	0.146602	0.010399
<b>Sample 162</b>	0.146476	0.151432	0.010717	0.166773	0.172415	0.012202
<b>Sample 163</b>	0.183561	0.189669	-0.039843	0.216335	0.223534	-0.046957
<b>Sample 164</b>	0.147776	0.150533	0.013371	0.181961	0.185356	0.016464
<b>Sample 165</b>	0.214966	0.226718	0.021582	0.131101	0.138268	0.013162
<b>Sample 166</b>	0.079510	0.080253	-0.013620	0.207886	0.209829	-0.035611
<b>Sample 167</b>	0.174381	0.172554	0.028847	0.204352	0.202210	0.033805
<b>Sample 168</b>	0.148776	0.141742	-0.013665	0.164109	0.156350	-0.015073
<b>Sample 169</b>	0.113291	0.108950	-0.012533	0.198592	0.190983	-0.021969
<b>Sample 170</b>	0.091994	0.088970	-0.005473	0.207373	0.200556	-0.012337
<b>Sample 171</b>	0.123573	0.130941	-0.020152	0.232947	0.246837	-0.037988
<b>Sample 172</b>	0.159518	0.170868	-0.035858	0.224914	0.240917	-0.050558
<b>Sample 173</b>	0.189001	0.180023	-0.026754	0.189500	0.180498	-0.026824
<b>Sample 174</b>	0.140090	0.143465	0.014437	0.180359	0.184704	0.018587
<b>Sample 175</b>	0.205064	0.209949	-0.045588	0.142421	0.145813	-0.031662
<b>Sample 176</b>	0.186882	0.197997	-0.034785	0.134957	0.142984	-0.025120
<b>Sample 177</b>	0.230195	0.225946	-0.030415	0.131772	0.129339	-0.017411
<b>Sample 178</b>	0.131119	0.141117	-0.024556	0.255152	0.274605	-0.047786
<b>Sample 179</b>	0.226118	0.223921	-0.040184	0.134960	0.133649	-0.023984
<b>Sample 180</b>	0.166867	0.174077	-0.045343	0.186310	0.194361	-0.050627
<b>Sample 181</b>	0.125182	0.135531	-0.016001	0.206271	0.223323	-0.026366
<b>Sample 182</b>	0.074875	0.080756	-0.012980	0.339635	0.366314	-0.058879

<b>Sample 183</b>	0.134738	0.147714	0.027070	0.164949	0.180834	0.033140
<b>Sample 184</b>	0.172395	0.173137	-0.028831	0.210438	0.211344	-0.035193
<b>Sample 185</b>	0.137179	0.136148	-0.034274	0.285455	0.283309	-0.071321
<b>Sample 186</b>	0.172496	0.170017	-0.023582	0.128677	0.126828	-0.017592
<b>Sample 187</b>	0.166141	0.160102	-0.027651	0.150282	0.144819	-0.025012
<b>Sample 188</b>	0.187664	0.202280	0.016340	0.170479	0.183756	0.014844
<b>Sample 189</b>	0.140796	0.151581	0.009223	0.238375	0.256634	0.015614
<b>Sample 190</b>	0.168171	0.174162	-0.019565	0.141695	0.146743	-0.016485
<b>Sample 191</b>	0.148976	0.153424	-0.028574	0.201206	0.207213	-0.038592
<b>Sample 192</b>	0.071554	0.071376	0.006375	0.266577	0.265913	0.023750
<b>Sample 193</b>	0.161017	0.162908	-0.051883	0.150918	0.152690	-0.048629
<b>Sample 194</b>	0.183975	0.175526	-0.016037	0.108168	0.103200	-0.009429
<b>Sample 195</b>	0.131704	0.135179	0.028480	0.236464	0.242704	0.051133
<b>Sample 196</b>	0.233287	0.231854	-0.016837	0.160679	0.159693	-0.011597
<b>Sample 197</b>	0.065867	0.065061	-0.009807	0.258513	0.255350	-0.038489
<b>Sample 198</b>	0.109712	0.101026	0.005688	0.138365	0.127411	0.007174
<b>Sample 199</b>	0.113205	0.108582	-0.019197	0.219578	0.210611	-0.037235
<b>Sample 200</b>	0.185899	0.178641	0.013974	0.175043	0.168209	0.013157
<b>Sample 201</b>	0.233160	0.250766	-0.028154	0.185956	0.199998	-0.022454
<b>Sample 202</b>	0.209401	0.206040	-0.024047	0.120009	0.118083	-0.013781
<b>Sample 203</b>	0.097794	0.100812	-0.013267	0.260804	0.268853	-0.035381
<b>Sample 204</b>	0.234852	0.238388	-0.027385	0.141019	0.143142	-0.016443
<b>Sample 205</b>	0.176306	0.181610	-0.025821	0.203755	0.209884	-0.029841
<b>Sample 206</b>	0.113836	0.111604	0.011972	0.252342	0.247394	0.026538
<b>Sample 207</b>	0.104541	0.105018	-0.010699	0.232835	0.233897	-0.023828
<b>Sample 208</b>	0.187762	0.193026	0.033047	0.185096	0.190285	0.032578
<b>Sample 209</b>	0.177104	0.175083	-0.009321	0.180736	0.178673	-0.009513

<b>Sample 210</b>	0.157020	0.153498	0.017942	0.134845	0.131820	0.015408
<b>Sample 211</b>	0.151615	0.146840	-0.014606	0.207138	0.200614	-0.019955
<b>Sample 212</b>	0.222294	0.220176	-0.012211	0.211291	0.209278	-0.011607
<b>Sample 213</b>	0.143595	0.136851	-0.022220	0.187491	0.178686	-0.029012
<b>Sample 214</b>	0.149009	0.151625	-0.034633	0.218354	0.222189	-0.050750
<b>Sample 215</b>	0.182225	0.170946	-0.029567	0.165491	0.155248	-0.026852
<b>Sample 216</b>	0.109520	0.116943	0.024752	0.216033	0.230676	0.048825
<b>Sample 217</b>	0.140341	0.153295	0.026931	0.196788	0.214953	0.037763
<b>Sample 218</b>	0.148036	0.143165	-0.030048	0.135990	0.131516	-0.027603
<b>Sample 219</b>	0.247338	0.243735	-0.042009	0.177177	0.174596	-0.030093
<b>Sample 220</b>	0.127927	0.131779	-0.022320	0.250593	0.258139	-0.043722
<b>Sample 221</b>	0.193748	0.198058	0.017929	0.208520	0.213158	0.019295
<b>Sample 222</b>	0.216742	0.219211	-0.030014	0.170676	0.172621	-0.023635
<b>Sample 223</b>	0.160634	0.159191	-0.020549	0.109352	0.108370	-0.013989
<b>Sample 224</b>	0.158957	0.170906	-0.027523	0.190139	0.204433	-0.032922
<b>Sample 225</b>	0.146291	0.155493	-0.022269	0.209790	0.222987	-0.031936
<b>Sample 226</b>	0.209535	0.214317	-0.045803	0.185729	0.189967	-0.040599
<b>Sample 227</b>	0.215917	0.212756	0.046341	0.130992	0.129074	0.028114
<b>Sample 228</b>	0.194867	0.203057	-0.040121	0.190032	0.198019	-0.039126
<b>Sample 229</b>	0.213280	0.214912	-0.050832	0.188518	0.189960	-0.044930
<b>Sample 230</b>	0.165114	0.169778	-0.032269	0.186256	0.191517	-0.036401
<b>Sample 231</b>	0.184968	0.182072	-0.038321	0.190924	0.187936	-0.039555
<b>Sample 232</b>	0.110670	0.109572	-0.016471	0.261153	0.258564	-0.038867
<b>Sample 233</b>	0.120899	0.115306	-0.012105	0.215763	0.205783	-0.021603
<b>Sample 234</b>	0.147556	0.144594	-0.012121	0.206624	0.202476	-0.016973
<b>Sample 235</b>	0.131148	0.130852	-0.008497	0.195156	0.194714	-0.012643
<b>Sample 236</b>	0.121666	0.119194	0.013917	0.184624	0.180874	0.021119



<b>Sample 237</b>	0.168756	0.169565	0.021136	0.160597	0.161367	0.020114
<b>Sample 238</b>	0.180464	0.167995	-0.034211	0.134599	0.125299	-0.025516
<b>Sample 239</b>	0.184231	0.180640	0.018579	0.197369	0.193522	0.019904
<b>Sample 240</b>	0.157129	0.156351	-0.023689	0.238557	0.237375	-0.035966
<b>Sample 241</b>	0.108634	0.105032	-0.015388	0.217295	0.210090	-0.030780
<b>Sample 242</b>	0.167821	0.166442	-0.031528	0.228083	0.226210	-0.042850
<b>Sample 243</b>	0.097053	0.096398	0.004727	0.231692	0.230129	0.011286
<b>Sample 244</b>	0.054058	0.052404	0.006899	0.224433	0.217564	0.028644
<b>Sample 245</b>	0.171594	0.180888	-0.026600	0.171167	0.180438	-0.026533
<b>Sample 246</b>	0.157394	0.156819	-0.025186	0.179712	0.179056	-0.028757
<b>Sample 247</b>	0.172071	0.192055	-0.020515	0.200350	0.223618	-0.023886
<b>Sample 248</b>	0.150597	0.157977	-0.012127	0.200605	0.210436	-0.016154
<b>Sample 249</b>	0.063649	0.061219	0.003630	0.280220	0.269519	0.015983
<b>Sample 250</b>	0.150381	0.151119	0.012890	0.202761	0.203756	0.017380
<b>Sample 251</b>	0.182372	0.196538	-0.045384	0.201426	0.217072	-0.050125
<b>Sample 252</b>	0.191801	0.194080	0.020438	0.199596	0.201968	0.021268
<b>Sample 253</b>	0.169520	0.173943	-0.035696	0.191271	0.196263	-0.040276
<b>Sample 254</b>	0.152191	0.150849	-0.012063	0.194596	0.192881	-0.015424
<b>Sample 255</b>	0.238214	0.249515	-0.051171	0.151557	0.158746	-0.032556
<b>Sample 256</b>	0.144436	0.154034	-0.023245	0.220620	0.235282	-0.035506
<b>Sample 257</b>	0.114573	0.112278	-0.020206	0.235094	0.230384	-0.041461
<b>Sample 258</b>	0.198576	0.199958	-0.021692	0.175703	0.176926	-0.019193
<b>Sample 259</b>	0.124501	0.125066	-0.012408	0.237760	0.238840	-0.023695
<b>Sample 260</b>	0.180861	0.181664	-0.022368	0.183972	0.184789	-0.022752
<b>Sample 261</b>	0.211365	0.219354	-0.026784	0.161251	0.167346	-0.020434
<b>Sample 262</b>	0.197406	0.196264	-0.024872	0.191360	0.190253	-0.024111
<b>Sample 263</b>	0.109166	0.102708	-0.024883	0.202855	0.190854	-0.046239

<b>Sample 264</b>	0.219933	0.225835	0.024217	0.103651	0.106432	0.011413
<b>Sample 265</b>	0.153899	0.150414	0.025100	0.245387	0.239831	0.040021
<b>Sample 266</b>	0.170575	0.166279	-0.021546	0.159145	0.155137	-0.020102
<b>Sample 267</b>	0.096792	0.094302	-0.008895	0.222632	0.216905	-0.020460
<b>Sample 268</b>	0.232721	0.232527	-0.036193	0.177350	0.177202	-0.027581
<b>Sample 269</b>	0.193160	0.195421	-0.030964	0.122497	0.123930	-0.019637
<b>Sample 270</b>	0.181146	0.184984	-0.044289	0.172934	0.176598	-0.042282
<b>Sample 271</b>	0.127750	0.129173	-0.016716	0.221056	0.223518	-0.028925
<b>Sample 272</b>	0.206728	0.204253	-0.021489	0.087843	0.086791	-0.009131
<b>Sample 273</b>	0.139509	0.139428	-0.018288	0.246249	0.246105	-0.032280
<b>Sample 274</b>	0.160823	0.162942	-0.013937	0.148844	0.150805	-0.012899
<b>Sample 275</b>	0.177756	0.186613	0.020424	0.191563	0.201107	0.022010
<b>Sample 276</b>	0.102081	0.104613	0.020873	0.187804	0.192462	0.038402
<b>Sample 277</b>	0.146392	0.145564	-0.018484	0.189461	0.188389	-0.023922
<b>Sample 278</b>	0.188985	0.199770	-0.036733	0.165766	0.175226	-0.032220
<b>Sample 279</b>	0.250967	0.239950	-0.039584	0.151112	0.144479	-0.023834
<b>Sample 280</b>	0.120384	0.123685	-0.020402	0.157909	0.162239	-0.026761
<b>Sample 281</b>	0.225247	0.235934	-0.042405	0.118717	0.124350	-0.022350
<b>Sample 282</b>	0.200050	0.204720	-0.038814	0.167248	0.171153	-0.032450
<b>Sample 283</b>	0.191361	0.188440	0.027286	0.180154	0.177404	0.025688
<b>Sample 284</b>	0.163153	0.169910	0.011581	0.166926	0.173840	0.011849
<b>Sample 285</b>	0.025329	0.025557	0.002976	0.266063	0.268456	0.031259
<b>Sample 286</b>	0.113682	0.117476	-0.010986	0.184426	0.190581	-0.017822
<b>Sample 287</b>	0.114180	0.121172	-0.009797	0.249027	0.264277	-0.021368
<b>Sample 288</b>	0.123003	0.121260	-0.024555	0.200878	0.198032	-0.040101
<b>Sample 289</b>	0.245239	0.243723	-0.029975	0.103345	0.102706	-0.012632
<b>Sample 290</b>	0.167906	0.170511	-0.023338	0.153462	0.155844	-0.021331

<b>Sample 291</b>	0.124349	0.122857	-0.023205	0.233826	0.231020	-0.043635
<b>Sample 292</b>	0.213860	0.221939	-0.024523	0.140754	0.146071	-0.016140
<b>Sample 293</b>	0.176443	0.172417	-0.023733	0.222689	0.217607	-0.029954
<b>Sample 294</b>	0.145871	0.145315	-0.021328	0.194179	0.193438	-0.028392
<b>Sample 295</b>	0.195056	0.217054	-0.033386	0.115314	0.128319	-0.019737
<b>Sample 296</b>	0.170183	0.167938	-0.033119	0.139451	0.137611	-0.027138
<b>Sample 297</b>	0.178435	0.165553	-0.029654	0.138500	0.128501	-0.023017
<b>Sample 298</b>	0.086015	0.089089	-0.011673	0.246942	0.255767	-0.033511
<b>Sample 299</b>	0.131655	0.136569	-0.009981	0.198312	0.205714	-0.015034
<b>Sample 300</b>	0.160992	0.166868	-0.034245	0.191175	0.198153	-0.040665
<b>Sample 301</b>	0.191812	0.191933	-0.031001	0.151485	0.151581	-0.024484
<b>Sample 302</b>	0.183474	0.187462	-0.025502	0.200004	0.204350	-0.027799
<b>Sample 303</b>	0.185286	0.183004	-0.017059	0.207527	0.204970	-0.019106
<b>Sample 304</b>	0.100630	0.094459	-0.012070	0.204085	0.191572	-0.024478
<b>Sample 305</b>	0.134176	0.143769	-0.012950	0.239891	0.257042	-0.023153
<b>Sample 306</b>	0.196949	0.200971	-0.046921	0.196751	0.200769	-0.046874
<b>Sample 307</b>	0.196636	0.194908	-0.044004	0.221261	0.219317	-0.049515
<b>Sample 308</b>	0.209335	0.203007	-0.029742	0.231455	0.224458	-0.032884
<b>Sample 309</b>	0.116948	0.111306	-0.015344	0.201310	0.191597	-0.026413
<b>Sample 310</b>	0.114953	0.112740	0.008858	0.190280	0.186616	0.014663
<b>Sample 311</b>	0.146218	0.160579	-0.029826	0.252141	0.276905	-0.051433
<b>Sample 312</b>	0.081397	0.074871	-0.011485	0.241671	0.222297	-0.034100
<b>Sample 313</b>	0.165167	0.163259	-0.021954	0.226859	0.224239	-0.030154
<b>Sample 314</b>	0.173624	0.162456	-0.014508	0.173101	0.161967	-0.014464
<b>Sample 315</b>	0.127715	0.122922	0.009811	0.208297	0.200480	0.016001
<b>Sample 316</b>	0.203779	0.195202	-0.046140	0.158479	0.151810	-0.035883
<b>Sample 317</b>	0.122495	0.130900	-0.020663	0.248610	0.265668	-0.041936

<b>Sample 318</b>	0.090452	0.089427	0.013864	0.202493	0.200199	0.031037
<b>Sample 319</b>	0.187046	0.187720	-0.017785	0.076641	0.076917	-0.007287
<b>Sample 320</b>	0.131677	0.130820	-0.013224	0.223290	0.221836	-0.022424
<b>Sample 321</b>	0.131606	0.141770	-0.022390	0.194617	0.209648	-0.033110
<b>Sample 322</b>	0.120589	0.123167	-0.019802	0.235484	0.240518	-0.038668
<b>Sample 323</b>	0.089759	0.085739	-0.009955	0.239040	0.228332	-0.026511
<b>Sample 324</b>	0.161749	0.161766	-0.031088	0.201831	0.201852	-0.038792
<b>Sample 325</b>	0.189721	0.187443	-0.027404	0.207201	0.204712	-0.029929
<b>Sample 326</b>	0.153961	0.164310	0.010204	0.121690	0.129870	0.008065
<b>Sample 327</b>	0.143399	0.152925	0.032652	0.217500	0.231948	0.049524
<b>Sample 328</b>	0.096618	0.094718	-0.025438	0.270572	0.265251	-0.071238
<b>Sample 329</b>	0.147630	0.144781	-0.025141	0.235305	0.230765	-0.040071
<b>Sample 330</b>	0.139240	0.136061	-0.016318	0.206126	0.201421	-0.024156
<b>Sample 331</b>	0.176832	0.190699	-0.032130	0.151780	0.163682	-0.027578
<b>Sample 332</b>	0.228172	0.229406	-0.013741	0.138871	0.139621	-0.008363
<b>Sample 333</b>	0.188781	0.194307	-0.020641	0.230597	0.237347	-0.025213
<b>Sample 334</b>	0.133212	0.133997	-0.017164	0.177426	0.178472	-0.022861
<b>Sample 335</b>	0.128290	0.126147	-0.011475	0.174500	0.171585	-0.015609
<b>Sample 336</b>	0.143462	0.146871	-0.017020	0.194928	0.199560	-0.023126
<b>Sample 337</b>	0.077824	0.082921	-0.011075	0.202426	0.215683	-0.028807
<b>Sample 338</b>	0.172045	0.187895	-0.023109	0.180726	0.197375	-0.024275
<b>Sample 339</b>	0.191780	0.191494	0.039757	0.174992	0.174731	0.036277
<b>Sample 340</b>	0.148088	0.143004	-0.023717	0.163179	0.157577	-0.026134
<b>Sample 341</b>	0.099766	0.096794	-0.016445	0.201876	0.195861	-0.033277
<b>Sample 342</b>	0.207554	0.211907	-0.036351	0.187528	0.191461	-0.032844
<b>Sample 343</b>	0.148616	0.153992	-0.035535	0.231906	0.240295	-0.055451
<b>Sample 344</b>	0.215711	0.228855	-0.079471	0.211533	0.224421	-0.077932

<b>Sample 345</b>	0.155217	0.168637	-0.032835	0.187893	0.204138	-0.039747
<b>Sample 346</b>	0.098442	0.098241	-0.014445	0.272568	0.272012	-0.039995
<b>Sample 347</b>	0.218272	0.229762	-0.029670	0.118641	0.124887	-0.016127
<b>Sample 348</b>	0.206763	0.196402	-0.023130	0.141563	0.134469	-0.015836
<b>Sample 349</b>	0.210149	0.218218	-0.037736	0.173269	0.179923	-0.031114
<b>Sample 350</b>	0.170714	0.171231	0.009367	0.185244	0.185805	0.010164
<b>Sample 351</b>	0.215482	0.205230	0.035519	0.071416	0.068018	0.011772
<b>Sample 352</b>	0.182931	0.178915	-0.017915	0.188300	0.184166	-0.018441
<b>Sample 353</b>	0.210071	0.214945	0.029122	0.118178	0.120920	0.016383
<b>Sample 354</b>	0.187702	0.192996	-0.031384	0.163525	0.168137	-0.027341
<b>Sample 355</b>	0.201313	0.208989	-0.030942	0.167025	0.173394	-0.025672
<b>Sample 356</b>	0.168673	0.175914	-0.037666	0.231743	0.241692	-0.051751
<b>Sample 357</b>	0.143768	0.133725	0.009175	0.124298	0.115615	0.007932
<b>Sample 358</b>	0.191426	0.189874	-0.030147	0.138636	0.137512	-0.021833
<b>Sample 359</b>	0.227878	0.231633	-0.044491	0.207679	0.211102	-0.040547
<b>Sample 360</b>	0.148161	0.152710	-0.010351	0.225180	0.232095	-0.015731
<b>Sample 361</b>	0.137659	0.135085	-0.019739	0.190569	0.187005	-0.027326
<b>Sample 362</b>	0.150411	0.154265	-0.024993	0.166161	0.170419	-0.027610
<b>Sample 363</b>	0.190261	0.178555	-0.018276	0.182025	0.170826	-0.017485
<b>Sample 364</b>	0.185181	0.194159	-0.048664	0.208434	0.218539	-0.054775
<b>Sample 365</b>	0.146007	0.149311	-0.021268	0.202246	0.206823	-0.029460
<b>Sample 366</b>	0.203349	0.203548	-0.039066	0.117254	0.117369	-0.022526
<b>Sample 367</b>	0.134611	0.130436	-0.010941	0.171605	0.166283	-0.013948
<b>Sample 368</b>	0.168112	0.177608	-0.017854	0.142139	0.150168	-0.015096
<b>Sample 369</b>	0.141913	0.151548	-0.019757	0.209544	0.223770	-0.029173
<b>Sample 370</b>	0.174504	0.172757	-0.040142	0.222149	0.219924	-0.051102
<b>Sample 371</b>	0.102155	0.105227	-0.020345	0.165872	0.170861	-0.033034

<b>Sample 372</b>	0.217449	0.211559	-0.027974	0.152115	0.147995	-0.019569
<b>Sample 373</b>	0.139911	0.138565	-0.036973	0.180844	0.179104	-0.047790
<b>Sample 374</b>	0.197029	0.202816	-0.026902	0.217231	0.223612	-0.029660
<b>Sample 375</b>	0.148244	0.137929	-0.017668	0.201128	0.187133	-0.023971
<b>Sample 376</b>	0.189229	0.183091	-0.021859	0.130960	0.126712	-0.015128
<b>Sample 377</b>	0.177390	0.180493	-0.019882	0.167186	0.170110	-0.018739
<b>Sample 378</b>	0.193402	0.198098	-0.031031	0.154484	0.158236	-0.024786
<b>Sample 379</b>	0.164018	0.165745	-0.036749	0.212422	0.214658	-0.047594
<b>Sample 380</b>	0.172656	0.186441	-0.016372	0.224079	0.241970	-0.021248
<b>Sample 381</b>	0.109588	0.115496	-0.017104	0.196184	0.206760	-0.030619
<b>Sample 382</b>	0.125772	0.125367	-0.014060	0.268308	0.267444	-0.029994
<b>Sample 383</b>	0.254265	0.261286	-0.025342	0.106900	0.109852	-0.010654
<b>Sample 384</b>	0.089259	0.085419	0.007342	0.152569	0.146006	0.012549
<b>Sample 385</b>	0.185276	0.187866	-0.027525	0.167251	0.169589	-0.024847
<b>Sample 386</b>	0.169888	0.172410	-0.017442	0.214419	0.217602	-0.022014
<b>Sample 387</b>	0.135821	0.139566	-0.018507	0.204782	0.210428	-0.027903
<b>Sample 388</b>	0.189025	0.209746	-0.027023	0.182581	0.202595	-0.026102
<b>Sample 389</b>	0.174011	0.178330	-0.025744	0.241049	0.247033	-0.035662
<b>Sample 390</b>	0.171409	0.172269	0.021231	0.160143	0.160946	0.019835
<b>Sample 391</b>	0.148102	0.144109	-0.029502	0.185848	0.180837	-0.037020
<b>Sample 392</b>	0.191734	0.187131	-0.020517	0.156151	0.152402	-0.016710
<b>Sample 393</b>	0.134179	0.142279	-0.021498	0.225922	0.239559	-0.036197
<b>Sample 394</b>	0.154367	0.161088	-0.030775	0.219620	0.229183	-0.043784
<b>Sample 395</b>	0.175632	0.182305	0.025529	0.179986	0.186825	0.026162
<b>Sample 396</b>	0.171354	0.172164	-0.022044	0.185055	0.185929	-0.023806
<b>Sample 397</b>	0.148815	0.147987	-0.025063	0.240626	0.239286	-0.040525
<b>Sample 398</b>	0.176398	0.175725	-0.037888	0.180471	0.179782	-0.038763

<b>Sample 399</b>	0.188236	0.195556	-0.023932	0.135918	0.141204	-0.017280
<b>Sample 400</b>	0.180011	0.188770	-0.023679	0.192943	0.202332	-0.025380
<b>Sample 401</b>	0.146907	0.153671	-0.022182	0.228562	0.239086	-0.034511
<b>Sample 402</b>	0.144327	0.141344	-0.026231	0.160513	0.157194	-0.029172
<b>Sample 403</b>	0.192059	0.199183	-0.025027	0.263336	0.273105	-0.034315
<b>Sample 404</b>	0.142282	0.144935	-0.027612	0.169334	0.172491	-0.032862
<b>Sample 405</b>	0.164178	0.164710	-0.017545	0.164975	0.165509	-0.017630
<b>Sample 406</b>	0.096921	0.099838	-0.011926	0.293809	0.302653	-0.036154
<b>Sample 407</b>	0.092745	0.088768	-0.019727	0.217944	0.208600	-0.046358
<b>Sample 408</b>	0.136036	0.138997	-0.034657	0.239595	0.244811	-0.061040
<b>Sample 409</b>	0.092922	0.093823	-0.021212	0.234600	0.236876	-0.053554
<b>Sample 410</b>	0.141532	0.142231	-0.026273	0.203480	0.204485	-0.037773
<b>Sample 411</b>	0.169411	0.180582	-0.036352	0.179895	0.191757	-0.038601
<b>Sample 412</b>	0.150965	0.147188	-0.019737	0.215352	0.209965	-0.028155
<b>Sample 413</b>	0.207090	0.205633	-0.021425	0.138709	0.137733	-0.014350
<b>Sample 414</b>	0.246442	0.241633	-0.043410	0.133875	0.131263	-0.023581
<b>Sample 415</b>	0.189938	0.180284	-0.036059	0.107942	0.102455	-0.020492
<b>Sample 416</b>	0.170621	0.172449	-0.015526	0.177933	0.179839	-0.016192
<b>Sample 417</b>	0.067685	0.068191	-0.009257	0.222888	0.224554	-0.030484
<b>Sample 418</b>	0.135758	0.130246	0.015064	0.161015	0.154478	0.017867
<b>Sample 419</b>	0.223009	0.220212	-0.053857	0.140664	0.138900	-0.033971
<b>Sample 420</b>	0.178365	0.182705	-0.032302	0.218601	0.223921	-0.039589
<b>Sample 421</b>	0.224910	0.225308	-0.038262	0.156766	0.157043	-0.026669
<b>Sample 422</b>	0.165493	0.182505	0.018145	0.163399	0.180196	0.017915
<b>Sample 423</b>	0.208377	0.211057	-0.022742	0.186013	0.188406	-0.020301
<b>Sample 424</b>	0.157899	0.166875	-0.017993	0.179644	0.189855	-0.020471
<b>Sample 425</b>	0.215716	0.215671	-0.027251	0.132420	0.132392	-0.016728

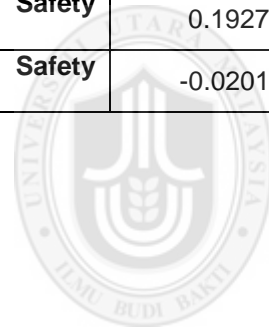
<b>Sample 426</b>	0.110652	0.104869	0.008611	0.220911	0.209367	0.017192
<b>Sample 427</b>	0.238365	0.251730	-0.044232	0.156661	0.165445	-0.029071
<b>Sample 428</b>	0.229316	0.239172	-0.045078	0.159578	0.166437	-0.031369
<b>Sample 429</b>	0.238995	0.243343	-0.056618	0.163314	0.166285	-0.038689
<b>Sample 430</b>	0.219595	0.221211	-0.033002	0.147609	0.148695	-0.022184
<b>Sample 431</b>	0.086653	0.083878	-0.011748	0.255559	0.247376	-0.034648
<b>Sample 432</b>	0.136490	0.141093	-0.017037	0.181907	0.188040	-0.022706
<b>Sample 433</b>	0.189571	0.205314	-0.028129	0.214517	0.232332	-0.031831
<b>Sample 434</b>	0.161391	0.171214	-0.040119	0.208278	0.220954	-0.051774
<b>Sample 435</b>	0.152641	0.151723	-0.029435	0.228929	0.227553	-0.044147
<b>Sample 436</b>	0.138698	0.135987	-0.020543	0.243533	0.238774	-0.036071
<b>Sample 437</b>	0.181762	0.179759	-0.030202	0.161112	0.159336	-0.026771
<b>Sample 438</b>	0.138824	0.135068	-0.021910	0.163440	0.159018	-0.025795
<b>Sample 439</b>	0.038727	0.039068	0.005800	0.247387	0.249566	0.037047
<b>Sample 440</b>	0.005970	0.006099	-0.000496	0.345711	0.353168	-0.028709
<b>Sample 441</b>	0.112990	0.108566	-0.008889	0.246716	0.237056	-0.019409
<b>Sample 442</b>	0.191664	0.204669	-0.030114	0.208474	0.222620	-0.032755
<b>Sample 443</b>	0.191294	0.187977	0.037699	0.168987	0.166057	0.033303
<b>Sample 444</b>	0.093684	0.095577	-0.007358	0.230728	0.235390	-0.018122
<b>Sample 445</b>	0.150933	0.164472	-0.008734	0.240504	0.262078	-0.013916
<b>Sample 446</b>	0.219797	0.216223	-0.058926	0.166223	0.163520	-0.044563
<b>Sample 447</b>	0.190044	0.187032	0.022090	0.132995	0.130887	0.015459
<b>Sample 448</b>	0.111916	0.104135	-0.020165	0.168597	0.156875	-0.030377
<b>Sample 449</b>	0.210155	0.205530	-0.049695	0.174306	0.170470	-0.041218
<b>Sample 450</b>	0.114771	0.115448	-0.017162	0.224078	0.225400	-0.033506
<b>Sample 451</b>	0.219300	0.206165	0.049635	0.087936	0.082669	0.019903
<b>Sample 452</b>	0.199453	0.208276	-0.029722	0.205029	0.214098	-0.030553



<b>Sample 453</b>	0.149579	0.142525	-0.033222	0.204631	0.194982	-0.045449
<b>Sample 454</b>	0.156706	0.159112	-0.023915	0.171647	0.174282	-0.026195
<b>Sample 455</b>	0.086464	0.085804	0.010556	0.152131	0.150969	0.018573
<b>Sample 456</b>	0.129824	0.126370	-0.025278	0.192433	0.187314	-0.037469
<b>Sample 457</b>	0.136956	0.136222	-0.014065	0.212344	0.211206	-0.021807
<b>Sample 458</b>	0.264704	0.275465	-0.056893	0.144456	0.150329	-0.031048
<b>Sample 459</b>	0.186420	0.180102	-0.043119	0.149260	0.144201	-0.034524
<b>Sample 460</b>	0.148564	0.157925	-0.021957	0.214802	0.228336	-0.031747
<b>Sample 461</b>	0.096765	0.091161	-0.009172	0.188259	0.177356	-0.017844
<b>Sample 462</b>	0.105591	0.112032	-0.011536	0.231347	0.245459	-0.025276
<b>Sample 463</b>	0.172557	0.177054	-0.037183	0.206198	0.211572	-0.044432
<b>Sample 464</b>	0.169326	0.182585	-0.028314	0.193059	0.208177	-0.032283
<b>Sample 465</b>	0.181973	0.178535	-0.029572	0.203384	0.199541	-0.033051
<b>Sample 466</b>	0.212181	0.214924	-0.041131	0.180472	0.182805	-0.034985
<b>Sample 467</b>	0.163862	0.162642	-0.014045	0.120764	0.119865	-0.010351
<b>Sample 468</b>	0.069865	0.069178	-0.020600	0.291945	0.289073	-0.086080
<b>Sample 469</b>	0.205920	0.212264	-0.029759	0.147905	0.152461	-0.021375
<b>Sample 470</b>	0.164086	0.168721	0.016718	0.144085	0.148155	0.014680
<b>Sample 471</b>	0.166372	0.173059	-0.026090	0.217458	0.226197	-0.034102
<b>Sample 472</b>	0.179469	0.182978	-0.017757	0.193305	0.197084	-0.019126
<b>Sample 473</b>	0.158407	0.165499	-0.021740	0.232951	0.243381	-0.031971
<b>Sample 474</b>	0.121719	0.128042	0.014343	0.193606	0.203664	0.022815
<b>Sample 475</b>	0.169809	0.186316	-0.035777	0.137827	0.151225	-0.029039
<b>Sample 476</b>	0.219212	0.212555	-0.057319	0.185225	0.179600	-0.048432
<b>Sample 477</b>	0.227881	0.237056	-0.027387	0.122060	0.126974	-0.014669
<b>Sample 478</b>	0.088200	0.084512	-0.009976	0.201058	0.192651	-0.022741
<b>Sample 479</b>	0.185228	0.192686	-0.052016	0.183049	0.190419	-0.051404

<b>Sample 480</b>	0.094631	0.091545	0.015316	0.187123	0.181021	0.030285
<b>Sample 481</b>	0.240169	0.254106	-0.037610	0.167020	0.176712	-0.026155
<b>Sample 482</b>	0.194662	0.201102	-0.026748	0.209107	0.216024	-0.028733
<b>Sample 483</b>	0.148258	0.150313	0.015774	0.210918	0.213843	0.022440
<b>Sample 484</b>	0.094363	0.090776	0.005993	0.205770	0.197948	0.013069
<b>Sample 485</b>	0.130132	0.130834	0.006818	0.239203	0.240493	0.012533
<b>Sample 486</b>	0.108879	0.115253	-0.012261	0.175447	0.185717	-0.019757
<b>Sample 487</b>	0.108808	0.110884	-0.023193	0.205697	0.209621	-0.043845
<b>Sample 488</b>	0.050538	0.047687	-0.011410	0.225988	0.213241	-0.051023
<b>Sample 489</b>	0.147234	0.134864	0.014187	0.152339	0.139541	0.014679
<b>Sample 490</b>	0.172414	0.172294	-0.033213	0.227818	0.227659	-0.043886
<b>Sample 491</b>	0.118081	0.119212	-0.016224	0.208073	0.210065	-0.028588
<b>Sample 492</b>	0.178876	0.173759	-0.029185	0.208950	0.202972	-0.034092
<b>Sample 493</b>	0.126811	0.127875	-0.014198	0.171952	0.173395	-0.019253
<b>Sample 494</b>	0.192866	0.196071	-0.026193	0.188715	0.191851	-0.025629
<b>Sample 495</b>	0.216783	0.215393	-0.031712	0.184052	0.182873	-0.026924
<b>Sample 496</b>	0.196753	0.197601	-0.036899	0.173106	0.173852	-0.032464
<b>Sample 497</b>	0.225125	0.229102	-0.042693	0.131849	0.134179	-0.025004
<b>Sample 498</b>	0.188916	0.204916	-0.035168	0.255643	0.277294	-0.047590
<b>Sample 499</b>	0.211196	0.219816	-0.033248	0.185797	0.193381	-0.029249
<b>Sample 500</b>	0.071531	0.067295	-0.007115	0.228457	0.214930	-0.022724

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics ( O /STDEV)	P Values
<b>Authentic Leadership -&gt;Safety Climate-&gt; Safety Compliance</b>	0.154913	0.044552	3.477142	0.000551
<b>Authentic Leadership -&gt;Safety Climate-&gt; Safety Participation</b>	0.155990	0.045702	3.413184	0.000694
<b>Authentic Leadership -&gt; Safety Climate -&gt; Risky Behaviour</b>	-0.016295	0.020387	0.799266	0.424516
<b>Inclusive Leadership -&gt;Safety Climate-&gt; Safety Compliance</b>	0.191416	0.041266	4.638648	0.000004
<b>Inclusive Leadership -&gt; Safety Climate-&gt;Safety Participation</b>	0.192747	0.043485	4.432523	0.000011
<b>Inclusive Leadership -&gt; Safety Climate -&gt;Risky Behaviour</b>	-0.020135	0.023980	0.839661	0.401500



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Mean, STDEV, T-Values, P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
<b>Authentic Leadership -&gt; Safety Climate</b>	0.222192	0.226266	0.063687	3.488796	0.000528
<b>Inclusive Leadership -&gt; Safety Climate</b>	0.274548	0.275014	0.059926	4.581467	0.000006
<b>Safety Climate -&gt; Risky Behaviour</b>	0.073337	0.074684	0.083624	0.876990	0.380913
<b>Safety Climate -&gt; Safety Compliance</b>	0.697205	0.697792	0.030743	22.678128	0.000000
<b>Safety Climate -&gt; Safety Participation</b>	0.702050	0.704424	0.024179	29.035602	0.000000

