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# CONTENTS

| Sr.<br>No. | TITLE & NAME OF THE AUTHOR (S)  | Page<br>No. |
|------------|---|-------------|
| 1.         | <p style="text-align: center;"><b>A DETAILED STUDY OF THE KEY VARIABLES<br/>INFLUENCING HOUSING PRICES</b></p> <p style="text-align: center;"><i>MADHUSHREE GHOSH &amp; Dr. AMARESHA M</i></p>                                      | 1           |
| 2.         | <p style="text-align: center;"><b>HEALTH CARE SECTOR – A CRITICAL REVIEW: A STUDY<br/>WITH SPECIAL REFERENCE TO PROBLEMS AND<br/>PROSPECTS</b></p> <p style="text-align: center;"><i>Dr. P. PONRAJ &amp; Dr. S. S. SUGANTHY</i></p> | 13          |
| 3.         | <p style="text-align: center;"><b>DYNAMICS OF HORTICULTURE PRODUCE<br/>MARKETING: A STUDY BASED ON HIMACHAL<br/>PRADESH</b></p> <p style="text-align: center;"><i>NITEESH KUMAR &amp; Dr. NARENDER SINGH CHAUHAN</i></p>            | 16          |
|            | <b>REQUEST FOR FEEDBACK &amp; DISCLAIMER</b>  | 20          |

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## A DETAILED STUDY OF THE KEY VARIABLES INFLUENCING HOUSING PRICES

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**ABSTRACT**

There are several factors which are responsible for the overall development of an economy. Among all such sectors, the real estate sector is a significant one. In order to understand the exact contribution of this sector, it's important to get an idea of its earnings. This can be determined from the final prices of the housing properties through which the earnings can be identified at the sales point. Here in this paper we have highlighted the key variables which help to influence the final housing prices. This will also help to exactly determine the importance of each variable in the process of the contribution to the total earnings of the housing sector. The data collection of the study is based on a structured questionnaire which has been further associated with an interview process. The sample consists of 400 builders from 4 major real estate hubs of Karnataka. However, secondary data sources have also been included for certain information. The statistical tool used here comprises Descriptive statistics and Chi-square test (where it is found necessary). The results highlighted from the data analysis and interpretation section shows that the majority of the variables which influence the prices of properties belong to factors like project amenities and legal documents. However, few variables also belong to the eco-friendly amenity factor. The current paper is an initiative to identify the major or the key variables which ultimately influence the real estate housing prices. This will help to understand the importance of the significant variables and will be helpful for further statistical analysis.

**KEYWORDS**

housing prices, real estate sector, housing properties.

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**I. INTRODUCTION**

Real estate sector is a very prominent field in any economy. Studies reveal that several research works have been conducted in this field. From the paper *P. M. Firstenberg et al. (1988)*<sup>[3]</sup> we get an overview of this sector. This sector consists of various departments like private commercial equity, real estate trusts, housing sector, hospital etc. One such research has been conducted in the paper *Hudson-Wilson et al. (2005)*<sup>[4]</sup>. However, for the sake of our research, we have only considered the real estate housing sector.

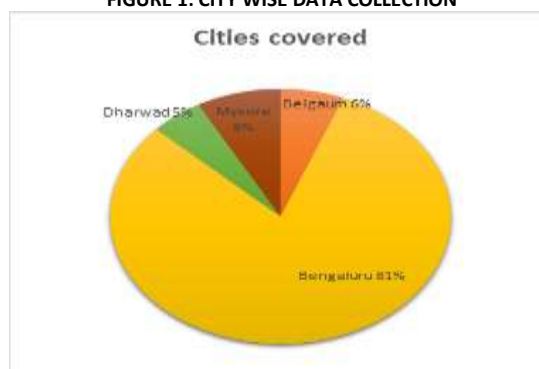
On the other hand, several studies have been conducted regarding the various factors which directly and indirectly influence the pricing of the housing properties. Few of the studies are *T. San Ong (2013)*<sup>[9]</sup>, *G. Calmasur (2016)*<sup>[2]</sup>, *Y. Wang & Y. Jiang (2016)*<sup>[10]</sup>, *P. Pashardes & C. S. Savva (2009)*<sup>[7]</sup>. However, if we observe the different literatures, most of them are related to the overall contribution of different factors towards the framing of the final housing prices. This also highlights that very little work has been conducted on the most significant variables which influence the property prices in Indian context. Simultaneously we found that many works have been conducted regarding the behavioural aspects of customers which they consider while making housing purchase decisions. Few of the contributions are *G. Madhushree & M. Amaresha (2020)*<sup>[5]</sup>, *D. Rachmawati et al. (2019)*<sup>[8]</sup>, *Al-Nahdi (2015)*<sup>[1]</sup>. But when we discuss pricing of housing properties, it is important to understand the builders' perspective. For this we have conducted a pilot study in the paper *G. Madhushree & M. Amaresha (2021)*<sup>[6]</sup>. This paper has helped to conduct a detailed analysis in the current research work and at a large scale. Since it has been observed that few studies have been conducted to identify the major variables which contribute to the quotation of the final prices, the objective of the current paper is to identify the same. Also, the study focuses on the availability of the various variables depending on the location of the properties. This will thus give us a clear image about the variables which not only influences the property prices but also help to conduct further research work in an enhanced manner.

**II. OBJECTIVES**

1. To identify the significant variables under different factors which influence the prices of the housing properties.
2. To determine whether the impact of the significant variables on housing prices is dependent on the location of the properties.

**III. RESEARCH METHODOLOGY**

To identify the significant variables, we have taken the help of both primary and secondary data sources. The sample considered for this purpose is 400 which has been based on 4 major real estate hubs of Karnataka as per the RERA. A proportionate stratified random sampling method has been adopted for this purpose. Under this method, we have collected 81% of the data from Bangalore, 8% from Mysore, 6% from Belgaum and 5% from Dharwad. This has been highlighted in Figure 1.

**FIGURE 1: CITY WISE DATA COLLECTION**

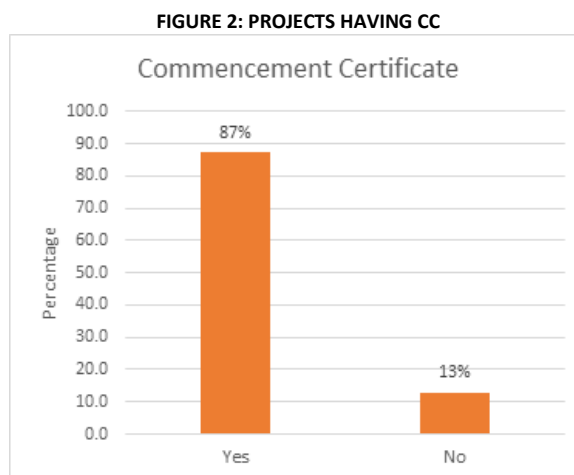
The primary data which has been collected from the real estate builders is based on a questionnaire which has been pretested through a pilot study in the paper *G. Madhushree & M. Amaresha (2021)*<sup>[6]</sup>. Apart from this a part of data has been collected from secondary sources. This is from the RERA site as well as different prospectus provided by the real estate builders. Since the objective of the paper is to identify the major variables, we have used Descriptive analysis for this purpose. Also, since the data is based on 4 different places, we have used the chi square test to identify whether these variables differ from one place to another. In this study we have not used any Inferential statistics as the objective is to just identify the significant variables influencing the housing prices.

**IV. DATA ANALYSIS & INTERPRETATION**

This section comprises a detailed analysis of the top 6 factors which are considered as influencing criteria related to housing prices in the study *G. Madhushree & M. Amaresha (2021)*<sup>[6]</sup>. In this paper it has been observed that out of 8 criteria, builders have considered 4 factors which play an important role in the quoting of final housing prices. These are - Legal documents, Project amenities, Public amenities and Eco-friendly amenities. Apart from these, 2 more factors have been included in our current study - Distance from nearest IT/Industrial hub and Promotional platform. The analysis from this section will help us to identify how many projects actually possess the considered factors along with variables under each factor. For this reason, each factor has been allotted with 5 variables. Only IT/Industrial hubs do not include any variable. Moreover, since the samples have been collected based on 4 major real estate hubs of Karnataka, the Chi-square test has been conducted (when found necessary) to identify if the factors with the variables are based on the location of the projects.

**1. LEGAL DOCUMENTS**

**a. Commencement Certificate**



The first factor considered in this section is the Legal document which has been further divided into 5 variables- Commencement certificate (CC), Encumbrance certificate (EC), Occupancy certificate (OC), Khata certificate & Extract and Title Deed (TD). From Figure 2 we can observe that 87% of the projects possess CC and only 13% do not. However, to find out whether the availability of CC is dependent on the location of the project we have conducted a chi-square test.

**TABLE 1: CHI-SQUARE TESTS - CC**

| Pearson Chi-Square | Value | df | Asymptotic Significance (2-sided) |
|--------------------|-------|----|-----------------------------------|
|                    | 4.924 | 3  | 0.177                             |

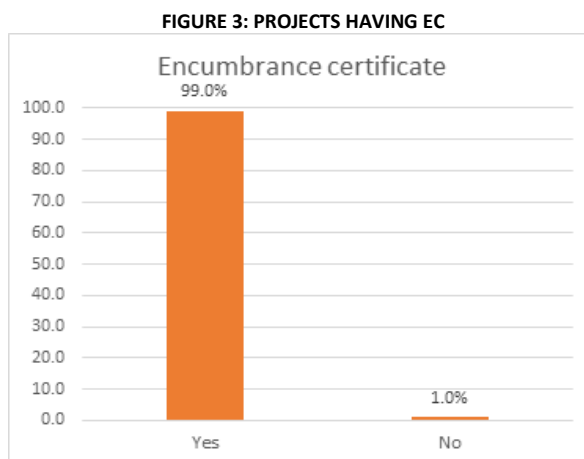
Chi-square test of Independence

H<sub>0</sub>: Availability of commencement certificate is independent of the city located

H<sub>a</sub>: Availability of commencement certificate is not independent of the city located

The value of the Chi-square highlighted in Table 1 is 4.924 with a p value of 0.177. This is greater than 0.05. Thus, it clearly indicates that the availability of CC provided by different projects are not dependent on the city located.

**b. Encumbrance Certificate**



The 2nd variable under the legal document is EC. From Figure 3 we find that a maximum of the projects possesses this certificate i.e. 99% of them have provided the EC and 1% do not.

**TABLE 2: CHI-SQUARE TESTS - EC**

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 17.409 | 3  | 0.001                             |

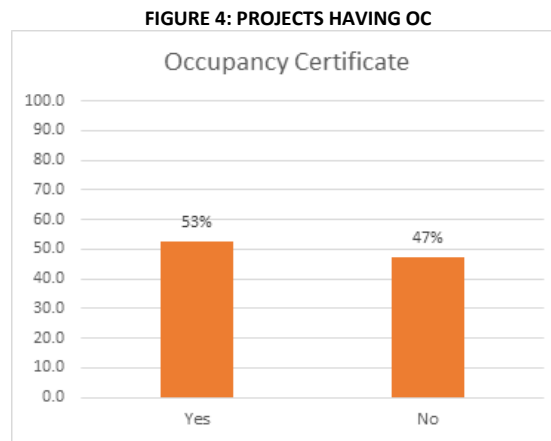
Chi-square test of Independence

H<sub>0</sub>: Availability of encumbrance certificate is independent of the city located

H<sub>a</sub>: Availability of encumbrance certificate is not independent of the city located

The value of chi-square has been shown in Table 2. The value is 17.409 with a p value of 0.001 which is less than 0.05. This indicates that even though the maximum project has provided EC, however the availability of this certificate is dependent on the city located.

c. Occupancy Certificate



The 3rd type of legal document is the OC which is obtained only when a project is completed by following all necessary regulations. Figure 4 highlights that only 53% of the projects possess OC whereas 47% of them do not. This shows that many projects have not followed the guidelines due to which they have not obtained OC or they are waiting to receive the certificate due to the current COVID situation.

**TABLE 3: CHI-SQUARE TESTS - OC**

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 20.653 | 6  | 0.002                             |

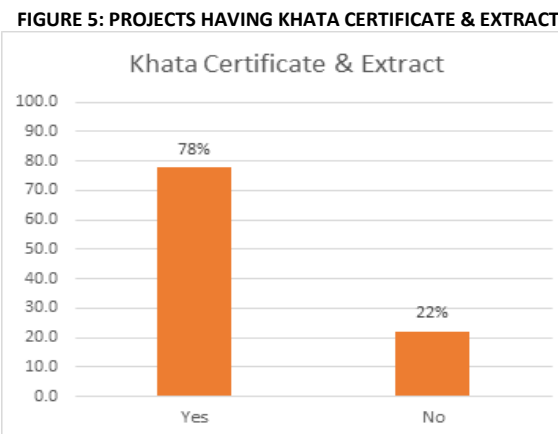
Chi-square test of Independence

H<sub>0</sub>: Availability of occupancy certificate is independent of the city located

H<sub>a</sub>: Availability of occupancy certificate is not independent of the city located

The results derived from Table 3 highlights the value of Chi-square test which is 20.653. The calculated p value is 0.002 which is less than 0.05. This shows that the availability of OC is dependent on the city located.

d. Khata Certificate and Extract



The 4th type of legal document is Khata certificate & Extract. Figure 5 highlights that 78% of the projects have provided this legal document and 22% of them have not.

**TABLE 4: CHI-SQUARE TESTS - KHATA CERTIFICATE AND EXTRACT**

| Pearson Chi-Square | Value | df | Asymptotic Significance (2-sided) |
|--------------------|-------|----|-----------------------------------|
|                    | 5.188 | 3  | 0.159                             |

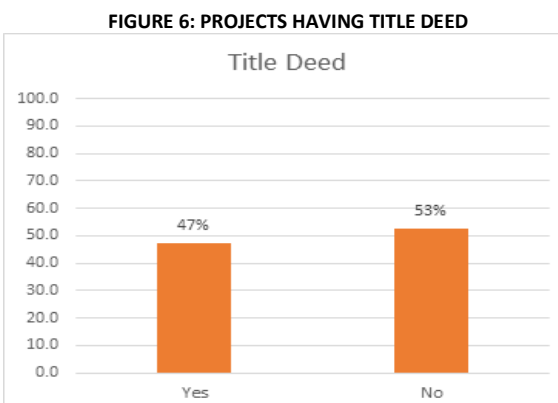
Chi-square test of Independence

H<sub>0</sub>: Availability of khata certificate & extract is independent of the city located

H<sub>a</sub>: Availability of khata certificate & extract is not independent of the city located

To check whether this is dependent on the project's location, the chi-square test has been conducted. Table 4 shows the result of the chi-square test is 5.188 with a p value of 0.159. This is greater than 0.05 which indicates that residential projects which provide Khata certificate & Extract are not dependent on the project's location.

e. Title Deed



The last variable under the legal document is TD. Figure 6 shows that only 47% of the projects have provided TD and 53% of them have not.

TABLE 5: CHI-SQUARE TESTS - TITLE DEED

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 26.155 | 3  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Availability of title deed is independent of the city located

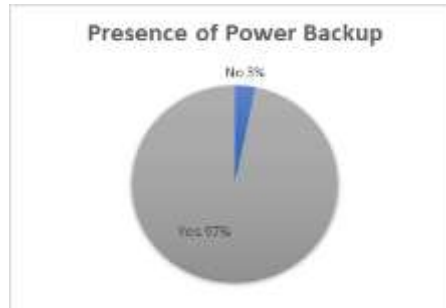
H<sub>a</sub>: Availability of title deed is not independent of the city located

The value of Chi-square test highlighted in Table 5 is 26.155. The calculated p value is 0.000 which is less than 0.05. This indicates that the availability of TD is dependent on the city located.

**2. PROJECT AMENITIES**

In case of project amenities also 5 variables have been considered. In order to find out whether the items are consistent or not, we have conducted the Cronbach's Alpha test. The value of the test is 0.750 which indicates that the items in the group are consistent in nature.

FIGURE 7: PROJECTS HAVING POWER BACKUP



The first variable under this section is Power backup. From Figure 7 we find that 97% of the projects have the facility of power backup. Only 3% do not have the provision of this facility.

TABLE 6: CHI-SQUARE TESTS - POWER BACKUP

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 30.911 | 3  | 0.000                             |

Chi-square test of Independence

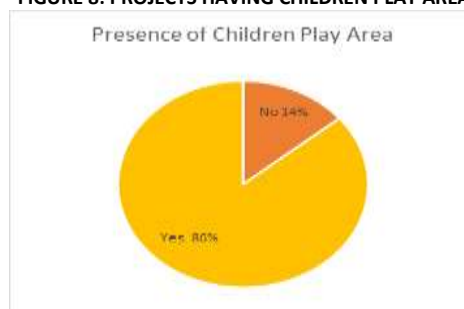
H<sub>0</sub>: Presence of Power backup in apartments is independent of the city located

H<sub>a</sub>: Presence of Power backup in apartments is not independent of the city located

The chi-square test is conducted to find whether this facility is dependent on the location of the project or not. In Table 6 the value of the chi-square test highlighted is 30.911 with a p value of 0.000. This is less than 0.05 which indicates that the availability of power backup facility is dependent on the city located.

**b. Children's Play area**

FIGURE 8: PROJECTS HAVING CHILDREN PLAY AREA



The 2nd variable under project amenity considered here is Children's play area. From Figure 8 we find that the majority of the projects i.e. 86% of them have this facility. Only 14% of them do not have this facility.

TABLE 7: CHI-SQUARE TESTS - CHILDREN PLAY AREA

| Pearson Chi-Square | Value   | df | Asymptotic Significance (2-sided) |
|--------------------|---------|----|-----------------------------------|
|                    | 231.793 | 3  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Presence of children play area in residential properties is independent of the city located

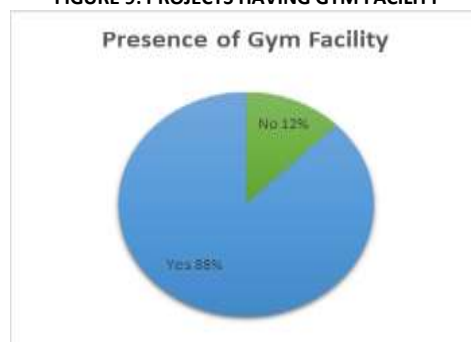
H<sub>a</sub>: Presence of children play area in residential properties is not independent of the city located

The chi-square test value highlighted in Table 7 is 231.793 with a p value of 0.000. As the p value is less than 0.05, it indicates that the facility of the children's play area is dependent on the city located.

**c. Gym Facility**

The 3rd variable in this section is gym facility. From Figure 9 we can find that 88% of the projects have the provision of gym facilities. Only 12% of them do not have this provision.

FIGURE 9: PROJECTS HAVING GYM FACILITY



**TABLE 8: CHI-SQUARE TESTS - GYM FACILITY**

| Pearson Chi-Square | Value   | df | Asymptotic Significance (2-sided) |
|--------------------|---------|----|-----------------------------------|
|                    | 194.930 | 3  | 0.000                             |

Chi-square test of Independence

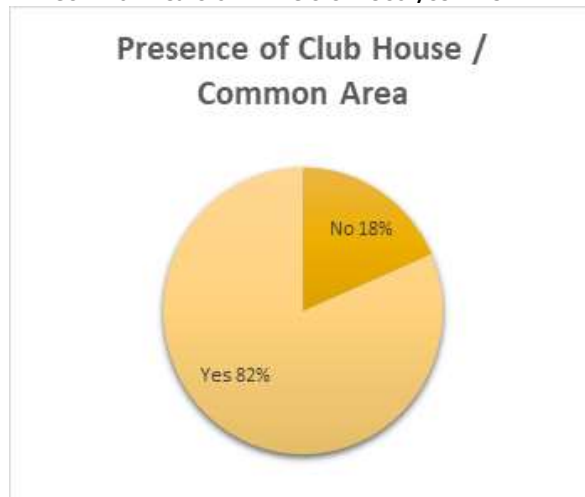
H<sub>0</sub>: Presence of gym facility in residential properties is independent of the city located

H<sub>a</sub>: Presence of gym facility in residential properties is not independent of the city located

The results derived from the chi-square test is 194.30 which is highlighted in Table 8. The p value calculated is 0.000 which is less than 0.05. This indicates that the provision of gym facilities is dependent on the city located.

**d. Club House/Common Area**

**FIGURE 10: PROJECTS HAVING CLUBHOUSE/COMMON AREA**



The next variable in this section is club house/common area. Figure 10 highlights that 82% of the projects have the provision of this amenity. Only 18% of them do not have this provision.

**TABLE 9: CHI-SQUARE TESTS - CLUBHOUSE/COMMON AREA**

| Pearson Chi-Square | Value   | df | Asymptotic Significance (2-sided) |
|--------------------|---------|----|-----------------------------------|
|                    | 172.509 | 3  | 0.000                             |

Chi-square test of Independence

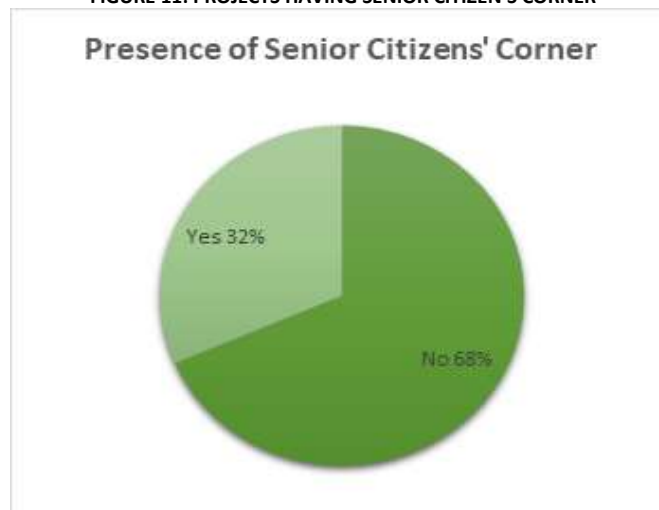
H<sub>0</sub>: Presence of Club House / Common Area in residential properties is independent of the city located

H<sub>a</sub>: Presence of Club House / Common Area in residential properties is not independent of the city located

From Table 9 we find that the value of the chi-square test is 172.509 with a p value of 0.000. Since p value is less than 0.05, it indicates that the facility of the club house/common area is dependent on the city located.

**e. Senior Citizens' Corner**

**FIGURE 11: PROJECTS HAVING SENIOR CITIZEN'S CORNER**



The last variable under this section is senior citizen's corner. From Figure 11 we find that very few projects have this facility. Only 32% of the projects have this facility. However, 68% of the projects do not have this facility.

**TABLE 10: CHI-SQUARE TESTS - SENIOR CITIZEN'S CORNER**

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 30.493 | 3  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Presence of Senior Citizens' Corner in residential properties is independent of the city located

H<sub>a</sub>: Presence of Senior Citizens' Corner in residential properties is not independent of the city located

The chi-square value highlighted in Table 10 is 30.493. The p value calculated is 0.000 which is less than 0.05. This indicates that the availability of this project amenity is dependent on the city located.

**3. PUBLIC AMENITIES**

In the current section 5 variables have been considered. This section covers the data analysis regarding the proximity of different projects from 5 different types of public amenities namely- Shopping mall, Hospital, School, Bus stop and Railway station.

a. Nearest Shopping mall

FIGURE 12: PROJECT'S PROXIMITY TO NEAREST SHOPPING MALL



Through the help of descriptive statistics, we have been able to find the proximity of the projects from their nearest shopping malls. From Figure 12 we find that 45% of the projects are located at a distance of more than 5 km from the nearest shopping mall.

TABLE 11: CHI-SQUARE TESTS - NEAREST SHOPPING MALL

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 77.399 | 9  | 0.000                             |

Chi-square test of Independence

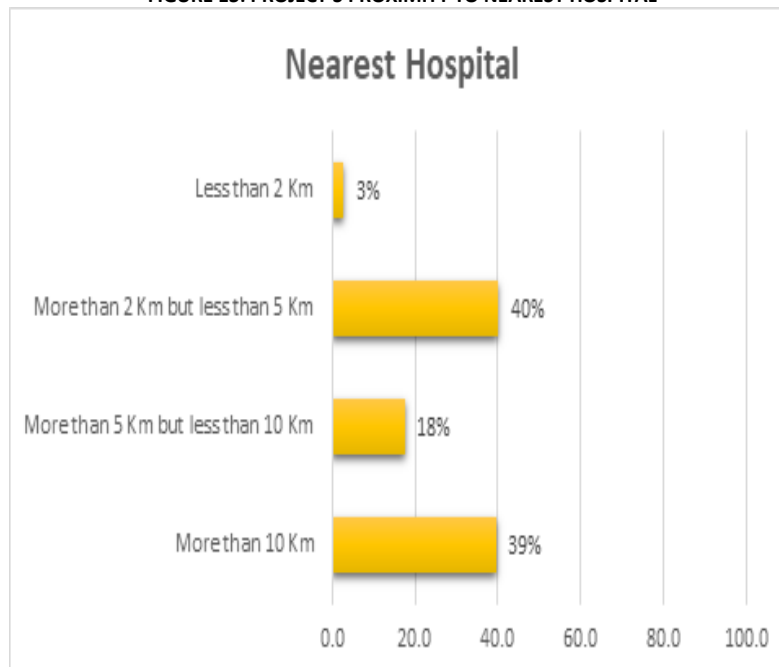
H<sub>0</sub>: Proximity to nearest shopping mall from the residential project is independent of the city located

H<sub>a</sub>: Proximity to nearest shopping mall from the residential project is not independent of the city located

The value of the chi-square test highlighted in Table 11 is 77.399. The calculated p value is 0.000 which is less than 0.05. This indicates that this proximity to the nearest shopping mall is dependent on the city located.

b. Nearest Hospital

FIGURE 13: PROJECT'S PROXIMITY TO NEAREST HOSPITAL



From Figure 13 we find that 40% of the projects are located at distances of more than 2 km and less than 5 km from the nearest hospital. This is closely followed by 39% of the projects situated more than 10 km from the nearest hospital.

TABLE 12: CHI-SQUARE TESTS - NEAREST HOSPITAL

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 33.377 | 9  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Proximity to nearest hospital from the residential project is independent of the city located

H<sub>a</sub>: Proximity to nearest hospital from the residential project is not independent of the city located

Table 12 highlights the value of the chi-square test which is 33.377. The p value calculated is 0.000 which is less than 0.05. This indicates that the proximity of the projects to the nearest hospital is dependent on the city located.

c. Nearest School

FIGURE 14: PROJECT'S PROXIMITY TO NEAREST SCHOOL

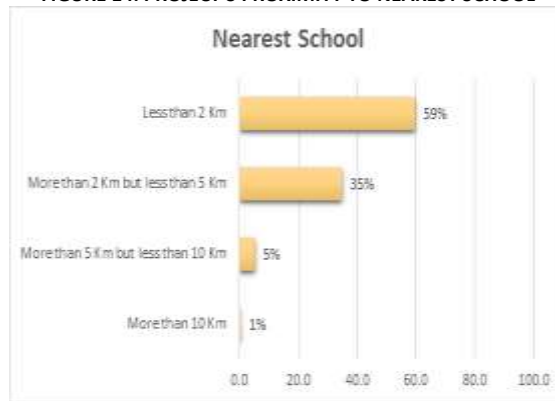


Figure 14 highlights that 59% of the projects are located at a distance of less than 2 km from the nearest school. This means that the majority of the projects are closely located to the nearest school.

TABLE 13: CHI-SQUARE TESTS - NEAREST SCHOOL

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 21.040 | 9  | 0.012                             |

Chi-square test of Independence

H<sub>0</sub>: Proximity to nearest school from the residential project is independent of the city located

H<sub>a</sub>: Proximity to nearest school from the residential project is not independent of the city located

The value of the chi-square test highlighted in Table 13 is 21.040. The p value calculated is 0.012 which is greater than 0.05. This indicates that the proximity of the projects to the nearest school is independent of the city located.

d. Nearest Bus stop

From Figure 15 we find that 36% of the projects are located more than 5 km from the nearest bus stop. This means that most of the projects are not located at a close proximity of the nearest bus stop.

FIGURE 15: PROJECT'S PROXIMITY TO NEAREST BUS STOP

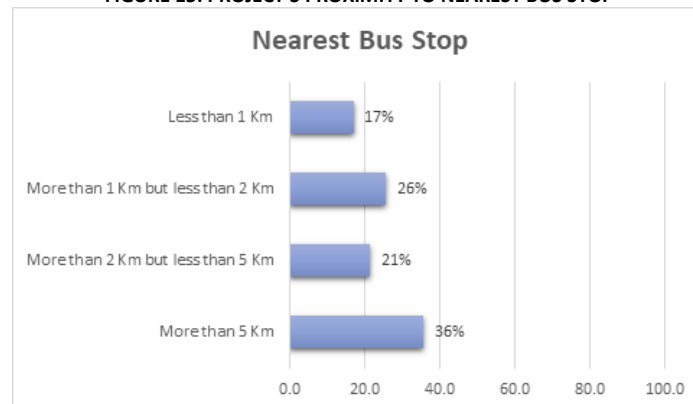


TABLE 14: CHI-SQUARE TESTS - NEAREST BUS STOP

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 29.639 | 9  | 0.001                             |

Chi-square test of Independence

H<sub>0</sub>: Proximity to bus stop from the residential project is independent of the city located

H<sub>a</sub>: Proximity to bus stop from the residential project is not independent of the city located

From Table 14 we are able to find the value of chi-square which is 26.639. The calculated p value is 0.001 which is less than 0.05. This indicates that the proximity of the projects to the nearest bus stop is dependent on the city located.

e. Nearest Railway station

FIGURE 16: PROJECT'S PROXIMITY TO NEAREST RAILWAY

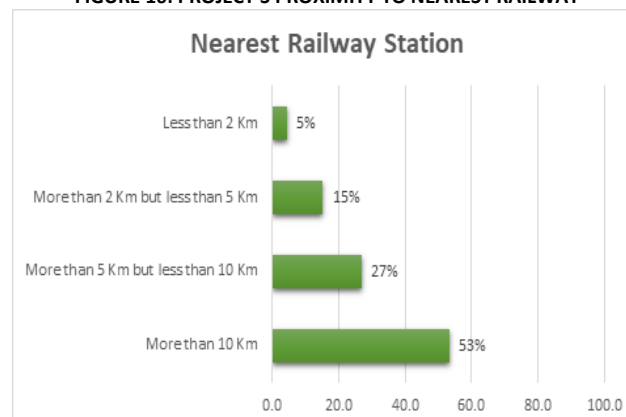


Figure 16 highlights that the majority of the projects are located at a distance of more than 10 km from the nearest railway station. This comprises 53% of the projects.



TABLE 15: CHI-SQUARE TESTS - NEAREST RAILWAY STATION

| Pearson Chi-Square | Value   | df | Asymptotic Significance (2-sided) |
|--------------------|---------|----|-----------------------------------|
|                    | 102.670 | 9  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Proximity to railway station from the residential project is independent of the city located

H<sub>a</sub>: Proximity to railway station from the residential project is not independent of the city located

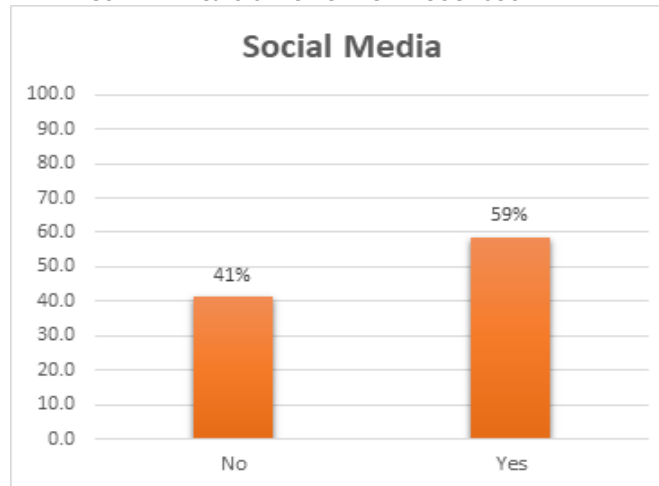
The chi-square value highlighted in Table 15 is 102.670. The p value calculated here is 0.000 which is less than 0.05. This indicates that the proximity of the projects to their nearest railway station is dependent on the city located.

**4. PROMOTIONAL PLATFORMS**

Under promotional platforms/advertising medium 5 different items have been considered. To check the consistency of the items, Cronbach's alpha test has been conducted. The results derived from the test is 0.634 which indicates that it is of acceptable level and the items under this group are consistent in nature.

**a. Social Media**

FIGURE 17: PROJECTS PROMOTING THROUGH SOCIAL MEDIA



The first variable in this section is social media which includes platforms like Facebook, YouTube. From Figure 17 we find that only 59% of the projects use this medium for advertisement. 41.3% of the projects do not promote through such platforms.

TABLE 16: CHI-SQUARE TESTS - SOCIAL MEDIA

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 11.041 | 3  | 0.012                             |

Chi-square test of Independence

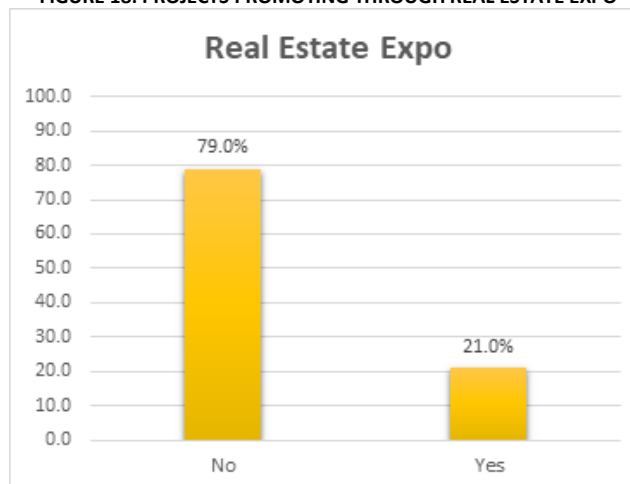
H<sub>0</sub>: Advertising in social media by residential properties is independent of the city located

H<sub>a</sub>: Advertising in social media by residential properties is not independent of the city located

To check whether this result is location based or not, chi-square tests have been conducted. Table 16 highlights that the value of the test is 11.041 with a calculated p value of 0.012. This is greater than 0.05 which indicates that the use of social media by various builders are not dependent on the city located.

**b. Real Estate Expo**

FIGURE 18: PROJECTS PROMOTING THROUGH REAL ESTATE EXPO



These are fairs organized by real estate houses/companies to promote their various projects. From Figure 18 we find that only 21% of the projects have used this platform for promotional purposes. Majority of the projects i.e. 79% of the projects have not used this medium.

TABLE 17: CHI-SQUARE TESTS - REAL ESTATE EXPO

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 17.428 | 3  | 0.001                             |

Chi-square test of Independence

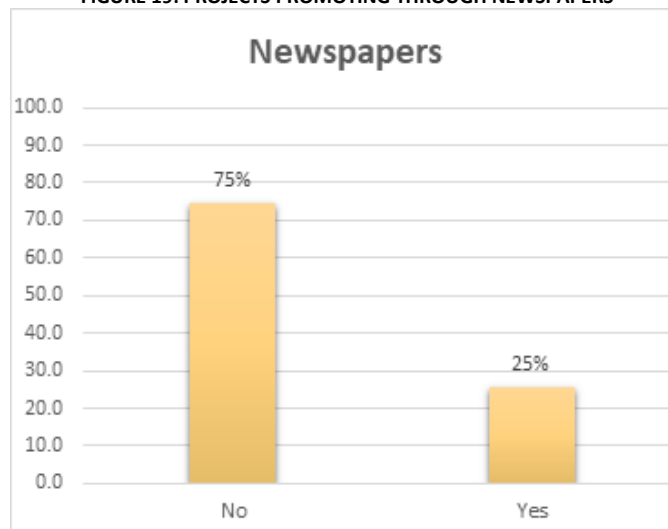
H<sub>0</sub>: Participating in Real Estate Expo is independent of the city located

H<sub>a</sub>: Participating in Real Estate Expo is not independent of the city located

Chi-square test was conducted to identify whether it is location oriented or not. It has been found that the majority of the projects do not use this platform. Especially Tier II cities based projects have not used this platform for advertisement purposes. Also, the chi-square value highlighted in Table 17 is 17.428 with a p value of 0.001 which is less than 0.05. Thus, this indicates that the use of this platform is dependent on the city located.

c. Newspapers

FIGURE 19: PROJECTS PROMOTING THROUGH NEWSPAPERS



From Figure 19 we find that just like real estate expo this platform also has not been used by many projects. The figure highlights that 75% of the projects did not use this medium. Only 25% of them have used newspapers to promote their projects.

TABLE 18: CHI-SQUARE TESTS - NEWSPAPERS

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 13.045 | 3  | 0.005                             |

Chi-square test of Independence

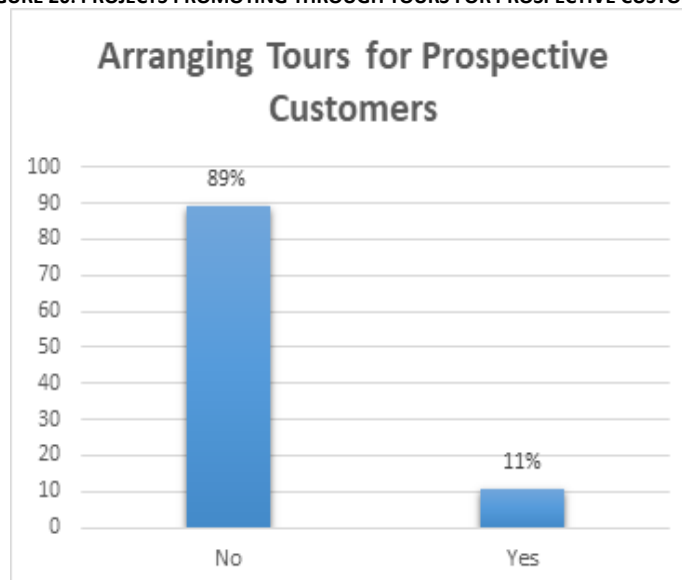
H<sub>0</sub>: Advertising in Newspapers is independent of the city located

H<sub>a</sub>: Advertising in Newspapers is not independent of the city located

The chi-square value highlighted in Table 18 is 13.045 with a p value of 0.005. This is again less than 0.05. This indicates that the use of this medium is dependent on the city located.

d. Arranging tours for prospective customers

FIGURE 20: PROJECTS PROMOTING THROUGH TOURS FOR PROSPECTIVE CUSTOMERS



From Figure 20 we find that very few projects have used this medium for promotional purposes. Only 11% of the projects have used this medium. However, 89% of the projects have not used this medium.

TABLE 19: CHI-SQUARE TESTS - TOURS FOR PROSPECTIVE CUSTOMERS

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 11.301 | 3  | 0.010                             |

Chi-square test of Independence

H<sub>0</sub>: Arranging Tours for Prospective Customers is independent of the city located

H<sub>a</sub>: Arranging Tours for Prospective Customers is not independent of the city located

The chi-square test value highlighted in Table 19 is 11.301. The p value calculated is 0.010 which is greater than 0.05. This indicates that the use of this medium is dependent on the city located.

e. Real estate websites

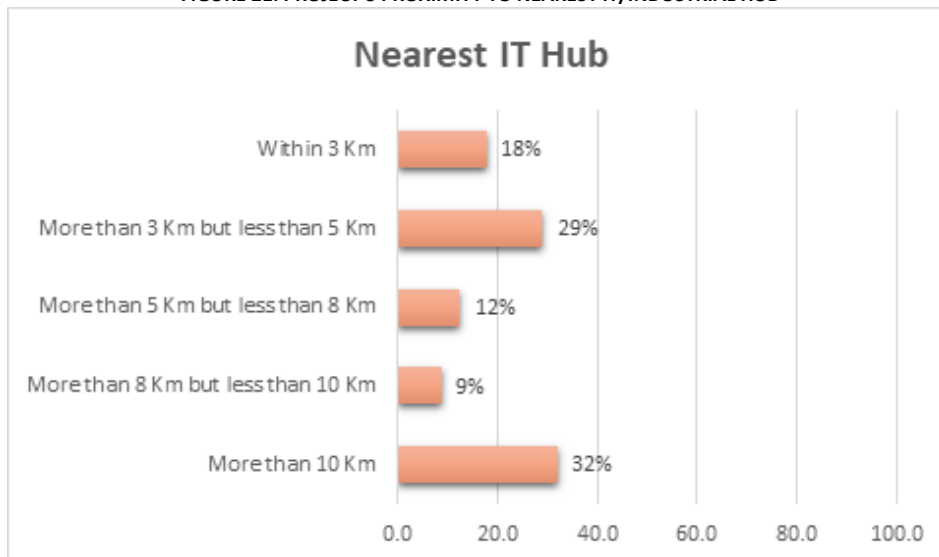
The last variable in this section is real estate websites. From Table 20 we find that all the projects in our sample have this or other websites for their promotional purpose. This is why the chi-square test has not been conducted to identify the importance of the location of the cities.

TABLE 20: REAL ESTATE WEBSITES

|     | Frequency | Percent |
|-----|-----------|---------|
| Yes | 400       | 100     |

5. NEAREST IT/INDUSTRIAL HUB

FIGURE 21: PROJECT'S PROXIMITY TO NEAREST IT/INDUSTRIAL HUB



Since the workplace plays an important role while making purchase decisions regarding housing properties. Since the IT sector and other industrial hubs are eminent in Karnataka, this variable has been considered as an important one. From Figure 21 we find that the majority of the projects are located at a distance of more than 10 km from their nearest IT/Industrial hub. This means that the majority of the projects are located very far from the nearest workplace.

TABLE 21: CHI-SQUARE TESTS - NEAREST IT HUB

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 77.399 | 9  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Proximity to IT/Industrial hub from the residential project is independent of the city located

H<sub>a</sub>: Proximity to IT/Industrial hub from the residential project is not independent of the city located

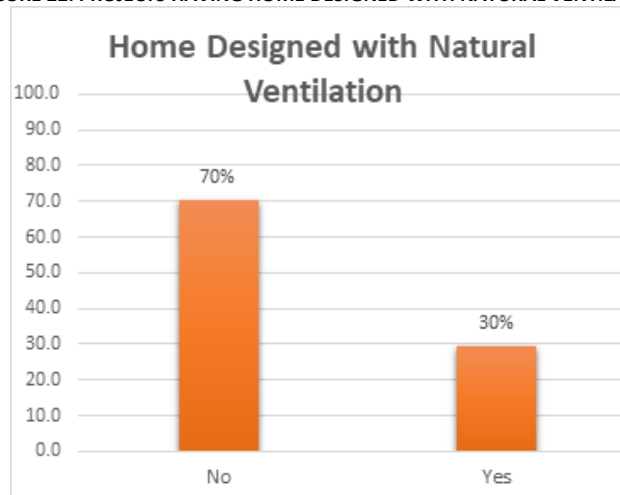
The result derived from the chi-square test is 77.399 which is highlighted in Table 21. The calculated p value is 0.000 which is less than 0.05. This indicates that the proximity to the nearest IT/Industrial hub is dependent on the city located.

6. ECO-FRIENDLY AMENITIES

Under Eco-friendly amenities, 5 items have been considered. The Cronbach's alpha test was conducted in order to find out whether these 5 items are consistent or not. The calculated value derived from the test is 0.739. Since the value is acceptable, it can be said that the 5 items in the group are consistent in nature.

a. Home designed with Natural ventilation

FIGURE 22: PROJECTS HAVING HOME DESIGNED WITH NATURAL VENTILATION



From Figure 22 we find that the majority of the projects do not have the provision of homes designed with natural ventilation. This comprises 70% of the projects only. 30% of the projects have the provision of natural ventilation.

TABLE 22: CHI-SQUARE TESTS - HOME DESIGNED WITH NATURAL VENTILATION

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 39.261 | 3  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Home Designed with Natural Ventilation by residential properties is independent of the city located

H<sub>a</sub>: Home Designed with Natural Ventilation by residential properties is not independent of the city located

The result of the chi-square test found is 39.261 which is highlighted in Table 22. The calculated p value is 0.000 which is less than 0.05. Thus, it can be interpreted that the provision of homes designed with natural ventilation is dependent on the city of the project located.

b. Sewage Treatment Plant

It has been found that the majority of the projects have the provision of Sewage Treatment Plant (STP). This comprises 80% of the projects which is highlighted in Figure 23. Only 20% of them do not have this provision.

FIGURE 23: PROJECTS HAVING SEWAGE TREATMENT PLANT

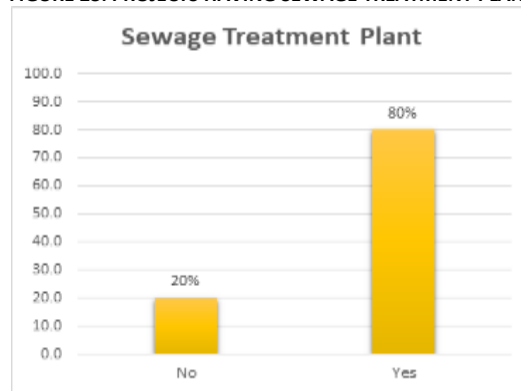


TABLE 23: CHI-SQUARE TESTS - SEWAGE TREATMENT PLANT

| Pearson Chi-Square | Value   | df | Asymptotic Significance (2-sided) |
|--------------------|---------|----|-----------------------------------|
|                    | 130.858 | 3  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Sewage Treatment Plant by residential properties is independent of the city located

H<sub>a</sub>: Sewage Treatment Plant by residential properties is not independent of the city located

The results derived from the Chi-square test is 130.858 with a p value of 0.000. This is highlighted in Table 23. The calculated p value is less than 0.05 which indicates that the provision of STP is dependent on the city of location.

**c. Energy Conservation System**

This is a rare facility/amenity provided by a few sections of builders. From Figure 24 we find that only 18% of the projects have the provision of this facility. On the other hand, 82% of the projects have no provision for this amenity.

FIGURE 24: PROJECTS HAVING ENERGY CONSERVATION SYSTEM

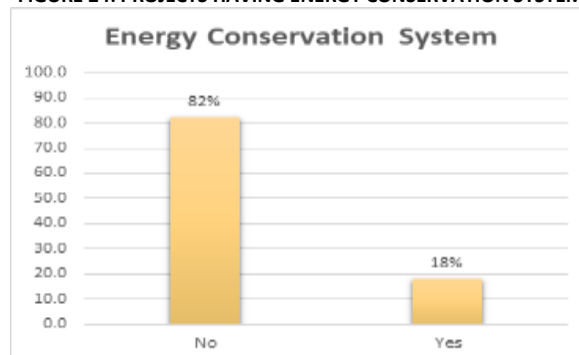


TABLE 24: CHI-SQUARE TESTS - ENERGY CONSERVATION SYSTEM

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 20.596 | 3  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Energy Conservation System by residential properties is independent of the city located

H<sub>a</sub>: Energy Conservation System by residential properties is not independent of the city located

When the chi-square test was conducted, the result was 20.596. This is highlighted in Table 24. The calculated p value is 0.000 which is less than 0.05 which indicates that the provision of the Energy Conservation System is dependent on the city located.

**d. Rainwater Harvesting System**

FIGURE 25: PROJECTS HAVING RAINWATER HARVESTING SYSTEM

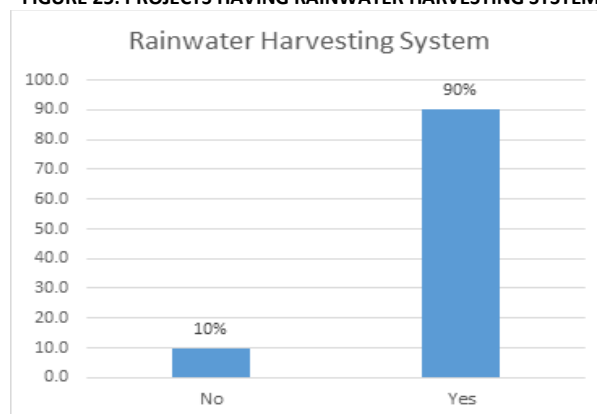


Figure 25 highlights that the majority of the projects have the provision of Rainwater harvesting System (RHS). 90% of the projects have the provision. Only 10% of them do not have this provision.

TABLE 25: CHI-SQUARE TESTS - RAIN HARVESTING SYSTEM

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 94.539 | 3  | 0.000                             |

Chi-square test of Independence

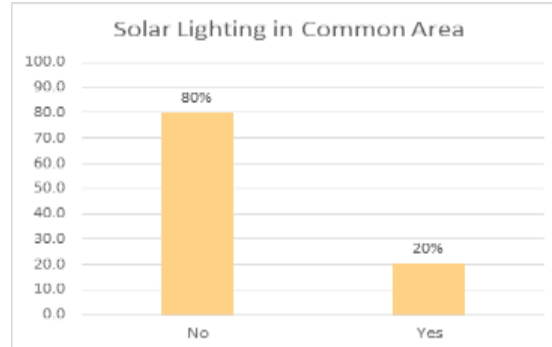
H<sub>0</sub>: Rainwater Harvesting System by residential properties is independent of the city located

H<sub>a</sub>: Rainwater Harvesting System by residential properties is not independent of the city located

The chi-square test value highlighted in Table 25 is 94.539. The calculated p value is 0.000 which is less than 0.05. This indicates that the provision of RHS is dependent on the city located.

**e. Solar lighting in common area**

**FIGURE 26: PROJECTS HAVING SOLAR LIGHTING IN COMMON AREA**



From Figure 26 we find that only 20% of the projects have the provision of Solar Lighting in the common area; whereas 80% of the projects have no provision for this amenity.

**TABLE 26: CHI-SQUARE TESTS - SOLAR LIGHTING IN COMMON AREA**

| Pearson Chi-Square | Value  | df | Asymptotic Significance (2-sided) |
|--------------------|--------|----|-----------------------------------|
|                    | 18.741 | 3  | 0.000                             |

Chi-square test of Independence

H<sub>0</sub>: Solar lighting in common area by residential properties is independent of the city located

H<sub>a</sub>: Solar lighting in common area by residential properties is not independent of the city located

From Table 26 we find that the value of the chi-square test is 18.741. The calculated p value is 0.000 which is less than 0.05. Thus, we can infer that the provision of solar lighting in common areas is dependent on the city located.

**V. CONCLUSION**

The objective of the paper was to identify the significant variables which influence the prices of housing properties. The application of descriptive analysis has helped to find out the no. of projects which have the provision of various variables. On the other hand, the adoption of chi-square test has helped to identify whether the provision of the variables is dependent on the location of the cities or not. The results derived from the data analysis section shows that the majority of the projects have the provision of almost all the legal documents. Apart from Title deed, most of the projects have provided the other legal documents. The chi-square test value shows that the availability of the legal documents like EC, OC and Title deed are dependent on the location of the projects. The availability of the other legal documents is independent of the city of location. Under the project amenities section, the results show that the majority of the projects have the provision of all amenities apart from the senior citizen’s corner. Results derived from the chi-square test show that the availability of all the project amenities are dependent on the location of the projects. Under the public amenities section, we find that apart from the distance of the properties to the nearest school, all the other amenities are located far. These public amenities are not very closely located to the properties. The results of the chi-square test highlight that the proximity of the projects to all the public amenities apart from the nearest school is dependent on the city located. Under the promotional platforms section, we find that the majority of the projects do not use real estate expo, newspaper and tours for prospective customers in order to promote the projects. Social media is used for advertisement purposes by the majority of the projects. It is also found that all projects included in our sample have used real estate websites for promotional purposes. In case of expo and newspaper, the promotional activities are based on the city located. The other mediums are not dependent on the city located. Since all projects have used real estate websites, no chi-square test has been conducted. In the case of the nearest IT/ Industrial hub, most of the projects have been observed to be located very far. However, the chi-square results show that this distance is dependent on the locations of the projects. In the last section we found that apart from STP and RHS, most of the projects do not have the provision of the other eco-friendly amenities. The results derived from the chi-square test show that the availability of all the eco-friendly amenities provided by the real estate builders are dependent on the locations of the projects.

From the data analysis and interpretation, we can conclude that the majority of the projects in the sample considered in our study have the provision of legal documents, project amenities and few eco-friendly amenities. We can say that the builders in most of the cases provide the legal documents to their customers. Not only that, the majority of the projects have the provision of almost all the project amenities. From this it can be said that customers prefer projects with maximum no. of amenities. On the other hand, since as per RERA, builders should provide STP and RHS facility, majority of the projects have the provision of these two eco-friendly amenities. Thus, from the current study it can be observed that like legal documents and project amenities, there are few variables under the eco-friendly amenities section which influence the property prices as the information collected from the builders. Since we are able to identify the important variables under each section which influences the property prices, this study will help to conduct further studies and identify if any relationship exists between the various independent variables and the dependent variable - ‘Price’. Thus, further research work can be taken up to find out the correlation between the variables and to determine the final predictors of the real estate housing prices.

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**HEALTH CARE SECTOR – A CRITICAL REVIEW: A STUDY WITH SPECIAL REFERENCE TO PROBLEMS AND PROSPECTS****Dr. P. PONRAJ****ASST. PROFESSOR****DEPARTMENT OF COMMERCE & RESEARCH CENTRE  
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MADURAI****Dr. S. S. SUGANTHY****ASST. PROFESSOR****DEPARTMENT OF COMMERCE & RESEARCH CENTRE  
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MADURAI****ABSTRACT**

*Health care sector is a segment within the economic system that provides goods and services to treat patients with curative, preventive, rehabilitative and palliative care. It is one of the largest and fastest growing sectors in the world. Health care sector of India constitutes government sector that is financed publicly providing promotive and preventive health services throughout the country from primary to territory level and the private sector providing curative care by levying fee. Health care sector can be expected that the numbers will increase with increased internet penetration and Smartphone usage. This paper provides a critical review of health care sector with reference to problems and prospects and also discusses the significance of the study, recent trends, problems, suggestions and conclusion.*

**KEYWORDS**

health care, hospitals, patient, pharmacy, doctors.

**JEL CODES**

H51, I11, I18, K32,

**1. INTRODUCTION**

Health care has been a focus area for the Indian government. The public healthcare system in India remains highly overstretched and the private healthcare system is yet to achieve the desired level penetration. Mobile apps, dealing in the healthcare sector, have ushered in some welcome changes in the Indian healthcare system though their penetration remains quite low as compared to the volume of healthcare services seekers in India. However, it can be expected that the numbers will increase with increased internet penetration and Smartphone usage.

According to data from the Indian Medical Association (IMA), India's healthcare spending remains low at 1.2% when compared with the US's 17% and China's 5.5%. This data clearly indicates that India has a low spread of medical stores.

**2. SIGNIFICANCE OF THE STUDY**

The healthcare sector is a service industry, where the patient (customer) is the most important person. Therefore, greater importance has to be given to the people element and that all the employees of the hospital have to perform their duties in a better way to provide satisfaction to the customers. It is not only important how advanced technology and drugs a hospital use to cure the patient, but also it is very important that how each employee of the hospitals deal with the patient and their relatives (i.e. customer). Every organization faces the problem of directing the energies of their staff to the task of achieving business goals and objectives. Higher the availability of latest machineries, technologies, procedures and systems are important; but what is more critical is the quality of delivery the individual who work in these hospitals. The dependency on human assists has been observed more in the healthcare sector, especially in the case of hospitals.

**3. OBJECTIVES OF THE STUDY**

The objective of this paper is to critically review the healthcare sector in India, and illuminate the key challenges to the overall attainment of better health status for Indians. Such an analysis timely because health care restructuring is high on the Indian political agenda and policy options are being continuously debated. This critical health sector can be expected that the numbers will increase with increased internet penetration and smart phone usage.

**4. RESEARCH METHODOLOGY**

The study is a descriptive research, in which Secondary data was used for conducting the study and the same is collected from journal and magazines.

**5. RECENT TRENDS**

Online healthcare mobile apps can be broadly classified under few categories including telemedicine, online pharmacy, personal healthcare, healthcare at home, fitness and wellness related apps and pediatric solutions providers. These mobile apps are using Artificial Intelligence (AI), Machine Learning (ML) and other modern technologies to provide affordable and quality healthcare.

**5.1 Telemedicine**

Telemedicine apps help patients to get doctor consultations through the apps or by web-based videos and chats. A McKinsey report informs that India can save up to \$10 billion in 2025, by using telemedicine instead of in-person doctor consultations. Major players in this segment in India are Practo, mfine, Lybrat and Docsapp. With over 1,00,000 doctors supporting its operations in India. Practo caters to about 25 million patients every year.

**5.2 Online Pharmacy**

It is also known as e-pharmacy, this segment has players like 1MG, pharameasy, Netmeds and MyraMed. Alongwith growing investor interest, e-pharmacy companies have also overcome legal challenges thrown at them from offline competitors. The Central Government has introduced a draft regulation guideline for the e-pharmacy segment to standardize registration procedures. The move may provide encouragement to players in the segment.

**5.3 Personal health and check-ups**

Increasing awareness about healthcare issues has led to the rise of healthcare apps like Portea, Practo, Murgency, MyUpchar and Curejoy. There are also healthcare apps like Pregbuddy and Maya, aimed exclusively at pregnancy advice.

**5.4 Healthcare at home**

An India Brand Equity Foundation (IBEF) report has predicted that the market of healthcare at home will reach \$6.21 billion by next year. Additionally, India has the second largest geriatric or aged population in the world and that increases the scope of this segment. Busy urban lifestyles have also contributed to the rise of various lifestyle oriented diseases. The scope for apps in this segment is expansive. This sector includes simple diagnostic tests, advanced oncology or cancer support and various other services which can be well facilitated by apps. Companies operating in this sector are Healthiness, Call Health, Practo and Portea.

**5.5 Fitness and Wellness**

With increasing fitness consciousness, India has seen a rise of fitness and nutrition service companies like Fitternity, Cure. Fit, HealthifyMe, GoQii and HealthKart. There are also many mental Health and wellness companies like Yourdost and InnerHour.

**5.6 Pediatrics Care**

A Bengaluru-based company, Address Health is providing affordable primary pediatric healthcare services to school going children. They treat children for hearing, optical issues and dental health and anthropometry issues. Address Health has designed curriculum for both healthy mental and physical behavior of children.

**6. HEALTHCARE APP**

There is a growing scope for various health apps that can enable users to book and avail medicines and medical services. Many of these apps are also looking into emergency medical services whereas others are focusing exclusively on medical equipment. Yet, many others are allowing users to book appointments with doctors in an easy and hassle-free manner. Many healthcare professionals have also welcomed the services provided by these apps which are aimed at using technology for quick treatment.

The Indian healthcare sector will become one of the top revenue contributors and is estimated to reach \$58.8 billion in 2020 from \$25.39 in 2017, creating a huge opportunity for healthcare based online or offline businesses. A report by Research 2 Guidance, a global think tank, shows that there are 3,25,000 healthcare apps available worldwide. However, the report also states that the number of such apps in India is relatively less but another report from Accenture states that download of healthcare apps have doubled in the past couple of years, indicating towards a positive swing in the segment.

**7. PROBLEMS OF HEALTHCARE SERVICES IN INDIA**

After Independence there has been a significant improvement, in the health status of people. But the situation is not much better as per study of World Health Organization (WHO). It has placed India in 112<sup>th</sup> position among 191 countries of the world.

**7.1 Neglect of Rural Population**

A serious drawback of India's health service is the neglect of rural masses. It is largely a service based on urban hospitals. Although, there are large number of Primary Health Centre (PHC's) and rural hospitals yet the urban bias is visible. According to health information 31.5% of hospitals and 16% hospital beds are situated in rural areas where 75% of total population resides. Moreover, the doctors are unwilling to serve in rural areas.

**7.2 Emphasis on Culture Method**

The health system of India depends almost on imported western models. It has no roots in the culture and tradition of the people. It is mostly service based on urban hospitals. This has been at the cost of providing comprehensive primary health care to all. Otherwise speaking, it has completely neglected preventive, promotive, rehabilitative and public health measures.

**7.3 Inadequate Outlay for Health**

According to the National Health Policy 2002, the Government contribution to health sector constitutes only 0.9 per cent of the GDP. This is quite insufficient. In India, public expenditure on health is 17.3% of the total health expenditure while in China, the same is 24.9% and in Sri Lanka and USA, the same is 45.4 and 44.1 respectively. This is the main cause of low health standards in the country.

**7.4 Social Inequality**

The growth of health facilities has been highly imbalanced in India, Rural; hilly and remote areas of the country are under served while in urban areas and cities, health facility is well developed. The SC/ST and the poor people are far away from modern health service.

The table shows social inequality in provision of health in India.

**TABLE 1: INDICATORS OF SOCIAL INEQUALITY**

| Sl. No | Indicator                                    | All India | SC    | ST    | Other Disadvantaged | Others |
|--------|--|-----------|-------|-------|---------------------|--------|
| 1      | Infant Mortality Rate (per '000 population)  | 70        | 83    | 84.2  | 76                  | 61.8   |
| 2      | Under 5 Mortality Rate (per '000 population) | 94.9      | 119.3 | 126.6 | 103.1               | 82.6   |
| 3      | % Children under weight                      | 47        | 53.5  | 55.9  | 47.3                | 41.1   |

**7.5 Shortage of Medical Personnel**

In India, shortage of medical personnel like doctors, a nurse, etc. is a basic problem in the health sector. In 1999-2000, while there were only 5.5 doctors per 10,000 population in India, the same is 25 in the USA and 20 in China. Similarly, the number of hospitals and dispensaries is insufficient in comparison to our vast population.

**7.6 Medical Research**

Medical research in the country needs to be focused on drugs and vaccines for tropical diseases which are normally neglected by International Pharmaceutical companies on account of their limited profitability potential. The National Health Policy 2002 suggests allocating more funds to boost medical research in this direction.

**7.7 Expensive Health Service**

In India, health services especially allopathic are quite expensive. It hits hard the common man. Prices of various essential drugs have gone up. Therefore, more emphasis should be given to the alternative systems of medicine. Ayurveda, Unani and Homeopathy systems are less costly and will serve the common man in better way.

**8. SUGGESTIONS**

- Education of physicians and nurses in public sector
- Incentives and policies to attract and retain personnel
- Make it mandatory for professionals to do three years of rural service
- Formation of an integrated national/state public health system
- Improve physical access to preventive and curative health services especially in India's rural population
- Efficient allocation of resources between different levels of services and between different geographical areas
- Sustained programs to change household behaviors and spread awareness
- Creation of centers of excellence for health + nutrition policy research

**9. CONCLUSION**

The country has become one of the leading organizations for high-end diagnostic services with tremendous capital investment for advanced diagnostic facilities, thus catering to a greater proportion of the population. Besides, Indian medical service consumers have become more conscious towards their healthcare up keep which demanded to maintain quality in the healthcare industry. The people often compare facilities and technologies available in the public sector institutions



with those available in the private sector with the obvious aftermath of adding to the dissatisfaction of the beneficiaries. So, a comprehensible policy must be taken to satisfy the increased expectation of the people. All levels of health sectors must be maintained and provided with better infrastructure, adequate staff, equipment, drinking water, sanitation, drainage, environmental cleanliness, proper waste disposal management, rational and cost effective treatment and reduction of morbidity (both chronic and communicable) steps must be undertaken for ensuring the availability of doctors, paramedical staff, utilization of equipment and its reliability in all hospitals by the government and public authorities.

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**DYNAMICS OF HORTICULTURE PRODUCE MARKETING: A STUDY BASED ON HIMACHAL PRADESH**

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**ABSTRACT**

*The fact is well known that fruits provides important vitamin and minerals, in some cases fruits are even considered as the healer for various diseases. Among all these benefits horticulture industry provides great benefit to the GDP of the country. Horticulture products plays and important role in commerce trade and food processing industry. However currently horticulture industry is not delivering according to its potential due to the problem and challenges it has with respect to the distribution and marketing channels in the state. Not only in the state, when it comes to the marketing and distribution of horticulture crop, it has been a major problem in India as well. Marketing is the process of movement of goods from produces to consumer at the desired time, place and form. In view of this, this research paper tries to express the dynamics of horticulture produce marketing in the state of Himachal Pradesh. This research paper also tries to put some emphasis on the marketing aspects of horticulture produce of the state as it is not to mention that livelihood of the state depends on it. The focus on the marketing aspect will enhance the potential of this industry and will generate enormous amount of opportunities.*

**KEYWORDS**

Himachal Pradesh, horticulture produce marketing.

**JEL CODES**

Q13, M31.

**INTRODUCTION**

Himachal Pradesh is a state which possess its economic strength in the activities related to agriculture, horticulture, animal husbandry, limestone mines and allied activities in the primary sector. Among other states of the country Himachal provides one the best horticulture environment. Horticulture industry of Himachal Pradesh provides fruits, vegetables, species, floriculture and coconut etc. the state of Himachal provides diversified climate conditions and wide range of soils to accommodate the horticulture industry. When it comes to Horticulture Himachal provides fruits, vegetables, species, Floriculture and coconut etc. and it also has diversified climate conditions and wide range of soils to accommodate the horticulture Industry. It also provides many experienced and skilled workers (ranging from officer class to labour class), so it will generate high employment to the state post COVID-19.

Horticulture contribution towards the state domestic product

1. HP is the only state in the country whose 89.96% of population lives in rural areas (census 2011).
2. It provides 62% of the total workers of the state.
3. Till now about 10.4% of total GSDP comes from the agriculture and its allied sectors.

Total geographical area of the state is 55.67 lakh hectares, out of which operational holding is of 9.55 lakh hectares, which is being operated by 9.61 lakh farmers (land holdings according to 2010-11). 87.95 % of the holdings are of others (agriculture census). 11.71 percent of holding are owned by semi medium and medium farmers and 0.34 percent is by large ones. Economic survey of India (2008) provides data regarding the growth rate of food grain products which is decelerated to 1.2 percent from 1990-2007. The population of India is increasing and is estimated to touch 1370 million by 2030. Demand will rise and to meet this demand production of food grains needs to be 289 mt, which is matter of concern.

On the basis of past studies, it can be stated that very few studies have been conducted in the area of marketing of horticulture produce in Himachal Pradesh, which involves problems related to marketing of horticulture produce of the state, awareness about the government policies provided by the state government as well as the centre government, problems in the existing techniques used for the marketing of horticulture products. Keeping these facts in mind, there is a need of improvement in the area of marketing of horticulture produce and thus the study on marketing of horticulture produce in Himachal Pradesh is required in order to develop new strategies for the solution of problems in the future.

Marketing of Horticulture produce is a complex phenomenon. Marketing pattern of horticulture is different from other agriculture commodities. Every horticulture produce has its own different pattern cum channel of distribution. For example, Apples are first brought to the nearby wholesale markets and from there to the terminal markets. The dispersion channel is totally different in case of apples. In similar manner for other horticulture produce dispersion channel is different from one another. Middleman plays a vital role in the trade of horticulture produce i.e. between the producers and the consumers. Horticulture produce marketing in Himachal Pradesh is carried out by private sector which involves pre-harvest contractor, forwarding agent, commission agents, wholesalers and retailers. Due to involvement of middlemen there is exploitation of producers and this effects the profit margin one can get from their crop.

On the basis of past studies, it can be stated that very few studies have been conducted in the area of marketing of horticulture produce in Himachal Pradesh, which involves problems related to marketing of horticulture produce of the state, awareness about the government policies provided by the state government as well as the centre government, problems in the existing techniques used for the marketing of horticulture products. Keeping these facts in mind, there is a need of improvement in the area of marketing of horticulture produce and thus the study on marketing of horticulture produce in Himachal Pradesh is required in order to develop new strategies for the solution of problems in the future. The fact is well known that fruits provides important vitamin and minerals, in some cases fruits are even considered as the healer for various diseases. Among all these benefits horticulture industry provides great benefit to the GDP of the country. Horticulture products plays and important role in commerce trade and food processing industry. However currently horticulture industry is not delivering according to its potential due to the problem and challenges it has with respect to the distribution and marketing channels in the state. Not only in the state, when it comes to the marketing and distribution of horticulture crop, it has been a major problem in India as well.

**REVIEW OF LITERATURE**

**Parmar (2005)** reported in his study "Marketing Operations of Himachal Apple- An overview" that a good production of apple and the marketing problems of growers are increasing day by day with the increase in the production of apples.

**Dastagiri, M.B and Kumar Ganesh. B., (2010)** reported in "Innovative Models in Horticulture Marketing in India "India produces around 111.8 MT of vegetables and 57.73 MTs of fruits (2006-07).

**Ahmad, and Rifat, (2012)**, stated in "Marketing of Fruit Products: A case of Apple Fruit in Himachal Pradesh" marketing efficiency is important for increasing production and fair returns to apple growers. They talked about three marketing channels and have concluded that marketing channel i.e., Growers to consumer is having less price spread and more returns to growers, but is in rare practice due to lack of marketing information, credit and institutional facilities, small holdings.

**Bowman, and Zilberman, (2013)** research findings "Economic factors affecting diversified farming systems. Ecology and Society", had concluded that the expansion and adoption of DFS is limited by a number of factors, including still-limited demand for products produced via DFS, supply-side constraints such as high costs of tilling or harvest in multiple crop systems, and policies such as subsidies and crop insurance which discourage diversification.

**Gaurav Bera, (2015)** "An assessment of apple cultivation in Kalpa (Kinnaur Distt.) Himachal Pradesh". This research mentioned that horticulture has great future prospect in terms of exports. It also mentioned that horticulture does affect the socioeconomic life of inhabitants of Kalpa.

**Tripathya, and Manjunath, (2014)** investigation of the study "Operational semi-physical spectral-spatial wheat yield model development" had identified the existing farming systems in 12 major states of India at district level using remote sensing and ancillary data, delineated 44 farming systems with the help of GIS it became possible for integrating different enterprises

**Chatterjee et al., (2015)** in "Methodology of identification and characterization of farming systems in irrigated agriculture: Case study in West Bengal State of India" had identified four distinct farm types, namely, farms growing food grain and jute, farms with animal husbandry and fishery based diversification with high off-farm income, farms with crop based diversification with off-farm income, and farms growing vegetables and fruits and also concluded that farm type identification and characterization based on estimates of income from different farm components allows simplifying diversity in farming systems.

**Parrey, and Hakim, (2015)** States in. "Exploring marketing activities of apple growers: Empirical evidence from Kashmir" that apple grower has strong incentive to apple sale information, investigating price and demand changes by using all the available information sources. However, low availability of market information and high cost on analysis and recognition of getting signals cause such problems, including convergence of information sources, limitation in the local market, and low reliability of information.

**Goswami et al., (2014)** in their study "Farm types and their economic characterization in complex agro-ecosystems for informed extension intervention: study from coastal West Bengal, India of research findings" had identified four major types of farms, based on the source from which maximum gross income was earned by the farmers. Those were – rice-based farming system (34 households), vegetable - based farming system (70 households), fishery - based farming system (10 households) and farming system based on off - farm income (20 households).

**Lokesh, and Hira.S, (2014)** in his research paper entitled, "Horticulture development in Himachal Pradesh: An Empirical Analysis", the contribution of the horticulture within primary sector has risen from 18.53 percent in 2000-01, 26.98 per cent in 2009-10. In terms of contribution to GSDP and NSDP, horticulture sector demonstrates a phenomenal place during the span of ten years.

**Iles and Marsh, (2012)** findings of the study "Nurturing Diversified Farming Systems in Industrialized Countries: How Public Policy Can Contribute" had concluded diversified farming systems depends on the willingness and capacity of farmers to diversify their farms, but they need support and incentives to help survive the risks of changing from conventional to alternative production practices and to work together more collaboratively at the landscape level.

**Khatun and Roy, (2012)** in their study "Rural livelihood diversification in West Bengal: Determinants and constraints" conducted in the state of West Bengal had shown that household-head experience(age), educational level, social status, training, asset position, access to credit, rural infrastructure, agro climatic condition and the overall level of economic development of a region are the main driving force towards livelihood diversification in the state.

**OBJECTIVES OF THE STUDY**

The objectives of the study are to analyse the horticulture produce marketing in the state which will involve the existing marketing practices, and also to analyse the government aids with respect to horticulture produce.

1. To analyse the government aids by the state government with respect to horticulture industry.
2. To analyse the distribution channels of different horticulture produce.
3. To analyse the contemporary marketing issues with respect to horticulture produce.

**RESEARCH METHODOLOGY**

This research paper is an analytical study which is based on secondary data. Secondary data means which is already available, it refers to data which has been collected and analysed by someone else. Certain types of secondary data such a product details of the company, main aspects of the research, data about the marketing of new products, essentials of advertisements in marketing etc. For meeting the objectives of the study, the secondary data of last 10 years related to production of various horticulture produce of Himachal Pradesh has been analysed. The data for this purpose has been collected from the secondary sources such as official websites, reports, journals and newspapers etc.

**ANALYSIS AND DISCUSSION****1. GOVERNMENT AIDS****A. MISSION FOR INTEGRATED DEVELOPMENT OF HORTICULTURE(MIDH)**

Mission for integrated development of horticulture sector is a sponsored scheme for the overall growth of this sector which covers fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew and cocoa.

Under MIDH there are further five more schemes on horticulture:

- i) National Horticulture Mission (NHM)
- ii) Horticulture Mission for North East and Himalayan States (HMNEH)
- iii) National Horticulture Board (NHB)
- iv) Coconut Development Board (CDB)
- v) Central Institute of Horticulture (CIH), Nagaland

In MIDH, Govt. of India (GOI) contributes 60% of the total outlay and 40% of the total outlay is provided by the state governments. For the North East States and Himalayan States, GOI contributes 90%. Under the above mentioned 5 schemes GOI contributes 100%. The total Budget allocated for this is Rs. 2160.25 crore has been earmarked for 2020-21. And as on 31<sup>st</sup> December, 2020 Rs. 857.47 crores have been released under MIDH, i.e. Rs. 495.13 crore for NHM, Rs. 197.75 crore under HMNEH, Rs. 80.00 crore under CDB, 77.42 Crore to NHB and Rs. 7.17 crore to CIH, DCCD & DASD.

**i. NATIONAL HORTICULTURE MISSION(NHM):**

NHM comes under MIDH which is centrally sponsored scheme and was launched in 2005-06, it aims at the overall development of the horticulture, through cluster approach which ensures forward and backward linkage and also the active participation of all the stake holders. 384 districts in 18 states and 6 union territories were covered under NHM. There are total of 16 national level agencies (NLAs) that were included under this Mission.

**A. PHYSICAL PROGRESS****TABLE 1: PHYSICAL PROGRESS UNDER NHM**

| S. No. | Components                            | Unit | Progress during 2020-21 (as on 31 <sup>st</sup> December, 2020) |
|--------|---------------------------------------|------|---|
| 1      | Area Expansion                        | Ha.  | 80406   |
| 2      | Rejuvenation                          | Ha.  | 6783  |
| 3      | Protected Cultivation                 | Ha.  | 9450  |
| 4      | Integrated Pest/ Nutrient Management  | Ha.  | 35460   |
| 5      | Nurseries                             | No.  | 14  |
| 6      | Water Resources                       | No.  | 1213  |
| 7      | Beekeeping                            | No.  | 49194   |
| 8      | Horticulture Mechanization            | No.  | 4081  |
| 9      | Post Harvest Management               |      |   |
|        | (i) Pack House                        | No.  | 661   |
|        | (ii) Cold Storage                     | No.  | 29  |
|        | (iii) Primary/mobile processing units | No.  | 117   |
| 10     | Rural Market                          | No.  | 1   |

Source: as per the data uploaded by State Govt. on MIDH web portal

**B. FINANCIAL PROGRESS**

During 2019-20, as on 31st March, 2020, funds to the tune of Rs. 800.13 crore have been released to States/ UTs/NLAs for implementing NHM scheme against BE of Rs.1217.00 crore and RE of Rs 1065.00 crore. During 2020-21, an amount of Rs. 1363.62 crore has been allocated for NHM, against of which an amount of Rs. 495.13 crore has been released as on 31<sup>st</sup> December, 2020.

**ii. HORTICULTURE MISSION FOR NORTH EAST AND HIMALAYAN STATES (HMNEH):**

HMNEH is a scheme under MIDH which is also a centrally sponsored scheme for North East and Himalayan states. Earlier this scheme was known as Technology Mission for Integrated Development of Horticulture in North Eastern States only, since 2001-02. During the X plan (2003-04) this scheme was extended to three Himalayan states namely: Himachal Pradesh, Jammu and Kashmir and Uttarakhand. This scheme covers full spectrum of horticulture, from the planting to the consumption with the forward and backward linkage. HMNEH subsumed under MIDH from 2014-15.

**A. PHYSICAL PROGRESS****TABLE 2: PHYSICAL PROGRESS UNDER HMNEH**

| S. No. | Components                            | Unit | Progress during 2020-21 (as on 31 <sup>st</sup> December, 2020) |
|--------|---------------------------------------|------|---|
| 1      | Area Expansion                        | Ha.  | 3843  |
| 2      | Rejuvenation                          | Ha.  | 300   |
| 3      | Protected Cultivation                 | Ha.  | 125   |
| 4      | Integrated Pest/Nutrient Management   | Ha.  | 6730  |
| 5      | Nurseries                             | No.  | 5   |
| 6      | Water Resources                       | No.  | 15  |
| 7      | Beekeeping                            | No.  | 0   |
| 8      | Horticulture Mechanization            | No.  | 1067  |
| 9      | Post Harvest Management               |      |   |
|        | (i) Pack House                        | No.  | 32  |
|        | (ii) Cold Storage                     | No.  | 0   |
|        | (iii) Primary/Mobile Processing Units | No.  | 0   |
| 10     | Rural Market                          | No.  | 0   |

**B. FINANCIAL PROGRESS**

During 2019-20, as on 31st March, 2020, funds to the tune of Rs. 326.74 crore have been released to States implementing HMNEH scheme against BE of Rs.415.00 crore. During 2020-21, an amount of Rs. 470.00 crore has been allocated for North Eastern States and Himalayan States (including PMDP), against which an amount of Rs. 197.75 crore has been released as on 31st December, 2020.

**iii. NATIONAL HORTICULTURE BOARD**

Government of India started National Horticulture Board (NHB) in 1984 as an autonomous body under Ministry of Agriculture and Farmers Welfare and registered under societies registration act 1860 and re-registered under the Haryana Registration and Regulation of Societies Act 2012. The NHB aims at the commercial horticulture development by creation of production hubs, post-harvest infrastructure and cold chain facilities, promotion of new crops and promotion of growers' associations.

**A. PHYSICAL PROGRESS**

- Under the scheme of Commercial Horticulture Development through Production and Post-Harvest Management, board sanctioned 249 projects as on 31 December, 2020, which involves subsidy of Rs. 3219.50 Lakh.
- Under the Capital Investment Subsidy for construction/ expansion/ modernization of cold storages for horticulture produce scheme, board sanctioned 06 projects of cold storages/CA storages which involves subsidy of Rs. 32122 MT as on 31.12.2020.
- Under the scheme of Technology development and Transfer for promotion of Horticulture, board sanctioned 04 projects for New technology introduction, progressive farmers visit, horticulture sangam, various awareness programs which involves financial assistance of Rs. 11.21 Lakh as on 31.12.2020.

**B. FINANCIAL PROGRESS**

For the period 2020-21, total of Rs. 77.42 crore has been released to NHB against BE of Rs. 170.00 crore.

**2. MARKETING AND DISTRIBUTION CHANNEL**

A Horticulture produce marketing agency have many activities and operations like procurement, packing, storage, transportation, processing and marketing of produce related to horticulture sector. Marketing strategy for horticulture produce, if it is efficient, rely on the decisions related to where, when and how much to market. The horticulture products pass through different channels on their way to final consumer and the profit share of producers depends on the channel followed.

**i. DISTRIBUTION STRATEGIES FOR HORTICULTURE PRODUCES**

Distribution, as the name suggest, is the process of making a product available for final consumer. It is very important to have a good distribution channel for every product. Horticulture produce involves perishable products, therefore, distribution is considered to be very important element. Due to perishability, the distribution channel of these products needs to be as fast as possible.

There are so many factors which plays an important role in the distribution of horticulture produce such as nature of produce, Competitors choice of selection of channel, financial resources, transportation saving, storage facilities, market knowledge, High marginal cost, image of the producers, price and convenience. The large chain of commission agents affects the profit of orchardists, so choosing a cost saving channel is always considered to be the best channel. Distribution

channel also involves commission agent, wholesaler, private companies HPMC, and retailers. Majority of horticulture produce growers consider commission agent and wholesaler as the most efficient channel.

#### ii. DISTRIBUTION CHANNELS OF HORTICULTURE PRODUCE

Marketing of any consumer good comprises of the movement that good from producer to consumer, and in case of Horticulture produce one can say from grower to consumer. Distribution is important because it decides the almost everything in any business. Distribution channels one is using needs to be efficient and cost effective so that growers/producers can get the maximum benefit out of it. In the state of Himachal Pradesh there are so many problems in when it comes to distribution due to its geographical situation. It is very challenging for the producers to manage the supply chain in the state. In this chain of distribution there are various agencies involved like growers, pre-harvest contractors, wholesalers, retailers and consumers. The following are the existing channels used for the purpose,

1. Channel A: Producer-wholesaler-retailer-consumer
2. Channel B: Producer-primary wholesaler-secondary wholesaler-retailer-consumer
3. Channel C: Producer-pre harvest contractor-primary wholesaler-secondary wholesaler- retailer-consumer
4. Channel D: Producer-retailer-consumer

#### iii. MARKETING FUNCTIONS

Marketing in case of Horticulture produce involves various marketing function. After growing the produce has to be prepared for the market which involves picking, assembling, grading, packing, transportation, loading/unloading, storage etc. These marketing functions are important determinants for setting up the prices of horticulture produce. Being careful in performing these function helps in setting up the good tone for the net returns and vice-versa.

- i) **Harvesting:** marketing function starts from the picking function and hence it is important to depicts the correct time for picking to ensure its quality and maximum storage life. The picking stage also depends on the time lag between the expected arrival of the produce in the market and picking. The horticulture produces are considered to be very susceptible to bruising and other mechanical injuries and therefore, should be handled carefully. If any damage cause due to rough handling, it will reduce the value of the horticulture produce.
- ii) **Grading:** Grading is considered to be the second important marketing function. Grading is not considered for every horticulture produce as it varies from produce to produce, for example in case of apples, apples are classified into different grades on the bases of quality, sizes.
- iii) **Packing:** packaging is considered to be very important marketing function as it is the package which appears in front of consumer. Horticulture produce involves perishable items which are fragile in nature, and needs to be transported to different locations therefore it is very important to have a good packaging material which can protect and preserve its quality during transportation and handling.
- iv) **Transportation:** transportation is another function in marketing which adds utility and need to be done carefully. Managing the supply chain is very important as horticulture produces are perishable and fragile in nature.

#### CONCLUSIONS AND SUGGESTIONS

Himachal Pradesh provides wide variety of soils and diversified climate conditions for the horticulture produces in the state. Geographical area of the which ranges from Lower hills (Shivalik range), Inner Himalayas (mid-mountains) and Greater Himalaya (Alpine zone) makes it suitable to produce variety of horticulture produce within the state itself. Horticulture produce in the state is having very wide range i.e. Apple, Plum, Peach, Apricot, Pear, Cherry, Kiwi, Pomegranate, Olive, Persimmon, Strawberry, Almond, Walnut, Pecannut, Hazelnut, Mango, Litchi, Guava, Papaya, Jackfruit, Aonla, Grapes, Loquat, Ber, Banana, Karonda, Fig, Spota, Deon, Bael, Harad, Jamun, Baherba, Orange/Kinnow, Malta/Musambi, Kagzi Lime, Galgal, Grape fruit, etc. There are approximately 38 varieties of fruits only. Among other issues related to horticulture sector, marketing and distribution channel in the state needs to be improved. Focusing on Marketing channels will open many opportunities to the growers as well as towards the economy of the state. The existing marketing practices needs to revisited by the government as well as the growers. Innovative strategies and new marketing tools available in the market needs to be utilized by the horticulture sector as well. Centre as well as state governments are providing so many facilities to the growers but many of the growers are not aware of it. Awareness programs should be provided to the growers. Supply chain facility which will manly focus on the transportation related issues needs to be addressed. E-Marketing as well as direct marketing will enhance the states potential in the horticulture sector. Niche marketing and in case of premium quality produce can also be considered. Also, advertising and promotional activities needs to be focused and increased.

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