

Ethical Dilemma Decision Making Based on Personality: The Case of Installation of a Keylogger System

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ABSTRACT

The use of artificial intelligence, including keylogger systems, is unavoidable. Companies install keylogger systems on office computers to ensure that their employee is working effectively and efficiently. Meanwhile, the employee perceived it as spying and breaching their privacy. The study examines 448 business students about their ethical decision-making. Is it ethical for a company to install a keylogger system on office computers? Besides, the study observes whether ethical decision making derived from personality. First, the research shows that more than 70% of the students perceived the installation of the keylogger system is ethical. Second, it reveals that the extraversion and conscientiousness dimensions of personality impact ethical decision-making. The higher the score of extraverted, the higher the student likelihood in perceiving that the keylogger system installation is unethical; in contrast, the higher the score of conscientiousness, the higher the student likelihood in perceiving that the keylogger system installation is ethical.

Keywords: *Ethical dilemma, personality, keylogger system.*

1 RESEARCH BACKGROUND

Today, we face society 5.0, which is the fifth stage of the four previous stages of the hunting society, the agrarian society, the industrial society, and the information society (Fukuda 2020). The fast progress of information and technology creates an unexpected explosion of digital data and emerging and growing cyberspace (Fukuda 2020). This condition force industry to work effectively and efficiently. Using artificial intelligence can be a solution. The use of artificial intelligence (AI), namely face recognition, chatbots, and robots in the industry, are common. It is to help us, human. At a certain point, artificial intelligent able to make autonomous decision making. Unfortunately, the urge of growing innovation is not supported with the thorough consideration of moral, societal and legal consequence. This gap creates a grey area for unethical conduct.

One ethical dilemma in business regarding artificial intelligence is the existence of a key logger system. Keylogger system allows the user to captures typed character or number, including document content, password, user id, visited website, URL, and do a screen-shot (Tuli & Sahu 2013). In general, network monitoring might give the company several benefits, including protecting business secret formula / intellectual property; prevent sabotage and data theft; abuse through internet/email among coworkers; reduce workplace slackers; and improving efficiency and productivity (Tuli & Sahu 2013). A key logger system might improve employee productivity since it can check on employees' time on social media or non-productive sites (Bhardwaj & Goundar 2020).

Despite the company's benefit, the setting up of the key logger system makes the workers feel uncomfortable since their

action is monitored. Some of them think that it is a breach of their privacy. Besides, the keylogger system creates a risk of a stolen password. Therefore, the existences of the keylogger system create an ethical dilemma. Do the company behave ethically if the company install a keylogger system on the office's computer?

The answer to the case might be different personally. A person might think that it is ethical if the company install a keylogger system. Contrary, others might think not.

Literature has provided several principles to solve the ethical dilemma, namely Utilitarianism; Universalism; Rights; Justice; and Virtue (Weiss 2014). Each principle has a different moral compass and perspective. Utilitarianism focuses on cost and benefit; Universalism focus on duty; Rights emphasize freedom; Justice considers the distribution of burden; Virtue Ethics depends on the individual's character. So, if the decision-maker uses a different principle regarding an ethical dilemma, it leads to a different result.

Besides different perspective, different personality also leads to the different result of ethical decision making. One of the famous studies about personality is the big five inventory model. The model explains a person's facet, including extraversion, agreeableness, openness, neuroticism, and conscientiousness (John & Srivastava 1999).

The research aims to survey business college student regarding their opinion about key logger system in the workplace. Second, this paper aims to predict the factor of ethical decision-making in the context of the keylogger system. This research proposes that ethical decision making is affected by the personality and preference of principles. Also, GPA and gender are used as a control variable.

1.1 *The Big five Personality Traits*

The definition of the big five personality traits is taken from John & Srivastava (1999). An extrovert person is a person who has sociable, outgoing, energetic, and adventurous traits. An agreeableness person

has compliance, modesty, and trust traits. A conscientious person has several traits such as efficient, organized, self-discipline, and deliberation. The scope of neuroticism personality includes anxiety, depression (not contented), moody, and not self-confident. The last personality is openness which has curious, imaginative, artistic, and unconventional traits.

1.2 *Five ethical decision-making principles*

Each principle offers different moral authority. The literature regarding five ethical decision-making principles is taken from Weiss (2014). First, the utilitarianism principle elaborates that an action can be categorized as ethical if the benefits are greater than the costs. The consequences of an act determine its moral authority. The second principle is universalism (duty), in which moral authority is based on treating all people concerning the duty. The third principle is rights. The rights principle considers whether individual rights are guaranteed to pursue freedom of speech, choice, and happiness. The fourth principle, justice, considers whether the wealth and burden are distributed to all. The last principle is virtue ethics which the moral authority is based on individual character.

1.3 *Hypothesis Development*

One solution to solve the ethical dilemma in business is hiring employees or managers with excellent ethical dilemma decision-making competence. Ethical decision-making is complex since it considers cause and effect. Sometimes, it is not easy to define black or white (Antes et al. 2007, Beu et al. 2003).

The way to predict ethical dilemma decision-making competence is personal trait measurement (Manley et al. 2007). Personality is how a person thinks, feels, behaves, and influences individuals' behavior in the workplace (Antes et al. 2007). It affects how a person acts in a

specific situation; therefore, personality also affects ethical decision-making (Antes et al. 2007).

According to the literature review, several principles on how to solve an ethical dilemma are known worldwide. Each principle has a perspective that offers a different answer. An act might be seen as ethical if a principle views it but might be seen as unethical if other principles consider it.

This study proposes the hypothesis that:

H1: Personality has an effect on the decision making

H2: The decision-making principle has an effect on the decision making

2 RESEARCH METHODOLOGY

2.1 *Sample*

The respondents were 448 students of the Faculty of Business and Economics who took the business ethics course. 194 respondents were males (43.3 %) and 254 were females (56.7%). 40.2% were from the accounting department, 48.4% were from the management department, and 11.4% were from the economics department. 423 respondents (94.4%) were second-semester students. Their GPA ranges from 1.356 to 4.00 (out of 4.00) with a standard deviation of 0.514, and the Mean of GPA is 3.351.

2.2 *Procedure*

During the ethical business class, the lecture explains five ethical decision-making principles, including Utilitarianism: A consequentialist (results-based); Rights: An entitlement-based approach; Universalism: A deontological (duty-based) approach; Justice: Procedures, compensation, retribution Virtue Ethics (Character-Based-virtue) (Weiss, 2014). The theory was taken from business ethic textbooks based on the syllabus.

After giving an explanation and example of the principle's usage, the lecture confirms whether there is any question regarding the

theory. Then, the student is given a case about an ethical dilemma in business regarding technological innovation called the keylogger system.

2.3 *The Case*

In this digital area, most companies install keylogger systems in office computers to monitor the employee. Indeed, the company give the employee the salary and expect a certain performance. The company attest that the employee works effectively and efficiently during the working hours. The company finds that some employees are downloading a movie, watching YouTube, scrolling social media timeline, and playing games during office hours. While the employee feels it is a breach of privacy. In your opinion, do the company do an ethical behaviour if the company install a key logger system in office computer?

The student must choose whether the company's behaviour is ethical or not, choose one of the five ethical decision-making principles for supporting statement and elaborate the reason.

2.4 *Measurement of ethical decision making*

The student must decide whether the company acts ethically regarding the case. The student who chooses ethical implies that they agree to install the keylogger system on office computers. The decision is coded into 1 for ethical and 0 for unethical.

2.5 *Measurement of principles*

The selection of theory consists of five choices Utilitarianism: A consequentialist (results-based); Rights: An entitlement-based approach; Universalism: A deontological (duty-based) approach; Justice: Procedures, compensation, retribution Virtue Ethics (Character-Based-virtue). Each student chooses only one theory that supports the reasonable rationale of the decision.

2.6 Measurement of personality

Along with the case, the student must answer 44 questions about their personality. The questionnaire refers to the big five personality traits (John & Srivastava 1999). It is a 5-point Likert scale. The question measures the big – five personality traits: agreeableness, openness, extraversion, neuroticism, and conscientiousness.

2.7 Statistical Analysis

To prove the hypotheses of whether personality has an effect on the decision making (H1) and the decision-making principle has an effect on the decision-making (H2), the research uses logistic regression. It calculates the student's likelihood to choose ethical or unethical based on personality and the principle choice. Besides, GPA and gender are used as the control variables.

3 FINDINGS AND DISCUSSION

Table 1 and Figure 1 present the descriptive statistic and the results of the respondent. It shows that 94 students (21%) decide that installing a keylogger system on office computers is unethical, while 354 students (79%) decide it is ethical.

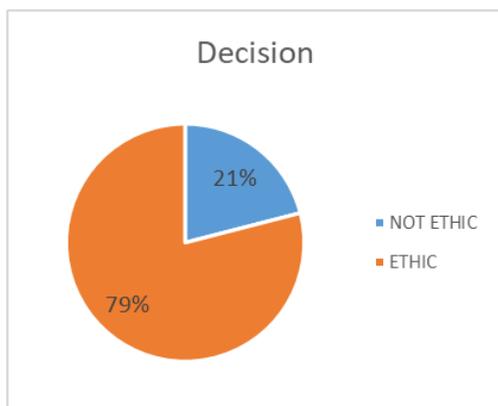


Figure 1. Decision making

For the principles preference, the preferable principle is Rights: An entitlement-based approach, 137 students (30.6%) choose rights: An entitlement-based approach as a

reason to make the decision. Next, 127 students (28.3%) prefer Universalism: A deontological (duty-based) approach. The third most used principle is Utilitarianism: A consequentialist (results-based), where 117 students (26.1%) choose it. Next, Justice: Procedures, compensation, retribution principle is chosen by 36 students (8%), and the least preferred principle is virtue, chosen by 31 students (6.9%).

Table 1. Descriptive Statistic

		N	%
Decision	UNETHICAL	94	21.0
	ETHICAL	354	79.0
Principle	Justice: Procedures, compensation, retribution	36	8.0
	Rights: An entitlement-based approach	137	30.6
	Universalism: A deontological (duty-based) approach	127	28.3
	Utilitarianism: A consequentialist (results-based)	117	26.1
	Virtue Ethics (Character-based virtue)	31	6.9
Gender	Male	194	43.3
	Female	254	56.4
Department	Economics	51	11.4
	management	217	48.4
	Accounting	180	40.2
Semester	2nd semester	423	94.4
	Other semesters	25	5.6

The distribution of principles used to justify ethical decision-making is shown in Table 2 and Figure 2.

Table 2. The Preferred Ethical Principle

Decision	Principle	N	%
ETHICAL	justice	27	7.6%
	rights	70	19.8%
	Universalism	120	33.9%
	Utilitarianism	112	31.6%
	virtue	25	7.1%
UNETHICAL	justice	9	9.6%
	rights	67	71.3%
	Universalism	7	7.4%
	Utilitarianism	5	5.3%
	virtue	6	6.4%

Most of the students who perceived the installation of the keylogger system as ethical behavior choose universalism and utilitarianism as their justification.

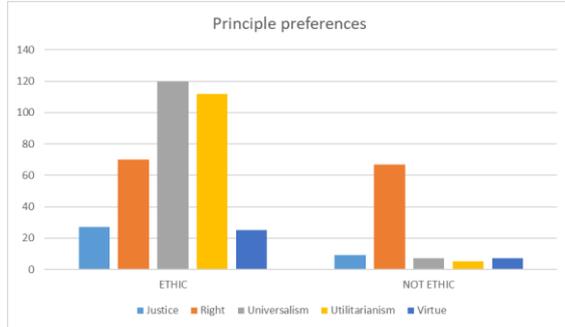


Figure 2. Preferred principle

The universalism principle implies that an act is ethical as long as a person performs the duty. The installation of a keylogger is the way to ensure the employees work or do their tasks effectively and efficiently.

Utilitarianism principle defends that an act can be said as ethical behavior if the benefits are more than the costs. The company pays a salary; in return, the employee must do a particular job during working hours. It is such a loss for the company if the employee does not perform at their best. A keylogger system is a monitoring mechanism to prevent such waste. So, it is ethical if the company installs the keylogger system.

On the other hand, the most principle chosen to justify the unethical decision is the rights principle. The rights principle implies that an act is unethical if the act is snatching someone's liberties. The installation of a keylogger system breaches employees' rights to have recreational activity during their boring time.

Another intriguing finding is the usage of the right principle. The right principle is the most chosen principles. 137 students (30.6%) choose it as their justification for the ethical dilemma of installation of a keylogger system. 70 respondents use it as justification for ethical decisions, and 67 students use it as reasoning for not-ethical

decisions. The right principle emphasizes the liberties of a party; therefore, it is flexible for justification for both perspectives, the company and the employee. It contributes 19.8% (70 respondents) to justify the ETHIC decision that defends the company and contribute 71.3% (67 students) to support the NOT ETHIC decision that speaks up from the employee's perspective.

Table 3 exhibits that the Hosmer and Lemeshow Test is 0.177, signifying that the model is fit statistically.

Table 3. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	11.469	8	0.177

Referring to Table 4, Nagelkerke R Square is 0.408, showing that variables Extraversion, Conscientiousness, Agreeableness, Openness, Neuroticism, Utilitarianism, Rights, Universalism, Justice, Virtue Ethics, GPA, and Gender contribute 40.7% explaining the decision making of the ethical dilemma.

Table 4. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	324.508 ^a	0.261	0.407

Referring to Table 5, with the significance below 5%, an increase in conscientiousness score raises the student likelihood to ethics 1.034 times. A conscientious person is a person who has strict, committed, hardworking, diligent, and cautious values (Roccas et al. 2002). They are motivated by the sense of duty and show it in a productive way (Manley et al. 2007). They are committed to their work and showing a hardworking spirit. In addition, conscientiousness tends to planful, organized, and goal-directed, which is beneficial to job performance. If they plan to finish a task, they may face temptations, such as playing video games or attending

parties (Giluk & Postlethwaite 2015). They have a security spirit that maintains interpersonal relations and avoids disruption of social order (Roccas et al. 2002).

Table 5. Logistic Regression

	B	Wald	Sig.	Exp(B)
Extraversion	-0.029	5.857	0.016	0.971
Conscientiousness	0.034	4.184	0.041	1.034
Agreeableness	0.006	0.130	0.718	1.006
Openness	0.019	1.196	0.274	1.020
Neuroticism	0.013	0.554	0.457	1.013
Utilitarianism	3.329	42.791	0.000	27.915
Universalism	3.181	48.687	0.000	24.065
Justice	1.439	9.729	0.002	4.216
Virtue	2.150	15.087	0.000	8.581
GPA	0.884	10.904	0.001	2.421
gender	0.495	2.794	0.095	1.641
Constant	-6.317	8.138	0.004	0.002

In the context of the keylogger system, when the company installs the system, a conscientious person perceives it as a part of the commitment and does their job professionally, so they accept it as an ethical condition.

The condition of conscientiousness is in contrast with extraversion. The likelihood of choosing ethics is lower 0.971 times as increasing of extravert score. The higher the extrovert score, the higher of likelihood to decide that keylogger is not ethical behavior.

An extrovert is associated with pleasurable experience and hedonism (Roccas et al. 2002). An extrovert person perceives pleasure as a desirable general life goal. Extrovert behavior is antithetical to valuing self-denial or self-abnegation, expressed in traditional value (Roccas et al. 2002). Extraversion is considered a tendency to feel positive emotion, engage in a pleasurable activity (Chen et al. 2020), and enjoy being in a social situation (Giluk & Postlethwaite 2015).

Extroverts are likely to use social media as they spend more time using one or more social media platforms and regularly create content (Bowden-Green et al. 2020). Extrovert's facet is linked to excitement-seeking, which can be associated with playing social media during working hours. Individuals with high excitement-seeking are risk-takers seeking out thrills and

stimulating environments (De Bruin & Rudnick 2007).

In the context of a keylogger system, a person with extrovert characteristics tends to engage in a pleasurable activity, which will refresh themselves during working hours. It could be in the spare time; they do a recreational activity such as opening social media or watching a video. The existence of a keylogger system reduces the pleasure since they know that somebody is watching. Sometimes, they feel it is a breach of privacy. Therefore, a person with a high extraversion score will perceive a keylogger system's installation as unethical.

Personality, especially extraversion and conscientiousness, has a significant effect on decision-making. However, the effects of agreeableness, openness, and neuroticism are not significant for decision-making.

Compare with the rights principle, the student who prefers Utilitarianism will have the likelihood to decide that the keylogger system is an ethical condition 27 times higher. The student who chooses universalism has a 24 times higher probability of choosing ethics. The student who chooses justice has a higher likelihood which is 4.2 times, and if the student chooses virtue, the odds are 8.5 higher to choose ethics. All the significance for the dummy principle is below 5%. It gives evidence that preferred principles affect the ethical decision-making outcome. Besides, 1 point of GPA will increase the odds to choose ethics is 2.4 times higher with the significance below 5%.

4 CONCLUSION

Innovation can bring benefits and opportunities to unethical conduct. The fast-growing technological innovation might shock society, especially when the legal and ethical aspects are undefined. An illiterate or inadvisable user might abuse the digital data.

Installing a keylogger system can be unethical conduct if the company sets it up without the employee's consent.

Communication and signing a consensus can be a solution. The company must clarify the use benefits of the keylogger system to the employee. Therefore, the company must not monitor and peek at the employees without their consent. It can be stated in the employment contract and signed by the employee.

The company must also guarantee to keep the personal data or information gathered by the keylogger system. The company might state in the contract that it will not abuse or sell it to other parties.

The research finds that the extraversion and conscientiousness dimensions of personality have an impact on ethical decision-making. The preferred principle also affects decision-making. The research results are limited to five principles of ethical dilemma decision-making presented in the textbook. The personality dimension is limited to the big five inventory.

REFERENCES

- Antes, A. L., Brown, R. P., Murphy, S. T., Waples, E. P., Mumford, M. D., Connelly, S., & Devenport, L. D. 2007. Personality and ethical decision-making in research: The role of perceptions of self and others. *Journal of Empirical Research on Human Research Ethics* 2(4): 15–34.
- Beu, D. S., Buckley, M. R., & Harvey, M. G. 2003. Ethical decision-making: A multidimensional construct. *Business Ethics: A European Review* 12(1): 88–107.
- Bhardwaj, A., & Goundar, S. 2020. Keyloggers: silent cyber security weapons. *Network Security*, 2020(2): 14–19. [https://doi.org/10.1016/S1353-4858\(20\)30021-0](https://doi.org/10.1016/S1353-4858(20)30021-0)
- Bowden-Green, T., Hinds, J., & Joinson, A. 2020. How is extraversion related to social media use? A literature review. *Personality and Individual Differences* 164: 110040.
- Chen, J., Qiu, L., & Ho, M.-H. R. 2020. A meta-analysis of linguistic markers of extraversion: Positive emotion and social process words. *Journal of Research in Personality* 89: 104035.
- De Bruin, G. P., & Rudnick, H. 2007. Examining the cheats: The role of conscientiousness and excitement seeking in academic dishonesty. *South African Journal of Psychology* 37(1): 153–164.
- Fukuda, K. 2020. Science, technology and innovation ecosystem transformation toward society 5.0. *International Journal of Production Economics* 220: 107460. <https://doi.org/10.1016/j.ijpe.2019.07.033>
- Giluk, T. L., & Postlethwaite, B. E. 2015. Big Five personality and academic dishonesty: A meta-analytic review. *Personality and Individual Differences* 72: 59–67.
- John, O. P., & Srivastava, S. 1999. *The Big-Five trait taxonomy: History, measurement, and theoretical perspectives* (Vol. 2). Berkeley:University of California.
- Manley, G. G., Benavidez, J., & Dunn, K. 2007. Development of a personality biodata measure to predict ethical decision making. *Journal of Managerial Psychology* 22(7): 664-682
- Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. 2002. The big five personality factors and personal values. *Personality and Social Psychology Bulletin* 28(6): 789–801.
- Tuli, P., & Sahu, P. (2013). System monitoring and security using keylogger. *International Journal of Computer Science and Mobile Computing* 2(3): 106–111.
- Weiss, J. W. (2014). *Business ethics: A stakeholder and issues management approach*. California: Berrett-Koehler Publishers.