ENFORCEMENT AND EFFECTIVENESS OF BAN ON THE USE OF PLASTIC BAGS: A KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) SURVEY IN ISLAMABAD

By

Muhammad Azhar
PIDE2018FMPHILENV09

Supervisor

Dr. Muhammad Nasir

MPhil Environmental Economics
PIDE School of Economics
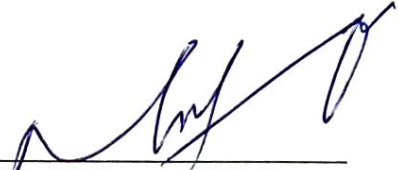# Pakistan Institute of Development Economics Islamabad
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External Examiner:

Dr. Muhammad Irfan
Assistant Professor
COMSATS University
Islamabad

Supervisor:

Dr. Muhammad Nasir
Assistant Professor
PIDE, Islamabad

Head, PIDE School of Economics:

Dr. Shujaat Farooq
Assistant Professor/Head
PIDE School of Economics
PIDE, Islamabad

DECLERATION

I, **Muhammad Azhar**, Roll No: **PIDE2018FMPHILENV09** STUDENT OF **Master of Philosophy (MPhil)** in the subject of **Environmental Economics,** session **2018-2021**, hereby declare that the matter printed in the thesis titled **"ENFORCEMENT AND EFFECTIVENESS OF BAN ON THE USE OF PLASTIC BAGS: A KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) SURVEY IN ISLAMABAD"** is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any university, research institute etc. in Pakistan or abroad.

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Muhammad Azhar

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ABSTRACT

This study examines whether the ban imposed on plastic bags across the capital city of Pakistan is effectively enforced or not. In both urban and rural regions of Islamabad, 400 KAP questionnaires were filled out by shopkeepers and customers. In the questionnaires, knowledge, attitude, and practices of the people regarding the plastic bags were examined and the results are shown on different graphs and tables. Logit model was used for estimation of both the consumers' and retailers' models. The study finds out that the people of Islamabad have good knowledge and attitude towards plastic bags and the ban imposed on them but when it comes to practicality, they are very weak. The reason behind their weak practicality is the weak enforcement of the ban and their fearlessness of getting caught in violation of the ban. Those retailers who have fear of being caught have 11.7% higher probability of following the ban as compared to those who do not have fear of being caught. Moreover, the retailers supporting the ban and those who knew the amount of fine to be charged if violate the ban had 19.5% and 43.2% higher probability respectively, as compared to those retailers who were not supporting or were unaware. Availability of alternatives to retailers also played a vital role in following the ban. Consumers on the other hand were a bit more reluctant towards following the ban. Those consumers who thought they will be caught if violate the ban and those who took their own reusable bag from home when go for shopping had 14.2% and 18.4% higher probability respectively, as compare to those who do not think they will be caught or those who were not taking alternatives for shopping. Base on the results of the study it is suggested that people of Islamabad are more likely to follow the ban if they have more fear of being caught in violation of the ban. Government should strictly enforce the ban by increasing punishment and by increasing the probability of sanctioning people for the violation.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Plastic is one of the most amazing materials on the earth. It is so cheap and convenient that it changed down lives. It is made of polymer, the long repeating chain of molecules groups. In 1907, Bakelite brought the revolutionary invention to the material by introducing synthetic plastic. Synthetic plastic is durable and hence not biodegradable, light weight, and can be moulded into many shapes. After introducing synthetic plastic, everyone started manufacturing it and its uses increased drastically.

Single-use plastic bags (SUPB) are types of plastic bags which are used only once and are mostly provided at shopping centres and grocers stores for free. As free plastic bag is zero or very little economic value, therefore, people do not recognise its environmental hazardousness. Single-use plastic bags are notorious for CO_2 emissions, spoiling sanitations, choking sewer, water pollution, and damaging the scenic view of the overall environment (Akullian, Karp et al. 2006).

Packing foods in plastic, using plastic plates for eating, plastic foods for shopping, Styrofoam cups or disposable cups for tea, etc. all these things contaminate our food with plastic. The use of plastic has become so high that now we can see plastic everywhere around us. It is in our phones, clothes, toys, furniture, cars, toothpaste, and whatnot but most importantly it is in our food. Even the fish we eat sometimes contain micro plastic because of dumping too much plastic into rivers and seas, fishes consider it food and eat it. Plastic is very dangerous to our health because it contains hazardous chemicals.

Plastic contains Polyvinyl chloride, Phthalates, Polycarbonate with Bisphenol A, Polystyrene, and Polyester. All of these materials are very injurious to health and can cause many critical diseases like Polyvinyl chloride can cause birth defects, cancer, skin diseases, vision failure, deafness, etc. Phthalates are endocrine disrupters that can cause asthma, immune system impairment, endometriosis, etc. Bisphenol A can cause diabetes, impaired immune function, obesity, and hyperactivity. (Prager 2021)

According to the Trade Association Plastics Europe, the production of world plastic increased from some 1.5 million tonnes per year to 381 million tonnes from in 1950 to 2015 (Hussain 2019). The United Nations in its report says that every year about 300 million tonnes of plastic waste are produced which is nearly equal to all human population. Norway has proposed that plastic trash be included in the Basel Convention due to excessive plastic contamination in the ocean.

(Bharadwaj, Baland et al. 2020) mentioned that the nominal amount of fine on single-use plastic bags does not seem effective while the important determinant of single plastic bag use is the perceived sanction. Plastic bag use could be reduced by one-half for consumers and two-third for retailers if the perceived sanction becomes doubled. The perceived sanction further depends on the probability of being caught. This implies that for the success of the policy the monitoring of municipal authorities is critically important.

(Barnes, Galgani et al. 2009) found that demand for plastic bags was roughly declined to 90 percent because of the imposition of ban in Ireland. In addition, the country collected revenue equal to 196 million euros and they utilized this revenue by funding it to anti-litter activities.

(Akullian, Karp et al. 2006) conducted a study in Denmark in which they highlighted that the country was able to decline the usage of plastic bags to almost 67 percent by imposing a ban on plastic bags for the first time.

Summers (2012) mentioned that to decrease carbon footprint, plastic bags should be recycled. He said to match the carbon footprint of plastic bags, a paper bag must be used three times and a coon bag 131 times. Therefore, the reuse of plastic bags is necessary so that its carbon footprint decreases.

Pakistan Environmental Protection Agency (PEPA) says that the country produces 55 billion of plastic bags which is expected to increase by 15 percent annually. Pakistan has produced plastic bags on a massive scale that have a very disastrous effect on animals and human lives and also on climate. The reason is they emit dangerous gases and carbon dioxide in the environment when burnt. Animals are also affected by them because sometimes, they ingest them by considering their food. Plastic bags are also notorious for causing the gutters to overflow because they block the gutters and hence produce a bad smell and diseases. (Survey 2012-2013)

(Humna 2015) in the news article mentioned that the ratio of plastic bags in the total litter is 80 percent and due to this more than 80 percent of the drainage overflow and blockages take place. Plastic bags are also home to dangerous mosquitos where they produce larvae and after that cause dengue and malaria. Plastic bags also cause allergies because it is made of copper and chromium which can cause allergies. People associated with the business of plastic bags are at risk of dangerous diseases. To overcome the problem of plastic bags, the Government of Pakistan has taken several measures. [1]

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[1] 14-08-2020

In the year 1997, the manufacturing of plastic bags was prohibited because the government has imposed a blanket ban on it. However, the ban remained ineffective. After this, in the year 2008 the Ministry of Environment made a two-pronged strategy to avoid the problem. The strategy comprised of starting a campaign of "Say No to Plastic Bags" aimed at discouraging and reducing the habit of using plastic bags in excessive quantities. Focus was also given on diverting the attention towards introducing technology to produce degradable plastic so that plastic litter could have disappeared if remained uncollected. The Punjab government has also taken the same measures concerning the reduction of consumption and production of plastic bags. In the year 2002, an ordinance was introduced by the government for the prohibition of the use, sale, import, and manufacture of polythene bags which made it illegal to sell, use or make plastic bags that had a thickness up to 15 microns (Shahid 2011). After that, in the year 2015, the policy of Punjab Environment also adopted the strategy to overcome plastic bags use. Among their suggestions, one was to reduce making plastic bags and provide alternative like paper or bio-degradable bags (Environment Protection Agency Punjab, 2015).

(Shahid 2013) said that an important regulatory initiative was taken in order to reduce the use of plastic bags in Pakistan. Approving by the Ministry of Climate Change (MoCC), the Pakistan Environmental Protection Agency (Pak-EPA), with the consent of the Law and Justice Division, issued a regulation prohibiting the use, sale, manufacture, and import of plastic bags which are not biodegradable and some other plastic products in the jurisdiction of Islamabad Capital Territory, which would be effective from April 2013.

Recently, in July 2019, Pak-EPA and MoCC took an important regulatory initiative to reduce plastic bags waste in the Capital Territory Islamabad effective from 14 August

2019 which completely bans the manufacturing, purchase, sale, imports, usage, and storage of polythene bags in the Islamabad Capital Territory. Manufacturers, importers, wholesalers, shop keeper, hawkers, and stallholder will be fined from 100,000 to 500,000 rupees if found violating the ban, while consumers will be fined 5000 rupees.

1.2 Research Gap

How effective this ban is in reducing the use of plastic bag, however, has not been explored empirically. Moreover, consumers' and retailers' response to this ban has not been investigated to see their perspective regarding this ban. The current study fills this gap by conducting an empirical analysis of the ban on plastic bag in Islamabad.

1.3 Research Objectives

- To examine whether the ban on the single use of plastic bags in the capital city has been effectively enforced across the city.
- To conduct a knowledge, attitude, and practices (KAP) survey to examine key issues regarding abandoning the use of plastic bags and the effectiveness of the ban.

1.4 Significance of The Study

The study provides evidence of whether the ban on the use of plastic bags has been effective and will try to figure out gaps in its enforcement. This, in addition to the KAP results, will help policymakers to identify the key weakness in the enforcement of the ban and make better and effective policies in the future to help prevent the use of plastic bags.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter is consisting of three parts. The first part of this chapter provides reviews of some international studies done for coping with plastic bags problems, the second part reviews some domestic strategies and decisions taken for the reduction of plastic bag use and the last part of the study provides ways to reduce plastic bag pollution.

2.2 Literature Review

2.2.1 Effective Strategies to Reduce Plastic Use: International Evidence

(He 2012) said that regulations on the use of plastic bags were introduced by both China (2008) and Taiwan (2003). It was obligatory for retailers in both countries to price plastic bags. There was a roughly 49 percent decline in the use of newly manufactured plastic bags in China and old bags were reused with the increased number. In Taiwan, two environmentalists, Innes and Yang (2006) highlighted that among the masses environmental awareness was created which helped in the reduction of solid waste of all types generated by households.

(Song, Murphy et al. 2009, Gupta 2011) suggested that conventional plastic bags should be replaced by oxo-biodegradable plastic bags as they expose to water or air it biodegrades. Focusing on alternatives he further said that paper bags are also considered to be a greener choice. But Nolan (2002) exposed the reality of paper bags by saying that it uses 10 times more material than producing a single-use plastic bag. Cellulose, which is present there in the trees and considers to be a sucker of greenhouse gases, is also used in the production of paper bags. Moreover, a paper bag also uses more water

in production than a plastic bag and it also releases greenhouse gases while degrading. However, paper bags can be used for different foods like vegetables, and fruits.

(Gupta 2011) highlighted that on the single use of plastic bags, 6 cents fees were imposed by New York and 5 cents by Toronto to overcome the high usage of plastic shopping bags. The money collected from the imposition of levy were used to produce new biodegradable bags.

After passing the plastic bag legislation in 2007 in Botswana, (Dikgang and Visser 2012) studied the efficiency and effectiveness of plastic bag legislation. They used primary data for estimation and did a quantitative study. They found that compared to pre-plastic bag legislation the consumption of overall plastic bags fell by 50 percent within 18 months. They were up to the opinion that the high price of the bags was the reason for the partial success of the levy.

(Convery, McDonnell et al. 2007) estimated due to the imposition of a levy in Ireland the plastic bags demand was roughly reduced to 90 percent. In addition, the country collected revenue equal to 196 million euros and they utilized this revenue by funding it to anti-litter activities. The result of the levy has been noted in the form of behavioural change of the consumers as they were able to reduce the use of plastic bags for a very long time.

(Luís, Spínola et al. 2010) published a study in which behaviour of consumers was studied in two different markets of Portugal. In Portugal, certain retailers voluntarily charged 2 cents for each shopping bag, and it was discovered that consumers used fewer plastic bags in shops where the price was charged than supermarkets where plastic bags were provided for free.

(Hasson, Leiman et al. 2007) point out to reduce plastic bag litter, legislation was introduced by the government of South Africa in May 2003. The legislation was about thickness restrictions of plastic bags and levies were imposed on their use. According to 2002 regulation, 30 microns' thickness was allowed while consumers had to pay 46 cents for each use of the plastic bag. There was a 60 to 90 percent decrease in the use of plastic bags after introducing this legislation. However, when per bag levy was decreased to 17 cents, the use of plastic bags inclined drastically.

To protect wildlife and decrease litter, in the year 2015, a plastic bag fee of five pence per single use of plastic bag was introduced by the United Kingdom government. This policy helped the government to reduce the consumption of plastic bags in supermarkets by 80 percent. In England only, the usage of plastic bags had reached 7.6 billion in the previous year which is almost equivalent to 61,000 tonnes and 140 bags per person. It is expected to save £60 million of cleaning costs and even will produce more up to £730 million. Excluding the smaller shops, the charge on retailers was up to £250 or even more (Gov. of the UK, 2016).

To completely ban single-use plastic bags, developing Asian countries, for example, Bhutan and Bangladesh also launched some policies but both countries like other developing countries failed in the effective enforcement. Hence, the consumption of plastic bags was not sustainably declined. (Ben, 2008)

One of the cities of Nepal, Pokhara also banned the use of plastic bags in 2010. Some states in India, for instance, Rajasthan in 2010, Delhi in 2009, and Chandigarh in 2008 implemented bans on the use of plastic bags. However, the ban remained ineffective like other Asian countries. However, Himachal Pradesh and Shimla in India were able to effectively implement the ban. The success of the ban was because of the demographic features and role of local environmental groups.

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The effect of non-price instruments and other possible prices was examined by (Gupta 2011). The authors were up to the opinion that to decrease the use of plastic bags less enforcement and monitoring may require in case of non-price instruments and other possible prices. The effectiveness of these policies was tested in the retail sector (semi-organized) through field experiments. The treatments in the policies included (i) a cashback scheme, (ii) information provision to consumers, and (iii) substitutes provision for plastic bags. The results of these interventions suggest that for those consumers who brought bags from home, their proportion increased by 4.6 percent at the beginning of the treatment and post-treatment it was 17.8 percent. On average usage of plastic bags were reduced from 80 percent to 58 percent. It was suggested that because the enforcement capacity is little, a blanket ban may not be effective solution for developing countries. Rather, substitutes availability to plastic bags, providing subsidies on reusable bags, and interventions on low-cost information could make good policy max.

The plastic bag levy, as a tool for changing consumer behaviour, should be accompanied with an awareness and education campaign. MDTCC (Ministry of Domestic Trade, Co-operatives, and Consumerism) broadcasts the environmental message about the negative effects of plastic bag use across the country via electronic media. The usual promotional materials, which are sent to grocery chains and retail outlets, continue to support it. This component must be assessed in order to determine the campaign message's deliverability in context of consumer awareness, knowledge, and attitude, as well as the creation of pro-environmental behaviour. Plastic bag ban campaign supported by consumers give necessary knowledge to policy maker (Sharp, Høj et al. 2010).

The government of Taiwan has effectively achieved its zero-waste target, reducing the average daily per capita weight of MSW from 1.14kg to 0.81kg in 2002. The most essential variables in the minimization of MSW, according to (Shu, Lu et al. 2006), are the government's policy, which mixes MSW collection with recycling and reduction initiatives, as well as the strategy of extended producer responsibility. For example, waste recycling is required by law, and education about environment for the public is being implemented to promote waste recycling and reduction by requiring required public participation. Furthermore, they imposed restrictions on the use of plastic bags.

Public knowledge is equally critical, especially since there is presently no intelligible government legislation or regulation regarding waste disposal by each individual. (Troschinetz and Mihelcic 2009) conducted a study on municipal solid waste management (MSWM) in 23 developing nations, including Malaysia. This research paper point out 12 factors that have an impact on MSWM recycling which are household economics, household education, government finances, government policies, waste segregation and collection, waste characterization, MSWM plan, MSWM administration, personal education about MSWM, land availability and human resource including technology. It also emphasised the interconnectedness of these 12 factors. Government policy, for example, can have an influence on household trash characteristics education. This report is comparable to a prior Taiwan research study in which the state promotes and impose public awareness and waste reduction methods through legislation.

As a direct result of the littering of plastic bags in Bangladesh, real difficulties have arisen. The restriction was extended across the entire country in March 2007. Evidence suggests that plastic bags blocking drains exacerbated the 1988 and 1989 floods, which

buried up to two-thirds of the country. In reaction to drainage issues in Mumbai, the Indian government also decided to ban plastic bags (Ritch, Brennan et al. 2009). Plastic bags were outlawed in Dhaka, Bangladesh's capital city, in 2002 after they choked municipal drains and caused two floods (Spivey 2003). Due to the extensive flooding in metropolitan areas and the associated heightened risk of water-borne illness, bans were preferred over other less severe approaches (Williamson 2003).

The average plastic bag found in supermarket is almost 18 microns thick. Due to widespread pollution in South Africa, all plastic bags smaller than 30 microns thick have been outlawed. Because of the frequency with which these windblown curiosities are seen strewn around and entwined in bushes and branches of trees. Citizens of South Africa refer to plastic bags as the "national flower"(Williamson 2003). Because industry of South Africa lacks the manufacturing competence to make bags thicker than 24 microns, the prohibition was met with strong opposition in the industrial sector (Ritch, Brennan et al. 2009).

One of the popular methods for limiting the use of plastic bags in Europe is taxation. An indirect tax of 0.0051 Euros were imposed on the use of plastic bag in Italy in 1988, which had no influence on consumer behaviour. In Denmark, a weight-based tax and other green taxes were imposed in 1994, to reduce paper and plastic bag consumption and to encourage the use of textile shopping bag. This tax successfully reduced the consumption paper and plastic bag by 66 percent. Use of plastic bag has reduced by 94 percent in Ireland in 2002 from a direct fee of 15 Euro cents per bag on consumers. The extra revenue of 3.5 billion dollars collected in the first year of the new policy was used to fund environmental projects (Ritch, Brennan et al. 2009).

Even though there is a correlation between plastic use in general and resource use as well as industrial growth and better living standards for Americans and much of the rest

of the globe, new attitudes regarding the environment and resources are evolving. On page 164 of Harper's book, the social paradigm is described as a system of beliefs that indirectly moulds and organises the worldview of people. Sociology recognised a paradigm, the Human Exemptionalism Paradigm, and named it (HEP). The Human Exemptionalism Paradigm was identified and labelled as a paradigm in sociology (HEP). The HEP holds the belief that as compared to natural forces, humans are more powerful and hence are immune to biological and physical factors that limit nature (Harper, 2004, p. 64).

2.2.2 Evidence of Effectiveness of Domestic Strategies

On 26 August 1994, a ban was imposed by the Government of Sindh, on the request of EPA Sindh on the purchase, use, sale, and production of black polyethylene bags. Then on 5 June 1995, black polyethylene bags were banned by the Punjab Environmental Protection Department. On 19 February 2001, an ordinance was promulgated by the Balochistan Government titled: "The Balochistan Prohibition on Use and Sale of Polyethylene Bags Ordinance, 2001", prohibiting the use and sale of polythene bags in the Balochistan province.

In 1997, for the first time, an order from Lahore High Court came to implement full ban on the manufacturing of plastic bags but due to lack of enforcement, the ban remained ineffective. After that, the National Assembly of Pakistan, in the year 2008 passed a resolution to start the use of degradable bags and take action to ban single use of plastic bags. In addition, a two-pronged strategy was devised by the Ministry of Environment to curtail the use of plastic bags. Firstly, to discourage the use of plastic bags and to reduce the habit of their inordinate use, the "Say No to Plastic Bag" campaign was launched and secondly, technology was introduced which could make plastic bags degradable so that the uncollected plastic waste vanishes. Furthermore, the

usage of plastic bags having weight less than 30-micron were banned but still the government was unsuccessful in implementation (Shahid 2011).

(Shahid 2013) highlighted that to minimize plastic bag use in Pakistan, Pakistan Environmental Protection Agency (Pak-EPA) took an important regulatory initiative which was approved by the Ministry of Climate Change. A regulation was notified effective from April 2013 which prohibits the manufacture, use, sale, and import of non-degradable plastic bags in the geographical boundary of Islamabad Capital Territory. This step was taken to comply with international market demand for environmental-friendly packaging and to control hazardous waste of plastic bags in long term. (PAK-EPA 2013)

(Naeem 2013) mentioned that by considering the international practice of using oxo-biodegradable plastic bags, the initiative explained above was undertaken. Many countries in America, Europe, and Asia have controlled plastic waste successfully by introducing oxo-biodegradable plastic technology. He further, explains the simplicity of the technology by saying that the machinery does not need alteration, not even the process. To create biodegradable properties in plastic bags just a small amount of olefin-based additive which is hardly from 1 to 3 percent needs to be assorted with the raw material. When this technique is used in the manufacturing of plastic bags, it helps to weaken the internal link of the plastic when it is exposed to water or the open air. Biodegradable bags have been requested by both governmental and commercial sector entities. The Federal Board of Revenue (FBR) has also been advised by the ministry to reduce import duty from 6 to 0 percent on the additive of oxo-biodegradable.

The government of Punjab has taken several measures to reduce the production and consumption of plastic bags. On 5 June 1995, the earliest ban on black polythene bags was put by the Punjab Environment Protection Department. After that, the sale, use,

and manufacturing of plastic bags having less than 15-micron thickness are announced to be illegal by the Punjab Prohibition ordinance, 2002. Thin bags tear easily, and thicker bags do not therefore, the law will help to increase the reuse of the bags. To reduce the usage of plastic bags, the government of Punjab also initiate a campaigns like "Say-No-to-Plastic-Bags" in the year 2009. Few years later in 2015, the Punjab government again approved a policy of Punjab Environment Protection Department policy in which strategies to counter plastic bags use were there. Putting restriction on the production of plastic/ shopping bags and providing alternatives like bio-degradable and paper bag was one of the actions that was suggested to be undertaken (The Daily Express Tribune, 2015).

In a bid to improve environmental conditions and control damage from extensive use of polyethylene bags (shopping bags), the Punjab Environment Protection Department (EPD) took measures to increase the standard weight of a shopping bag, which would increase its cost thereby reducing demand from retailers and wholesalers. The standard weight of a plastic bag was set at 15 microns. Likewise, a massive crackdown against the use of underweight and black coloured plastic bags was carried out across the province. To vanish the tradition of giving plastic bags free of cost in the supermarkets while shopping, The Punjab government planned to increase the prices of plastic bags. The use of black plastic bags having thickness below 15 microns is prohibited by the law but despite the ban, the use of black plastic bags is at its peak. To stop the distribution of plastic bags for free, the price of plastic bags should be increased by increasing their thickness up to 30 microns. (The Daily News, 2015)

The Punjab government is also working to amend the 'Punjab Prohibition on Manufacture, Sale, Use and Import of polythene bags (black or any other polythene bag below fifteen micron thickness)' (Ordinance 2002). Law says no person shall

manufacture, sell, use or import black polythene bags or any polythene bag below fifteen micron thickness or offer any kind of eatable and non-eatable goods in any black polythene bag or any polythene bag below fifteen micron thickness. Any person, who contravenes the provisions of section 3, shall be punished with imprisonment for a term which may extend to three months or with fine which may extend to Rs. 50,000 or both. The free supply of polythene bags to customers by shopkeepers has played havoc on the environment. Under the plan, the weight, thickness, and cost of the polythene bags will be increased significantly to force the majority of the customers to bring cloth-made bags with them for shopping (The Daily News, 2015).

Recently, in July 2019 Pakistan Environmental Protection Agency (PEPA) and the Ministry of climate change (MoCC) took an important regulatory initiative to reduce plastic bags waste in the Capital Territory Islamabad effective from 14 August 2019 which completely bans the manufacturing, purchase, sale, imports, usage and storage of polythene bags in the Islamabad Capital Territory. Manufacturer, importer, wholesaler, Shop keeper, Hawker, and Stallholder will be fine from 100,000 to 500,000 rupees if find violating the ban and while consumer will be fine 5000 rupees. (PEPA 2019)

The literatures suggest different points of view. Some of the literature suggest that there should be complete ban on the use of plastic bags and money collected from the imposition of ban should be use in producing biodegradable plastic bags or anti litter activities, while some has the opinion that the complete blanket ban is not the solution because most of the ban and policies remained ineffective in reducing plastic bag usage in different countries. Some of the authors emphasised on the awareness and education campaigns regarding plastic bag use while the other says that charging for plastic bags

can also reduce the consumption on plastic bag. An author also suggests that increase in the sanction can also reduce plastic bag use while some of the literature were in favour of recycling or replacing plastic bag by oxo-biodegradable plastic bags as these bags biodegrades when expose to air or water.

2.2.3 Ways to Address Plastic Bag Pollution

Plastic bag issue is currently being tickled by two ways. First one is environmental policy and second is behaviour change. To limit single use plastic bag and its litter dumping in ecosystem, governments at all levels have worked and are working to impose environmental policies. Legislatively, three main policies are used to address single use plastic bag problem (1) Bag Fee: Fee needed for utilization of all carryout bags in shop (2) Second Generation Ban: Ban imposed on thin plastic bags and a charge for utilizing shopping bags that are paper, compostable or reusable (3) First Generation Ban – ban only on thin plastic bags (Romer.J 2019).

First-generation plastic bag bans are effective in reducing the number of single-use plastic bags entering the land and coastline, according to documented citizen science studies (Touhey 2019). Currently, California is the only state in the United States with a state-wide form plastic bag regulation that charges a fee, while there are 311 cities in 24 states with their own bag policies (Romer.J 2019). Although there is enough proof that environmental policies such as the single-use plastic bag ban and fee are beneficial at reducing environmental consequences, compliance and enforcement of the restrictions are the limiting aspects of any effective policy.

The second strategy to combat plastic bag pollution is to modify people's habits. Many examples are provided in the environmental conservation behaviour literature to help explain why people engage in certain actions and how to influence behaviour change.

(De Young and behavior 1993) present three methods for motivating behaviour change, the first of which is an informative strategy.

This strategy employs informative messaging to teach individuals why they need to modify their behaviours to address an environmental issue, as well as how they can change their actions to address the problem. This model, also known as the information deficit model of public understanding, linear and as well as action model and was developed in the 1970s. Many social science investigations that employ this model show that having more environmental knowledge does not ensure a change in a person's mind-set, and thus does not lead to more ecologically friendly (Kollmuss and Agyeman 2002).

Individuals are more likely to modify their attitudes about an environmental problem (and thus their behaviours) after first experiencing an environmental concern, according to (De Young and behavior 1993). An experiment that looked at attitudes toward marine debris after engaging in a beach clean-up discovered this adjustment in attitude. Researchers discovered that participation in a beach clean-up boosted people's feelings of well-being, and that these people had more short-term pro-environmental behavioural intentions. However, the study did not show that these intentions were followed (Wyles, Pahl et al. 2017). People can more confidently modify their behaviour after having their own experience with the environment. The reason is that they have a stronger awareness and responsibility for the environmental problems at hand (De Young and behavior 1993).

The employment of positive motivating approaches, according to (De Young and behavior 1993), is the second way to impact behaviour change. Incentives and self-recognition are used in this strategy to influence behaviour. Positive behaviour changes are observed in research when money or monetary incentives are offered for

participating in a behaviour or when social appreciation is given when an individual do a behaviour.

The third strategy involves employing a coercive motivational method, which takes a negative approach to behaviour change by removing certain incentive actions through the imposition of a tax, the production of negative and frightened advertisements, and the creation of barriers to prevent the behaviour from happening, such as a ban. One of the type of coercive motivational behavioural technique is plastic bag policies because they impose a fee or a tax on either alternative paper bags or plastic bag to discourage consumers from using them, or they outright ban plastic bags, effectively prohibiting consumers from using them in the future.

One of the already outlined strategies may be more suited to apply than the others, which may depend on the environmental issues and the human behaviour that has to be altered. However, it's critical to first comprehend why and when people are more likely to engage in pro-environmental behaviours. "Personal norms to conduct pro-environmental action are started by views that environmental conditions threaten what the individual norms and values that the individual can act to decrease the threat," writes (Stern 2000) in his early work. Here theoretical research focuses on how individual react to behavioural changes. However, according to (Kollmuss and Agyeman 2002), "behaviour is not determined by attitudes directly; rather, they impact behavioural attitude, which in turn shape our actions." attitudes are impacted by social ('normative') forces as well as intentions." As a result, a person's actions are impacted by their own ideas and as well as by self-interest, and also by the beliefs of others in their community or social context. These theories are necessary for assessing a person's reaction to a particular environmental situation.

(Stern 2000) also distinguishes between two types of environmentalism, commonly known as environmental behaviour categories: private-sphere environmentalism and public-sphere environmentalism. Supporting environmental legislation and participating in environmental activism are examples of public-sphere environmentalism, both of which achieve environmental purpose indirectly. Other habits that fall under this area of environmentalism include volunteering for or giving to environmental groups. Depending on the shape and size of the policy and environmental organisation being supported, engaging in public-sphere activities can have a significant environmental impact (Stern 2000). Instead of indirect effects, private-sphere conduct has a direct impact on the environment, however they have a very minor positive impact on the natural environment when not carried out by a significant number of people (Stern 2000).

The limited number of studies on plastic-bag-related behaviours focuses on private-sector activities in places without a policy. One research in Japan utilised a "voice-prompt intervention" at the sale point, asking customers if they wanted a plastic bag instead of giving them one instantly. The use of plastic bags decreased by 5% when the voice-prompt intervention strategy was used, according to the results of this study. Although there was a small decrease in bag use, the authors suggest that because they only gathered information for a whole week across four different super markets, a longer time of data gathering could have resulted in a larger change in behaviour (Ohtomo, Ohnuma et al. 2014).

Another study (De Groot, Abrahamse et al. 2013) investigated the impact of messaging in reducing plastic bag usage and encouraging the use of reusable grocery bags. Researchers utilised three types of messaging: (1) injunctive normative messaging,

which stated, "Shoppers in this store feel that reusing grocery bags is an important method to protect the environment."

Please keep using your reusable bags;" (2) personal normative texting that stated, "We appreciate your continued efforts to protect the environment by reusing your bags;"

(3) integrated normative messaging, in which both preceding assertions were blended into a single new statement.

The combined messaging method was found to be the most successful in decreasing plastic bag use, whereas injunctive normative messaging and personal normative messaging were also beneficial to varying degrees. The authors of this study conclude that environmental messaging alone is insufficient to dissuade people from the use of plastic bags, and the most effective way to decrease plastic bag usage is to refuse to give them away or give them access at the place of sales. Individuals' values and beliefs towards the environment are founded in their participation in actions that come within private and public realm environmentalism. Two survey-based tools can be used to measure these values. The New Ecological Paradigm (NEP) and Connectedness to Nature are two popular approaches. NEP is a widely used metric in the field of environmental behaviour that analyses an individual's environmental worldview in a broader sense (Dunlap, Liere et al. 2000). According to the research, the NEP scale is made up of three environmental dimensions: "balance to nature, growth constraints, and human dominance of nature" (Dunlap, Liere et al. 2000), which are all addressed through a set of standardised environmental questions. High NEP scores, which link to high environmental values, have been proven to be important predictors of pro-environmental behaviour in studies (Gatersleben, Murtagh et al. 2014). Connectedness to Nature, on the other side, assesses how closely an individual's identity is linked to the natural environment (Shultz et al. 2005; Mayer & Frantz, 2004). Unlike the NEP,

Sense of connection to Nature is a self-reported score via a visual aid that includes a sequence of seven different Venn diagrams, each with one circle representing "self" and the other "nature." The participant will encircle the Venn-diagram with the correct level of contact between "self" and "nature" depending on how they see their own connection with nature. Interconnectivity to nature has also been demonstrated to be a strong predictor of pro-environmental actions and environmental concerns in studies (Davis, Green et al. 2009).

CHAPTER 3

Data and Methodology

3.1 Introduction

This chapter is divided into three parts. The first part of the chapter presents the study area, the second part research design, and the last part presents econometric modelling where we further explain our variable for both the models and their construction.

3.2 Study Area

The area of my study is Islamabad which is considered to be the second beautiful capital in the world but single-use plastic bags has done so much bad to its scenic view that government finally has to ban them. Islamabad is sited at longitude 72° 24' with east and latitudes 33° 49' north and with an altitude of 457 to 610 meters above the sea level.

The total population of Islamabad is 2.006572 million according to the latest census (2017) and the area of Islamabad is 906.50 square kilometers. A further 3626 square kilometers area is known as the Specified Area, with the Margala Hills in the north and northeast.

Islamabad city is divided into five major zones: Zone I, Zone II, Zone III, Zone IV, & Zone V. Zone IV is the largest in the area while Zone I is the largest developed residential area. Zone 1 is divided into sectors. Each residential sector is identified by a letter of the alphabet and a number and covers an area of approximately 2 km × 2 km.
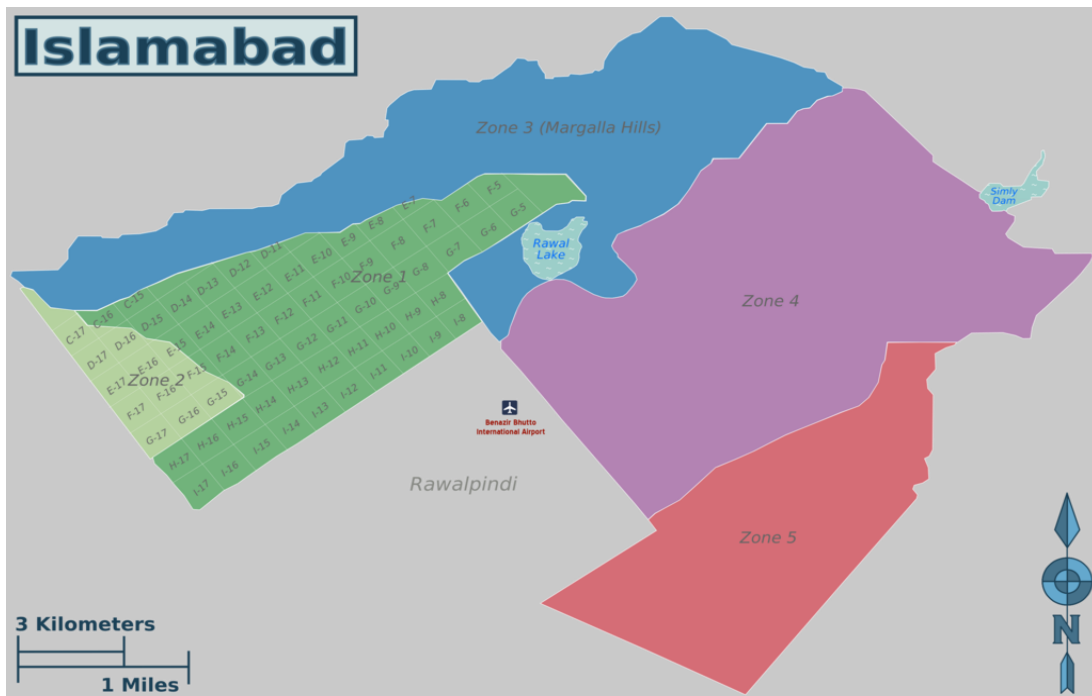
We have collected data in zone 1 and zone 4. Zone 1 is an urban area while zone 4 is a rural area where we wanted to check the enforcement of the ban in both areas to see whether the ban's enforcement is high in the urban or rural area and what are the reasons behind it.

Zone 1 covers an area of 54,958 acres. It is the most organized and beautiful part of Islamabad with the major sectors, I-8 to I-13, H-8 to H-13, G -5 to G-14, F- 6 to F -14, and also the un acquired rural area of Golra village.

Zone 4 is spread over an area of 69,814 acres and is by far the largest zone of Islamabad. Some of the most famous residential schemes including Shahzad town, Bani gala, and Bahria Enclave are located in Zone 4. Rawal Lake and Simli Dam Lake are also located here.

We randomly select 10 sectors out of 31 in zone 1 and filled 200 questionnaires there from both retailers and consumer, 100 from each. We left every 5 shops and houses and took data from the 6th one. The same we did in zone 4. We first randomly select 5

residential areas and then filled 200 questionnaires there from both consumers and retailers, 100 from each. We left every 5 shops and houses and take data from the 6th one. Total of 400 questionnaires are filled in both the areas.

3.3 Research Design

The study is based on primary data. We have done the exploratory data analysis, and for analysing the determinants of ban logistic model is applied. Keeping the objectives in mind, two types of questionnaires are made for this study. The first one is for retailers and second for consumers. A total of 400 questionnaires are filled out from consumers and retailers, with a confidence interval of 5% and a confidence level of 95%. In each region, 200 questionnaires are filled out (urban and rural). The questionnaires are based on KAP (Knowledge, Attitude and Practices) survey. We have tried to see the knowledge of the people about the plastic bags ban in Islamabad, their attitude toward the ban, and then have examined, what are they practicing in reality. Different results are shown on graphs, charts, and tables.

Through the questionnaires, we have collected information on the knowledge, attitude, and practice of the ban as well as about how effectively the ban is followed by consumers and retailers in the two regions.

3.4 Econometrics Modelling

The information regarding KAP is analysed using descriptive analysis and infographics.

The determinants of the effectiveness of ban are examined using the following equation.

$$Ban_i = \beta_0 + \beta KAP_i + \gamma X_i + e_i \qquad (3.1)$$

Where Ban_i represents whether the ban is being followed by consumers or retailers. It has taken the value 1 if the ban is being followed and 0 otherwise. Whereas KAP_i is a vector of the knowledge, attitude, and practices, and X_i is a vector of characteristics of consumers and retailers. Two equations are estimated; the first one is for retailers and the second one for consumers. The logit model is used to estimate both equations.

3.4.1 Variables Construction for Retailers' Model:

Dependent Variable

Ban:

The dependent variable is dummy, taking the value 0 if the ban is not being followed otherwise 1. For constructing the dependent variable, either the ban is being followed or not, a question from retailers was asked that what bags do they provide to the customer. For choices; plastic bags, cloth bags, biodegradable plastic bags, reusable bags, and paper bags are given to them. If the retailers have selected plastic bags, then we assigned the value 0 and 1 otherwise.

Independent Variables

Age:

Age is a continuous variable, representing the number of years of respondents.

Education:

Education is also a continuous variable and represents the completed years of education of respondents either retailer or consumer.

Location:

To check out whether the ban is followed more in the urban area or rural area, location of shops of respondents are taken as an independent variable. If their shops were in rural areas of Islamabad, it is assigned the value 1, otherwise 0.

Fear of being caught:

Fear of being caught is one of the main and important variables in our model. The enforcement of the ban depends upon the fear of being caught. If the fear of being caught is high than the probability of following the ban will be high. The variable is constructed from a question "On the range from 1 to 5, how much do you think you will be caught if violate the ban?" If they have chosen from 1 to 3 we assigned the value 1 and 0 otherwise.

Knowledge of Violation Fee:

Enforcement of the ban also depends upon knowledge of the fine imposed due to violation of the ban. Retailers were asked a question if they know the amount of fines to be charged if they violate the ban. If their answer was yes, then this variable has taken the value of 1 and 0 otherwise.

Support of Ban:

There are two types of people those who support the ban and those who do not support it. The more people are in favour of a ban the more probability of following the ban. To construct this variable, we have asked a question from respondents that what do they think that government should do about single-use plastic bags. From the given options, if they have chosen the government should ban it then it has taken the value of 1 otherwise 0.

Availability of Alternative:

This variable is constructed by asking respondents that if they think the alternative to plastic bags is available to buy in stock. Because the more alternatives to plastic bags are available the more chance is there to go for alternatives rather than violating the ban. If respondents thought that alternatives are available, it has taken a value of 1 and 0 otherwise.

Ban Affecting Sales:

If the ban on plastic bags affects sales of retailers on large scale, they may violate the ban. Therefore, retailers were asked whether single-use plastic bags affect their sales or not if they said yes has taken the value of 1 and 0 otherwise.

3.4.2 Variables Construction for Consumers' Model:

Dependent Variable

Ban:

Ban is our dependent variable in this model too. It is also a binary variable but here its construction is from a different question. A question regarding plastic bags was asked from consumers that when they do shopping, what types of bags do they use. Few options were given that are Single-use plastic bag, Reusable bag, Paper bag, Jute bag, and Biodegradable plastic bag. Those consumers who chose single-use plastic bags from the option were given values of 0 and 1 otherwise. Which means that those consumers who are using single-use plastic bag when shopping is not following the ban and those who use other bags are following.

Independent Variables

Age:

Age is in the number of years of respondents.

Education:

Completed years of schooling of respondents.

Fear of being caught:

Fear of being caught is the variable that could affect the behaviour of consumers regarding following or unfollowing the ban. The more there is fear of being caught the more they will follow the ban and vice versa. The variable is made from a question "on the range from 1 to 5 (where 1 stand for never and 5 for always) how much you are sure you will be caught if violate the single-use plastic bag ban"? If they have chosen from 3 to 5, it has taken a value of 1 and 0 otherwise.

Taking Alternative Bags:

This variable is also in binary form. Consumers were asked that when they go for shopping how often they take their own bag with themselves (from always to never). This question shows their support toward the ban if they are taking alternative or reusable bags along with themselves when go for shopping, they are actually in favour of the ban. Therefore, if they have chosen among often, sometimes, and never from the given options in the question, it has taken a value of 0 and 1 otherwise.

Health Conscious:

The variable of health-conscious is also in a dichotomous form. We asked a question from consumers that what do they think the plastic bag is bad for their health? If their answer was yes it took a value of 1 and 0 otherwise. Those who think that the use of

plastic bags could affect their health may reduce plastic bags which could indirectly mean following the ban.

Knowledge of Ban:

Knowledge of the ban could also affect the enforcement of the ban. Question regarding the SUPBB (single use plastic bag ban) in Islamabad was asked that whether they know about it or not? If the thought, they know about the ban it has taken a value of 1 and 0 otherwise.

Availability of Alternative:

Availability of alternatives to plastic bags has also a direct relationship with following the ban. If more alternatives to plastic bags are available there is more chance that the ban will be followed and if alternatives to the plastic bags are not available, the ban may not be followed. Therefore, a question from consumers was asked that how much they think the alternatives to plastic bags are available. From the given ranges that are from 1 to 5 where 1 stands for not available at all and 5 available, those who have selected 3, 4, and 5 has given a value of 1 and 0 otherwise.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, we present the results of our exploratory data analysis and estimation. The first half of the chapter presents results of the KAP survey for both retailers and consumers and the second part of the chapter shows the results of the empirical model.

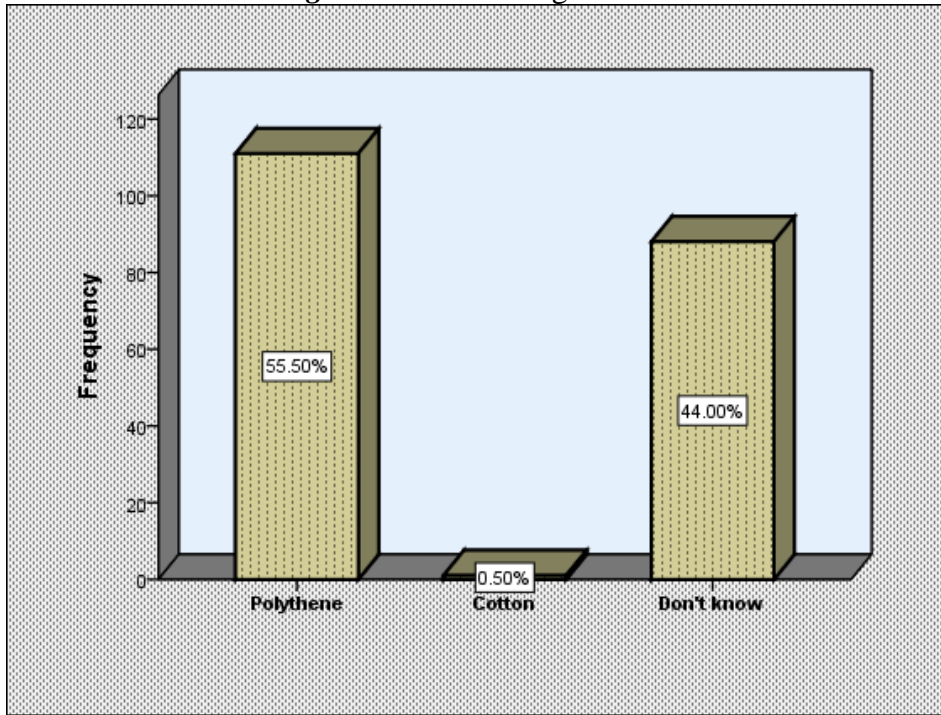## 4.2 KAP Survey Results

4.2.1 KAP Survey Results for Retailers

4.2.1.1 Knowledge Response of Retailers

We have asked a question from 200 respondents to check their knowledge about plastic bag composition. Figure 4.1 presents the percentage distribution of the retailers regarding this question. It can be seen that 55.50 percent people believe that plastic bags are made of polythene, 44 percent do not know the answer while only 0.50 percent of people said that it is made of cotton.

Based on the below figure, we can say that more than 50 percent of people are aware and have knowledge about the composition of plastic bags, and 44 percent people, which is comparatively less do not know the material used in plastic bags that could be the reason behind the ignorance and violation of the ban. The percentage of people who knows about the composition of plastic bag is also not big but little above than average.

rom which

pl6late plastic bags are made

Figure 4.1: Knowledge about the material from which plastic bags are made

Figure 4.2 shows the percentage of respondents using paper bags, cloth bags, biodegradable plastic bags, and jute bags from environmentally friendly bags. Out of 200 respondents, 36 percent were up to the opinion that paper bag is the most environmentally friendly bag. 30.50 percent chose cloth bags, 19.50 percent biodegradable bags and only 1.50 percent chose jute bags while 12.50 did not know the answer.

Most of the people believe that paper bag is an environmentally friendly bag usually because of its quick degradability but as paper bags are made of trees and when you cut down trees to make paper bags you degrade the environment rather than improving it because trees help to reduce carbon dioxide from the environment by absorbing it and by releasing oxygen. The cloth bag is made from cotton and is recyclable while the biodegradable plastic bags degrade quickly in the environment. Therefore, by looking

at the figure we can say that people have good knowledge about the environmentally friendly bags use for shopping.
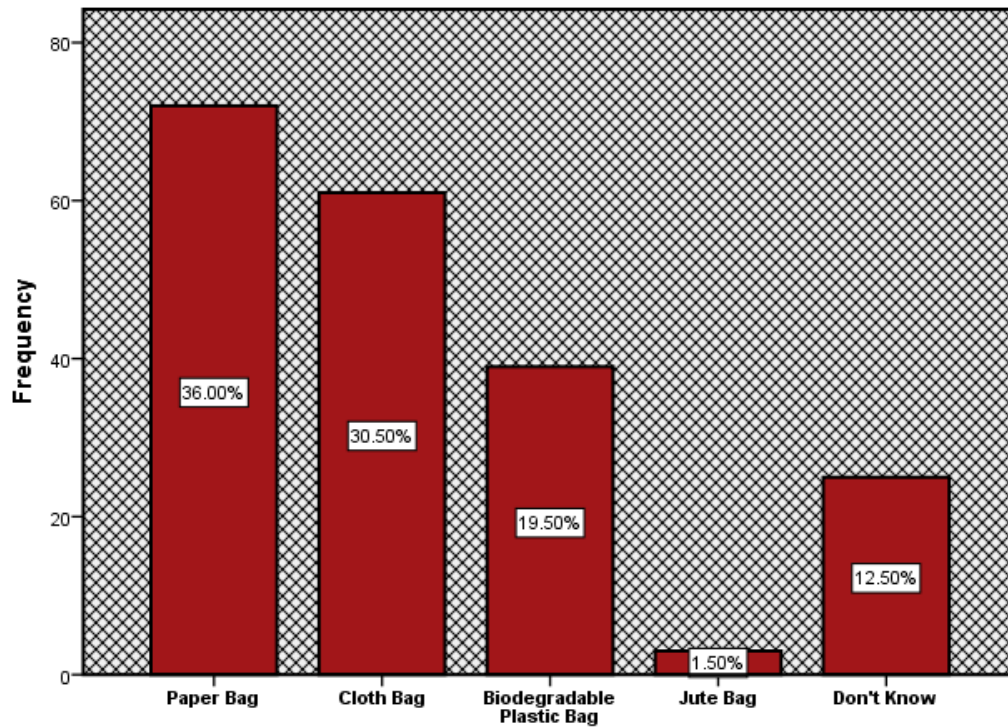
Figure 4.2: Knowledge of retailers regarding bags good for the environment

The figure 4.3 shows the knowledge of the people about environmentally unfriendly bags. Out of 200 respondents, 74.50 percent people were up to the opinion that plastic bags cause more damage to the environment as compared to other bags. 11 percent think that cloth bags are responsible for the bad effect of shopping bags on the environment while only 1.50 percent chose cloth bags as a culprit for environmental degradation. The rest 13 percent were unable to answer the question.

As plastic bags are bad for the environment, health, and scenic view and most of the people have selected the plastic bag option, therefore, based on the above data we can say that most of the people are aware of the illness and bad effects of plastic bags.
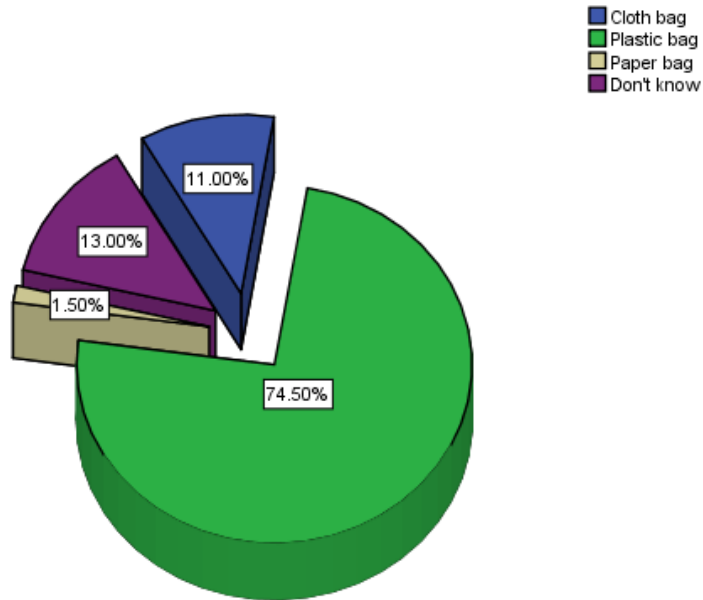
Figure 4.3: Retailers' knowledge about bags bad for the environment

In figure 4.4, represents the percentage of people who present their opinion on what government should do about single-use plastic bags. 29.50 percent of people suggested the government should recycle plastic bags while 26 percent of them emphasized the alternative to plastic bags and asked the government to provide alternatives. 19 percent were up to the opinion that government should ban plastic bags and 17 percent of them advised the government to collect the used plastic bags and burn them. The remaining 11 percent suggested the government not do anything with a plastic bag.

As most people think that government should recycle them and should provide an alternative, therefore, we can say that above-average people have a good opinion about single-use plastic bag.
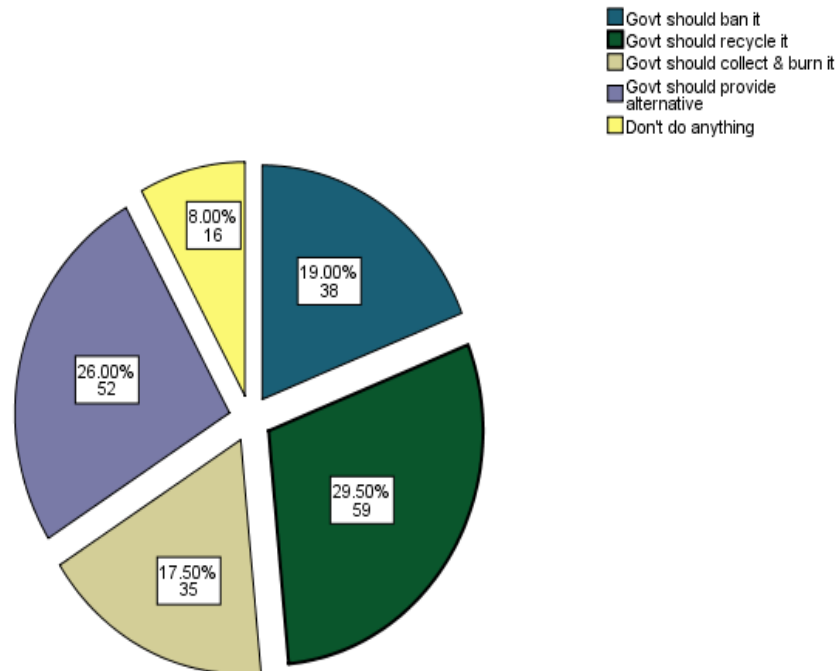
Figure 4.4: What do you think govt should do about SUPBB?

The figure, 4.5 shows the percentage distribution of the people among 200 retailers who know the fees charged on them due to violation of the ban on the use of plastic bags in Islamabad capital territory. 78.50 percent of them did not know the amount to be charged if they violate the ban while only 21.50 percent claimed that they knew the amount.

The percentage clearly shows the weak knowledge of retailers about the fine if someone violates the plastic bag ban and the government's failure by providing the knowledge about the plastic bag ban.
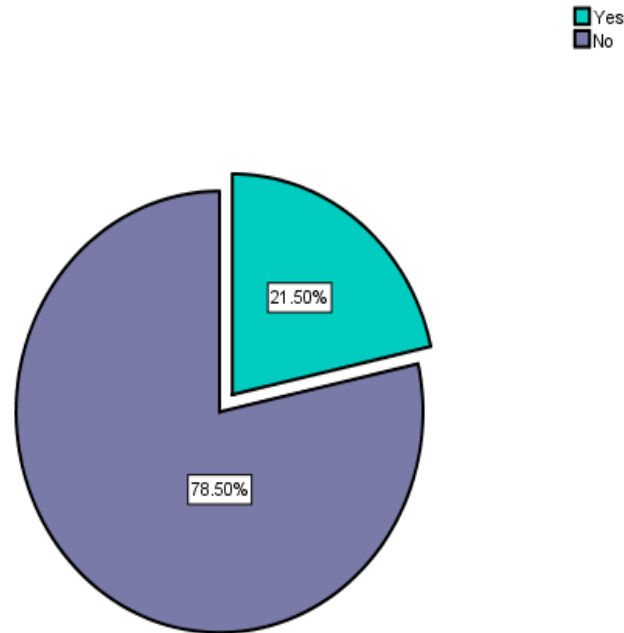
**Figure 4.5**: Knowledge about the fine if a retailer violates the ban

We can say from the above graph that most of the people have good knowledge about the material used in plastic bags and its bad effects on the environment, but they are failed to get knowledge about the fine imposed on the violators of the ban which may be the reason for people ignorance and violation of the ban. This also shows the failure of the government not to convey the knowledge about the ban to the people properly.

4.2.1.2 Attitude Response of Retailers

Retailers were asked the question about their sales if the single-use plastic bag ban has affected their sales. Different retailers had different opinions. In figure 4.6, 31.50 percent out of 200 respondents said that the ban has not affected their sales at all while 16 percent said it has affected their sales slightly. 30.50 percent of respondents said that

their sales are very affected by the ban and 13.50 believed that their sales are influenced by the ban extremely. Only 8.50 percent chose the option moderately.

If we see the figure, we can argue that 52.50 percent of shopkeepers were up to the opinion that the single-use plastic bag ban has affected their sales while 47.50 percent said that their sales have not been affected. Based on the figure we can conclude that SUPBB has slightly affected their sales not very much.
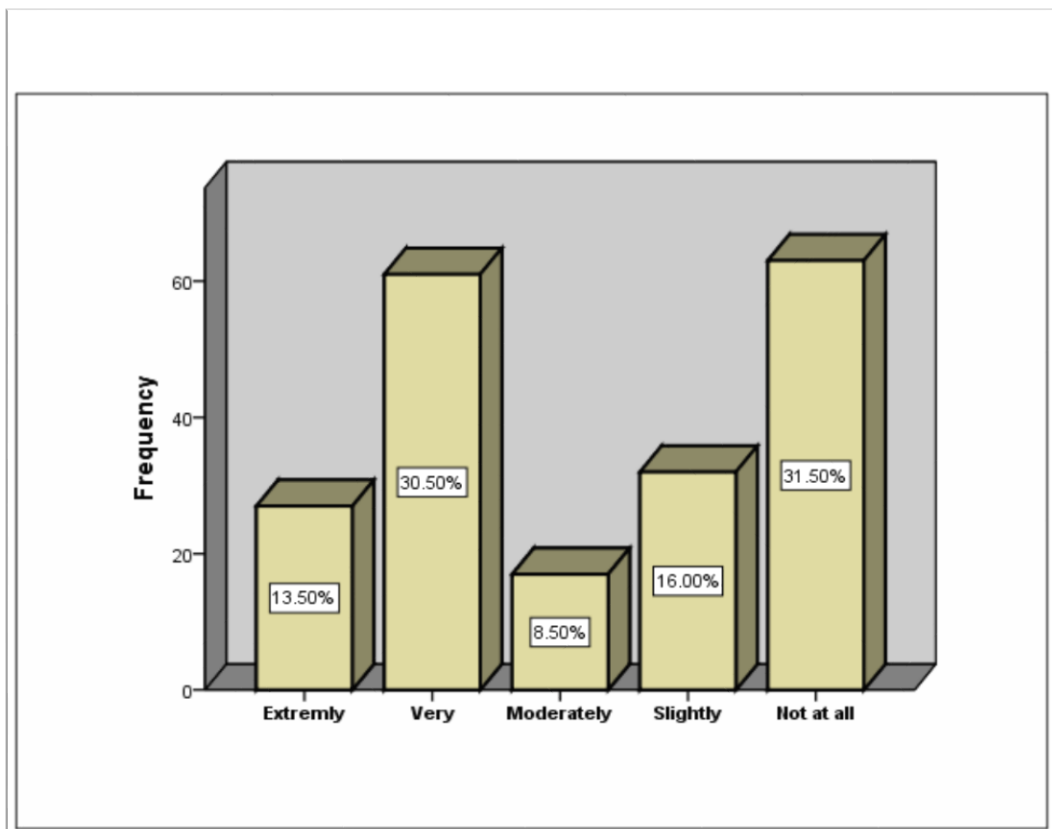
Figure 4.6: Attitude of retailers about SUPBB affecting sales

In figure 4.7 retailers were asked the question that how much they are sure, they will be caught if violated the ban. Out of 200 respondents, 36.50 percent remained neutral while 29 percent were sure that they will be caught if violated the ban. Among 200 respondent's 24 percent were not sure that they will be caught while 5.50 percent selected the option never and only 5 percent were very sure that they will be caught by the authorities if violated the ban.

Figure 4.7 also shows that above-average people which is 34 percent have in their minds that if they sell plastic bags they will be caught by the government and below-average people which is 29.50 percent are not sure. This shows the weakness of the authority in implementing the ban across the Capital city. The high number of people that is 36.50 percent, were not able to say whether they would be caught or not which could be the cause of violation of the ban.
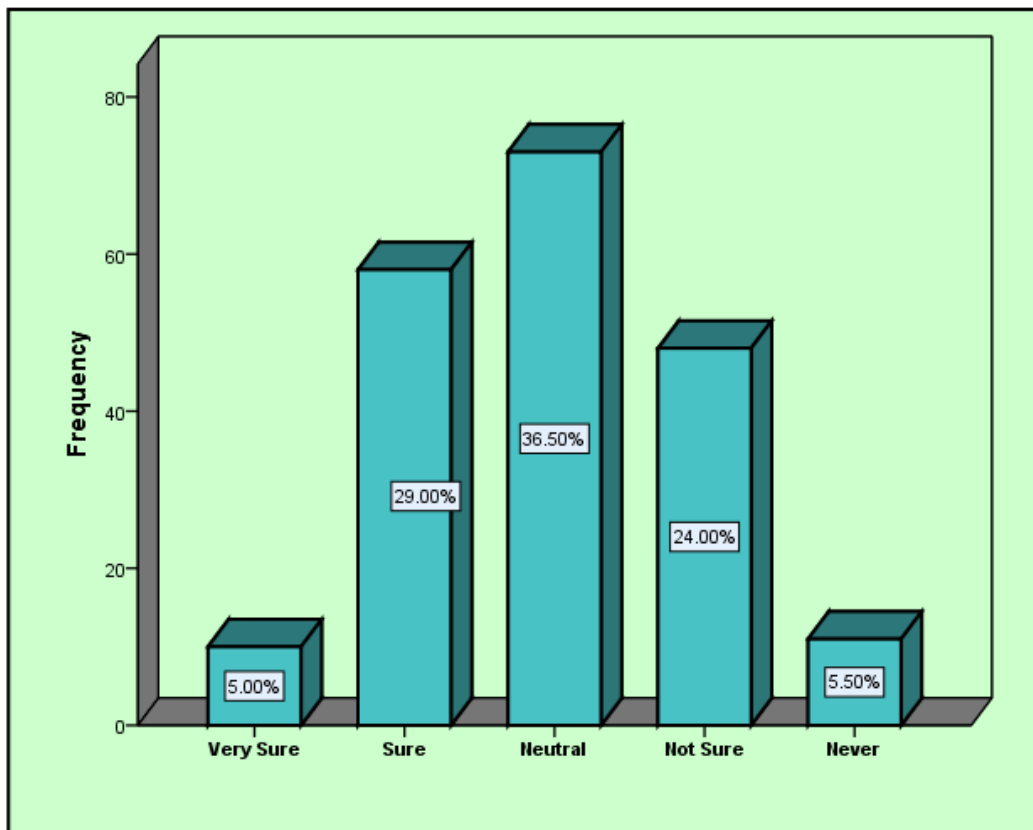
Figure 4.7: Retailers' attitude about getting caught if violate the ban

The 4 slices of the pie chart (figure 4.8) show the percentage distribution of retailers giving their opinion of a question "Why you obey plastic bag ban" asked from 200 retailers in the Islamabad capital territory. 36 percent of the shopkeepers consider it their duty to follow the ban, 27 percent said that it is a good decision, while 19 percent believed that the ban is good for the environment and the fine on violation of the single-use plastic bag ban compel 17 percent of the retailers to obey the ban.

Keeping in view the below figure 4.8 in mind we can say that most of the people have a good attitude towards the ban and they have good reasons to follow it. Only 17.50 percent of retailers chose fine as a reason for following the ban which shows that only 17.50 percent of people do not care about the other illness of plastic bags.
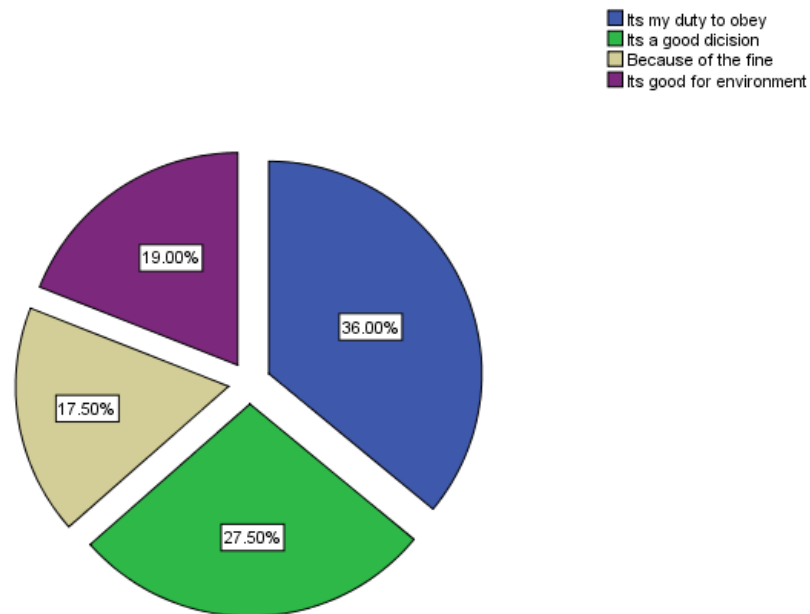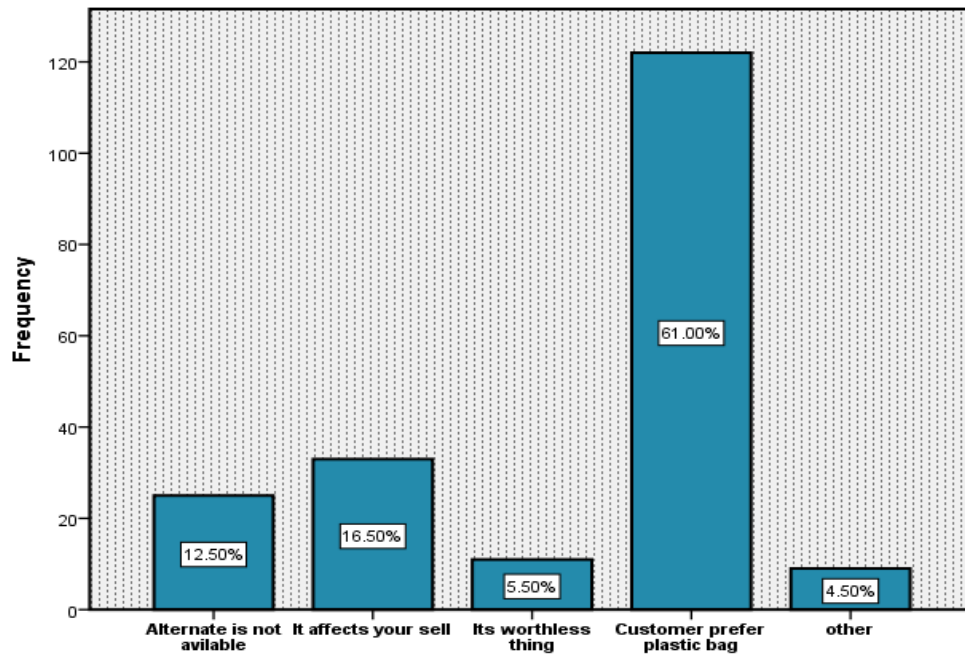

Figure 4.8: Reason for following the ban

Figure 4.9 shows the reasons why retailers disobey the SUPBB (single-use plastic bag ban)? 61 percent of the retailers said that customers prefer plastic bags that's why they sell plastic bags. 16.50 percent said that their sales are affected by it while 12.50 percent of the retailers expressed their views by saying that an alternative to plastic bags is not available and therefore, they are compelled to sell plastic bags. From 200 respondents, only 5.50 percent considered the ban a worthless thing while 4.50 percent selected the other reasons.

The attitude of retailers towards the SUPBB is good. They blame consumers that they prefer plastic bag instead of the alternative available to them that's why they would disobey the ban.


Figure 4.9: Reason for not following SUPBB

By concluding all the above five graphs we can say that retailers' attitude toward the ban is good. They mostly blame consumers that they prefer plastic bags and without them, they shop less therefore, it affects their sales. Very few retailers were afraid of the fine and many of the retailers considered to follow the ban is their duty and consider it a good decision which shows their good attitude towards the ban.

4.2.1.3 Practice Response of Retailers

Figure 4.10 shows data of retailers with whom the alternative is available at their shops. Among the total respondents only 37.50 percent retailers said that they have alternative at their shops while 62.50 percent said that they do not have alternatives.

This shows the weak enforcement of the government. Despite of ban imposed on single use plastic bag; they still do not keep alternative with them.
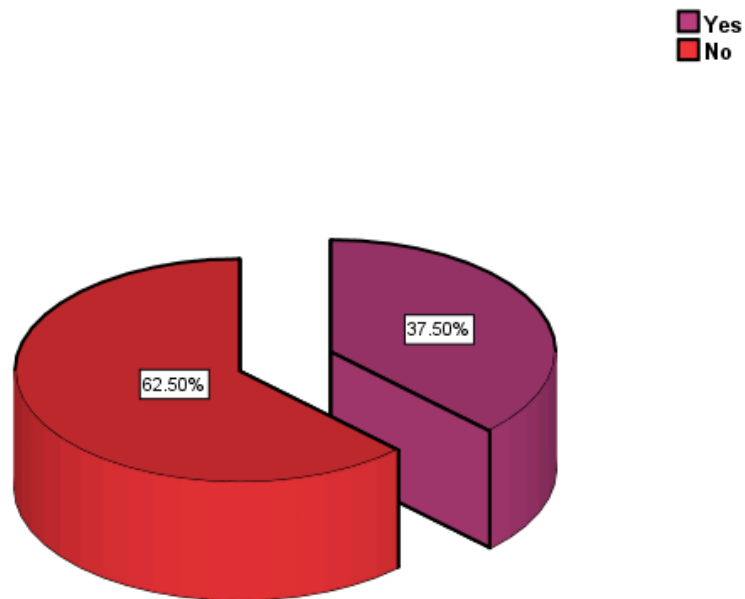
Figure 4.10: Availability of alternatives at shop

The below figure 4.11 shows data of 200 retailers who were asked a question regarding the type of bag they provide to customers when they come for shopping? Among them, 59.50 percent of retailers selected the option plastic bag, 18 percent reusable bag, 15 percent biodegradable plastic bag, while only 7.50 believed that they provide cloth bags to the customer.

Figure 4.11 clearly shows that the practices of the retailers are against the ban. A larger number of retailers still provide plastic bags to the customers which is a clear violation of the ban.
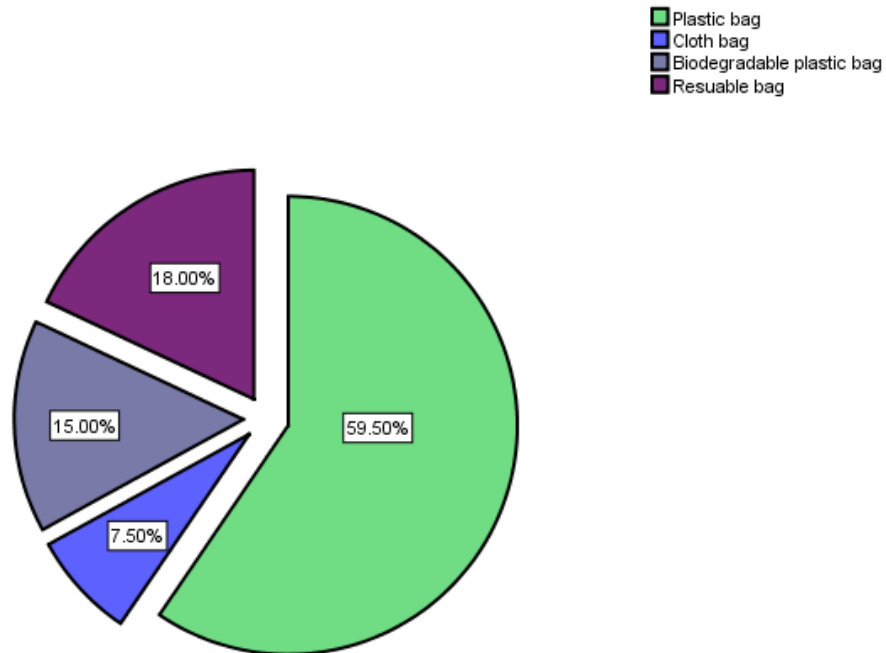
Figure 4.11: Type of bag provide by retailers

Different retailers were asked the question about the price they charged for large-sized alternative bags. 33.33 percent of the total respondents charge 75 rupees, 12.50 percent 70 rupees, 20.83 percent charge 45 rupees, 16.67 percent 40, 12.50 percent, and 12.50 percent charge 35 rupees. Only 1 respondent said he charges 30 rupees for a big-size alternative bag.

The different prices of alternative bags at different places in the urban and rural areas of Islamabad show how the government is careless about the ban. They should check the availability of alternatives to plastic bags and ensure the same prices of alternatives across the city.
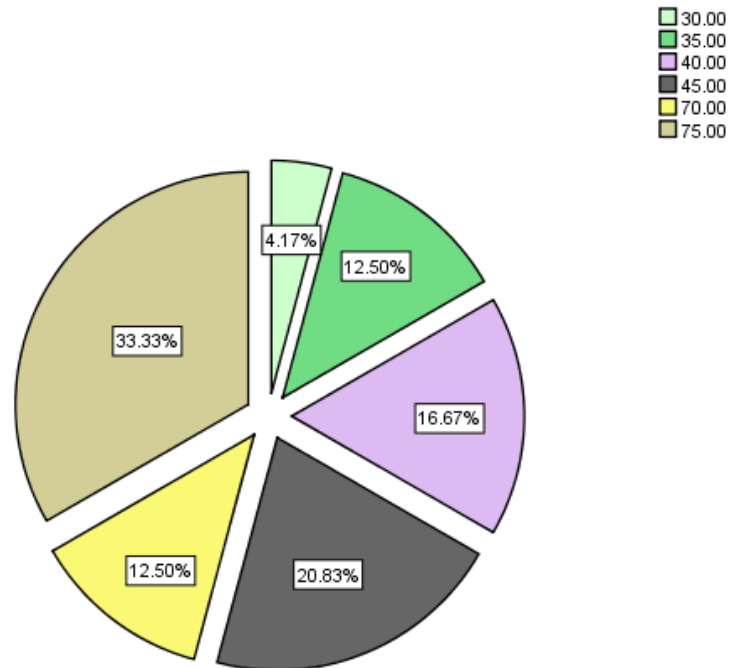
Figure 4.12: Retailers charging for a large bag of alternative

To conclude all the above graphical responses of retailers we can say that despite having good knowledge of plastic bag ban, the material used in a plastic bag, its hazardous effect on environment and health, most of the retailers in Islamabad still provide plastic bags. Their attitude toward the ban is good but when it comes to practicality they are failed and the implementation of the ban by the government is a question mark

4.2.1.4 General Knowledge Response of Retailers:

Some general information questions regarding plastic bags and plastic bag ban were asked. Retailers were asked their opinions regarding the enforcement of the ban. They

were asked how much they think the SUPBB has been followed in Islamabad and 54 percent of them said that the ban has not been followed while 19 percent of them said yes. 27 percent of them did not know the answer that whether the ban has been followed or not.
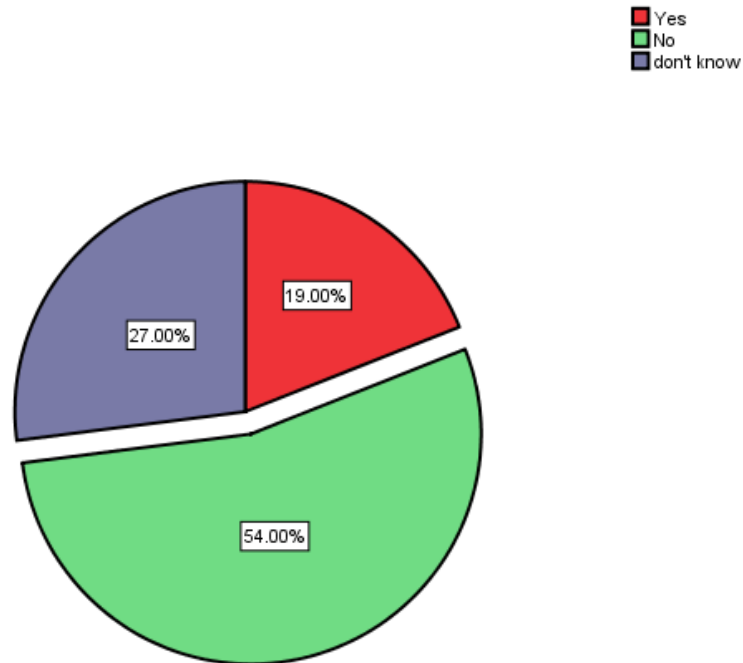
Figure 4.13: Opinion of retailers regarding following the ban

200 retailors were asked a question if they have ever been caught while providing plastic bags to the consumer. Surprisingly, only 9.50 percent of them were caught while having or providing plastic bags and 90.50 percent said they are not caught yet.

The graph clearly shows the weak enforcement of the ban across the city of Islamabad. The 9.50 percent caught ratio is a big question mark on government credibility regarding implementing the ban.
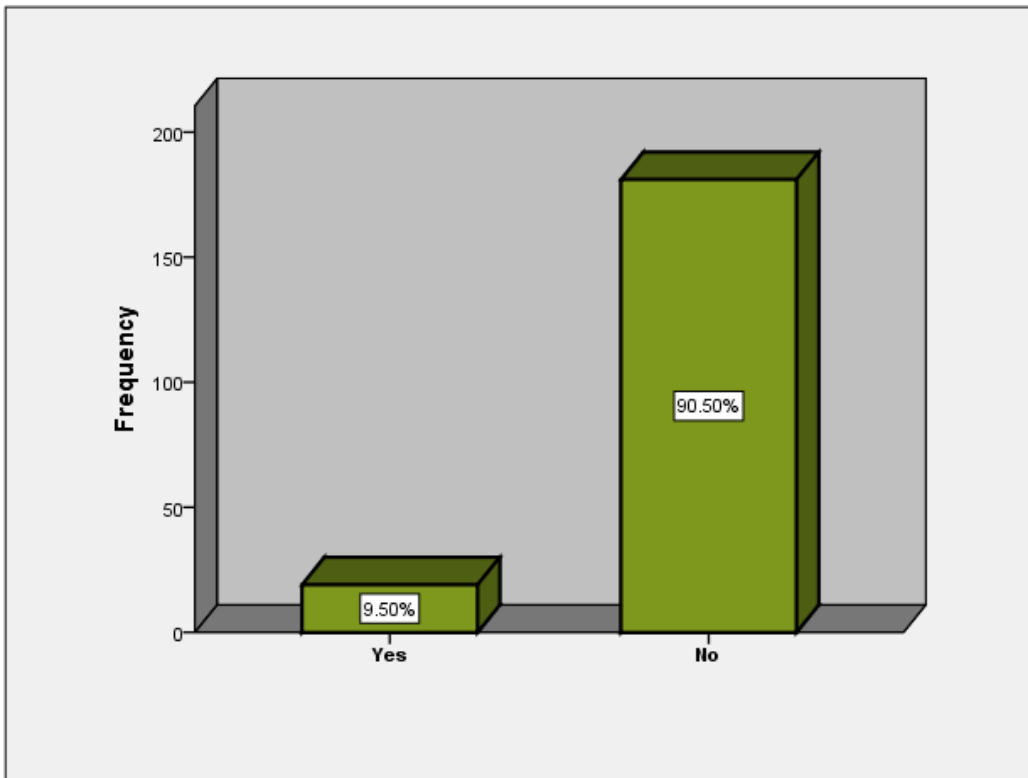
Figure 4.14: Retailers caught while providing plastic bag

In figure 4.15 retailers were asked about the plastic bag that whether it is available to buy in stock or not. Among 200 retailers, 74 percent of them said that it is available to buy in stock while only 26 percent said that it is not.

If you want to reduce a thing in a market, reduce its manufacturing industries and its excess to markets. Therefore, if the government wants to impose the ban strictly, it also has to stop or reduce the big industries selling plastic bags in stock inside Islamabad.
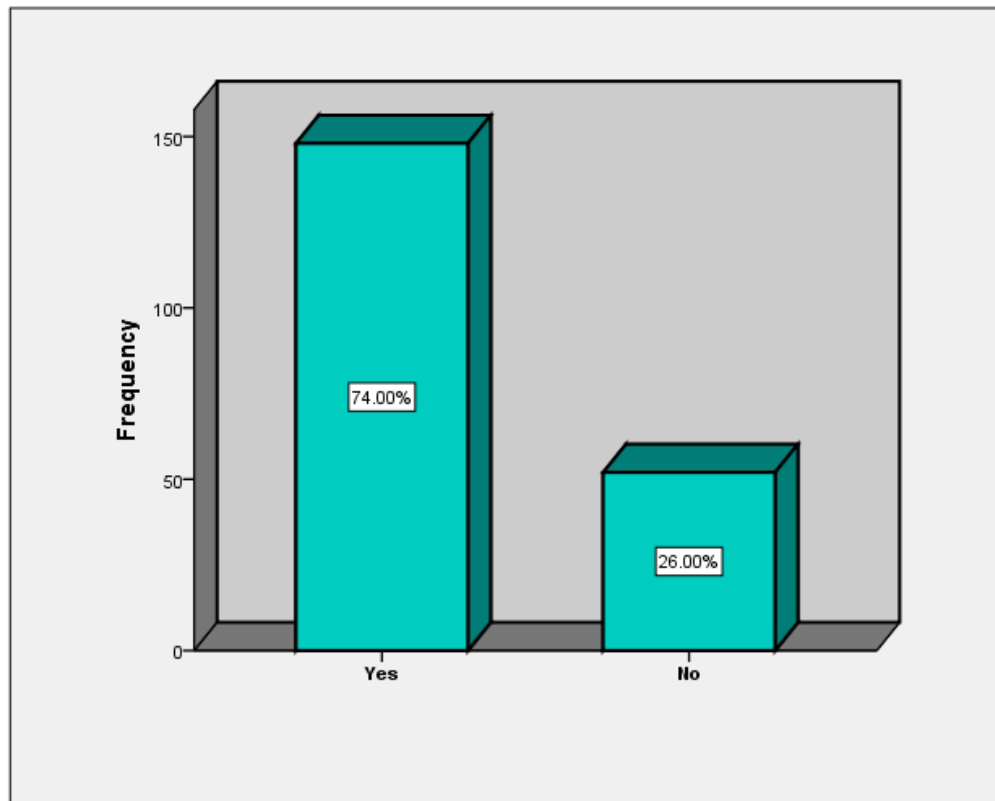
Figure 4.15: Availability of plastic bag to buy is stock

The availability of alternatives is an important factor. If you impose a ban on plastic bags, you should provide an alternative for it as well. Therefore, the question about the availability of alternatives was asked in figure 4.16 that if it is available in stock or not. 27.50 percent of the respondents said that alternative is not available to buy in stock while 20 percent of them said it is available. The 52.50 percent of people did not know whether it is available in stock or not.

This 52 percent also shows that because of weak enforcement, retailers are careless to know about the availability of an alternative to the plastic bags in the market.
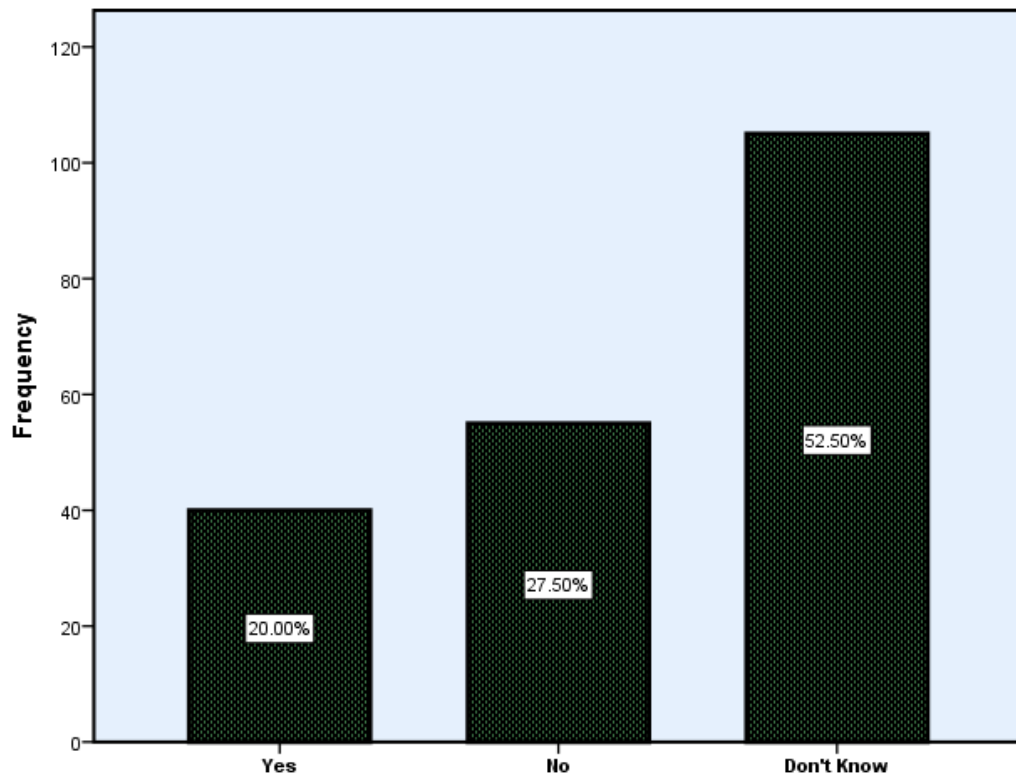
Figure 4.16: Availability of alternatives to buy in stock

4.2.2 KAP Survey Results for Consumers

4.2.2.1 Knowledge Response of Consumers

To check the knowledge about plastic bags and the plastic bag ban in Islamabad capital territory we asked different questions from the consumers. Figure 4.17 shows the knowledge about the material used in making plastic bags. The bigger portion that is 79 percent believed that plastic bags are made of polythene. 2 percent were up to the opinion that it is made from fiber and 1.50 percent selected the option cotton while 17.50 said that they do not know what plastic bags are made of.

Based on figure 4.17, we can say that the consumers of plastic bags in the Islamabad capital territory are well aware of the material used in the manufacturing of plastic bags. Out of two hundred respondents, only 21 percent were either unaware or wrong about the answer.
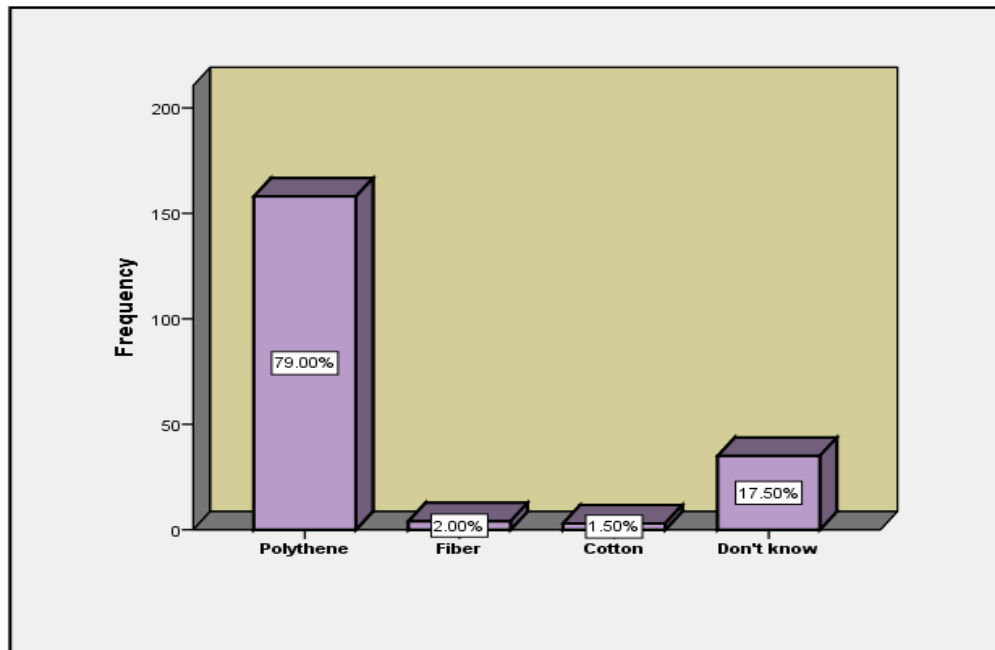
Figure 4.17*: Knowledge about the material from which plastic bags are made*

To check the knowledge of the respondents about the hazardous effect of plastic bags on human health, they were asked if they think plastic bags are bad for health. Out of two hundred respondents, 74.50 percent of them knew that plastic bags are bad for health. 10.50 percent of people think that it is not bad while 15 percent of people did not know whether plastic bags are bad for their health or not.

People of the Islamabad capital territory are aware and have good knowledge about the bad effect of plastic bags on human health. A major portion of them thinks that use of the plastic bag is bad for health while very little portion does not know or they do not think that its effect is bad for health.

Yes
No
Don't know
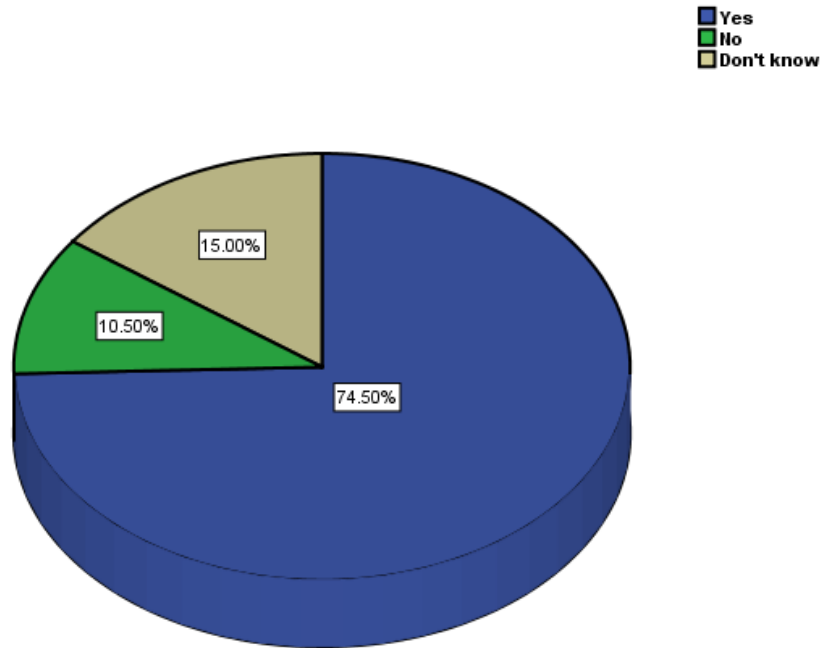
Figure 4.18: Knowledge about plastic bag bad effect on health

Plastic bags are considering to be the biggest culprit for blocking drainages. People of both urban and rural areas of Islamabad were asked if they think that drainages of their areas are badly affected by plastic bags. 43.50 percent (Figure 4.19) of them were agreed to the asked question, while 26 percent were strongly agreed. 22.50 percent of them did not believe that drainages of their area are badly affected by plastic bags and 7.50 percent were strongly disagreed. Only 0.50 percent said that they do not know the answer.

Keeping the below graph in mind we can say that almost 70 percent agreed that drainages of their areas are badly affected by plastic bags. This shows that most of the people in Islamabad know the ill effect of plastic bags in the form of blocking drainages.
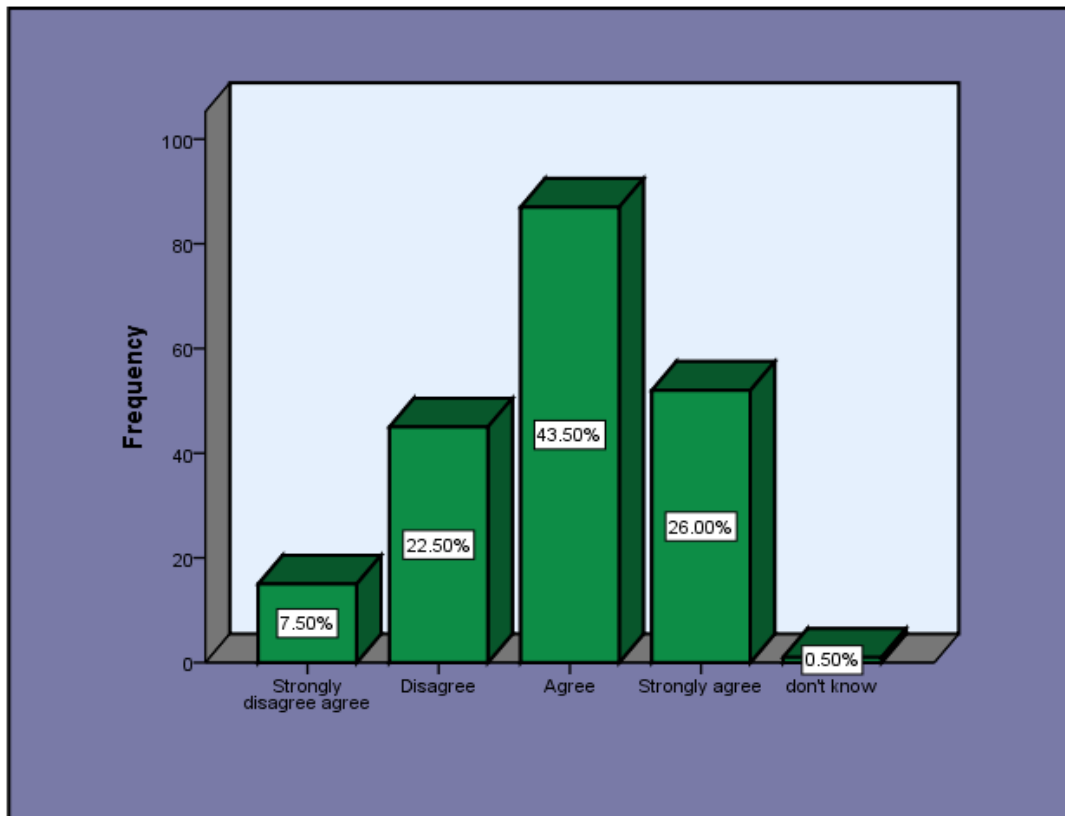
Figure 4.19: Plastic bags blocking drainages

Figure 4.20 represents the respondent's percentage presenting their opinions about SUPB that what government should do about it. Different respondents had different opinions. 32 percent of them said that government should recycle it, 23 percent argued that government should ban it, 22.50 percent were up to the opinion that government should provide alternatives while the same percentage of people out of 200 said that government should collect it and burn it.

Here we can see that most people are in favour of recycling plastic bags. They think recycling would help in cleaning the litter created by plastic bags. The second bigger portion of the pie graph shows that most of the people are in favour of the ban. They support the ban and want the government to ban it.

49
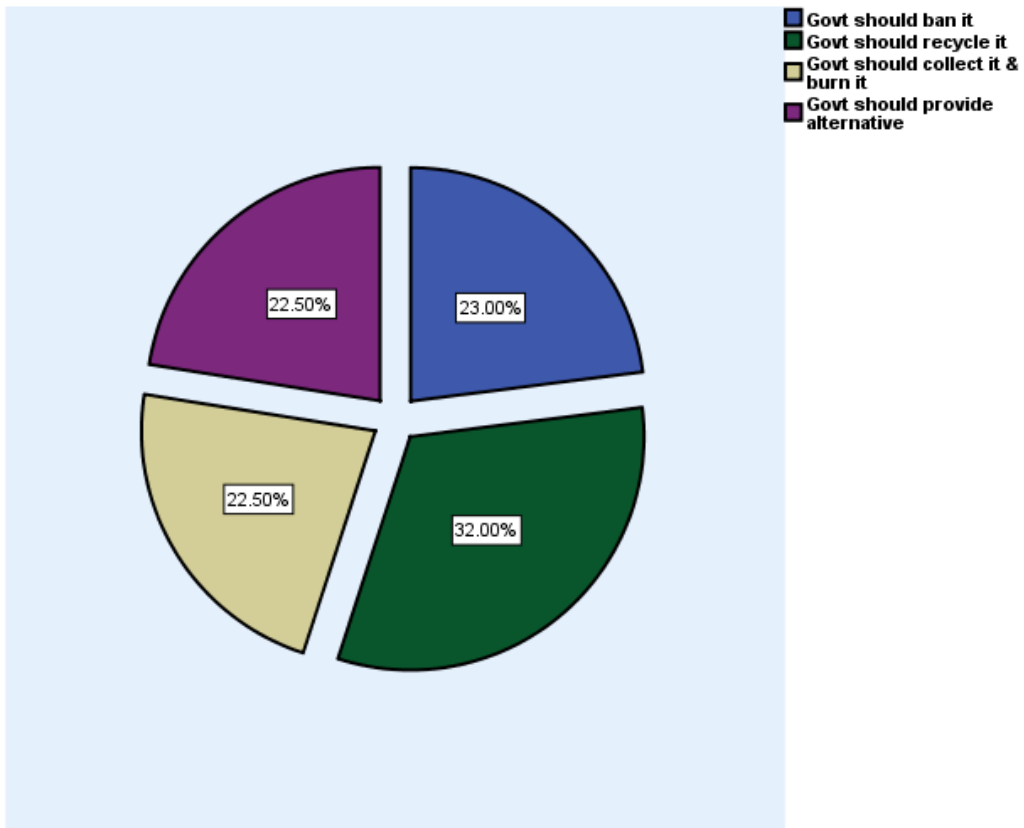
*Figure 4.20:*People's opinion regarding government's action about SUPBB

Different shopping bags have a different impact on the environment. Those consumers who have knowledge about environmental friendly bags may less use those bags which have a bad impact on the environment. To check the knowledge of the people regarding environmental friendly bags, respondents were asked to choose a bag that they know is environmental friendly. 34 percent of the people think that cloth bags are good, 30 percent, 25.50 percent, and 5.0 percent people of them selected biodegradable plastic bag, paper bag, and jute bag as environmental friendly bags (Figure 4.21), respectively. Only 5.50 people said they do not know the answer.

Most of the people have selected cloths bags and biodegradable plastic bags as environmental friendly, which shows that many of the respondents have knowledge about environment friendly shopping bags. Paper bags may look like a good option but paper bags are made from trees which is also a degradation of the environment.

Therefore, cloth bags which are reusable and biodegradable plastic bag, which degrades in the environment are the two good options.
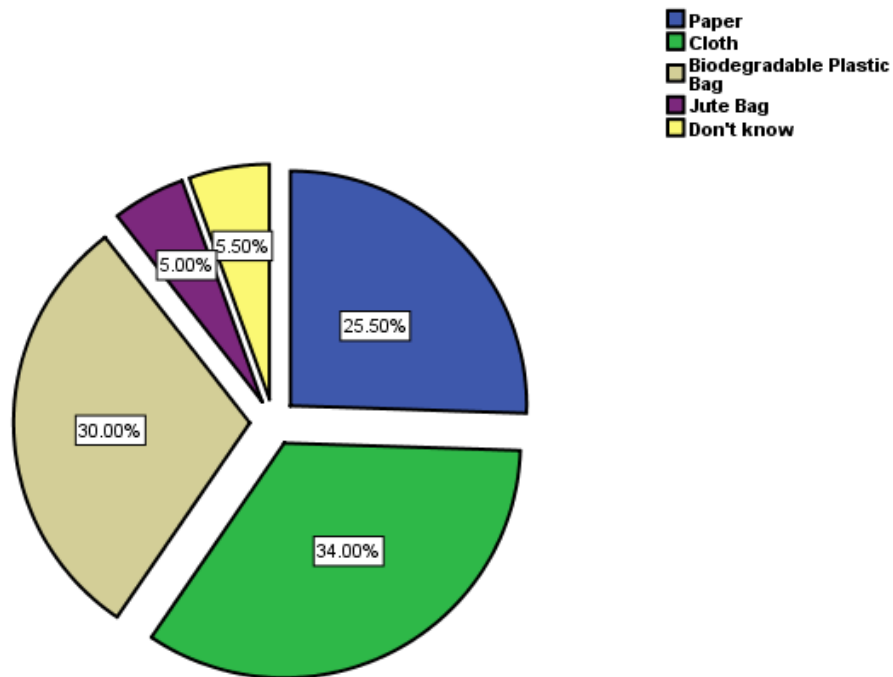
Figure 4.21: Knowledge about environmental friendly bags.

Plastic bags are considered to be the most environmental unfriendly shopping bag. We have tried to know the knowledge of the people regarding the shopping bag that is unfriendly to the environment. The huge number of the respondents that are 72.50 percent out of 200 believed that plastic bag has the more hazardous effect on the environment. 12 percent respondents think jute bags are unfriendly to the environment, 5.50 percent said cloth bag and 4 percent consider biodegradable plastic bag as the culprit for environmental degradation. Only 6 percent said they do not know the answer.

To conclude the results of the graph in nutshell, I would say that respondents are well aware of the shopping bag that are environmental unfriendly but when it come to usage,

they still use plastic bags for shopping and do not bother about the environment. Almost 60 percent of the people in Islamabad still use a plastic bags when shopping.
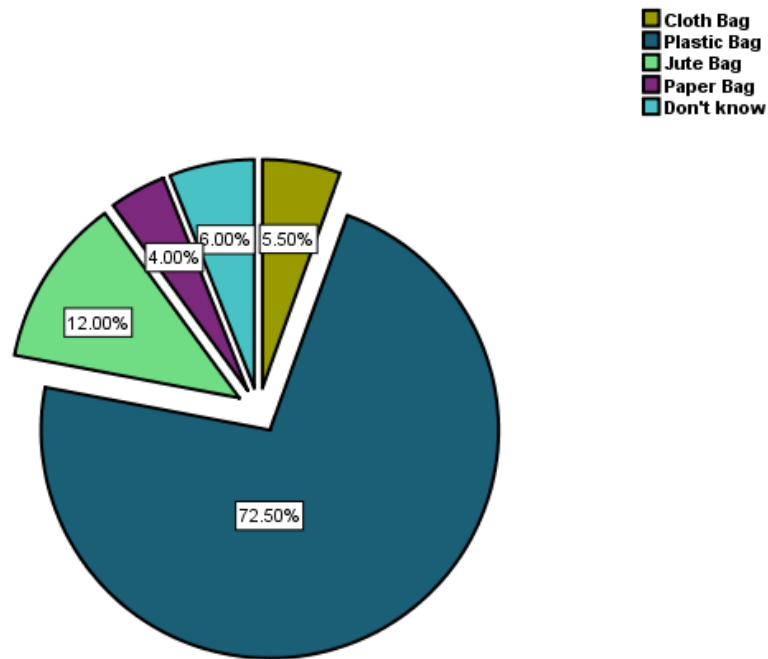
Figure 4.22: Knowledge about environmental unfriendly bags.

We asked a question to know how much of the respondents know about the ban imposed on a single-use plastic bag in Islamabad's capital territory. From the total of 200 respondents, about 72.50 percent of people knew about the ban and only 27.50 people said they are unaware.

The data presented in figure 4.23 clearly, shows that a big number of people know about the ban but still they do not follow it. It may be due to the unawareness of the fine imposed on the violator of the ban or maybe very less fear of being caught. The 27.50 percent of people who are unaware are enough number to point out government failure regarding giving awareness about the ban imposed on SUPB in Islamabad but overall most of the people know about the ban.
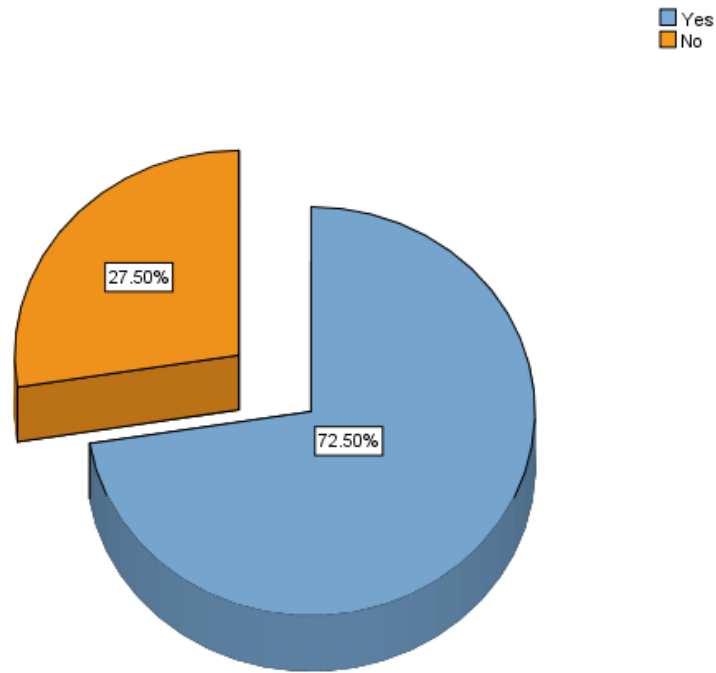
Figure 4.23: Knowledge about SUPBB in Islamabad

In the below figure 4.24, we have asked respondents how do they know about single use plastic bag ban in Islamabad. 56 percent of people's answers were television. 16 percent of people said that newspaper is the mean through which they got aware of the ban. 2 percent of people said radio while 22.50 percent people selected the other option. Only 3.50 percent said they do not know about the mean through which they came to know about the ban.

Enforcement of the ban can also be increased by letting the people know through different means about the fine on violating the ban. The means could be social media, electronic media, and different campaigns. A huge campaign through social media and television would be very effective.

Legend:
- Television
- News Paper
- Radio
- Other
- Don't Know

(Pie chart values: 56.00%, 16.00%, 3.50%, 22.50%, 2.00%)
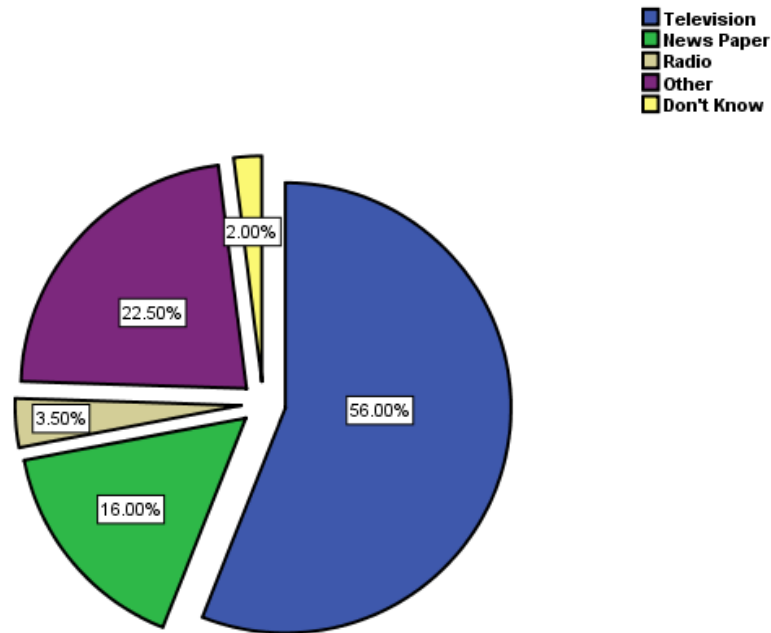
Figure 4.24: Means of knowing about SUPBB

Figure 4.25 shows the percentage of the respondents where they were asked what makes it difficult for them to use an alternative or reusable bags as a substitute of single-use plastic bags when shopping. 35 percent of the respondents said that the alternative available is expensive, 30 percent of them said the alternative is not even available. 15 percent of people replied that taking the reusable bag from home is difficult. 17 percent said they forget to take the reusable bag from home. Only 2.50 percent of people selected the option other for the asked question.
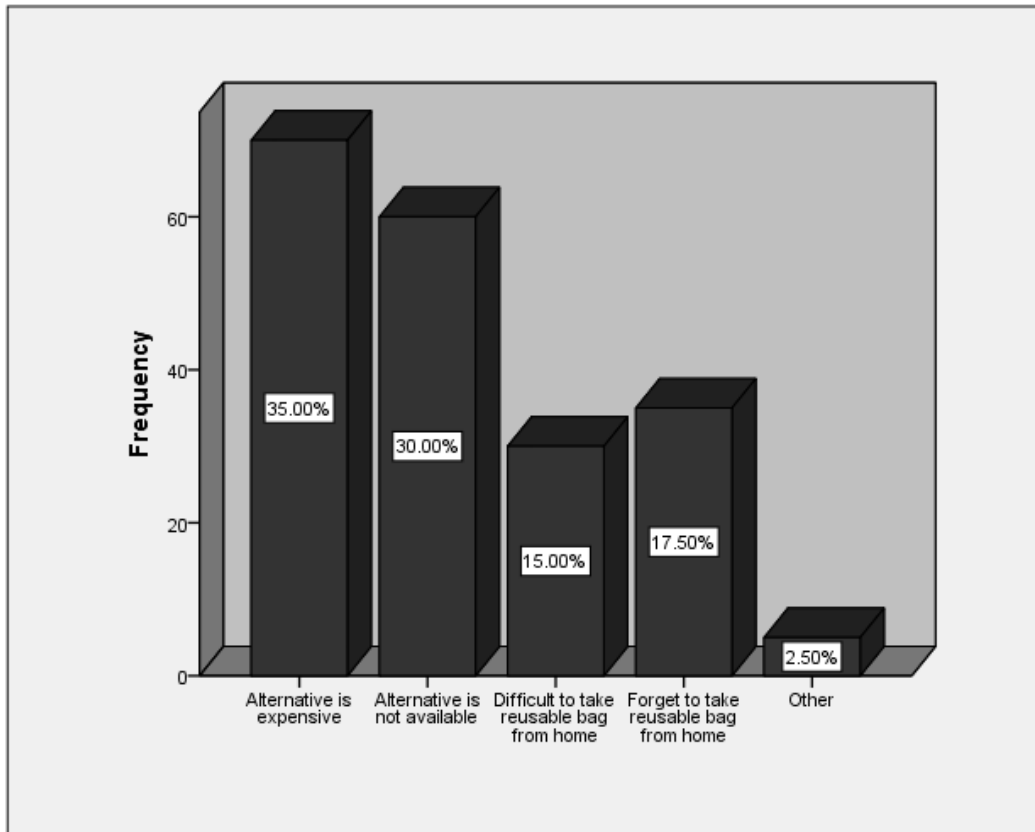
Figure 4.25: Reasons of not using reusable instead of SUPB

To sum up the graphical results of all the above figures, it is concluded that the people

of Islamabad have knowledge about the material used in the manufacturing of plastic

bags. They do know that using a plastic bag is bad for health and it also blocks

drainages. They also know about environmental friendly and unfriendly shopping bags.

Even most of them are aware of the ban imposed on single-use plastic bags but still

high number of people use plastic bags when they do shopping. The reason they give

not follow the ban is not the availability of substitutes and its expensiveness. To

increase the effectiveness of the ban, the government should increase the availability of

alternatives and reduce its prices.

4.2.2.2 Attitude Response of Consumers

We have asked the opinions of different consumers regarding single use plastic bag

ban. About 42 percent of respondents called it a good thing while 28.50 said the ban

imposed is very good (Figure 4.26). 11.50 percent think that the ban is bad while 5.50

percent people's response was very bad regarding the ban. 12.50 percent of people said

that they do not know whether the ban is good or bad.
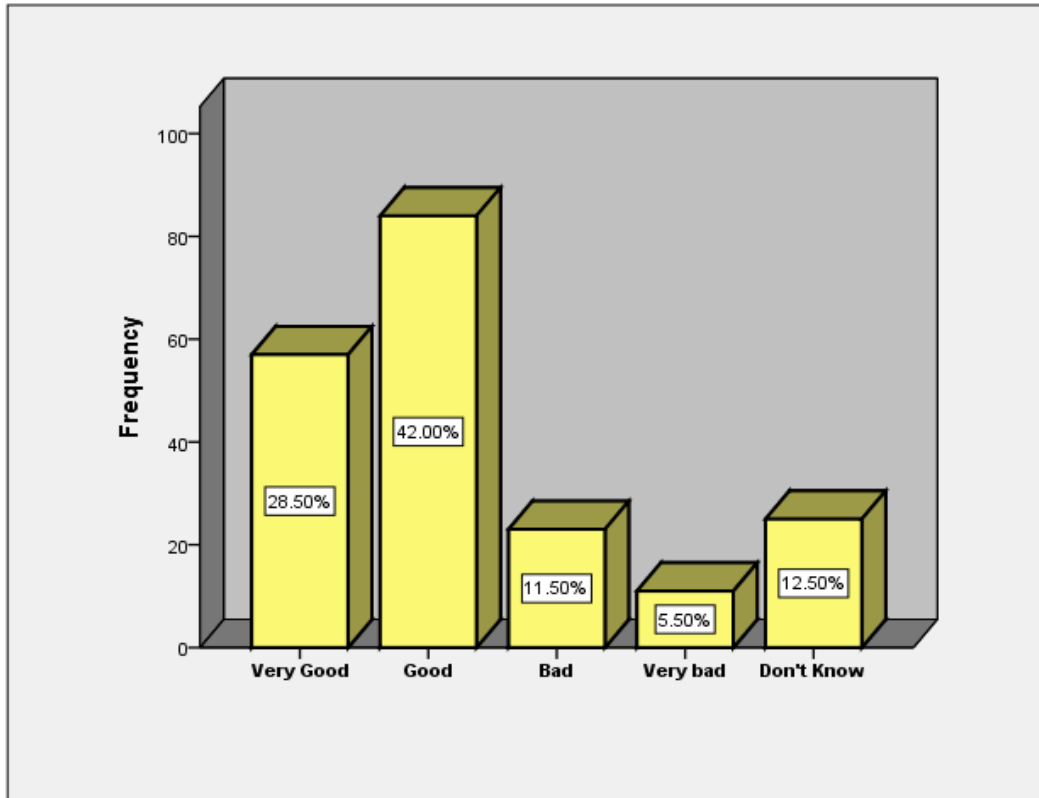
Figure 4.26: Attitude of consumers regarding SUPBB

Almost 70 percent of peoples' attitude regarding the band is good. They think that ban

on plastic bags is a good thing and the government should continue the ban across the

city. Only 17 percent of the people were unhappy from the ban. They think it is a

worthless thing and it would not affect anything.

In figure 4.27 we have asked a question from consumers that how much do they think

plastic bags are harmful to the environment. 53.50 percent of people said that its effect

on the environment is very harmful while 33 percent people said it is just harmful. 9

percent of people were up to the opinion that plastic bags are less harmful to the

environment while only 2.50 percent said that it is not harmful at all. 2 percent of people

did not know whether plastic bags are harmful to the environment or not. 86.50 percent

of people think that plastic bags have a devastating effect on the environment while only 11.50 percent of people said it's not a big deal. This shows that most of the people in Islamabad have an idea about the bad effect of plastic bags on the environment. But they still use plastic bags for shopping which shows contradiction in their saying and doing.
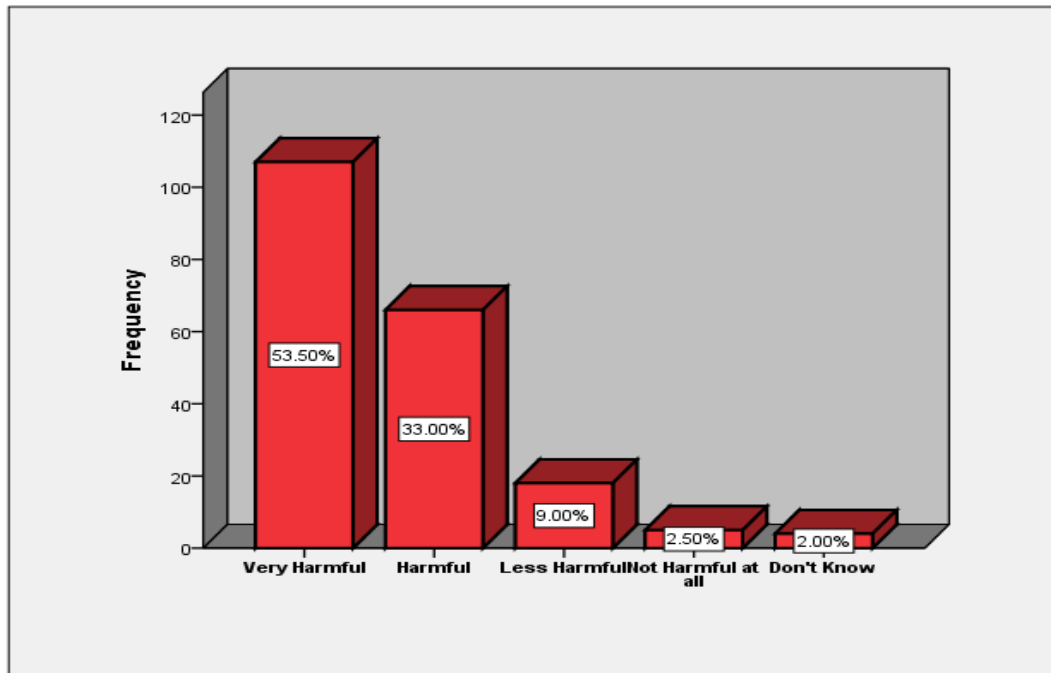
Figure 4.27: Harmfulness of plastic bag on environment

Opinions of almost 200 respondents are taken regarding the effectiveness of the ban imposed on plastic bags in Islamabad. Almost 34 percent of the respondents said that ban is not effective at all while 37 percent of them said it is very less effective. 23 percent of them said that the ban is effective and only 5.50 percent were up to the opinion that it is very effective. Among them 0.50 percent of people did not know whether the ban is effective or not.

Figure 4.28 clearly shows that above-average respondents' (that is almost 71 percent) opinion regarding the ban effectiveness is not good and they think that the ban imposed on single use plastic bag is not effective in the capital city. This shows their attitude towards the ban and its imposition.

Legend:
- Not Effective
- Less Effective
- Effective
- Very Effective
- Don't know

Pie chart values: 23.00%, 5.50%, 0.50%, 34.00%, 37.00%
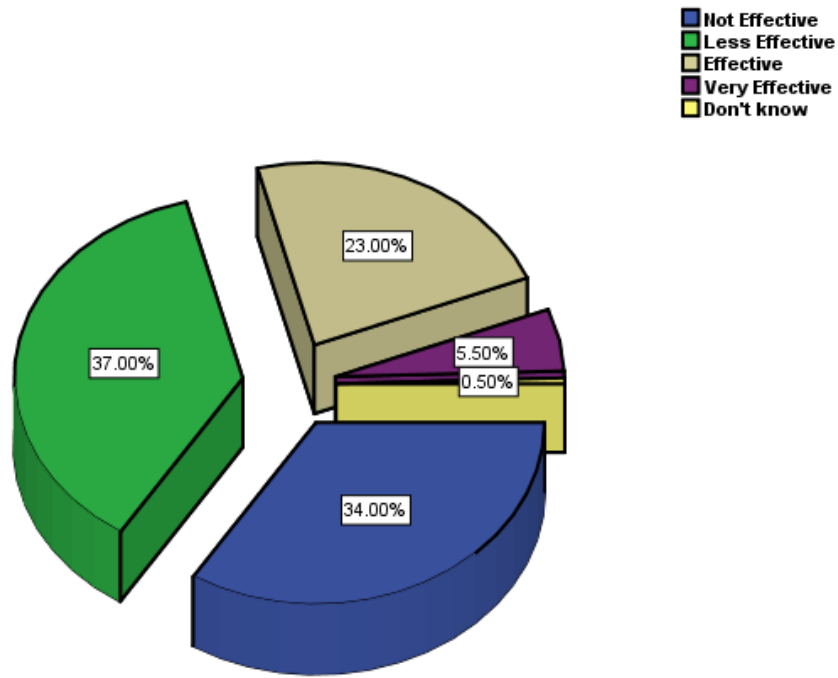
Figure 4.28: Opinions regarding effectiveness of the ban

In figure 4.29, respondents were asked, if they would like to reduce the consumption of plastic bags or not. The above graph clearly shows that 88.50 percent of the respondents are willing to reduce their use of plastic bags and only 11.50 percent of people prefer to use plastic bags. This also shows the difference between their saying and doings. Most people want to reduce the use of plastic bags but when it comes to practicality, most of them still use and prefer plastic bags.
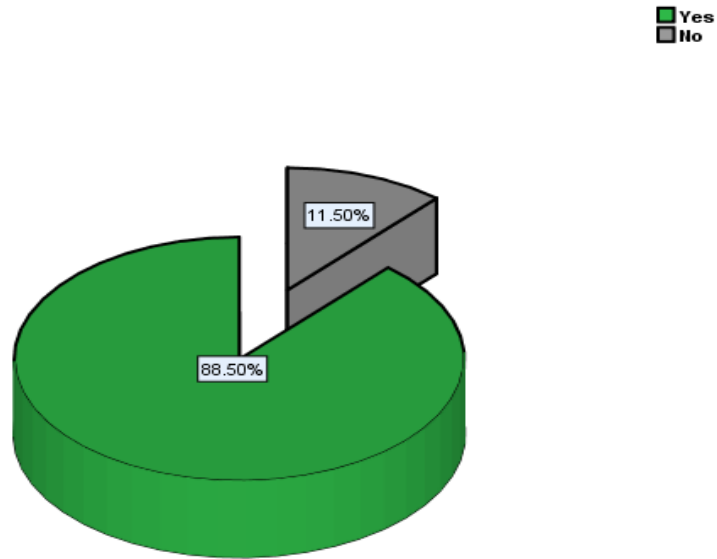
Figure 4.29: Reducing the use of SUPB

To check the attitude of people of Islamabad regarding the SUPBB, we asked respondents a question in the below figure 4.30 that if they have bought a reusable shopping bag with intend of using fewer plastic bags. Among 200 respondents, 54 percent of them said yes while 46 percent of them said that they have never bought a reusable bag with intend of using fewer plastic bags.

This shows that the attitude of the people of Islamabad is good toward the single-use plastic bag ban. Above average people of them have bought alternative or reusable bags to comply with the ban.

Yes
No

54.00%

46.00%
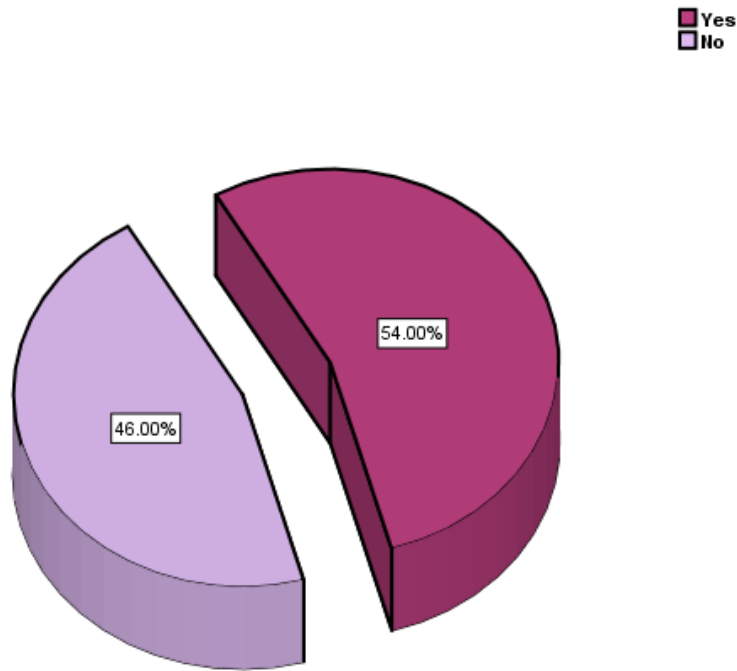
Figure 4.30: Buying reusable bag with the intent of using the fewer plastic bag

In conclusion to all the above graphs, attitude response of the retailers regarding the ban is good. They think that plastic bag effects environment and ban is a good initiative of the government to tickle town environmental pollution. They want to reduce their consumption of plastic bags and also believe that ban is not effective in the city.

4.2.2.3 Practice Response of Retailers

In figure 4.31, the percentage of people out of 200 respondents are shown in which they have asked that how much they think they reuse the plastic bags. 32.50 percent of people among them said they never reuse plastic bags. 31 percent selected the option of sometimes, 17.50 percent often and 13 percent selected usually. While only 6 percent of them said they always reuse plastic bags.

To examine the below figure, we can say that the people of Islamabad or reluctant to reuse plastic bags. They mostly throw it which causes the unaesthetic view and also becomes the cause of blocking drainages.
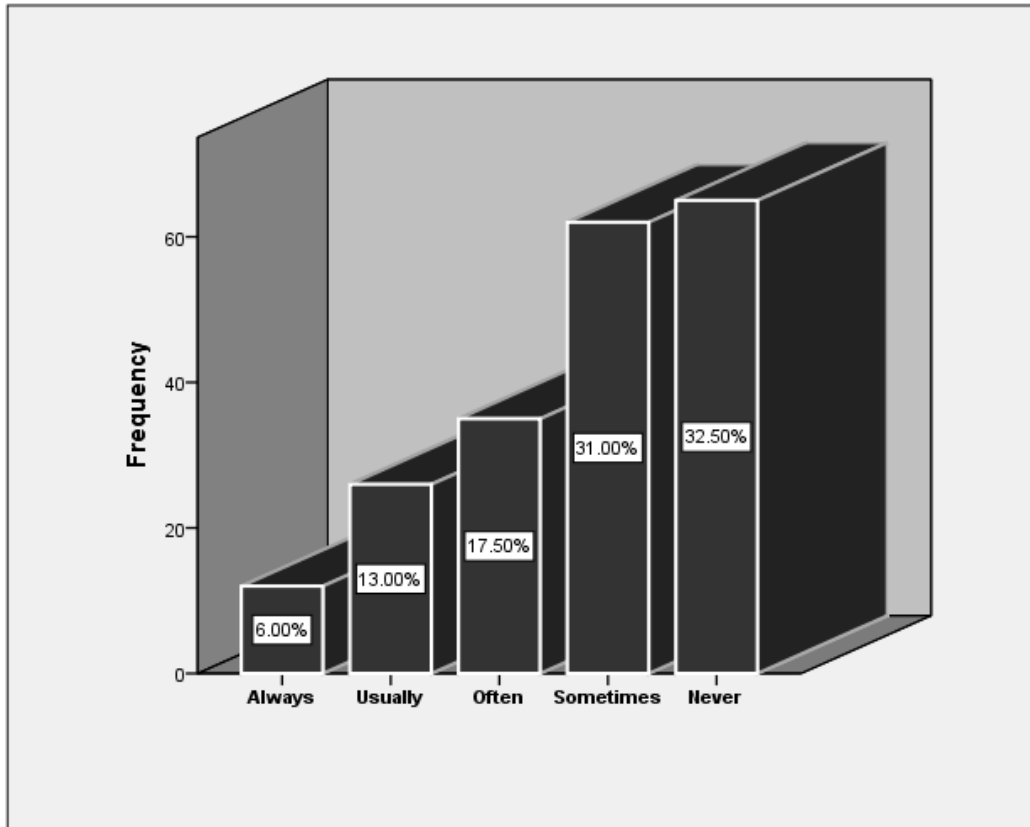
Figure 4.31: Reusing plastic bags

To know whether the consumers are using plastic bags they were indirectly asked a question do they think retailers still provide the plastic bags. If retailers do, it is quite possible that consumers will also use plastic bags. 33 percent of the respondents said that shopkeepers always provide plastic bags and they never stopped providing them (Figure 4.32). 25 percent of them selected the option usually, 21 percent often and 12.50 percent sometimes. While only 8 percent of them said that retailers never provide plastic bags after the imposition of the ban.

We can see the bigger portions of the pie is of those respondents who believe that retailers still provide plastic bags. If retailers are providing plastic bags it is possible

that consumers are also using plastic bags which means that practically, they are not following the ban.
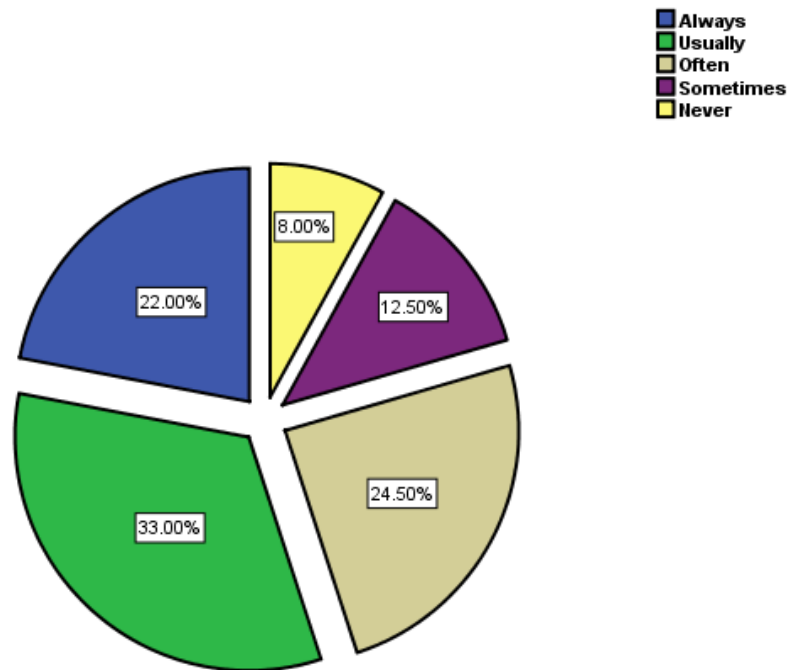
Figure 4.32: Surety regarding retailers providing plastic bags.

Now a direct question was asked from the respondents that what type of bag they actually use when they do shopping. Figure 4.33 shows that almost 56.50 percent of people use plastic bags when they do shopping which is a big question mark on imposition of the ban. 13.50 percent of people said they use reusable bags, 16 percent people said they use biodegradable plastic bags, 9.50 percent of people chose paper bag as an option while 4.50 percent people said they use jute bag.

The figure below clearly shows that how many people of Islamabad are practically following the ban. We can see that government has failed to implement the ban properly in the capital city. More than half of the people are not following the ban while only a few of them use reusable bags and biodegradable bags.

Legend:
- Single use plastic bag
- Resuable bag
- Paper bag
- Jute bag
- biodegradable plastic bag

14.00%
3.50%
9.50%
59.50%
13.50%
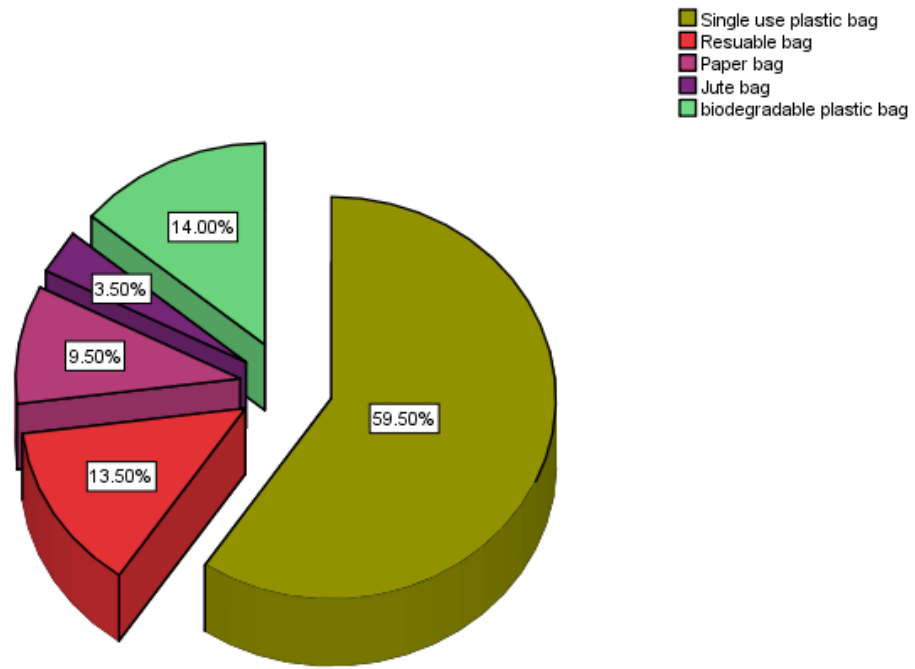
Figure 4.33: Type of bag use for shopping

Figure 4.34 shows, what respondents do with the majority of their plastic bags when they used them once. 43 percent of the respondents said that they throw it, 22.50 percent people said that they place it in the dust bin, 20 percent of them believed that they reuse it, 12.50 percent think that they burn it after using them once and only 2 percent people said that they return it to the shopkeeper.

Most of the respondents which is a bit little than half, throw plastic bags when they use it once this shows how careless people of Islamabad are regarding the plastic pollution and scenic view of the capital city.
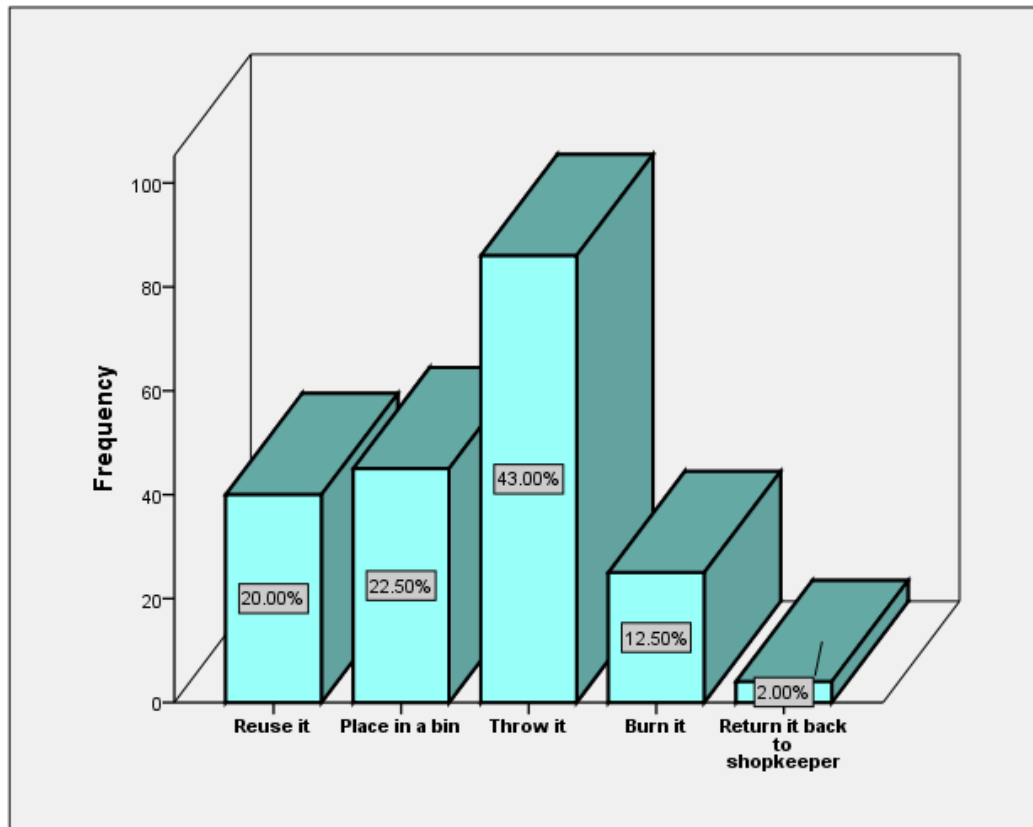
Figure 4.34: Action performed with plastic bags after using them once

We asked the opinions of 200 respondents that if they think plastic bags should be ban and what do they think are the reasons. In the below figure, 64 percent of the people said that it should be banned because it is not good for the environment. 21.50 percent of them considered plastic bags as culprits for blocking drainages. 6 percent of them were up to the opinion that it is not strong enough to carry stuff while 6.50 percent of them believed that it should not be banned.

If we see the graph above, we can say that most of the respondents have knowledge about the ill effects of plastic bags on the environment. They also know that plastic bags are the cause of blocking drainages but when it comes to using them they prefer to use them while shopping.
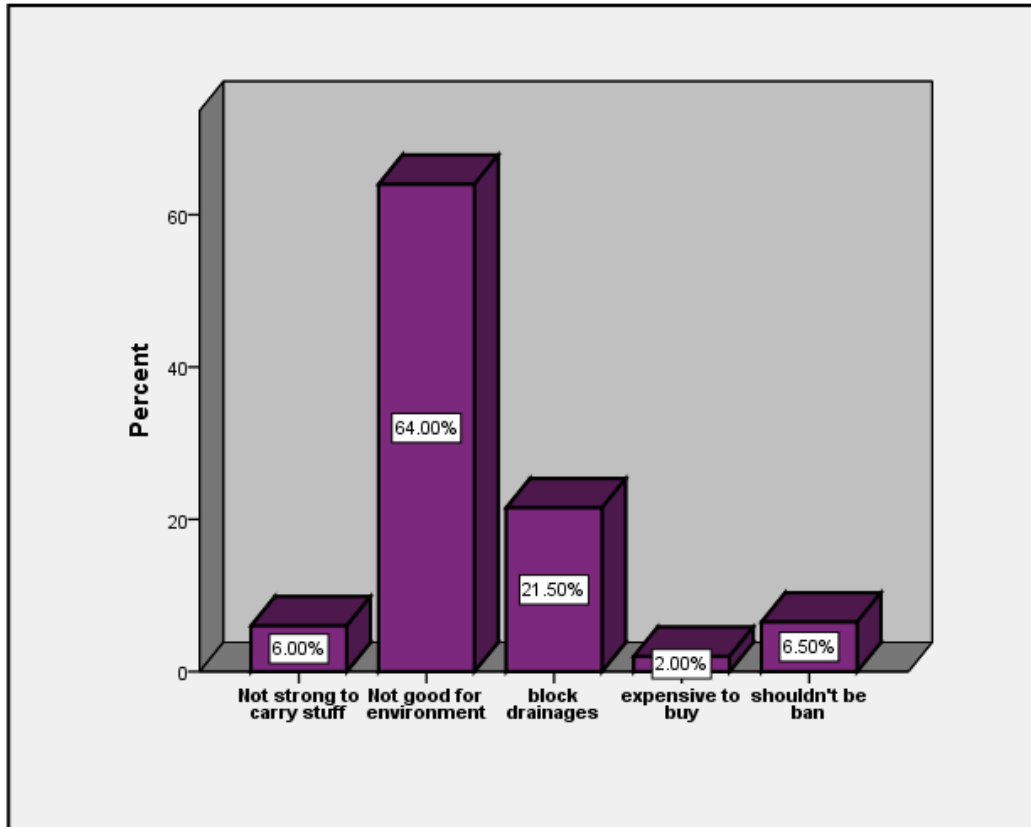
Figure 4.35: Reasons to ban plastic bags

Is plastic bag ban difficult to comply is the question asked from 200 respondents. 48 percent (Figure 4.36) of the respondents said that the ban is difficult to comply while 12.50 percent said it is very difficult. 35.50 percent of them said it is easy while only 4 percent people said it is very easy to comply with the plastic bags ban in the capital city Islamabad.
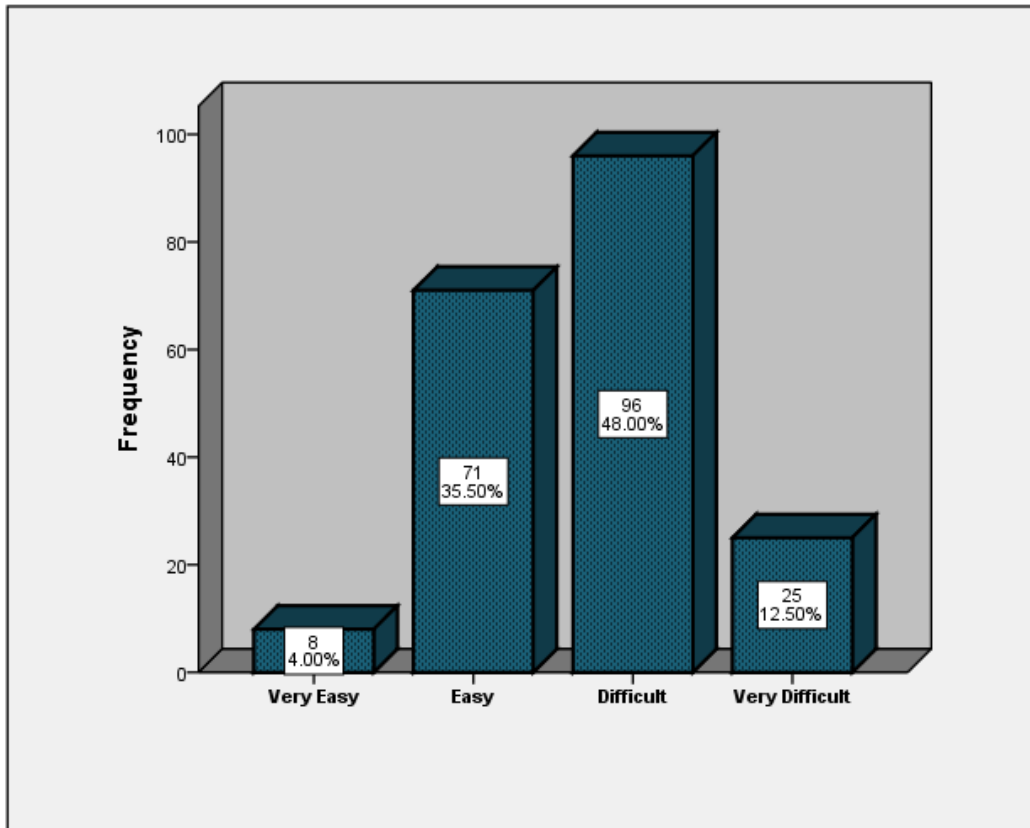
Figure 4.36: Complying with the ban

To check enforcement of the ban on the consumer side, we asked a question from the respondents that if they have ever been caught while violating the ban. Surprisingly, figure 4.37 shows that only 1.50 percent of people said they are caught while using plastic bags. This shows how much the ban is not effective on the consumer side. The government is totally failed in implementing the ban on consumers as compared to retailers.
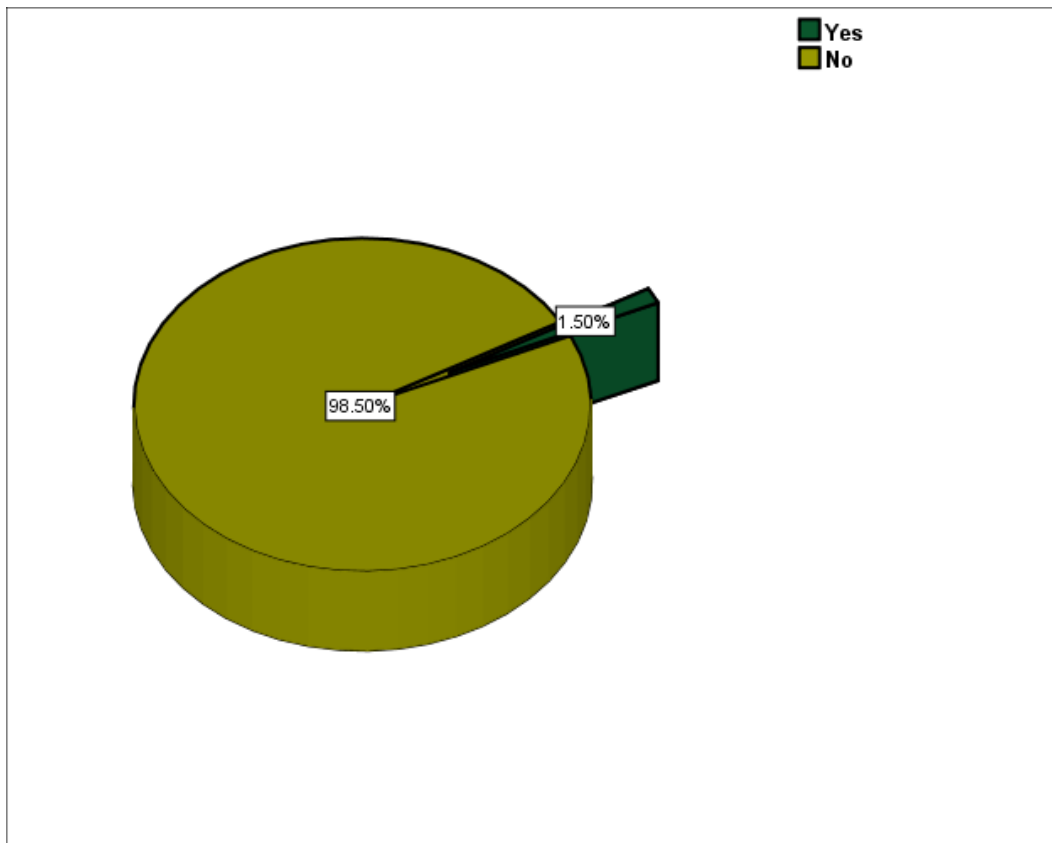
Figure 4.37: Have you ever been caught while violating the ban?

To sum up all the above graphs, we can conclude that the knowledge and attitude of the people of Islamabad are good toward the single use plastic bag ban in the capital city but they are very weak in following the ban. When it comes to practical life, they still use plastic bags for shopping. About 60 percent of people still use plastic bags when shopping. Very few people of them reuse plastic bags and most of them throw plastic bag when they use it once. Just 54 percent of them have bought a reusable bag with intend to use fewer plastic bags. A big number of them think that complying with the ban is difficult. In nutshell, I would say that there is a huge difference between their saying and doings. Their knowledge and attitude are good regarding plastic bags and the ban imposed on them but when it comes to following the ban they are not practical then.

4.3 Determinants of Ban Compliance among Retailers: (Marginal Effects)

$$Ban = age + e\,du + loc + a_{2\_D} + k_{5\_d} + k_{4\_d} + g_{i5\_d} + a_{1\_D}$$

Interpretations

We have reported both the coefficients and marginal effects of logistic regression (Table 4.1).

The dependent variable is enforcement of the ban, while the independent variables included in the regression are age, education, location of a shop, fear of being caught, knowledge of violation fee, support of the ban, availability of alternatives, and ban affecting sales. Along with the coefficients and marginal impacts, the standard errors, level of significance, and t-values are also reported. The positive signs of the coefficient show direct relation while the negative sign shows an inverse relation with dependent variables.

Age, education, and location of shops are insignificant which means that there is no relationship between these variables and enforcement of the ban. Age of respondents is insignificant because it is not necessary that with increase or decrease in age of retailers will increase the probability of following the ban. Education of the respondents has also no relation with following the ban. This also question our education system that our government is failed to provide such an education system which add responsibility in the people. Location of shops are also insignificant and the reason could be the week enforcement and both the urban and rural areas.

The seller of the plastic bags will follow the ban if they have fear of being caught while selling plastic bags. The sign of the coefficient of fear of being caught is positive and significant at a 5% level of significance, which means that there is a direct relationship between the fear of being caught and the enforcement of the ban. Those retailers who

have fear of being caught have 11.7% higher probability of following the ban as compared to those who do not have fear of being caught.

Knowledge of violation fees is also an important variable in our model. The more retailers know about the fine imposed on the violator of the ban, the more there is the chance of following the ban. The fine imposed on the violator of the ban is from 100,000 to 500,00 which is a huge amount for a retailer to pay, therefore, the retailers who know violation fees will not go against the ban. The coefficient of the variable, knowledge of violation fee is 0.452 and its sign is positive which means that those retailers who know violation fee have 45.2% higher probability of following the ban as compared to those who do not know violation fee.

Support of ban has also a direct relation with the ban. Those who support the ban will also follow the ban. The variable is significant and its sign is positive which means that those retailers who support the ban have 19.5% higher probability of following the ban as compared to those who do not support the ban.

The sign of the availability of alternatives to shopkeepers is positive and significant. Its coefficient is 0.459 which means that the availability of an alternative to shopkeepers has a 45.9% higher probability of effecting the ban as compared to the non-availability of alternatives to shopkeepers.

Our last variable is ban affecting sales of retailers and its coefficient is -0.051 but it is insignificant and has no relationship with the dependent variable. The justification for this is that as there are now alternative to plastic bags available on many shops, the ban on plastic bags does not effect the sales of retailers.

Table 1: Determinants of Ban Compliance among Retailers

Variables	Coefficient (dy/dx)	T value
Age (Years)	-0.002 (0.003)	-0.66
Education (No of Years)	0.005 (0.011)	0.45
Location of Shop	0.004 (0.049)	0.081
Fear of being caught (A2_d)	0.117** (0.049)	2.387
Knowledge of Violation Fee (K5_d)	0.452*** (0.110)	4.10
Support of Ban (K4_d)	0.195* (0.112)	1.741
Availability of Alternative (Gi5_d)	0.459*** (0.111)	4.135
Ban Affecting Sales (A1_D)	-0.051 (0.066)	-0.772

4.4 Determinants of Ban Compliance among Consumers: (Marginal Effects)

$$B_{an} = age + sex + edu + a_{5_d} + p_{5_d} + k_{2_d} + k_7 + a_{1_d}$$

Interpretations:

Table 4.2 shows the results of our second model in which we have taken data from consumers of plastic bags in the Islamabad capital territory. The dependent variable is enforcement of ban and independents variables are age, sex, education, fear of being

caught, taking alternative bags, health consciousness, knowledge of ban, and availability of alternatives.

Our first independent variable is age and is significant at 10% level of significance and its sign is positive which means that when there is a unit increase in the age of respondents, the probability of following the ban increases by 0.010 units.

The independent variable sex is also significant at 5% level of significance and its sign is negative representing that probability of following the ban for the female is 18.4% lower as compared to men.

Fear of being caught plays a vital role in following the ban. Consumers will follow the ban if they think they will be caught if violate the ban. The variable is significant at 5% level of significance and its sign is positive which could be interpreted as that those consumers who have fear of being caught have 14.2% higher probability of following the ban as compared to those who do not have fear of being caught.

Consumers who take alternatives to plastic bags or reusable bags from home when they go for shopping are mostly those people who support the ban. Therefore, there is a direct relationship between taking alternative bags from home and following the ban. The variable is significant at 5% level of significance and its sign is positive which means that those consumers who take their own alternative/reusable bag with themselves when go for shopping have 18.4% higher probability of following the ban as compared to those who do not take alternatives with them selves.

Our four other variables that are education, health consciousness, knowledge of ban, and availability of alternative are insignificant which means that these variables do not have any effect on our dependent variable.

Availability of alternative variable is insignificant because most of the people think that the alternative available is expensive (our data also shows it) and government has also not started the imposition of ban strictly on consumers' side.

The health conscious variable is insignificant and the reason could be from practical life that there are many people who know that the usage of plastic bag is not good for health but still they use it. In our practical life we can also see that people throw rubbish here and there despite of having knowledge that is bad environmentally, ethically and healthily.

Knowledge of ban variable is insignificant because this is what we also found out in our KAP survey that despite of having good knowledge and attitude about the ban, when it comes to practicality, people are reluctant to follow the ban.

Table 2: Determinants of Ban Compliance among Consumers

Variable	Coefficient (dy/dx)	T value
Age	0.010* (0.006)	1.740
Sex	-0.183** (0.074)	-2.460
Education	-0.006 (0.017)	-0.340
Fear of being Caught (a5_d)	0.142** (0.069)	2.050
Taking Alternative bags (p2_d)	0.184** (0.090)	2.030
Health Conscious (k2_d)	-0.108 (0.084)	-1.280

Knowledge of ban (K7)	-0.011	-0.140
	(0.078)	
Availability of Alternative (a1_d)	0.073	0.790
	(0.092)	

CHAPTER 5

Conclusion and Recommendations

5.1 Conclusion:

In July 2019 Pakistan Environmental Protection Agency (PEPA) and the Ministry of climate change (MoCC) took an important regulatory initiative to reduce plastic bags waste in the Capital Territory Islamabad effective from 14 August 2019 which completely bans the manufacturing, purchase, sale, imports, usage and storage of polythene bags in the Islamabad Capital Territory.

This study finds out the enforcement and effectiveness of the ban across the city. We conduct a KAP survey in which 400 questionnaires in total were filled from both retailers and consumers (200 from each) in the urban and rural areas of Islamabad. To meet the objectives, the study is divided into two broad categories. The first part of the study examines the graphical representation of KAP responses of the retailers and consumers which shows knowledge, attitude, and practices of people of Islamabad regarding plastic bags and the ban imposed on their use. The second part of the study estimates the logit model for retailers and consumers in which enforcement of the ban is found out.

The infographic part of the KAP survey shows that the people of Islamabad have good knowledge about the composition of plastic bags, their bad effects on health and the environment. They know how plastic bags destroy the scenic view and block drainages. They know about environmentally friendly and unfriendly shopping bags. Their attitude regarding the ban is good too. Most of the consumers want to reduce their consumption of plastic bags and many of retailers think that the ban does not affect their sales. Most of the people consider the ban their duty to follow it while many of

them declared it a good initiative to save the environment. But when we come to the practical part of the KAP survey, people are very reluctant to follow the ban. About 60% of the retailers still provide plastic bags which means that 60% of the retailors are not following the ban and 62% of them do not keep substitutes for plastic bags at their shops. Retailers blame consumers that they demand plastic bags rather than reusable bags while consumers on the other hand blame retailers that they provide plastic bags rather than reusable that is why they are compelled to use a plastic bag. About 56.50 percent of the consumer use plastic bags when they do shopping.

The second part of the study shows that enforcement of the ban depends upon the fear of being caught and the knowledge about the fee if someone violates the ban. There was 11.7% higher probability of following the ban of those retailers who think they will be caught if violet the ban as compared to those who do not think so. The probability of following the ban of those retailers who know violation fees was 45.2% higher than that of those who do not know. Availability of alternatives also plays a significant role in following the ban. Retailers who think the alternative to plastic bags is available to buy in stock were more following the ban and those retailers who were in favour of the ban were also following the ban. Consumers on the other hand were a bit more rigid to follow the ban. Only those consumers who has fear of being caught and those who bring their own bag for shopping were the one following the ban. There was 18.4% higher probability of following the ban of those consumers who think they will be caught as compared to those who do not think. Those consumers who bring their own reusable bags had 14.2% higher probability of following the ban as compared to those who do not bring.

5.2 Suggestions:

Base on the results of the study it is suggested that people of Islamabad are more likely to follow the ban if they have more fear of being caught in violation of the ban. Government should strictly enforce the ban by increasing punishment and by increasing the probability of sanctioning people for the violation. It can be done by increasing the number of police and policing in the city.

The fine imposed on shop keeper or wholesalers is big which is from 100,000 to 500,000 rupees but if they do not know they will be charged this huge amount if they use a plastic bag, they may not follow the ban. To increase enforcement of the ban, the government should increase the knowledge of the people by different means. The means could be social media, television, newspaper, etc. A huge campaign through social media and television would be very effective.

As retailers tend to follow the ban if they have more alternatives to plastic bags available in stock, the government should lower the cost of alternatives and should increase its availability to the retailers. Government should encourage those factories which make a substitute for plastic bags by providing them subsidies etc.

The government has not started sanctioning the consumers yet, if they also start imposing fine on the consumers, pressure will be put on the retailers not to provide plastic bags which can also help in enforcing the ban.

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Appendix A

Questionnaire for Retailors

Dear respondents, the objective of this survey is assess the use of plastic bags, their disposal and adverse impacts on environment in the capital Islamabad. Your views are extremely important to success of the survey as well as the efforts being made to minimize the environmental impacts of plastic bags. Thus, you are kindly requested to cooperate the given responses to the items given in the questionnaire. **Please circle the appropriate one.**

1. Personal and Shop's Information

1. Are you resident of Islamabad?

   i.   Yes
   ii.   No

2. Where do you live in Islamabad?

   i.   Urban area
   ii.   Rural area

3. What is the completed year of your education? Please, specify…………..?

4. Location of your shop in Islamabad?

   i.   Urban area
   ii.   Rural area

5. What is your age.................?

6. Type of shop?

   i.   Groceries
   ii.   Dairy
   iii.   Meat
   iv.   Fruit /Veg.
   v.   Clothes
   vi.   Medical
   vii.   Other………….?

7. Type of goods that you sell?

   i.   Wet
   ii.   Dry
   iii.   Both

8. Yesterday's transaction numbers…………?

9. Yesterday's sales income………………PKR?

10. Nature of retail?

   i.   Big
   ii.   Medium

iii.   Small

1. Do you know what plastic bag is made of?

   i.   Polythene
   ii.   Fibre
   iii.   Paper
   iv.   Cotton
   v.   Don't know

2. Which of the following is more good for the environment?

   i.   Paper bag
   ii.   Cloth bag
   iii.   Biodegradable plastic bag
   iv.   Jute bag
   v.   Don't know

3. Which of the following is more bad for the environment?

   i.   Cloth bag
   ii.   Plastic bag
   iii.   Jute bag
   iv.   Hemp bag
   v.   Don't know

4. What do you think government should do about single use plastic bag?

   i.   Government should ban it.
   ii.   Government should recycle it
   iii.   Government should collect it and burn it
   iv.   Government should provide alternative
   v.   Don't do anything

5. Do you know the amount of fines to be charged if a retailor violate the ban?

   i.   Yes
   ii.   No
   iii.   Don't know

Attitude

1. On the range of 1 to 5 how much do you think single use plastic bag ban affect your sells?

    i.   1 (very much)
    ii.   2
    iii.   3
    iv.   4
    v.   5 (very little)

2. On the range from 1 to 5, how much do you think you will be caught if violate the ban?

    i.   1 (very sure)
    ii.   2
    iii.   3
    iv.   4
    v.   5 (never)

3. On the range from 1 to 5 how much do you think it is hard to comply with the ban?

    i.   1 (very hard)
    ii.   2
    iii.   3
    iv.   4
    v.   5 (very easy)

4. Why do you obey plastic bag ban?

    i.   Its my duty to obey
    ii.   It's a good decision
    iii.   Other (specify)………………………………………….?

5. Why do you disobey plastic bag ban?

    i.   Alternative is not available
    ii.   It affects your sells
    iii.   It is a worthless thing.
    iv.   Customer prefer plastic bag
    v.   Other (specify)………………………………………….?

Practices

1. Are plastic bags supplied at shop?

    i.   Yes
    ii.   No
    iii.   Don't know

2. Is alternative to plastic bags available at your shop?

    i.   Yes
    ii.   No
    iii.   Don't know

3. What types of bag do you provide?

   i.   Plastic bag
  ii.   Cloth bag
 iii.   Biodegradable plastic bag
 iv.   Reusable bag
  v.   Paper bag

4. What is the Size of bag you provide?

   i.   Small
  ii.   Medium
 iii.   Large

5. How much you charge the customer per bag?

   i.   Small…………?
  ii.   Medium………….?
 iii.   Large…………?

6. Number of bags you sell per day approximately?

   i.   Small…………?
  ii.   Medium………….?
 iii.   Large…………?

General Information:

1. Have you ever been caught for providing a plastic bag?

   i.   Yes
  ii.   No
 iii.   Don't know

2. If yes to question 1, what were the amount of fine………….?

3. Are plastic bags available to buy in stock?

   i.   Yes
  ii.   No
 iii.   Don't know

4. Is alternative is available to buy in stock?

   i.   Yes
  ii.   No
 iii.   Don't know

Appendix B

Questionnaire for Consumers

Dear respondents, the objective of this survey is assess the use of plastic bags, their disposal and adverse impacts on environment in the capital Islamabad. Your views are extremely important thus, you are kindly requested to cooperate the given responses to the items given in the questionnaire. **Please circle the appropriate.**

Personal Profile

1. Are you resident of Islamabad?

iii.   Yes
iv.   No

2. Where do you live in Islamabad?

iii.   Urban area
iv.   Rural area

3. Sex

i.   Male
ii.   Female

4. What is the completed year of your education? Please, specify…………..?

5. Occupation

i.   Student
ii.   Job (Govt/Private)
iii.   Private Business
iv.   Freelancer
v.   Others (Please, Specify) ………….

Knowledge:

1. Do you know what plastic bag is made of?

vi.   Polythene
vii.   Fibre
viii.   Paper
ix.   Cotton
x.   Don't know

2. Do you think the drainages of your area are badly effected by plastic bags?

i.   Strongly disagree agree
ii.   Disagree
iii.   Agree
iv.   Strongly agree
v.   Don't know

3. What do you think government should do about single use plastic bag?

  vi.   Government should ban it.
 vii.   Government should recycle it
viii.   Government should collect it and burn it
  ix.   Government should provide alternative
   x.   Don't do anything

4. Which of the following is more environmentally friendly?

  vi.   Paper bag
 vii.   Cloth bag
viii.   Biodegradable plastic bag
  ix.   Jute bag
   x.   Don't know

5. Which of the following is more environmentally unfriendly?

  vi.   Cloth bag
 vii.   Plastic bag
viii.   Jute bag
  ix.   Hemp bag
   x.   Don't know

6. How do you know about plastic bag ban?

   i.   Television
  ii.   Newspaper
 iii.   Radio
  iv.   Other
   v.   Don't know

7. Do you think plastic bag should be ban; why?

   i.   Not strong to carry stuff
  ii.   Not good for environment
 iii.   Block drainages
  iv.   Expensive to buy
   v.   Shouldn't be ban

8. What makes it difficult (if anything) for you to use reusable bags or an alternative, instead of single use plastic bags when shopping?

   i.   Alternative is expensive
  ii.   Alternative is not available
 iii.   Difficult to take reusable bag from home
  iv.   Forget to take reusable bag from home
   v.   Others……………?

9. Do you know about single use plastic bag ban in Islamabad capital territory?

    i.   Yes

    ii.   No

    iii.   Don't Know

10. If yes to question 9, do you know the amount of fine if someone violate the single use plastic bag ban? If yes, please, specify the amount……………..?

Attitude

1. On the range from 1 to 5 (Where 1 shows not available at all and 5 available) how much do you think alternative to plastic bag is available?

    vi.   1

    vii.   2

    viii.   3

    ix.   4

    x.   5

2. On a range from 1 to 5 (where 1 being the least expensive and 5 pretty expensive) how much do you think the alternative available is expensive?

    i.   1

    ii.   2

    iii.   3

    iv.   4

    v.   5

3. What is your opinion about the ban?

    i.   Very good

    ii.   Good

    iii.   Bad

    iv.   Very bad

    v.   Don't know

4. How much do you think plastic bags are harmful for the environment?

    i.   Very harmful

    ii.   Harmful

    iii.   Less harmful

    iv.   Not harmful

    v.   Don't know

5. On the range from 1 to 5 (where 1 stands for Never and 5 for Always) how much do you think you will be caught if you violate the single use plastic bag ban?

    i.   1

    ii.   2

    iii.   3

iv.   4

v.   5

6. On the range of 1 to 5 how much do you think plastic bags are the cause of blocking drainages?

i.   1

ii.   2

iii.   3

iv.   4

v.   5

7. How much do you think the ban imposed on single use plastic bag is effective?

i.   Very effective

ii.   Effective

iii.   Less effective

iv.   Not effective at all

v.   Don't know

Practices

1. Have you ever bought a reusable shopping bag with the intent of using less single-use plastic shopping bags?

i.   Yes

ii.   No

iii.   Don't Know

2. When you go for shopping how often do you take your own bag with yourself?

i.   Always

ii.   Usually

iii.   Often

iv.   Sometimes

v.   Never

3. How much do you think you reuse the plastic bag?

i.   Always

ii.   Usually

iii.   Often

iv.   Sometimes

v.   Never

4. How much do you think that retailors still provide plastic bags?

i.   Always

ii.   Usually

iii.   Often

iv.   Sometimes

v.   Never

5. Which of the following do you use more often at the checkout counter when shopping?

    i.   Single-use plastic bag
    ii.   Reusable bag
    iii.   Paper bag
    iv.   Jute bag
    v.   Hemp bag

6. What do you do with the majority of your plastic bags after you use them once?

    i.   Reuse them
    ii.   Place in a bin
    iii.   Throw it
    iv.   Burn it
    v.   Return it bac k to shopkeeper

General Information:

1. Do you think plastic bag is bad for health?

    i.   Yes
    ii.   No
    iii.   Don't know

2. On the range from 1 to 5 (where 1 stands for Not Successful at All and 5 for Very Successful) how much do you think the ban is successful?

    i.   1
    ii.   2
    iii.   3
    iv.   4
    v.   5

3. Would you like to reduce your consumption of single use plastic bags?

    i.   Yes
    ii.   No
    iii.   Don't know

4. Is plastic bag ban hard to comply?

    i.   Very easy
    ii.   Easy
    iii.   Hard
    iv.   Very hard
    v.   Don't know

5. How much you are charged by retailor for an alternative?

    i.   Small size ……… rupees only?

    ii.   Medium size ……... rupees only?

iii.   Large size ……... rupees only?

6. Have you ever been caught while violating the ban?

    i.   Yes
    ii.   No
    iii.   Don't know

7. If "Yes" to question 6, then what was the amount……………?