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Applying the Theory of Planned Behaviour to Tourism-Related Waste Behaviour in Marine Protected Areas: The Aliwal Shoal Case Study

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Abstract:

This paper aims to better understand tourism-related waste behaviour within marine protected areas (MPAs) by applying the Theory of Planned Behaviour (TPB) to a specific South African case study. Observed- and self-reported elements of waste separation behaviour were determined for four diving charters and five accommodation facilities within the Aliwal Shoal MPA. Observations and waste characterisation were performed to understand actual behaviour, while survey questionnaires based on the TPB were administered to determine self-reported behaviour. Interviews were conducted to explore challenges and opportunities for waste separation at source. The results found a significant percentage of recyclable waste (>70%) within the disposable waste stream, and no waste separation infrastructure at any of the facilities investigated. Survey responses indicated a positive attitude towards waste separation, with a social drive towards participating. Respondents also indicated that they generally participated in waste separation at source, a claim not supported by the observation data. The identified challenges for waste separation at source included a lack of separation infrastructure and collection services, inconvenience, time constraints, and unwillingness of customers to participate. Accordingly, the main opportunities towards waste separation included the provision of waste separation resources and reliable municipal services, and strategies towards improved waste-related awareness and behaviour.

Keywords: waste behavior; tourism activities; theory of planned behaviour; marine protected area; Aliwal Shoal; South Africa.

JEL Classification: Q53; Q01; Z30.

Introduction

Protected areas have significant tourism value (Leung *et al.* 2018; Reinius and Fredman 2007) and are often considered popular tourism destinations because of their biodiversity, unique natural features and high-quality tourism-related resources (Reinius and Fredman 2007). The primary appeal of tourism in protected areas is that it can, in theory, provide local economic benefits while maintaining ecological integrity through low-impact, non-consumptive use of local resources (Stem *et al.* 2003). Although tourism in protected areas can have economic, environmental and social benefits, commercial tourism may also have several negative impacts such as: changes to water courses and water quality, impacts on vegetation, damage to reefs, archaeological sites and existing infrastructure, pollution and degradation of sensitive environments, and increased waste generation (Eagles *et al.* 2002; Amusan and Olutola 2017). Tourism has been heralded as one of the fastest growing industries world-wide, with ecotourism becoming the fastest growing sector within tourism (Gumede and Nzama 2019). This trend is especially important for developing countries with a strong reliance on eco-tourism development (Manrai *et al.* 2020). In 2016, tourism accounted for approximately 2.9% of the South African GDP (StatsSA 2019). Furthermore, South Africa is, globally, regarded as a top ecotourism destination, because of its abundant diversity in wildlife species and habitats, and large number of protected- and other biodiversity areas (Chiutsi *et al.* 2011). South Africa's protected area network consists of more than 1 500 protected areas, and other area-based conservation measures (Hoveka *et al.* 2020; UNEP-WCMC and IUCN, 2021). There are currently 42 Marine Protected Areas (MPAs) declared through the National Environmental Management: Protected Areas Act in the country (UNEP-WCMC and IUCN, 2021).

1. Literature Review

MPAs are used as a policy instrument for habitat protection, the promotion of sustainable resource management, biodiversity conservation, as well as the management of fisheries (Sowman and Sunde 2018). These areas are particularly popular tourist destinations because of their biodiversity-, cultural-, and historical features; and they provide for numerous tourism activities, such as fishing, scuba diving, snorkelling, and marine fish-, mammal- and bird watching (Sink 2016). However, tourism-related activities within coastal-marine zones may have negative impacts on these protected environments (Eagles *et al.* 2002; Findlay 2020). One specific concern of increased tourism activities within protected areas generally, and MPAs specifically, is effective waste management (Steg and Vlek 2009; Belsoy *et al.* 2012; Sandham *et al.* 2020; Roos *et al.* 2021). This concern is mainly associated with the rapid growth and increase in tourist volumes, as well as irresponsible and unsustainable waste-related practices (Capocchi *et al.* 2019). Tourism-related activities generate mostly municipal solid waste (MSW), which usually needs to be managed and disposed of by the tourist operator (Diaz-Farina *et al.* 2019). These wastes can have a negative impact on sensitive environments such as MPAs due to its pollution potential and resultant degradation of the natural environment. Some research has been conducted that focus on the efforts of the tourism sector to reduce pollution and work towards zero waste initiatives (del Mar Alonso-Almeida 2012; Hsiao *et al.* 2014; Wyngaard and de Lange 2013; Yusof and Jamuludin 2013). However, waste behaviour related to tourism activities within protected areas, especially MPAs, have not yet been extensively researched. The aim of this paper is, therefore, to better understand tourism-related waste behaviour within MPAs by applying the Theory of Planned Behaviour (TPB) to a selected South African case study namely, the Aliwal Shoal MPA.

The TPB provides a theoretical framework for understanding how psychological- and other factors influence the decision to engage in specific behaviour. This theory, introduced in 1985, is one of the most frequently used models to predict human social behaviour and is commonly applied in waste-related behavioural research (for instance: Tonglet *et al.* 2004; Ghani *et al.* 2013; Pakpour *et al.* 2014; Gilli *et al.* 2018). According to the TPB there are three main elements, namely - attitude, subjective norms, and perceived behavioural control, that may predict an individual's intention or likelihood to engage in a specific behaviour (Ajzen 2011; Razali *et al.* 2020). The TPB, however, relies on self-reported reflection of behaviour (Ajzen 2011) and, furthermore, the intention to engage in a specific behaviour does not always reflect an individual's actual behaviour or practice (Huffman *et al.* 2014). Moreover, Tonglet *et al.* (2004) highlight that self-reported behaviour often exaggerates observed behaviour. Huffman *et al.* (2014) and Steg and Vlek (2009), therefore, propose that determining self-reported behaviour should be supplemented by observation of actual waste-related practice. This research, thus, evaluates actual (observed) behaviour, in addition to self-reported behaviour in order to obtain a holistic view of waste management behaviour within a South African MPA. The scope of the research was specifically focused on waste separation at source behaviour as a first step towards improving waste behaviour. The next section explains the methodology after which the results are discussed, and conclusions are made in the final section.

2. Methodology

Sections 2.1 and 2.2 provide explanations of how the case study and participants were selected, while Section 2.3 describes data collection and analysis.

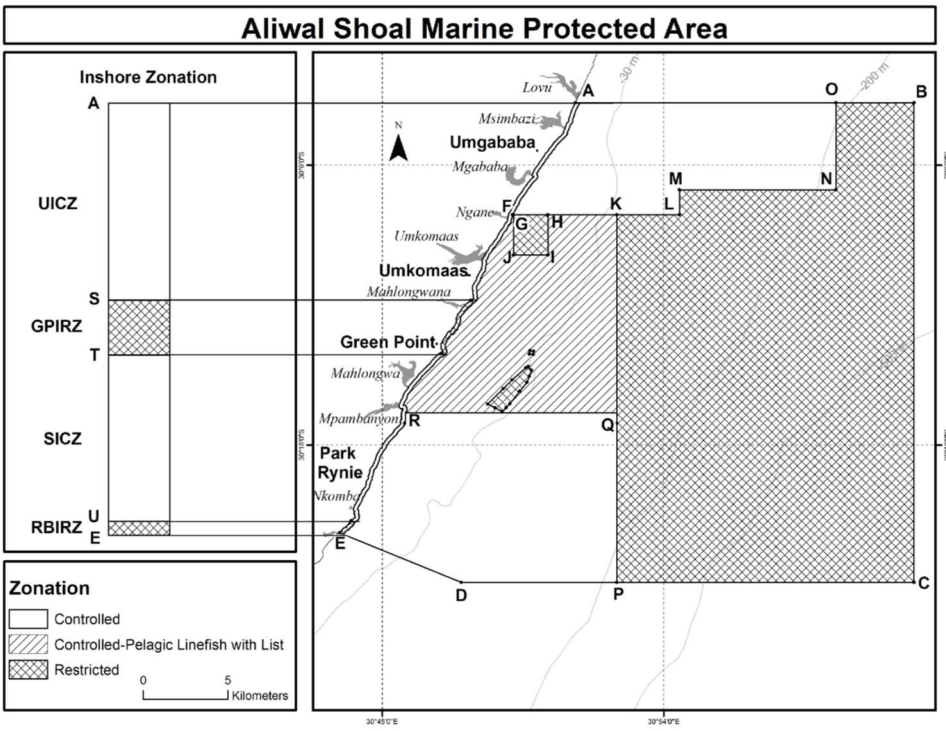
2.1. Case Study Selection

A case study approach (Yin 2017) is commonly followed in TPB research (Gilli *et al.* 2018; Razali *et al.* 2020; Roos *et al*. 2021) and was also preferred to achieve the research aim. In line with our case study research design, non-probability sampling, based on the subjective judgment of the researchers rather than random selection, was used to identify the MPA case study, based on the requirements that the MPA had to represent:

- Diverse tourism-related activities, infrastructure and services;
- Sufficient participants to represent specific tourism-related activities; and
- Willing participants who provide consent and permission to conduct the research.

The Aliwal Shoal MPA in KwaZulu-Natal, South Africa (Figure 1), was selected due to its diversity in tourism-related activities, consisting of diving, fishing, bird watching, and other tourism-related activities, supported by accommodation facilities and infrastructure and the willingness of a sufficient number of participants to take part in the research.

Figure 1. Inshore zonation of the Aliwal Shoal MPA in KwaZulu-Natal, South Africa



Source: (GNR. 781 of 23 May 2019 Regulations for the management of the Aliwal Shoal Marine Protected Area)

2.2. Participant Selection

The scope of the research specifically focused on a sample of tourism-related activities and did not focus on households or other sectors located within the MPA. Diving charters and accommodation facilities were purposively selected to represent tourism-related activities within the Aliwal Shoal MPA, because of their known generation of diverse general waste streams, and its potential to impact on the marine environment due to the nature and location of these facilities. Accommodation facilities that were located inland from and outside of the Aliwal Shoal MPA were not included in the research.

A total of nine facilities, which included four diving charters and five accommodation facilities were purposively selected to provide for a range of different facility and activity types. The diving charters selected included different types and sizes of operators, while the accommodation facilities included a range of accommodation types, such as lodges, hotels and guest houses to provide for variances in waste generation, waste type and waste-related behaviour.

2.3. Data Collection and Analysis

Since the TPB largely relies on self-reported behaviour, data on observed practice were gathered to supplement self-reported data. To prevent the surveys and interviews (self-reported behaviour) from influencing or changing actual behaviour, observations and waste composition characterisation were conducted prior to determining self-reported behaviour (Petty *et al.* 2012; Huffman *et al.* 2014). As mentioned earlier, data collection specifically focused on waste separation at source behaviour.

Data was collected in a phased approach:

Phase 1: Performing on-site observations and waste composition characterisation (July 2021):

Direct on-site observation was employed to gain an understanding of:

- The availability of waste separation at source infrastructure;
- The location and number of waste storage/separation at source facilities; and
- The actual separation at source practices and activities taking place.

Waste composition characterisation was performed according to the American Society for Testing and Materials (ASTM) standard for characterising unprocessed MSW (ASTM, 2016) as proposed by Oelofse *et al.* (2016). The purpose of the waste composition characterisation was to:

- Determine the recycling potential of waste generated by the selected facilities by:
  - Determining the composition of any source separated waste;
  - Determining the composition of waste destined for disposal;
  - Determining the composition of recyclable waste ending up in the disposable waste stream;

and

- Supplement the self-reported data.

General waste, generated during a one-week period, was collected from the four diving charters and five accommodation facilities. Each facilities' total amount of waste generated was quantified, and then separated into nine categories namely: (i) paper and paperboard; (ii) glass; (iii) metals; (iv) plastics; (v) textiles; (vi) organic waste; (vii) construction and demolition materials; (viii) special care waste; and (ix) other waste (ASTM, 2016). The quantity of each of the nine categories was determined, and expressed as a percentage of the total amount of waste generated (Table 1).

Phase 2: Administering survey questionnaires based on the TPB to determine self-reported waste-related behaviour (July – September 2021):

A survey questionnaire, based on the TPB framework, was electronically administered to the research participants, representing the four diving charters and five accommodation facilities, to determine the factors influencing waste separation at source behaviour in the Aliwal Shoal MPA. Research by Ghani *et al.* (2013); Nomura *et al.* (2017); Xu *et al.* (2017); Alhassan *et al.* (2018); Mak *et al.* (2018); Strydom (2018) and Roos *et al.* (2021) were consulted to design the survey questionnaire. The statements proposed by these authors were adapted to focus on waste separation at source within the Aliwal Shoal MPA. The survey questionnaire focused on self-reported behavioural practice (B1 and 2), attitude (A1 to 7), subjective norms (SN1 to 6), and perceived behavioural control (PBC1-13), as outlined in Table 2.

Similar to other studies, a 5-point ordinal scale (where 1 indicated a high level of disagreement and 5 indicated a high level of agreement) was adopted to indicate respondents' level of agreement with the survey statements (Strydom 2018; Roos *et al.* 2021). A frequency table was compiled to record the number of responses falling in each ordinal interval (Table 2). It was not possible to perform any associations or correlations between statements in a statistical sound matter, due to the sample size.

Phase 3: Conducting semi-structured interviews on the opportunities and challenges for waste management within the Aliwal Shoal MPA (September – October 2021):

Semi-structured interviews were held with the same representatives mentioned in phase 2 to gather data concerning the challenges and opportunities for waste separation at source within the Aliwal Shoal MPA. Interviews were based on two questions: 1. What are the challenges for waste separation at source within the Aliwal Shoal MPA? and 2. What are the opportunities for waste separation at source within the Aliwal Shoal MPA?

Subjected to ethics approval (NWU–00492–21–A90), with informed consent and permission from the participants, interview responses were recorded, and transcribed for the purpose of data analysis. Interview responses were then anonymously analysed and grouped thematically as themes emerged.

3. Results and Discussion

This section provides the results of the research, with the on-site observation results in Section 3.1., the waste composition characterisation results in Section 3.2, the survey questionnaire results in Section 3.3, and lastly, the interview results in Section 3.4.

3.1. On-Site Observation Results

On-site waste observations of the nine participants indicated that none of the participants had any waste separation facilities (*i.e.,* different bins or bags for different recyclables) or related infrastructure at their premises. For all of the accommodation facilities observed, waste from each room and communal waste bins were collected periodically and deposited into larger bins. These bins were not dedicated to specific waste categories, but contained all disposable waste. Once these larger bins were filled, they were taken to a waste storage area until the day of collection. These waste storage areas were generally located in an area far from the guest's rooms and communal areas. All waste was then placed on the kerbside, for municipality collection once a week. No source separation of waste took place, except for one accommodation facility separating their garden waste for composting purposes. Diving charters managed their waste similarly – with no source separation of waste taking place and all of the waste being consolidated for collection by the municipality and, ultimately, landfill disposal.

3.2. Waste Composition Characterisation Results

Table 1 provides the (averaged) composition of waste generated by diving charters and accommodation facilities, respectively, in a one-week period in July 2021 (in a period of typically high occupancy, during the sardine run), based on the nine ASTM categories. The relative composition per waste category, rather than actual waste quantities, are reported due to the fact that COVID-19 restrictions may have had an impact on tourism-related activities, which could have influenced the quantities of waste generated. The composition of waste is, however, expected to remain relatively consistent (Liang *et al.* 2021) for diving and accommodation facilities.

For diving charters, paper was the most dominant waste stream (25.9%), followed by plastics (23.7%) and organic waste (16.9%), which largely comprised of food waste (Table 1). Waste is mainly generated by divers on diving vessels, as well as activities at diving centres. The waste composition is similar to what was found by Lucrezi and Saayman (2017), who researched waste disposal by diving charters in Ponta do Ouro and Portofino in Mozambique, where the main waste streams generated included paper, plastic, metal, food waste, small quantities of toxic waste (engine oil and batteries) and diving equipment. No toxic waste or diving equipment was found in the waste produced by the diving charters included in this research at the time of the waste characterisation being performed. Of particular interest in this research, however, was waste generated from bait that was used to attract fish (categorised as other waste). Approximately 78% of the total waste generated by diving charters consisted of recyclable waste, and 16.9% of compostable organic waste (Table 1). These waste streams were, however, not separated at source and was destined for disposal to landfill.

Table 1. Waste composition (in percentage) of the total weight of waste generated by diving charters and accommodation facilities

General waste categories	Percentage of waste generated total (%)	
	Diving charters	Accommodation facilities
Paper and paperboard*	25.9*	17.7*
Glass*	14.9*	20.3*
Metal*	13.7*	13.5*
Plastics*	23.7*	22.9*
Textiles	2.8	1.2
Organics (including food waste)**	16.9**	18.7**
Construction and demolition materials	0	0
Special care waste	1.0	0.9
Other non-recyclable wastes	1.1	4.8
Total	100	100

**Recyclable waste streams; **Compostable waste stream*

Waste from accommodation facilities mainly consisted of plastic waste (22.9%), followed by glass (20.3%) and organic waste (18.7%) (Table 1). Research conducted by Wani *et al.* (2018) and Phu *et al.* (2019) on waste generated by accommodation facilities in the Himalayas, and Hoi An in Vietnam, respectively, found that food waste was the most dominant waste stream generated by these facilities, with between 34.2% and 35.5% of the total waste stream being ascribed to food wastage. In our research, however, organic waste, which included garden

waste and food waste contributed to only 18.7% of the total amount of waste generated (Table 1). Several factors could have played a role in the organic waste generated in this research being relatively lower, when compared to other studies.

Accommodation facilities (hotels, bed and breakfast facilities, and guest houses) that offer meals or have restaurants will usually produce more food waste than the predominantly self-catering accommodation facilities (Wani *et al.* 2018) investigated in this research. Of the five accommodation facilities investigated, two of the lodges were self-catering with bed and breakfast options, one lodge was fully serviced, and one guest house was also partly self-catering. This means that the guests mainly purchase prepared meals or prepare food themselves, with limited food preparation and wastage by the accommodation facilities. This was confirmed by a relatively high proportion of prepared meal packaging contributing to the plastic waste that was generated.

In general, non-recyclable waste was in the minority (less than 30%), with wastes such as single-use plastics (disposable cutlery and plastic cups), disposable diapers, and ceramics being categorised as other non-recyclable waste (Table 1). Recyclable waste streams accounted for approximately 74% of the total amount of waste generated by accommodation facilities, while approximately 18% of waste was compostable. Similar to the diving charters, these recyclable and compostable waste streams were not separated from disposable (non-recyclable) waste in any way, and was destined for landfill disposal. Unfortunately, the majority of recyclable waste was contaminated by other wastes, such as food waste, which lowers its recycling potential. Only one accommodation facility separated approximately seven kilograms of garden waste from other waste streams, with the intention of composting it.

3.3. Survey Questionnaire Results

Responses on the TPB survey questionnaire were electronically captured. The frequency of responses (expressed as a percentage according to the assigned ordinal scale rating) of the nine survey respondents is outlined in Table 2 for each TPB element, namely behaviour/practice (B), attitude (A), subjective norm (SN), and perceived behavioural control (PBC).

Waste separation at source practice/behaviour (B)

When reflecting on self-reported behaviour, all of the diving charters and three of accommodation facilities agreed or strongly agreed that they regularly separate their waste into recyclables and non-recyclables (B1) (Table 2). Similarly, three of the four diving charters and three of the five accommodation facilities either agreed or strongly agreed that they often separate their waste into the appropriate recycling bins (B2) (Table 2).

These self-reported behaviours, however, contradict the findings of the on-site observations and waste composition characterisation study, where it was determined that no source separation was taking place at the time of the research being conducted. Tonglet *et al.* (2004) highlight that self-reported behaviour often exaggerates observed behaviour. These authors found that approximately 80% of individuals stated that they often recycled their waste, with only about a half of their participants (40%) actually doing so. Likewise, the MORI Social Research Institute (2002) conducted research which found more than 60% of individuals claimed to recycle their waste, but that the actual percentage was much lower (about 20%).

Attitudes (A) related to the separation of waste at source

Respondents from diving charters and accommodation facilities generally had overwhelmingly positive attitudes towards waste separation at source (mean ranging between 4,25 and 4,75) (Table 2). All of the survey respondents either agreed or strongly agreed to statements A1 to A4, indicating that they believe that waste separation at source: is a useful practice within the Aliwal Shoal MPA (A1); would enable them to be responsible members of the community (A2); would enable them to live in a clean and improved environment (A3); and aids in environmental protection and the conservation of resources in the MPA (A4) (Table 2). These findings agree with the work of Issock *et al.* (2020), which indicated South Africans generally believe that source separation of waste is important for resource preservation and the protection of the environment.

Furthermore, the majority of respondents (three of four diving charters, and four of five accommodation facilities, respectively) agreed that source separation is an interesting and fulfilling task (A5) (Table 2). One respondent, however, disagreed with this statement. The majority of respondents also agreed to statement A6, indicating that they could set an example for their colleagues by participating in waste separation (Table 2). Finally, all of the respondents either agreed or strongly agreed that waste separation should be promoted and formalised within the Aliwal Shoal MPA (A7) (Table 2).

The role of subjective norms (SN) in waste separation at source

Subjective norms refer to perceived social pressure, and the belief that a person or group of people will approve or support a particular behaviour (Ajzen 2011), in this case – waste separation at source. From the self-reported survey responses, it seems as if perceived social pressure from family (SN1, mean of 4,5 and 4) and guests/customers (SN6, mean of 4,5 and 4,3) played the largest role in respondents being willing to engage in waste separation at source behaviour (Table 2). These results agree with what Roos *et al.* (2021) found regarding the importance of guest/visitors expectations in influencing integrated waste management behaviour at the Sabi Sand Wildtuin private nature reserve in South Africa.

Table 2. Results of the survey questionnaire: Frequency table of ordinal scale responses received from diving charters (n = 4) and accommodation facilities (n=5)

Statements	Frequency of ordinal scale responses (% of responses)					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean
Behaviour/practice statements						
B1: I regularly separate waste into recyclables and non-recyclables						
Diving charters	0	0	0	100	0	4,00
Accommodation facilities	20	20	0	20	40	3,40
B2: I often separate waste into the appropriate recycling bins						
Diving charters	0	0	25	75	0	3,75
	20	20	0	20	40	3,40
Attitude statements						
A1: I believe that waste separation is a useful practice in the Aliwal Shoal MPA						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	0	0	40	60	4,60
A2: I believe that waste separation of waste would enable me to be a responsible member of the Aliwal Shoal MPA community						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	0	0	40	60	4,60
A3: I believe that waste separation would enable me to live in a clean and improved environment						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	0	0	40	60	4,60
A4: I believe that waste separation aids in environmental protection and the conservation of resources in the Aliwal Shoal MPA						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	0	0	20	80	4,80
A5: I feel that waste separation at my workplace is an interesting and fulfilling task						
Diving charters	0	0	25	25	50	4,25
Accommodation facilities	0	20	0	40	40	4,00
A6: I feel that I can set an example for my colleagues by participating in waste separation						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	0	20	20	60	4,40

Statements	Frequency of ordinal scale responses (% of responses)					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean
A7: I think that waste separation should be promoted and formalised in the Aliwal Shoal MPA						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	0	0	40	60	4,60
Subjective norm statements						
SN1: If my family expects of me to participate in waste separation at my workplace, I will						
Diving charters	0	0	0	50	50	4,50
Accommodation facilities	0	20	0	40	40	4,00
SN2: If my friends expect of me to participate in waste separation at my workplace, I will						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	20	20	20	40	3,80
SN3: If my community expects of me to participate in waste separation, I will						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	40	0	20	40	3,60
SN4: If my colleagues expect of me to participate in waste separation, I will						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	20	0	40	40	4,00
SN5: If my municipality expects of me to participate in waste separation, I will						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	0	20	40	40	4,20
SN6: If our guests/customers expect of me to participate in waste separation, I will						
Diving charters	0	0	0	50	50	4,50
Accommodation facilities	0	0	20	60	20	4,30
Perceived behavioural control statements						
PBC1: I have complete control in deciding whether or not to separate waste at my workplace						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	0	0	40	60	4,60
PBC2: Waste separation requires time and effort						
Diving charters	0	25	0	75	0	3,50
Accommodation facilities	0	0	0	60	40	4,40
PBC3: Even if waste separation requires time and effort, I will still participate						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	40	0	20	40	3,60
PBC4: My workplace has enough space and infrastructure to store separated waste						
Diving charters	0	0	25	50	25	4,00
Accommodation facilities	40	0	0	20	40	3,20
PBC5: Even if my workplace does not have enough space and infrastructure to						

Statements	Frequency of ordinal scale responses (% of responses)					
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean
store separated waste, I will still participate						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	40	0	20	40	3,60
PBC6: My municipality provides me with sufficient facilities for waste separation at my workplace						
Diving charters	25	75	0	0	0	1,75
Accommodation facilities	40	40	0	0	20	2,20
PBC7: Even if my municipality does not provide me with sufficient facilities for waste separation, I will still participate						
Diving charters	0	25	0	75	0	3,50
Accommodation facilities	0	40	0	20	40	3,60
PBC8 I know how waste should be separated at my workplace						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	0	20	40	40	4,20
PBC9: Even if I do not know how to separate wastes, I will still participate						
Diving charters	0	0	0	100	0	4,00
Accommodation facilities	0	40	0	20	40	3,60
PBC10: I know which recycling bins sorted waste should be put into						
Diving charters	0	0	0	50	50	4,50
Accommodation facilities	0	0	0	60	40	4,40
PBC11: Even if I do not know which recycling bins sorted waste should be put into, I will still participate						
Diving charters	0	0	0	75	25	4,25
Accommodation facilities	0	40	0	20	40	3,60
PBC12: My workplace is convenient to carry out waste separation (e.g., recycling bins are close to my workplace)						
Diving charters	0	25	0	75	0	3,50
Accommodation facilities	20	20	20	0	40	3,20
PBC13: Even if my workplace is inconvenient to carry out waste separation, I will still participate						
Diving charters	0	0	0	25	75	4,75
Accommodation facilities	0	40	0	20	40	3,60

The perceived expectations of friends (SN2), the community (SN3), colleagues (SN4), and the municipality (SN5) also played an important (but less dominant) role towards the willingness of respondents to separate waste at source (Table 2).

The role of perceived behavioural control (PBC) in waste separation at source

The last TPB element investigated, namely perceived behavioural control (PBC), was used to determine the control beliefs of the participants, in other words their perceived difficulties in engaging in waste separation at source behaviour (Ajzen 2011).

All of the respondents agreed or strongly agreed that they have complete control in deciding whether or not to separate waste at their workplace (PBC1) (Table 2). It, therefore, seems that there are no corporate or other policies making it compulsory for these facilities to separate their waste at source.

Although participants may have control over whether they want to participate in waste separation, there are other factors that influence their ability to control their behaviour, such as time and effort, availability of

infrastructure, convenience, distance to facilities, and others (Ghani *et al.* 2013; Strydom, 2018). Responses indicated that a lack of support from the municipality (PBC6) and inconvenience to separate waste at source within the workplace (PBC13) were perceived as the main factors hindering the separation of waste at source (Table 2). Insufficient support and inconvenience were, similarly, found to have a negative influence on waste separation at source behaviour in research done by Strydom (2018) in South Africa, and Stoeva and Alriksson (2017) in Bulgaria.

Despite the fact that respondents indicated that separation at source may require time and effort (PBC2), that they may not have sufficient knowledge (PBC8), and that a lack of municipal support (PCB6) and inconvenience play a role (PBC13) in waste separation, the majority of respondents were still willing to engage in waste separation at source behaviour (refer to PBC3, 5, 7, 9, 11 and 13) (Table 2). This finding also corresponds with the research by Roos *et al.* (2021) where participants from private protected areas were willing to engage in waste separation at source measures, in spite of various challenges.

3.4. Results of Interviews

Interviews focused on identifying opportunities and challenges for waste separation at source within the Aliwal Shoal MPA. Interview responses are thematically presented in Table 3, with perceived challenges being related to proposed opportunities. Interviewee responses propose that the main challenges for the separation of waste at source within the MPA include: (1) a lack of waste separation infrastructure, (2) insufficient waste collection and transportation services for separated waste, (3) inconvenience and time constraints, and (4) unwillingness of customers to participate in waste separation at source (Table 3).

The opportunities and challenges were similar to those reported by Ghani *et al.* (2013), Gilli et.al. (2018), Razali *et al.* (2020), Roos *et al.* (2021), and Strydom (2018) for waste separation at source within the developing country context.

Table 3. Perceived challenges and related opportunities for waste separation at source within the Aliwal Shoal MPA based on interviewee responses (n = 9)

Challenges		Opportunities	
Theme	Responses from interview participants	Theme	Responses from interview participants
1. Lack of waste separation infrastructure (bins) Mentioned by all nine of the participants (100%) **Challenges:** • There are no bags or bins supplied by the municipality to encourage waste separation at source; • There are limited central recycling stations or drop-off centres within the Aliwal Shoal MPA.	"Our municipality only supplies us with black plastic bags for our refuse. Even if we wanted to separate the refuse, we cannot afford to buy other equipment. I know of other municipalities in KZN who give recycling bags and have bins for separating waste at source. In the Aliwal Shoal MPA, there are no separation at source infrastructure at the moment." (Diving centre owner) "The community and businesses within the MPA are eager to recycle, but we don't have any bins on-site or elsewhere within the municipality to deposit any separated waste. There is a recycling bin at one of the local schools, but it is far from our facility, and difficult to access." (Hotel manager)	**1. Provision of waste separation infrastructure** Mentioned by six of the nine participants (67%) **Opportunities:** • Provision of recycling bins to businesses by the municipality; • Provision of recycling stations and drop-off centres at centrally accessible locations by the municipality.	"The municipality should definitely supply appropriate waste disposal bins to all the lodges and BandBs and outlets throughout the town as we are a very small town." (Lodge owner) "If there was a central drop-off point for waste, we would definitely take the time and effort to separate our recyclable waste from our disposable waste." (Diving charter operator)
2. Insufficient waste collection and transportation services for separated waste Mentioned by five of the nine participants (56%) **Challenges:** • Separated waste is not collected (separately) by the municipality.	"The municipality does not collect recycled goods separately. Even if you separate waste, it is collected together with disposable waste and it goes to landfill. If you do want to recycle waste, an individual or business needs to make arrangements to dispose of the separated waste themselves, which takes time and effort and costs money" (B&B owner) "A local recycling company has attempted to assist the community in the past, however, due to financial constraints they were unable to continue with the collection of recyclables". (Diving centre owner)	**2. Provision of collection and transportation services for separated waste** Mentioned by two of the nine participants (22%) **Opportunities:** • Provision of (separate) municipal waste collection services for source separated waste.	"The municipality must think of a way to collect separated waste separately from disposable waste. Even if we separate our waste, everything is collected and transported together, and eventually disposed of at the landfill (if it is not reclaimed by waste pickers)." (Hotel manager) "The municipality must collect separated waste (that is in different coloured bags, for instance) separately (on a different day or in a different truck) so that it does not end up with other wastes" (Diving charter manager)
3. Inconvenience and time constraints Mentioned by six of the nine participants (67%) **Challenges:** • It is inconvenient to separate waste at source due to a lack of	"Separating waste at source takes time and effort, which is wasted when the separated waste gets collected and disposed of with other wastes." (Diving charter manager) "There are no convenient ways to separate waste at source. The municipality does not render any support, and businesses are left to take the time and effort to try and find places to drop off the separated waste." (Hotel manager)	No specific related opportunities mentioned by participants, however, refer to 1 and 2 regarding infrastructure and collection service opportunities.	

Challenges		Opportunities	
Theme	Responses from interview participants	Theme	Responses from interview participants
infrastructure and collection services; • The time spent to separate waste at source is wasted, if separated waste is collected are disposed of with other non-recyclable wastes; • It takes too much time and effort to take recyclables to drop-off points.	"Once waste is mixed by our customers, it is too time consuming to separate the waste." (B&B owner) "We have very little time to focus on waste separation. Diving is our core business. Given that nothing happens with the waste from the municipality's side, we have decided not to separate any waste at source" (Diving charter operator)		
4. Unwillingness of guests to participate in waste separation Mentioned by one participant (11%) **Challenge:** • Guests are unwilling to participate in waste separation at source activities.	"We do try to encourage our customers to either not bring any rubbish with them on the boats or to take the waste back with them, although they generally do not comply with our requests". (Diving charter operator)	**4. Improved waste management behaviour** Mentioned by two of the nine participants (22%) **Opportunity:** • Raise awareness amongst guests regarding waste separation; • Limit guest intervention/participation.	"A way to address the waste issue, is by generating less waste in the first place. We can make an effort to raise awareness amongst guests and staff to change their behaviour and generate less waste" (Hotel manager) "We try to move away from snacks and refreshments on the boats that could generate plastic waste, such as food wrappers and plastic bottles". (Diving centre owner)

Conclusions

The aim of the paper was to better understand tourism-related waste behaviour within an MPA by applying the Theory of Planned Behaviour (TPB) to a South African case study. The paper focused on waste separation at source behaviour of diving charters and accommodation facilities within the Aliwal Shoal MPA. Since the TPB primarily relies on self-reported behaviour, and because self-reported behaviour is usually overstated, observation of actual waste separation at source practices, and waste composition characterisation were also undertaken.

Approximately 78% of the waste generated by diving charters, and 74% of the waste generated by accommodation facilities are recyclable. These wastes are, however, not separated at source and, therefore, the opportunity and potential to move this waste up the waste management hierarchy, and away from landfill disposal, is decreased.

Diving charter and accommodation facility participants generally had positive attitudes towards waste and reported that they separate waste at source. Although attitude is the TPB factor which generally has the least impact on waste behaviour (Razali *et al.* 2020), it is still a crucial element in influencing separation at source behaviour. The on-site observations, however, found that no separation at source activities were taking place. It seemed that inconsistencies exist between the self-reported and observed waste behaviour of most respondents. This is not an unusual result and is supported by the research findings of the MORI Social Research Institute (2002), Tonglet *et al.* (2004) and Huffman *et al.* (2014).

Perceived social pressure to separate waste at source could be a reason for the contradiction between self-reported and observed behaviour. It was evident from the results of the survey that respondents experienced social pressure to engage in waste separation behaviour, with social pressure from family and guests/customers playing the largest role. This result is also supported in a study by Flagg and Bates (2016:492), finding that "as a social norm, recycling has a coercive aspect; people believe it is something they should do, regardless of their personal commitment to waste reduction or other pro-environmental values." Therefore, many individuals may state that they participate in pro-environmental behaviour if others around them do or if others expect it from them, but may in reality not actively participate in waste separation practices (Flagg and Bates, 2016).

Inaccuracies in the self-reported data may have various negative implications. By reporting that source separation is being practiced in the Aliwal Shoal MPA, when in reality it is not, could invalidate the efforts of waste separation recycling programmes in the area. These programmes require appropriate planning and cooperation in order to effectively aid in environmental conservation.

Respondents identified four main challenges towards participating in waste separating at source behaviour. These included (1) a lack of waste separation infrastructure, (2) insufficient waste collection and transportation services for separated waste, (3) inconvenience and time constraints, and (4) unwillingness of guests to participate in waste separation at source. Respondents proposed opportunities to address these challenges such as for the municipality to provide waste separation infrastructure and drop-off points, as well as waste collection and transportation services for separated waste. Other opportunities included changing or influencing waste-related behaviour of staff and guests by awareness-raising. The opportunities and challenges were similar to those reported by Ghani *et al.* (2013), Gilli *et al.* (2018), Razali *et al.* (2020), Roos *et al.* (2021), and Strydom (2018).

We trust that this paper has contributed to the limited research done on waste-related behaviour in protected areas (Roos *et al.* 2021). It is recommended that this research be replicated for other MPAs in order to grow the knowledge base towards improved waste management behaviour and practice in protected areas.

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References

[1] Ajzen, I. 2011. The theory of planned behaviour: Reactions and reflections. *Psychology and Health,* 26*:* 1113-1127. DOI: https://doi.org/10.1080/08870446.2011.613995

[2] Alhassan, H., Asante, F.A., Oteng-Ababio, M. and Bawakyillenuo, S. 2018. Application of theory of planned behaviour to households' source separation behaviour in Ghana. *Management of Environmental Quality: An International Journal*, 29(4): 704-721. DOI: 10.1108/MEQ-10-2017-0122

[3] Amusan, L. and Olutola, O. 2017. Climate change and sustainable tourism: South Africa caught in-between. *African Journal of Hospitality, Tourism and Leisure*, 6(4):1-15.

[4] Belsoy, J., Korir, J. and Yego, J. 2012. Environmental impacts of tourism in protected areas. *Journal of Environment and Earth Science*, 2(10): 64-73. ISSN 2224-3216

[5] Capocchi, A., Vallone, C., Pierotti, M. and Amaduzzi, A. 2019. Overtourism: a literature review to assess implications and future perspectives. *Sustainability*, 11(12):1-18. DOI: 10.3390/su11123303

[6] Chiutsi, S., Mukoroverwa, M., Karigambe, P. and Mudzengi, B.K. 2011. The theory and practice of ecotourism in Southern Africa. *Journal of Hospitality Management and Tourism*, 2(2):14-21.

[7] del Mar Alonso-Almeida, M. 2012. Water and waste management in the Moroccan tourism industry: the case of three women entrepreneurs. *Women's Studies International Forum,* 35(5): 343-353. DOI:10.1016/j.wsif.2012.06.002

[8] Diaz-Farina, E., Díaz-Hernández, J.J. and Padrón-Fumero, N. 2020. The contribution of tourism to municipal solid waste generation: a mixed demand-supply approach on the island of Tenerife. *Waste Management*, 102:587-597. DOI: 10.1016/j.wasman.2019.11.023

[9] Eagles, P.F., McCool, S.F. and Haynes, C.D. 2002. *Sustainable tourism in protected areas: Guidelines for planning and management*. Gland, SZ: IUCN.

[10] Findlay, K. 2020. Challenges facing marine protected areas in Southern African countries in light of expanding ocean economies across the sub-region. In: Humphreys, J., and Clark, R.W.E., eds. *Marine Protected Areas*. Poole: Elsevier. pp. 37-65.

[11] Flagg, J.A. and Bates, D.C. 2016. Recycling as a result of "cultural greening"? *International Journal of Sustainability in Higher Education*, 17(4): 489-506. ISSN-1467-6370

[12] Ghani, W.A.W.A.K., Rusli, I.F., Biak, D.R.A. and Idris, A. 2013. An application of the theory of planned behaviour to study the influencing factors of participation in source separation of food waste. *Waste Management*, 33(5): 1276-1281.

[13] Gilli, M., Nicolli, F. and Farinelli, P. 2018. Behavioural attitudes towards waste prevention and recycling. *Ecological Economics,* 154: 294-305. DOI: 10.1016/j.ecolecon.2018.08.009

[14] Gumede, T.K. and Nzama, A.T. 2019. Ecotourism as a mechanism for local economic development: the case of communities adjacent to the Oribi Gorge Nature Reserve, KwaZulu-Natal, South Africa. *African Journal of Hospitality, Tourism and Leisure*, 8(4): 1-19. ISSN: 2223-814X

[15] Hoveka, L.N., van der Bank, M. and Davies, T.J. 2020. Evaluating the performance of a protected area network in South Africa and its implications for megadiverse countries. *Biological Conservation*, 248: 1-9. ISSN: 0006-3207

[16] Hsiao, T.Y., Chuang, C.M., Kuo, N.W. and Yu, S.M.F. 2014. Establishing attributes of an environmental management system for green hotel evaluation. *International Journal of Hospitality Management*, 36:197-208. DOI: http://dx.doi.org/10.1016/j.ijhm.2013.09.005

[17] Huffman, A.H., Van Der Werff, B.R., Henning, J.B. and Watrous-Rodriguez, K. 2014. When do recycling attitudes predict recycling? An investigation of self-reported versus observed behavior. *Journal of Environmental Psychology*, 38: 262-270. DOI: https://doi.org/10.1016/j.jenvp.2014.03.006

[18] Issock, P.B.I., Roberts-Lombard, M. and Mpinganjira, M. 2020. Understanding household waste separation in South Africa: An empirical study based on an extended theory of interpersonal behaviour. *Management of Environmental Quality: An International Journal*, 530-547. DOI: 10.1108/meq-08-2019-0181

[19] Leung, Y.F., Spenceley, A., Hvenegaard, G. and Buckley, R. 2018. *Tourism and visitor management in protected areas: Guidelines for sustainability*. Gland, SZ: IUCN.

[20] Liang, Y., *et al.* 2021. Repercussions of COVID-19 pandemic on solid waste generation and management strategies. *Frontiers of Environmental Science and Engineering*, 15(6): 115. DOI:https://doi.org/10.1007/s11783-021-1407-5

[21] Lucrezi, S. and Saayman, M. 2017. Sustainable scuba diving tourism and resource use: Perspectives and experiences of operators in Mozambique and Italy. *Journal of Cleaner Production*, 168:632-644. DOI:10.1016/J.JCLEPRO.2017.09.041

[22] Mak, T.M., Iris, K.M., Tsang, D.C., Hsu, S.C. and Poon, C.S. 2018. Promoting food waste recycling in the commercial and industrial sector by extending the Theory of Planned Behaviour: A Hong Kong case study. *Journal of Cleaner Production*, 204:1034-1043. DOI: https://doi.org/10.1016/j.jclepro.2018.09.049

[23] Manrai, L.A., Lascu, D. and Manrai, A.K. 2020. A study of safari tourism in sub-Saharan Africa: An empirical test of Tourism A-B-C (T-ABC) model, *Journal of Business Research*, 119: 639-651. DOI:https://doi.org/10.1016/j.jbusres.2019.02.066

[24] Nomura, H., Takahashi, Y. and Yabe, M. 2017. Psychological driving forces behind households' behaviors toward municipal organic waste separation at source in Vietnam: a structural equation modeling approach. *Journal of Material Cycles and Waste Management*, 19(3): 1052-1060. DOI: 10.1007/s10163-017-0587-3

[25] Oelofse, S.H., Muswema, A.P. and Koen, R. 2016. The changing face of waste management–considerations when conducting a waste characterisation study. Paper delivered at the 23rd WasteCon Conference, Johannesburg. Available at: https://researchspace.csir.co.za/dspace/handle/10204/8948

[26] Pakpour A.H., Zeidi, I.M., Emamjomeh, M.M., Asefzadeh, S. and Pearson, H. 2014. Household waste behaviours among a community sample in Iran: An application of the theory of planned behaviour. *Waste Management,* 34(6): 980-986. DOI: 10.1016/j.wasman.2013.10.028

[27] Petty, N.J., Thomson, O.P. and Stew, G. 2012. Ready for a paradigm shift? Part 2: introducing qualitative research methodologies and methods. *Manual Therapy*, 17(5): 378-384. DOI: 1016/j.math.2012.03.004

[28] Phu, S.T.P., Fujiwara, T., Hoang, M.G. and Tran, M.T. 2019. Waste separation at source and recycling potential of the hotel industry in Hoi A city, Vietnam. *Journal of Material Cycles and Waste Management*, 21(1): 23-34. DOI:10.1007/S10163-018-0807-5

[29] Razali, F., Daud, D., Weng-Wai, C., and Jiram, W.R.A. 2020. Waste separation at source behaviour among Malaysian households: the theory of planned behaviour with moral norm. *Journal of Cleaner Production*, 271(2): 1-10. DOI: 10.1016/j.jclepro.2020.122025

[30] Reinius, S.W. and Fredman, P. 2007. Protected areas as attractions. *Annals of tourism research*, 34(4):839-854. DOI: 10.1016/j.annals.2007.03.011

[31] Roos, C., *et al.* 2021. Understanding waste management behaviour in private nature reserves through the Theory of Planned Behaviour. *PARKS,* 27(2): 47-56. DOI: 10.2305/IUCN.CH.2021.PARKS-27-2CR.en

[32] Sandham, L.A., *et al.* 2020. Evaluating Environmental Impact Assessment report quality in South African national parks. *Koedoe: African Protected Area Conservation and Science,* 62(1): 1-9. DOI:https://doi.org/10.4102/koedoe.v62i1.1631

[33] Sink, K. 2016. The marine protected areas debate: implications for the proposed phakisa marine protected areas network. *South African Journal of Science*, 112(9-10): 1-4. DOI:https://doi.org/10.17159/sajs.2016/a0179

[34] Sowman, M. and Sunde, J. 2018. Social impacts of marine protected areas in South Africa on coastal fishing communities. *Ocean and Coastal Management*, 157: 168-179. DOI: 10.1016/j.ocecoaman.2018.02.013

[35] Steg, L. and Vlek, C. 2009. Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology*, 29(3): 309-317. DOI: 10.1016/j.jenvp.2008.10.004

[36] Stem, C.J. *et al.* 2003. Community participation in ecotourism benefits: The link to conservation practices and perspectives. *Society and Natural Resources*, 16(5):387-413. DOI: 10.1080/08941920390190041

[37] Stoeva, K. and Alriksson, S. 2017. Influence of recycling programmes on waste separation behaviour. *Waste Management*, 68: 732-741. DOI: 10.1016/j.wasman.2017.06.005

[38] Strydom, W.F. 2018. Applying the theory of planned behavior to recycling behavior in South Africa. *Recycling*, 3(43): 1-20. DOI: 10.3390/recycling3030043

[39] Tonglet, M., Phillips, P.S. and Read, A.D. 2004. Using the Theory of Planned Behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK. *Resources, Conservation and Recycling,* 41(3): 191-214. DOI: 10.1016/j.resconrec.2003.11.001

[40] Wani, M.A., Dada, Z.A. and Shah, S.A. 2018. Sustainable integrated solid waste management in the trans-himalayan accommodation sector. *African Journal of Hospitality, Tourism and Leisure*, 7(2): 1-17. ISSN: 2223-814X

[41] Wyngaard, A.T. and De Lange, R. 2013. The effectiveness of implementing eco initiatives to recycle water and food waste in selected Cape Town hotels. *International Journal of Hospitality Management*, 34: 309-316. DOI:10.1016/j.ijhm.2013.04.007

[42] Xu, L., Ling, M., Lu, Y. and Shen, M. 2017. Understanding household waste separation behaviour: Testing the roles of moral, past experience, and perceived policy effectiveness within the theory of planned behaviour. *Sustainability*, 9(4):1-27. DOI: https://doi.org/10.3390/su9040625

[43] Yin, R. 2017. Case study research: Design and Methods - Sixth Edition, Sage publications, London.

[44] Yusof, Z.B. and Jamaludin, M. 2013. Green approaches of Malaysian green hotels and resorts. *Procedia-Social and Behavioral Sciences*, 85:421-431. DOI: https://doi.org/10.1016/j.sbspro.2013.08.371

[45] American Society for Testing and Materials (ASTM). 2016. *Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste. Available at:* https://www.astm.org/Standards/D5231.htm

[46] MORI Social Research Institute. 2002. Public Attitudes towards Recycling and Waste Management: Quantitative and Qualitative Review. (Research Study Conducted for The Strategy Unit, Cabinet Office: London, UK). Available at: https://www.nswai.org/docs/Public%20Attitudes%20Towards%20Recycling%20and%20Waste%20Management.pdf

[47] StatsSA (Statistics South Africa). 2019. Tourism satellite Account for South Africa, final 2016 and provisional 2017 and 2018. Available at: http://www.statssa.gov.za/publications/Report-04-05-07/Report-04-05-072018.pdf

[48] United Nations Environment Programme, World Conservation Monitoring Centre and International Union for the Conservation of Nature (UNEP-WCMC and IUCN). 2021. *World Database on Protected Areas. Available at:* https://www.iucn.org/theme/protected-areas/our-work/world-database-protected-areas

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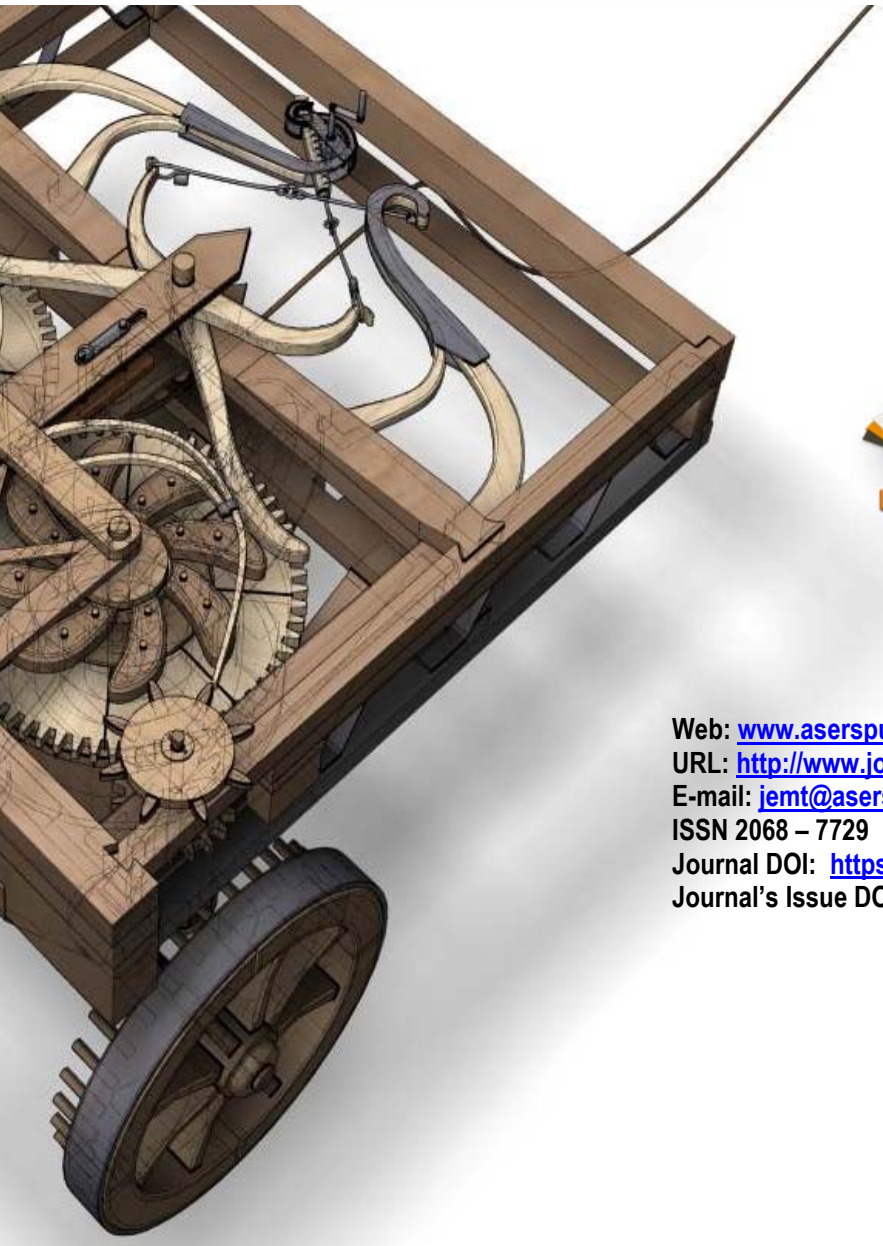

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