

# Purchasing Trends Uses and Management of Indoor Plants: Quetta Case Study

**Sardar Waseem Baran**

Baluchistan Agriculture College, Quetta, Pakistan

**Muhammad Arshad Ullah\***

National Agricultural Research Centre, Islamabad 45500, Pakistan

Email: [arshad\\_pak786@yahoo.com](mailto:arshad_pak786@yahoo.com)

**Syed Ishtiaq Hyder**

National Agricultural Research Centre, Islamabad 45500, Pakistan

**Muhammad Umair Khalil**

University of Arid Agriculture, Rawalpindi, Punjab, Pakistan

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## Abstract

Interior plantscaping is newly establishing industry. People through different motivation sources are using indoor plants for beautification of their houses and premises. Lot many benefits are tagged with buying plants, so a change has been seen in purchasing trend of indoor plants. Interior plantscaping improves the personal environment by making our rooms, work areas and building more aesthetically pleasing and perceptually simulating. Plants provides warmth and cooler and offer living art thus offering an inexpensive interior decorating alternative. Indoor plants play an important role for improving surrounding environment of a building or a house. They are not only decorating material, but they also play role in providing a fresh environment. They have many advantages like absorbing harmful gases and toxins and on the other hand providing the fresh air with oxygen. Use of indoor plants is increasing day by day. This article is aimed to study the different purchasing trends of indoor plants, their management and use of these indoor plants. This study was carried out in Quetta. Recently, the trend of using indoor plants is significantly increasing depending on locality and income. Limitations in management and availability of indoor plants are also decreasing with improvement in facilities at local nursery levels.

**Keywords:** Beautification; Friendly environment; Stress free; Oxygen availability.

## 1. Introduction

People in contemporary society spend 80% to 90% of their time indoors every day [1]. Thus, having a comfortable indoor environment with favorable indoor air quality is imperative, as indicated by the increasing prevalence of sick building syndrome [2]. In the United States alone, roughly 27 million office workers are at risk of sick building syndrome, and 30% of new buildings worldwide are associated with indoor air pollution problems [3]. Moreover, indoor air pollution is generally 2 to 5 times worse (sometimes up to 100 times worse) than outdoor air pollution [4]. This may be one of the reasons that people in contemporary society are experiencing increasingly severe physical and mental health problems, along with declining general wellbeing [5]. By contrast, exposure to nature is considered beneficial to physical and mental health [6]. This is why people often grow plants indoors to improve the quality of their living environment and workspace [7], because plants represent nature [8]. Empirical studies have also demonstrated that indoor plants have positive effects on physical and mental health as well as general wellbeing [9, 10].

Plants are the most common element of nature and are also often regarded as the most representative of nature [8]. This is true even within manmade structures. However, a room with plants differs from the natural outdoor environment in that the plants have been separated from their natural habitat. Furthermore, the objective effects of indoor plants on the physical environment (e.g., air quality, temperature, and humidity) should also be examined. Because mechanical ventilation and air-conditioning generally consume energy, research should focus on energy-free methods of regulating indoor air quality and microclimate [11]. Studies conducted since 1989 have reported that indoor plants can significantly reduce urban air pollution [12-15]. Nevertheless, little research has conducted experiments in a daily living environment to examine the effects of indoor plants on air quality, temperature, and humidity. The majority of existing experiments of indoor plants have involved highly concentrated pollutants in small closed fumigation chambers, and these experiments have not investigated the effects of distance from indoor plants. Greater proximity to the plant should yield more favorable effects, considering that air purification and microclimate regulation rely on plant photosynthesis, adsorption, respiration, transpiration and soil microbes [13, 14].

Plants are known to exert positive physical and psychological effects on humans and contribute to the reduction of and recovery from stress [16]. According to the common size of interior space and the proportion of plant

\*Corresponding Author

landscape gives some reference standard [17], in order to make plant landscape and the indoor environment more harmonious. Therefore, the role of indoor plants is ambiguous: they can be perceived as a symbol of nature or as a result of human intervention, interference, and even control over nature [8]. Research has yet to explore the effects of indoor plants with respect to novelty and perceived naturalness. This study is the first to examine the psychological effects (i.e., novelty and perceived naturalness) of bringing plants, which symbolize nature, from outdoor (natural environment) to indoor settings (artificial environment).

Lighting the way into the projection lighting, lighting and back lighting up. Upward lighting way is to put the lights in plants, the main purpose is the special effect of shadow on the wall; Back lighting is hidden behind the plants, the lights make the plant under the condition of the backlight produces dark outline, exquisitely carved effect [18]. The outside wall was lush branches can keep out sunshine, have the effect of shading and regulate indoor temperature. According to the measured, building on the west wall planting *parthenocissus tricuspidata*, in vegetation cover 90% of the cases, outer wall surface temperature can reduce 8.2 °C [19]. Nagda and Hodgson [20], reported that indoor humidity is not typically classified as an indoor contaminant. However, a number of studies [21-23] and building design guides [24, 25] recommend an indoor %RH in the range of 40 to 60%.

Kaufman and Lohr [26], reported that people exhibit strong responses to a range of tree colors, varying in hue and intensity. Fjeld, *et al.* [27], did some researches into the effects of plants on the well-being and health of office workers. This research showed that there is a positive relationship between plants at the workplace and the health of the office worker. The color red has been associated with excitement, orange has been perceived as distressing and upsetting, purple as dignified and stately, yellow as cheerful, and blue has been associated with comfort and security [28]. Williams [29], showed that medium-sized and lobular or oval-formed trees were preferred. Muderrisoglu, *et al.* [30], found that pyramid formed trees had the highest visual quality and strength. Indoor air quality is also a strong function of the indoor carbon dioxide (CO<sub>2</sub>) concentration. Humans exhale CO<sub>2</sub> and therefore, occupied indoor spaces are characterized with concentrations of CO<sub>2</sub> gas which are higher than the concentrations found in the outdoor air Lee, *et al.* [31]. Therefore, the beneficial effect of indoor plants on public health is a topic requiring exploration. Research has shown that having even a few indoor plants is beneficial to the general wellbeing and physical and mental health of humans. For example, covering 6% of an indoor floor area with indoor plants can elicit significantly stronger feelings of preference, comfort, and friendliness in students and reduce their misbehavior and number of sick leave days. A study conducted in real offices showed that the presence of plants has a significant effect on reducing short-term sickness absence, compared to the absence of plants [32]. Similarly, having a green space comprising 2% of a classroom floor area can promote feelings of wellbeing in students [6]. Considering the extremely low number of indoor plants used, the differences in participant responses were attributed to the possible effects of novelty (adding “something new” to the classroom perceived visually, olfactorily, auditorily and/or tactually) and not necessarily to the positive effects of the indoor plant itself. Furthermore, the distance from indoor plants appears to have distinct effects on the subjective feelings of humans [6, 33, 34]. Another possibility is that people’s responses were affected by the visibility of the plant rather than its distance from them because greater proximity to a plant corresponds to greater plant visibility. Studies have reported a positive correlation between the visible density of urban tree coverage with stress recovery [35] and landscape preference [36].

Usha, *et al.* [37], reported that high levels of indoor CO<sub>2</sub> concentrations are associated with a poor indoor air quality which could lead to health issues such as headaches and mucosal irritations, slower work performance, and increased employee absence. Moreover, Wargocki, *et al.* [38] concluded that the perceived air quality in an office building was reported to improve with higher ventilation rates. This in turn yielded an improved occupant perception of the indoor air freshness, thus yielding better employee productivity levels as a result of the feel good factor and the reduced sensation of mouth and throat dryness. For this reason Chartered Institution of Building Services Engineers CIBSE [25] recommended a fresh air supply per person between 5 and 8 litres per second which gives an internal CO<sub>2</sub> concentration in the range of 1000 and 1350 ppm. Intriguingly, Fang, *et al.* [39] reported that the impact on the perceived indoor air quality with lower ventilation rates (10 to 3.5 litres per second) can be counteracted with a reduction in the indoor air temperature and relative humidity (23°C/50%RH to 20°C/40%RH). Smith, *et al.* [32], undertook a plant trial in a large open plan office, finding that short-term sickness absence reduced by approximately 50% in the planted experimental area compared to a control area in which absence increased slightly, calculating a net saving for the organization of approximately £40,000 (GBP). Bringslimark, *et al.* [40], assessed whether office workers compensate for lack of nature views and found that workers in windowless offices were approximately five times more likely to bring plants into their workplace. Plants in the workplace have been associated with, task performance [41] and reduction in symptoms of sick building syndrome [42].

The objectives of this study were to examine the purchasing trends of indoor plants, their uses, management and different problems in management in the Quetta city of Pakistan. This research was based on different income groups, uses of indoor plants at different places and problems regarding the keeping and their management.

## 2. Materials and Methods

Research work was carried out in Quetta city. 9 nurseries were picked from main city. Out of which 4 were selected through convenience sampling technique [43]. 60 willing respondents were selected in selected nurseries for sampling (15 respondents from each nursery) and interviewed. An interview questionnaire in Urdu language was prepared for convenience in discussing research questions. On a structured format indoor plants user were interviewed according to schedule. Information was collected through open end and some close end questions. Questions were based to collect the information on; (i) Personal (ii) Increasing purchase trends of using indoor plants (iii) Opinion of plant users about their uses (iv) Problems regarding their management (v) Availability of material at

local nurseries. A pilot survey of indoor plants users at all selected nurseries was conducted to see the customer's response and to find any gap in the interview questionnaire. After testing of questionnaire a detailed survey of the nurseries was conducted, started from June 5<sup>th</sup>, 2016 and ending on August 10<sup>th</sup>, 2017. Interviews were scheduled in the morning (10-12am) and evening (3-5pm) as the most suitable time to visit nurseries. The collected data was arranged for analysis and SPSS (Statistical Package for Social Sciences) program was used. Required cross tables were formed for analysis of research data. Then using these cross tables, pie charts, bar charts were constructed, and possible graphical presentations were made. Chi Square Test was applied to analyze the data because there was non-parametric population and there were nominal variables in the data. Statistical difference of different parameters was tested at 0.5% of P value.

### **3. Results and Discussion**

Stratification was done on the bases of gender and income levels. Respondents were classified depending on their gender and different income levels (Table-1).

To know the purchasing trend of indoor plants, different questions were asked; one of them was "for how many years you have been purchasing indoor plants". Out of total respondents, majority of respondents 47% were buying indoor plants from recent 2-3 years, while 30% were buying plants from last 5 years and 23% were buying indoor plants from more than 5 years. It is evident from the data, that there is remarkable increase in buying indoor plants in recent 2-3 years (Table-2).

To know why people buy plants, respondents were asked "what is your reason for purchasing indoor plants?" Mainly two reasons were ascribed by the respondents. Highest (70%) respondents reported that they buy indoor plants to improve their indoor environment while (30%) respondents adopted it as a hobby (fig 3).

Results show that majority of the people use indoor plants for improving their indoor environment. Internationally it is well recognized that plants play a vital role for the improvement of indoor environment. House plant can contribute in keeping indoor air safer to breathe. They also act as living art, thus offering an inexpensive decorating alternative. Indoor plants buyers were asked that which type of plants they want to buy. Majority of plants users (60%) liked to buy flowering plants followed by (20%) respondents those wished to buy creeping type indoor plants and (10%) liked foliage as their favorite indoor plants (fig 4).

Choices of indoor plants among different income groups were also studied and significant differences were observed. Majority of respondents from lower income group liked flowering type of indoor plants. While middle income group liked creeping plants and higher income groups liked the foliage plants. When respondents were asked about their consideration regarding best plant, majority (27%) considers the money plant, (20%) considers Araucaria, (14%) considers Dieffenbachia and (10%) Elephantia as best indoor plant. Similarly, choices of plants depending on different income levels also determined. Higher income levels (32%) consider Araucaria and lower income level (37%) consider Money plant as best choice (fig 5).

To identify different sources of information and arranging plants in premises, they were asked about how they got the idea of using indoor plants. Highest (30%) of people got information from surroundings, (20%) from books, (17%) from T.V., (13%) from movies, (7%) from newspaper, (3%) from magazines, (3%) from nursery men and (7%) from other sources (fig 6). However, plant scaping is not an established enterprise, little information is being published in magazines. But with improvement in trends more information will be passed through documentaries, pages and programs in developing countries.

Majority (98%) of people use indoor plants in their houses and only (2%) people use plants in offices and other places. However, when reasons for management and maintenance were discussed; (90%) people were convinced that these indoor plants have amazing effects on visitors while only (10%) were considering the plants only for beautification (fig 7).

To evaluate the problems in maintenance of plants, time needed for care and management various questions were asked. In response majority (90%) was taking care of their plants themselves. Furthermore, (70%) of people spend half an hour daily for plant care, (20%) spend one hour while (10%) spend more than one hour (fig 8). Results suggest that, majority take care of their plants themselves, it shows the interest of people for keeping these plants alive

Respondents were asked about the problems in getting the indoor plants. But, majority (42%) had no problem in plants purchasing, while (20%) people had unavailability of desired plants, (19%) told that weather is too cold, (13%) had told that desired plants are very expensive, (3%) had the problem of distant nurseries and (3%) had the problem in plants care (fig 9).

Local nurseries efficacy was checked by the availability of basic necessities for indoor plants. People were asked about the material availabilities at nurseries. Majority (77%) reported the availability of necessary material at local nurseries, while (10%) reported the absence of sprays, (7%) reported absence of plant feed, (3%) told pots absence and (2%) reported seed absence (fig 10). Availability of necessary materials at local nurseries showed the infrastructure improvement in local nurseries.

There were several problems in keeping up of indoor plants. Majority (42%) of people had no problem, while (20%) had unavailability of desired plants, (19%) reported expensiveness of plants, (13%) people reported the leaf damage and (3%) reported lack of proper nurseries (fig 11).

### **4. Conclusion**

Indoor plants are beauty of modern era. These can be seen everywhere like houses, banks, shopping malls etc. these plants contribute to improve the environment of living premises that is effective as in modern era man spends

more time indoor. This study was aimed to observe the purchasing trends, problems, uses and management. At the end, it is concluded that there was a significant increase in purchasing of indoor plants since last 2-3 years. Majority of people reported that they opted to buy indoor plant for improving the environment. People are not having serious limitation and problems in management and facilities at local nurseries levels are also getting better with time.

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**Table-1.** Data Stratification on the bases of Gender

Group	Numbers	Percentage
Male	52	91
Female	8	9
Total	60	100

**Table-2.** Data Stratification on the bases of Income Levels

Group	Numbers	Percentage
<5000	10	17
5000-10000	6	10
10000-15000	16	26
15000-20000	4	7
>20000	24	40
Total	60	100

**Fig-1.** Overall purchasing trend of respondents

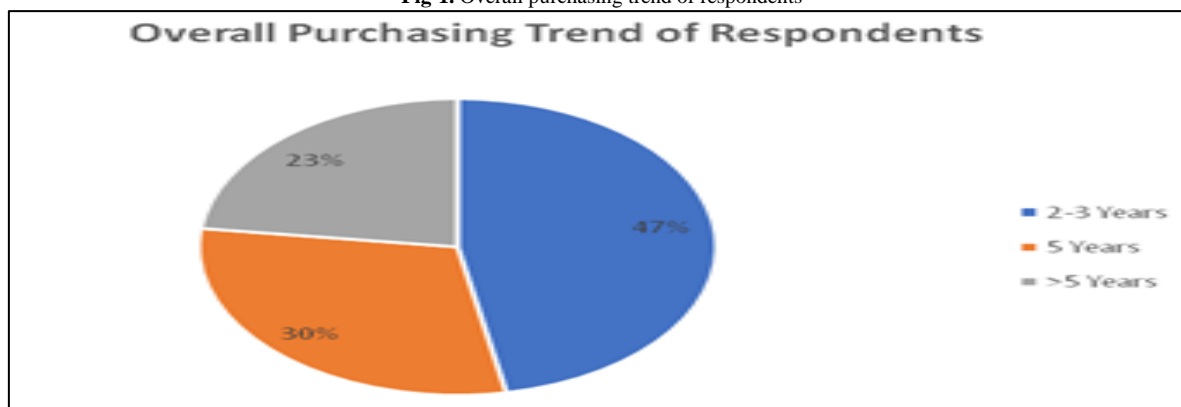
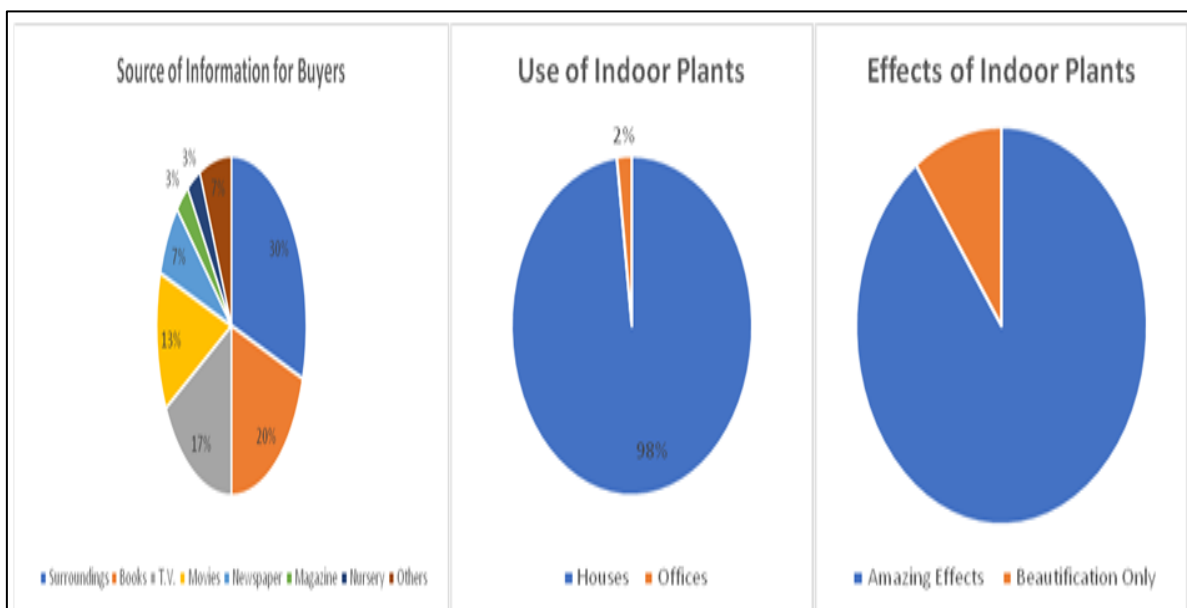
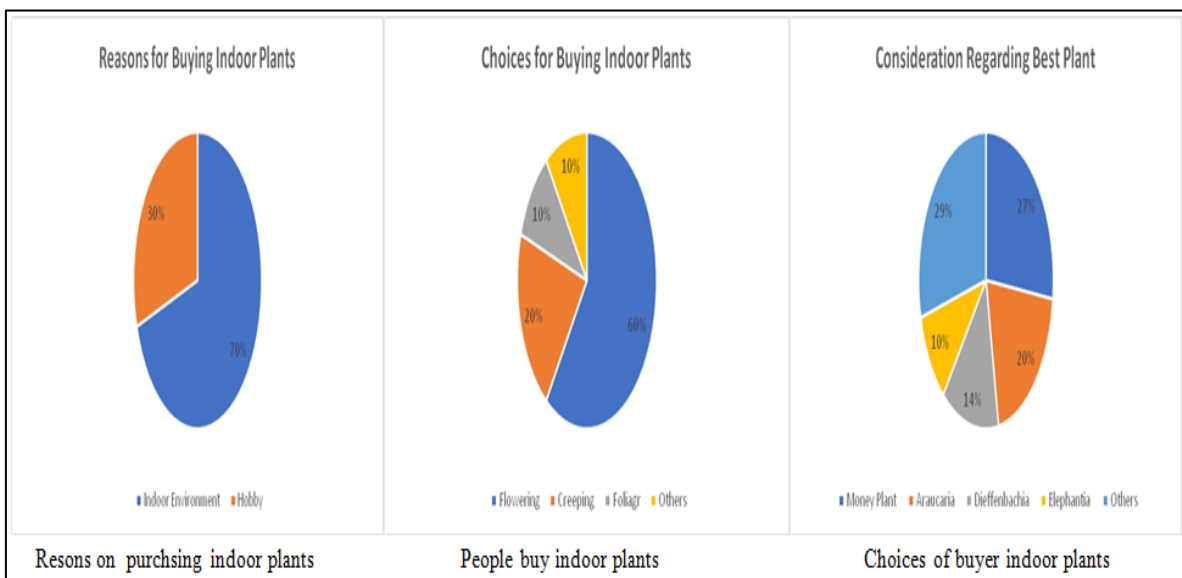
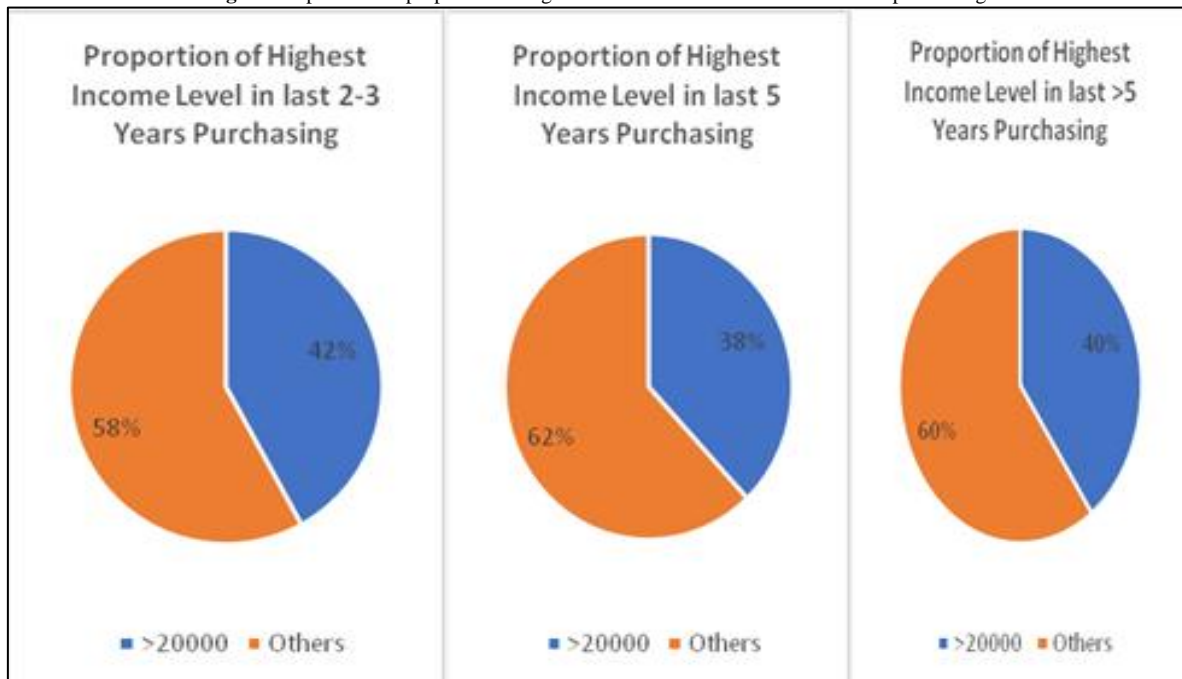
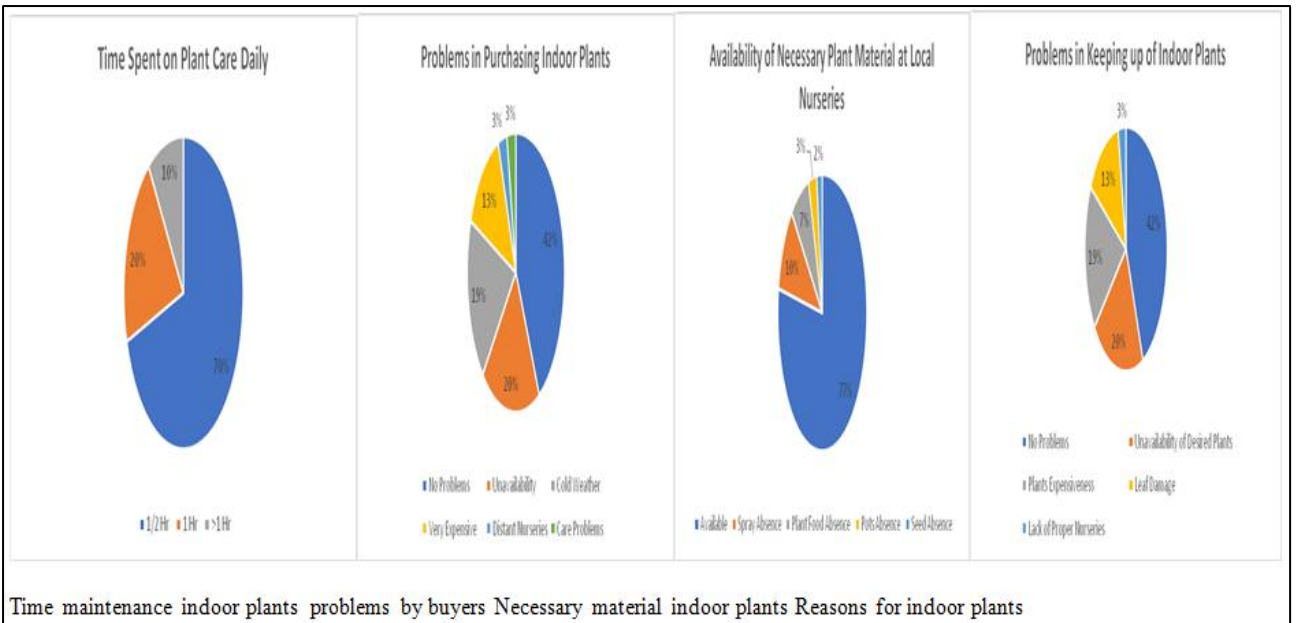


Fig-2. Comparasion in proportion of highest income level different durations of purchasing



Sources: to buyers for indoor plants purchase influence of indoor plants on visitors



Time maintenance indoor plants problems by buyers Necessary material indoor plants Reasons for indoor plants