

A Detailed Review on Littering (The Place Which Contains The Dropped and Leave Objects) And Its Impacts on Environment

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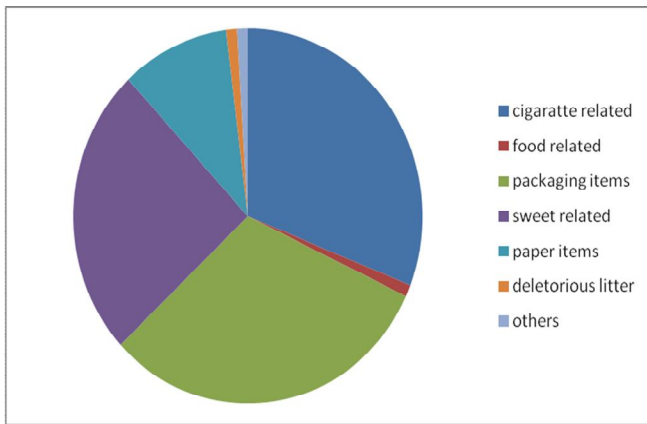
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Abstract- Environmental contamination due to solid waste mismanagement is a global issue. Open dumping and open burning are the main implemented waste treatment and final disposal systems, mainly visible in low-income countries. This paper reviews the main impacts due to waste mismanagement in developing countries, focusing on environmental contamination and social issues. The activity of the informal sector in developing cities was also reviewed, focusing on the main health risks due to waste scavenging. Results reported that the environmental impacts are pervasive worldwide: marine litter, air, soil and water contamination, and the direct interaction of waste pickers with hazardous waste are the most important issues. Many reviews were published in the scientific literature about specific waste streams, in order to quantify its effect on the environment. This narrative literature review assessed global issues due to different waste fractions showing how several sources of pollution are affecting the environment, population health, and sustainable development. The results and case studies presented can be of reference for scholars and stakeholders for quantifying the comprehensive impacts and for planning integrated solid waste collection and treatment systems, for improving sustainability at a global level. Littering can be defined as making a place or area untidy with rubbish, or incorrectly disposing waste. Littering causes pollution, a major threat to the environment, and has increasingly become a cause for concern in many countries. As human beings are largely responsible for littering, it is important to understand why people litter, as well as how to encourage people not to litter. This paper explores the reasons and consequences of littering and suggests possible solutions based on international experience. Research related to litter has focused mainly on three points: on determining the amount, the compilation and the location of litter present in certain locations, behavior causing litter and the effectiveness of interventions meant to reduce litter.

Keywords- Littering, Solid Waste, Litter Behavior, Causes of Littering and Guidelines

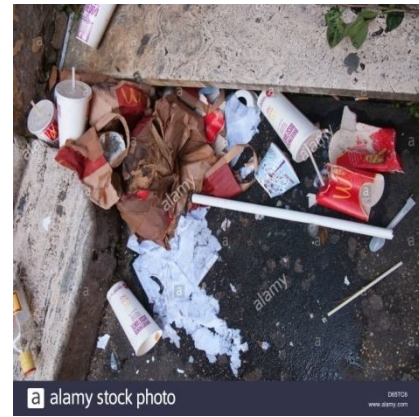
I. INTRODUCTION

Littering can be defined as making a place or area untidy with rubbish, or incorrectly disposing waste. Littering causes pollution, a major threat to the environment, and has increasingly become a cause for concern in many countries. As human beings are largely responsible for littering, it is important to understand why people litter, as well as how to encourage people not to litter. Littering is a social and environmental problem. It is perceived as untidy by most people and can be harmful to the health of humans and wildlife. Yearly communities spend substantial amounts of money on cleaning up litter. For instance, the organization charged with the maintenance of the Dutch highway system, spends 8 million euros yearly, in cleaning up road-side litter. Hence reduction of litter has received a lot of attention, both from scientists and governments. Numerous studies have been performed, studying the effects of different kind of litter reduction strategies. Sadly these studies have all used varying definitions on what litter is, mainly differing on what is included and what is excluded. Some researchers in the past have put minimum and maximum sizes on items to be considered as litter. This makes it difficult to combine the results from these studies. In this paper the following definition of litter is used: Those forms of trash that either originates by people throwing away or leaving behind artefacts' they consider functionless in places not officially intended or designated for such a purpose, or that end up in such places by indirect action or inaction of people. Trash is here taken to mean items for which the proper way of disposal would be to put them in trash receptacle like an astray or a waste bin. With this limitation it possible to distinguish some major sub-categories of litter by their nature and how people acquired it, namely: packaging materials and disposables such as coffee cups and napkins, leaflets and handbills (i.e. information carriers) and product remains. The statistical analysis of littering was shown in below figure.



II. WHY DO PEOPLE LITTER?

Laziness and carelessness have bred a culture of habitual littering. Carelessness has made people throw rubbish anywhere without thinking about the consequences of their actions. Many people do not realize or underestimate the negative impacts of littering on the environment. People believe that their individual actions will not harm society as a whole. As a result, it is common to see people throwing wrappers, cigarette butts and other rubbish in public areas. The majority of people believe that there are others who will clean up after them and consequently, the responsibility of cleaning up litter usually falls on local governments and taxpayers. Thus, the lack of responsibility to look after public places is another problem.



III. CONSEQUENCES & CAUSES OF LITTERING

Litter adversely affects the environment. Littering along the road, on the streets or by the litter bins, toxic materials or chemicals in litter can be blown or washed into rivers, forests, lakes and oceans, and, eventually can pollute waterways, soil or aquatic environments. Based on recent data, 7 billion tons of debris enter the world's oceans annually and most of it is long-lasting plastic. Litter also reduces air quality due to the smell and toxic/chemical vapor emanating from the trash. A polluted environment can encourage the spread of diseases. Toxic chemicals and disease-causing microorganisms in the trash may also contaminate water systems and spread water-borne diseases which can negatively affect the health of both animals and humans if unclean or untreated water is consumed. Cigarette butts take a grand total of ten years to decompose because of cellulose acetate, contrary to the common perception that cigarette butts decompose very quickly in only a matter of days. In reality, cigarette butts are a serious threat to the environment, as they contain toxic substances like arsenic which can contaminate soil and water.

Plastic litter is another threat to the environment and its inhabitants. It has often been mistaken for food by both land and marine wildlife. When consumed by animals, they reduce the stomach capacity since they cannot be digested. In the long-term it affects the animals' eating habits, eventually killing the animals. Much of marine wildlife including birds, whales, dolphins and turtles have been found dead with plastic and cigarettes found in their stomachs. An estimated 100,000 sea mammals are killed by plastic litter every year. Some of the materials may also be poisonous or contain sharp objects therefore damaging the animal's vital organs or severely injuring them. Another negative aspect of littering is that it is too expensive for a country, society and individuals. Cleaning up litter requires a huge amount of money that is financed by taxpayers that could be used in more productive ways. Littered places are visually displeasing and they depreciate the

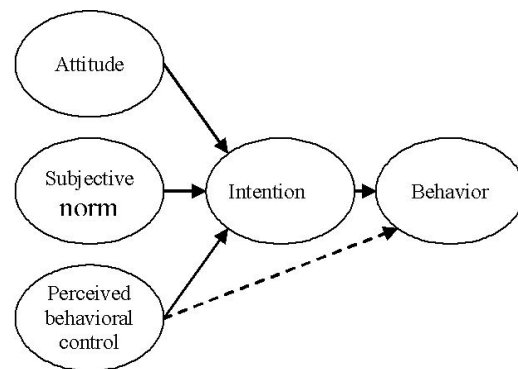
aesthetic and real value of the surrounding environments. Places with large amounts of litter are often characterized with homes and property that are less valuable as a result. Similarly, it affects tourism as it makes city areas and roadsides look disgusting and tourists tend to avoid staying and even visiting areas that are littered. Furthermore, littering can lead to car accidents. Some trash in the road is enough to create a dangerous situation that could result in serious injuries or death.

Generally people litter because they do not have a sense of ownership, even though areas such as parks are public property (60%), believe someone else – a municipal worker – will clean up after them (70), tolerate litter (10), believe littering is convenient due to shortage of bins (5) and some see litter that has already accumulated and therefore there is no need not to (10). Street vendors are largely blamed for the littering in the CBD. Street kids the streets are their home and they throw rubbish around and empty bins. In addition pedestrians are to blame for littering the CBD, their contribution is mainly via empty food packaging. Increased urbanization rate over the last decade this has increased the demand for refuse collection in the CBD and residential areas.

IV. CLASSIFICATION OF BEHAVIOR OF LITTRING

There is not a single type of behavior causing litter. Literature describes several classifications of types of littering behavior. Two types of littering behavior, namely active and passive (and active and passive non-littering for that matter). The difference is based on the latency between the placements of littering in the environment and the subsequent vacating of the area where litter was placed. Active littering occurs when someone places litter while moving or at the moment they start moving. Passive littering is defined as placing litter while in a stationary situation and refraining from cleaning it up when leaving sometime later. This distinction results from a split they make in the model of littering behavior between the action of placing litter and the vacating of that location. Other studies have made other classifications, Several types of littering behavior, of which they name the following. Wedging (pieces of litter are stuffed into gaps between seats and other places), Fragrant Flinging (used materials are thrown through the air), Inching (material is littered and the person slowly moves away from it), Foul Shooting (litter is thrown at a bin, it misses the bin, and the litterer walks away), Undertaking (litter is buried, often in the often in sand at the beach Clean Sweeping (on arriving at a table where others have littered, litter is swept onto the ground), 90%ing (most of the rubbish is put into bin, but some is left behind, or smaller items are dropped), Herd Behavior (the tendency to follow the lead of

other people and behave in an unusual manner, often going past an empty bin to litter next to an overflowing bin.



V. INFLUENCING LITTERING BEHAVIOR:

Several studies have modeled littering behavior in such a way as to provide indications for how to influence littering behavior. These studies were not aimed at packaging design, but their general conclusions can provide clues for guidelines. As said, argue that a conceptual distinction should be made between active and passive littering. They conclude from their research that passive littering is more resistant to change than active littering. As they conclude later from the success in reducing littering through signage and placement of more trash receptacles, which showed that they had succeeded in making subjects switch from passive littering to active non littering. This increase in active non-littering suggests that passive littering maybe maximally reduced by targeting the first stage of the littering process and stopping people from placing their litter in the territory they are occupying in the first place.

VI. COMPONENTS OF LITTER

Most of the litter is used airtime vouchers, paper and food packaging. Some of this waste could be avoided through online method of crediting airtime. Wood waste, paper, cardboard, plastics, cans, textiles, leather, wood, glass, used office paper, wood shavings, hazardous waste, electronic-waste, aluminum cans and bottles are common in the CBD. Dust / sand, leaves, Used air time vouchers disposed of all around cigarette butts that have been thrown on the ground stepped on and discarded with some these waste seen flying around town. The major problem is that the litter is no sorted before it is disposed of hence it may be difference.

VII. LITTER REDUCTION EXPERIENCES:

First the different strategies for minimizing litter that have been applied in practice will be discussed. These strategies can be divided into antecedent strategies and

consequence strategies, occurring either before or after the act of littering respectively. Antecedent strategies that have been applied are related to factors that have been found to be relevant in literature. Firstly litter already present in a certain location is found a relevant factor, i.e. litter begets litter. Hence tidying a location by cleaning up any litter present will help prevent new litter. However, this is a costly solution that has a strong end-of-pipe character. A second strategy is aimed at the trash receptacles. Attempts are made to reduce litter by reconsidering the number, the design and the placement of trash receptacles. It is not necessarily the case that more trash receptacles reduce the amount of litter. This strategy reduced littering by 10%.

VIII. THE VALUE AND APPLICATION OF DEVELOPMENTAL ACTION THEORY:

Developmental action theory is developed in the 20th century, with industrialised nations representing the most advanced form of society. It categorises other nations in terms of their approximation to this theory. Hence, nations are judged to be either more or less developed, and any efforts made by their respective political, social, educational and economic institutions should be directed towards working their way up the 'development' set goal. It will be the practitioners' acumen as inter-pretivists to inculcate littering awareness to their learners through participatory difficult to recycle some of the materials paradigms.

IX. SOLUTIONS

The ideal way to handle the problem of littering is for each member of society to take responsibility and try their best to properly dispose waste. If citizens are required not to litter, appropriate conditions must be provided by local governments. Measures must be taken by appropriate local authorities to ensure more garbage bins are installed in various areas for effective garbage disposal. Installing enough garbage bins in town centers, walking routes, public areas, and near bus stops as well as fast-food restaurants offer convenience in disposing and collecting litter. To avoid additional problems due to overfilling, the bins must be emptied regularly. Unfortunately, the existence of garbage bins do not guarantee that waste will not be dropped in the streets. Enforcing strict litter laws will encourage people not to litter in private and public places. Such laws work towards prohibiting illegal dumping and littering.

Littering penalties and other enforcement measures are common practices worldwide. For instance, the penalty for the first case of littering consists of fines and at least eight hours of community service litter cleanup. For subsequent

offenses, fines and the duration of required community service increases. Intentional littering can result in a one-year suspension of your driver's license or imprisonment for up to 30 days in addition to standard fines and community service. Undoubtedly, penalties have a real effect on littering behavior, but education and raising awareness is crucial in guaranteeing long-term results. Community clean up events can be an effective way for spreading anti-litter messages in society. The issue can also be incorporated in bulletin boards, TV programs, social media platforms, and newsletters in a more intensive way in order to spread the message widely. Furthermore, an anti-littering sign might be placed in highly littered areas such as the streets near public transport stations. These signs serve to constantly remind people that littering is a bad thing that should be avoided.

Some people argue that not only penalties but rewards also might be a good idea. People "caught" doing the right thing may be given rewards like shopping vouchers and their positive disposal behavior publicized in the media or social networks to encourage others to dispose of litter properly.

X. GENERATION OF GUIDELINES:

Based on the literature and the specific package design examples, guidelines can be formulated for package designers. This synthesis has been done in an iterative process based on scenarios of most likely littering behavior, which in turn were based on the classification. At first a set of 25 guidelines was generated. To evaluate these guidelines a twofold strategy was applied. Firstly a creativity session with 9 industrial designers was held and secondly an experienced packaging designer was confronted with the improved guidelines. First, the creativity session will be discussed, then the interview. An assessment was made of the certainty of each of the guidelines. In the creativity session the 9 most uncertain guidelines were presented to the designers without further comments. By letting the designers come up with creative solutions the extent in which the guidelines stimulate creativity was assessed. Furthermore the sensibility and phrasing were evaluated. The interview, on the other hand, was used to evaluate the practical feasibility was evaluated, i.e. to see if and how the guidelines conflict with normal packaging design practice. Again the phrasing was evaluated. Hence, the set of guidelines was tested for completeness and against overlapping guidelines. The individual guidelines were tested for clearness and their ability to stimulate the creativity of designers. This evaluation led to some reformulation of the guidelines, resulting in the following set of 15 guidelines: Provide clear indications for proper use (use cues). Supported by the theory of planned behaviour as in improvement of the

perceived behavioural control and the theory. Prevent closures coming loose from the package. Treat each separately packed sub-unit as if it were a single package. Try to give the package a second function after use. Put a label on the package that states decomposition time. Give the package an appearance of higher value. Based on the assumption that people are less inclined to throw away something of value. Make the user more aware of the package. Design the package in such a way that it can be re-closed and carried along. Give the package more volume and stiffness. Design a package that keeps the user occupied. Design a package that contributes positively to the user's image. Design the pocketing of the packaging to be a ritual. Assure free use of hands as much as possible while using the package. Design a package that can be put away compactly and cleanly. Design the package to function as trash bin for products remains.

XI. CONCLUSIONS

Research has informed many of the initiatives that have been introduced to deal with the problem of littering internationally. Littering causes pollution, a major threat to the environment, and has increasingly become a cause for concern in many countries. As human beings are largely responsible for littering, it is important to understand why people litter, as well as how to encourage people not to litter. This paper explores the reasons and consequences of littering and suggests possible solutions based on international experience. Research related to litter has focused mainly on three points: on determining the amount, the compilation and the location of litter present in certain locations, behavior causing litter and the effectiveness of interventions meant to reduce litter. Now a day's awareness on littering and its consequences was more important for the citizens.

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