

THE THEORY OF PLANNED BEHAVIOR AND PRO- ENVIRONMENTAL BEHAVIOR AMONG STUDENTS

by Dyah Sugandini

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The Theory of Planned Behavior and Pro-Environmental Behavior among Students

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Abstract:

This study aims to analyze pro-environmental behavior that is influenced by perceived behavioral control, subjective norms, environmental attitude, and intention. This research is based on the Theory of Planned Behavior. This study uses students as respondents because students are young people who are most responsible for environmental preservation both now and in the future. Higher education is also often the foundation for various student social movements when it comes to values and pro-environment associations. This research was conducted to address empirical issues related to the relationship between attitudes to pro-environmental behavior which is still being debated. This argument becomes an important basis for analyzing the level and relationship of pro-environmental behavior and students' attitudes towards environmental sustainability. The intention is the influencer's biggest for the behavior of pro-environmental students, but not all research yields the same answer depending on the behavior and case, as well as the pro-environment attitude. This study used 250 student respondents. The data analysis tool used is PLS-SEM 3.2.8. The results of this study explain that pro-environmental behavior can be influenced by perceived behavioral control and intention to behave pro-environment. Also, the results of this study showed that perceived behavioral control, subjective norms, and attitudes also affect intention.

Keywords: perceived behavioral control; subjective norms; attitudes; intentions; pro-environment behavior

JEL Classification : Q56; I25.

Introduction

The extraordinary technological discoveries of the 20th century have had both good and bad effects, especially related to the deteriorating environment of human life. The growth of the environmental movement is becoming increasingly apparent as the number and intensity of environmental problems increase. Research shows clear evidence of systemic, global problems such as global warming, deforestation, and excessive consumption as well as local problems of hazardous waste, air pollution, and invasive species (Laner 2018). Changes caused by human activities worsen environmental conditions at a frightening pace. The mountains of trash become a scene that we often encounter, we begin to lack water and clear air, some extinct animal species, illegal logging of forests. Human health and life are increasingly threatened. Contemporary civilization, because of the unusual rate of transformation that occurs in it, acts negatively and destructively on the natural environment. The ecological crisis is deepening. No one today will claim that ecological education is useless. What the Earth will be like in the future, depends exclusively on us and the ideas we will convey to our students. Because it is an educational institution obligation to educate students to understand ecology so that their intuitive and positive attitudes towards nature become intentional and deliberate behavior, so that new lifestyles, new ways to work together in harmony with the natural, social and cultural environment are developed.

This research raises the issue of the existence of research results related to the relationship between attitudes, intentions and pro-environment behaviors which are still in debate with the setting of active students at tertiary institutions. Higher education often becomes the foundation for various student social movements when students experiment with their values and associations and regulate their pro-environment behavior. As future leaders, students' trust and intentions towards the environment and sustainability are important to be taken into account when the campus and the larger community develop accurate programming, promotional materials, and strategic plans (Ermolaeva 2010, Meyer 2016). This argument becomes an important basis to see the level and relationship between pro-environment behavior and students' attitudes towards environmental sustainability. Sheldon (2016) found that intention is the *influencer's* biggest of student behavior. Not all studies produce one simple answer as the most significant predictor of behavior, all variables are combined differently depending on behavior and in some cases, questions can be answered by just looking at one variable. Sheldon (2016) also notes that students' attitudes are the biggest influencers for student subjective norms.

Kaiser and Gutscher (2003) differed on this point, in their study of differences in recycling behavior in Swiss people, they found that in a residential context, the intention-behavior relationship was not what they expected in a situation of lack of behavioral control (Kaiser and Gutscher 2003). Intentions are indicative of an individual's readiness or readiness to take action. In many studies, the individual intention is a direct predictor of pro-environmental behavior (Morren and Grinstein 2016; Swaim *et al.* 2014, Sugandini *et al.* 2019). This relationship applies to various behaviors. A study by Kaiser *et al.* (1999) shows that the intention to perform a behavior is better in predicting ecological behavior and general pro-social behavior.

This study aims to analyze the effect of perceived behavioral control, subjective norms, environmental attitude, and intention on pro-environment behavior. The research was conducted at UPN Veteran's Yogyakarta students. Universitas Pembangunan Nasional (UPN) Veteran Yogyakarta is a campus that has 13 thousand students and has invested in ecological education to preserve the environment through state defense courses. The results of interviews and focus group discussions with international teaching teams produced findings that students had been educated to defend the country one of them by loving their environment. This is indicated by various outbound programs that aim to instill the spirit of defending the country including defending the environment. UPN Veteran Yogyakarta students have been educated not to litter, smoke, scribble on buildings and other inventory. The pro-environmental behavior carried out by UPN Veteran Yogyakarta students is good enough. The theory on which this study is based on the *Theory of Planned Behavior* (TPB). TPB can be used to overcome the problem of pro-environmental behavior because it has the most consistent and reliable correlation for similar studies. TPB is generally used to understand the relationship between various predictors of environmental behavior (Laner 2018). TPB shows that behavior is predicted directly by someone's intentions, then their intentions are predicted by a combination of attitudes, subjective norms, and perceived behavioral control. If applied to pro-environmental behavior, for example, the behavior is immediately preceded by the person's willingness and plans to carry out pro-environment behavior or their intentions. In turn, their willingness is determined by their belief in the pro-environmental concept (attitude), the influence of their family and friends (subjective norms), and how easy or difficult it is to carry out pro-environmental behavior where they are (perceived behavioral control). Many researchers choose to use this framework because it allows the intended

audience to learn what other ways they can influence behavior rather than just changing the action itself, which can be difficult.

1. Literature Review

This study builds on TPB from Azjen (1985), which shows that pro-environmental behavior is influenced by subjective intentions, attitudes, and norms (Whitmarsh and O'Neill 2010). Azjen (1985) argues that TPB allows for a more complete understanding of behavior. The scope of this theory is not limited to certain fields, although there are many studies on environmental behavior using TPB. TPB has demonstrated strong predictive validity in studies of pro-environmental behavior, and more general behavior (Levine and Strube 2012, Lakhani 2017; Sugandini *et al.* 2018).

Pro-Environmental Behavior

Pro-environmental behavior is an awareness, personal norms, and the role of responsibility of each individual in carrying out their social functions in preserving the environment (Garling *et al.* 2003). Tam and Chan (2017) defines pro-environmental behavior as behavior to preserve a sustainable environment. Individuals who are pro-environment, usually have the intention to behave towards high environmental sustainability (Sugandini *et al.* 2018). One rational reason is that people who have the motivation to preserve the environment have a unique consumption motivation that is different from other consumers and they support each other to preserve the environment. Pro-environment behavior occurs voluntarily. Pro-environmental behavior makes consumers more careful in consuming their products. Pro-environmental behavior is a consumer behavior that leads to environmental sustainability by paying attention to sustainability (Kaiser *et al.* 2005).

Perceived Behavioral Control

Perceived Behavioral control shows a degree in which an individual feels that the appearance or failure of behavior in question is under his control (Ajzen 1991). People tend not to form a strong intention to display a certain behavior if he believes that he does not have the source or opportunity to do so even though he has a positive attitude and he believes that other people who are important to him will approve it. PBC can influence behavior directly or indirectly through intention. The direct path from PBC to behavior is expected to occur when there is harmony between perceptions about control and the actual control of a person over a behavior. Perceived behavioral control (PBC) relates to intentions as well as directly to pro-environmental behavior (Kaiser and Gutscher 2003, Morren and Grinstein 2016). Generally, PBC is measured by asking respondents how complicated specific or general behavior is performing. Morren and Grinstein (2016) found in their meta-analysis that PBC is more useful in predicting pro-environmental behavior in developed countries. According to Kaiser and Gutscher (2003), PBC is more valid when it predicts certain behaviors and becomes unreliable because of gathering behavior and has more variation. In their study, PBC was significant in predicting whether someone recycled glass, avoided using cars in the city center, recycled paper, and was a member of the organization's environment (Kaiser and Gutscher 2003). Lakhani 2017 and Taylor and Todd (1995) studied communities with sophisticated waste management and found that PBC positively influences recycling behavior and intentions.

H1: Perceived behavioral control influences intention toward pro-environmental behavior

H2: Perceived behavioral control influences pro-environmental behavior

Subjective Norms

Subjective norms are what we think and will think about if we do (or don't do) a behavior. Subjective norms are a function of normative beliefs and motivation to obey what is considered important people (for example community leaders, fathers or religious leaders) deserve to be done (Ajzen 1985, Laner 2018). The influence of external parties, such as friends, coworkers, community members, and family, on behavior, is referred to as subjective norms. Social pressures impact individual compliance in a variety of behaviors, from the ability to recycle, using public transportation to work rather than driving private cars. (Kaiser *et al.* 2005). Studies show that different groups respond to various sources of influence in different ways. Lakhani (2017) states that social pressure impacts on pro-environmental behavior for ethnic minorities when messages are delivered through religious and community leaders. For students, Swaim *et al.* (2014) found that the influence of a business leader, professor, or politician was positively related to the intention for students to make decisions about recycling for an internship scenario.

H3: Subjective norms influence the intention toward pro-environmental behavior

Environmental Attitude

Environmental attitudes are seen as expressions of trust and values and are often directed towards certain behaviors. The literature on the relationship between attitudes and pro-environmental behavior is very broad, although researchers will sometimes use words such as personal attention, personal norms, and values to describe attitudes. Research shows that attitude is a strong predictor of intention (Kaiser *et al.* 1999, Levine and Strube 2012). This can occur because of the attitude of taking into account the moral realm that utilizes a feeling of personal obligation to the environment rather than solely based on rationality (Kaiser *et al.* 1999). Involvement in pro-environment behavior is predicted by positive attitudes about environmental sustainability (Lakhan 2017). Kaiser *et al.* (2005) also found that attitudes are responsible for the majority of variants in environmental coverage. Ivata (2004) states that as a whole, the attitude-behavior relationship is widely discussed in the environmental field.

H4: Attitudes affect the intention toward pro-environmental behavior

Intention

The intention is an indication of an individual's readiness to take action. In many studies, the individual intention is a direct predictor of pro-environmental behavior and accounts for the majority of all variants (Kaiser and Gutscher 2003, Morren and Grinstein 2016, Swaim *et al.* 2014). This relationship also applies to various behaviors. (Morren and Grinstein 2016) conducted a meta-analysis of 81 previous studies of pro-environment behavior, by observing food consumed, conservation behavior carried out, general behavior, or other specific behaviors. (Morren and Grinstein 2016) find that intention is a better predictor of all pro-environmental behavior for all categories of behavior in individualistic and developed countries than in developing countries.

H5: Intention influences pro-environmental behavior

2. Methodology

This study is survey research involving 250 students at UPN Veteran Yogyakarta. The selection of students from this campus is because the University has students who come from all regions of Indonesia and have different demographic backgrounds. So that it is considered able to represent consumer behavior with different cultural characteristics. This study uses four antecedents of pro-environment behavior that cover intention, attitude, subjective norm and perceived behavioral control. Data obtained by distributing questionnaires to respondents with the help of the Google form application. The data analysis technique used was purposive sampling, with the characteristics of the respondents being students who were still actively studying and those students who were concerned about environmental preservation. This study uses a questionnaire adopted from Whitmarsh and O'Neill (2010), Laner (2018) and Lange & Dewitte (2019). The number of questionnaires used was 22 questions. The data analysis tool used is PLS-SEM version 3.2.8.

3. Results

Descriptive Analysis

The results of the descriptive analysis in this study aim to describe the categories of respondents and research variables. For the category of respondents who are students at UPN Veteran Yogyakarta based on gender, age, and income.

Table 1. Characteristics of respondents

Gender		Age		Income (Rupiah)	
Category	%	Category	%	Category	%
Men	49.2	18 – 20	13,2	< 1 million	29,2
Women	50.8	21 – 23	74,9	1 million – 1.5 million	53,4
		> 23	11,9	> 1.5 million	17,4

SEM-PLS Analysis

Hypothesis testing is performed using SEM-PLS analysis version 3.2.8. The SEM-PLS full model can be seen in Figure 1. Hypothesis test results can be seen in Table 2.

Figure 1. Pro-environmental behavior model

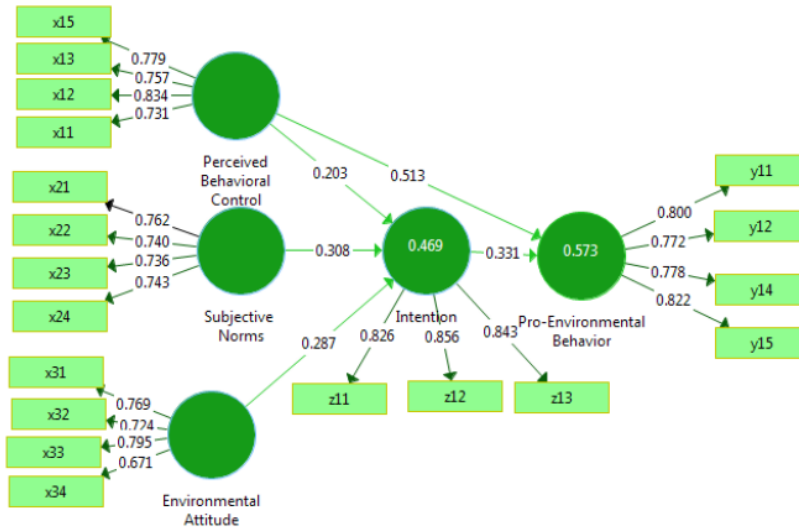


Table 2. Hypothesis test results

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P-Values
Perceived Behavioral Control → Intention	0.203	0.089	2.283	0.023
Perceived Behavioral Control → Pro-Environmental Behavior	0.513	0.053	9.706	0.000
Subjective Norms → Intention	0.308	0.061	5.021	0.000
Environmental Attitude → Intention	0.287	0.086	3.316	0.001
Intention → Pro-Environmental Behavior	0.331	0.054	6.160	0.000

T-test Results (significance)

This test is used to prove the effect of each independent variable on the dependent variable. T value calculated from the results of the research is greater than the value of t-table (1.96) and has a significance value ≤ 0.05 . Based on all the paths observed, all paths are significant, so that all hypotheses are supported.

The Outer Model Test Results

The outer model focuses on testing the validity and reliability of each indicator on its latent variable. The Outer Model (Measurement Model) is done by testing Convergent Validity, Discriminant Validity, AVE, and Composite Reliability.

Convergent Validity Test Results

The recommended loading factor value is > 0.7 . But according to Chin (1998) for the initial stages of developing measurement scales, values of loading 0.5 - 0.6 are considered sufficient. The results of the initial validity testing show that three indicators have a loading factor value of less than 0.6, so they must be excluded from the model. These indicators are X14, X25 and Y13. After the three indicators are eliminated, all instruments used can be said to be valid (for convergent validity and discriminant validity). Table 3 shows the results of testing the validity of all research instruments after X14, X25, and Y13 were eliminated.

Table 3. Convergent Validity and Discriminant Validity

Item	Environmental Attitude	Intention	Perceived Behavioral Control	Pro-Environmental Behavior	Subjective Norms
x11	0.631	0.386	0.731	0.505	0.379
x12	0.630	0.434	0.834	0.630	0.432
x13	0.676	0.434	0.757	0.472	0.310
x15	0.510	0.555	0.779	0.575	0.482
x21	0.403	0.458	0.415	0.474	0.762
x22	0.404	0.405	0.379	0.428	0.740
x23	0.381	0.454	0.375	0.358	0.736
x24	0.411	0.362	0.387	0.380	0.743
x31	0.769	0.492	0.588	0.501	0.434
x32	0.724	0.422	0.618	0.590	0.371
x33	0.795	0.488	0.680	0.554	0.423
x34	0.671	0.398	0.407	0.352	0.350
y11	0.516	0.498	0.570	0.800	0.422
y12	0.529	0.493	0.555	0.772	0.402
y14	0.484	0.441	0.493	0.778	0.492
y15	0.608	0.565	0.617	0.822	0.442
z11	0.514	0.826	0.463	0.477	0.478
z12	0.503	0.856	0.526	0.594	0.426
z13	0.525	0.843	0.492	0.522	0.531

Reliability Test Results

Expected AVE value > 0.5 and good Composite Reliability if it has a value ≥ 0.70 . Based on Table 4 all latent variables have the value AVE > 0.5 and Composite Reliability ≥ 0.70 . So all latent variables are said to be reliable.

Tabel 4. Cronbach's Alpha and Average Variance Extracted (AVE)

	Cronbach's Alpha	Rho-A	Composite Reliability	Average Variance Extracted (AVE)
Environmental Attitude	0.725	0.734	0.829	0.549
Intention	0.795	0.797	0.880	0.709
Perceived Behavioral Control	0.780	0.788	0.858	0.603
Pro-Environmental Behavior	0.804	0.809	0.872	0.629
Subjective Norms	0.735	0.737	0.834	0.556

The Results of Testing the Inner Model

Inner Model (Structural Model) or also called the influence test or hypothesis test. The result's outer model shows that all instruments analyzed are valid and reliable so that they can proceed with inner model testing. The testing of inner models includes the coefficient of determination (R^2), Q^2 predictive relevance, and Goodness of Fit (GoF). Table 5 shows the results of the structural test/inner model output.

Table 5. The Results of Inner Model

Testing Criteria	Results	Justification
Coefficient of Determination (R-square) Intention (R_1^2) Pro-environmental behavior (R_2^2)	0.469 0.573	Good
Q^2 predictive relevance $Q^2 = 1 - ((1-R_1^2)(1-R_2^2))$ = 0.92778	92.778%	Good, it means that the values observed have been reconstructed well with predictive relevance the goodness of Fit (GoF)
The goodness of Fit (GoF) $GoF = \sqrt{AVE} \times \overline{R^2}$ = 0.563377	56,3377%	Good

4. Discussion

The Effect of Perceived Behavioral Control on Pro-Environmental Behavior

The results of the study support the hypothesis that PBC influences intention (the first hypothesis is supported), and PBC influences pro-environment behavior (the second hypothesis is supported). This is indicated by the p -value ≤ 0.05 . The effect of PBC on intention is 20.3% and the effect of PBC on pro-environment behavior is 51.3%. This research shows that students always save water and energy in their daily lives. They often discuss the protection and preservation of the environment with their communities. Also, in purchasing behavior, students prefer to buy green products and products that can be recycled. The results of this study support the opinion of Ajzen (1991) which states that PBC can influence behavior directly or indirectly through intention. Kaiser and Gutscher (2003); Morren and Grinstein (2016) also show that PBC is related to intention and also to pro-environment behavior. This study also supports the findings of Lakhan (2017) which shows that PBC influences recycling intentions and behavior.

The Effect of Subjective Norms on Intention

The results of the study support the hypothesis that states that subjective norms affect intention (the third hypothesis supported). This is indicated by the p -value ≤ 0.05 . The effect of subjective norms on pro-environment behavior is 30.8%. The results of this study indicate that there are students' perceptions about the right to modify the natural environment to suit their needs. Students also have the opinion that when humans disturb nature, the consequences are very negative for human life. Humans also often abuse the environment, and the earth has many natural resources that are very potential to be developed, so humans will eventually learn enough about how to control nature so that nature can work for human welfare. The results of this study support the opinion of Azjen (1985), Laner, (2018) which states that the influence of external parties and social pressure have an impact on individual compliance with pro-environment behavior such as the ability to recycle, and use public transportation (Kaiser *et al.* 2005). Lakhan (2017) also states that social pressure impacts on pro-environment behavior for ethnic minorities. Shiva *et al.* (2014) found that the influence of a business leader, professor, or politician influences students to make pro-environment decisions.

The Effect of Environmental Attitude on Intention

The results of the study support the hypothesis which states that environmental attitude influences intention (the fourth hypothesis is supported). This is indicated by the p -value ≤ 0.05 . The influence of environmental attitude on pro-environment behavior is 28.7%. This research shows that students behave pro-environment because their friends and family also behave in the same manner. Students also assume that the campus provides regulations that make students care about their environment. The campus also provides facilities and infrastructure that make it easy for students to carry out pro-environment activities. Besides that students also have the convenience to consume green products. This study supports Kaiser *et al.* (1999), Levine and Strube (2012) which states that attitude is a strong predictor of intention to pro-environmental behavior. Someone will involve themselves in pro-environmental behavior if they have a positive attitude about the environment (Lakhan 2017). Kaiser *et al.* (2005) and Iwata (2004) show that attitudes and behavior relationships have been found in environmental research.

The Effect of Intention on Pro-Environmental Behavior

The results support the hypothesis that states that intention influences intention (the fifth hypothesis is supported). This is indicated by the p -value ≤ 0.05 . The influence of environmental attitude on pro-environment behavior is 28.7%. This research shows that students always try to regulate their standard of living that can protect their environment. Students intending to participate in environmental events held on campus. Also, students intend to share information about the environment with their communities and families. The results of this study support Kaiser and Gutscher (2003), Morren and Grinstein (2016), Swaim *et al.* (2014) which states that intention is a direct predictor of pro-environmental behavior. Morren and Grinstein (2016) also found that intention is a better predictor for all pro-environmental behaviors in all behavioral categories.

Conclusions

This study sought to address the issue of their research results regarding the relationship is still debated attitudes, intentions and behavior in the environment settings. Previous research shows different results.

Previous research shows different results. Several research results show that there is a relationship between attitudes, intentions and pro-environment behavior. However, other research results show that the relationship between attitudes, intentions and pro-environment behavior is not significant. This study supports research findings which state that there is a relationship between attitudes, intentions and pro-environment behavior. By basing on The Theory of Planned Behavior, and using 250 college student respondents, this study found that attitudes, intentions, and behavior have a significant relationship in the environmental protection category. This study uses antecedents of pro-environment behavior namely perceived behavioral control, subjective norms, environmental attitude, and intention. The results show that behavioral control, subjective norms, environmental attitude affect intention. Furthermore, Intention and PBC influence pro-environment behavior.

Suggestions

The results of this study show that perceived behavioral control has the most influence on pro-environmental behavior. This shows that the campus must always encourage its students to carry out environmentally friendly activities, both at home and on campus. The campus should also provide rules that reinforce environmental protection both on-campus and off-campus. And the campus should hold joint activities to show concern for the environment for all the academic community. This study only uses students as respondents. Future research should involve other parties such as lecturers and education staff who work in tertiary institutions so that they can be used to generalize the results of this research. This study only bases on variables contained in the Theory of Planned Behavior. For further research, it is expected to be able to add other variables to clarify pro-environment behavior, for example by adding the variables of environmental knowledge, awareness of consequences (Sugandini *et al.* 2019); Environmental Awareness and environmental education (Padmanabhan *et al.* 2017).

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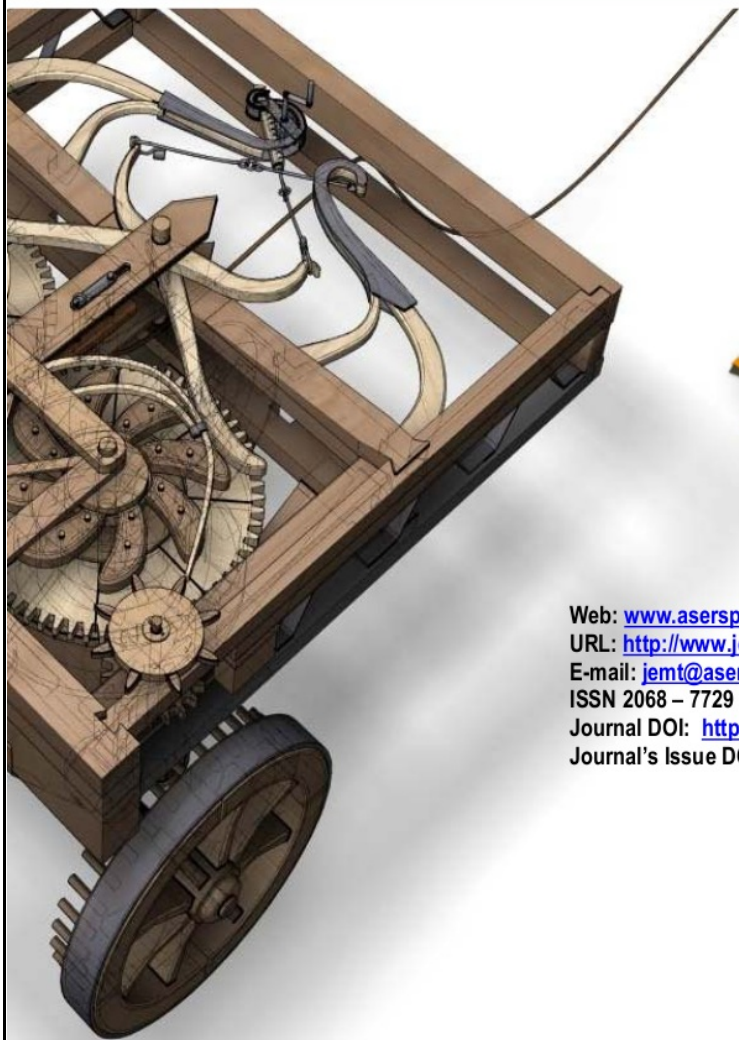
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