# EFFECTS OF HUMAN RESOURCE CAPABILITY, PRODUCTION PLANNING SYSTEM, TECHNOLOGY AND ORGANIZATIONAL CULTURE ON SME'S PERFORMANCE IN WEST JAVA

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# ABSTRACT

This study, in particular, addresses the gap in the effect of Human Resource Capability (HRC), Production Planning System (PPS), Technology (TECH) and Organizational Culture (OC) on the performance of the automotive- and –metal-sectors- based SMEs in West Java. Earlier literature shows that scholars have conducted various studies on these variables individually, but this might not reflect the whole picture. This study investigated the effects of HRC, PPS, Technology, as independent variables, and OC as a mediating variable on Organizational Performance (OP). The theoretical framework of this study used a Resource-based View (RBV) and Dynamic Capabilities (DC). The research instrument consisted of 92 items adapted from previous studies. Out of 370 sets of questionnaires distributed, 360 (97.30%) were usable. The research employed the systematic sampling technique and the AMOS 21 software to draw and make conclusions. The findings support the belief that a specific combination of strategic HRC, PPS and TECH factors improve OP. These results are in line with previous research studies, which agree that HRC, PPS and TECH lead to improved OP. The current findings indicate that RBV and DC lend support in describing the effects of HRC, PPS, TECH and OP, directly or indirectly, through OC. The study suggests important implications for practitioners in building and strengthening the competitive approach of their organizations in the hyper-competitive environment of SMEs. This finding will be useful to government agencies in making new policies to support strategic plans, to increase performance and contribution to GDP which will create jobs, and encourage the development of SMEs to have global competitiveness, as the main targets of the strategic plan of the industry in West Java.



**Keywords**: Human resource capability, production planning system, technology, organizational culture, organizational performance, SMEs.

# ABSTRAK

Kajian ini secara khusus membahaskan jurang mengenai pengaruh Keupayaan Sumber Manusia (HRC), Sistem Perancangan pengeluaran (PPS), Teknologi (TECH) dan Budaya Organisasi (OC) terhadap prestasi PKS sektor automotif dan logam di Jawa Barat. Kajian kepustakaan sebelum ini menunjukkan bahawa para sarjana telah melakukan pelbagai kajian mengenai pemboleh ubah-pemboleh ubah ini secara berasingan. Namun, ini mungkin tidak mencerminkan gambaran secara keseluruhan. Kajian ini meneliti pengaruh HRC, PPS, Teknologi, sebagai pemboleh ubah bebas, dan OC sebagai pemboleh ubah pengantaraan terhadap pencapaian organisasi (OP). Kerangka teori kajian ini menggunakan Sudut Pandangan Berasaskan Sumber Daya (RBV) dan Kemampuan Dinamik (DC). Instrumen kajian terdiri daripada 92 item yang diadaptasi daripada kajian sebelumnya. Sejumlah 370 soal selidik telah diedarkan dan hanya 360 (97.30%) soal selidik boleh digunakan. Penyelidikan ini menggunakan teknik persampelan sistematik dan perisian AMOS 21 dalam membuat kesimpulan. Penemuan juga menyokong keyakinan bahawa gabungan tertentu antara faktor strategik HRC, PPS dan TECH dalam memperbaiki OP. Keputusan ini sesuai dengan kajian sebelum ini, yang bersetuju bahawa HRC, PPS and TECH menyebabkan OP bertambah baik. Penemuan kajian menunjukkan bahawa sokongan RBV dan DC dalam menggambarkan kesan HRC, PPS, TECH dan OP, secara langsung atau tidak langsung melalui OC. Kajian tersebut menunjukkan implikasi penting bagi pengamal dalam membina dan mengukuhkan pendekatan kompetitif organisasi mereka di persekitaran PKS yang hiperkompetitif. Penemuan ini akan memberi manfaat kepada agensi-agensi kerajaan dalam membuat dasar baru untuk menyokong pelan strategik, untuk meningkatkan prestasi dan sumbangan terhadap KDNK. Ini dapat mencipta peluang pekerjaan, mendorong pembangunan PKS yang mempunyai daya saing global iaitu sebagai sasaran utama pelan strategik industri di Jawa Barat dapat direalisasikan.

**Kata Kunci:** Keupayaan Sumber Manusia, Sistem Perancangan Pengeluaran, Teknologi, Budaya Organisasi, Pencapaian Organisasi, PKS.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| AEC | ASEAN Economic Community |
| AGFI | Adjusted Goodness of Fit Index |
| AMOS | Analysis of Moment Structure |
| AMT | Advanced Manufacturing Technology |
| ASEAN | Association of Southeast Asian Nations |
| BPS | Biro Pusat Statistik (Central Bureau of Statistic) |
| CFA | Confirmatory Factor Analysis |
| Cr. | Critical ratio |
| CR | Composite Reliability |
| AVE | Average Variance Extracted |
| CFI | Comparative Fit Index |
| DC | Dynamic Capabilities |
| DF | Degrees of Freedom |
| FCIC | Financial Crisis Inquiry Commission |
| ILMATE | Industri Logam, Mesin, Alat Transportasi, dan Elektronika (Metal Industry, Machine, Transportation Tool, and Electronic) |
| GDP | Gross Domestic Product |
| GFI | Goodness of Fit Index |
| HRC | Human Resource Capability |
| KBLI | Kelompok Baku Lapangan Usaha Indonesia |
| KSA | Knowledge, Skill, Attitude |
| MLR | Multiple Linear Regressions |
| MSI | Method of Successive Interval |
| OC | Organizational Culture |
| OP | Organizational Performance |
| PPS | Production Planning System |
| RBV | Resource Based View |
| RFID | Radio Frequency Identification |
| RMSEA | Root Mean Square Error of Approximation |
| RMSR | Root Mean Square Residual |
| SD | Standard Deviation |

| | |
|---|---|
| SEM | Structural Equation Model |
| SMEs | Small and Medium Enterprises |
| SPSS | Statistical Package for the Social Sciences |
| SR | Structural Regression |
| SV | Scale Value |
| TLI | Tucker-Lewis Index |
| TSV | Transformed Scale Value |
| TT | Throughput Times |
| TECH | Technology |
| VIF | Variance Inflation Factor |
| WIP | Work In Progress |

# CHAPTER ONE
# INTRODUCTION

## 1.1 Background of the Study

Industry and trade are amongst the most important sectors in the economy of any country. These sectors serve as the driving force of the economy and a source of livelihood and community development. Since September 2008, the global financial crisis has dramatically impacted the economy of most countries around the world. To turn such adversity into opportunity, firms are required to increase their efficiency, reduce waste and consistently invest in innovation (Financial Crisis Inquiry Commission (FCIC) Report, 2011; Honohan, 2010).

The impact of the crisis affected the performance of organization sustainable at service sector and manufacturing industry (Setiawan and Ika, 2012; Wijaya, 2008; Biro Perencanaan, 2015). Furthermore, the continuous performance of an organization is crucial as it determines whether pre-determined targets can be achieved (Goffin and Perkins, 2009). In order to ensure the efficacy of an organization in securing long-term sustainable development and dealing with change, it is of utmost importance to have a strategic balance in the decision-making process (Babeľová and Vaňová, 2014).

Some of the studies on the measurement of organizational performance were conducted at large companies and small enterprises. In large companies performance measurement research conducted on the related to the wider financial controls, availability of reports, and indicators concerning large companies, allowing

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## Appendix A: Questionnaire

**SCHOOL OF TECHNOLOGY, MANAGEMENT AND LOGISTIC**
**COLLEGE OF BUSINESS**
**UNIVERSITI UTARA MALAYSIA**

**Dear Sir / Madam,**

I am a PhD candidate in the School of Technology, Management & Logistics (STML) at the College of Business Othman Yeop Abdullah (COB - OYA), Universiti Utara Malaysia. This questionnaire in part of my PhD study which aims to secure your opinion on the topic; Effects of Human Resource Capability, Production Planning System, Technology and Organizational Culture on Organizational Performance.

In completing this questionnaire, would you answer it honestly and in accordance with the actual situation. The answers will remain **confidential** and the results will be used solely for academic purposes.

Thank you for your cooperation and your time in completing this questionnaire.

Your Sincerely

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**ORGANIZATION**

## A. PROFILE OF RESPONDENTS

Before answering the questions in the following sections, please fill in the following data. Please note that your answers will be treated as **CONFIDENTIAL**.

Enter a cross (X)

a. Job position : (1) Owner (2) CEO (3) Manager

b. Gender : (1) Male (2) Female

c. Age :

(1) ≤ 25 years (2) 26 – 35 years (3) 36 – 45 years

(4) 46 – 55 years (5) above 55 years

c. Educational level :
(1) Master (2) Bachelor degree (3) Diploma (4) High School (5) Others

d. Work Experience :
(1) Under 5 years (2) 5 – 10 years (3) 11 – 15 years

(4) 16 – 20 years (5) above 20 years

e. Status of employees in the workplace:
(1) Permanent (2) Contract

f. Number of employees :
(1) ≤ 5 (2) 6 – 10 (3) above 10



## B. INSTRUCTIONS FOR COMPLETING THE QUESTIONNAIRE

1. Statements / questions are grouped in four MAJOR PARTS.
2. **RESPONDENTS** are expected to first read the description of each question before giving an answer.
3. **RESPONDENTS** can provide answers by giving entering a cross (X) in the appropriate box. Only one answer is possible to each question. 1 indicates that you strongly disagree with the statement; numbers progress to 7, strongly agree, as shown below.

| Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

4. **RESPONDENTS'** personal data and all information provided will be guaranteed confidentiality, so please complete this questionnaire as truthfully and objectively as possible.

## SECTION C.1 HUMAN RESOURCE CAPABILITY

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **HUMAN RESOURCE CAPABILITY**<br>Please indicate how strongly you agree or disagree with the following statement in relation to the human resource capabilities that exist in your company. | | | | | | | | |
| 1. | My company always pays attention and places employees in accordance with their education level. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | At the operational level, my company has skilled human resources in their respective sectors to achieve company goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | At the managerial level, my company has skilled human resources in their respective sectors to achieve company goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | My company has human resources to carry out its duties effectively to achieve company goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | My company has the human resources to carry out the work and synergize tasks with other employees to achieve organizational goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | My company has human resources that can communicate well in their respective sectors. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | My company has human resources skilled in critical thinking and analysis. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | My company has human resources eager to learn continuously. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. | My company has human resources to act as role models for other employees. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. | My company has human resources capable of coordinating the major activities of the company. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. | My company has human resources capable of coordinating staff to achieve organizational goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. | My company has the human resources that can provide creative ideas in their duty to achieve and maintain the organization. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. | My company has innovative human resources in carrying out duties for achieving and maintaining organizational | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | objectives. | | | | | | | |
| 14. | My company responds well to the ideas submitted by employees to achieve and maintain the organization's objectives | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | My company provides facilities to get creative ideas submitted by employees to achieve and maintain the organization's objectives. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | At the operational level, my company put in the field of human resources tasks according to their abilities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. | At the managerial level, my company allocates human resources tasks according to their abilities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. | My company provides facilities at managerial level in order to work well according to tasks and abilities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. | My company always pays attention to competence of the employees by involving the certification of expertise in accordance with their work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. | My company always involves the employees in the competencies that need to be improved to achieve higher qualifications. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. | To enhance knowledge and skills, my company provides the opportunity for human resources training in the field of assignment. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. | To enhance creativity and innovation, my company provides the opportunity for its human resources for training / apprenticeship as field duty. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. | Human resources always have the opportunity for training / internship and submit a report in accordance with related duties. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. | My company provides infrastructure and work environment in accordance with applicable regulations to achieve corporate goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. | My company expects its human resources to comply with the rules governing their work | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| | to achieve the company's goals. | | | | | | | |
| 26. | My company has very loyal human resources to sustain and achieve organizational goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. | My company has permanent human resources because of loyalty to the company. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. | My company always provides compensation to employee performance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## SECTION C.2 PRODUCTION PLANNING SYSTEM IN YOUR COMPANY

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | **PRODUCTION PLANNING SYSTEM IN YOUR COMPANY**<br>Please indicate how strongly you agree or disagree with the following statement in relation to the production planning system in your company. | | | | | | | |
| 29. | My organization has good production planning for the company's production capacity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. | My organization has proper planning and the right design for the company's goals. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31. | My organization has an effective utilization of resources. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32. | My organization has a production flow. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33. | My organization coordinates the activities of the departments. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34. | The production planning system in my organization improves labour productivity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35. | The production planning system helps my company to capture the market. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36. | The production planning system in my organization generates customer satisfaction. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 37. | The production planning system in my organization reduces production costs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 38. | Facilities planning in my organization are according to production requirements. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 39. | My organization designs the plant layout according to production requirements. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 40. | In my organization the layout of materials and equipment is according to production needs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 41. | Production space is in accordance with the requirements of work activity / production. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 42. | My organization has a production plant that is broadly in line with the needs and requirements of the production facilities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 43. | My organization makes manufacturing facilities in accordance with the | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | requirements for production quality. | | | | | | | |
| 44. | My organization chooses a good business location. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 45. | My organization chooses the location of the plant in accordance with the requirements for the production of quality improvement. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 46. | My organization chooses the location of the plant in accordance with the needs of production and attention to environmental factors. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 47. | My organization easily obtains human resources, employees or workers. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 48. | Work in my organization is effective and efficient in accordance with the planned production activities. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 49. | Work in my organization is planned to carry out the activity of production / labour safely and comfortably. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 50. | Storage facilities for materials and equipment have been designed to carry out the activity of production / labour safely and comfortably. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 51. | Storage of materials / equipment has a good level of security to run production activities / work safely. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 52. | In my organization the work has been well designed and has a clear operating procedure standard. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 53. | In my organization every worker has documents to carry out the duties and functions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 54. | In my organization every worker has duties and functions that are clearly stated. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 55. | In my organization every worker always pays attention to good environmental conditions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 56. | In my organization every task takes a standard time. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 57. | In my organization every worker is employed continuously. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 58. | In my organization every worker uses methods appropriate to the type of work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 59. | In my organization every worker uses a machine that fits the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 60. | In my organization every worker uses materials that fit the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 61. | In my organization every worker uses equipment that fits the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## SECTION C.3 TECHNOLOGY IN YOUR COMPANY

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| **TECHNOLOGY**<br>Please indicate how strongly you agree or disagree with the following statement in relation to the applied technology in your company. | | | | | | | | |
| 62. | Application of technology in my organization is supported by human resources with an appropriate level of technical ability to use the technology. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 63. | Application of technology in my organization is supported by human resources with good social skills to use the technology. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 64. | My organization has employees with appropriate technical skills to take care of equipment / machinery. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 65. | My organization has employees with the technical skills and the right skills to repair the equipment / machinery. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 66. | My organization has employees with the appropriate level of technical education for the job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 67. | My organization has employees with a good level of knowledge in the use of technology. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 68. | My organization has employees with the level of technical knowledge and skills appropriate to repair the equipment / machinery. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 69. | My organization has employees with the right skills to maintain the job environment. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 70. | My organization has good equipment and machinery. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 71. | My organizations always considers the effectiveness of the technology to support the production process. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 72. | My organization always operates the machine in accordance with the technical specifications. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 73. | My organization regularly schedules maintenance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 74. | My organization has never lost the production process, even though the machine is down for maintenance. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 75. | In production activities, my organization uses a machine for an optimum time. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 76. | Within one month of production activities, my organization has never had to repeat work due to engine failure. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 77. | Within one month of production activities, my organization often repeats work, due to operator error. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## SECTION C.4 ORGANIZATIONAL CULTURE

**Instruction :**
Please indicate your answer by cross (X) the appropriate number about / based on organizational culture in your company/organization.

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | **ORGANIZATIONAL CULTURE**<br>How organizational culture at your place work? | | | | | | | |
| 78. | In the culture developed in my organization, every human resource devotes all his ability to work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 79. | In the culture developed in my organization, every human resource organizes their own work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 80. | In the culture developed in my organization, every human has a good relationship with one another. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 81. | In the culture developed in my organization, every human has the ability to take the initiative. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 82. | Cultures that developed in my organization, each meeting are made on time. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 83. | In the culture developed in my organization, everybody always pays attention to the costs incurred. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 84. | In the culture developed in my organization, every human feels secure with their job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 85. | In the culture developed in my organization, every human resource is proud and appreciated. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## SECTION C.5 ORGANIZATIONAL PERFORMANCE

| Item No. | Questions / Statement Variables | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

**ORGANIZATIONAL PERFORMANCE**

Please indicate the answer which best describes the average performance of your company over the past three years (your responses will be kept strictly confidential)

| No. | Question /Statement Variable | Much Lower | Lower | Somewhat Lower | Neutral | Somewhat Higher | Higher | Much Higher |
|---|---|---|---|---|---|---|---|---|
| 86. | Return on Sales (ROS) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 87. | Return on Investment (ROI) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 88. | Market share | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 89. | Sales growth rate | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Please indicate how strongly you agree or disagree with the following statements in relation to your company's performance

| | | Strongly Disagree | Disagree | Somewhat Disagree | Neutral | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|---|
| 90. | **Innovation and Learning Perspective:** The company is able to innovate, improve and learn, to increase new markets, revenues and margins in the bid to promote customers' interests. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 91. | **Customer Perspective:** The company always considers the customers' concern over time, quality, performance, services and costs in order to pursue success. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 92. | **Internal Business Perspective:** The company always considers the business processes that have the greatest impact on customer satisfaction, such as factors that affect cycle time, quality, employee skills and productivity. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Appendix B: Result of Validity Test Pilot Study (n=80)

### B.1 Validity Test Human Resources Capabilities Items

| Item | $r_{count}$ | Sig. | Result |
|---|---|---|---|
| 1 | .462** | 0.000 | Valid |
| 2 | .419** | 0.000 | Valid |
| 3 | .584** | 0.000 | Valid |
| 4 | .472** | 0.000 | Valid |
| 5 | .404** | 0.000 | Valid |
| 6 | .354** | 0.001 | Valid |
| 7 | .369** | 0.001 | Valid |
| 8 | .449** | 0.000 | Valid |
| 9 | .430** | 0.000 | Valid |
| 10 | .444** | 0.000 | Valid |
| 11 | .559** | 0.000 | Valid |
| 12 | .445** | 0.000 | Valid |
| 13 | .426** | 0.000 | Valid |
| 14 | .407** | 0.000 | Valid |
| 15 | .373** | 0.001 | Valid |
| 16 | .359** | 0.001 | Valid |
| 17 | .444** | 0.000 | Valid |
| 18 | .382** | 0.000 | Valid |
| 19 | .258* | 0.021 | Valid |
| 20 | .415** | 0.000 | Valid |
| 21 | .452** | 0.000 | Valid |
| 22 | .438** | 0.000 | Valid |
| 23 | .492** | 0.000 | Valid |
| 24 | .345** | 0.002 | Valid |
| 25 | .271* | 0.015 | Valid |
| 26 | .352** | 0.001 | Valid |
| 27 | .385** | 0.000 | Valid |
| 28 | .435** | 0.000 | Valid |

## B. 2 Validity Test Planning Production System Items

| Item | $r_{count}$ | Sig. | Result |
|---|---|---|---|
| 1 | .626** | 0.000 | Valid |
| 2 | .673** | 0.000 | Valid |
| 3 | .684** | 0.000 | Valid |
| 4 | .626** | 0.000 | Valid |
| 5 | .569** | 0.000 | Valid |
| 6 | .628** | 0.000 | Valid |
| 7 | .662** | 0.000 | Valid |
| 8 | .548** | 0.000 | Valid |
| 9 | .405** | 0.000 | Valid |
| 10 | .460** | 0.000 | Valid |
| 11 | .627** | 0.000 | Valid |
| 12 | .433** | 0.000 | Valid |
| 13 | .626** | 0.000 | Valid |
| 14 | .553** | 0.000 | Valid |
| 15 | .588** | 0.000 | Valid |
| 16 | .586** | 0.000 | Valid |
| 17 | .498** | 0.000 | Valid |
| 18 | .320** | 0.004 | Valid |
| 19 | .290** | 0.009 | Valid |
| 20 | .442** | 0.000 | Valid |
| 21 | .637** | 0.000 | Valid |
| 22 | .722** | 0.000 | Valid |
| 23 | .644** | 0.000 | Valid |
| 24 | .428** | 0.000 | Valid |
| 25 | .493** | 0.000 | Valid |
| 26 | .620** | 0.000 | Valid |
| 27 | .716** | 0.000 | Valid |
| 28 | .677** | 0.000 | Valid |
| 29 | .681** | 0.000 | Valid |
| 30 | .336** | 0.002 | Valid |
| 31 | .508** | 0.000 | Valid |
| 32 | .353** | 0.001 | Valid |
| 33 | .455** | 0.000 | Valid |

## B.3 Validity Test Technology Items

| Item | $r_{count}$ | Sig. | Result |
|---|---|---|---|
| 1 | .489** | 0.000 | Valid |
| 2 | .709** | 0.000 | Valid |
| 3 | .602** | 0.000 | Valid |
| 4 | .733** | 0.000 | Valid |
| 5 | .719** | 0.000 | Valid |
| 6 | .722** | 0.000 | Valid |
| 7 | .767** | 0.000 | Valid |
| 8 | .714** | 0.000 | Valid |
| 9 | .567** | 0.000 | Valid |
| 10 | .751** | 0.000 | Valid |
| 11 | .616** | 0.000 | Valid |
| 12 | .780** | 0.000 | Valid |
| 13 | .705** | 0.000 | Valid |
| 14 | .393** | 0.000 | Valid |
| 15 | .373** | 0.001 | Valid |
| 16 | .369** | 0.001 | Valid |

## B. 4 Validity Test Organization Culture Items

| Item | $r_{s.hitung}$ | Sig. | Result |
|---|---|---|---|
| 1 | .741** | 0.000 | Valid |
| 2 | .853** | 0.000 | Valid |
| 3 | .771** | 0.000 | Valid |
| 4 | .639** | 0.000 | Valid |
| 5 | .693** | 0.000 | Valid |
| 6 | .638** | 0.000 | Valid |
| 7 | .738** | 0.000 | Valid |
| 8 | .532** | 0.000 | Valid |

## B. 5 Validity Test Organization Performance Items

| Item | $r_{s.hitung}$ | Sig. | Result |
|---|---|---|---|
| 1 | .732** | 0.000 | Valid |
| 2 | .632** | 0.000 | Valid |
| 3 | .732** | 0.000 | Valid |
| 4 | .863** | 0.000 | Valid |
| 5 | .768** | 0.000 | Valid |
| 6 | .778** | 0.000 | Valid |
| 7 | .832** | 0.000 | Valid |

## Appendix C: Comparison Validity and Reliability Pilot study and Main Study

### C.1 Items of Human Resources Capability

| Item | $r_{s.Pilot\ Data}$ | $r_{s.\ Field\ Data}$ | Gap (Field – Pilot) |
|---|---|---|---|
| 1 | .462** | .492** | .030 |
| 2 | .419** | .616** | .197 |
| 3 | .584** | .632** | .048 |
| 4 | .472** | .698** | .226 |
| 5 | .404** | .585** | .181 |
| 6 | .354** | .626** | .272 |
| 7 | .369** | .547** | .178 |
| 8 | .449** | .716** | .267 |
| 9 | .430** | .636** | .206 |
| 10 | .444** | .592** | .148 |
| 11 | .559** | .579** | .020 |
| 12 | .445** | .714** | .269 |
| 13 | .426** | .512** | .086 |
| 14 | .407** | .692** | .285 |
| 15 | .373** | .671** | .298 |
| 16 | .359** | .557** | .198 |
| 17 | .444** | .735** | .291 |
| 18 | .382** | .505** | .123 |
| 19 | .258* | .537** | .279 |
| 20 | .415** | .653** | .238 |
| 21 | .452** | .701** | .249 |
| 22 | .438** | .492** | .054 |
| 23 | .492** | .616** | .124 |
| 24 | .345** | .632** | .287 |
| 25 | .271* | .698** | .427 |
| 26 | .352** | .585** | .233 |
| 27 | .385** | .626** | .241 |
| 28 | .435** | .547** | .112 |

## C.2 Items of Production Planning System

| Item | $r_{s.Pilot\ Data}$ | $r_{s.\ Field\ Data}$ | Gap (Field – Pilot) |
|---|---|---|---|
| 1 | .626** | .520** | -.106 |
| 2 | .673** | .575** | -.098 |
| 3 | .684** | .604** | .080 |
| 4 | .626** | .628** | .002 |
| 5 | .569** | .451** | -.118 |
| 6 | .628** | .692** | .064 |
| 7 | .662** | .649** | -.013 |
| 8 | .548** | .718** | .170 |
| 9 | .405** | .396** | -.009 |
| 10 | .460** | .580** | .120 |
| 11 | .627** | .533** | -.094 |
| 12 | .433** | .686** | .253 |
| 13 | .626** | .642** | .016 |
| 14 | .553** | .422** | -.131 |
| 15 | .588** | .434** | -.154 |
| 16 | .586** | .390** | -.196 |
| 17 | .498** | .409** | -.089 |
| 18 | .320** | .435** | .115 |
| 19 | .290** | .669** | .379 |
| 20 | .442** | .473** | .031 |
| 21 | .637** | .522** | -.115 |
| 22 | .722** | .450** | -.272 |
| 23 | .644** | .685** | .041 |
| 24 | .428** | .520** | .092 |
| 25 | .493** | .466** | -.027 |
| 26 | .620** | .557** | -.063 |
| 27 | .716** | .494** | -.222 |
| 28 | .677** | .531** | -.146 |
| 29 | .681** | .426** | -.255 |
| 30 | .336** | .538** | -.202 |
| 31 | .508** | .487** | -.021 |
| 32 | .353** | .660** | .307 |
| 33 | .455** | .595** | .140 |

### C.3 Items of Technology

| Item | $r_{s.Pilot\ Data}$ | $r_{s.\ Field\ Data}$ | Gap (Field – Pilot) |
|---|---|---|---|
| 1 | .489** | .684** | .195 |
| 2 | .709** | .796** | .087 |
| 3 | .602** | .799** | .197 |
| 4 | .733** | .759** | .026 |
| 5 | .719** | .606** | -.113 |
| 6 | .722** | .638** | -.084 |
| 7 | .767** | .728** | -.039 |
| 8 | .714** | .776** | .062 |
| 9 | .567** | .680** | .113 |
| 10 | .751** | .451** | -.300 |
| 11 | .616** | .553** | -.063 |
| 12 | .780** | .456** | -.324 |
| 13 | .705** | .013 | -.692 |
| 14 | .393** | .454** | .061 |
| 15 | .373** | .409** | .036 |
| 16 | .369** | .548** | .179 |

### C.4 Comparing Validity Test between Pilot Data versus Main Data

### C.4.1 Items of Organization Culture

| Item | $r_{s.Pilot\ Data}$ | $r_{s.\ Field\ Data}$ | Gap (Field – Pilot) |
|---|---|---|---|
| 1 | .741** | .623** | -.118 |
| 2 | .853** | .743** | -.110 |
| 3 | .771** | .716** | -.055 |
| 4 | .639** | .708** | .069 |
| 5 | .693** | .712** | .009 |
| 6 | .638** | .747** | .109 |
| 7 | .738** | .751** | .013 |
| 8 | .532** | .724** | .192 |

### C.4.2 Item Organization Performance

| Item | $r_{s.Pilot\ Data}$ | $r_{s.Field\ Data}$ | Gap (Field – Pilot) |
|---|---|---|---|
| 1 | .732** | .797** | .065 |
| 2 | .632** | .761** | .129 |
| 3 | .732** | .779** | .047 |
| 4 | .863** | .820** | -.043 |
| 5 | .768** | .728** | -.040 |
| 6 | .778** | .693** | -.085 |
| 7 | .832** | .699** | -.133 |

## C.4 Comparing Reliability Test between Pilot Data versus Field Data

| No | Variabel | (r) Pilot Data | (r) Field Data | Gap |
|---|---|---|---|---|
| 1 | Human Resources Capabilities | 0.957 | 0.932 | -.025 |
| 2 | Production Planning System | 0.934 | 0.924 | -.010 |
| 3 | Technology | 0.892 | 0.878 | -.014 |
| 4 | Organization Culture | 0.858 | 0.877 | .019 |
| 5 | Organization Performance | 0.897 | 0.876 | -.021 |

## C.5 Result Validity and Reliability Pilot Data versus Field Data

**Correlations**

| | | | H1 | H2 | H3 | H4 | H5 | H6 | H7 | HRC |
|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | H1 | Correlation Coefficient | 1.000 | .430** | .349** | .241** | .284** | .340** | .412** | .492** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H2 | Correlation Coefficient | .430** | 1.000 | .397** | .409** | .387** | .458** | .387** | .616** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H3 | Correlation Coefficient | .349** | .397** | 1.000 | .435** | .424** | .415** | .312** | .632** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H4 | Correlation Coefficient | .241** | .409** | .435** | 1.000 | .461** | .445** | .335** | .698** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H5 | Correlation Coefficient | .284** | .387** | .424** | .461** | 1.000 | .438** | .288** | .585** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H6 | Correlation Coefficient | .340** | .458** | .415** | .445** | .438** | 1.000 | .552** | .626** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H7 | Correlation Coefficient | .412** | .387** | .312** | .335** | .288** | .552** | 1.000 | .547** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | HRC | Correlation Coefficient | .492** | .616** | .632** | .698** | .585** | .626** | .547** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | H8 | H9 | H10 | H11 | H12 | H13 | H14 | HRC |
|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | H8 | Correlation Coefficient | 1.000 | .553** | .525** | .384** | .513** | .368** | .504** | .716** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H9 | Correlation Coefficient | .553** | 1.000 | .564** | .352** | .471** | .411** | .473** | .636** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H10 | Correlation Coefficient | .525** | .564** | 1.000 | .352** | .429** | .431** | .471** | .592** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H11 | Correlation Coefficient | .384** | .352** | .352** | 1.000 | .514** | .171** | .253** | .579** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .001 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H12 | Correlation Coefficient | .513** | .471** | .429** | .514** | 1.000 | .462** | .418** | .714** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H13 | Correlation Coefficient | .368** | .411** | .431** | .171** | .462** | 1.000 | .437** | .512** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .001 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H14 | Correlation Coefficient | .504** | .473** | .471** | .253** | .418** | .437** | 1.000 | .692** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | HRC | Correlation Coefficient | .716** | .636** | .592** | .579** | .714** | .512** | .692** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | H15 | H16 | H17 | H18 | H19 | H20 | H21 | HRC |
|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | H15 | Correlation Coefficient | 1.000 | .415** | .522** | .281** | .334** | .365** | .348** | .671** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H16 | Correlation Coefficient | .415** | 1.000 | .437** | .354** | .264** | .330** | .371** | .557** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H17 | Correlation Coefficient | .522** | .437** | 1.000 | .417** | .370** | .514** | .517** | .735** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H18 | Correlation Coefficient | .281** | .354** | .417** | 1.000 | .317** | .398** | .463** | .505** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H19 | Correlation Coefficient | .334** | .264** | .370** | .317** | 1.000 | .517** | .561** | .537** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H20 | Correlation Coefficient | .365** | .330** | .514** | .398** | .517** | 1.000 | .758** | .653** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H21 | Correlation Coefficient | .348** | .371** | .517** | .463** | .561** | .758** | 1.000 | .701** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | HRC | Correlation Coefficient | .671** | .557** | .735** | .505** | .537** | .653** | .701** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | H22 | H23 | H24 | H25 | H26 | H27 | H28 | HRC |
|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | H22 | Correlation Coefficient | 1.000 | .515** | .325** | .267** | .266** | .367** | .088 | .661** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .097 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H23 | Correlation Coefficient | .515** | 1.000 | .260** | .198** | .224** | .131* | .208** | .470** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .013 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H24 | Correlation Coefficient | .325** | .260** | 1.000 | .574** | .439** | .413** | .279** | .586** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H25 | Correlation Coefficient | .267** | .198** | .574** | 1.000 | .401** | .356** | .217** | .491** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H26 | Correlation Coefficient | .266** | .224** | .439** | .401** | 1.000 | .488** | .318** | .489** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H27 | Correlation Coefficient | .367** | .131* | .413** | .356** | .488** | 1.000 | .435** | .520** |
| | | Sig. (2-tailed) | .000 | .013 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | H28 | Correlation Coefficient | .088 | .208** | .279** | .217** | .318** | .435** | 1.000 | .308** |
| | | Sig. (2-tailed) | .097 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | HRC | Correlation Coefficient | .661** | .470** | .586** | .491** | .489** | .520** | .308** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

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

**Correlations**

| | | | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | PPS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | P1 | Correlation Coefficient | 1.000 | .334** | .287** | .247** | .345** | .351** | .421** | .397** | .520** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P2 | Correlation Coefficient | .334** | 1.000 | .512** | .426** | .215** | .482** | .487** | .469** | .575** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P3 | Correlation Coefficient | .287** | .512** | 1.000 | .421** | .344** | .461** | .348** | .390** | .604** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P4 | Correlation Coefficient | .247** | .426** | .421** | 1.000 | .154** | .466** | .409** | .456** | .628** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .003 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P5 | Correlation Coefficient | .345** | .215** | .344** | .154** | 1.000 | .286** | .333** | .393** | .451** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .003 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P6 | Correlation Coefficient | .351** | .482** | .461** | .466** | .286** | 1.000 | .495** | .563** | .692** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P7 | Correlation Coefficient | .421** | .487** | .348** | .409** | .333** | .495** | 1.000 | .537** | .649** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P8 | Correlation Coefficient | .397** | .469** | .390** | .456** | .393** | .563** | .537** | 1.000 | .718** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | PPS | Correlation Coefficient | .520** | .575** | .604** | .628** | .451** | .692** | .649** | .718** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | P9 | P10 | P11 | P12 | P13 | P14 | P15 | P16 | PPS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | P9 | Correlation Coefficient | 1.000 | .179** | .257** | .166** | .208** | -.048 | .342** | .295** | .396** |
| | | Sig. (2-tailed) | . | .001 | .000 | .002 | .000 | .360 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P10 | Correlation Coefficient | .179** | 1.000 | .398** | .511** | .436** | .165** | .216** | .163** | .580** |
| | | Sig. (2-tailed) | .001 | . | .000 | .000 | .000 | .002 | .000 | .002 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P11 | Correlation Coefficient | .257** | .398** | 1.000 | .472** | .323** | .141** | .197** | .237** | .533** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .007 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P12 | Correlation Coefficient | .166** | .511** | .472** | 1.000 | .488** | .217** | .187** | .266** | .686** |
| | | Sig. (2-tailed) | .002 | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P13 | Correlation Coefficient | .208** | .436** | .323** | .488** | 1.000 | .311** | .216** | .226** | .642** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P14 | Correlation Coefficient | -.048 | .165** | .141** | .217** | .311** | 1.000 | .324** | .216** | .422** |
| | | Sig. (2-tailed) | .360 | .002 | .007 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P15 | Correlation Coefficient | .342** | .216** | .197** | .187** | .216** | .324** | 1.000 | .404** | .434** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P16 | Correlation Coefficient | .295** | .163** | .237** | .266** | .226** | .216** | .404** | 1.000 | .390** |
| | | Sig. (2-tailed) | .000 | .002 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | PPS | Correlation Coefficient | .396** | .580** | .533** | .686** | .642** | .422** | .434** | .390** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | P17 | P18 | P19 | P20 | P21 | P22 | P23 | P24 | PPS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | P17 | Correlation Coefficient | 1.000 | .532** | .246** | .257** | .237** | .101 | .200** | .274** | .409** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .055 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P18 | Correlation Coefficient | .532** | 1.000 | .317** | .357** | .226** | .110* | .194** | .254** | .435** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .037 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P19 | Correlation Coefficient | .246** | .317** | 1.000 | .349** | .394** | .208** | .411** | .257** | .669** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P20 | Correlation Coefficient | .257** | .357** | .349** | 1.000 | .332** | .169** | .219** | .229** | .473** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .001 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P21 | Correlation Coefficient | .237** | .226** | .394** | .332** | 1.000 | .343** | .351** | .285** | .522** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P22 | Correlation Coefficient | .101 | .110* | .208** | .169** | .343** | 1.000 | .440** | .276** | .450** |
| | | Sig. (2-tailed) | .055 | .037 | .000 | .001 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P23 | Correlation Coefficient | .200** | .194** | .411** | .219** | .351** | .440** | 1.000 | .487** | .685** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P24 | Correlation Coefficient | .274** | .254** | .257** | .229** | .285** | .276** | .487** | 1.000 | .520** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | PPS | Correlation Coefficient | .409** | .435** | .669** | .473** | .522** | .450** | .685** | .520** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | P25 | P26 | P27 | P28 | P29 | P30 | P31 | P32 | P33 | PPS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | P25 | Correlation Coefficient | 1.000 | .275** | .143** | .230** | .251** | .246** | .349** | .398** | .346** | .466** |
| | | Sig. (2-tailed) | . | .000 | .007 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P26 | Correlation Coefficient | .275** | 1.000 | .421** | .377** | .234** | .258** | .297** | .390** | .380** | .557** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P27 | Correlation Coefficient | .143** | .421** | 1.000 | .409** | .132* | .229** | .121* | .292** | .215** | .494** |
| | | Sig. (2-tailed) | .007 | .000 | . | .000 | .012 | .000 | .021 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P28 | Correlation Coefficient | .230** | .377** | .409** | 1.000 | .368** | .265** | .195** | .309** | .260** | .531** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P29 | Correlation Coefficient | .251** | .234** | .132* | .368** | 1.000 | .238** | .377** | .316** | .183** | .426** |
| | | Sig. (2-tailed) | .000 | .000 | .012 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P30 | Correlation Coefficient | .246** | .258** | .229** | .265** | .238** | 1.000 | .441** | .481** | .473** | .538** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P31 | Correlation Coefficient | .349** | .297** | .121* | .195** | .377** | .441** | 1.000 | .528** | .557** | .487** |
| | | Sig. (2-tailed) | .000 | .000 | .021 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P32 | Correlation Coefficient | .398** | .390** | .292** | .309** | .316** | .481** | .528** | 1.000 | .716** | .660** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | P33 | Correlation Coefficient | .346** | .380** | .215** | .260** | .183** | .473** | .557** | .716** | 1.000 | .595** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | PPS | Correlation Coefficient | .466** | .557** | .494** | .531** | .426** | .538** | .487** | .660** | .595** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | TECH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | T1 | Correlation Coefficient | 1.000 | .636** | .618** | .540** | .325** | .355** | .475** | .534** | .684** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T2 | Correlation Coefficient | .636** | 1.000 | .700** | .685** | .467** | .448** | .488** | .610** | .796** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T3 | Correlation Coefficient | .618** | .700** | 1.000 | .677** | .527** | .478** | .526** | .602** | .799** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T4 | Correlation Coefficient | .540** | .685** | .677** | 1.000 | .469** | .440** | .503** | .650** | .759** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T5 | Correlation Coefficient | .325** | .467** | .527** | .469** | 1.000 | .578** | .443** | .425** | .606** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T6 | Correlation Coefficient | .355** | .448** | .478** | .440** | .578** | 1.000 | .586** | .494** | .638** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T7 | Correlation Coefficient | .475** | .488** | .526** | .503** | .443** | .586** | 1.000 | .606** | .728** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T8 | Correlation Coefficient | .534** | .610** | .602** | .650** | .425** | .494** | .606** | 1.000 | .776** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | TECH | Correlation Coefficient | .684** | .796** | .799** | .759** | .606** | .638** | .728** | .776** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | T9 | T10 | T11 | T12 | T13 | T14 | T15 | T16 | TECH |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | T9 | Correlation Coefficient | 1.000 | .420** | .218** | .218** | -.062 | .330** | .171** | .341** | .680** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .242 | .000 | .001 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T10 | Correlation Coefficient | .420** | 1.000 | .283** | .159** | .028 | .090 | .206** | .321** | .451** |
| | | Sig. (2-tailed) | .000 | . | .000 | .002 | .591 | .089 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T11 | Correlation Coefficient | .218** | .283** | 1.000 | .253** | .026 | .160** | .376** | .332** | .553** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .625 | .002 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T12 | Correlation Coefficient | .218** | .159** | .253** | 1.000 | -.279** | .401** | .142** | .237** | .456** |
| | | Sig. (2-tailed) | .000 | .002 | .000 | . | .000 | .000 | .007 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T13 | Correlation Coefficient | -.062 | .028 | .026 | -.279** | 1.000 | -.317** | .073 | -.060 | .013 |
| | | Sig. (2-tailed) | .242 | .591 | .625 | .000 | . | .000 | .169 | .256 | .810 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T14 | Correlation Coefficient | .330** | .090 | .160** | .401** | -.317** | 1.000 | .193** | .301** | .454** |
| | | Sig. (2-tailed) | .000 | .089 | .002 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T15 | Correlation Coefficient | .171** | .206** | .376** | .142** | .073 | .193** | 1.000 | .323** | .409** |
| | | Sig. (2-tailed) | .001 | .000 | .000 | .007 | .169 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | T16 | Correlation Coefficient | .341** | .321** | .332** | .237** | -.060 | .301** | .323** | 1.000 | .548** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .256 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | TECH | Correlation Coefficient | .680** | .451** | .553** | .456** | .013 | .454** | .409** | .548** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .810 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | OC1 | OC2 | OC3 | OC4 | OC5 | OC6 | OC7 | OC8 | OC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | OC1 | Correlation Coefficient | 1.000 | .439** | .417** | .374** | .326** | .381** | .422** | .380** | .623** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC2 | Correlation Coefficient | .439** | 1.000 | .569** | .440** | .437** | .453** | .472** | .490** | .743** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC3 | Correlation Coefficient | .417** | .569** | 1.000 | .485** | .401** | .417** | .441** | .428** | .716** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC4 | Correlation Coefficient | .374** | .440** | .485** | 1.000 | .575** | .496** | .452** | .365** | .708** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC5 | Correlation Coefficient | .326** | .437** | .401** | .575** | 1.000 | .504** | .455** | .413** | .712** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC6 | Correlation Coefficient | .381** | .453** | .417** | .496** | .504** | 1.000 | .582** | .594** | .747** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC7 | Correlation Coefficient | .422** | .472** | .441** | .452** | .455** | .582** | 1.000 | .584** | .751** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC8 | Correlation Coefficient | .380** | .490** | .428** | .365** | .413** | .594** | .584** | 1.000 | .724** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OC | Correlation Coefficient | .623** | .743** | .716** | .708** | .712** | .747** | .751** | .724** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

**Correlations**

| | | | OP1 | OP2 | OP3 | OP4 | OP5 | OP6 | OP7 | OP |
|---|---|---|---|---|---|---|---|---|---|---|
| Spearman's rho | OP1 | Correlation Coefficient | 1.000 | .641** | .545** | .604** | .533** | .490** | .427** | .797** |
| | | Sig. (2-tailed) | . | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OP2 | Correlation Coefficient | .641** | 1.000 | .597** | .617** | .468** | .401** | .407** | .761** |
| | | Sig. (2-tailed) | .000 | . | .000 | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OP3 | Correlation Coefficient | .545** | .597** | 1.000 | .700** | .467** | .477** | .434** | .779** |
| | | Sig. (2-tailed) | .000 | .000 | . | .000 | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OP4 | Correlation Coefficient | .604** | .617** | .700** | 1.000 | .537** | .437** | .529** | .820** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | . | .000 | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OP5 | Correlation Coefficient | .533** | .468** | .467** | .537** | 1.000 | .461** | .430** | .728** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | . | .000 | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OP6 | Correlation Coefficient | .490** | .401** | .477** | .437** | .461** | 1.000 | .471** | .693** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | . | .000 | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OP7 | Correlation Coefficient | .427** | .407** | .434** | .529** | .430** | .471** | 1.000 | .699** |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | . | .000 |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |
| | OP | Correlation Coefficient | .797** | .761** | .779** | .820** | .728** | .693** | .699** | 1.000 |
| | | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | . |
| | | N | 360 | 360 | 360 | 360 | 360 | 360 | 360 | 360 |

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

## Appendix D: Statistic Data and Histogram Curve's

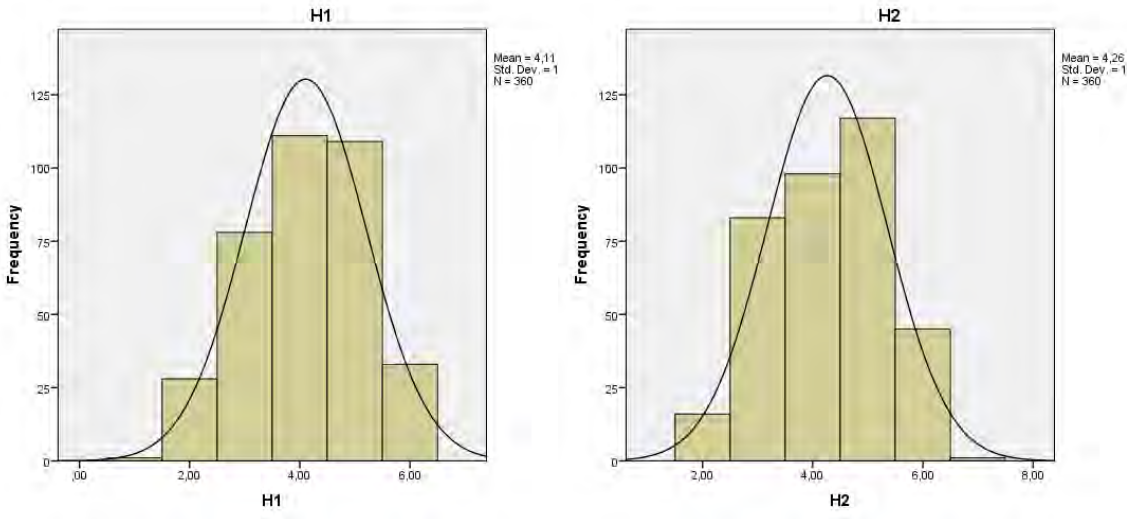
### D. 1 Statistics Data

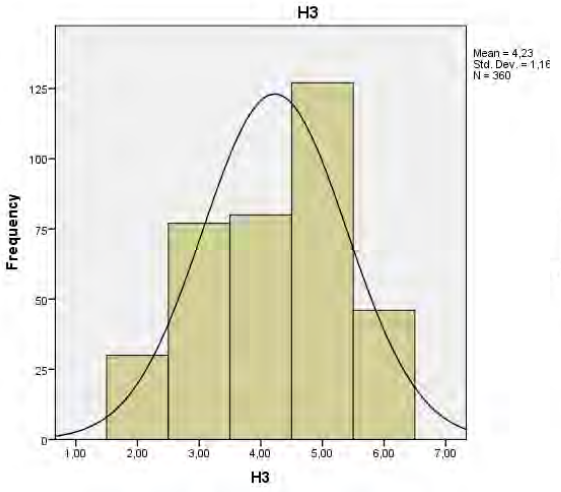
| | N | | Skewness | Std. Error of Skewness | Kurtosis | Std. Error of Kurtosis |
|---|---|---|---|---|---|---|
| | Valid | Missing | | | | |
| H1 | 360 | 0 | -.198 | .129 | -.616 | .256 |
| H2 | 360 | 0 | -.113 | .129 | -.769 | .256 |
| H3 | 360 | 0 | -.283 | .129 | -.871 | .256 |
| H4 | 360 | 0 | .027 | .129 | -.794 | .256 |
| H5 | 360 | 0 | -.243 | .129 | -.795 | .256 |
| H6 | 360 | 0 | -.421 | .129 | -.486 | .256 |
| H7 | 360 | 0 | -.274 | .129 | -.192 | .256 |
| H8 | 360 | 0 | -.075 | .129 | -.445 | .256 |
| H9 | 360 | 0 | -.051 | .129 | -.337 | .256 |
| H10 | 360 | 0 | .106 | .129 | -.265 | .256 |
| H11 | 360 | 0 | .033 | .129 | -.553 | .256 |
| H12 | 360 | 0 | -.021 | .129 | -.345 | .256 |
| H13 | 360 | 0 | .121 | .129 | -.628 | .256 |
| H14 | 360 | 0 | .119 | .129 | -.413 | .256 |
| H15 | 360 | 0 | .074 | .129 | -.558 | .256 |
| H16 | 360 | 0 | -.090 | .129 | -.741 | .256 |
| H17 | 360 | 0 | .078 | .129 | -.516 | .256 |
| H18 | 360 | 0 | -.043 | .129 | -.651 | .256 |
| H19 | 360 | 0 | -.205 | .129 | -.690 | .256 |
| H20 | 360 | 0 | -.189 | .129 | -.694 | .256 |
| H21 | 360 | 0 | -.200 | .129 | -.819 | .256 |
| H22 | 360 | 0 | .277 | .129 | -.395 | .256 |
| H23 | 360 | 0 | -.145 | .129 | -.069 | .256 |
| H24 | 360 | 0 | .254 | .129 | -.077 | .256 |
| H25 | 360 | 0 | .181 | .129 | -.031 | .256 |
| H26 | 360 | 0 | -.090 | .129 | -.174 | .256 |
| H27 | 360 | 0 | .154 | .129 | -.214 | .256 |
| H28 | 360 | 0 | .497 | .129 | -.143 | .256 |
| P1 | 360 | 0 | -.297 | .129 | -.719 | .256 |
| P2 | 360 | 0 | -.310 | .129 | -.480 | .256 |
| P3 | 360 | 0 | -.182 | .129 | -.319 | .256 |
| P4 | 360 | 0 | .288 | .129 | -.474 | .256 |
| P5 | 360 | 0 | -.032 | .129 | -.668 | .256 |
| P6 | 360 | 0 | -.217 | .129 | -.545 | .256 |
| P7 | 360 | 0 | .109 | .129 | -.504 | .256 |
| P8 | 360 | 0 | .034 | .129 | -.578 | .256 |
| P9 | 360 | 0 | -.206 | .129 | -.486 | .256 |
| P10 | 360 | 0 | -.285 | .129 | -.193 | .256 |
| P11 | 360 | 0 | -.383 | .129 | -.442 | .256 |
| P12 | 360 | 0 | .068 | .129 | -.564 | .256 |
| P13 | 360 | 0 | -.259 | .129 | -.461 | .256 |
| P14 | 360 | 0 | -.143 | .129 | -.216 | .256 |
| P15 | 360 | 0 | .027 | .129 | -.365 | .256 |
| P16 | 360 | 0 | -.168 | .129 | -.302 | .256 |
| P17 | 360 | 0 | .257 | .129 | -.278 | .256 |
| P18 | 360 | 0 | .014 | .129 | -.561 | .256 |
| P19 | 360 | 0 | -.033 | .129 | -.410 | .256 |
| P20 | 360 | 0 | -.228 | .129 | -.585 | .256 |
| P21 | 360 | 0 | -.196 | .129 | -.352 | .256 |
| P22 | 360 | 0 | -.421 | .129 | -.714 | .256 |
| P23 | 360 | 0 | .191 | .129 | -.726 | .256 |
| P23 | 360 | 0 | -.169 | .129 | -.691 | .256 |
| P25 | 360 | 0 | .281 | .129 | -.546 | .256 |
| P26 | 360 | 0 | -.090 | .129 | -.724 | .256 |
| P27 | 360 | 0 | -.195 | .129 | -.769 | .256 |
| P28 | 360 | 0 | .203 | .129 | -.443 | .256 |
| P29 | 360 | 0 | .232 | .129 | -.715 | .256 |
| P30 | 360 | 0 | -.190 | .129 | -.340 | .256 |

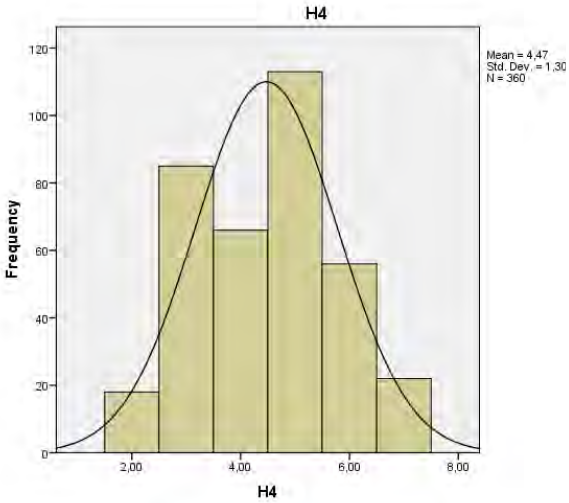
| | | | | | | |
|---|---|---|---|---|---|---|
| P31 | 360 | 0 | .032 | .129 | -.383 | .256 |
| P32 | 360 | 0 | -.178 | .129 | -.278 | .256 |
| P33 | 360 | 0 | -.232 | .129 | -.166 | .256 |
| T1 | 360 | 0 | -.516 | .129 | -.232 | .256 |
| T2 | 360 | 0 | -.456 | .129 | -.377 | .256 |
| T3 | 360 | 0 | -.020 | .129 | -.729 | .256 |
| T4 | 360 | 0 | -.158 | .129 | -.335 | .256 |
| T5 | 360 | 0 | .305 | .129 | .060 | .256 |
| T6 | 360 | 0 | -.265 | .129 | -.252 | .256 |
| T7 | 360 | 0 | -.547 | .129 | -.173 | .256 |
| T8 | 360 | 0 | -.684 | .129 | -.093 | .256 |
| T9 | 360 | 0 | -.076 | .129 | -.264 | .256 |
| T10 | 360 | 0 | -.117 | .129 | -.386 | .256 |
| T11 | 360 | 0 | .089 | .129 | -.230 | .256 |
| T12 | 360 | 0 | -.140 | .129 | -.425 | .256 |
| T13 | 360 | 0 | -.316 | .129 | -.797 | .256 |
| T14 | 360 | 0 | -.177 | .129 | -.426 | .256 |
| T15 | 360 | 0 | -.184 | .129 | -.884 | .256 |
| T16 | 360 | 0 | -.294 | .129 | -.603 | .256 |
| OC1 | 360 | 0 | -.244 | .129 | -.233 | .256 |
| OC2 | 360 | 0 | -.200 | .129 | -.558 | .256 |
| OC3 | 360 | 0 | -.036 | .129 | -.760 | .256 |
| OC4 | 360 | 0 | -.076 | .129 | -.720 | .256 |
| OC5 | 360 | 0 | -.024 | .129 | -.782 | .256 |
| OC6 | 360 | 0 | -.223 | .129 | -.600 | .256 |
| OC7 | 360 | 0 | -.157 | .129 | -.783 | .256 |
| OC8 | 360 | 0 | -.229 | .129 | -.194 | .256 |
| OP1 | 360 | 0 | -.189 | .129 | -1.084 | .256 |
| OP2 | 360 | 0 | -.109 | .129 | -.693 | .256 |
| OP3 | 360 | 0 | -.039 | .129 | -.732 | .256 |
| OP4 | 360 | 0 | .110 | .129 | -.943 | .256 |
| OP5 | 360 | 0 | .091 | .129 | -.851 | .256 |
| OP6 | 360 | 0 | -.157 | .129 | -.566 | .256 |
| OP7 | 360 | 0 | -.233 | .129 | -.802 | .256 |

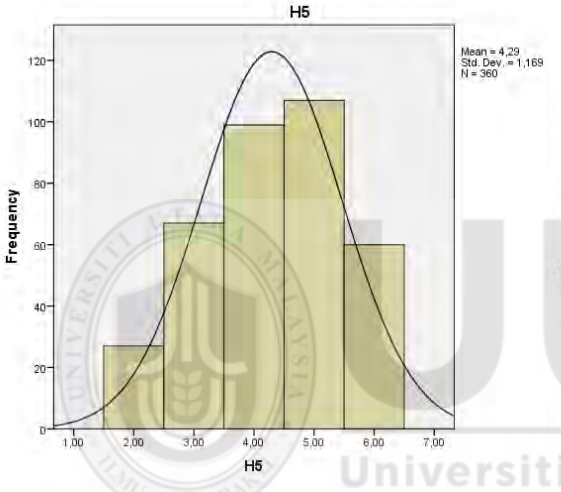


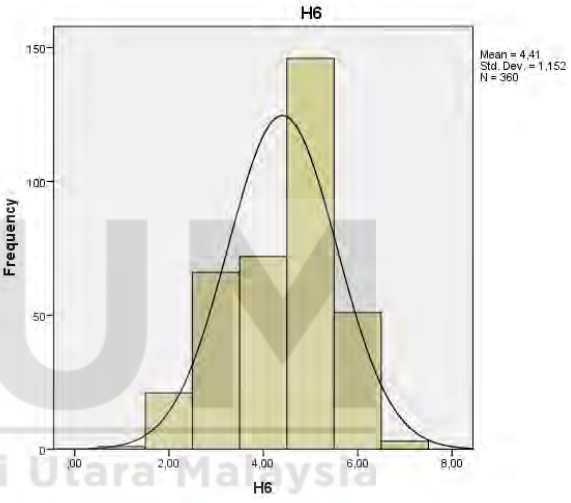
## D.2 Histogram Curve's

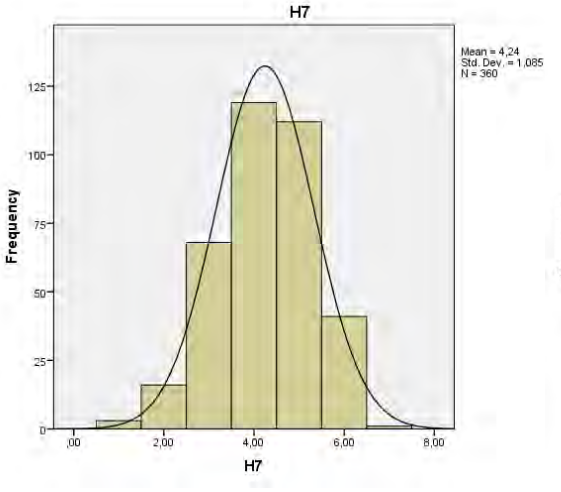


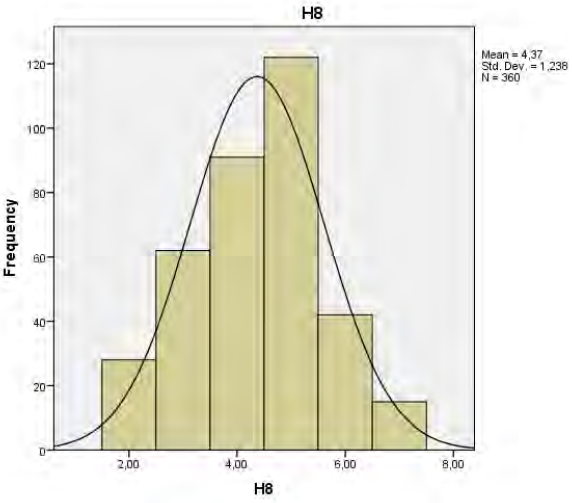


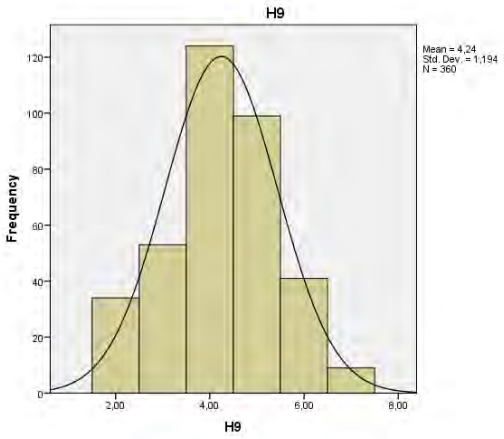



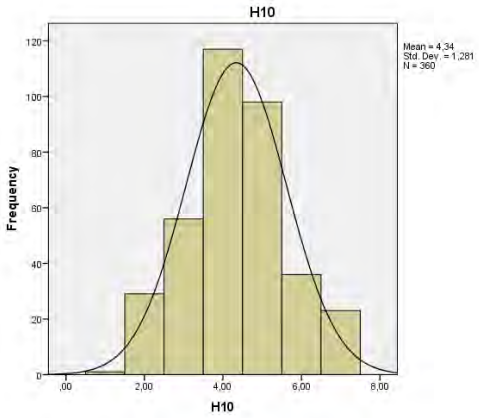



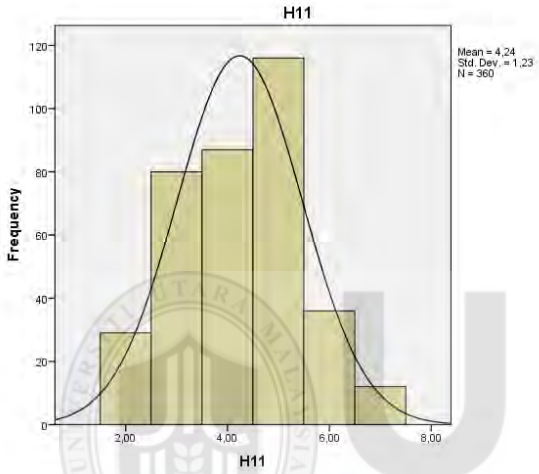



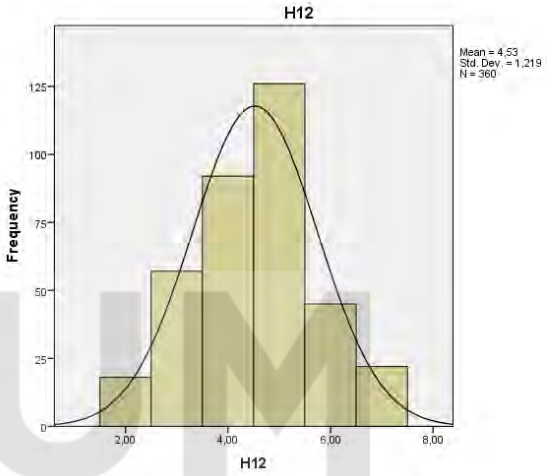



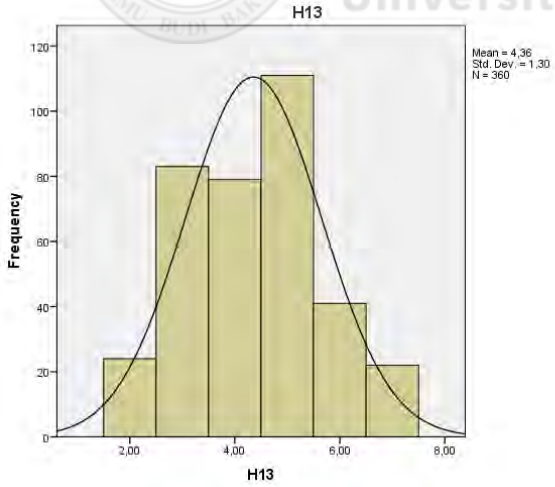



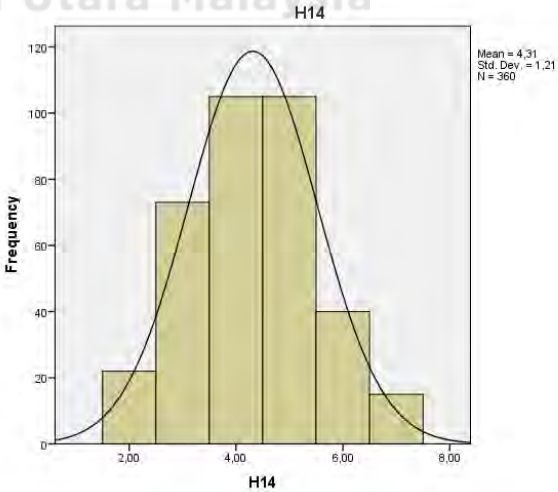


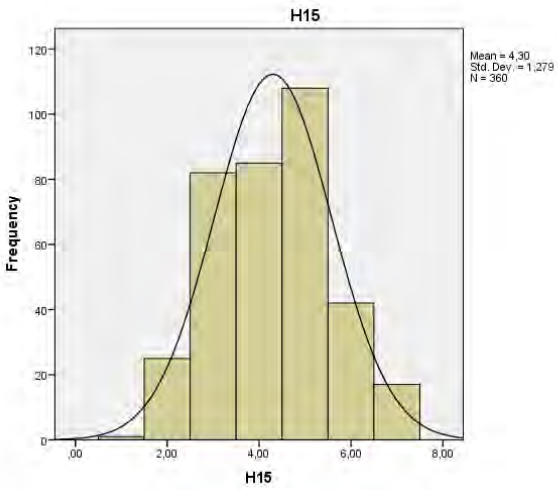



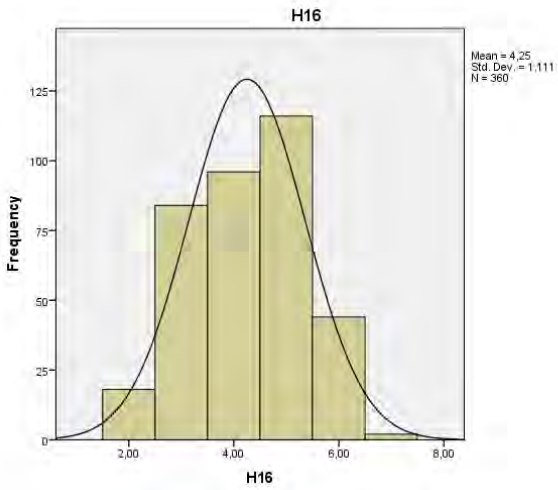



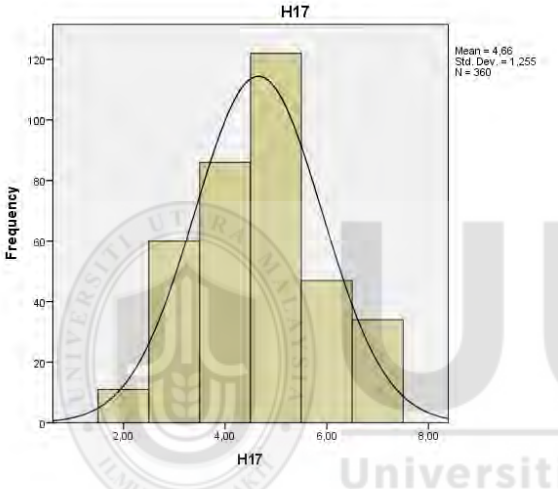



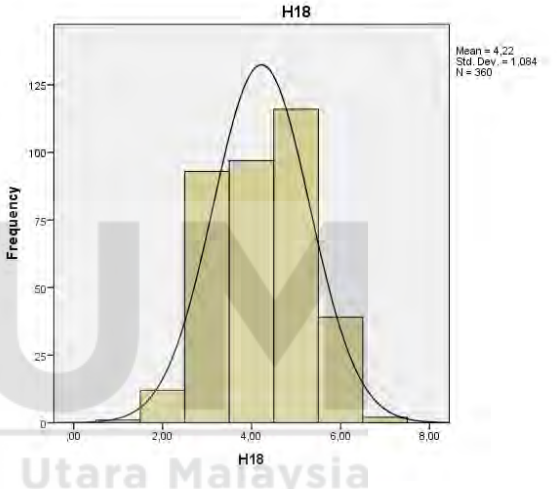



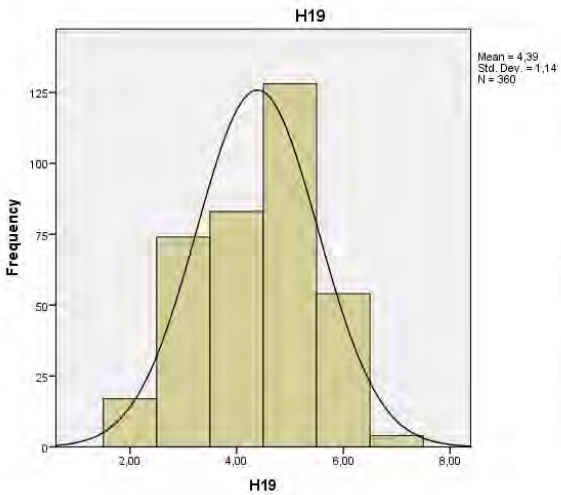



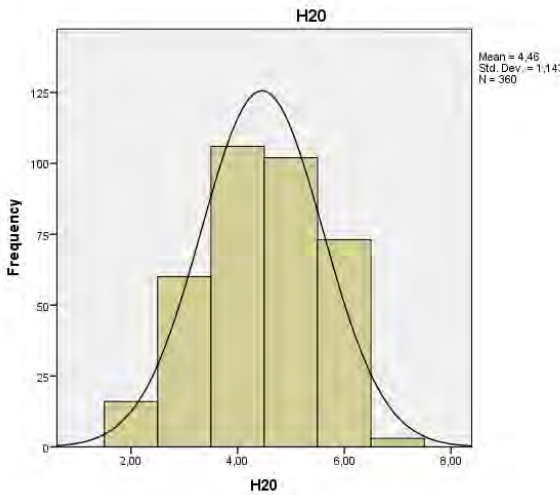


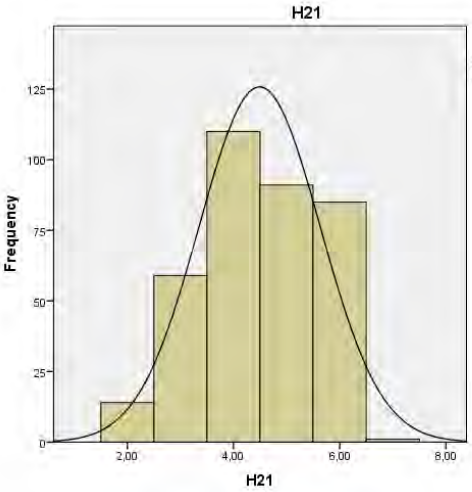



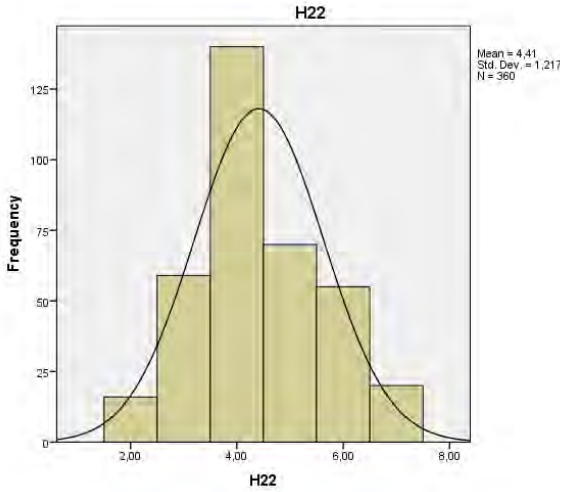



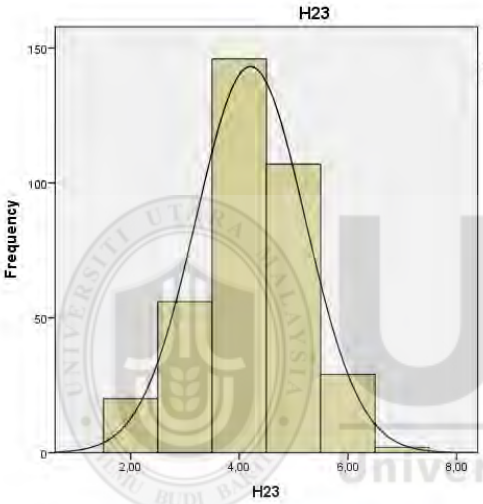



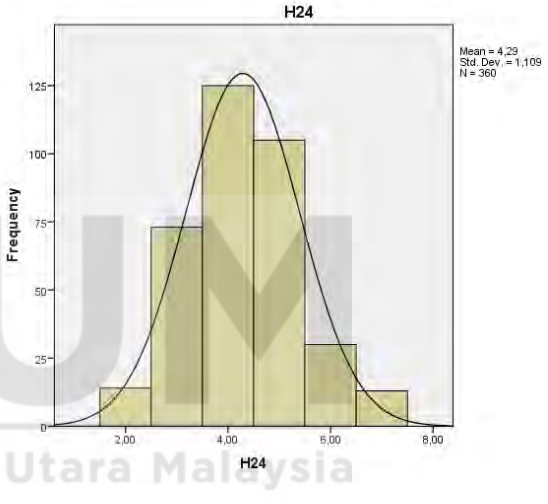



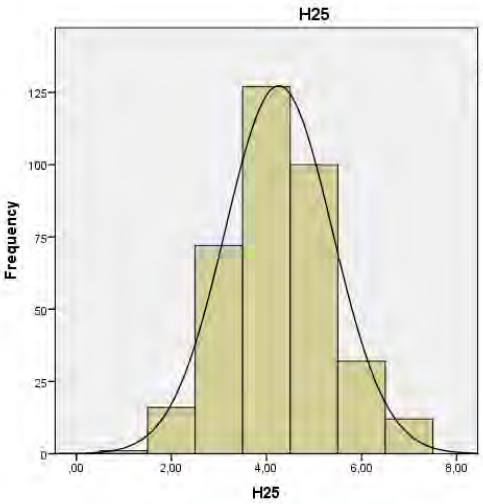



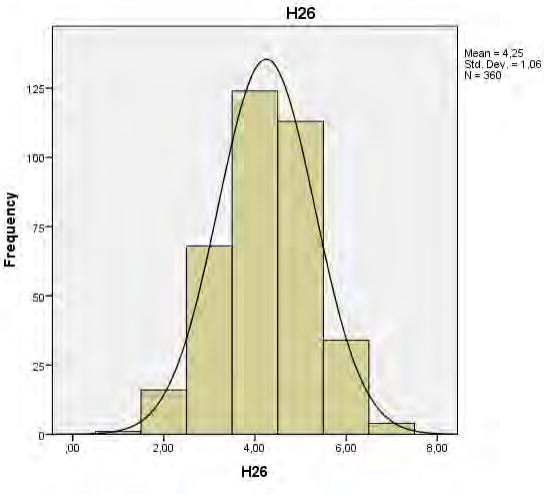


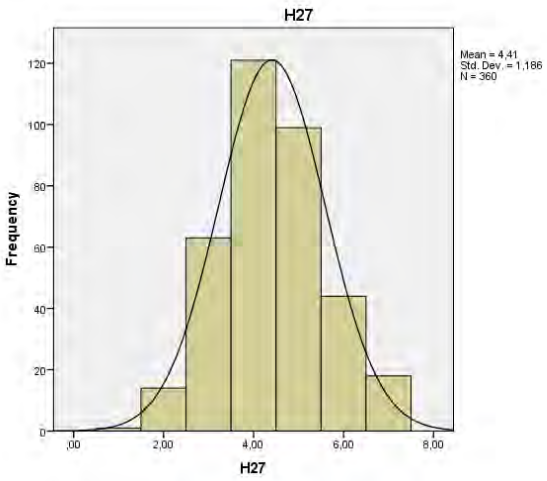



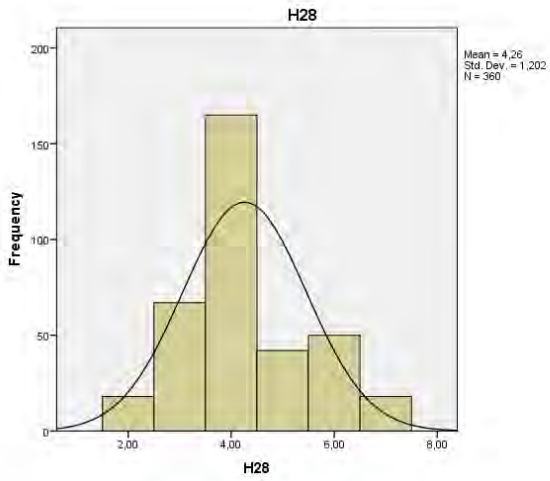



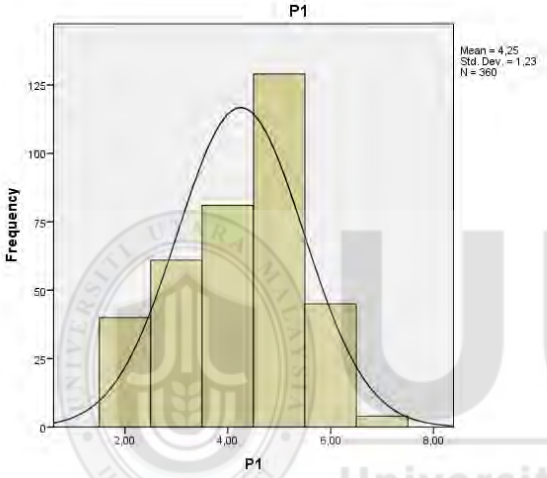



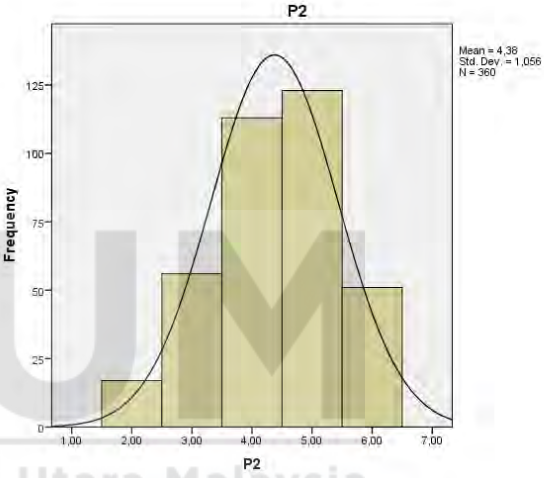



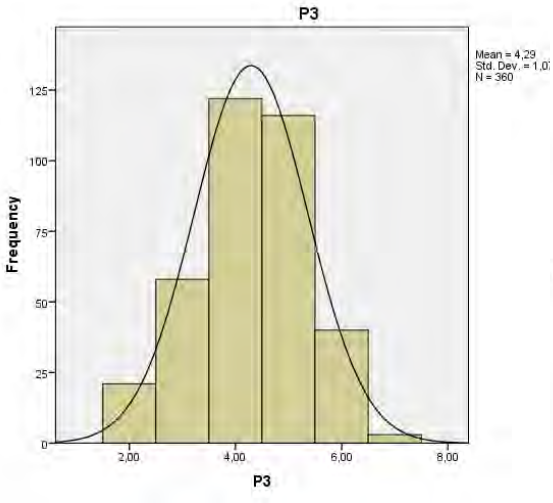



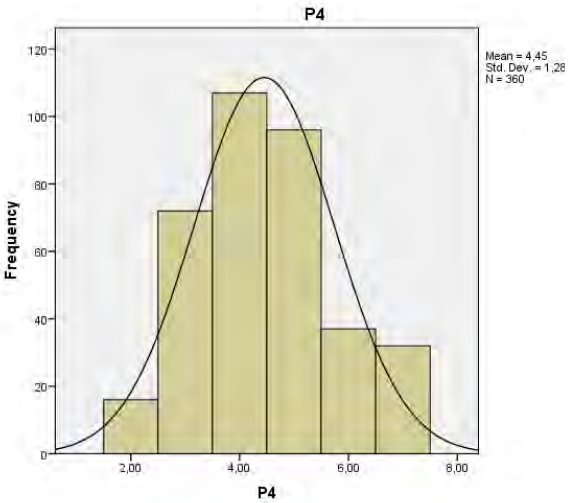


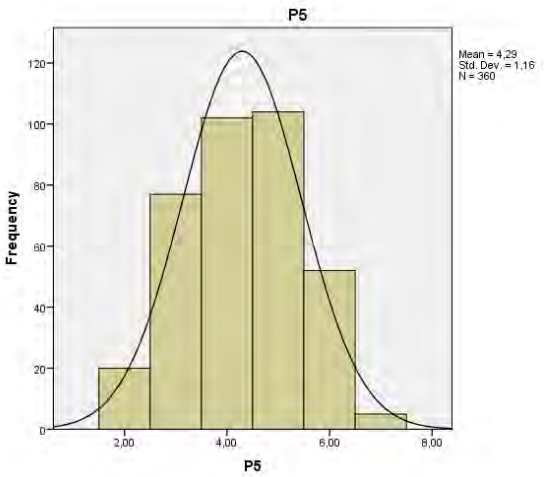



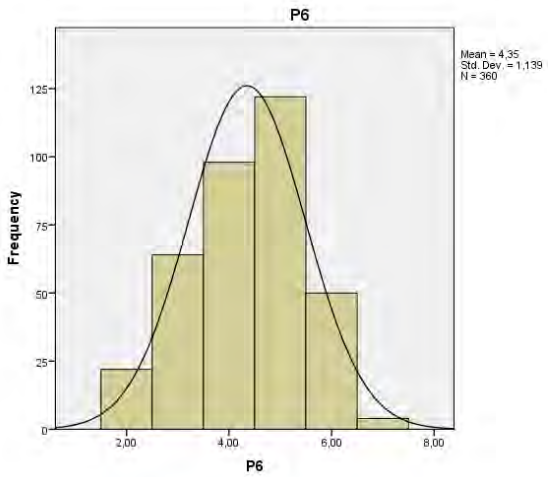



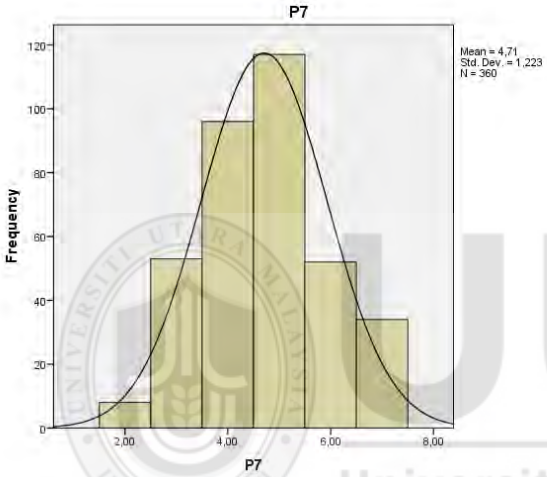



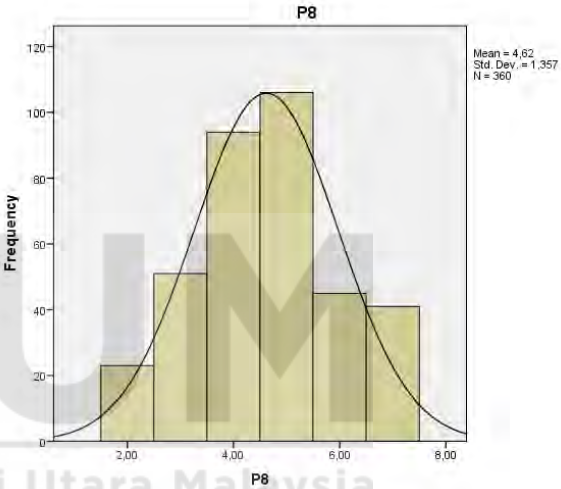



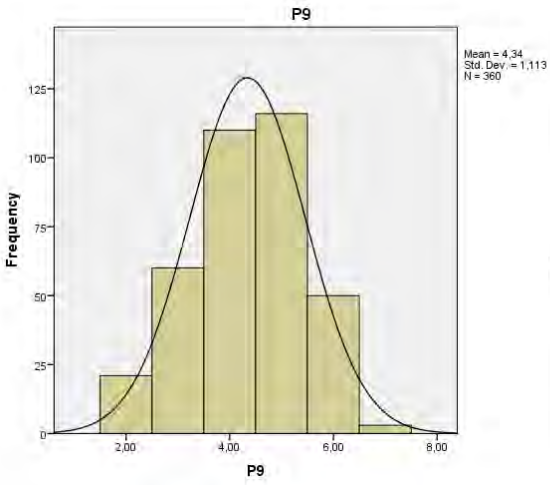



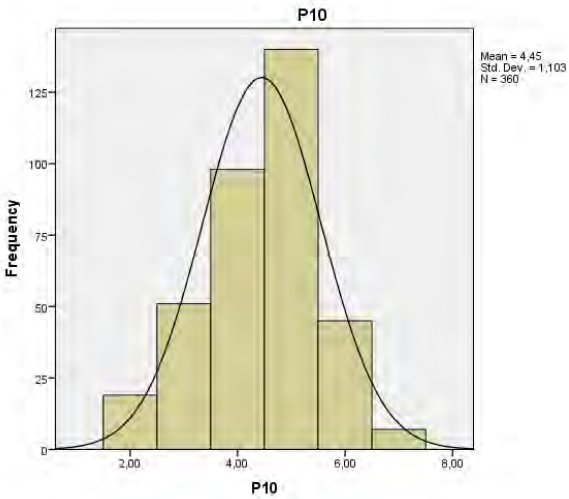


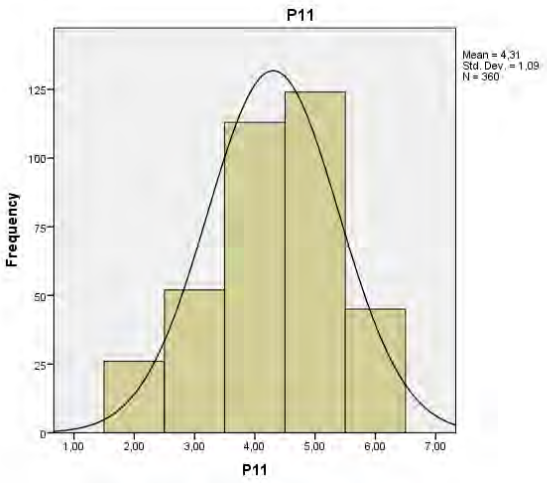



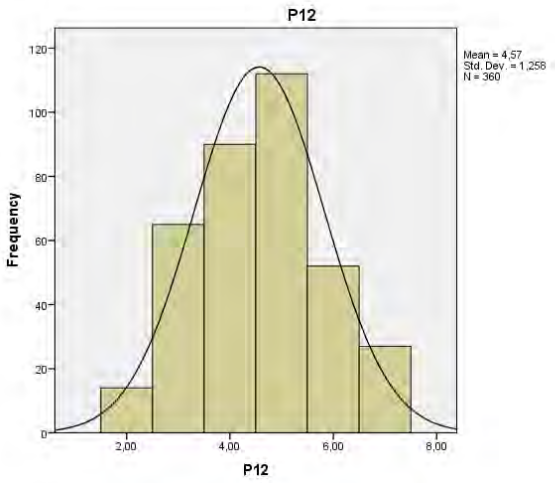



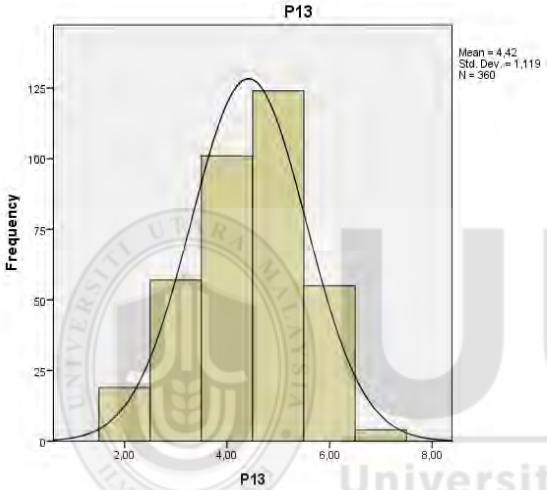



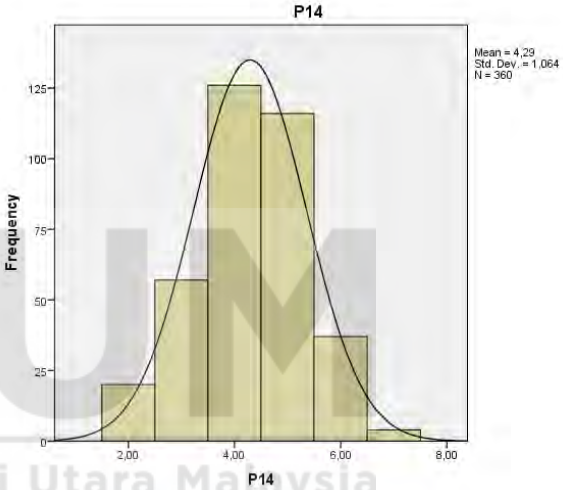



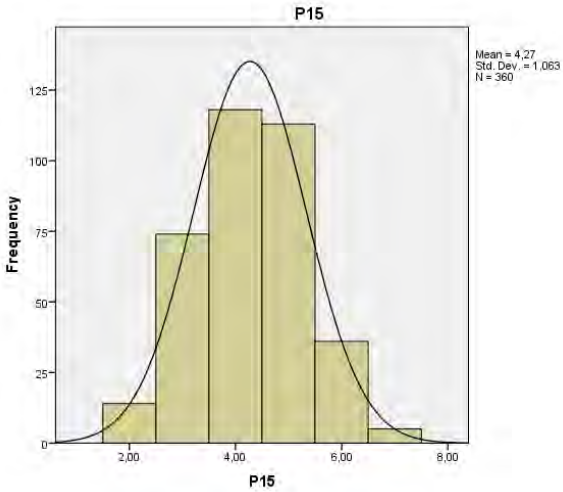



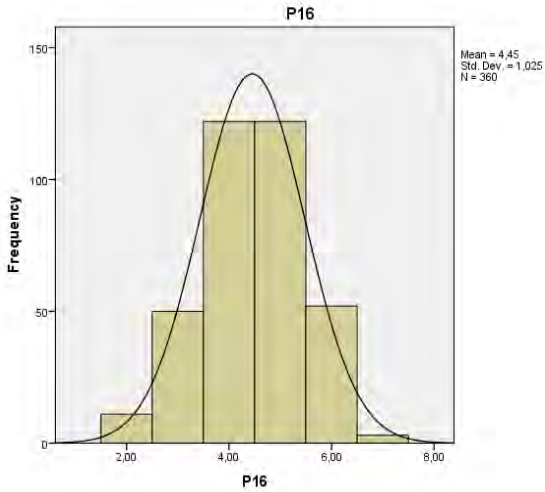


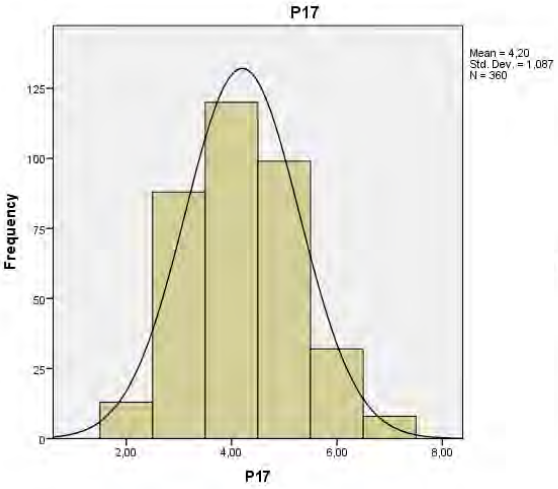



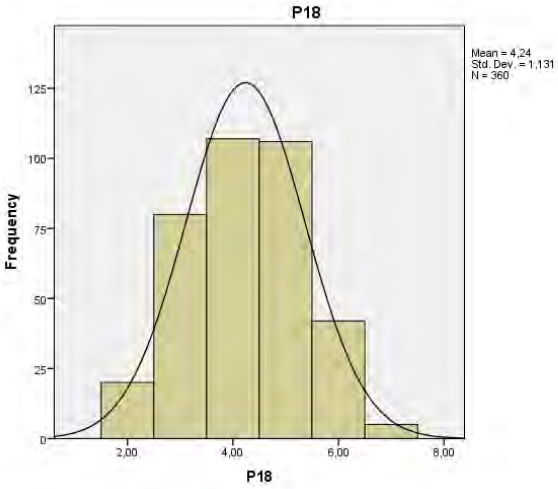



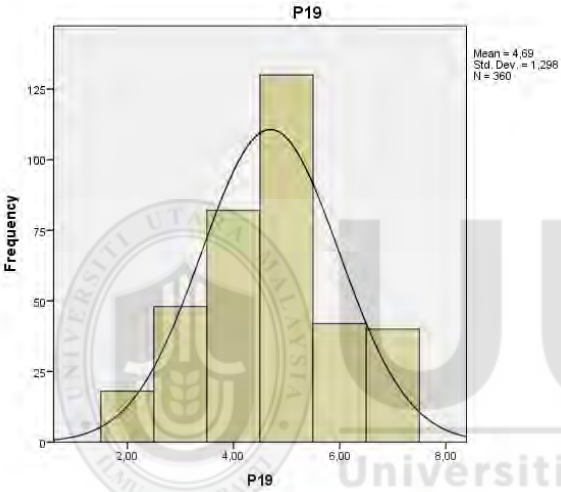



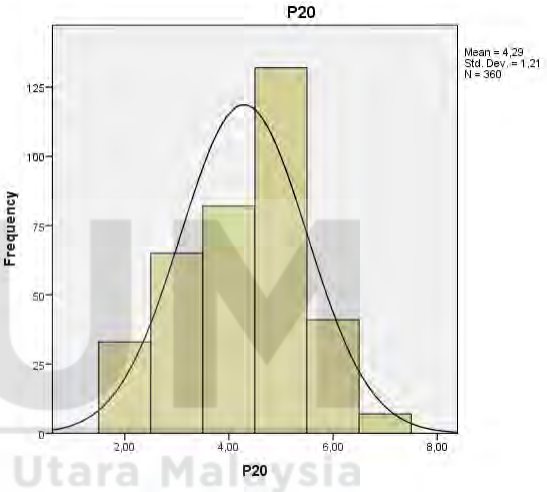



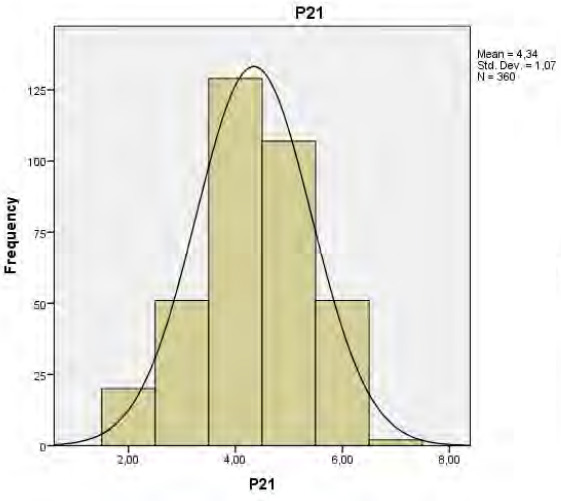



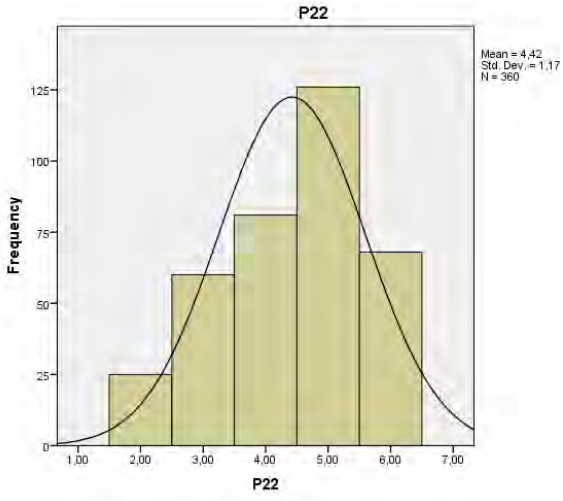


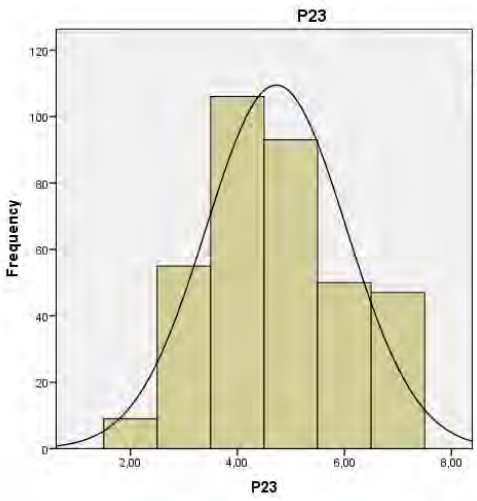



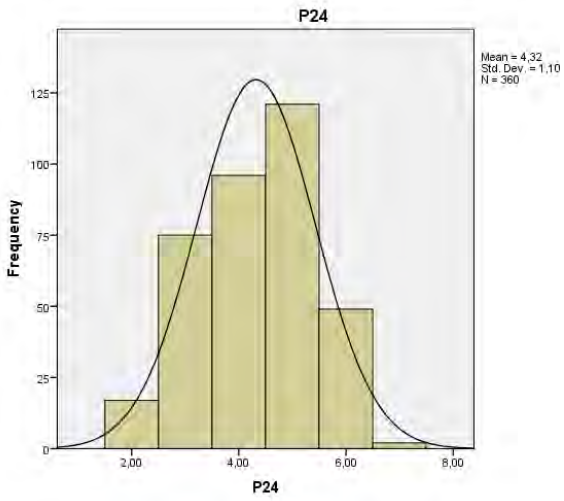



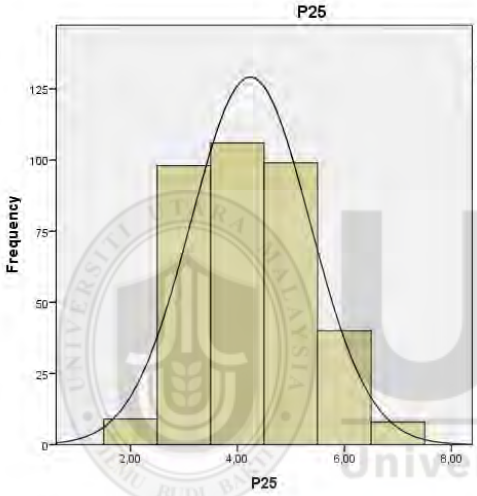



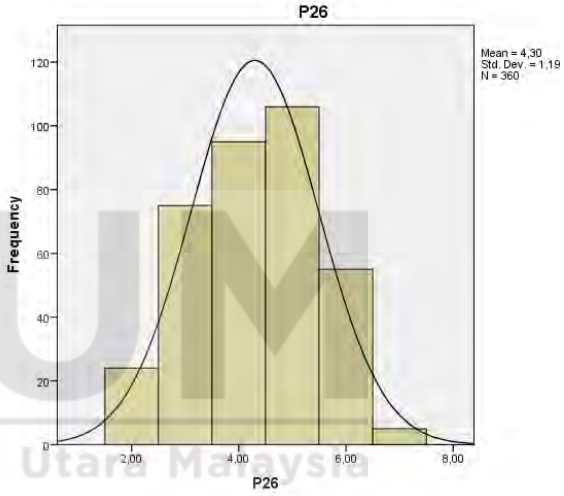



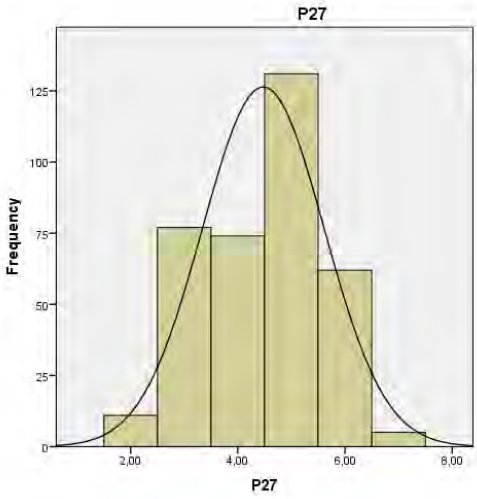



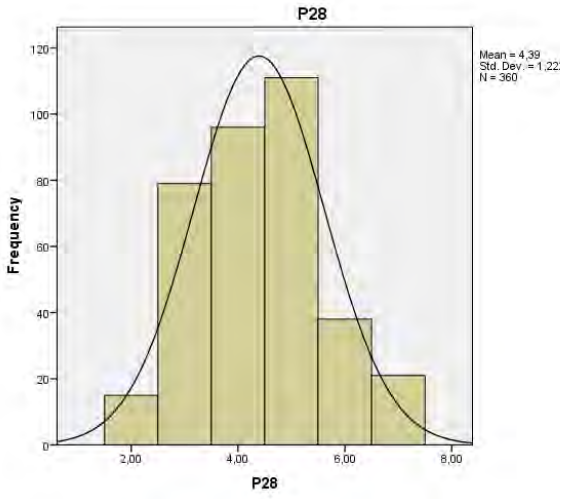


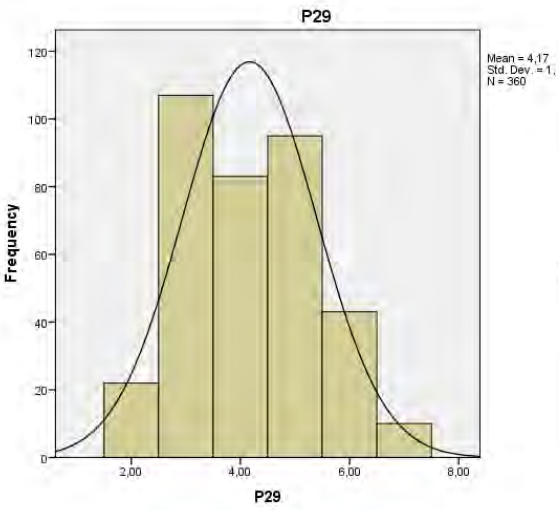



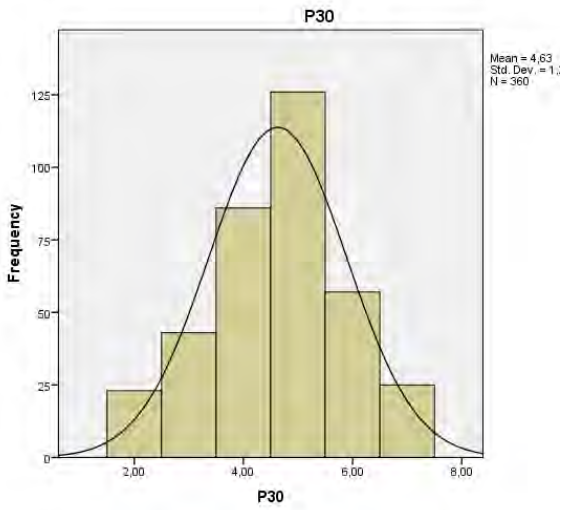



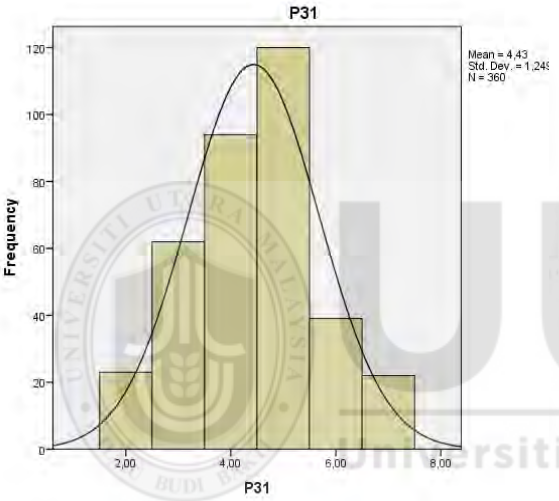



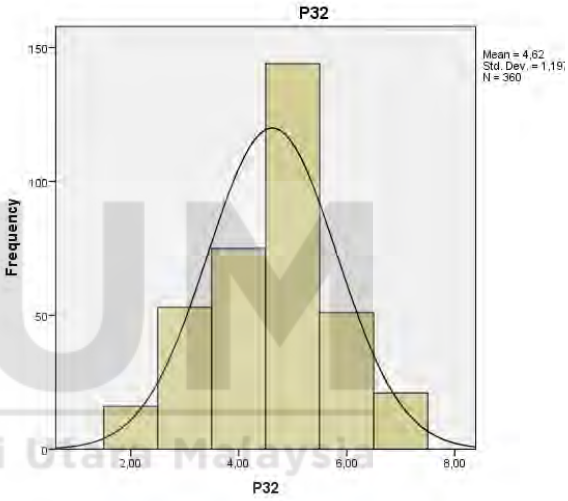



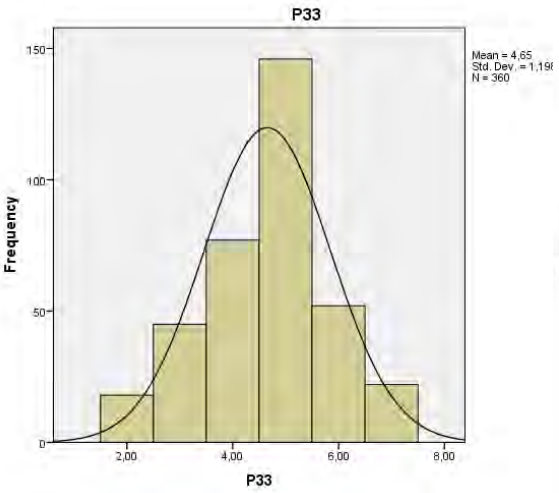



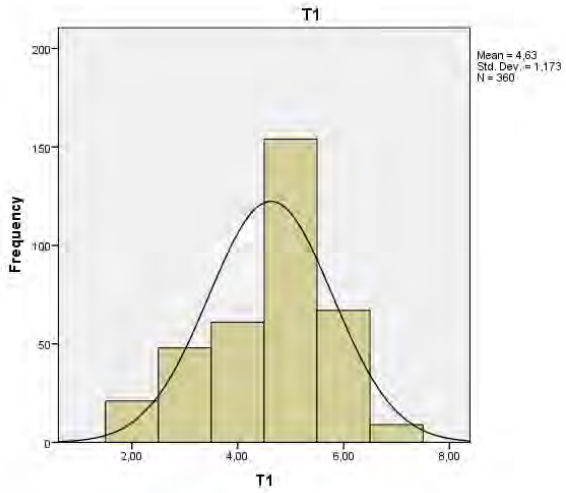


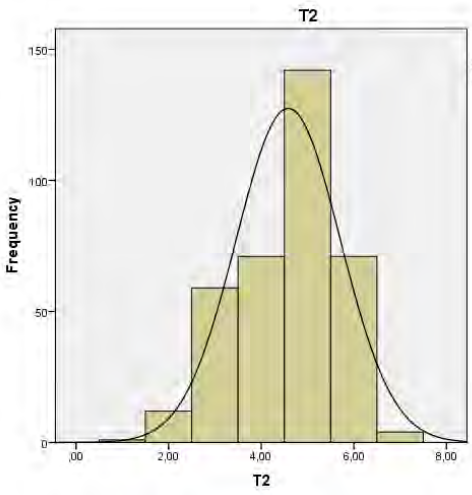



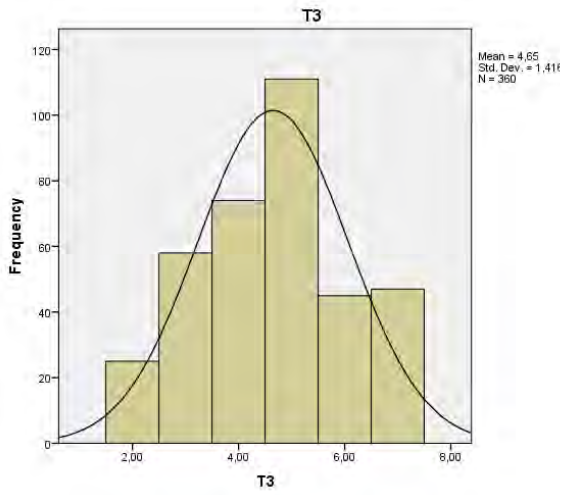



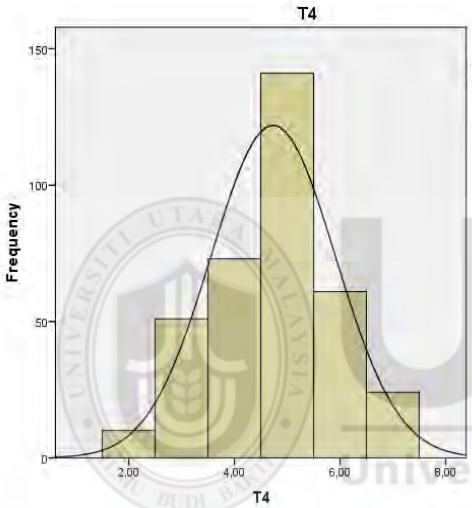



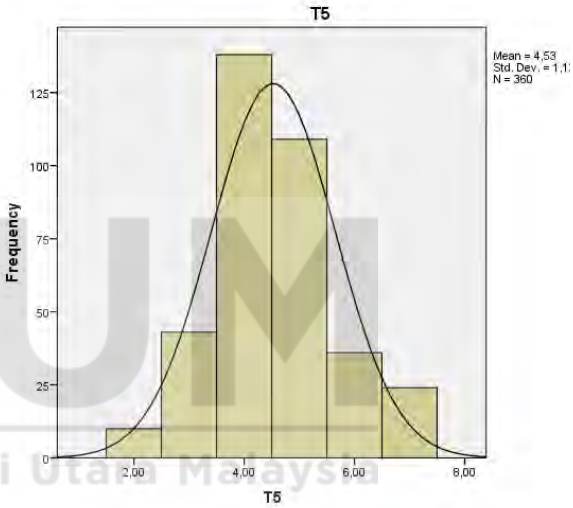



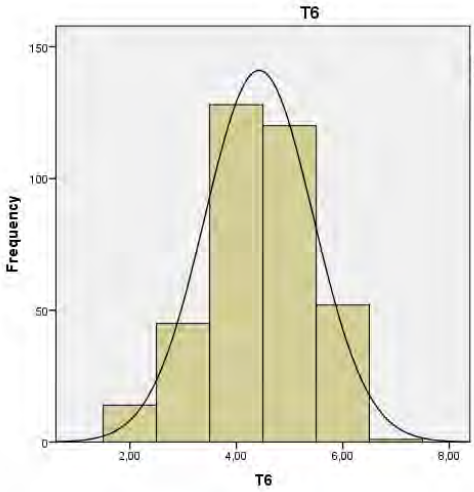



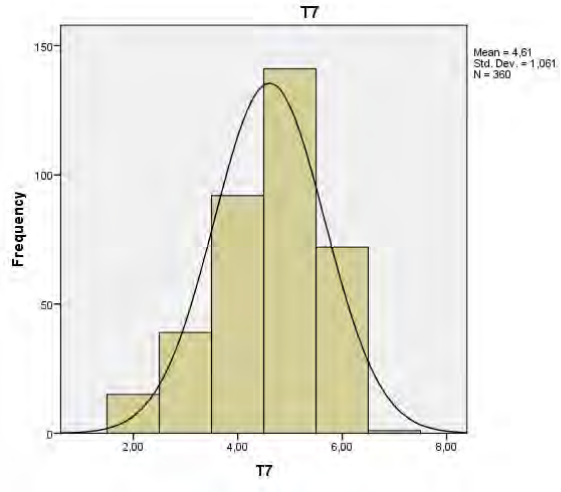


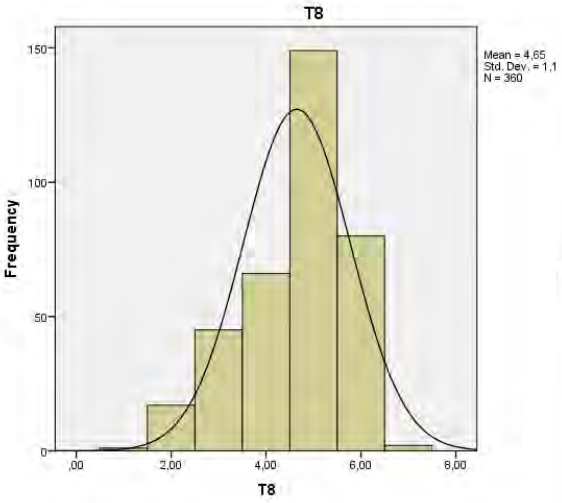



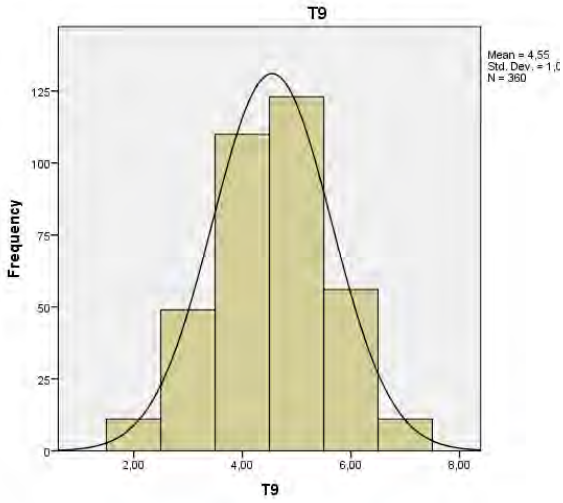



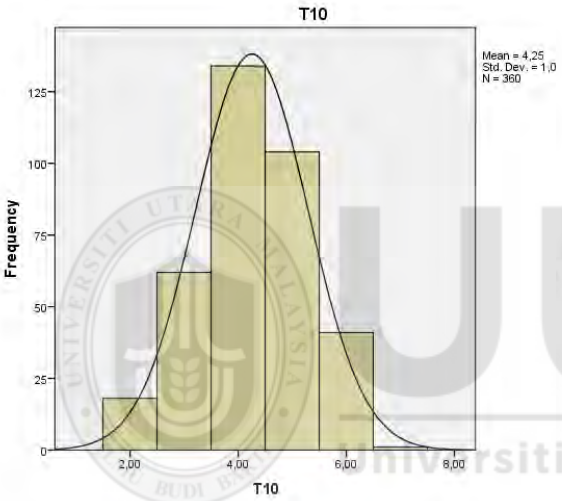



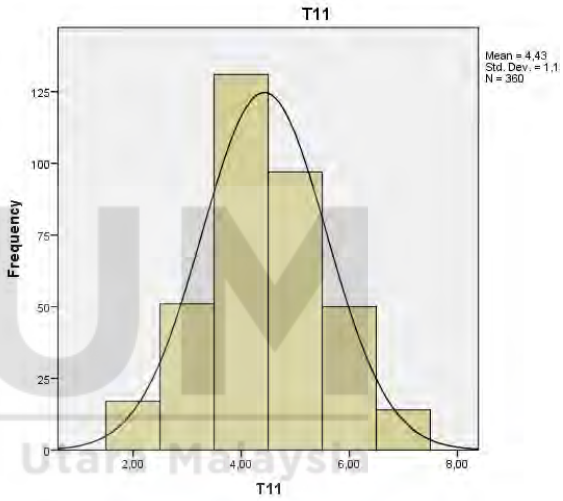



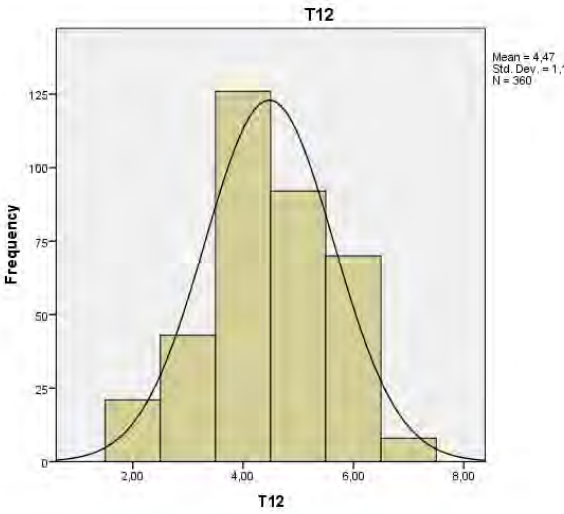



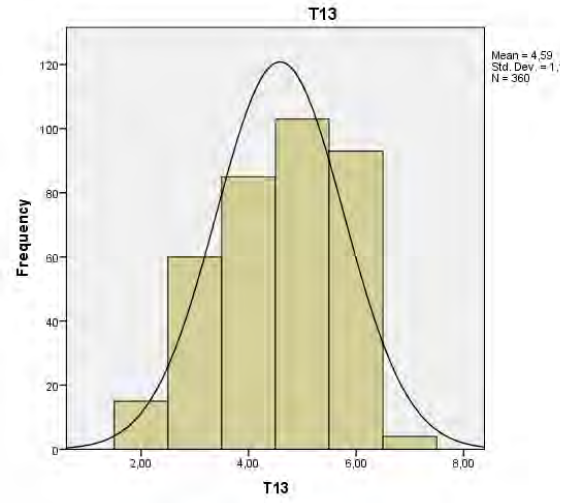


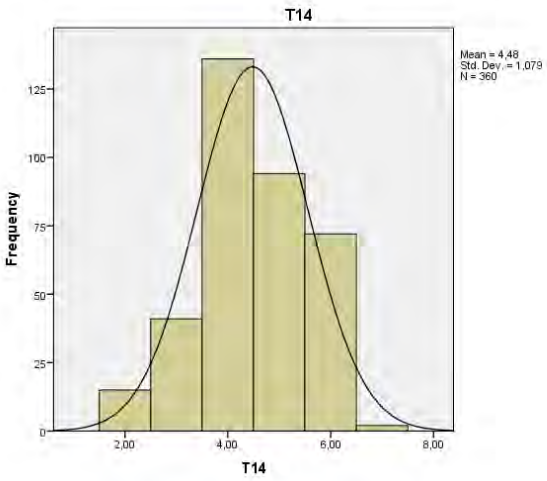



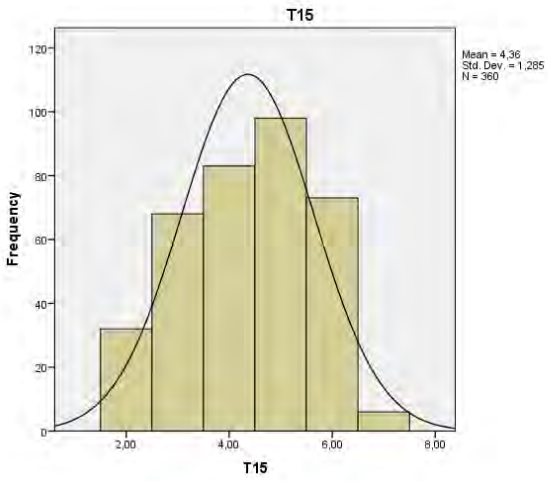



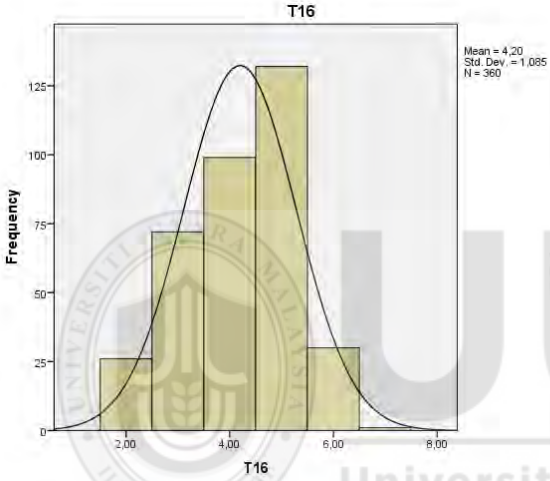



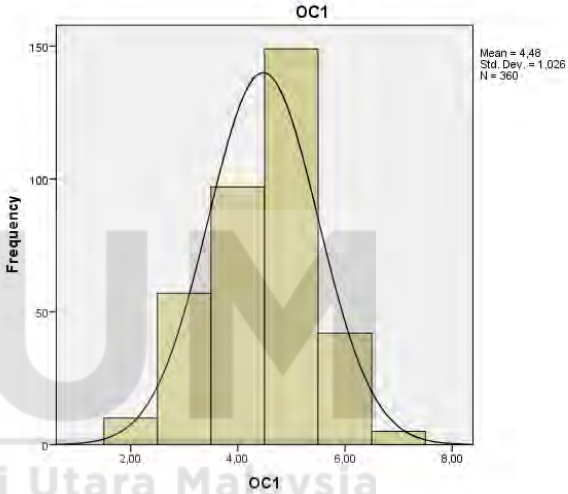



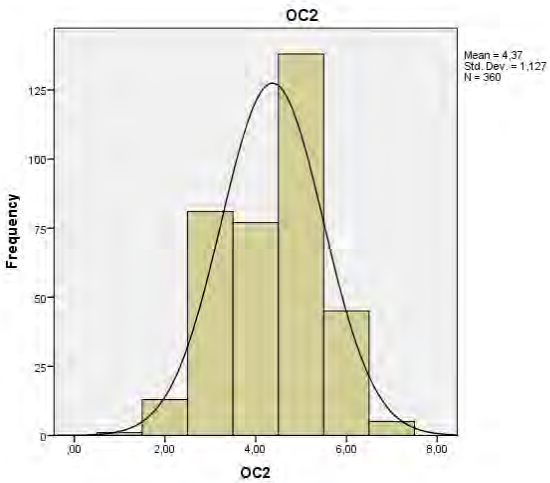



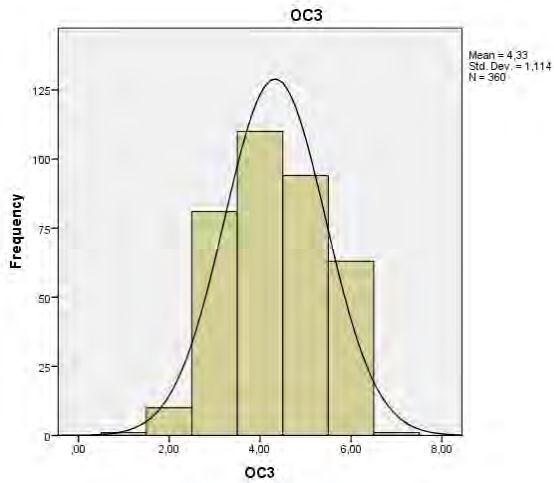


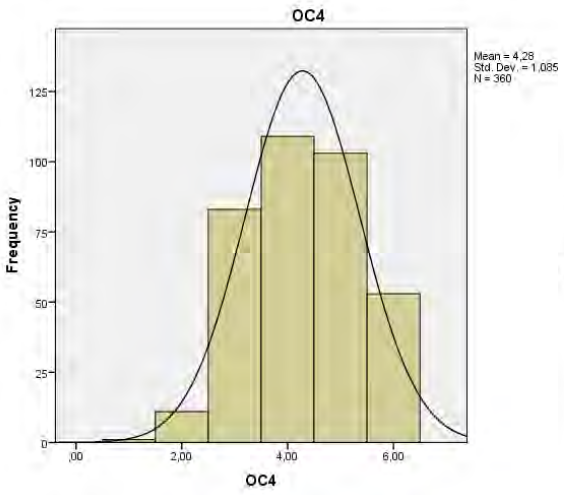



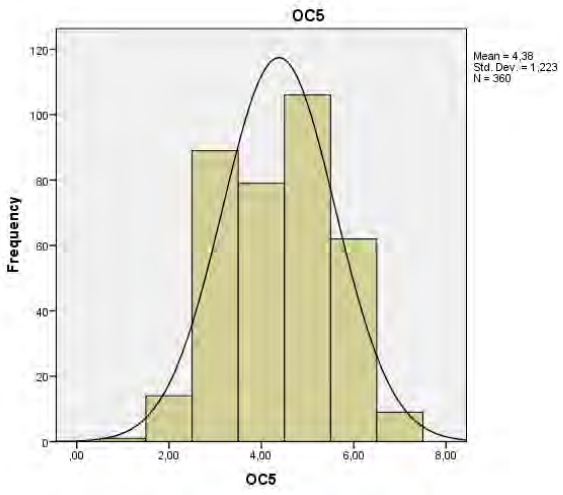



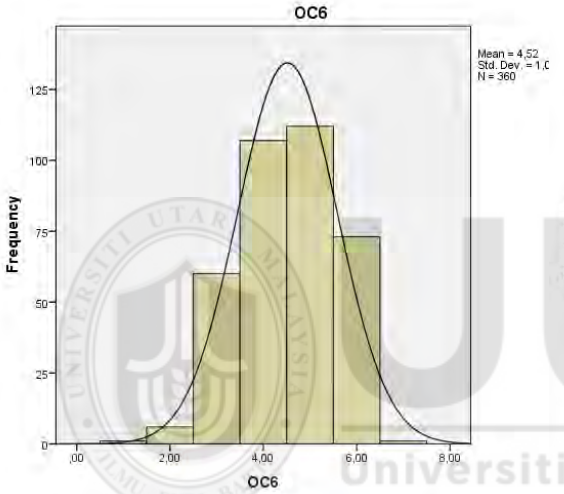



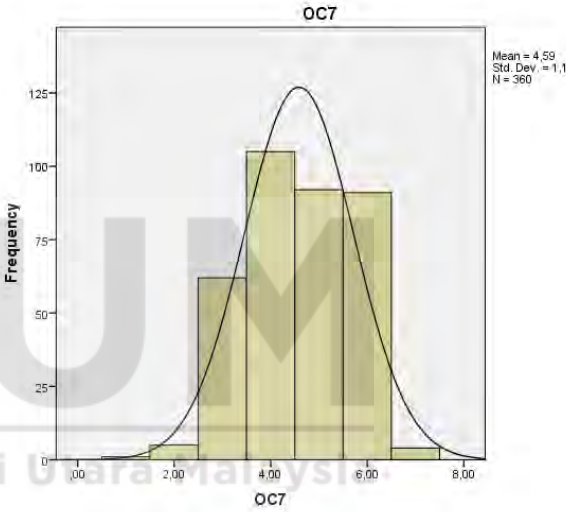



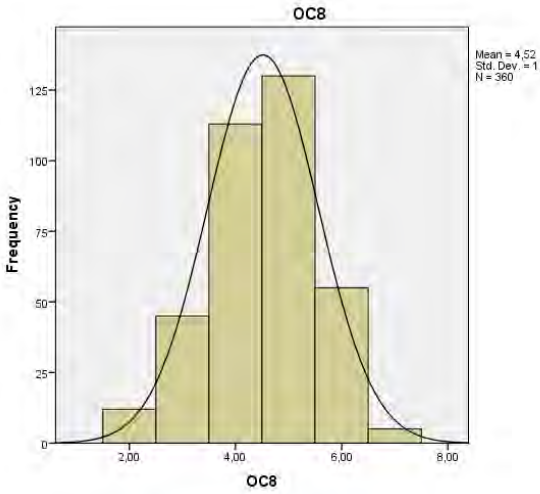



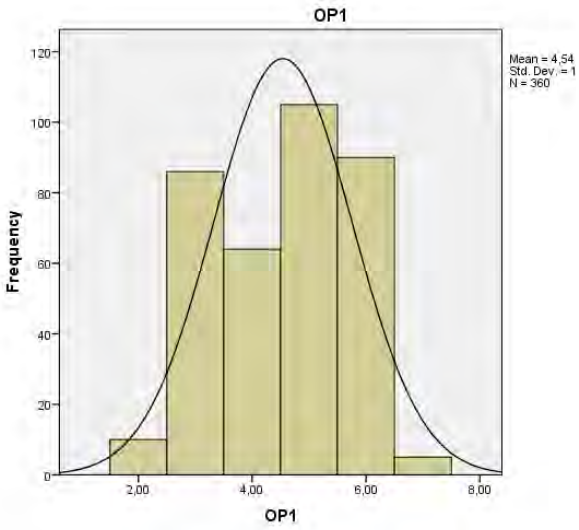


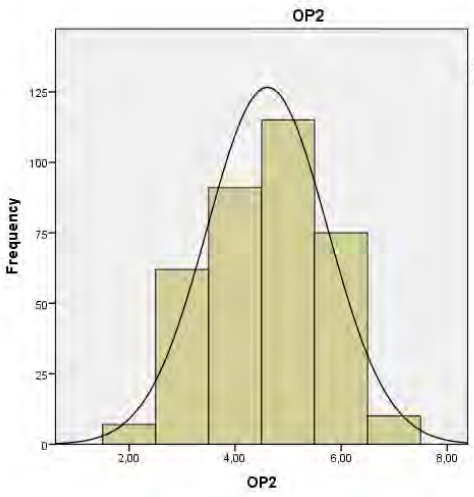



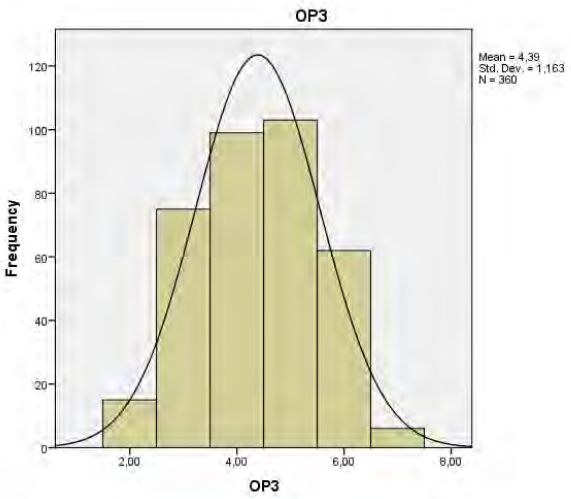



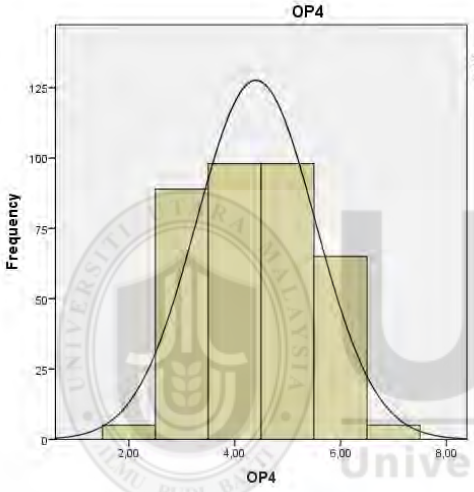



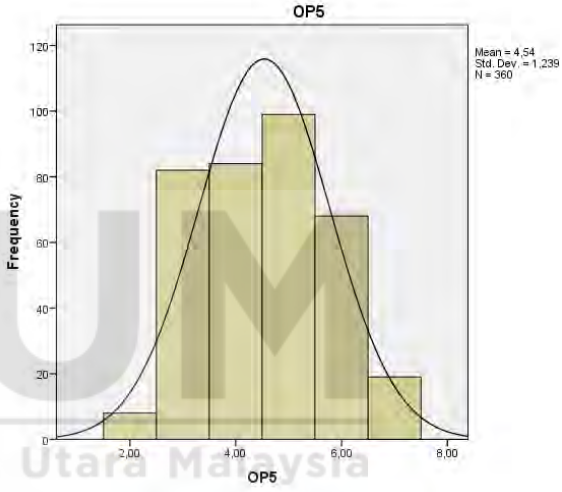



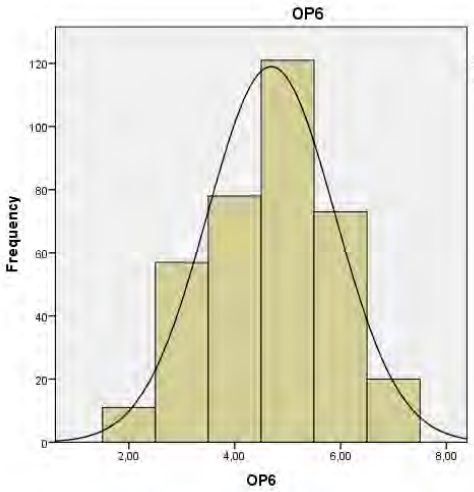



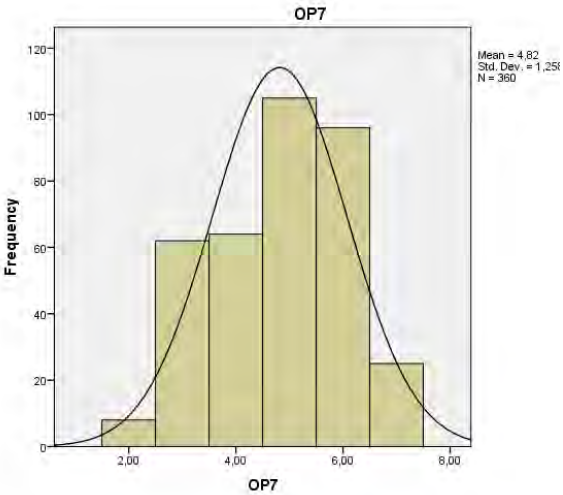


## Appendix E: Assessment of Normality

### Assessment of normality (Group number 1)

| Variable | min | max | skew | c.r. | kurtosis | c.r. |
|---|---|---|---|---|---|---|
| OP7 | 1.000 | 5.304 | -.043 | -.332 | -.330 | -1.280 |
| OP6 | 1.000 | 5.279 | -.028 | -.213 | -.260 | -1.006 |
| OP5 | 1.000 | 5.422 | .031 | .241 | -.329 | -1.272 |
| OP4 | 1.000 | 6.104 | .052 | .399 | -.339 | -1.313 |
| OP3 | 1.000 | 5.625 | -.004 | -.027 | -.266 | -1.031 |
| OP2 | 1.000 | 5.729 | -.018 | -.136 | -.238 | -.920 |
| OP1 | 1.000 | 5.850 | -.047 | -.366 | -.362 | -1.402 |
| OC8 | 1.000 | 5.779 | -.033 | -.257 | -.122 | -.473 |
| OC7 | 1.000 | 6.702 | -.086 | -.662 | -.292 | -1.132 |
| OC6 | 1.000 | 7.146 | -.109 | -.843 | -.333 | -1.289 |
| OC5 | 1.000 | 6.411 | .001 | .011 | -.187 | -.726 |
| OC4 | 1.000 | 5.637 | -.086 | -.662 | -.421 | -1.631 |
| OC3 | 1.000 | 7.146 | -.060 | -.466 | -.320 | -1.240 |
| OC2 | 1.000 | 6.625 | -.026 | -.205 | -.076 | -.295 |
| OC1 | 1.000 | 5.850 | -.037 | -.289 | -.056 | -.216 |
| TECH1 | 1.419 | 5.234 | .066 | .514 | -.661 | -2.559 |
| TECH2 | 1.267 | 4.951 | .033 | .256 | -.122 | -.473 |
| TECH3 | 1.000 | 4.902 | .170 | 1.318 | 1.225 | 4.743 |
| PPS1 | 1.114 | 4.544 | .122 | .942 | -.051 | -.197 |
| PPS2 | 1.000 | 4.549 | .023 | .179 | -.006 | -.021 |
| PPS3 | 1.000 | 4.767 | .006 | .046 | -.208 | -.804 |
| PPS4 | 1.000 | 4.769 | .163 | 1.260 | -.034 | -.133 |
| PPS5 | 1.459 | 4.454 | .009 | .073 | -.477 | -1.849 |
| HRC1 | 1.229 | 4.627 | -.113 | -.875 | -.418 | -1.618 |
| HRC2 | 1.226 | 4.901 | .196 | 1.519 | -.610 | -2.362 |
| HRC3 | 1.317 | 5.299 | .114 | .884 | -.267 | -1.036 |
| HRC4 | 1.000 | 5.760 | .060 | .464 | -.254 | -.986 |
| HRC5 | 1.393 | 5.409 | -.164 | -1.270 | -.085 | -.330 |
| Multivariate | | | | | 118.607 | 27.452 |

## Appendix F: Linearity and Homoscedasticity

**Observations farthest from the centroid (Mahalanobis distance) (Group number 1)**

| Observation number | Mahalanobis d-squared | p1 | p2 |
|---|---|---|---|
| 233 | 82.135 | .000 | .000 |
| 360 | 78.255 | .000 | .000 |
| 282 | 65.030 | .000 | .000 |
| 34 | 64.062 | .000 | .000 |
| 231 | 60.255 | .000 | .000 |
| 306 | 58.962 | .001 | .000 |
| 318 | 58.757 | .001 | .000 |
| 316 | 56.573 | .001 | .000 |
| 278 | 55.240 | .002 | .000 |
| 321 | 54.718 | .002 | .000 |
| 38 | 54.371 | .002 | .000 |
| 161 | 54.305 | .002 | .000 |
| 308 | 53.644 | .002 | .000 |
| 254 | 53.202 | .003 | .000 |
| 309 | 53.118 | .003 | .000 |
| 5 | 53.076 | .003 | .000 |
| 271 | 52.892 | .003 | .000 |
| 241 | 52.790 | .003 | .000 |
| 279 | 51.158 | .005 | .000 |
| 305 | 51.056 | .005 | .000 |
| 335 | 50.675 | .005 | .000 |
| 31 | 50.568 | .006 | .000 |
| 247 | 50.125 | .006 | .000 |
| 329 | 49.448 | .007 | .000 |
| 317 | 49.302 | .008 | .000 |
| 273 | 49.201 | .008 | .000 |
| 349 | 49.162 | .008 | .000 |
| 347 | 49.140 | .008 | .000 |
| 10 | 48.956 | .008 | .000 |
| 246 | 48.831 | .009 | .000 |
| 11 | 48.561 | .009 | .000 |
| 345 | 48.509 | .009 | .000 |
| 6 | 48.419 | .010 | .000 |
| 176 | 47.484 | .012 | .000 |
| 26 | 47.456 | .012 | .000 |
| 132 | 47.352 | .013 | .000 |
| 237 | 47.322 | .013 | .000 |
| 352 | 47.319 | .013 | .000 |
| 65 | 46.855 | .014 | .000 |
| 257 | 46.443 | .016 | .000 |
| 174 | 45.706 | .019 | .000 |
| 22 | 45.413 | .020 | .000 |
| 357 | 45.061 | .022 | .000 |
| 43 | 44.994 | .022 | .000 |
| 69 | 44.809 | .023 | .000 |
| 267 | 44.294 | .026 | .000 |
| 353 | 44.274 | .026 | .000 |
| 14 | 44.199 | .027 | .000 |

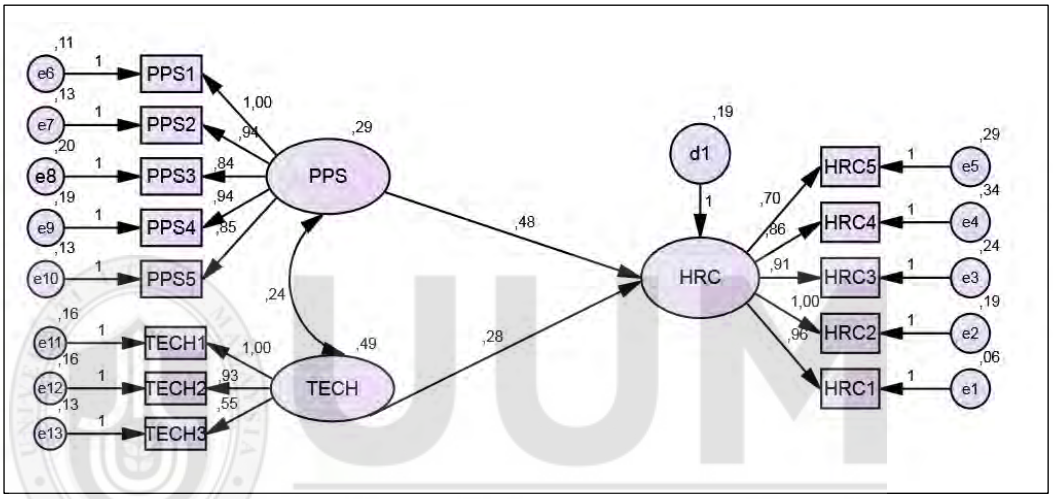
| Observation number | Mahalanobis d-squared | p1 | p2 |
|---|---|---|---|
| 39 | 43.368 | .032 | .000 |
| 274 | 43.357 | .032 | .000 |
| 4 | 43.305 | .033 | .000 |
| 252 | 42.932 | .035 | .000 |
| 32 | 42.784 | .037 | .000 |
| 272 | 42.734 | .037 | .000 |
| 312 | 42.626 | .038 | .000 |
| 310 | 42.350 | .040 | .000 |
| 298 | 42.238 | .041 | .000 |
| 262 | 42.070 | .043 | .000 |
| 265 | 42.067 | .043 | .000 |
| 20 | 42.059 | .043 | .000 |
| 71 | 41.621 | .047 | .000 |
| 8 | 41.377 | .050 | .000 |
| 30 | 40.988 | .054 | .000 |
| 256 | 40.750 | .057 | .000 |
| 311 | 40.544 | .059 | .000 |
| 248 | 40.462 | .060 | .000 |
| 123 | 40.087 | .065 | .000 |
| 19 | 39.853 | .068 | .000 |
| 186 | 39.792 | .069 | .000 |
| 131 | 39.792 | .069 | .000 |
| 288 | 39.702 | .070 | .000 |
| 259 | 38.956 | .082 | .000 |
| 9 | 38.868 | .083 | .000 |
| 55 | 38.577 | .088 | .000 |
| 255 | 38.511 | .089 | .000 |
| 325 | 38.245 | .094 | .000 |
| 36 | 38.239 | .094 | .000 |
| 100 | 38.115 | .096 | .000 |
| 260 | 38.073 | .097 | .000 |
| 277 | 37.802 | .102 | .000 |
| 276 | 37.454 | .109 | .000 |
| 333 | 37.306 | .112 | .000 |
| 45 | 36.905 | .121 | .000 |
| 204 | 36.486 | .131 | .000 |
| 342 | 36.366 | .134 | .000 |
| 18 | 36.115 | .140 | .000 |
| 313 | 36.051 | .141 | .000 |
| 348 | 36.001 | .143 | .000 |
| 1 | 35.971 | .143 | .000 |
| 268 | 35.619 | .153 | .000 |
| 344 | 35.537 | .155 | .000 |
| 41 | 35.423 | .158 | .000 |
| 63 | 35.240 | .163 | .000 |
| 338 | 35.073 | .168 | .000 |
| 29 | 35.048 | .168 | .000 |
| 27 | 34.840 | .175 | .000 |
| 280 | 34.807 | .176 | .000 |
| 17 | 34.543 | .184 | .000 |
| 295 | 34.456 | .186 | .000 |
| 253 | 34.391 | .188 | .000 |

## Appendix G: Variance Inflation Factor (VIF)

### G.1 Assessment Multi co-linearity

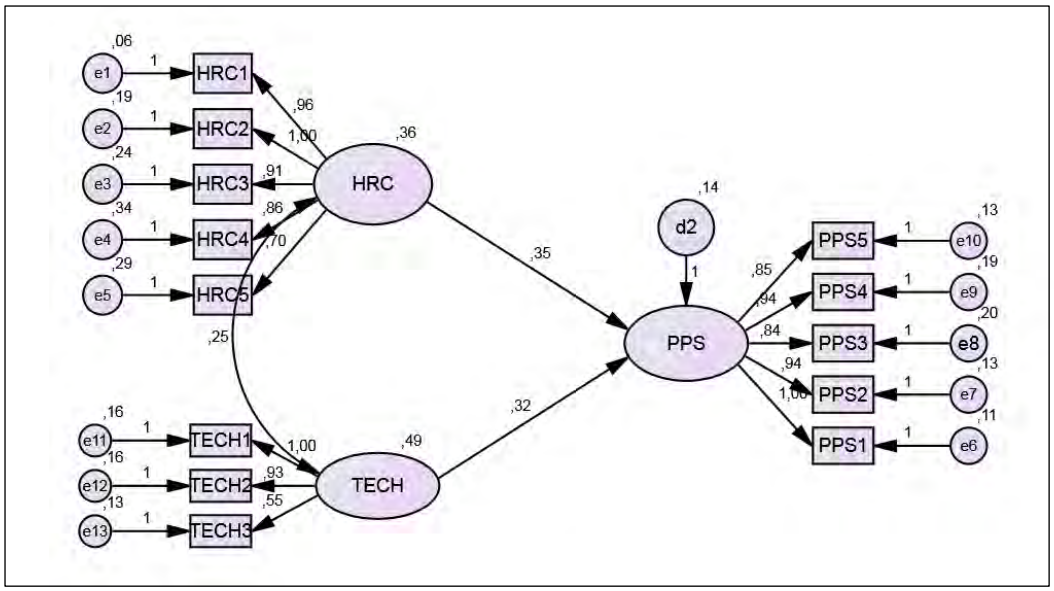
| Variable Latent Exogenous | R-Square | Tolerance | VIF |
|---|---|---|---|
| HRC | 0.479 | 0.521 | 1.919 |
| PPS | 0.524 | 0.476 | 2.101 |
| TECH | 0.486 | 0.514 | 1.946 |

*Tolerance > 0.10; VIF < 10*

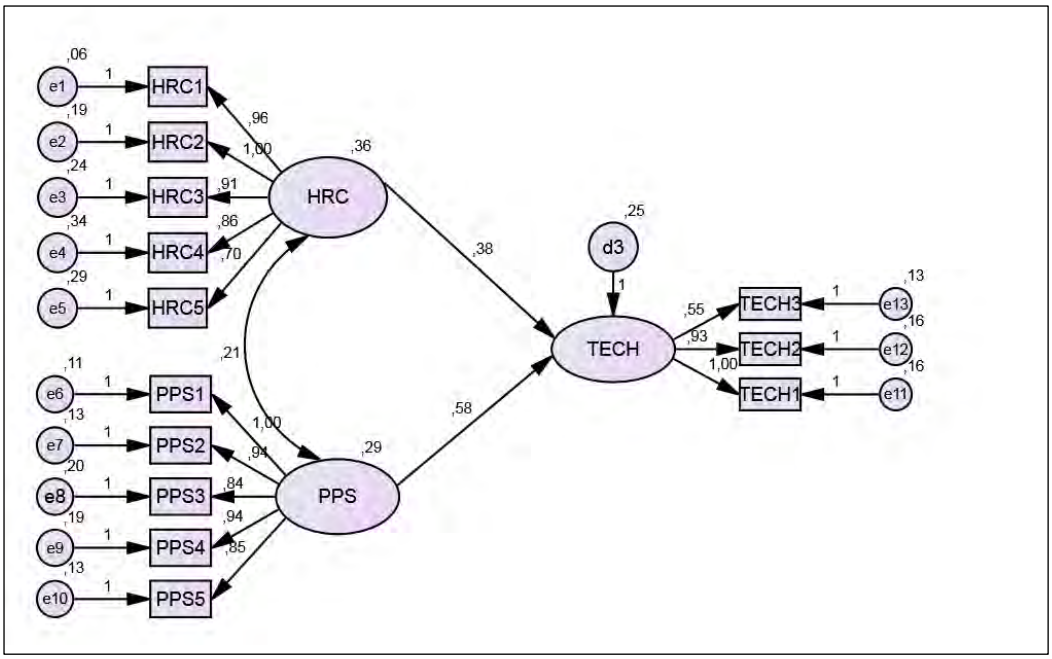





| | Estimate |
|---|---|
| HRC | .479 |
| TECH1 | .757 |
| TECH2 | .727 |
| TECH3 | .529 |
| PPS1 | .718 |
| PPS2 | .660 |
| PPS3 | .498 |
| PPS4 | .566 |
| PPS5 | .609 |
| HRC1 | .841 |
| HRC2 | .654 |
| HRC3 | .551 |
| HRC4 | .440 |
| HRC5 | .376 |




| | Estimate |
|---|---|
| PPS | .524 |
| TECH1 | .757 |
| TECH2 | .727 |
| TECH3 | .529 |
| PPS1 | .718 |
| PPS2 | .660 |
| PPS3 | .498 |
| PPS4 | .566 |
| PPS5 | .609 |
| HRC1 | .841 |
| HRC2 | .654 |
| HRC3 | .551 |
| HRC4 | .440 |
| HRC5 | .376 |



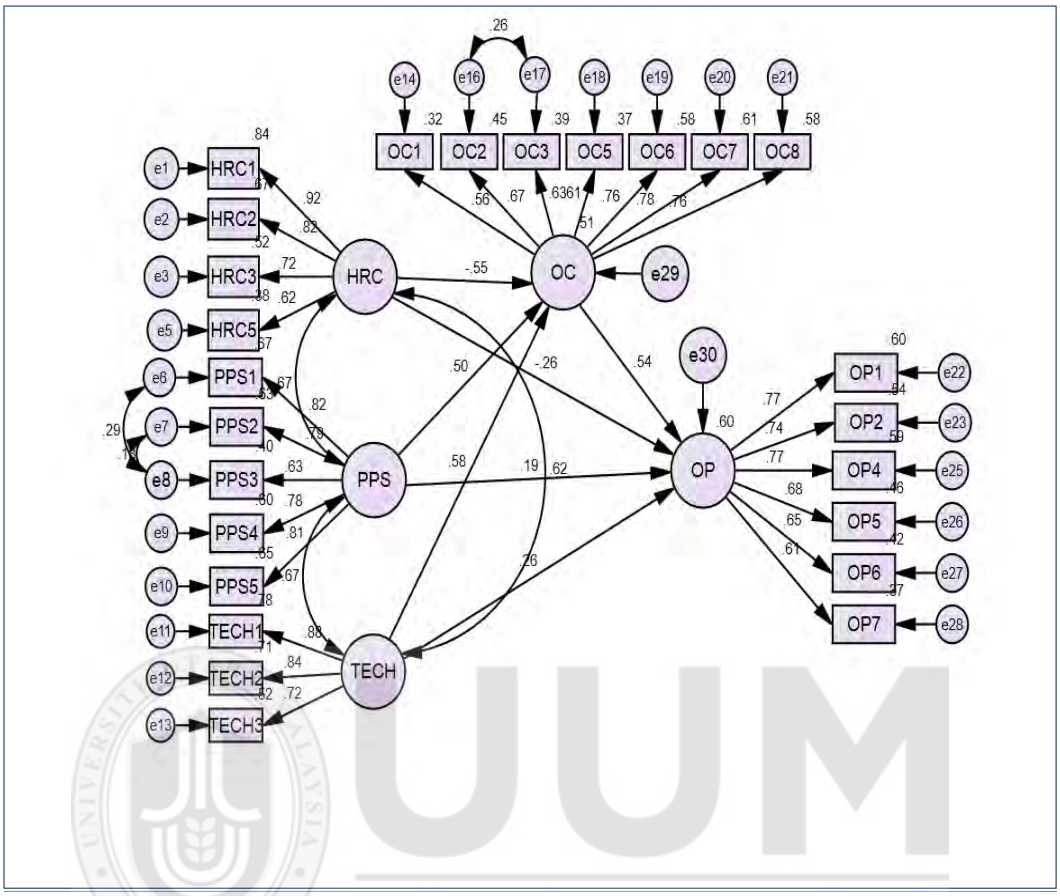

| | Estimate |
|---|---|
| TECH | .486 |
| TECH1 | .757 |
| TECH2 | .727 |
| TECH3 | .529 |
| PPS1 | .718 |
| PPS2 | .660 |
| PPS3 | .498 |
| PPS4 | .566 |
| PPS5 | .609 |
| HRC1 | .841 |
| HRC2 | .654 |
| HRC3 | .551 |
| HRC4 | .440 |
| HRC5 | .376 |

## G.2 Direct Hypothesis Testing Results All Items

| Exogenous | | Std. Estimate | S.E | C.R | P | Result |
|---|---|---|---|---|---|---|
| **HRC** | HRC1 | 0.914 | 0.047 | 20.385 | *** | Support |
| | HRC2 | 0.812 | | | | Support |
| | HRC3 | 0.742 | 0.059 | 15.316 | *** | Support |
| | HRC4 | 0.660 | 0.065 | 13.165 | *** | Support |
| | HRC5 | 0.619 | 0.057 | 12.269 | *** | Support |
| **PPS** | PPS1 | 0.843 | | | | Support |
| | PPS2 | 0.807 | 0.053 | 17.917 | *** | Support |
| | PPS3 | 0.701 | 0.056 | 14.933 | *** | Support |
| | PPS4 | 0.764 | 0.059 | 16.247 | *** | Support |
| | PPS5 | 0.784 | 0.051 | 16.778 | *** | Support |
| **TECH** | TECH1 | 0.879 | | | | Support |
| | TECH1 | 0.844 | 0.036 | 15.285 | *** | Support |
| | TECH1 | 0.725 | 0.048 | 18.771 | *** | Support |
| **OC** | OC1 | 0.573 | 0.070 | 10.743 | *** | Support |
| | OC2 | 0.702 | 0.070 | 13.212 | *** | Support |
| | OC3 | 0.682 | 0.070 | 12.784 | *** | Support |
| | OC4 | 0.657 | 0.070 | 12.332 | *** | Support |
| | OC5 | 0.633 | 0.071 | 11.862 | *** | Support |
| | OC6 | 0.755 | 0.068 | 14.593 | *** | Support |
| | OC7 | 0.765 | | | | Support |
| | OC8 | 0.739 | 0.068 | 14.290 | *** | Support |
| **OP** | OP1 | 0.573 | 0.063 | 14.884 | *** | Support |
| | OP2 | 0.702 | 0.063 | 14.877 | *** | Support |
| | OP3 | 0.682 | 0.062 | 15.914 | *** | Support |
| | OP4 | 0.657 | | | | Support |
| | OP5 | 0.633 | 0.066 | 12.638 | *** | Support |
| | OP6 | 0.755 | 0.067 | 12.279 | *** | Support |
| | OP7 | 0.765 | 0.066 | 11.544 | *** | Support |

## Appendix H: Final Model

### H.1 Results of Analysis






### H.2 CMIN

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 63 | 691.766 | 262 | .000 | 2.640 |
| Saturated model | 325 | .000 | 0 | | |
| Independence model | 25 | 5280.921 | 300 | .000 | 17.603 |

### H3. RMR, GFI

| Model | RMR | GFI | AGFI | PGFI |
|---|---|---|---|---|
| Default model | .041 | .866 | .834 | .698 |
| Saturated model | .000 | 1.000 | | |
| Independence model | .242 | .245 | .182 | .226 |

### H.4 Baseline Comparisons

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .869 | .850 | .914 | .901 | .914 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

### H.5 RMSEA

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | .068 | .061 | .074 | .000 |
| Independence model | .215 | .210 | .220 | .000 |

### H.6 Regression Weights: (Group number 1 - Default model)

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| OC | <--- | HRC | -.670 | .100 | -6.692 | *** | par_18 |
| OC | <--- | PPS | .752 | .135 | 5.585 | *** | par_20 |
| OC | <--- | TECH | .606 | .086 | 7.018 | *** | par_22 |
| OP | <--- | HRC | -.312 | .104 | -2.989 | .003 | par_19 |
| OP | <--- | PPS | .283 | .131 | 2.163 | .031 | par_21 |
| OP | <--- | TECH | .266 | .089 | 2.998 | .003 | par_23 |
| OP | <--- | OC | .528 | .081 | 6.491 | *** | par_24 |
| HRC5 | <--- | HRC | .692 | .057 | 12.244 | *** | par_1 |
| HRC3 | <--- | HRC | .874 | .059 | 14.902 | *** | par_2 |
| HRC2 | <--- | HRC | 1.000 | | | | |
| PPS5 | <--- | PPS | .958 | .059 | 16.125 | *** | par_3 |
| PPS4 | <--- | PPS | 1.052 | .068 | 15.423 | *** | par_4 |
| PPS3 | <--- | PPS | .818 | .062 | 13.149 | *** | par_5 |
| PPS2 | <--- | PPS | 1.000 | | | | |
| TECH3 | <--- | TECH | .540 | .035 | 15.295 | *** | par_6 |
| TECH2 | <--- | TECH | .900 | .048 | 18.831 | *** | par_7 |
| TECH1 | <--- | TECH | 1.000 | | | | |
| OC1 | <--- | OC | .721 | .069 | 10.516 | *** | par_8 |
| OC2 | <--- | OC | .867 | .069 | 12.619 | *** | par_9 |
| OC5 | <--- | OC | .793 | .069 | 11.429 | *** | par_10 |
| OC6 | <--- | OC | .980 | .066 | 14.786 | *** | par_11 |
| OC7 | <--- | OC | 1.000 | | | | |
| OC8 | <--- | OC | .983 | .067 | 14.772 | *** | par_12 |
| OP1 | <--- | OP | 1.006 | .069 | 14.545 | *** | par_13 |
| OP2 | <--- | OP | .969 | .069 | 14.019 | *** | par_14 |
| OP4 | <--- | OP | 1.000 | | | | |
| OP5 | <--- | OP | .890 | .071 | 12.551 | *** | par_15 |
| OP6 | <--- | OP | .854 | .072 | 11.835 | *** | par_16 |
| OP7 | <--- | OP | .798 | .071 | 11.214 | *** | par_17 |
| HRC1 | <--- | HRC | .954 | .047 | 20.159 | *** | par_25 |
| OC3 | <--- | OC | .809 | .069 | 11.747 | *** | par_26 |
| PPS1 | <--- | PPS | 1.049 | .063 | 16.708 | *** | par_27 |

## H.7 Squared Multiple Correlations: (Group number 1 - Default model)

| | Estimate |
|---|---|
| OC | .512 |
| OP | .600 |
| PPS1 | .666 |
| OC3 | .394 |
| HRC1 | .844 |
| OP7 | .366 |
| OP6 | .419 |
| OP5 | .456 |
| OP4 | .587 |
| OP2 | .543 |
| OP1 | .595 |
| OC8 | .581 |
| OC7 | .605 |
| OC6 | .583 |
| OC5 | .373 |
| OC2 | .452 |
| OC1 | .315 |
| TECH1 | .780 |
| TECH2 | .705 |
| TECH3 | .523 |
| PPS2 | .625 |
| PPS3 | .401 |
| PPS4 | .602 |
| PPS5 | .653 |
| HRC2 | .670 |
| HRC3 | .517 |
| HRC5 | .382 |



## H8. Total Effects (Group number 1 - Default model)

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .606 | .752 | -.670 | .000 | .000 |
| OP | .586 | .681 | -.666 | .528 | .000 |
| PPS1 | .000 | 1.049 | .000 | .000 | .000 |
| OC3 | .490 | .608 | -.542 | .809 | .000 |
| HRC1 | .000 | .000 | .954 | .000 | .000 |
| OP7 | .468 | .543 | -.531 | .421 | .798 |
| OP6 | .501 | .582 | -.569 | .451 | .854 |
| OP5 | .522 | .606 | -.592 | .470 | .890 |
| OP4 | .586 | .681 | -.666 | .528 | 1.000 |
| OP2 | .568 | .660 | -.645 | .512 | .969 |
| OP1 | .590 | .685 | -.670 | .532 | 1.006 |
| OC8 | .596 | .740 | -.659 | .983 | .000 |
| OC7 | .606 | .752 | -.670 | 1.000 | .000 |
| OC6 | .594 | .737 | -.656 | .980 | .000 |
| OC5 | .481 | .597 | -.531 | .793 | .000 |
| OC2 | .526 | .652 | -.581 | .867 | .000 |
| OC1 | .437 | .543 | -.483 | .721 | .000 |

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| TECH1 | 1.000 | .000 | .000 | .000 | .000 |
| TECH2 | .900 | .000 | .000 | .000 | .000 |
| TECH3 | .540 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | 1.000 | .000 | .000 | .000 |
| PPS3 | .000 | .818 | .000 | .000 | .000 |
| PPS4 | .000 | 1.052 | .000 | .000 | .000 |
| PPS5 | .000 | .958 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | 1.000 | .000 | .000 |
| HRC3 | .000 | .000 | .874 | .000 | .000 |
| HRC5 | .000 | .000 | .692 | .000 | .000 |

**H.9 Total Effects - Standard Errors (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .103 | .160 | .120 | .000 | .000 |
| OP | .103 | .147 | .123 | .104 | .000 |
| PPS1 | .000 | .063 | .000 | .000 | .000 |
| OC3 | .090 | .136 | .107 | .068 | .000 |
| HRC1 | .000 | .000 | .043 | .000 | .000 |
| OP7 | .088 | .124 | .097 | .085 | .068 |
| OP6 | .092 | .130 | .098 | .088 | .076 |
| OP5 | .094 | .138 | .110 | .087 | .075 |
| OP4 | .103 | .147 | .123 | .104 | .000 |
| OP2 | .100 | .150 | .120 | .095 | .071 |
| OP1 | .102 | .153 | .120 | .098 | .068 |
| OC8 | .097 | .157 | .118 | .057 | .000 |
| OC7 | .103 | .160 | .120 | .000 | .000 |
| OC6 | .097 | .165 | .124 | .061 | .000 |
| OC5 | .085 | .137 | .108 | .067 | .000 |
| OC2 | .086 | .146 | .109 | .065 | .000 |
| OC1 | .078 | .121 | .088 | .067 | .000 |
| TECH1 | .000 | .000 | .000 | .000 | .000 |
| TECH2 | .059 | .000 | .000 | .000 | .000 |
| TECH3 | .044 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | .000 | .000 | .000 | .000 |
| PPS3 | .000 | .058 | .000 | .000 | .000 |
| PPS4 | .000 | .071 | .000 | .000 | .000 |
| PPS5 | .000 | .072 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | .000 | .000 | .000 |
| HRC3 | .000 | .000 | .067 | .000 | .000 |
| HRC5 | .000 | .000 | .063 | .000 | .000 |

## H.11 Total Effects - Lower Bounds (BC) (Group number 1 - Default model)

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .409 | .482 | -.939 | .000 | .000 |
| OP | .369 | .427 | -.920 | .332 | .000 |
| PPS1 | .000 | .935 | .000 | .000 | .000 |
| OC3 | .324 | .388 | -.779 | .675 | .000 |
| HRC1 | .000 | .000 | .874 | .000 | .000 |
| OP7 | .289 | .331 | -.743 | .266 | .668 |
| OP6 | .316 | .358 | -.780 | .289 | .714 |
| OP5 | .331 | .371 | -.832 | .307 | .761 |
| OP4 | .369 | .427 | -.920 | .332 | 1.000 |
| OP2 | .368 | .410 | -.911 | .337 | .843 |
| OP1 | .379 | .424 | -.924 | .347 | .888 |
| OC8 | .403 | .468 | -.907 | .876 | .000 |
| OC7 | .409 | .482 | -.939 | 1.000 | .000 |
| OC6 | .408 | .464 | -.931 | .864 | .000 |
| OC5 | .324 | .374 | -.765 | .664 | .000 |
| OC2 | .360 | .410 | -.821 | .743 | .000 |
| OC1 | .290 | .346 | -.684 | .586 | .000 |
| TECH1 | 1.000 | .000 | .000 | .000 | .000 |
| TECH2 | .791 | .000 | .000 | .000 | .000 |
| TECH3 | .459 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | 1.000 | .000 | .000 | .000 |
| PPS3 | .000 | .701 | .000 | .000 | .000 |
| PPS4 | .000 | .927 | .000 | .000 | .000 |
| PPS5 | .000 | .826 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | 1.000 | .000 | .000 |
| HRC3 | .000 | .000 | .746 | .000 | .000 |
| HRC5 | .000 | .000 | .571 | .000 | .000 |

## H.12 Total Effects - Upper Bounds (BC) (Group number 1 - Default model)

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .821 | 1.105 | -.463 | .000 | .000 |
| OP | .781 | 1.003 | -.444 | .745 | .000 |
| PPS1 | .000 | 1.183 | .000 | .000 | .000 |
| OC3 | .676 | .918 | -.361 | .950 | .000 |
| HRC1 | .000 | .000 | 1.044 | .000 | .000 |
| OP7 | .640 | .815 | -.363 | .601 | .939 |
| OP6 | .680 | .869 | -.394 | .633 | 1.009 |
| OP5 | .707 | .914 | -.398 | .651 | 1.057 |
| OP4 | .781 | 1.003 | -.444 | .745 | 1.000 |
| OP2 | .763 | .995 | -.436 | .710 | 1.126 |
| OP1 | .785 | 1.017 | -.453 | .733 | 1.158 |
| OC8 | .788 | 1.081 | -.450 | 1.100 | .000 |
| OC7 | .821 | 1.105 | -.463 | 1.000 | .000 |
| OC6 | .789 | 1.103 | -.442 | 1.104 | .000 |
| OC5 | .663 | .903 | -.342 | .924 | .000 |
| OC2 | .704 | .984 | -.396 | 1.001 | .000 |
| OC1 | .599 | .811 | -.335 | .849 | .000 |
| TECH1 | 1.000 | .000 | .000 | .000 | .000 |
| TECH2 | 1.019 | .000 | .000 | .000 | .000 |
| TECH3 | .629 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | 1.000 | .000 | .000 | .000 |
| PPS3 | .000 | .936 | .000 | .000 | .000 |
| PPS4 | .000 | 1.206 | .000 | .000 | .000 |
| PPS5 | .000 | 1.111 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | 1.000 | .000 | .000 |
| HRC3 | .000 | .000 | 1.010 | .000 | .000 |
| HRC5 | .000 | .000 | .816 | .000 | .000 |

**H.13 Total Effects - Two Tailed Significance (BC) (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .000 | .000 | .000 | ... | ... |
| OP | .000 | .000 | .000 | .000 | ... |
| PPS1 | ... | .000 | ... | ... | ... |
| OC3 | .000 | .000 | .000 | .000 | ... |
| HRC1 | ... | ... | .000 | ... | ... |
| OP7 | .000 | .000 | .000 | .000 | .000 |
| OP6 | .000 | .000 | .000 | .000 | .000 |
| OP5 | .000 | .000 | .000 | .000 | .000 |
| OP4 | .000 | .000 | .000 | .000 | ... |
| OP2 | .000 | .000 | .000 | .000 | .000 |
| OP1 | .000 | .000 | .000 | .000 | .000 |
| OC8 | .000 | .001 | .000 | .001 | ... |
| OC7 | .000 | .000 | .000 | ... | ... |
| OC6 | .000 | .000 | .000 | .000 | ... |
| OC5 | .000 | .000 | .000 | .000 | ... |
| OC2 | .000 | .000 | .000 | .000 | ... |
| OC1 | .000 | .000 | .000 | .000 | ... |
| TECH1 | ... | ... | ... | ... | ... |
| TECH2 | .000 | ... | ... | ... | ... |
| TECH3 | .000 | ... | ... | ... | ... |
| PPS2 | ... | ... | ... | ... | ... |
| PPS3 | ... | .000 | ... | ... | ... |
| PPS4 | ... | .000 | ... | ... | ... |
| PPS5 | ... | .000 | ... | ... | ... |
| HRC2 | ... | ... | ... | ... | ... |
| HRC3 | ... | ... | .000 | ... | ... |
| HRC5 | ... | ... | .000 | ... | ... |

**H.14 Direct Effects (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .606 | .752 | -.670 | .000 | .000 |
| OP | .266 | .283 | -.312 | .528 | .000 |
| PPS1 | .000 | 1.049 | .000 | .000 | .000 |
| OC3 | .000 | .000 | .000 | .809 | .000 |
| HRC1 | .000 | .000 | .954 | .000 | .000 |
| OP7 | .000 | .000 | .000 | .000 | .798 |
| OP6 | .000 | .000 | .000 | .000 | .854 |
| OP5 | .000 | .000 | .000 | .000 | .890 |
| OP4 | .000 | .000 | .000 | .000 | 1.000 |
| OP2 | .000 | .000 | .000 | .000 | .969 |
| OP1 | .000 | .000 | .000 | .000 | 1.006 |
| OC8 | .000 | .000 | .000 | .983 | .000 |
| OC7 | .000 | .000 | .000 | 1.000 | .000 |
| OC6 | .000 | .000 | .000 | .980 | .000 |
| OC5 | .000 | .000 | .000 | .793 | .000 |
| OC2 | .000 | .000 | .000 | .867 | .000 |
| OC1 | .000 | .000 | .000 | .721 | .000 |
| TECH1 | 1.000 | .000 | .000 | .000 | .000 |
| TECH2 | .900 | .000 | .000 | .000 | .000 |
| TECH3 | .540 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | 1.000 | .000 | .000 | .000 |
| PPS3 | .000 | .818 | .000 | .000 | .000 |
| PPS4 | .000 | 1.052 | .000 | .000 | .000 |
| PPS5 | .000 | .958 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | 1.000 | .000 | .000 |
| HRC3 | .000 | .000 | .874 | .000 | .000 |
| HRC5 | .000 | .000 | .692 | .000 | .000 |

## H.15 Direct Effects - Standard Errors (Group number 1 - Default model)

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .103 | .160 | .120 | .000 | .000 |
| OP | .112 | .142 | .116 | .104 | .000 |
| PPS1 | .000 | .063 | .000 | .000 | .000 |
| OC3 | .000 | .000 | .000 | .068 | .000 |
| HRC1 | .000 | .000 | .043 | .000 | .000 |
| OP7 | .000 | .000 | .000 | .000 | .068 |
| OP6 | .000 | .000 | .000 | .000 | .076 |
| OP5 | .000 | .000 | .000 | .000 | .075 |
| OP4 | .000 | .000 | .000 | .000 | .000 |
| OP2 | .000 | .000 | .000 | .000 | .071 |
| OP1 | .000 | .000 | .000 | .000 | .068 |
| OC8 | .000 | .000 | .000 | .057 | .000 |
| OC7 | .000 | .000 | .000 | .000 | .000 |
| OC6 | .000 | .000 | .000 | .061 | .000 |
| OC5 | .000 | .000 | .000 | .067 | .000 |
| OC2 | .000 | .000 | .000 | .065 | .000 |
| OC1 | .000 | .000 | .000 | .067 | .000 |
| TECH1 | .000 | .000 | .000 | .000 | .000 |
| TECH2 | .059 | .000 | .000 | .000 | .000 |
| TECH3 | .044 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | .000 | .000 | .000 | .000 |
| PPS3 | .000 | .058 | .000 | .000 | .000 |
| PPS4 | .000 | .071 | .000 | .000 | .000 |
| PPS5 | .000 | .072 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | .000 | .000 | .000 |
| HRC3 | .000 | .000 | .067 | .000 | .000 |
| HRC5 | .000 | .000 | .063 | .000 | .000 |

**H.16 Direct Effects - Lower Bounds (BC) (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .409 | .482 | -.939 | .000 | .000 |
| OP | .036 | .008 | -.555 | .332 | .000 |
| PPS1 | .000 | .935 | .000 | .000 | .000 |
| OC3 | .000 | .000 | .000 | .675 | .000 |
| HRC1 | .000 | .000 | .874 | .000 | .000 |
| OP7 | .000 | .000 | .000 | .000 | .668 |
| OP6 | .000 | .000 | .000 | .000 | .714 |
| OP5 | .000 | .000 | .000 | .000 | .761 |
| OP4 | .000 | .000 | .000 | .000 | 1.000 |
| OP2 | .000 | .000 | .000 | .000 | .843 |
| OP1 | .000 | .000 | .000 | .000 | .888 |
| OC8 | .000 | .000 | .000 | .876 | .000 |
| OC7 | .000 | .000 | .000 | 1.000 | .000 |
| OC6 | .000 | .000 | .000 | .864 | .000 |
| OC5 | .000 | .000 | .000 | .664 | .000 |
| OC2 | .000 | .000 | .000 | .743 | .000 |
| OC1 | .000 | .000 | .000 | .586 | .000 |
| TECH1 | 1.000 | .000 | .000 | .000 | .000 |
| TECH2 | .791 | .000 | .000 | .000 | .000 |
| TECH3 | .459 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | 1.000 | .000 | .000 | .000 |
| PPS3 | .000 | .701 | .000 | .000 | .000 |
| PPS4 | .000 | .927 | .000 | .000 | .000 |
| PPS5 | .000 | .826 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | 1.000 | .000 | .000 |
| HRC3 | .000 | .000 | .746 | .000 | .000 |
| HRC5 | .000 | .000 | .571 | .000 | .000 |

**H.17 Direct Effects - Upper Bounds (BC) (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .821 | 1.105 | -.463 | .000 | .000 |
| OP | .475 | .570 | -.094 | .745 | .000 |
| PPS1 | .000 | 1.183 | .000 | .000 | .000 |
| OC3 | .000 | .000 | .000 | .950 | .000 |
| HRC1 | .000 | .000 | 1.044 | .000 | .000 |
| OP7 | .000 | .000 | .000 | .000 | .939 |
| OP6 | .000 | .000 | .000 | .000 | 1.009 |
| OP5 | .000 | .000 | .000 | .000 | 1.057 |
| OP4 | .000 | .000 | .000 | .000 | 1.000 |
| OP2 | .000 | .000 | .000 | .000 | 1.126 |
| OP1 | .000 | .000 | .000 | .000 | 1.158 |
| OC8 | .000 | .000 | .000 | 1.100 | .000 |
| OC7 | .000 | .000 | .000 | 1.000 | .000 |
| OC6 | .000 | .000 | .000 | 1.104 | .000 |
| OC5 | .000 | .000 | .000 | .924 | .000 |
| OC2 | .000 | .000 | .000 | 1.001 | .000 |
| OC1 | .000 | .000 | .000 | .849 | .000 |
| TECH1 | 1.000 | .000 | .000 | .000 | .000 |
| TECH2 | 1.019 | .000 | .000 | .000 | .000 |
| TECH3 | .629 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | 1.000 | .000 | .000 | .000 |
| PPS3 | .000 | .936 | .000 | .000 | .000 |
| PPS4 | .000 | 1.206 | .000 | .000 | .000 |
| PPS5 | .000 | 1.111 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | 1.000 | .000 | .000 |
| HRC3 | .000 | .000 | 1.010 | .000 | .000 |
| HRC5 | .000 | .000 | .816 | .000 | .000 |

**H.18 Direct Effects - Two Tailed Significance (BC) (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .000 | .000 | .000 | ... | ... |
| OP | .028 | .045 | .006 | .000 | ... |
| PPS1 | ... | .000 | ... | ... | ... |
| OC3 | ... | ... | ... | .000 | ... |
| HRC1 | ... | ... | .000 | ... | ... |
| OP7 | ... | ... | ... | ... | .000 |
| OP6 | ... | ... | ... | ... | .000 |
| OP5 | ... | ... | ... | ... | .000 |
| OP4 | ... | ... | ... | ... | ... |
| OP2 | ... | ... | ... | ... | .000 |
| OP1 | ... | ... | ... | ... | .000 |
| OC8 | ... | ... | ... | .001 | ... |
| OC7 | ... | ... | ... | ... | ... |
| OC6 | ... | ... | ... | .000 | ... |
| OC5 | ... | ... | ... | .000 | ... |
| OC2 | ... | ... | ... | .000 | ... |
| OC1 | ... | ... | ... | .000 | ... |
| TECH1 | ... | ... | ... | ... | ... |
| TECH2 | .000 | ... | ... | ... | ... |
| TECH3 | .000 | ... | ... | ... | ... |
| PPS2 | ... | ... | ... | ... | ... |
| PPS3 | ... | .000 | ... | ... | ... |
| PPS4 | ... | .000 | ... | ... | ... |
| PPS5 | ... | .000 | ... | ... | ... |
| HRC2 | ... | ... | ... | ... | ... |
| HRC3 | ... | ... | .000 | ... | ... |
| HRC5 | ... | ... | .000 | ... | ... |

**H.19 Indirect Effects (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .000 | .000 | .000 | .000 | .000 |
| OP | .320 | .397 | -.354 | .000 | .000 |
| PPS1 | .000 | .000 | .000 | .000 | .000 |
| OC3 | .490 | .608 | -.542 | .000 | .000 |
| HRC1 | .000 | .000 | .000 | .000 | .000 |
| OP7 | .468 | .543 | -.531 | .421 | .000 |
| OP6 | .501 | .582 | -.569 | .451 | .000 |
| OP5 | .522 | .606 | -.592 | .470 | .000 |
| OP4 | .586 | .681 | -.666 | .528 | .000 |
| OP2 | .568 | .660 | -.645 | .512 | .000 |
| OP1 | .590 | .685 | -.670 | .532 | .000 |
| OC8 | .596 | .740 | -.659 | .000 | .000 |
| OC7 | .606 | .752 | -.670 | .000 | .000 |
| OC6 | .594 | .737 | -.656 | .000 | .000 |
| OC5 | .481 | .597 | -.531 | .000 | .000 |
| OC2 | .526 | .652 | -.581 | .000 | .000 |
| OC1 | .437 | .543 | -.483 | .000 | .000 |
| TECH1 | .000 | .000 | .000 | .000 | .000 |
| TECH2 | .000 | .000 | .000 | .000 | .000 |
| TECH3 | .000 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | .000 | .000 | .000 | .000 |
| PPS3 | .000 | .000 | .000 | .000 | .000 |
| PPS4 | .000 | .000 | .000 | .000 | .000 |
| PPS5 | .000 | .000 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | .000 | .000 | .000 |
| HRC3 | .000 | .000 | .000 | .000 | .000 |
| HRC5 | .000 | .000 | .000 | .000 | .000 |

## H.20 Indirect Effects - Standard Errors (Group number 1 - Default model)

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .000 | .000 | .000 | .000 | .000 |
| OP | .082 | .112 | .093 | .000 | .000 |
| PPS1 | .000 | .000 | .000 | .000 | .000 |
| OC3 | .090 | .136 | .107 | .000 | .000 |
| HRC1 | .000 | .000 | .000 | .000 | .000 |
| OP7 | .088 | .124 | .097 | .085 | .000 |
| OP6 | .092 | .130 | .098 | .088 | .000 |
| OP5 | .094 | .138 | .110 | .087 | .000 |
| OP4 | .103 | .147 | .123 | .104 | .000 |
| OP2 | .100 | .150 | .120 | .095 | .000 |
| OP1 | .102 | .153 | .120 | .098 | .000 |
| OC8 | .097 | .157 | .118 | .000 | .000 |
| OC7 | .103 | .160 | .120 | .000 | .000 |
| OC6 | .097 | .165 | .124 | .000 | .000 |
| OC5 | .085 | .137 | .108 | .000 | .000 |
| OC2 | .086 | .146 | .109 | .000 | .000 |
| OC1 | .078 | .121 | .088 | .000 | .000 |
| TECH1 | .000 | .000 | .000 | .000 | .000 |
| TECH2 | .000 | .000 | .000 | .000 | .000 |
| TECH3 | .000 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | .000 | .000 | .000 | .000 |
| PPS3 | .000 | .000 | .000 | .000 | .000 |
| PPS4 | .000 | .000 | .000 | .000 | .000 |
| PPS5 | .000 | .000 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | .000 | .000 | .000 |
| HRC3 | .000 | .000 | .000 | .000 | .000 |
| HRC5 | .000 | .000 | .000 | .000 | .000 |

**H.21 Indirect Effects - Lower Bounds (BC) (Group number 1 - Default model)**

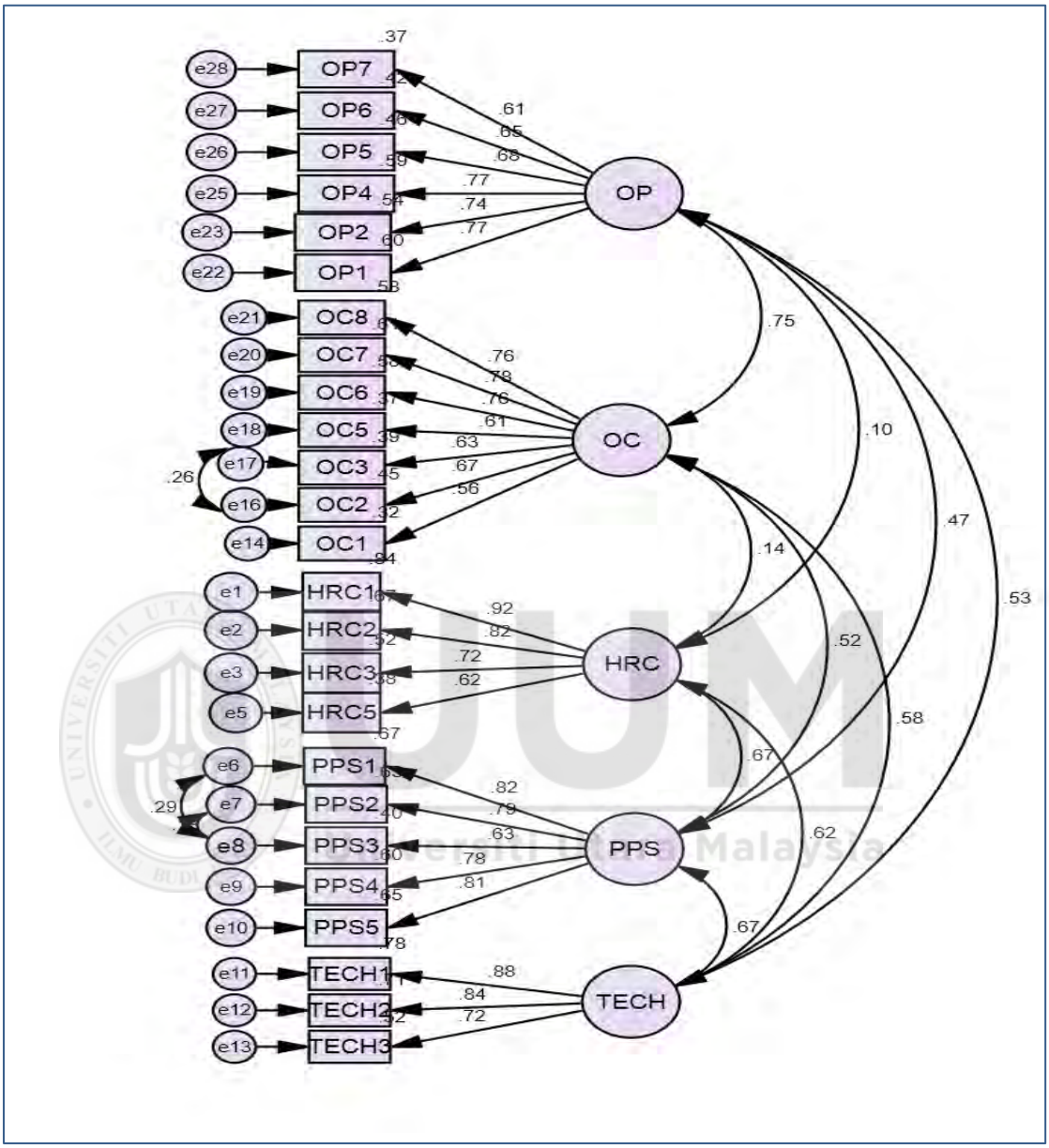
| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .000 | .000 | .000 | .000 | .000 |
| OP | .186 | .226 | -.577 | .000 | .000 |
| PPS1 | .000 | .000 | .000 | .000 | .000 |
| OC3 | .324 | .388 | -.779 | .000 | .000 |
| HRC1 | .000 | .000 | .000 | .000 | .000 |
| OP7 | .289 | .331 | -.743 | .266 | .000 |
| OP6 | .316 | .358 | -.780 | .289 | .000 |
| OP5 | .331 | .371 | -.832 | .307 | .000 |
| OP4 | .369 | .427 | -.920 | .332 | .000 |
| OP2 | .368 | .410 | -.911 | .337 | .000 |
| OP1 | .379 | .424 | -.924 | .347 | .000 |
| OC8 | .403 | .468 | -.907 | .000 | .000 |
| OC7 | .409 | .482 | -.939 | .000 | .000 |
| OC6 | .408 | .464 | -.931 | .000 | .000 |
| OC5 | .324 | .374 | -.765 | .000 | .000 |
| OC2 | .360 | .410 | -.821 | .000 | .000 |
| OC1 | .290 | .346 | -.684 | .000 | .000 |
| TECH1 | .000 | .000 | .000 | .000 | .000 |
| TECH2 | .000 | .000 | .000 | .000 | .000 |
| TECH3 | .000 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | .000 | .000 | .000 | .000 |
| PPS3 | .000 | .000 | .000 | .000 | .000 |
| PPS4 | .000 | .000 | .000 | .000 | .000 |
| PPS5 | .000 | .000 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | .000 | .000 | .000 |
| HRC3 | .000 | .000 | .000 | .000 | .000 |
| HRC5 | .000 | .000 | .000 | .000 | .000 |

**H.22 Indirect Effects - Upper Bounds (BC) (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | .000 | .000 | .000 | .000 | .000 |
| OP | .516 | .678 | -.208 | .000 | .000 |
| PPS1 | .000 | .000 | .000 | .000 | .000 |
| OC3 | .676 | .918 | -.361 | .000 | .000 |
| HRC1 | .000 | .000 | .000 | .000 | .000 |
| OP7 | .640 | .815 | -.363 | .601 | .000 |
| OP6 | .680 | .869 | -.394 | .633 | .000 |
| OP5 | .707 | .914 | -.398 | .651 | .000 |
| OP4 | .781 | 1.003 | -.444 | .745 | .000 |
| OP2 | .763 | .995 | -.436 | .710 | .000 |
| OP1 | .785 | 1.017 | -.453 | .733 | .000 |
| OC8 | .788 | 1.081 | -.450 | .000 | .000 |
| OC7 | .821 | 1.105 | -.463 | .000 | .000 |
| OC6 | .789 | 1.103 | -.442 | .000 | .000 |
| OC5 | .663 | .903 | -.342 | .000 | .000 |
| OC2 | .704 | .984 | -.396 | .000 | .000 |
| OC1 | .599 | .811 | -.335 | .000 | .000 |
| TECH1 | .000 | .000 | .000 | .000 | .000 |
| TECH2 | .000 | .000 | .000 | .000 | .000 |
| TECH3 | .000 | .000 | .000 | .000 | .000 |
| PPS2 | .000 | .000 | .000 | .000 | .000 |
| PPS3 | .000 | .000 | .000 | .000 | .000 |
| PPS4 | .000 | .000 | .000 | .000 | .000 |
| PPS5 | .000 | .000 | .000 | .000 | .000 |
| HRC2 | .000 | .000 | .000 | .000 | .000 |
| HRC3 | .000 | .000 | .000 | .000 | .000 |
| HRC5 | .000 | .000 | .000 | .000 | .000 |

**H.23 Indirect Effects - Two Tailed Significance (BC) (Group number 1 - Default model)**

| | TECH | PPS | HRC | OC | OP |
|---|---|---|---|---|---|
| OC | ... | ... | ... | ... | ... |
| OP | .000 | .000 | .000 | ... | ... |
| PPS1 | ... | ... | ... | ... | ... |
| OC3 | .000 | .000 | .000 | ... | ... |
| HRC1 | ... | ... | ... | ... | ... |
| OP7 | .000 | .000 | .000 | .000 | ... |
| OP6 | .000 | .000 | .000 | .000 | ... |
| OP5 | .000 | .000 | .000 | .000 | ... |
| OP4 | .000 | .000 | .000 | .000 | ... |
| OP2 | .000 | .000 | .000 | .000 | ... |
| OP1 | .000 | .000 | .000 | .000 | ... |
| OC8 | .000 | .001 | .000 | ... | ... |
| OC7 | .000 | .000 | .000 | ... | ... |
| OC6 | .000 | .000 | .000 | ... | ... |
| OC5 | .000 | .000 | .000 | ... | ... |
| OC2 | .000 | .000 | .000 | ... | ... |
| OC1 | .000 | .000 | .000 | ... | ... |
| TECH1 | ... | ... | ... | ... | ... |
| TECH2 | ... | ... | ... | ... | ... |
| TECH3 | ... | ... | ... | ... | ... |
| PPS2 | ... | ... | ... | ... | ... |
| PPS3 | ... | ... | ... | ... | ... |
| PPS4 | ... | ... | ... | ... | ... |
| PPS5 | ... | ... | ... | ... | ... |
| HRC2 | ... | ... | ... | ... | ... |
| HRC3 | ... | ... | ... | ... | ... |
| HRC5 | ... | ... | ... | ... | ... |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## H.24 Standardized Regression Weights: (Group number 1 - Default model)

| | | | Estimate |
|---|---|---|---|
| HRC5 | <--- | HRC | .618 |
| HRC3 | <--- | HRC | .719 |
| HRC2 | <--- | HRC | .818 |
| PPS5 | <--- | PPS | .808 |
| PPS4 | <--- | PPS | .776 |
| PPS3 | <--- | PPS | .633 |
| PPS2 | <--- | PPS | .791 |
| TECH3 | <--- | TECH | .723 |
| TECH2 | <--- | TECH | .840 |
| TECH1 | <--- | TECH | .883 |
| OC1 | <--- | OC | .562 |
| OC2 | <--- | OC | .672 |
| OC5 | <--- | OC | .611 |
| OC6 | <--- | OC | .764 |
| OC7 | <--- | OC | .778 |
| OC8 | <--- | OC | .762 |
| OP1 | <--- | OP | .772 |
| OP2 | <--- | OP | .737 |
| OP4 | <--- | OP | .766 |
| OP5 | <--- | OP | .675 |
| OP6 | <--- | OP | .647 |
| OP7 | <--- | OP | .605 |
| HRC1 | <--- | HRC | .918 |
| OC3 | <--- | OC | .628 |
| PPS1 | <--- | PPS | .816 |



## H.25 Correlations: (Group number 1 - Default model)

| | | | Estimate |
|---|---|---|---|
| HRC | <--> | PPS | .671 |
| HRC | <--> | TECH | .615 |
| HRC | <--> | OC | .143 |
| HRC | <--> | OP | .105 |
| PPS | <--> | TECH | .671 |
| PPS | <--> | OC | .518 |
| PPS | <--> | OP | .468 |
| TECH | <--> | OC | .575 |
| TECH | <--> | OP | .535 |
| OC | <--> | OP | .746 |
| e8 | <--> | e6 | .294 |
| e8 | <--> | e7 | .181 |
| e16 | <--> | e17 | .256 |

## H.26 Squared Multiple Correlations: (Group number 1 - Default model)

| | Estimate |
|---|---|
| PPS1 | .666 |
| OC3 | .394 |
| HRC1 | .844 |
| OP7 | .366 |
| OP6 | .419 |
| OP5 | .456 |
| OP4 | .587 |
| OP2 | .543 |
| OP1 | .595 |
| OC8 | .581 |
| OC7 | .605 |
| OC6 | .583 |
| OC5 | .373 |
| OC2 | .452 |
| OC1 | .315 |
| TECH1 | .780 |
| TECH2 | .705 |
| TECH3 | .523 |
| PPS2 | .625 |
| PPS3 | .401 |
| PPS4 | .602 |
| PPS5 | .653 |
| HRC2 | .670 |
| HRC3 | .517 |
| HRC5 | .382 |



## H.27 CMIN

| Model | NPAR | CMIN | DF | P | CMIN/DF |
|---|---|---|---|---|---|
| Default model | 63 | 691.766 | 262 | .000 | 2.640 |
| Saturated model | 325 | .000 | 0 | | |
| Independence model | 25 | 5280.921 | 300 | .000 | 17.603 |

## H.28a Baseline Comparisons

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .869 | .850 | .914 | .901 | .914 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

**H.28b Baseline Comparisons**

| Model | NFI Delta1 | RFI rho1 | IFI Delta2 | TLI rho2 | CFI |
|---|---|---|---|---|---|
| Default model | .869 | .850 | .914 | .901 | .914 |
| Saturated model | 1.000 | | 1.000 | | 1.000 |
| Independence model | .000 | .000 | .000 | .000 | .000 |

**H.29 RMSEA**

| Model | RMSEA | LO 90 | HI 90 | PCLOSE |
|---|---|---|---|---|
| Default model | .068 | .061 | .074 | .000 |
| Independence model | .215 | .210 | .220 | .000 |

**Appendix I: Table Sample Size (Krejcie & morgan)**

| *N* | *S* | *N* | *S* | *N* | *S* |
|---|---|---|---|---|---|
| 10 | 10 | 220 | 140 | 1200 | 291 |
| 15 | 14 | 230 | 144 | 1300 | 297 |
| 20 | 19 | 240 | 148 | 1400 | 302 |
| 25 | 24 | 250 | 152 | 1500 | 306 |
| 30 | 28 | 260 | 155 | 1600 | 310 |
| 35 | 32 | 270 | 159 | 1700 | 313 |
| 40 | 36 | 280 | 162 | 1800 | 317 |
| 45 | 40 | 290 | 165 | 1900 | 320 |
| 50 | 44 | 300 | 169 | 2000 | 322 |
| 55 | 48 | 320 | 175 | 2200 | 327 |
| 60 | 52 | 340 | 181 | 2400 | 331 |
| 65 | 56 | 360 | 186 | 2600 | 335 |
| 70 | 59 | 380 | 191 | 2800 | 338 |
| 75 | 63 | 400 | 196 | 3000 | 341 |
| 80 | 66 | 420 | 201 | 3500 | 346 |
| 85 | 70 | 440 | 205 | 4000 | 351 |
| 90 | 73 | 460 | 210 | 4500 | 354 |
| 95 | 76 | 480 | 214 | 5000 | 357 |
| 100 | 80 | 500 | 217 | 6000 | 361 |
| 110 | 86 | 550 | 226 | 7000 | 364 |
| 120 | 92 | 600 | 234 | 8000 | 367 |
| 130 | 97 | 650 | 242 | 9000 | 368 |
| 140 | 103 | 700 | 248 | 10000 | 370 |
| 150 | 108 | 750 | 254 | 15000 | 375 |
| 160 | 113 | 800 | 260 | 20000 | 377 |
| 170 | 118 | 850 | 265 | 30000 | 379 |
| 180 | 123 | 900 | 269 | 40000 | 380 |
| 190 | 127 | 950 | 274 | 50000 | 381 |
| 200 | 132 | 1000 | 278 | 75000 | 382 |
| 210 | 136 | 1100 | 285 | 1000000 | 384 |

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

## Appendix J: Curriculum Vitae

NAME

A. HARITS NU'MAN

BIRTH

Bandung, April 21th 1969

RELIGION

Moslem

STATUS

Married

Wife : Yayan Ruhyani, S. Sos
Child : Muhammad Syauqi Alharits (Male)
Rhianna Alisha Alharits (Female)
Anissa Shakeyra Alharits (Female)

EDUCATION

| | |
|---|---|
| ▪ (Elementary School) SD Negeri 4 Dayeuhkolot Bandung | 1976 – 1982 |
| ▪ (Junior High School) SLTPN 1 Dayeuhkolot Bandung | |
| ▪ (High School) SMUN Pematang Siantar Sumatra Utara | 1982 – 1985 |
| ▪ (Bachelor Degree) S1 Universiti Islam Bandung, Industrial Engineering and Management, Bandung | 1985 – 1988<br>1988 – 1993 |
| ▪ (Masters Degree) S2 ITB Industrial Engineering and Management, Bandung | 2001 – 2003 |
| ▪ Ph.D Schoolof Technology Management and Logistic Universiti Utara Malaysia | 2010 – now |

AWARDS RECEIVED/ACHIEVEMENT

Academic

- Best Lab. Assistant In Industrial Engineering and Management, Universitas Islam Bandung,
- Cumlaude in Masters Degree S2 ITB Industrial Engineering and Management, ITB Bandung
- Block Grant Technopreneurship Laboratory in Industrial Engineering Departement Universitas Islam Bandung, Directorat General Higher Education 2006
- Block Grant for Health Proffesional Education of Quality (HPEQ) in Medical Education Departement Universitas Islam Bandung, Directorat General Higher Education 2011 – 2014.

Non Academic

- Champion of Speech Competition in Junior High School, 1982
- Champion of Football League in High School as goalkeeper, 1986
- Man of the Macth of Football League in High School as goalkeeper, 1987
- Man of the Macth of Football League in Unisba Championship as goalkeeper, 2000 – 2001
- Best Performance of Football League in Unisba Championship as goalkeeper, 2001 –

2002

- Champion Mixed Dobble Badminton in Unisba Championship, 2003
- Best Lecturer in Technique Faculty Industrial Engineering and Management, Universitas Islam Bandung, 2006
- Best Lecturer in Technique Faculty Industrial Engineering and Management, Universitas Islam Bandung (UNISBA), 2007

## HOBBIES-INTERESTS & ACTIVITIES

- Read, Football (Soccer & Futsal)
- Watch movie (Cinema or DVD), Listen to Music
- Sport, Fitness,

## EXTRACURRICULAR ACTIVITIES

- Kushin Ryu Karate Do Indonesia (Black belt – II). 1994
- Majelis Percikan Iman
- Majelis Daarut Tauhid
- Futsal team Lecturers & Staff Technique faculty of UNISBA (Coordinator)

## WORKING EXPERIENCE

- Tutor (lecturer) in Mahagoni Hasta Purnama Consultant, 1993 – 1995
- Consultant Industrial Engineering and Management in Kogas Dryap Consultant, 1995 – 1998
- Consultant Industrial Engineering and Management in PT Mitra Kawasa Konsultindo 1999 – present
- Consultant Industrial Engineering and Management in Public Works Service Pusat Penelitian Jalan dan Jembatan 2011 – 2013
- Consultant Industrial Engineering and Management in KOPISMA, 2008 – present
- Lecturer of Industrial Engineering and Management STT Garut. 1996 – 2000
- Lecturer of UNISBA Technique Faculty Industrial Engineering and Management. 1999 – present
- Head of Department Industrial Engineering and Management. 2004 – 2007
- Executive Secretary of Badan Penjaminan Mutu (Quality Assurance) UNISBA, 2008 - 2011
- Head of Block Grant Program Hibah Kompetisi berbasis Istitusi in Universitas Islam Bandung, Directorat General Higher Education 2008 - 2011
- Executive Secretary of Health Professional Education Quality UNISBA, 2011 – 2014
- Education and Management Quality Improvement Consultant 2007 – present.