

Knowledge, Attitudes, and Practices Regarding Plastic Bag Usage in Mandalay

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Abstract

Plastic bags have been heavily used across multiple industries due to their availability and cost-effectiveness. Although they are cheap, they are not sustainable and have potential detrimental effects on the environment. An effective method in decreasing the use of plastic bags is by influencing local governments to adopt policies that can alleviate this issue. To gain a better understanding of individual plastic bag usage, a pilot study was conducted in Mandalay, the second largest city in Myanmar, to assess people's knowledge and attitudes towards plastic bag usage. Preliminary results (n = 57) showed that 68% of people preferred to throw their plastic bags in the trash, whereas 19% of participants reuse their plastic bags. It was also found that the median number of plastic bags used per day by individuals was 5, though the variability in daily usage was large. The majority (60%) of people prefer to use baskets instead of plastic bags when shopping at the store. Future studies may investigate methods to increase the adoption of eco-friendly alternatives to plastic bags.

Keywords: Plastic bag, Reuse, Environment

1. Introduction

In our society one of the most common materials used is plastic. People often interact with plastic at the store or market when they are given plastic bags to carry the items they purchase. For how often plastic bags are used they have large impacts on the environment (Jalil, 2013). When plastic bags are not disposed of properly, they could release toxic leachates and cause environmental harm (O'Brine, 2019). The combination of the low cost and high availability of plastic bags makes their impact even greater. In places like Taiwan, over 65,000 tons of plastic bags were thrown into the garbage each year (Lam, 2006). There was so much plastic garbage being

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created that a policy was made to prevent stores from giving out free plastic bags (Lam, 2006). Since it's common in Myanmar to use plastic bags, this pilot study aimed to gain a better understanding of the knowledge, attitudes, and practices regarding plastic bag usage among individuals to better influence policy change.

2. Methods

This study was a cross-sectional survey conducted in Mahharaungnyae Township, Mandalay district, Myanmar. People, including students, faculty, staff, and other workers from and nearby Mandalay University participated in survey including a series of questions pertaining to their knowledge and attitudes regarding plastic bag usage (e.g. how many plastic bags participants use in one day, how they dispose of plastic bags, and their willingness to use eco-friendly alternatives). The survey was designed in KoBo Toolbox and data was collected using the programs mobile application KoBo Collect. Once data collection was complete, the survey responses were compiled into SPSS version 25 for data analysis.

3. Results and Discussion

The mean age of survey participants (n = 57) was 30 years old and 57% of the respondents were female. Majority of them were highly educated (e.g. graduates (39%) or postgraduates (26%) because the surveys were administered on and nearby the campus. The average monthly household income was 242,902 kyat or 159 USD. The average monthly income was found to be lower than the average household monthly income in the area based on the previous survey (e.g. 200 USD in Mandalay). The income discrepancy may be due to people, especially students, not accurately knowing their household income. 63.2 % of respondents said they would reuse plastic bags multiple times. While 36.8% choose to not use plastic bags again (Figure 1).

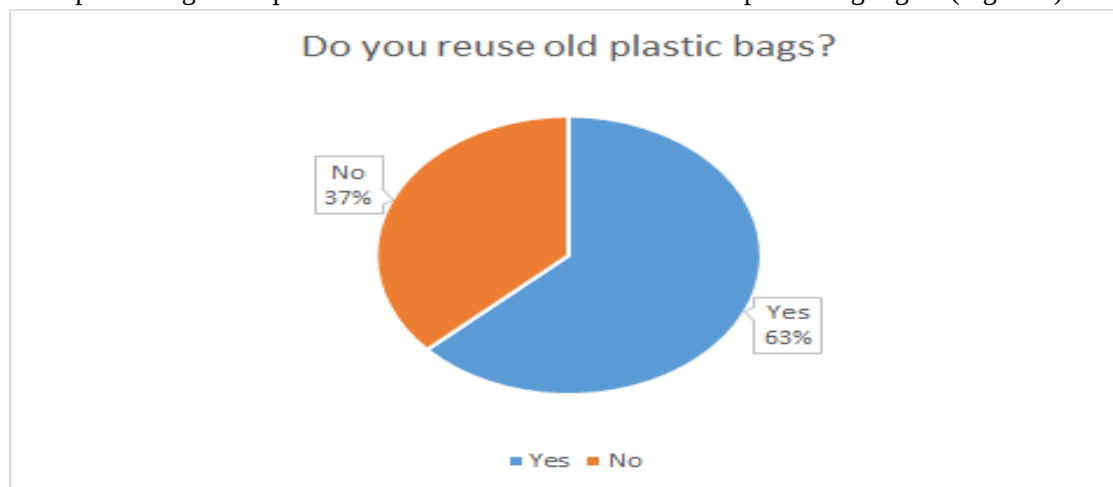


Figure 1. Do you reuse plastic bags?

A large portion of respondents opted to reuse plastic bags. This was interesting but it might be due to the large portion of respondents having high levels of education and thus knowledge on the impact plastic bags have on

the environment. The average number of plastic bags used per day is 12.88 according to respondents (Figure 2).

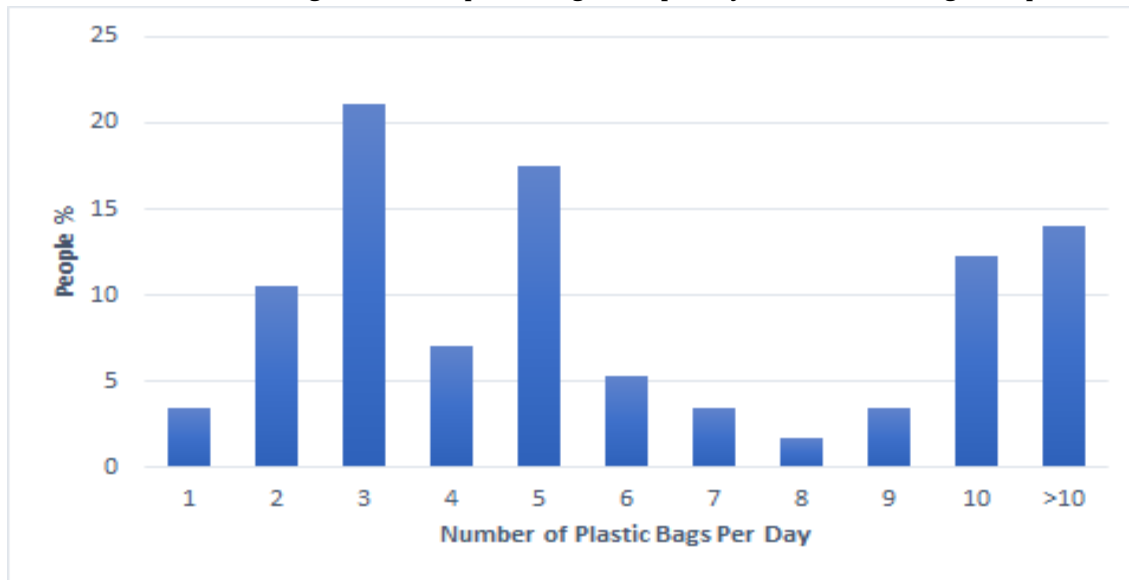


Figure 2. The average number of plastic bags used per day

The median number of plastic bags used per person was 5 per day, while the average number of plastic bag usage was 13 per day. This was higher than expected and might be due to a few respondents claimed large numbers of plastic bag usage. Approximately half (54%) of respondents would not refuse receiving plastic bags at the store while the other half would refuse plastic bags when shopping at stores. Sixty-one percent of respondents would opt to use baskets instead of plastic bags. Nineteen percent would choose to use paper bags instead of plastic bags (Figure 3).

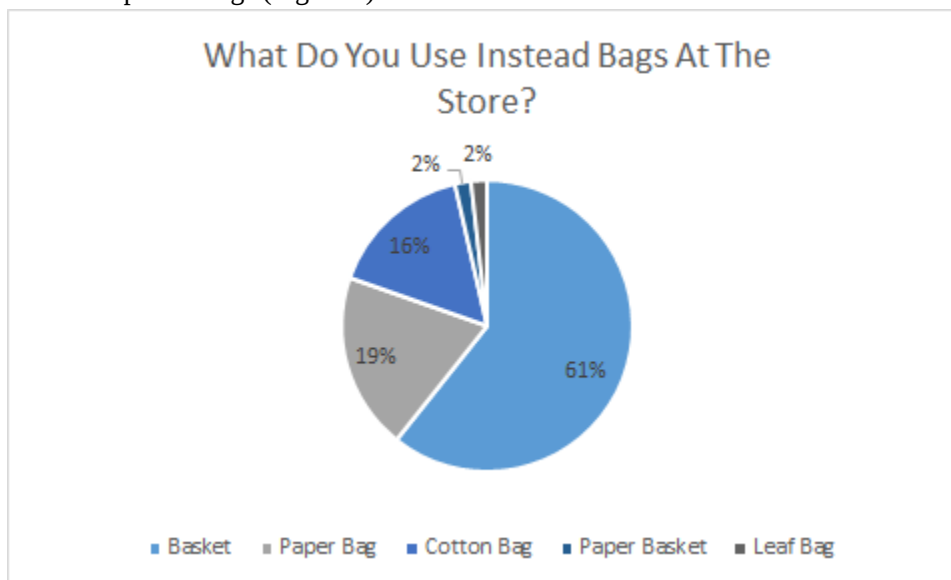


Figure 3. Alternate bag types

When asked what kind of alternative bags, the majority of people would use baskets. These baskets are culturally accepted amongst people in Myanmar which may be a reason why they are such a strong alternative for people. Respondents also would opt for paper bags when faced with a situation where they couldn't use plastic bags.

Sixty-eight percent of people disposed plastic bags in the trash while 19% recycle them. Almost all respondents (97.5%) would be willing to use a non-plastic bag when shopping. In an open-ended question about what makes it difficult to use reusable bags, a majority of respondents (72%) said that plastic bags were easier to use compared to their reusable counterparts. When looking at disposal habits a vast majority dispose of their bags in the trash, while a smaller percent will reuse them. Lack of reusing or recycling plastic bags in Mandalay could be because of the limited knowledge associated with sustainability and harmful effects of plastic. Perceptually plastic bags are cheap. At markets and stores, bags are given away for free with any purchase. Its significantly harder to assign a value to an object that has no perceived economic value. What isn't expressly stated for most is that the true cost of plastic bags is significant. Creating the product costs money. This product is then being given to consumers at no cost. After the initial exchange between consumers and producers, the plastic bag ends up somewhere. If being thrown away, there is a cost for disposal. This cost can be assigned to the waste disposal service or a future cost to the environment. Providing knowledge on the negative impact plastic bags have on the environment is a good first step to creating behavioral change. This promotion may aid in increasing how often plastic bags are reused and thus reducing the amount of waste entering the environment. Systematically, local government could provide a small financial deterrent to plastic bags. This would remove a small amount of convenience that the “free” bags bring, incentivizing consumers to save money and use their own bags or reuse plastic bags they already have. This change would likely be advantageous as over 95% of survey respondents were willing to switch to a different bag type (Figure 4).

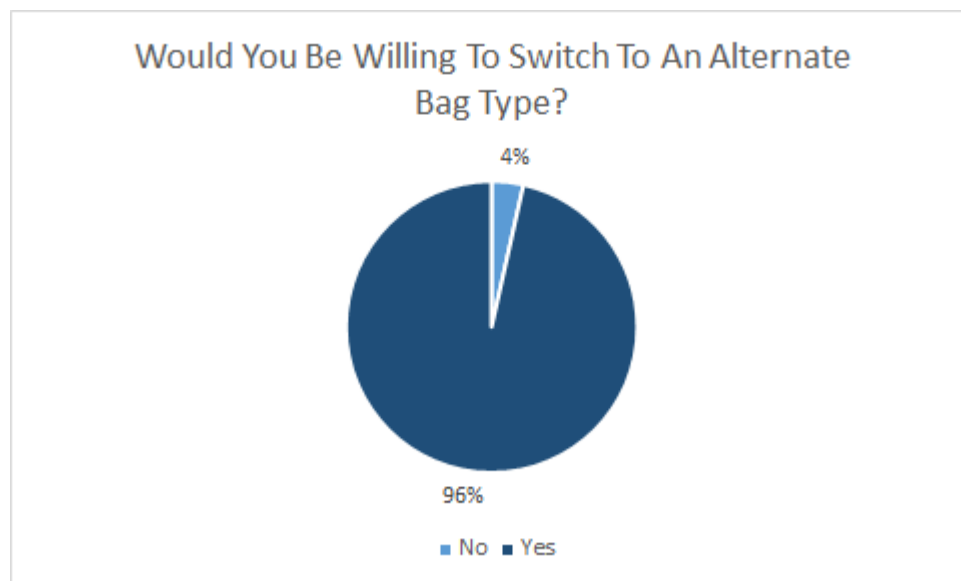


Figure 4. Would You be Willing to Switch to a Different bag type?

Conclusions

Plastic bag usage in Mandalay, Myanmar is relatively high when comparing it to other countries around the world (Parker, 2018). The impacts these plastic bags have on the environment may not be easily seen by the general public, but the consequences still exist. By providing knowledge about the harm plastic bags have on the

environment and its alternatives to local government and the general public, there could be a decrease in the number of plastic bags used. The government also has the ability to economically incentivize consumers into not using plastic bags. The additional revenue generated can be used as capital to aid in cleanup or be used in a manner that creates knowledge amongst citizens in Myanmar.

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References

- [1]Jalil, M. A., Mian, M. N., & Rahman, M. K. (2013). Using plastic bags and its damaging impact on environment and agriculture: An alternative proposal. *International Journal of Learning & Development*, 3(4), 1-14.
- [3]Lam, S. P., & Chen, J. K. (2006). What makes customers bring their bags or buy bags from the shop? A survey of customers at a Taiwan hypermarket. *Environment and Behavior*, 38(3), 318-332.
- [2]O’Brine, T., & Thompson, R. C. (2010). Degradation of plastic carrier bags in the marine environment. *Marine pollution bulletin*, 60(12), 2279-2283.
- [4]Parker, L., & Treat, J. (2018, December 20). Fast facts about plastic pollution. Retrieved October 26, 2019,from <https://www.nationalgeographic.com/news/2018/05/plastics-facts-infographics-ocean-pollution/>.
- [5]Nielsen, Tobias Dan, et al. “Need a Bag? A Review of Public Policies on Plastic Carrier Bags – Where, How and to What Effect?” *Waste Management*, vol. 87, 19 Feb. 2019, pp. 428–440., doi:10.1016/j.wasman.2019.02.025.