International Journal of Health and Life Sciences (IJHLS) is a scholarly, multidisciplinary, open access, peer-reviewed journal that considers articles on the ….

- Nutrition and Health
- Epidemiology of Communicable and Non-communicable Diseases
- Environmental Health Hazards
- Occupational Health
- Public Health Interventions and Health Promotion
- Health Economics
- Other disciplines relevant to Public Health.

International Journal of Health & Life Sciences

[ISSN: 2383-4390] [eISSN: 2383-4382]

Free of Charge

Hossini H. Int J Health Life Sci. 2016, volume 2 (number 2): pages 37-40.
Classification: Environmental Sciences

You can cite this article as follows:

Hossini H. Determination of paper consumption capital from automated teller machine (ATM) banking systems. *Int J Health Life Sci.* 2016, 2 (2): 37-40.

International
Journal of Health& Life Sciences
2016; 2 (2): 37-40

Determination of paper consumption capital from automated teller machine (ATM) banking systems

Hooshyar Hossini[a], Shiva Farhadi[b], Hiwa Hossaini*[a], Fabrício Motteran[c]

[a] Dep. of Environmental Health Engineering, Faculty of Health, Kermanshah University of Medical Sciences, Kermanshah, Iran.
[b] Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran
[c]Department of Hydraulics and Sanitation, Engineering School of São Carlos, University of São Paulo (USP), Brazil.

ARTICLE INFO
Article Type:
Original article

Article History:
Received: 2016-02-06
Accepted: 2016-04-12
ePublished: 2016-07-01

Keywords:
Wasted paper
Kermanshah City
ATM
Banking systems

Corresponding author
Hiwa Hossaini
Email: hiwa_hossaini@gmail.com
Tel: +98-9188594084

ABSTRACT

The aim of the present study was to determine paper waste production from automated teller machine (ATM) banking systems of Kermanshah City, Iran. Based on interviews and checklists, data collection was performed and analyzed thorough the employment of Excel software. The weight of wasted paper was determined by transaction rate and by the average weight of ATM received paper. According to results, it can be concluded that the Meli and Ansar banks have the highest paper waste production weight, at 225 and 188.5 g, respectively. Average paper production weight was 76.5 g for each ATM system per day. Also, the higher transaction rates were observed at the end and the first days of week /month and, higher amounts of the paper production rate were in February, March and April.

Introduction

The development of countries depends on their cultural and technological growth. And this development may be measurable by development indexes such as cultural exchange, social welfare, industrialization and economic development. Paper consumption on a global scale can be considered as a development index. The consumption rate varies throughout the world and in the USA and in European countries, it is more than 130 Kg/year/person. According to statistics and to facts about the global paper industry, paper consumption per capita is between 2.2 to more than 220 Kg/year/person [1]. This rate is about 20 Kg/year/person for Iran. Pulp and paper is one of the important industries in the world and through its large activities it can create environmental concerns. On the other hand, paper consumption without recycling can create even more environmental problems[2-3]. So, information regarding paper consumption and production rate can be considered as an important tool for environmental management. Many researchers have reported that they have addressed paper consumption from many sources, such as households, hospitals, offices, schools and colleges. But, based on our database search, there is no previous study that has revealed any information about paper production from automated teller machine (ATM) banking systems.

Method

The study area was located in the metropolis of Kermanshah, the capital of Kermanshah Province. As the ninth most populous city in Iran, the population of this city was over 851,405 people and it had an area of 93 389 956 km2. Kermanshah is the most important city in the west of Iran. In this work, data collection was performed according to qualitative research including interviews and checklists. At first, the banks of Kermanshah City were classified into two groups; with ATMs and without. Then, the headquarters of banks with ATM services for each

type of bank were considered. In this regard, 14 different banks were investigated, including Pasargad, Melat, Keshavarzi, Parseyan, Ansar, Eghtesad Novin, Sepah, Karafarin, Tejarat, Sina, Sarmayeh, Maskan, Saderat and Meli. In order to evaluate the amount of paper consumption, the following questions were raised:

- What time did the transcaction peak occur per hour?
- What time did the transcription peak occur per day?
- What time did the transcription peak occur per week?
- What time did the transcription peak occur per month?
- Which bank had the highest number of daily transactions?
- How many ATM papers were produced per day?
- How many ATM papers were producted per capita?

The raw data obtained from interviews and checklists were analyzed thorough employment of Excel software.

Results

The transaction rates for ATMs in the Kermanshah banking system are shown in Fig. 1. Fourteen different banks were investigated and it was found that the transaction rate and paper production weight were more than for other banks in Meli, Ansar, Sina, Tejarat and Sepah. Some banks, like Pasargad and Eghtesad Novin, were found to have lower level of transactions. The transaction ratees for Meli and Ansar banks were about 500 and 419, respectively. These amounts are related to 225 g and 188.5 g, respectively (in this regard the weight of an ATM paper is about 0.45 g). The weight of produced paper for other banks were as follows; Pasargad (15.75 g); Melat (54 g); Keshavarzi (40.5 g); Parseyan (56.25 g); Eghtesad novin (13 g); Sepah (78.75 g); Karafarin (22.5 g); Tejarat (112.5 g); Sina (157.5 g); Sarmayeh (30 g); Maskan (22.5 g); and Saderat (54 g). According to this data, the average paper production weight is about 76.5 g for each ATM system per day. In the next stage, the peak of production paper from ATMs was analysed. The paper production peaks in the Kermanshah banking system are shown in Fig. 2. Here, it is clear that the higher rate of transactions occurred between 10 am and 1 pm. Additionally, a second peak is seen between 8 pm and 9 pm that it is milder rather than first. Lowest transactions and also paper production rate existed between 11 pm and 7 am. Next, the transaction rate was evaluated during the week and the results of this evaluation are represented in Fig. 3. Accordingly, it can be found that the Saturday, Sunday and Thursday days had more transactions. Of these, more amounts were allocated for Saturday. To investigate the transaction rate during the months, it was seen that the highest transaction rates existed for the later days of each month and also for the first days (data not shown).

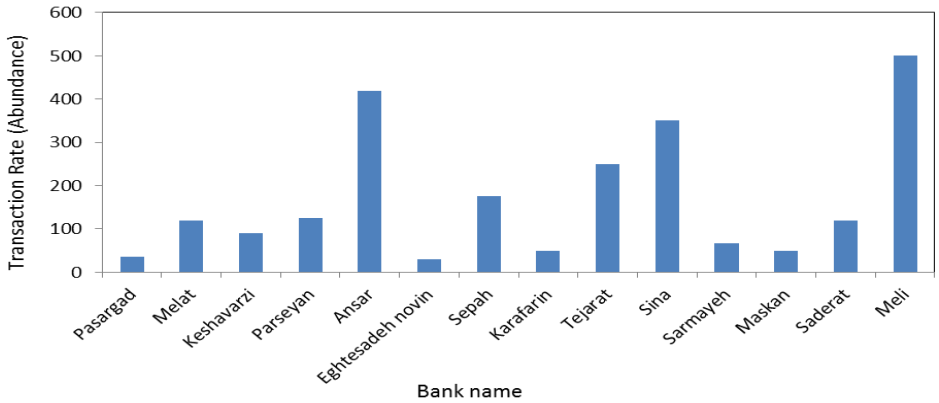

Figure 1. the transaction rate of kermanshah banking system.

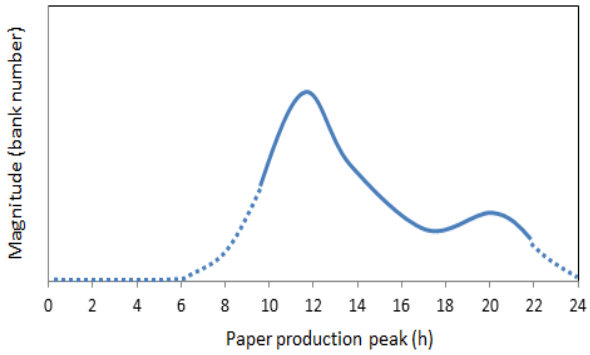

Figure 2. the paper production peak in the kermanshah banking system.

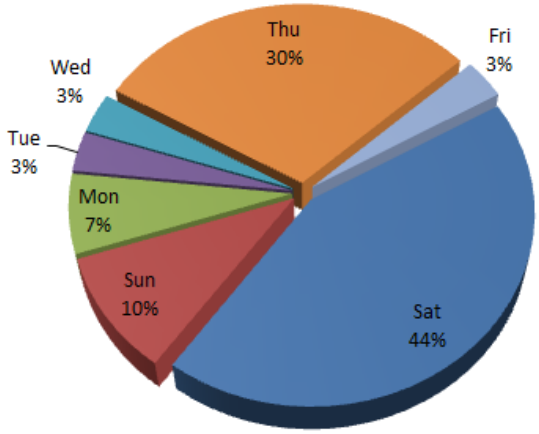

Figure 3. the transaction rate during the week.

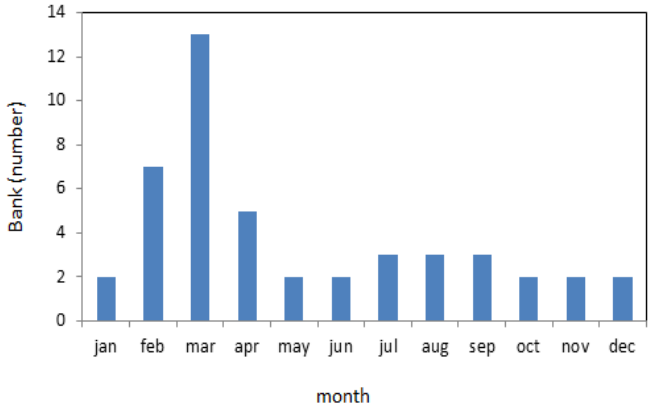

Figure 4. the transaction rate during the year.

Fig. 4, illustrates the transaction rate during a year. Regarding this plot, it can be observed that the higher transaction rate relates to the three months February, March, and April. For other months of the year, the relative uniform changes can be observed.

Discussion

Kermanshah, as the ninth metropolitan area in Iran, is located in the west with a high density population. In this regard, many banking systems are used and the area has all branches of Iran's central bank. Some banks such as Saderat (48 branches), Meli (46 branches) and Tejarat (44 branches) are serve to customers with higher branches. Also, the number of in-use ATM systems is about 60, 175, 100# from these institutes. Accordingly, it is expected that the transaction rate for these institutes is more than for the other. This is illustrated in Fig. 1. Some institutes like Ansar, Sepah and Sina showed that they have high transactions according to lower branches and ATM systems. This can be related to a higher coverage rate of these banks in paying salaries. For example, the Ansar and Sepah banks are in cooperation with military organizations. However, the transaction rate of ATMs and a high waste paper weight is happening (188.5 and 78.75 g for Ansar and Sepah, respectively). Overall, the average paper production weight was about 76.5 g for each ATM system per day. As seen in Fig. 2, the paper production hours peak during the day. It is evident that the higher transaction and waste paper rates occur between 10 am and 1 pm. At this time, daily activities increase as do also the activities of most governmental works. For this reason, the second peak is slight and is only related to marketing and non-governmental activities. The transaction rates during the week are represented in Fig. 3. This fact can be happened due to vacation, Friday in Iran. Uncompleted activities can be raised at Friday and this is reason for increases the transcription rate. Increases in rates of transaction at the end of every month and in the first days stems from salary payment and increasing liquidity. To trace the transaction rate during a year, it was found that the highest amount of transactions happens in the three months February, March and April

(Fig. 3). This time, especially 21 March to 3 April, coincides with the Nowrouz vacation. At this cultural vacation, the transaction rate significantly increases by New Year shopping, travels and financial settlements.

Conclusion

It this study, waste paper production weight from ATM banking systems was studied. These amounts were determined by the transaction rate and the average weight of an ATM receipt paper. According to results, it can be concluded:

- Meli and Ansar banks have highest paper waste production weight: 225 g and 188.5 g, respectively.
- Average paper production weight is about 76.5 g for each ATM system per day.
- Higher transaction rates were observed at the end and the first days of the week and month.
- The higher transaction rates occurred in February, March and April.

Acknowledgement

The authors gratefully acknowledge the Research Council of Kermanshah University of Medical Sciences for the financial support.

References

[1] Statistics and facts about the global paper industry, avialable at: http://www.paperonweb.com/Country.htm

[2] Arena U, Mastellone ML, Perugini F, Clift R. Environmental assessment of paper waste management options by means of LCA methodology. Industrial & engineering chemistry research. 2004 Sep 1;43(18):5702-14.

[3] Asgharnia H.A, Fallah SH, Amooei AA, Mohammadi AA, Motahariyan H, Dehbarz MB. The study of paper recycling in public schools in the Babol, The 16th National Environmental Health Conference, Tabtiz university of medical sciences, October 2013.