

Impact of Employee Satisfaction on Work Discipline in Government Office in Indonesia

Dedi Iskamto

Sekolah Tinggi Ilmu Ekonomi Riau, Pekanbaru Indonesia
dediiskamto@lecturer.stieriau-akbar.ac.id

Kurniati Karim

Sekolah Tinggi Ilmu Ekonomi Sakti Alam Kerinci, Jambi, Indonesia
atiekkarim299@gmail.com

Sukono

Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas
Padjadjaran, Indonesia.
sukono@unpad.ac.id

Abdul Talib Bon

Department of Production and Operations, University Tun Hussein Onn Malaysia, Malaysia
talibon@gmail.com

ABSTRACT

The purpose of this study was to determine the effect of job satisfaction on the work discipline of government employees in the district office. The population in this study were all employees at the Pangkalan Kerinci sub-district office Riau Province, Indonesia. This study is a quantitative study, data analysis using SPSS 23. The results of research with the t-test, t-value (8.297) is greater than t-table (2.021). So it was concluded that H_a was accepted and H_0 was rejected, so the hypothesis that there was a significant relationship between job satisfaction and employee work discipline at the Pangkalan Kerinci sub-district office was acceptable. While the R^2 test was 61.6%, while 38.4% was influenced by other factors not examined in this study. This means that job satisfaction has a significant influence on the work discipline of government employees.

Keywords: Job Satisfaction, Work Discipline, government employee

1. Introduction

Public servants are the backbone of the government in efforts to provide services to the community. Because it is increasingly developing and accepting the role of government in achieving its objectives, increasing the expertise and ability of the apparatus is a must (Zindiye et al., 2012). Maximum Job Satisfaction, the organization must guarantee the right people and the conditions that enable them to work optimally and will make employees disciplined at work. The achievement of organizational goals that are driven and run by employees who play an active role and as actors in efforts to achieve the goals of the organization (Auer Antoncic & Antoncic, 2011; Iskamto et al., 2020).

Work discipline is a process of developing construction for employees who are interested because work discipline is shown in the actions not in the person. Discipline is also a training process for employees so that employees can develop self-control and can be more effective at work. Government employees play an important role in providing services to the community, especially employees in the District Office. Discipline and job satisfaction of government employees at the Kerinci Pamat sub-district office can be seen from the level of employee attendance and following the rules (Iskamto, 2019).

each service has set a standard completion. But sometimes problems still occur. One of them was an increase in the completion time of the making of community land ownership letter. Some elements still ask for the cost of making correspondence. In addition, the problem of land ownership is rather vulnerable because sometimes a land is recognized by two, three or more owners. Heterogeneous communities sometimes conflict between migrants and local communities. Then the boundary problem And the most frequent e-KTP network problems that always experience signal interference, so that the disruption of e-KTP data recording service activities. Based on the foregoing,

2. Literature review

Work Discipline

Discipline is one's awareness and willingness to await all company regulations and applicable social norms (Melayu SP Hasibuan, 2016: 193)

According to Edy Sutrisno (2009: 85) in everyday life, wherever humans are, needed rules and regulations that will regulate and limit every activity and behavior. However, these regulations will have no meaning if they are not accompanied by sanctions for violators.

Fathoni (2006: 172) says that discipline is the awareness and willingness of a person to obey all company regulations and applicable social norms.

According to Keith Davis in Anwar Prabu Mangkunegara (2015: 129) argues that work discipline can be interpreted as the implementation of management to maintain organizational guidelines.

But in practice, discipline is often interpreted the same as punishment and efforts to control one's behavior. With this interpretation, the definition of discipline is always associated with a firm and harsh attitude of punishment (punishment) that is given as an effective tool to enforce discipline, that is to be able to behave in accordance with applicable rules or regulations.

So, someone will be willing to obey all the rules and carry out their duties, both voluntary and coercive. Discipline means that employees always come and go home on time, do a good job, comply with all company regulations and applicable social norms.

Punishment is needed in increasing discipline and educating employees to obey all company regulations. Penalties must be fair and strict to all employees. With fairness and firmness, the goal of giving strict penalties for violators is not an educative tool for employees.

Discipline must be upheld in a company organization. Without the support of good employee discipline, it is difficult for the company to realize its goals. So, discipline is the key to the success of a company in achieving its goals(Iskamto & Risman, 2018).

Factors That Affect Work Discipline

According to Singodimedjo in Edy Sutrisno (2009; 89-92), factors affecting work discipline are:

1. The size of the compensation. The size of the compensation can affect the upright discipline of employees will comply with all applicable regulations. If he feels he is guaranteed collateral that is worth the effort he has contributed to the company.
2. The presence or absence of leadership in the company. Leadership model is very important, because in the company environment (organization) all employees (employees) will always pay attention to how the leader can enforce his discipline and how he can control himself from words, actions and attitudes that can harm the established disciplinary rules.
3. There are no definite rules that can be used as a handle. Coaching discipline will not be carried out in the company (organization), if there are no definite written rules to be able to hold together.
4. Courage of the leader in taking action. With actions taken against disciplinary offenders in accordance with existing sanctions, all employees (employees) will feel protected and in their hearts promise not to do the same.
5. The presence or absence of leadership supervision. In every activity carried out by the company (organization) there is a need for supervision that will direct the employees to be able to carry out the work appropriately in accordance with what has been determined.
6. There is no attention to the employees (employees). An employee (employee) is not only satisfied with receiving high compensation, challenging work but also they still need great attention from their own leader.
7. Created habits that support the establishment of discipline. Respect each other, give praise in accordance with the place and time, including employees (employees) in meetings.

Kinds of Work Discipline

There are two forms of work discipline, namely: Anwar Prabu (2015: 129-130)

1. Preventive Discipline. Preventive discipline is an effort to move employees to follow and comply with work guidelines, rules that have been outlined by the company. The aim is to move employees to self-discipline.
2. Corrective Discipline. Corrective Discipline is an effort to move employees to declare a company and direct it to comply with regulations in accordance with the guidelines that apply to the company. In corrective discipline, employees who violate discipline need to be sanctioned in accordance with applicable regulations. The purpose of sanctions is to correct employee violations, maintain applicable regulations and provide lessons to violators

Indicators of Work Discipline

Indicator is a tool used to explain about a condition when something is said to be "good" what is used to explain the thing called "good". When it is said someone has "understood" what is used to explain the person's level of understanding.

Hasibuan (2016: 194-198) basically there are many indicators that affect the level of employee discipline including:

1. Purpose and ability. The purpose and ability to influence the level of employee discipline. The goals to be achieved must be clear and ideally set and quite challenging for the ability of employees. This means that the goals (jobs) charged to the employee are in accordance with the ability of the employee concerned, so that he works earnestly and is disciplined in doing it.
2. Leadership Model. The leader's role is very instrumental in determining employee discipline because the leader is made the role model and role model by his subordinates. With the example of a good leader, the discipline of subordinates will also be good. But if the leader's example is not good (less disciplined), the subordinates will certainly lack discipline.

3. Remuneration. Rewarding also influences employee discipline because retribution will give employees satisfaction and love for their work. If the employee's love for the job is getting better, their discipline will get better too.
4. Justice. Justice contributes to the realization of employee discipline because of ego and human nature who always feel themselves important and ask to be treated the same as other humans. Justice that is used as the basis of the policy in providing compensation (recognition) or punishment will stimulate the creation of good employee discipline.
5. Waskat Waskat (inherent supervision) is the most effective real action in bringing about employee discipline. With a referee means the supervisor must be active and directly supervise the behavior, morals, attitudes, work enthusiasm and work performance of his subordinates. It is effective in stimulating employee discipline and morale. Employees feel they are getting attention, guidance, guidance, direction and supervision from their superiors.
6. Penalty sanctions. Penalty status plays an important role in maintaining employee discipline. With sanctions increasingly severe penalties, employees will be increasingly afraid of violating the rules, attitudes and disciplinary behavior of employees will be reduced. The severity or severity of the sanctions that will be applied also affects the good or bad of employee discipline.
7. Firmness. Firm leadership reprimands and punishes every employee who is disciplined will bring good discipline to an agency.
8. Human relations. Harmonious human relations among fellow employees contribute to creating good discipline in a company, good relationships that are vertical and horizontal should be harmonious. If a harmonious human relationship is created, a comfortable working environment and atmosphere will be created, this will motivate good discipline in the organization

Job Satisfaction

Job satisfaction theory tries to reveal what makes some people more satisfied with their work than some others. This theory also seeks a basis for the process of people's feelings towards job satisfaction. Among job satisfaction theories are Two-Factor theory and Valuo theory (Wibawo, 2007: 502-503)

1. Two Factor Theory. The two factor theory is a theory of job satisfaction advocating that satisfaction and dissatisfaction are part of different variable groups, namely motivators and hygiene factors. In general, people expect that certain factors provide satisfaction if available and cause dissatisfaction if there is. In this theory, dissatisfaction is related to conditions around work (such as working conditions, wages, security, quality, supervision, and relationships with others), and not with the work itself. Because these factors prevent negative reactions, they are called hygiene or maintenance factors. Instead, satisfaction is drawn from factors related to the work itself or direct results thereof, such as the nature of the work, achievement in work, promotion opportunities and opportunities for self-development and recognition. Because these factors are associated with high levels of job satisfaction, they are called motivators.
2. Value Theory. According to this theoretical concept of job satisfaction occurs at the level where the work results are received by individuals as expected. The more people who receive results, the more satisfied. The less they receive the results, the less satisfied they will be. Value theory focuses on results everywhere that judge people regardless of who they are. The key to satisfaction in this approach is the difference between the aspects of work that one has and wants. The greater the difference, the lower the satisfaction of people. The implications of the theory invite attention to aspects of work that need to be changed to get job satisfaction. In particular, this theory suggests that these aspects do not have to be the same for everyone, but may be aspects of the value of work about people who feel there is a serious conflict.

Job Satisfaction Indicator

Hasibuan (2008: 202), states that: indicators of job satisfaction are:

1. Enjoys his work. The person who is well aware of the direction in which he is leading, why he is taking that path, and how he must go towards his goal. He likes his job because he can do it well.
2. Loves his work. Give the best thing to give all forms of attention with all your heart that has with all the effort to one goal for the best results for his work. Employees want to sacrifice themselves even though it is difficult, even if sick, by not knowing the time, wherever employees are always thinking about their work.
3. Work Morale Inner agreements that arise from within a person or group of people to achieve certain goals in accordance with established quality standards.
4. Discipline. Conditions that are created and formed through the process of a series of behaviors that show the values of obedience, obedience, loyalty, order and or order.
5. Work performance. The results of work achieved by a person in carrying out the tasks assigned to him based on skill and sincerity and time.

Meanwhile, according to Robbin and Judge (2007: 81) dimensions of employee job satisfaction consist of:

1. His work. A job requires a certain skill in accordance with their respective fields. Difficult whether or not a job and someone's feeling that his expertise is needed in doing the job, will increase or reduce job satisfaction. The indicator is the type of work.
2. Salary. One of the factors in fulfilling the life needs of employees considered appropriate or not. The indicators are salary level and reward level.
3. Supervision / supervisor. A good boss means to respect the work of his subordinates. For subordinates, superiors can be regarded as a father / mother / friend figure as well as their boss. The indicators are the attitude of superiors and leadership style.
4. Co-workers. Factors relating to the relationship between employees and their superiors and with other employees, both the same and different types of work. The indicator is the attitude of coworkers.

Effect of Job Satisfaction on Work Discipline

Job satisfaction at work is job satisfaction enjoyed at work by obtaining praise for work results, placement, treatment equipment, and good work environment. Employees who prefer to enjoy job satisfaction at work will prioritize their work more than rewards even though remuneration is important. Job satisfaction affects the level of employee discipline, meaning that satisfaction is obtained from work, good employee discipline. Conversely, if job satisfaction is less achieved from work, then employee discipline is low (Hasibuan, 2016: 203), for that the company also needs to pay attention to employee job satisfaction. Discipline in working is a factor that must also be owned by employees who want to achieve satisfaction in work. Discipline can be in the form of timeliness in working, obedience to the tasks assigned to him, and the use of facilities properly. The current paradigm of institutions that want to develop and advance greatly requires employees who are highly disciplined in their work. Those who have high spirits, obey the rules set by the institution, are creative and can implement the facilities properly. In addition, with high work discipline from employees, they will be able to feel the results of work that has been occupied so far, and will be able to feel satisfaction in working.

3. RESEARCH METHODOLOGY

This research is a quantitative research. Data processing uses SPSS 23. This research was conducted at the Government Office of Pangkalan Kerinci Sub-District, Pelelawan Regency, Riau Province, Indonesia. Sampling using simple random sampling technique. The sample in this study were all employees at the Pangkalan Keramat sub-district office, amounting to 45 people.

4. RESULTS AND DISCUSSION

From table 4.1 it is known from 45 respondents taken as samples, 15 people (33.3%) are men and 30 people (66.7%) are women. From these data we can see that the Pangkalan Kerinci Sub-District Office Officer is predominantly female

Table 4.1. Characteristics of Respondents by Gender

Item		amount	%
Gender	Male	15	33.3
	Female	30	66.7
Age	40 < years	38	84.5
	>40 years	7	15.5
Education	High school	27	60.0
	Diplom	5	11.1
	Under Graduate	13	28.9

Source: Data processed 2018

From table 4.1 it can be seen that of 45 respondents, 38 people (84.5%) were under 40 years old, while 7 people (15.5%) respondents were over 40 years old. dominantly under 40 years old and still young and energetic. The next respondent profile is distinguished by level of education. Based on the level of 27 people (60.0%) with high school education, 5 people (11.1%) had D3 education and 13 people (28.9%) had undergraduate education (S1). From these data, we can see that more than half of high school officials are in Pangkalan Kerinci Sub-district Office. This means that the employee of Pangkalan Kerinci Sub-District Office his competencies have not fulfilled his education.

Validity test

Validity test is the accuracy or accuracy of an instrument in measuring what it wants to measure. In this study the number of respondents was 45 people. By using a significance level of 0.05, a rtable of 0.304 is obtained. If count \geq rtable, the instrument or question items correlate significantly to the total score (declared valid). If on the contrary count $<$ rtable, the statement item is declared invalid. Based on data collected from the respondent table shown in the following table, there are 12 statements for variable X and 16 statements for variable Y. The results of item analysis are shown in the following table:

Table 4.1. Results of Analysis of Variable Statement Items X

Item	Scale		t-value
	Scale Mean if Item Deleted	Variance if Item Deleted	
DK1 Statement	61.11	56.692	.649
DK2 Statement	60.98	57.249	.584
DK3 Statement	61.02	56.931	.760
DK4 Statement	61.20	57.709	.586
DK5 Statement	60.87	58.800	.556
DK6 Statement	61.04	55.453	.728
DK7 Statement	60.33	60.727	.411
DK8 Statement	60.91	57.583	.545
DK9 Statement	61.02	56.795	.604
DK10 Statement	60.62	59.922	.486
DK11 Statement	60.69	58.537	.613
DK12 Statement	60.76	57.962	.667
DK13 Statement	60.73	58.564	.630
DK14 Statement	60.47	59.936	.460
DK15 Statement	61.02	57.977	.476
DK16 Statement	60.89	57.828	.631

Source: Data processed 2018

From table 4.1 it is known, the correlation of the first statement with a t-value of 0.649 > 0.304, then declared valid. This is because r count (0.649) is greater than rtable (0.304), for statement item 2 and so on it is declared valid because r count is greater than rtable (0.304).

Table 4.2 Results of Analysis of Variable Statement Items Y

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-
			Total Correlation
KK1 Statement	45.24	30.007	.555
KK2 Statement	44.80	32.709	.188
KK3 Statement	45.60	27.427	.671
KK4 Statement	45.33	28.545	.542
KK5 Statement	45.16	29.407	.600
KK6 Statement	45.09	29.719	.604
KK7 Statement	45.22	29.268	.480
KK8 Statement	45.40	27.427	.662
KK9 Statement	45.38	29.059	.605
KK10 Statement	45.20	28.664	.692
KK11 Statement	45.40	29.473	.596
KK12 Statement	45.58	27.931	.643

Source: Data processed 2018.

From table 4.35 it is known, t-value (0.555) is greater than rtable (0.304), for statement item 2 and so on it is declared valid because r count is greater than rtable (0.304).

Reliability Test

The reliability test is used to determine the consistency of the measuring instrument, whether the measuring device used is reliable and remains consistent if the measurement is repeated. According to Sekaran (2008: 26), reliability of less than 0.6 is not good, while 0.7 is

acceptable and above 0.8 is good. Following are the results of the reliability test on the statement items of each variable.

Table 4.3. Reliability Test Table for Each Variable

No	Variable	Cronbach's Alpha
1	Work Discipline (Y)	.906
2	Job Satisfaction (Y)	0.877

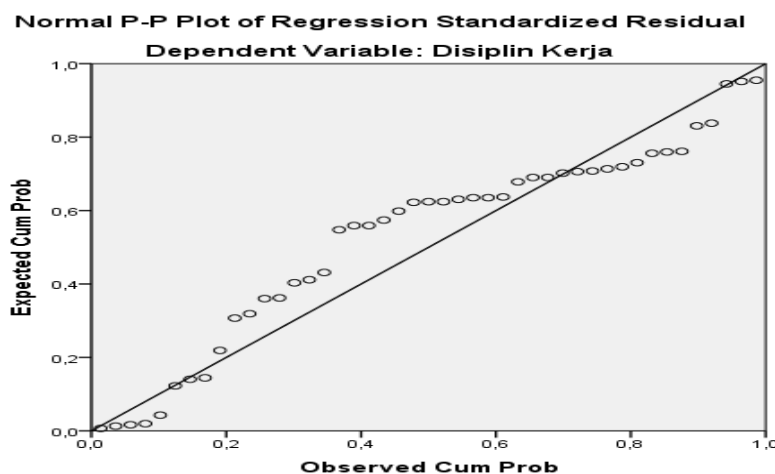
Source: Data processed 2018

From table 5.36 it can be seen that Cronbach's alpha in Variables X and Y is above 0.6, this means good reliability (reliable).

Normality test

Normality test is used to determine whether the population data is normally distributed or not. This test is usually used to measure data on an ordinal scale, interval or ratio. According Kriswanto (2008) in Masngudi (2012: 123), normality test is to see whether the residual value is normally distributed or not. Here are the results of the normality test on SPSS.

Figure 5.1. Normality Test Results



From Figure 5.1 it can be seen that the data spreads around the diagonal line and follows the direction of the diagonal line, then the regression model meets the normality assumption.

Simple Linear Regression Test

Simple linear regression is used to determine the direction of the relationship between the independent variables and the dependent variable.

Table 4.4. Simple Linear Regression Test Results

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	11,294	6.507		1,736	,090
Job satisfaction	1,085	,131	,785	8,297	,000

a. Dependent Variable: Work Discipline

From table 4.4 above it can be seen the results of a simple linear regression, namely:
 $Y = 11.294 + 1.085X$. From the results of these data can be explained as follows:

- A constant of 11,294 means that if job satisfaction (X) is 0, then work discipline (Y) still has a value of 11,294.
- Regression coefficient Job satisfaction variable (X) of 1.085, meaning that if job satisfaction has increased by 1 unit, then employee work discipline will increase by 1.085 units.

Table 4.5. Determination Coefficient Test Results

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,785 ^a	,616	,607	5,081

a. Predictors: (Constant), Job Satisfaction

b. Dependent Variable: Work Discipline

From table 4.5 it can be seen that the value of R is 0.785. This means that the variable job satisfaction (X) has a close relationship with employee work discipline. While the R square value of 0.616, this means that the variable job satisfaction (X) contributes to the influence of employee work discipline by 61.6% and the remaining 38.4% is influenced by other variables not examined in this study. For example: motivation, compensation, enthusiasm for work, work environment, leadership and other

T test

Table 4.6 Test Results t

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	11,294	6.507		1,736	,090
Job satisfaction	1,085	,131	,785	8,297	,000

a. Dependent Variable: Work Discipline

Source: Data processed 2018

From table 4.6 it can be seen that the results of the acquisition of t test show that t-value is 8,297 > t-table 2,021 with a significance level of 0,000 less than 0.05. This means that job satisfaction has a significant influence on the work discipline of Pangkalan Kerinci Sub-District Office Officers.

5. CONCLUSION

the results of research it can be concluded that from the t-test calculation, t-value (8,297) is greater than t-table (2,021). So it concluded that H_a accepted and H_o rejected, so the hypothesis that there was a significant relationship between job satisfaction and employee work discipline accepted. Also, from the linear regression, that R^2 was 61.6%, while 38.4% was influenced by other factors not examined in this study. This means that job satisfaction has an influence on the work discipline of government employees.

Reference

Arikunto, Suharsimi, 2010. Research Procedure, Revised Edition, Rineka Cipta, Jakarta.

Auer Antoncic, J., & Antoncic, B. (2011). Employee satisfaction, intrapreneurship and firm growth: A model. *Industrial Management & Data Systems*, 111(4), 589–607. <https://doi.org/10.1108/02635571111133560>

Fathoni, 2006. HR organization and management: Gramedia Utama.

Hasibuan, SP Melayu, 2012. Human Resources Management, Revised Edition, Matter XIV. PT. Earth Literacy. Jakarta.

Indonesia. 2014. Law Number 23 concerning Regional Government. Jakarta: Indonesian Ministry of State Secretary.

Iskamto, D. (2019). Disiplin Kerja dan Pengaruhnya Terhadap Kinerja Karyawan Pada PT. Prima Rintis Sejahtera Pekanbaru Divisi Unicharm. *Ekonomi Bisnis*, 24(1), 12. <https://doi.org/10.17977/um042v24i1p12-20>

Iskamto, D., & Risman. (2018). Pengaruh Kualitas Pelayanan Terhadap Kepuasan Nasabah di Badan Usaha Milik Desa (BUMDES). *Eko Dan Bisnis (Riau Economics and Business Review)*, 9(3).

Iskamto, D., Ghazali, P. L., & Aftanorhan, A. (2019). Effect Contextual Factor Toward Entrepreneurial Intention Among Young Educated. *International Conference on Industrial Engineering and Operations Management Riyadh*, 7.

- Iskamto, D. (2019). Disiplin Kerja dan Pengaruhnya Terhadap Kinerja Karyawan Pada PT. Prima Rintis Sejahtera Pekanbaru Divisi Unicharm. *Ekonomi Bisnis*, 24(1), 12. <https://doi.org/10.17977/um042v24i1p12-20>
- Iskamto, D., Puspa Liza Ghazali, Aftanoorhan, A., & Narti, S. (2020). Effect of Occupational Safety And Health on Performance: An Empirical Investigation. *International Journal of Islamic Studies and Social Sciences*, 1(3), 20.
- Mangkunegara, AA Anwar Prabu 2007. *Human Resources Management*. Jakarta: Rineka Cipta.
- Masyjui, Isnan. 2005. *The Effect of Work Motivation and Discipline on Job Satisfaction of Employees of the Grobogan Regency Office of National Education*. Thesis. Faculty of Social Sciences, Department of Economics, Semarang State University.
- Nurmansyah. 2011. *An Introduction to Human Resources Management*. Pekanbaru: Unilak Press.
- Priyatno, Duwi, 2008. *Mandiri Learning SPSS (Statistical Product and Service Solution)*, MediaKom, Yogyakarta.
- Robbins SP, and Judge. 2007. *Organizational Behavior*, Jakarta: Four Salemba
- Stephen P. Robbins and Timothy A. Jogle. 2009. *Organizational Behavior 12*. Jakarta Edition: Salemba Empat.
- Sugiyono, 2010. *Administrative Research Methods, XVIII Matter*, Alfabeta, Bandung.
- Susanto, Arif. 2015. *Effect of Positioning Strategies on purchasing decisions on consumers CV. Surya Kuansing, Kuantan Bay*. Proposal. Riau School of Economics. Pekanbaru.
- Sutrisno, Edy. 2013. *Organizational Culture*, Kencana Prenada Media Group. Jakarta.
- Veithzal Rivai and Ella Jauvani Sagala. 2010. *Human Resource Management for Companies*. Jakarta: Rajawali Press.
- Wibowo. 2007. *Performance Management*. Jakarta: Raja Grafindo Persada.
- Zindiye, S., Chiliya, N., & Masocha, R. (2012). The impact of Government and other Institutions' support on the Performance of Small and Medium Enterprises in the Manufacturing Sector in Harare, Zimbabwe. 3, 13.

Biographies

Dedi Iskamto is a PhD student in Faculty of Business and Management at the Universiti Sultan Zainal Abidin Malaysia. Research interest in Entrepreneurial, Islamic Banking, Marketing and Lecturer at Sekolah Tinggi Ilmu Ekonomi Riau, Indonesia.

Kurniati Karim is a lecturer at STIE Sakti Alam Kerinci, Jambi, Indonesia. She taught in management courses. Currently She is taking a PhD.

Sukono is a lecturer in the Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran. Currently serves as Head of Master's Program in Mathematics, the field of applied mathematics, with a field of concentration of financial mathematics and actuarial sciences.

Abdul Talib Bon is a professor of Production and Operations Management in the Faculty of Technology Management and Business at the Universiti Tun Hussein Onn Malaysia since 1999. He has a PhD in Computer Science, which he obtained from the Universite de La Rochelle, France in the year 2008. His doctoral thesis was on topic Process Quality Improvement on Beltline Moulding Manufacturing. He studied Business Administration in the Universiti Kebangsaan Malaysia for which he was awarded the MBA in the year 1998. He's

bachelor degree and diploma in Mechanical Engineering which he obtained from the Universiti Teknologi Malaysia. He received his postgraduate certificate in Mechatronics and Robotics from Carlisle, United Kingdom in 1997. He had published more 150 International Proceedings and International Journals and 8 books. He is a member of MSORSM, IIF, IEOM, IIE, INFORMS, TAM and MIM.