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# Measuring situational factors in theory of attribution to consumer attitudes towards unlawful disposal of solid waste products in Ghana with special reference to Sunyani: a mediation and moderation analysis

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## Abstract

Consumer attitudes towards the unlawful disposal of solid waste products in Ghana, particularly Sunyani, continue to be a challenge. The study is based on the attribution theory. A sample size of seven hundred and twenty-seven (727) was selected through convenience sampling. Data collected were analysed using the covariance-based structural equation modelling (CB-SEM) technique with AMOS v24. The results revealed that three factors of task difficulty, luck and feelings under the situational factors were considered. Based on these three factors, two variables were found to be significantly related to the unlawful disposal of solid waste products, namely luck and feelings. The study also assessed media channel type as a mediator in the relationship between situational factors and unlawful disposal of solid waste products. Furthermore, the study evaluated consumer identity as a moderator of the interaction effect in the relationship between feelings and unlawful disposal of solid waste products. The media channel type as a mediator and consumer identity as a moderator were significant towards the unlawful disposal of solid waste products. This paper is pioneering, in that it generates the effects of using the theory of attribution and some intervening variables conceptualized in the context of solid waste product disposal towards unlawful disposal of solid waste products in Sunyani at the micro-level. This area is relevant to scholars, marketing-oriented firms and brand practitioners, who will be aided to lead the advocacy for the consumer solid waste product disposals starting from the point of sales in consumer buying behaviour.

**Keywords** Theory of attribution, Situational factors, Unlawful disposal of solid waste products, Ghana

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## Introduction

The way consumers unlawfully dispose of solid waste products (UDSWP) is a complex issue confronting humanity. Consumer solid waste product disposal context is an urban and rural problem because everyone consumes products [30, 89]. Thus, consumer consumption resulted from a throw-away culture that created high volumes of easy-to-use disposable products [37, 89]. Solid waste product disposal starts when consumers scan for buying, using, evaluating, and disposing of products that satisfy their needs [121]. Consumption culture is highly considered a habit [113]. The daily unlawful disposal of solid waste products in cities and towns in Ghana is alarming. The individual consumer produces about 0.47 kg disposal of solid waste products everyday with 1.7 billion tonnes yearly [1, 15, 22, 66, 119]. The states spend between 20 and 50 per cent of their budget on disposal control or management, and still, somehow, 20 per cent of the disposed of solid waste products is managed [93, 119]. For instance, in the last few years, consumers, commercial, industrial, municipal services, building and construction, and agriculture in Ghana have produced about 13,000 tonnes of disposal solid waste products daily [22]. This is compounded by the changing consumer consumption patterns and changing structure of the Ghanaian market. This has put severe stress on city authorities across the country Ghana [22, 68]. Noticeably, amongst Ghana's critical centres/regions, it has been identified that solid waste product disposal is mainly related to population growth and urbanization and other activities in those cities that facilitate higher product disposal [1, 66, 80].

Similarly, a study projected that by 2030, daily consumer solid waste product disposal would be about 44,000 tonnes. Scholars have classified this development as worrying and will likely continue to overburden existing management systems [9]. However, the disposal of solid waste products from the commercial dimension has been too complex to quantify per capita [81]. Aside from this, consumer consumption of products and services from household production and purchase from farmers' market centres, modern malls and supermarkets all together contribute to excessive solid waste products [119]. For instance, the disposal of plastic products across the major centres in Ghana over the years has been increasing; for example, 1979 recorded 1.4 per cent, 4 per cent in 1993, 1996/1997 rose to 5 per cent, the year 1999/2000 increased to 8 per cent [102], and in the year 2010, 13 per cent [1].

According to the Ghana Tourist Board, in 2007, Sunyani, once considered the cleanest city in Ghana, was submerged by consumers' attitudes towards the unlawful disposal of solid waste products (trash) [5, 11, 66, 92].

Generally, the individual consumer's solid waste product disposal per day in Sunyani stands at 0.49 kg of 66 tonnes daily [4, 8]. This means that over 78.7% of Sunyani households disposed solid waste products anywhere and 15% in a nearby gutter [6]. Notwithstanding, there has not been proper management of solid waste product disposal by consumers [4, 66]. Consumer activities are projected to threaten 60% of the Sunyani water bodies [5, 11, 59]. For instance, in 2010, the city produced 12,010 tonnes of disposal solid waste products, but only 4,805 tonnes were collected. As is the case in many Ghanaian towns and cities, the consumers in Sunyani lack the attitudinal change and, more importantly, the ability and capacity to exhibit a responsible attitude. Hence, recent research trends suggest that the unlawful disposal of solid waste products features extensively in towns and cities in Ghana [14, 22, 66, 119]. Such attitudes do not lead to realizing the goal of healthy citizens and a safe environment. It critically affects the consumer's well-being, businesses, society, and the environment, especially in developing countries like Ghana.

Scholars have identified measures to improve the consumer experience of solid waste product disposal from a management perspective, using a theoretical application to test consumer social environmental behaviour. This includes the theory of planned behaviour [119], neoclassical consumer theory [9], value-belief-norm theory [37], social cognitive theory [69], new environmental paradigm [88], institutional theory perspective [44], theory of interpersonal behaviour [106], rational choice theory [71] and theory of environmentally responsible behaviour [41]. Due to the complexities of consumer social life behaviour, these commonly used theories when conceptualized in solid waste product disposal cannot explain the inherent aspect of consumer social psychology behaviour. These studies [41, 69, 88, 106, 107, 119] also proposed that other scholars must research illegal consumer phenomena of solid waste product disposals.

Researchers have studied the disposable management of solid waste products since 1910 [12, 62]. However, research into the persistent unlawful way consumers dispose solid waste products from a general micro-perspective is lacking [37, 119]. Also, there has been a lack of reliable social psychological marketing data on solid waste product disposable which can provide information to the authorities for decision-making [80, 116]. Given this, the current research builds on [41, 69, 70, 88, 106, 107, 119] by addressing a socio-psychological behaviour approach from the negative attitudes of consumer personal experiences using situational factors in attribution theory in solid waste products disposal. Furthermore, this study seeks to identify solutions that lead to improving societies behaviour and solving environmental

problems resulting from unlawful disposal of solid waste. It is an opportunity to tailor a micro-level policy decision by the consumer consumption disposal segment. This study also is expected to bring some level of societal and environmental sanity through policy-making contributions to tackling the deep-rooted canker of unlawful disposals. This is based on generating a validated conceptual model and empirical findings relevant to government, marketing practitioners and scholars. This can serve as regulations for marketing practitioners, brand and product designers, channel members, wholesalers, and retailing and consumer activities in Ghana. The position of attribution theory in the study expands the theoretical knowledge-based contributions in solid waste product disposals. This reduces the risk of losing life and properties and improves the green environment. Hence, the study seeks to address the following research questions:

*RQ1: Has there been any relationship between consumer's situational factors (i.e. task difficulty, luck, feeling) and unlawful disposal of solid waste products?*

*RQ2: How can media channel type (MCT) mediate in the relationship between consumers' situational factors and unlawful disposal of solid waste products?*

*RQ3: How can consumer identity (CITT) moderate the interaction between feeling and unlawful disposal of solid waste products?*

This paper is divided into sections, and the first section, the introduction, sets the stage for the idea of solid waste products disposals. A theoretical review of the attribution theory, unlawful disposal of solid waste products, situational factors, intervening variables, and the development of the conceptual model and hypotheses are all discussed in the second half. The methods, including data sources, the measurement of variables and estimating approaches, are covered in the third section. The results are presented in the fourth Sect. 6, and the fifth section also discusses the study's findings. The study's conclusions, implications, limitations and future research are presented in section six.

## Literature review and hypothesis formulation

### Theory of attribution

From the social psychology literature, attribution theory has gained prominence and provides unique ways to understand individuals' behaviour. The attribution theory is used as the underpinning theory for this study. Attribution theory was developed to explain the cause of a person's behaviour [61, 124]. Concerning the theory, this study is the first to link the attribution theory towards consumers' solid waste product disposable that relates to

unlawful disposal of solid waste products. Such a theory could help highlight consumers' negative attitudes in determining their solid waste product disposal practices [78].

The theory of attribution can be found in social psychology, and its applicability in consumer behaviour research was first introduced by Heider in 1958. Attribution theory has been formed from a collection of six different dimensions of traditions that constitute today's basis—attribution theory. These include: (i) Heider's theory of naïve psychology, (ii) Jones and Davis' correspondent inference theory, (iii) Kelley's work on co-variation, (iv) Bem's work on self-perception, (v) Schachter's theory of emotional lability, and (vi) Weiner's attributional theory. The attribution theory has been defined as how individuals envision the success or failure of their behaviour. In addition, attribution theory constitutes a process by which an individual interprets events caused by a particular part of an environment (i.e. attribution theory offers insights into consumers' causal behaviour). Again, attribution theory describes the cognitive processes through which causal assessments are made. Aside from this, attribution theory indicates three underlying principles of the behaviour of individuals, which are: (1) the three-stage process of attribution (situation), which involves; (a) observing the individual behaviour, (b) determining whether individual behaviour is deliberate, and (c) determine whether the individual was forced to act the way they behave; (2) attribution of achievement (motivation); and (3) causal dimensions of behaviour (internal and external locus of control). Together, these underlying principles enhanced the attribution theory, which demonstrates the degree of a person's behaviour [60, 64, 85, 91, 116, 120, 125].

Attribution theory is more suitable for the processes that make everyday circumstances understandable, predictable, and controllable. The theory can be used to predict social behaviour in a variety of situations. The theory is notable for providing an approach to the relationship between specific ideologies, such as product failure and specific consumer complaining behaviour. Thus, attribution theory addresses everyday phenomena, but the theory is not suitable for phenomena of questionable ecological validity that might only be in rare laboratory situations or in selected clinical groups. In this case, attribution research involves the systematic evaluation of antecedents. Interestingly, the original research using attribution theory was carried out by social psychologists, but the concepts of the theory have found application in consumer behaviour. Most importantly, the insights of attribution theory research have been applied to various domains, including consumer behaviour [60, 86, 116, 120].

The theory of attribution has been widely applied in many other contexts, such as addressing educational problems and social learning conception [124]. Also, the theory has been used to examine factors related to information system success [112], whether negative experiences lead to dissatisfaction [61], tourist characteristics and severity of the negative tourist experience [60] and a two-tier triadic business model consisting of the online travel agent, the offline travel supplier, tourist and tour guides [40]. Thus, the causes of attitudes are defined as an individual's attributions. Given this, Heider, the founder of attribution, states that individuals perceived as action centres can do something in the environment. Hence, individuals have abilities, wishes, and sentiments; they can act purposefully and can perceive or watch. As [116] put it, attribution theory has been applied in the learning environment to establish a desire to develop causes of behaviour. Individuals are motivated to engage in learning due to a personal need to develop new attributions. Conversely, attribution theory has limited data that can be connected to any form of solid waste product disposal study.

This study used attribution theory to measure the relationships between situational factors to consumer attitudes towards unlawful disposal of solid waste products and media channel type and consumer identity as intervening variables [116]. Attribution theory has been a useful framework since the 1940s. It is appropriate for the context of this study, as individuals' approach to solid waste product disposal after consumption is a socio-psychological behaviour in consumer behaviour, learned within the environment. Consumers engage in buying, use the purchased product for personal or household purpose and throw it away [108]. The attribution theory based on situational factors, the media channel type as a mediator and consumer identity as a moderator is further discussed in the subsequent sections.

#### **Unlawful disposal of solid waste products defined**

The study defined unlawful disposal of solid waste as a large deposit of any solid waste product, typically items measuring over 27 cubic feet in areas like the woods, alleys, waterways, and vacant lots [18, 90]. It also refers to the disposal of solid waste products into the water bodies without a license, permit or approval from the relevant authority. Unlawful disposal includes burying in areas not legally designated as toxic waste dump sites, such as cultivable areas, roads and, building and construction yards [13, 117]. Furthermore, unlawful disposal of solid waste is the act of disposing of solid waste products at a location that is not earmarked as a solid waste product disposal facility and is typically done for economic gain. Unlawful disposal poses significant social, environmental, and

economic impacts state-wide [10, 26]. Again, unlawful disposal refers to solid waste product disposal on sites with no license instead of using an authorized disposal place and being disposed of properly at a landfill site. The unlawful disposal of solid waste products affects soil quality and watercourse. When unlawful disposal is unchecked, it will damage the environment, mainly if it consists of used drugs and other toxic materials [73, 122], leading to the loss of cleanliness [129]. Again, major environmental problems, including soil, air, water, and aesthetic pollution, have been attributed to a lack of solid waste product management and unlawful disposal, causing several human health disorders [2, 22, 45, 93].

#### **Consumer's situational factors**

##### **Consumer's situational factors and unlawful disposal of solid waste products**

The situational factors are investigated in solid waste product disposal because they can cause consumers to engage in unlawful disposal of solid waste products. Accordingly, [99], the situational concept refers to the independent and interdependent dimensions of the self, which depict the individual attitude level and differences amongst persons who have been inevitably affected by the geographical environment. The cause of individual attitude in a process can be engendered by any situation [77]. A similar study [95] on situational factors also established that it influences one's actions and reactions.

The study investigates how three (3) different facets of situational factors proposed by Weiner in 1986 are conceptualized in solid waste product disposal, which can lead to the unlawful disposal of solid waste products: (i) task difficulty, (ii) luck, and (iii) feelings [116]. Further, the present study measure and tests how a mediator variable (media channel type) may relate between the situational dimensions and unlawful disposal of solid waste products in the solid waste product disposal. And a measure of consumer identity as a moderator in the interaction effect between feeling and unlawful disposal of solid waste products. These situational variables discussed are task difficulty, luck, and feeling with the corresponding hypotheses formulation.

##### **Task difficulty and unlawful disposal of solid waste products**

Task difficulty is assessed in solid waste product disposal because of the evidence that many consumers fail to perform tasks required of them appropriately [70]. In their opinion [125], task difficulty captures the individual in unstable circumstances. This is because the task can easily be carried out now and may become complex at the next moment. A similar study [29, 42] reported that task difficulty refers to the perceived job problem. This view

was emphasized [115, 131] that task difficulty affects individual social behaviour regarding the circumstances surrounding a task. In a similar vein, the study asserts that individual task difficulty is engendered by the expectancy of success and the level of effort. These influences affect all learners' behaviour [109]. In the light of this, [70] it has been reported that consumers usually face complex and challenging decisions in daily life activities. Task difficulty is evidenced in consumer buying situations where consumers often become confused when faced with choosing from the lot. Thus, the task difficulty is complex because it requires high skill and knowledge and involves more information processing than a general task. A task generally refers to goals to be completed and instructions to be performed.

In the study [96], it has been pointed out the relevance of understanding task difficulty attributes which relate to individual action avoidance. This presents skill-based and effort-based difficulty dimensions as necessary due to the one-to-one correspondence between attributions and felt emotions. For a consumer to choose a difficult task over an easy one, there must be a match between the process of achieving the difficult task and motivating emotional rewards. Similarly, a study [101] on task difficulty also established that a task requiring more psychological moments should be judged harder than a task requiring a lower proportion of psychological moments. The amount of attention that different tasks need is shaped by individuals' past experiences when performing the same or similar tasks, which inform their judgements of task difficulty and order. From this better empirical understanding of the negative disposal attitude, this study suggests that consumers' negative task difficulty towards solid waste product disposal relates to an unlawful approach. This leads to the following hypothesis:

*Hypothesis 1 Consumers' task difficulty towards disposal of solid waste products has a positive significant relationship with unlawful disposal of solid waste products.*

#### **Luck and unlawful disposal of solid waste products**

Accordingly [125], it has been contended that luck is unstable individual behaviour. Other studies point out that luck relates to the individual's behaviour that can be caused by the reason something occurs [65, 115]. Similarly, luck is an uncontrollable consumer attribute over time, positively or negatively affecting behaviour [24]. As in the case [118], luck relates to knowledge, and knowledge attributions are highly sensitive to luck events that change the explanation of individual belief.

This view was corroborated [132] that luck is an unstable factor determining personal behaviour. The concept

of luck has generally existed in many aspects of human social life from the past to the present. In this case, a related study [36] emphasizes that luck should be seen as what happens to good or bad persons by chance. It has been widely held that luck is a function of three dimensions: (i) chanciness, (ii) the absence of control, and (iii) significance. Thus, good and bad luck occurs in circumstances (coincidences) that are mainly out-of-control that will often be negative. Thus, out-of-control consumer behaviour is likely to cause adverse outcomes. Hence, the available literature does not provide evidence on the luck and disposal of solid waste products. Nevertheless, for a proper understanding of the negative disposal attitude, this study suggests that consumers' negative luck towards solid waste product disposal relates to an unlawful approach. From the above discussions, the following hypothesis is formulated:

*Hypothesis 2 Consumers' luck towards disposal of solid waste products has a positive significant relationship with unlawful disposal of solid waste products.*

#### **Feelings and unlawful disposal of solid waste products**

This study examines feelings generally established in their relationship with brand evaluation in solid waste product disposal [99]. According to studies [24, 84, 97], consumers' feelings constitute a set of emotions in which individual behaviour directly or indirectly acts on the issue. The feelings can put individuals in the state of frustration, anger, tension, or fear. This indicates that individuals are more likely to act towards the environment based on their feelings. The individual feelings constitute levels of emotional awareness. Individuals are considered critical players in their unique ways towards the environment [23, 54]. Generally, a person's feelings can influence how one responds to a given perspective. A further study [94] corroborates this view by affirming that feelings affect how consumers justify their behavioural patterns. The behavioural patterns of positive and negative feelings are associated with changes in behavioural emotions. This sort of behaviour, either positive or negative, requires developing appropriate responsive strategies.

Similarly, a study [17] posits that feelings seem more informative when perceived as relevant for the particular judgement to be made. The feelings are viewed from the dimension of incidental mood states that are typically more influential when experiential motives guide consumers than when instrumental reasons guide consumers. This has been so because affective feelings are more relevant for assessing the potential fulfilment of experiential goals than instrumental ones. A related study [83]

asserts that pride in a consumer is closely linked to feelings of positive and negative behaviour.

Two forms of decision-making are associated with consumer behavioural feelings; (i) affective, feeling-based decision-making tends to be quicker, and (ii) cognitive, reason-based decision-making tends to be slower. It implies that judgements and decisions based on cognitive reasoning and affective feelings tend to be less sensitive to issues. Thus, consumers rely on their feelings versus reasons in making judgements and decisions regarding being independent self-construal separated and differentiated from others, adopting an interdependent self-construal view of oneself as part of a social context, bounded and defined by others [55]. Similar studies conducted [19, 97, 127] reported that warm-glow feelings constitute feelings of pleasure and satisfaction derived from the cognitive appraisal of contributing to the well-being of society. In this case, warm-glow feelings affect consumer behaviour in multiple domains, including how they act towards the environment. To this end, for a proper understanding of the negative disposal attitude, this study suggests that consumers' negative feelings towards solid waste product disposal relate to the unlawful approach. From the above discussion, it is hypothesized that:

*Hypothesis 3* Consumers' feelings towards disposal of solid waste products have a positive significant relationship with unlawful disposal of solid waste.

#### **Mediator: Consumers' situation, media channel type and unlawful disposal of solid waste products**

Accordingly, [20, 76] media channel type constitutes a set of print media, broadcast media or mass media, internet, and out-of-home media. Types of these media are different sharing media and communication tools that brands use for marketing and advertising purposes, that is, to convey their brand messages and promote their products and services. A similar study [35] emphasizes that different media channel types have been designed to communicate the happenings in the environment to the targeted audience through various mediums such as newspapers, magazines, radio, television, billboards, social media, and websites. The most common types of media classifications comprise: (i) print media, (ii) broadcast media/mass media, (iii) internet media, and (iv) out-of-home media. These types of media play an essential role in conveying information. For instance, print media includes newspapers, magazines, books, and direct mail to reach a prospective audience to affect behaviour. It is considerably noted among the oldest form of media. Broadcast media also consists of radio, television, videos, and movies. These mediums form an essential part of information

delivery. The use of the internet allows consumers to receive types of information, making it a lot more convenient. The information is usually conveyed through emails, social media, podcasts, blog websites, etc. The out-of-home media comprises posters, billboards, and distribution of brochures typically used to reach the target audience to affect behaviour.

This view was corroborated [27], who affirm that media channel types such as radio and television play the main role in keeping the public aware of the environment and solid waste product management issues. Studies [31, 67] put it that mass media is a useful tool for the promotion of sustainable development and campaign for social change. Media plays an essential role in spreading relevant environmental information that offers solutions to environmental issues, which helps in conversation and sustainable development. Accordingly, [58, 98], an environmental communication campaign entails adopting steps towards an environmental aim. The essence is to bring attitudinal change and inculcate an environmentally friendly attitude. Solid waste product environmental campaigns could be pursued using different media like radio and television. For instance, radio is believed to be the most effective, popular and credible medium for reaching a large heterogeneous audience. This current study suggests that media channel type is more likely to cause a significant positive intervention in the causal relationship when a consumer engages in unlawful disposal behaviour. Based on the following discourse, the following hypothesis was formulated:

*Hypothesis 4* Media channel type mediates the positive significant relationship between consumers' situation and unlawful disposal of solid waste products.

#### **Moderator: Consumer identity interacts on feelings and unlawful disposal of solid waste products**

Consumer identity is any category designation that a consumer chooses to identify with or is endowed with. In general, identities can be broken down into two categories: (i) personal identities, which have been connected to a particular social group, such as rebels, and (ii) social identities, which have been connected to a social role an individual belongs to, such as being an adult female or male. Researchers have generally defined identities as a self-concept made up of many types and connections between them, which combined suggest a network of multiple identities.[104]. Identity significantly impacts how customers perceive and behave, as well as the activities they engage in [46]. Additionally, it has been demonstrated that consumer identity plays a significant role in behaviour motivation because it drives people to

act in ways that conform to the identification standard. Consumers frequently decide to engage in activities that are similar to their identities. As a result, social identity might affect how each individual consumer behaves when it comes to matters involving consumption [16].

Similar to this, a different study proposes that consumer identity is one aspect of the variation across time and context means by which consumers socially classify themselves and express who they are. Identity is a crucial and potent behaviour motivator. Consumers' identities are defined, reinforced, and communicated through their consumption choices [21]. According to a related study, identity is any category label that a customer self-identifies with and that allows for a clear representation of what people in that category are like, to look like, think, feel, and act. For instance, consumers are more likely to act in ways that are compatible with what it means to be responsible or irresponsible if they perceive their attitudes towards the environment as good or negative. This consumer identity category typically produces a wide variety of identity-driven impacts. Identity frequently affects behaviour [103]. According to the study [57], identity is seen as the self in a context that is integrated into social interactions and circumstances. Based on this, individual identities reflect collective social identity movements that seek to validate, change or resist social norms. This current study suggests that consumer identity is more likely to cause a significant positive intervention in the causal relationship when a consumer engages in unlawful disposal behaviour. Based on the following discourse, the following hypothesis was formulated:

*Hypothesis 5* Consumer identity moderate on the positive significant relationship between feelings and unlawful disposal of solid waste products.

### Proposed research conceptual model

The attribution theory of situational factors has been identified and are expected to influence consumer attitudes towards unlawful disposal of solid waste products. The model established (direct) key specific variables (consumer's situational factors, i.e. task difficulty, luck, feelings), including (media channel type and consumer identity) as an indicative set of responses. Further, the conceptual model provides the current practices of unlawful consumer disposal of solid waste products that focus on different attitudinal factors.

### Methodology

#### Data collection

The research design for this study is explanatory or causal research which is connected by means of

identifying the extent and nature of causal relationships [75]. Again, the current study adopted a causal research design that is able to test the causal relationships being independent variables and dependent variable. Further, the causal design allowed the evaluation of the intervening influences of variables [43, 75]. The study used these situational factors (task difficulty, luck and feeling) in attribution theory depicted in the conceptual model to examine whether these related to consumers' unlawful disposal of solid waste products, which includes the intervening variables (media channel type and consumer identity). These inherent attitudes were selected based on personal experience of consumers' continuous unlawful disposal of solid waste products despite the government and stakeholders' efforts to control the problem. Data were collected through face-to-face surveys on the street of Sunyani using a convenience sampling approach. Data collection took 37 days (4th January to 11th February 2022), including weekends, each day from 8 am-6 pm. In order to avoid collecting biased data and maintain the objectivity of convenience sampling, generally, only a single approach was used in relatively smaller areas and four different occasions for geographically larger areas, but different vantage locations throughout in collecting the data. The study ensures that the timing and location of the sampling procedure cover the target population to avoid bias [75]. The representative of categorization under this study comprises to set a minimum age of 18 years for the adult male and female consumers in Sunyani who can read, write, and understand and a maximum age of 60 years and above. The choice of characteristics depends on the objectives of the present study and contextual information. A total of 761 were collected. Only fully completed surveys were included in this analysis. After data screening, 727 valid questionnaires were obtained and invalid and incomplete questionnaires were rejected.

#### Instrument and measures

The items in the research and measurement scale of the model used a 5-point Likert-type scale with anchor points:—(1) Strongly disagree and (5) Strongly agree [75]. These measures were adopted and modified for this study. Specifically, consumers' situational factors (task difficulty, luck and feeling) items were taken from [34, 52, 105, 109], media channel type [7, 82], consumer identity [27, 33, 50, 107], and unlawful disposal of solid waste products [28, 100]. The questionnaire was administered in Ghana, Sunyani, the regional capital of the Bono Region.

**Data analysis**

The data collected were analysed using SPSS v24 and AMOS v24. A descriptive analysis and covariance-based structural equation modelling (CB-SEM) were carried out to test the proposed theoretical relationships. First, the SPSS v24 was used to analyse the demographic profile of respondents, exploratory factor analysis (EFA) to determine sampling adequacy and common method bias (CMB) to check deviation in research. Second, structural equation modelling was undertaken. Structural equation modelling (SEM) consisting of the ranges of defined multivariate analysis techniques [39, 75], answers questions in a unified and integrated manner. This study employed a two-step approach to the structural equation model to achieve the objective of the study. The first step is the measurement model, and the second step is the structural/path analysis [38, 47].

**Characteristics of respondents**

The sample profile represented consumers’ experience of unlawful disposal of solid waste products in Ghana, Sunyani. Table 1 describes the socio-demographic characteristics of respondents used in this study. The study revealed that males represented 55.7 per cent (%) of the respondents, and female represented 44.3 per cent (%). The majority of the respondents, 259 (35.6%) were 25–31 years, 237 of the respondents (32.6%) were 32–38 years, 99 of the respondents (13.6%) were 14–24 years, 64 of the respondents (8.8%) were 39–45 years, 32 of the respondents (4.4%) were 53–59 years, 31 of the respondents (4.3%) were 46–52 years and 5 of the respondents (0.7%) were 60 years and above. Regarding marital status, 61.6% were single, 35.9% were married, and 205% were divorced. In terms of the educational level of respondents, 46.8% had a bachelor’s degree, 31.4% had a diploma/higher national diploma, 11.6% obtained a master’s degree, 5.1% obtained a professional certificate, 1.1% obtained a PhD and the remainder 4.1% obtained other qualification. With employment status, the majority of the respondents 30.8% were employed in the public sector, 29.8% were employed in the private sector, 20.4% were students, 13.5% were unemployed but looking for work, and the remaining 5.5% fell in none of the categories above.

**Solid waste product throw aways/disposal**

In Table 2, the study sought to find out from the respondent their opinions on solid waste products thrown away / disposed off. The study reveals that most respondents (394), representing 54.2%, responded to Plastics being disposed off as solid waste products, followed by Food waste, 148 of the respondents representing 20.4%. The participants participate in leather

**Table 1** Socio-demographic Characteristics of Respondents

	Frequency	Per cent
<i>Gender</i>		
Male	405	55.7
Female	322	44.3
<i>Age</i>		
18–24	99	13.6
25–31	259	35.6
32–38	237	32.6
39–45	64	8.8
46–52	31	4.3
53–59	32	4.4
60 and above	5	.7
<i>Marital Status</i>		
single	448	61.6
married	261	35.9
separated/divorced	18	2.5
<i>Highest Education Qualification</i>		
Doctorate	8	1.1
Masters	84	11.6
Bachelor/Bachelor of Technology	340	46.8
Professional	37	5.1
Diploma/HND	228	31.4
Other	30	4.1
<i>Employment Status</i>		
Employed, in a public sector	224	30.8
Employed, in a private sector	217	29.8
Not employed, looking for work	98	13.5
Student	148	20.4
Other	40	5.5
Total	727	100.0

**Table 2** Solid waste product thrown away/disposal types

Solid waste products throw aways/disposal types	Frequency	Per cent
Plastic (plastic bottled, polythene, sachet, wrapper)	394	54.2
Metal (canned, tin)	49	6.7
Glass	6	.8
E-waste (mobile phone, television, computer)	21	2.9
Paper (cardboard and others)	31	4.3
Textile (clothes)	27	3.7
Leather (shoes, sandals, carpet, and others)	51	7.0
Food waste	148	20.4
Total	<b>727</b>	<b>100</b>

disposal, 51 of the respondents representing 7.0%, 49 of the respondents representing 6.9%, Metal, 31 of the respondents representing 4.3% were paper, 27 of the



respondents representing 3.1% were Textile, 21 of the respondents representing 2.9% were E-waste, and 6 of the respondents representing 0.8% were Glass.

**Exploratory Factor Analysis (EFA)**

It is recommended to conduct exploratory factor analysis (EFA) before conducting a SEM in order to understand the fundamental relationships between the components and to assess the construct validity using Principal Axis Factoring (PAF) and varimax. This analysis was conducted in part to determine whether the sampling used for the SEM was enough. Based on this, the Kaiser–Meyer–Olkin (KMO) test was employed to measuring sampling adequacy (MSA). The MSA was 0.862, the Bartlett test of sphericity was 19571.926 and with a significance level  $0.000 < 0.05$ , the KMO values exceeded the recommended cut-off value of 0.60 – 0.70 [63, 87, 114].

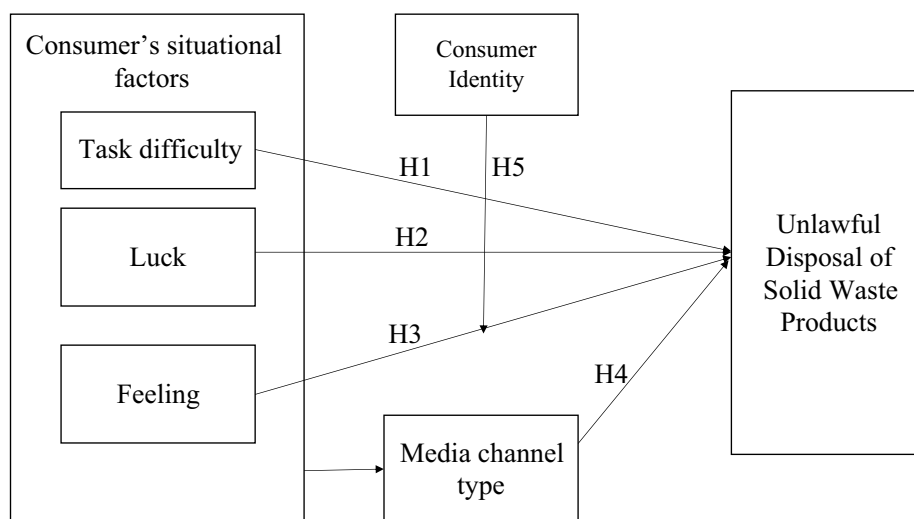
**Common Method Bias (CMB)**

Thus, instruments for data collection cause biases, which is why deviations in research must be checked on a regular basis. As a result, Harman’s single factor score is used to analyse method variance. It entails merging all variables that can be measured into a single component [123]. When the overall variance for a single element is less than 50%, CMB will not be present. Harman’s single factor was used in the inquiry. Maximum likelihood extraction was used to construct the total variance. One component recovered 13.951 per cent of

the total variance, which is within the recommended threshold of less than 50% (Fig. 1).

**Measurement model estimation process**

Analysis of Moment Structures (AMOS v24) was used to analyse the data in various stages of structural equation modelling (SEM). All of the measurement scale items for the measurement model underwent confirmatory factor analysis as part of the study [see Table 3, Fig. 2] [63]. Measures of construct validity, including composite reliability, convergent validity, and discriminant validity (HTM), were also evaluated. According to the standardized threshold for composite reliability, convergence is attained when the estimate range is between 0.70 and 0.60 [49], and the average variance extracted (AVE) standardized value should be greater than 0.50. In addition, these established standard values will serve as the study’s direction. Additionally, it has been advised that when values are marginal (below criteria) to the conventional threshold, it is acceptable to use regarding based shared variance on testing system model fit [39]. In a case, whenever the thresholds are somewhat below 0.50, and the model fits well, then even items with low composite reliability (CR) and average variance extracted (AVE) datasets can operate well because measurement error terms were already taken into consideration. Thus, the basis of any validity concerns is the fit of the model supporting the structure of the model factor model’s [39, 72]. Indicators of the measurement model’s goodness-of-fit, such as the Chi-square ( $\chi^2/df$ ), Goodness of Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Standard Root Mean Residual (SRMR), Normal Fit Index (NFI),



**Fig. 1** Proposed Conceptual Model

**Table 3** Confirmatory factor analysis of measurement model

Constructs and scale items	ItemCode	Factor loading	CR	AVE	Cronbach's alpha
Task difficulty [59; 105, 109]					0.923
It takes much time to throw away solid waste products	TKD1	0.789	0.930	0.729	
My expectations are consistent with the way I throw away solid waste products	TKD2	0.876			
The throw away of solid waste products meets my expectations	TKD3	0.951			
I do not consider any specific approach to throwing away solid waste products	TKD4	0.836			
I do not have any specific reasons to throw away solid waste products	TKD5	0.806			
Luck [34, 105, 109]					0.857
I am bothered about the way I throw away solid waste products	KCL1	0.708	0.858	0.547	
Sensitivity is not relevant when it comes to throwing away solid waste product	KCL2	0.674			
I am attentive when it comes to throwing away solid waste products	KCL3	0.771			
The solid waste products I throw away are not something to be given priority	KCL4	0.767			
Sensitivity is not relevant when it comes to throwing away solid waste product	KCL5	0.773			
Feeling [34; 105, 109]					0.946
I am not saddened about the way I throw away solid waste products	FLG1	0.889	0.947	0.783	
There has not been fear of throwing away solid waste products	FLG2	0.866			
There is happiness in throwing away solid waste products	FLG3	0.948			
I do not take delight in the way I throw away solid waste products	FLG4	0.832			
The moment does not describe the way I throw away solid waste products	FLG5	0.884			
Media channel type [7, 82]					0.875
I can associate myself with radio about the way I throw away solid waste products	MCT1	0.882	0.877	0.589	
I relate well with television about the way I throw away solid waste products	MCT2	0.755			
My throw away solid waste product is connected with the awareness	MCT3	0.753			
Awareness is everywhere about the way I throw away solid waste products	MCT4	0.758			
Newspapers create an impression about the way I throw away solid waste products	MCT5	0.674			
Consumer identity [27, 33; 50, 126]					0.933
I feel a strong sense of identity with the way I throw away solid waste products	CDT1	0.835	0.934	0.740	
As a user of products, I do not feel a sense of belonging the way I throw away solid waste products	CDT2	0.883			
The way I am aligns with my expectations in the way I throw solid waste products	CDT3	0.878			
I see other people the way throws away solid waste products mirroring my own image	CDT4	0.890			
I am motivated to participate in the way other people throw away solid waste products	CDT5	0.814			
Consumer's situational factors [52, 105, 109]					0.921
Wherever I find myself determine the way I throw away solid waste products	STL1	0.715	0.914	0.682	
I do not have fix way I throw away solid waste products. It does not matter the condition;	STL2	0.697			
become responsible about the way throw away solid waste products	STL3	0.939			
The way I throw away solid waste products is largely influenced by persons in their midst	STL4	0.873			
	STL5	0.877			
I do not throw away solid waste products anyhow due to my whereabouts					
Unlawful disposal of solid waste products[28, 100]	SDP1	0.919	0.941	0.763	0.941
The way I throw away solid waste products does not cause any harm to soil and air pollution	SDP2	0.869			
The way solid waste products are thrown away does not cause any health issues for human	SDP3	0.850			
The surrounding water in towns and cities does not have anything to do with the way solid waste products are being thrown away	SDP4	0.879			
The state is not punishing enough about the way solid waste products are being disposed	SDP5	0.847			
Solid waste products have not been handled well the state					

$\chi^2_{df} = 2.492$ ; SRMR = 0.052, GFI = 0.902, AGFI = 0.886; NFI = 0.933; TLI = 0.954, CFI = 0.958; RMSEA = 0.045

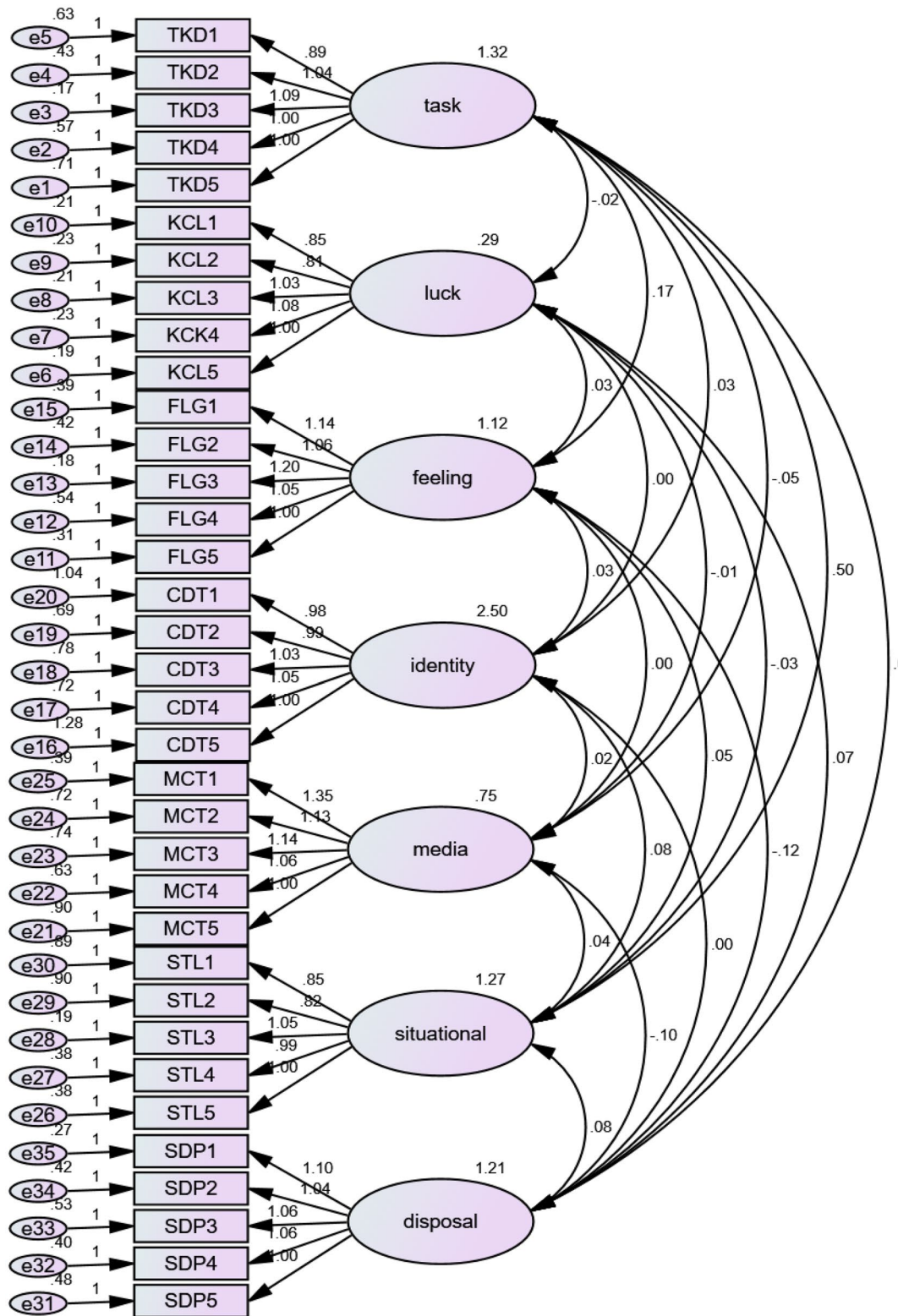


Fig. 2 Measurement model

Tucker–Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Squares Error of Approximation (RMSEA), were also evaluated. The cut-off points for the goodness-of-fit indices are  $\chi^2/df \leq 3$  [48];  $GFI > 0.90$  [32];  $AGFI > 0.80$  [74];  $SRMR < 0.08$  [56];  $NFI > 0.90$  [56];  $TLI > 0.90$  [51];  $CFI > 0.90$  [51] and  $RMSEA \leq 0.08$  [56]. The reason for these indices was to check the sample discrepancy and measures based on the population discrepancy of the study. Most importantly, all the recommended indices were higher than the recommended thresholds. On the whole, the model fit of the results shows a significant level [see Tables 3, 4 and 5] [63, 87, 111].

As proven by a study [53], it is insufficient to measure discriminant validity using the square roots of AVE, MSV, or MaxR(H), predominantly when indicator loadings vary slightly. The heterotrait–monotrait ratio (HTMT) was developed. Discriminant validity fails when the HTMT value exceeds 0.9 or if the confidence interval contains a value greater than one (1), this indicates discriminant validity issues. Table 4 shows discriminant validity values were within acceptable criteria,

**Table 4** Goodness-of-fit Indices indicators of the measurement model

Measures	Estimate	Recommended Value	Interpretation
$\chi^2/df$	2.492( $\chi^2 = 1343.437$ , $df = 539$ )	Between 1 and 3 [48]	Excellent fit
GFI	0.902	$> 0.90$ [32]	Good fit
AGFI	0.886	$> 0.80$ [74]	Good fit
SRMR	0.052	$< 0.08$ [51]	Excellent fit
CFI	0.958	$> 0.90$ [51]	Excellent fit
TLI	0.954	$> 0.90$ [51]	Excellent fit
NFI	0.933	$> 0.90$ [56]	Excellent fit
RMSEA	0.045	$< 0.06$ [56]	Excellent fit

GFI = goodness-of-fit, AGFI = adjusted goodness-of-fit index, CFI = comparative fit index, TLI = Tucker–Lewis Index, RMSEA = root mean square error of approximation, NFI = normal fit index, and SRMR = standard root mean residual

indicating discriminant validity and the HTMT did not reflect discriminant validity issues [128].

**Results**

**Paths analysis – direct hypothesis results**

After the measurement model was assessed, the next step was to test the first part of the theory/conceptual model. That was the direct paths analysis (H1, H2, H3). The direct effect (see Fig. 3) represents the effect of independent (IVs) constructs/variables (exogenous) (task difficulty, luck and feeling) towards the dependent variable (DV) (endogenous) (unlawful disposal of solid waste products) of the study theory model [110].

According to Table 6 (also see Fig. 3), the findings revealed that there is a statistically insignificant relationship between task difficulty and unlawful disposal of solid waste products with a coefficient of 0.048 and standard error (SE) of 0.037 and critical ratio (t) of 1.294 at  $p = 0.196$ ,  $p \leq 0.05$  threshold (H1). This is based on the prediction and the set of confidence level of 95%. The results suggest that task difficulty does not have any relationship towards consumers’ participation in unlawful disposal of solid waste products practices.

Next, there was a statistically significant relationship between luck and unlawful disposal of solid waste products with a coefficient of 0.225 and standard error (SE) of 0.084 and critical ratio (t) of 3.028 at  $p = 0.002$ ,  $p \leq 0.05$  threshold (H2). This is based on the prediction and the set of confidence level of 95%. The finding suggests that luck influences consumer attitudes towards their participation in unlawful disposal of solid waste products practices.

Also, the feeling was found to be in statistically significant relationship towards unlawful disposal of solid waste products with a coefficient of -0.117 and standard error (SE) of 0.040 and critical ratio (t) of -0.2.902 at  $p = 0.004$ ,  $p \leq 0.05$  threshold (H3). This is based on the prediction and the set of confidence level of 95%.

**Table 5** Discriminant Validity of Heterotrait–Monotrait Ratio (HTMT)

	Task difficulty	Luck	Feeling	Consumer identity	Media channel type	Situational factors	Unlawful disposal of solid waste products
Task difficulty							
Luck	0.036						
Feeling	0.128	0.052					
Consumer identity	0.023	0.005	0.014				
Media Channel type	0.054	0.022	0.002	0.009			
Situational factors	0.405	0.068	0.043	0.049	0.021		
Unlawful disposal of solid waste products	0.029	0.118	0.096	0.003	0.095	0.078	

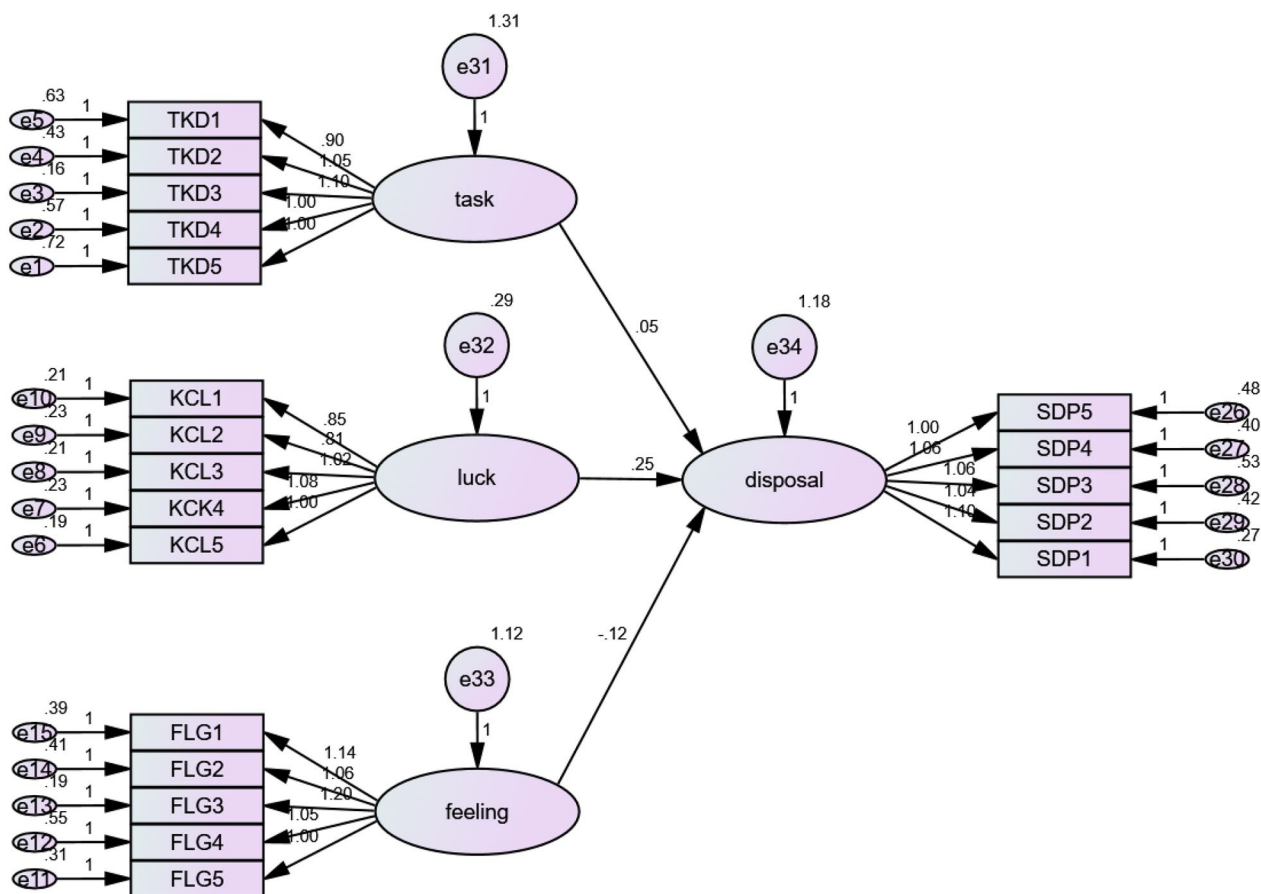


Fig. 3 Direct structural model pathways – analysis of hypothesized results

Table 6 Analysis of hypothesized structural paths

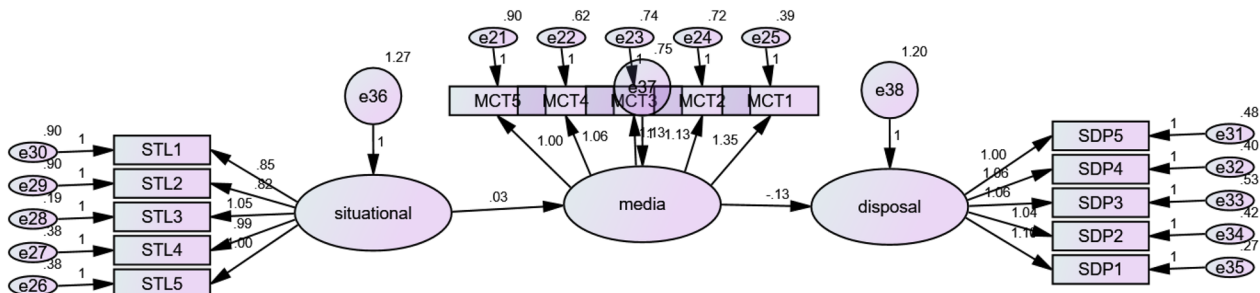
	Relationships	Estimate	SE	CR	95% Confidence Interval for $\beta$ P
Task difficulty	Unlawful disposal of Solid waste products	.048	.037	1.294	.196
Luck	Unlawful disposal of Solid waste products	.255	.084	3.028	.002
Feeling	Unlawful disposal of Solid waste products	-.117	.040	-2.902	.004

The results indicate that the feelings variable significantly drives consumers’ unlawful disposal of solid waste product practices.

**Mediation analysis – indirect hypothesis results**

This study evaluated the second part of the theoretical model. Accordingly, [110] the indirect effect, as presented in Fig. 4, is an independent variable on a dependent variable through a mediating variable. One study suggests that the indirect effects between the construct/variable may be determined by measuring the mediating effects [130].

This study focuses on the significance of the indirect effect to establish whether media channel type has mediating effect as specified in hypothesis H4. As presented in Table 7, the results indicate that media channel type has a statistically significant and positive indirect effect on the relationship between consumers’ situational factors and unlawful disposal of solid waste products (UDSWP) with an estimate of  $-0.133$  standard error (SE) of  $0.052$  at  $p=0.010$ , with  $p$  less than the  $0.05$  threshold (H4). This is based on the prediction and the set of confidence level of



**Fig. 4** Mediation (Indirect) Analysis of Hypothesized Results

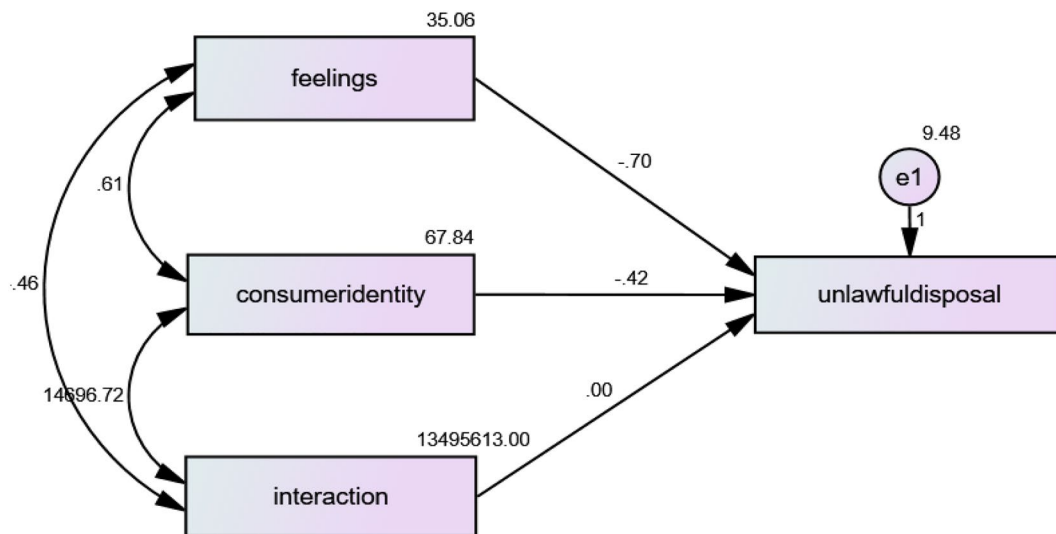
**Table 7** Mediation Results

Relationship			95% Confidence Interval for $\beta$		
			Estimate	SE	P
Consumers situational factors	Media channel type	Unlawful disposal of solid waste products	-.133	.052	.010

95%. Figure 4 illustrates mediation hypothesized graphically results.

**Moderation analysis**

The main approach of moderation evaluation was to measure and test the variation effect of the independent variable on the dependent variable as an operationalization of the moderator [79] (Fig. 5). The study hypothesized the consumer identity on the relationship between feeling and unlawful disposal of solid waste products.



**Fig. 5** Moderation analysis hypothesized results

**Table 8** Moderating results

Relationships	Estimate	SE	95% Confidence Interval for $\beta$	
			CR	P
Feeling → Unlawful disposal of solid waste products	-.703	.024	-29.655	***
Consumer identity → Unlawful disposal of solid waste products	-.417	.017	-24.907	***
Interaction → Unlawful disposal of solid waste products	.002	.000	44.446	***

The results in Table 8 indicate the interaction effect of the interaction variable (regression weight) on unlawful disposal of solid waste products at 0.000; it is statistically significant ( $p < 0.005$ ). Most importantly, the regression weight for consumer identity in the prediction has a significant effect on the unlawful disposal of solid waste products at 0.000 ( $p < 0.005$ ). Thus, the interaction effect of consumer identity on the prediction of feelings and unlawful disposal of solid waste products is statistically significant in this present study. The interaction effect reported here suggests that individual dimensions of identity largely caused unlawful disposal of solid waste products activities.

## Discussion

From the conceptual framework's perspective, the study developed a conceptual model to evaluate situational factors in the theory of attribution to predict consumer attitudes towards unlawful disposal of solid waste products in Ghana with special reference to Sunyani: a mediation and moderation analysis conceptualized in solid waste product disposal. The current study is in reaction to [37, 41, 69, 88, 106, 107, 119] concerns by addressing a social psychological approach from the inherent behaviour of negative attitudes of consumer experience and continuous unlawful disposals that can provide a better understanding of solid waste disposal markets.

The findings provide the essential role of these situational factors (task difficulty, luck and feeling) in the theory of attribution engendering unlawful disposal of solid waste products. Also, the mediating effects of media channel type in the potential relationship between situational factors and unlawful disposal of solid waste products add an interesting dimension to the better understanding of what makes consumers behave in the way they do persistently. Further, the moderating effects of consumer identity on the feeling and its relationship with the unlawful disposal of solid waste products make crucial contributions towards solid waste disposals.

The finding on task difficulty did not achieve a statistically significant relationship towards the unlawful disposal of solid waste products. This implies that individual consumers do not engage in unlawful disposal of solid waste products due to their negative attitude towards task difficulty. However, the concept of task difficulty of consumer attitude should not be overlooked because it is a behaviour that can drive several activities surrounding an individual, as a study [101] highlighted the crucial role task difficulty played. A task that must be seen as a higher proportion of psychological moments should be judged harder than a task requiring a lower proportion of psychological moments. The amount of attention that different tasks need is shaped by the consumer's past

experiences in performing the same or similar tasks, specifically from the beginning of consumption to the disposable stage. Marketing practitioners should be more concerned about how consumers carry out their functions both in-store and in their homes to help avoid unlawful solid waste product disposal.

It was discovered that the conceptualized luck had a positive and statistically significant relationship in solid waste product disposal with the unlawful disposal of solid waste products. The finding has primarily established that individual negative attitudes related to luck caused the unlawful disposal of solid waste products due to their unstable nature. Dealing with a lack of negative attitude to avoid unlawful solid waste products disposable would be complex to understand why something occurs. This finding is in line with the literature view, which emphasizes that the individual consumer's luck relates to their knowledge, and knowledge attribution is more sensitive [118]. In the previous study, luck has been seen as what happens to an individual, either good or bad [36].

The test found that the relationship between feeling and unlawful disposal of solid waste products is positive and statistically significant. This implies that the negative attitude of consumer feeling is among the underlying reasons unlawful solid waste products disposable occurs. It has become imperative that a strategy is developed to handle such an attitude which would be important to marketing practitioners and policymakers to address such negative personal behaviour. Essentially, feelings as the negative attitude consumers have demonstrated over the years in unlawful solid waste product disposal cannot be overemphasized. The finding confirms the previous studies that feeling can put individuals in the perspective of frustration, anger, tension, or fear. This indicates that individuals are more likely to act towards the environment based on their feelings [24, 97], and this sort of negative behaviour requires developing appropriate responsive strategies [94]. Again, the literature suggested a strategy be developed to handle negative attitudes of feelings by consumers who make quicker decisions and those who make slower decisions [55].

The study tested the media channel type in the relationship between consumers' situations and unlawful disposal of solid waste products, the study found a statistically significant and positive relationship among the variables. This finding is in line with the literature claims, using the new environmental paradigm model [88], and the theory of environmentally responsible behaviour for promoting environmental sustainability for individuals to be more environmentally conscious is in variation [41]. Hence, from the negative perspective, the finding implies that the media platforms used to convey messages to reach consumers about the consequences of

their negative disposable behaviours are not working. The commonly used media channel such as television, billboards, and radio and how they are used to combat unlawful solid waste disposal is not achieving the needed results, particularly on the part of the government. Also, the finding supports the view that the internet allows consumers to receive types of information, making it a lot more convenient. The information is usually conveyed through emails, social media, podcasts, blog websites, etc. The out-of-home media comprising posters, billboards, and distribution of brochures are typically used to reach the target audience to effect behaviour [20, 35, 76].

Examination of the moderation effect of the consumer identity and its relationship with the unlawful disposal of solid waste products has a significant interaction effect. This is in line with [16, 46], consumer identity serves as a key motivator of behaviour, as individuals seek conformity with the norm of identity through behavioural acts. Consumers typically choose to carry out activities that are comparable to their identity. Thus, social identity can influence individual consumers to engage in consumption-related matters. Further, the result is in line with [21, 103], consumers engage in unlawful disposal of solid waste products based on a person's identity, which often drives behaviour. Identity is a fundamental and powerful motivator of behaviour. Consumption choice helps to define, reinforce, and communicate the identities that consumers hold.

## Conclusion

The present study has examined the relationship between situational factors of consumer attitudes towards unlawful disposal of solid waste products with mediation and moderation effects. The specific objectives set to guide this paper were to: (i) examine whether task difficulty, luck and feeling related to consumer attitudes towards unlawful disposal of solid waste products; (ii) evaluate whether media channel type has mediated in the relationship between overall consumers' situational factors and unlawful disposal of solid waste products; (iii) examine whether consumer identity has moderated interaction between feeling and unlawful disposal of solid waste products.

This study's findings suggest that luck and feeling of consumer attitudes were statistically significant towards unlawful disposal of solid waste products. However, the results also revealed that task difficulty and its relationship with the unlawful disposal of solid waste products were statistically insignificant. Regarding the mediator and moderator variables, media channel type was statistically significant in the relationship between consumers'

situational factors and unlawful disposal of solid waste products. On the part of consumer identity, its interaction between feeling and unlawful disposal of solid waste products was also statistically significant.

The results of the current study indicate that consumer attitudes towards the unlawful disposal of solid waste products are engendered by situational factors (luck, feeling), media channel type, and consumer identity. It has been reinforced that those inherent negative attitudes enhance the consumers' continuous unlawful solid waste product disposal in Ghana. These are ways to cater to the negative consumer attitudes to handle solid waste product disposal from an individual level when harnessed. This research is crucial, as the government needs to incorporate a marketing body and marketing-oriented firms to create the desire for them to be responsible for controlling the unlawful disposal of solid waste products from the buyers' and sellers' perspectives. Such a unique proposition approach will distinguish it from the existing macro-level perspective of management of solid waste.

## Implications of findings

This study essentially advanced the course of contributions with respect to the field of solid waste disposal industry, marketing and consumer behaviour literature. The specific contributions made by this study include:

From the theory perspective, the findings have shown how the present study contributes to the growing body of knowledge (theoretical gaps) on the use of attribution theory in the solid waste product disposal literature from the social-psychological dimensions. The study used attribution theory to explain how consumer attitudes and the intervening variables of media channel type and consumer identity related to the unlawful disposal of solid waste products. More specifically, attribution theory was applied to test consumers' situational factors (i.e. task difficulty, luck, feeling), with the intervening variables towards unlawful disposal of solid waste products. Also, the attribution theory facilitates the need to highlight how outlined factors which serve as negative consumer attitudes were conceptualized in different attitudinal ways by proving that the development of consumer attitudes that reside in them and the intervening variables caused unlawful disposal of solid waste products. It was also evident that brand and product development practitioners, retailers, and shop operators along the marketing channel enable them to understand the side of disposable circumstances in the consumer social life. Further, this study advanced the course of the literature in a broad nature extending from the developing and developed markets contextualization.



Regarding managerial implications, the findings of this study call for branding and encouraging marketing practitioners to aspire to greater strategy advocacy of knowledge acquisition and skill-building to enhance consumers' determination towards solid waste product disposals. The target cannot be achieved if the Marketing body is not equipped. It is key to success in the solid waste products disposable markets. Hence, the marketing body and practitioners must develop these competencies to enhance their ability more efficiently. Another possible pathway is to create sustainable pro-environmental disposal of solid waste products. The Ghana Tourism Agency and Sanitation Ministry can ensure the findings of mediating variable, media channel type and moderating variable, consumer identity in collaboration with the retail operators and community-to-community-based best practices of solid waste products disposable in advocacy to establish award schemes packages. This study is of the view that taking a more crucial and pragmatic approach will ultimately serve as a community and shop-based competition purposely for reward and shame. Once the shop operators (small, medium and large) are identified, they will own the concept of consumer best solid waste products disposable. Also, understanding the situational factors of attribution theory is important because it provides and brings different dimensions to stakeholders in the solid waste products disposal industry with knowledge about how and where they can tackle the canker of negative consumer attitudes towards disposals from within. So, considering the persistent unlawful solid waste products disposal situation in Ghana currently, there is a need to build an effective strategy on the existing private and public structures targeted at consumers. Thus, the solid waste product disposable should resonate with the consumers' attitudes and acceptance of society.

As part of the policy implications, the findings have been highlighted by the study of the consumer attitudes that engender the unlawful disposal of solid waste products in Sunyani in the Bono Region of Ghana. That is, the unlawful disposal of solid waste products has largely become a problem in Sunyani, and the underlying root cause is individual consumers' attitudes. The problem of unlawful disposal of solid waste products is not and cannot be limited to the consumers in Sunyani in the Bono Region. The negative attitude towards disposals of solid waste products is seen across towns and cities in Ghana. As a result, this paper outcome provides some policy implications. The Environmental Protection Agency (EPA) and The Ministry of Local Government Rural and Development (MLGRD) need to develop a tough comprehensive policy that creates responsibilities for various environmental actors, particularly involving The Chartered Institute of Marketing Body in policy development

and implementation on the benefits of making use of the negative consumer attitudes towards solid waste products disposals. The Marketing Body will have enforced environmental sanitation legislation at the various shops and shopping centres to educate and train its firms/members and consumers to perform better on solid waste disposals. The research results can attest that the existing way of handling solid waste products from the external perspective (generally waste collection) as a form of management is challenging due to its constant and persistent way of unlawful disposals since the findings of this study indicate that the part of unlawful solid waste product disposal is from (micro-perspective) individual attitude and behaviour. Subsequently, a comprehensive new policy is required by reviewing old policies to meet the current market disposable industry and population growth. As a major stakeholder and spender, the government can consider other countries.

#### **Limitations and future research**

This study is not achieved without no limitations; thus, the choice of convenience sampling limited some categories of sample data collection in terms of the target population the researcher could choose from. This was caused by the requirements for convenience sample data collection, which required individuals to provide their own responses. Additionally, the study's confirmatory nature makes it imperative to employ a quantitative explanatory technique. This suggests that people who could not read, write, or understand were left out of the study. However, using qualitative or mixed methodologies in this study might have aided in bringing them on board. It is further suggested that possible future research look at the more different sampling techniques to reach categories of participants. Also, attribution theory mainly focuses on internal dimensions, but complex people's behaviour does not concentrate only on internal attributions. Rather, they demonstrate internal and external causes in their behaviour. Additionally, the theory is unsuitable for rare laboratory situations or selected clinical groups. More so, the study was limited to Sunyani Metropolis. It is suggested that future research should look at quantitative and qualitative methods to apply different sample (literate population and illiterate population) approaches. Future research can replicate this study in other geographical locations that may possess unique and varied contextual elements that may generate additional insights. It is suggested that other theories can be applied in the same or different context to complement attribution theory in the future research to focus on the external aspect of consumers.

### Abbreviations

UDSWPD	Unlawful disposal of solid waste products
MLGRD	The ministry of local government rural and development
EPA	Environmental protection agency
MCT	Media channel type
CITT	Consumer identity

### Author contributions

AY was involved in writing —conceptualisation, original draft, data curation, methodology, formal analysed and interpreted the data of situational factors in theory of attribution to consumer attitudes towards unlawful disposal of solid waste products in Ghana with special reference to Sunyani: a mediation and moderation analysis; NOF contributed to conceptualisation, supervision, software, data curation, review and editing; OA was involved in writing — review and editing, supervision, and conceptualisation; VOP contributed to writing – review and editing, supervision, and conceptualisation.

### Funding

The authors received no funding.

### Availability of data and materials

In this investigation, we used primary and secondary data sources. The primary data sources were obtained from the participants in the field, and secondary data sources were obtained from the literature or past studies. Therefore, these main data sources were used.

### Declarations

#### Ethics approval and consent to participate

A survey statement was provided on the questionnaire to assure participants' confidentiality about their contributions towards this paper.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare that they have no competing interests or personal relationships that could influence the findings reported in this paper.

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Received: 24 March 2023 Accepted: 21 July 2023

Published online: 23 August 2023

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