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Impact of Environmental Education on Waste Disposal Behavior of Beachgoers on the Durban Central Beachfront

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Abstract

The study focused on beachgoers' waste disposal behavior and its impacts on the coastal and marine environment. Coastal and marine tourism is a key subsector of tourism that is fast becoming one of the most popular forms of tourism globally. The objective of the study was to discuss the resilience of coastal destinations by examining the role of environmental education in shaping environmentally responsible tourists' behavior. A mixed method approach that combined both qualitative and quantitative research design was adopted for this study. A total of 248 domestic and international beachgoers were surveyed using a purposive sampling technique. The results indicate that the level of environmental awareness has a direct impact on environmental behavior, fundamentally the more environmentally aware beachgoers are, the less likely they will dispose of their waste incorrectly. Drawing on the existing studies as well as discussions from the findings show that the city's service delivery forums should be strengthened through robust stakeholder collaborative efforts. The study recommends quantifying tourist-generated waste to identify the types and sources of waste and minimize waste generation streams. Further studies should be undertaken to explore incentive initiatives for beachgoers who dispose of their waste correctly.

Keywords: Waste management; stakeholders; domestic tourism; pro-environmental behavior; environmental education

Introduction

Tourism is one of the largest and fastest-growing economic sectors across the world. Tourism and its related activities are inextricably linked to the existence of a well-balanced and ecologically diverse natural environment. However, extreme vulnerability of the tourism industry concerning the global COVID-19 pandemic dramatically impacted and halted its growth. Despite the positive global growth trends, this paper examines the linkages and effects of tourists' behavior, especially the irreversible impacts created by poor waste disposal behavior. Khan et al. (2020) note that there are direct and indirect benefits that are associated with tourism, the negative impacts are usually experienced in fragile and sensitive coastal environments where tourism developers and planners fail to adhere to the sustainable tourism principles. Therefore, sensitive environments such as coastal areas are often targets of mass destruction due to their unique physical and ecological attributes (Chetty & Ndlovu, 2018). Hence, its rapid growth can result in severe ecological disturbances due to poor management (Kamran & Omran, 2018).

A recent study conducted by Bob (2016) shows that in developing a tourism destination, it is important to consider the environmental impacts of tourism and their threat to ecological marine habitats. Due to the economic benefits associated with tourism, very often a destination

attracts huge numbers of tourists that exceed its carrying capacity resulting in infrastructural overload. Balsalobre-Lorente et al. (2020) and Schmidt et al. (2021) claim that environmental degradation is driven by the changes in land use; carbon emissions; generation of large amounts of waste both general and sewage; pollution and waste; and the consumption of non-renewable resources. The Durban Central Beachfront (DCB) became popular soon after it was upgraded as part of the FIFA 2010 soccer world cup infrastructure readiness program (Bob & Maharaj, 2015; Rogerson & Rogerson, 2020) and Van Rensburg et al. (2020) observe that the growth in tourism numbers along the DCB has resulted in the increase of anthropological litter. Yet, the primary role of the Durban Solid Waste's (DSW) education and waste minimization programme is to educate and instill correct waste management behavior and practices in the city of eThekwini. The objective of the study was to evaluate the impact of the education and waste minimization programme on the attitudes, perceptions, and behavior of beachgoers towards waste generation and disposal along the DCB. The study sought to assess the level of stakeholders' participation in curbing negative waste disposal practices on the DCB.

Literature review and theoretical framework

Tourism is among the largest and fastest-growing industries globally, contributing to large economic growth across different regions of the world pre-COVID-19. According to Carolin et al. (2015) the growth of tourism accelerated over time, with global travelers increasing from 25 million in 1950 to 806 million in 2015. In the past 65 years, the exponential growth of the industry can be partly attributed to structural changes such as the onset of the third industrial revolution (i.e. energy and information technology sector) among other factors. Hence, the state of global tourism reflects a promising economic outlook in the distant future. For example, Stats-SA (2018:4) breaks down the leading international tourism markets as follows: Europe (62%); North America (15.6%); Asia (9.4%); Australasia (4.4%); Central and South America (4.0%) and lastly the Middle East with (2.4%).

Tourism in South Africa

The advent of democracy opened up the global community to visit the stock of unique natural and cultural products in South Africa (Parker & Costa, 2021). This marked an important time in history to attract tourists seeking to experience the struggle landmarks including apartheid museums and prisons where former struggle icons' memorabilia were kept (Fubah, 2020). For instance, the popular apartheid museum situated in district six in Cape Town, and Robben Island which is located in the western cape (WC) province are often visited by thousands of visitors each year (Soudien, 2019). Presently, the tourism sector in South Africa is one of the largest job creators, employing 686,596 people (Toerien, 2020). In addition, the available data on tourism and migration report shows that a total of 3,039,744 travelers registered at the ports of entry into South Africa. Disaggregated data by place of origin shows that there were 731,074 domestic travelers and 2, 308, 670 foreign travelers respectively (Stats-SA, 2018:4).

Community Based Natural Resource Management (CBNRM) is designed to empower poor communities to set priorities and make decisions for the development of their natural assets to promote conservation and sustain livelihoods at the same time (Makwindi & Ndlovu, 2022). Over the past years, the South African government has supported the growth and development of tourism through the development of appropriate policies and strategies. Tourism was identified as a strategic industry with a potential to positively influence and promote economic growth, create employment opportunities, advance sustainable development, and ultimately deliver national social cohesion (Rogerson & Rogerson, 2019). Cornelissen (2017) argues that the National Development Plan was instituted against the

backdrop of an ongoing national development policy such as the Accelerated and Shared Growth Initiative (ASGISA) which was meant to scale up tourism promotion in South Africa.

Domestic tourism in South Africa and KwaZulu Natal

According to Stats-SA (2017:4) tourism activities in South Africa make a vital contribution to the National Gross Domestic Product. The report specifically notes an increase in the number of day trips from 39, 4 million in 2016 to 48 million in 2017. In the same vein, the tourism industry in South Africa is expected to create 2.1 million jobs by 2028 (Stats-SA 2019:1). Overnight trips in the country increased from 43 million in 2016 to 44, 4 million in 2017. Although there has been a notable increase in day and overnight trips, total expenditure decreased from R87 billion in 2016 to R86 billion in 2017. The most visited provinces by day visitors in South Africa during the period 2016-2017 were Gauteng, Limpopo and Western Cape, and the most popular province attracting overnight visitors was Limpopo. On aggregate, Gauteng was the second most visited province followed by KwaZulu-Natal in 2017, most likely due to improved tourism infrastructure, increased airline routes, new tourist attractions and competitive prices among other factors.

Makhaola and Proches (2017) describe domestic tourism as a cornerstone and foundation of economic development in most cities including eThekwini. Scholars such as Rogerson and Visser (2017); Gumede and Ezeuduji, (2021) and Rogerson and Rogerson (2017) note that there has been a steady growth of international tourism in South Africa particularly in KwaZulu-Natal. The City of eThekwini shares this growth with international and domestic tourist arrivals to a range of its unique coastal tourism offerings. Given coastal and marine tourism's popularity, Biggs et al. (2015:67) believes that "the popularity of a place can have a significant impact on the socio-economic environment by supporting conservation projects through financial gains derived from tourism activities". While it is beyond doubt that tourism is an ideal niche sector through which developing countries can escape poverty and thus attain sustainable development, recent studies have, however, provided empirical evidence pointing to the flip side of the industry (Gumbo, 2022). There are threats that are unique to coastal and marine tourism such as climate change and global warming, national security concerns, and other impacts (Ghulam-Rabbany et al., 2013; Rogerson & Rogerson, 2020).

Coastal and marine tourism in South Africa

Coastal Tourism is a culmination of land and sea activities utilizing the resources located at the land and sea interface such as water, sandy and rocky beaches, scenic views, coastal biodiversity offerings, coastal food, and coastal heritage and culture amongst others (Finkl & Makowski, 2021). Griffiths et al. (2010:1) claim that "South Africa has a coastline that is approximately 3 650km and an economic zone of just over 1 Million km^{2}". Griffiths et al. further explain that "South Africa has a rich marine biodiversity with over 23 000 species cataloged in the regional African Ocean Biogeographic Information System (AfrOBIS)" (p.1). Coastal and Marine Tourism (CMT), forms part of the ocean economy and can make an important contribution to employment creation and skills transfer amongst others. The United Nations Conference on Trade and Development (UNCTD) in 2014, emphasized the importance of CMT in accelerating the growth of the ocean economy. Specifically, promising CMT sectors include subsistence fishing, aquaculture, marine energy generation, and marine transport amongst others (Van Wyk, 2015).

Marine pollution waste management

Over the past five decades, plastics constitute the commonest non-soluble pollutant affecting oceans (Eruz & Ozseker, 2017). While recent modeling studies show that the flux of

contaminants associated with micro-plastics to remote areas is small compared with that from oceanic and especially long-distance atmospheric transport processes, the problem is that plastics with their accumulated contaminant load are directly ingestible by organisms (Isensee & Valdes, 2015). As a result, an excess of 150 million tons of plastic are deposited into world seas and oceans which are heavily polluted. Sources of marine plastic pollution include ships both commercial and recreational, fishing and cargo vessels, and fishing operations (fishing gear and general waste), whereas the land-based sources include commercial and recreational waste, littering and illegal dumping, informal settlements, improper waste disposal behavior and non-collection of waste by local authorities (Isensee & Valdes, 2015).

Cumulatively, human behavior both intentional and unintentional results in the release of plastic into marine environments through illegal dumping, littering, spillages, and other marine recreational activities, which contribute significantly to pollution levels in marine and coastal environments. Due to its composition, plastic does not disintegrate rapidly, instead it fragments into microscopic particles that float in the oceans and marine ecosystems, potentially creating false-feeding for marine species (Mannaart et al., 2019). Thus, the problem of plastic pollution on the planet's oceans and seas has subsequently stimulated scientific attention that has given rise to an interest in formalisation of an international commitment to combating pollution (Borrelle et al., 2017).

Common property resource theory

The study was anchored by the common property resource theory which focuses unlimited usage and access to public property. The Common Property Resource (CPR) theory explains the ideology with regards to property rights, and the resources that are found within the common property range (Cornée et al., 2020). Common property theorists are therefore concerned with the extreme inability to supervise people in the common property range due to its nature (as a tourist destination) that eventually leads to over-exploitation and depletion of the resource, as the demand and popularity rise, this will lead to what is often referred to as the tragedy of the commons in common property (Kok, 2019). This is when a natural resource is physically and lawfully available to more than one resource user, where the outcome is said to be a free-for-all, with clients competing against one another for a more prominent share of the asset to the disadvantage of the asset and the broader society (Karpoff, 2021).

A possible solution to the CPR is to control access to the common property range and its resources for its sustenance, which can be explained broadly by scholars (Ostrom, 1990; Cornée et al., 2020; Adhikari, 2021) as a collective action, which can result in three outcomes namely: free riders; co-operation; and rebellion. In the context of this study, Environmental Education (EE) was applied as a catalyst to inform free riders and rebels from a sustainable tourism context. This was done with the understanding that pollution can critically impair the resilience of coastlines from an ecological point of view, as well as compromise the authenticity of the tourist experience. Thus, the use of EE can assist tourists to adopt a pro-environmental behavior within a destination, especially those destination areas that are ecologically sensitive (Cornée et al., 2020; Adhikari, 2021). CPR was deployed in the study to understand the behavior of individuals in a coastal environment and their role in protecting the environment in settings where reputation is important and where individuals should share the norm of keeping agreements. "CPR institutions that use this principle are better able to tailor their rules to local circumstances because the individuals who directly interact with one another and with the physical world can modify the rules over time to better fit them to the specific characteristics of their setting" (Ostrom, 1990:93). As such the study assumes that the reputation and shared norms are insufficient by themselves to produce stable cooperative behavior over the long run. If they were sufficient, appropriators could have avoided investing

resources in monitoring and sanctioning activities (Ostrom, 1990). Therefore, it is apparent for appropriators to invest in monitoring and sanctioning activities in the long run. CPR appropriators should create internal enforcement rules to deter those who are tempted to break the rules. Given that individuals monitor the use of the resource, then the relative costs and benefits must have a different configuration, either the costs of monitoring are lower or the benefits to an individual are higher, or both. Ostrom further explains that it is important to pay attention to the cost of monitoring and enforcement as well as the benefits that accrue to those who monitor and enforce rules. If private benefits are allocated to those who monitor, individuals who find a rule infractor gain status and prestige for being good protectors of the commons, and the infractor loses status and prestige (Ostrom, 1990). In monitoring the behavior of others the appropriator-monitor learns more about the level of quasi-voluntary compliance in the CPR.

Methodology

The research was guided by a mixed-method approach where both qualitative and quantitative research methods were used. Using a mixed method approach was useful in extracting numerical data and personal experiences of respondents (Creswell & Creswell, 2017). The quantitative data collection approach consisted of the researcher administered questionnaires which were distributed to beachgoers along the DCB. This was followed by a qualitative data collection approach that included interviewing key informants based on unstructured questions. This study employed both non-probability and probability sampling techniques. The sample was calculated using the Rao soft sample size calculator on google. A margin of error of 5% was used with a confidence level of 95 percent. The sample size was 348 participants, with a return rate of 248 survey questionnaires. Convenience sampling was used in collecting qualitative data where in-depth interviews were conducted with key informants along the DCB. Key informant interviews were conducted until a saturation level was reached after interviewing 24 people.

The questionnaires were designed to collect the required data to address the research questions. The survey questionnaires largely consisted of closed-ended questionnaires, since participants in the tourism and leisure industry find it difficult to take time to complete surveys. Part A of the questionnaire covered demographic information, Part B focused on the behavior of tourists towards waste disposal and Part C covered the perceptions of tourists regarding waste management in and around the beaches. The open-ended questions were grouped into categories ranging from the most frequent open-ended answers down to the less popular open-ended answers. The researchers wanted to assess the stakeholders' perceptions and understanding of the waste management and disposal behavior of beachgoers. The questions focused on perceptions regarding stakeholders' involvement in environmental sustainability along the DCB and the policies and strategies that govern tourism activities on the DCB. The summary findings were presented using tables and narratives from the respondents. Inferential statistics were used to test the relationship and correlation in the data using simple regression analysis.

Results and discussion

Table 1 shows the demographic characteristics of beachgoers sampled in the study. A large percentage of the overall participants (37.2%) were young, with ages ranging from 25 to 34 years. Disaggregated by gender, women compared to men were slightly over-represented (38.7%) versus (35.8%), i.e. among participants of the same age. It is important to note that the demographic information (age and gender) of respondents was generally not the total profile of beachgoers at the DCB. The age-sex profile of tourists/beachgoers corroborates earlier

studies in South Africa in which the majority of adventure tourists were younger, and more susceptible to pleasure-seeking behavior (Giddy, 2018).

Table 1: Sample characteristics

Variable	Overall	Women	Men
Age			
18-24	56 (24.2%)	28 (25.2%)	28 (23.3%)
25-34	86 (37.2%)	43 (38.7%)	43 (35.8%)
35-49	51 (22.1%)	22 (19.8%)	29 (24.2%)
50-59	29 (12.6%)	12 (10.8%)	17 (14.2%)
60+	9 (3.9%)	6 (5.4%)	3 (2.5%)
Race			
African	39 (35.1%)	55 (45.8%)	94 (40.7%)
Asian	24 (21.6%)	24 (20.0%)	48 (20.8%)
Coloured	16 (14.4%)	14 (11.8%)	30 (13.0%)
White	31 (27.9%)	26 (21.7%)	57 (24.7%)
Other	1 (0.9%)	1 (0.8%)	2 (0.9%)
Marital status			
Married	44 (39.6%)	45 (37.5%)	89 (38.6%)
Single	42 (37.8%)	62 (51.7%)	104 (45.0%)
Divorced	16 (14.4%)	9 (7.5%)	25 (10.8%)
Widowed	8 (7.2%)	4 (3.3%)	12 (5.2%)
Other	1 (0.9%)	0 (0.0%)	1 (0.43%)
Origin			
South African	56 (50.5%)	62 (51.8%)	118 (51.1%)
Regional (SADC)	17 (15.3%)	20 (16.7%)	37 (16.0%)
Continental (Rest of Africa beyond SADC)	11 (9.9%)	21 (17.5%)	32 (13.8%)
International	27 (24.3%)	17 (14.2%)	44 (19.1%)
Primary recreational activities at DCB			
-Relaxation	221 (75.6%)	74 (71.7%)	91 (79.1%)
-Swimming	221 (72.9%)	73 (68.9%)	88 (76.5%)
-Research purposes	221 (23.5%)	24 (22.6%)	28 (24.4%)
-Fitness	221 (32.1%)	30 (28.3%)	41 (35.7%)
-Restaurant	220 (53.2%)	53 (50.5%)	64 (55.7%)
-Vacation	221 (41.6%)	41 (38.7%)	51 (44.4%)
-Snorkelling	221 (13.1%)	16 (15.1%)	13 (11.3%)
-Fishing	221 (24.0%)	22 (20.8%)	31 (26.9%)
-Surfing	221 (14.9%)	11 (10.4%)	22 (19.1%)
-Cycling	221 (33.0%)	28 (26.4%)	45 (39.1%)
-Sightseeing	126 (48.4%)	26 (41.2%)	35 (55.6%)
-Diving	221 (14.0%)	9 (8.5%)	22 (19.1%)
-Vising with friends and relatives (VFR)	126 (40.8%)	29 (46.8%)	22 (34.9%)

Source: Own calculations from the survey
Notes DCB (Durban Central Beach) SADC (South African Development Community) VFR (Visiting with Friends and Relatives)

Data were presented by race, where 35.1% were African, 27.9% were White, 21.6% Asian, 14.4% Coloured, and 0.9% Other fairly represented the proportionality of these races in the open general population in South Africa (Stats-SA, 2019). African women 45.8% and men 40.7% accounted for the largest group when data was split by gender. Thus, a blend of all the major races in South Africa was expected since the survey was carried out during the peak/holiday season of tourism in Durban, particularly on the beachfront, which is a net receiver of inbound tourists. Most participants were either married or unmarried: 39.6% and 37.8%, respectively. This finding could be attributed to the DCB being one of the primary family destinations and the most accessible public spaces for domestic tourists. This is supported by Willemse and Globle (2018); and Brett (2019), who noted that over (60%) of the population in KwaZulu-Natal (KZN) reside close to KZN's coastline, thereby having a major influence on tourists' Durban Central Beach selection. According to beachgoers' data by origin,

the majority of the sample was South African, i.e. consisting of 50.5%, followed by 24.3% of international, 15.3% of SADC region countries, and 9.9% from the rest of Africa. Previous studies have highlighted the attractiveness of Durban's coastal tourism superstructure beyond KZN Province.

Table 2: Responses for attitudes and perceptions about responsible tourism practices

Statement	**Response**						
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean	95% Confidence Intervals
Tourism contributes to increased pollution of the soil, air, and water.	126(57.8%)	28(12.8%)	34(15.6%)	18(8.3%)	12(5.5%)	1.9	1.7 – 2.08
An in increase tourist inflow has generated large amounts of waste.	117(54.4%)	32(14.9%)	35(16.3%)	25(11.6%)	6(2.8%)	1.9	1.8 – 2.11
Tourism burdens the supply of local municipal services.	102(48.8%)	26(12.4%)	52(24.9%)	22(10.5%)	7(3.4%)	2.1	1.9 – 2.2
Tourism increases littering along the beachfront.	107(51.4%)	27(13.0%)	48(23.1%)	19(9.1%)	7(3.4%)	2.0	1.8 – 2.2
Tourists often litter anywhere without any regard for the environment.	108(48.8%)	20(9.1%)	57(25.8%)	26(11.8%)	10(4.5%)	2.2	2.0 – 2.3
Tourists have little knowledge of the impact of litter on the environment.	82(37.6%)	15(6.9%)	56(25.7%)	38(17.4%)	27(12.4%)	2.6	2.4 – 2.8
Individual tourist behaviour does not indicate a willingness to minimize environmental risks.	98(45.6%)	31(14.4%)	54(25.1%)	23(10.7%)	9(4.2%)	1.7	1.6 – 1.8
Tourists can behave responsibly by taking the initiative to protect the environment.	94(42.0%)	55(24.6%)	41(18.3%)	20(8.9%)	14(6.3%)	2.1	2.0 – 2.3
Tourists engage in environmentally friendly practices such as purchasing responsible tourism packages.	23(23.7%)	2(2.1%)	33(34.0%)	17(17.5%)	22(22.7%)	3.2	2.7 – 3.4
Tourists use environmentally friendly transport or purchase locally produced goods.	35(17.0%)	51(24.8%)	46(22.3%)	35(17.0%)	39(18.9%)	3.0	2.8 – 3.1
Despite the display of pro-environmental attitudes, only a few tourists take action.	101(47.9%)	49(23.2%)	37(17.5%)	5(7.1%)	9(4.3%)	2.0	1.8 – 2.1

Source: Own calculations from the survey

To examine the attitudes and perceptions of respondents about responsible tourism practices of beachgoers, a list of possible environmental problems was provided on a Likert scale as shown in Table 2 above. The majority of the participants, (i.e. strongly agree) reported that tourism; "contributes to increased pollution of the soil, air, and water (57.8%)"; "generated large amounts of waste (54%)", "increases littering along the beachfront (51%)." The argument is based on the fact that the government's failure to preserve CPRs together with their excessive

exploitation for developmental activities has led to serious degradation of the environment with ecological repercussions (Adhikari, 2021). Similarly, earlier studies by Sunlu (2003) highlighted that mass tourism is overly undesirable as activities may lead to the depletion or degradation of the natural resource. More recent studies reflect this strong global movement whose main approach to global warming and climate change awareness is to establish partnerships with tourism stakeholders, instead of treating them as adversaries. In the same vein, Bob (2016) suggests that tourists are increasingly becoming more environmentally conscious when interacting with tourism intermediaries. The data in Table 2 further reveal that less than 50% agreed that "individual tourist behavior does not indicate a willingness to minimize environmental risks" (45.6%); "tourists can behave responsibly by taking the initiative to protect the environment" (42%); and "tourists engage in environmentally friendly practices such as purchasing responsible tourism packages" (23.7%); reflecting consistently low confidence in tourists' environmental behavior.

Tourism-related mitigating and adaptation strategies include nature-based tourism which is conducted by consumers and tourists who are more environmentally aware by actively adopting sustainable attitudes and behaviors while at home or traveling, i.e. green or ecotourism (Saarinen & Tervo, 2006). Respondents agreed that tourists use environmentally friendly transport or purchase locally produced goods (24.8%). Notwithstanding this, Juvan & Dolnicar (2014) argue that there is a behavior-attitude gap among tourists when at home and traveling, such that they may engage in activities completely different at either of the tourism axis. Despite the display of pro-environmental attitudes, only a few tourists take action (47.9%). This study could not examine tourist environmental behavior extensively, although past evidence suggests that environmental attitudes and travel behavior are largely modeled by individual beliefs and value systems as well as the level of appreciation for nature (Schultz & Zelezny, 1999; Passafaro, 2020).

Perceptions and visitor impressions of Durban Central Beach

Table 3 below shows a multiple logistic regression for predictors of visitor impression of Durban Central Beach

Table 3: Multiple logistic regression for predictors of visitor impression of Durban Central Beach

	Category	**Odds Ratio**	**95% CI Confidence Intervals**	**Adjusted Odds Ratio**	**95% CI Confidence Intervals**
Common litter on DCB:	Plastic	0.75	0.37 – 1.52	1.41	0.26 – 7.71
	Cupboard	0.29*	0.17 – 0.52	1.09	0.39 – 3.10
	Cans	0.57*	0.33 – 0.98	0.78	0.29 – 2.10
	Glass	0.40*	0.23 – 0.72	0.53	0.18 – 1.58
	Cigarettes	0.27*	0.15 – 0.49	1.18	0.40 – 3.42
Visibility of DSW on DCB:[Do not know]	Highly visible	0.88	0.32 – 2.41	0.67	0.16 – 2.86
	Fairly visible	0.48	0.22 – 1.04	0.57	0.19 – 1.70
	Not visible	2.58*	1.10 – 6.04	0.57	0.14 – 2.22
Waste facilities along DCB:[Poor]	Fair	1.06	0.42 – 3.30	1.15	0.33 – 4.05
	Good	16.5*	6.10 – 55.09	14.19*	3.60 – 55.82
	Excellent	23.0*	6.94 – 211.69	23.48*	2.68 – 210.21
Waste disposal challenges [No]	Bins	0.63	0.19 – 2.06	0.20	0.03 – 1.40
Littering [No]	Smell pollution	0.79	0.32 – 1.95	0.83	10.15 – 4.60

*0<05[Reference category]
Source: Own calculations from the Survey
Notes: DCB (Durban Central Beach), DSW (Durban Solid Waste)

The table provides more solid evidence not only for demonstrating the potential of accelerated beach cleaning efforts in shaping user satisfaction, but also its successes during peak seasons. The impression of the overall DCB was independently associated with reporting no visibility of DSW on DCB compared to those who did not know the level of visibility of DSW on DCB. However, the risk of being impressed was lowered by 71%, 43%, 60%, and 73% among those respondents sighting cupboards a OR=0.29 (95% CI 0.17 – 0.52), cans aOR=0.57 (95% CI 0.33 – 0.98), glass aOR=0.40 (95% CI 0.23 – 0.72) and cigarettes aOR 0.27 (95% CI 0.15 – 0.49), respectively along the DCB. These results were not significant in the final model, i.e. aOR. The adjusted odds ratio for being impressed by the DCB were 14 times and 23 times higher than aOR=14.19 (95% CI 3.60 – 55.82) and aOR=23.86 CI 22.67-213.52 for respondents rating 'good' and 'excellent' facilities along the DCB (i.e. controlling for level of visibility of DSW on DCB, the state of waste disposal on DCB, among other factors). Taken together, these results echo the need for a seamless transfer of natural resource governance knowledge to all stakeholders and to properly align the necessary policies in order to integrate all of them into sustainable tourism (Mannaart et al., 2019). These results underscore the linear linkage between the visibility of DSW beach cleaning infrastructure i.e., including personnel and overall user satisfaction.

Rosenberg (2020) contends that people are an essential part of the environment, therefore, experiential interactions and active participation will ensure that people develop a better sense of care and understanding of the environment (Healy, 1994). However, there is no fixed format or framework associated with EE methods or techniques. Tourism education fosters inequality and exclusion, because of intersecting, social identities and stereotypes are understood and explained from a medical, cultural/religious, and charity perspective (Makuyana, & du Plessis, 2022). Delivering EE is primarily determined by the task at hand, where each geographical location or community will have to have its own unique EE approach and method. The above discussion underscores the importance of responsible tourism and is therefore closely related to pro-environmental behavior. Stern (2000:408) talks about "behavior that is undertaken to change the environment" noting "the extent to which it changes the availability of materials or energy from the environment or alters the structure and dynamics of ecosystems or the biosphere." A prominent strategy amongst these was the introduction of waste minimization through recycling at the beachfront whereby recycling stations were set up in partnership with different stakeholders such as the private and informal sectors (Chetty & Ndlovu, 2018). The implication is that the establishment of recycling stations at the beach can allow users to sort and dispose waste such as cans, plastics, and beer bottles for recycling, or reuse them to make ornaments. Furthermore, one of the interviewees added that visible policing and increased user education during holiday periods are essential in creating environmental awareness and the use of big signage and information balloons, among other interpretation and awareness strategies cannot be ignored.
One of the interviewees remarked:

> And so, I think that in the council there should be much more supervision because there are officials responsible for waste management. They should play a bigger role; we should not have a situation where beachgoers leave the whole beachfront with so much litter. What it shows is that enforcement is bad.…. uum, I think that they should have more education during the holiday period but if we have visible policing, then we have fewer people employed for picking up the rubbish afterward.

The results are similar to Wondirad et al.'s (2020) findings on the importance of stakeholder collaboration in sustainable tourism. The majority of the interviewees considered stakeholder partnership to be a key tool for achieving effective environmental sustainability along the DCB. The major principle behind this orientation is about leveraging on the competencies of different interested actors in delivering a public good. Due to "lack of effective monitoring and early detection mechanism, individuals are presented with numerous opportunities to breach property rights, nevertheless, the use of social norms can prevent any breach due to the common understanding of the individuals" (Ostrom, 1990:6). Support should be given to the beach and security cluster forums throughout the year to enforce and ensure that the DCB is clean and safe. In addition, there is a standing committee that focuses on the festive season planning comprising both governmental and non-governmental organizations, which co-manage, co-implement, and monitor sustainable programs for the DCB and other coastal areas in the surroundings of the City. Other municipal departments, such as the Area Based Management (ABM) and the Urban Improvement Precinct (UIP) focus on issues related to the ambiance of the destination, such as minimizing the accumulation of litter, and addressing service delivery backlogs such as street lights and crime prevention. In order to address the policy gap, one interviewee noted that there should be literature in different languages available to tourists disseminating information about waste management. For instance, the interviewee said:

> You know that policies in tourism are more about attracting people, they are about showing people where they can go and eat, where they can go and swim, and all that….. I do not think there is much information about waste generation and disposal because when people ask me about where they can put recyclable materials, there's nothing of that sort and there is no information going out to tourists. And in my opinion, this is that we should put in place in different languages such as English and Zulu or even Afrikaans. And that will be a good thing because people will say ….oohh okay, so this is what we are expected to do.

For instance, Chetty and Ndlovu (2018) emphasized the importance of extending operating times at the beachfront for environmental education to foster environmentally friendly practices. Notably, this would inevitably require hiring more staff to facilitate environmental education awareness campaigns. The mobilization of stakeholders is a distinct feature of the active learning framework, which reiterates the centrality of implementing the principles learned. The evidence above demonstrates a multi-stakeholder approach to practicing pro-environmental behaviors after awareness. Specifically, one of the interviewees said:

> Ongoing talks to beachgoers, not only about the ocean, but about marine life in general, and waste in particular is necessary. The discussion should cover different topics and experts in different areas should be brought in to make presentations on selected topics. And probably we could use some of the top surfers, some of the guys who are there, you know, we have some profound people who are famous…. whom beachgoers would be willing to come and listen to, so we need to give them a chance.

The findings show that poor stakeholder collaborations can increase environmental degradation which has a potential to affect the local livelihoods. As shown in previous studies (Moodley, 2013; Chetty & Ndlovu, 2018) continued environmental education activities, campaigns, and programs at the Durban Central Beachfront and beyond are important in

changing the waste disposal behavior of beachgoers. Overall, this underscores the importance of engaging all stakeholders in order to achieve environmental sustainability.

Implications and conclusion

The results have shown that most beachgoers espouse a nonchalant behavior about correctly disposing of litter on the DCB. The primary motive for littering was found to be laziness and a general lack of concern for the environment. Given the need for seamless cooperation and partnerships to achieve global resolutions enshrined in the SDGs, the DCB is a microcosm in which local efforts such as re-purposing city enforcement to actively 'monitor' tourist behavior can be achieved. Lack of coordination and cooperation among stakeholders responsible for DCB cleaning has resulted in service delivery backlogs involving non-collection of litter, especially during tourism peak season (the time set for the current study). Additionally, the results show that there is disjointed communication between relevant stakeholders and the municipality in planning activities and events for environmental protection and waste management. A large proportion of the sample reported that tourism and associated activities negatively impact on the environment, with poor waste management being highly cited, and an increase in the amount of litter found along the Durban Central Beachfront, among others. The results showed that the majority of beachgoers espouse a nonchalant behavior about correctly disposing of litter on the DCB. The anthropological litter that is very common along the Durban Central Beachfront, include shopping packages, sweet wrappings, and empty beverage cans. Other major reasons cited include laziness and sheer lack of awareness of the waste's impact on the environment.

To address littering on the beach, stakeholders need to maintain a mutually beneficial relationship that promotes and fosters cleanliness on the Durban Central Beachfront. Most of the interviewees considered stakeholder partnership to be a necessary tool for achieving effective environmental sustainability along the DCB. The major principle behind this orientation is leveraging on competencies of different interested actors in delivering a public good. Although the beach and security cluster forums are currently conducted throughout the year to enforce and guarantee the cleanliness and safety along DCB, different stakeholders should be involved in the management of the commons by providing monitoring systems and adaptation of rules to local conditions to ensure efficient and inclusive governability of the common-pool resources. An important finding of this study is the critical role played by environmental education in promoting pro-environmental behaviors and practices.

Several factors were significantly associated with environmental education, such as willingness to pay for beach entrance fees, spending more time if DCB was cleaner, and willingness to volunteer for beach clean-ups. Currently, the knowledge about environmental education is not uniformly disseminated among relevant stakeholders, often poorly designed approaches among tourists and residents compared to other players with professional interests such as private and public institutions. Moreover, this study has shed more light on the timing of public environmental awareness campaigns in order to make the most possible impact. The optimization of environmental education for improved environmental education outcomes is an important research priority for future research, especially packaging a suitable combination of campaigns that can impact not only on tourists but other private and public players. The study concludes that to strengthen shared competence and participation in waste management, there is a need for collaboration among different structures of the DCB in planning, designing, monitoring and evaluation of tourism impacts.

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