CHAPTER V
DISCUSSION OF RESULTS

5.1 INTRODUCTION

This chapter discusses the entrepreneurial support systems for development and sustenance of the biotech industry at genome valley. From the results of crosstabs, chi-square tests are conducted for all the 37 variables and for all the three organization types of respondents i.e., company executives, government officials and R & D scientists (with a sample of 266 respondents), it is found that except for electricity all other hypotheses are rejected. This indicates that there is association with all the items of support systems considered in the questionnaire. Hence the overall result is that all items in the questionnaire are playing a role in the development and sustenance of the biotech industry in the genome valley.

In order to understand the specific issues confronting the company and government, company and R & D institutions in and around genome valley, further chi-square tests are carried out for all the hypotheses for company and government and for select hypotheses relevant to biotech companies and R & D organizations. Such an
analysis gave mixed results. Out of all the hypotheses rejected for 266 sample, some are accepted when tested for the data of company and government. This gave useful insights for providing implications to policy makers, company executives and R & D scientists.

<table>
<thead>
<tr>
<th>Influencing Factor</th>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tariff_on Land, Water, Electricity, incubation space provided</td>
<td>$H_0$: Regarding tariff per unit of land, water, electricity, incubation space provided, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>REJECTED</strong></td>
</tr>
<tr>
<td>Electricity, Incubation space provided</td>
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Table 5.1 Hypotheses based on Influencing Factors

<table>
<thead>
<tr>
<th>Influencing Factor</th>
<th>Hypotheses</th>
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<tbody>
<tr>
<td>2. Availability of Biotech Ready Human resource</td>
<td>$H_0$: Regarding availability of biotech ready human resource, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected</strong></td>
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</tbody>
</table>
| Availability of Quality & cost | $H_0$: Regarding availability of quality & cost effective biotech cluster, there is no significant
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<tr>
<td><strong>Effective Biotech Cluster</strong></td>
<td>difference in the level of satisfaction of the respondents of company, Government and R &amp; D.</td>
<td><strong>Rejected.</strong></td>
</tr>
<tr>
<td><strong>3</strong></td>
<td><strong>Time for taking Licenses</strong></td>
<td>$H_04.7$ : Regarding time taken for issuing licenses, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
</tr>
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<td></td>
<td><strong>Clearances by Inspector of Factories</strong></td>
<td>$H_04.8$ : Regarding time taken for clearances by inspector of factories, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
</tr>
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<td></td>
<td><strong>Clearances by Pollution Control Board</strong></td>
<td>$H_04.9$ : Regarding time taken for clearances by pollution control board, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
</tr>
<tr>
<td><strong>4</strong></td>
<td><strong>Incentive &amp; Support for acquiring Land/Place</strong></td>
<td>$H_04.1$ : Regarding adequacy of incentive and support for land, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
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<td></td>
<td><strong>Incentive &amp; Support for</strong></td>
<td>$H_04.2$ : Regarding adequacy of incentive and support for capital investment, there is no difference in the</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
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<td>-------------------</td>
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<tr>
<td>Incentive &amp; Support for Excise/VAT/Sales Tax</td>
<td>( H_0^{4.3} ): Regarding adequacy of incentive and support on VAT / Sales Tax, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>Infra_Electricity</strong></td>
<td>( H_0^{2} ): Regarding electricity provided, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>ACCEPTED</strong></td>
</tr>
<tr>
<td>Infra_Roads</td>
<td>( H_0^{1.3} ): Regarding roads provided, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
<td></td>
</tr>
<tr>
<td>Infra_Lighting</td>
<td>( H_0^{1.4} ): Regarding lighting provided, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D. <strong>Rejected.</strong></td>
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<tr>
<td>Infra_Incubation</td>
<td>( H_0^{1.5} ): Regarding incubation space provided, there is no significant difference in the level of satisfaction of</td>
<td></td>
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<tr>
<td>6</td>
<td>Government R &amp; D related to Biotechnology is Beneficial to Growth and Development of Genome Valley.</td>
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<tr>
<td>6.11</td>
<td>[H_0]: Regarding Government R &amp; D Labs benefit growth of biotech industry, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D.</td>
<td>\textbf{Rejected.}</td>
</tr>
<tr>
<td>6.12</td>
<td>Biotechnology Research Institutes in AP fully capitalized its Technologies by commercializing through the Genome valley.</td>
<td>[H_0]: Regarding capitalizing and commercializing by R &amp; D Labs through genome valley, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D.</td>
</tr>
<tr>
<td>7</td>
<td>Availability of AIR (Domestic &amp; Inter, RAIL &amp; Road- Domestic &amp; International)</td>
<td>[H_0]: Regarding availability of connectivity (AIR, RAIL &amp; Road- Domestic &amp; International), there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D.</td>
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<tr>
<td></td>
<td>Road Connectivity</td>
<td>respondents of company, Government and R &amp; D.</td>
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<tr>
<td>Safe &amp; Secure for Business</td>
<td>$H_0$5.5: Regarding safety &amp; security for business from political and communal issues, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D.</td>
<td>Rejected.</td>
</tr>
<tr>
<td>Safe &amp; Secure for Business</td>
<td>$H_0$5.7: Regarding anticipated activities are launched in Genome Valley, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D.</td>
<td>Rejected.</td>
</tr>
<tr>
<td>Safe &amp; Secure for Business</td>
<td>$H_0$5.8: Regarding biotech companies working as per the vision of the biotech policy, there is no significant difference in the level of satisfaction of the respondents of company, Government and R &amp; D.</td>
<td>Rejected.</td>
</tr>
<tr>
<td>Safe &amp; Secure for Business</td>
<td>$H_0$14: Regarding objections by inspector of factories and pollution control board, there is no significant difference in the level of satisfaction of the respondents of company, government and R &amp; D.</td>
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</table>
### 5.2 DISCUSSION OF RESULTS OF THE HYPOTHESES TESTED

#### 5.2.1 Quantity of infrastructure provided

*H₀₁*: There is no association between organization type (company, govt., R & D) and satisfaction level of infrastructure – land, water, roads, lighting, incubation centre space provided by Government – Rejected.

*H₀₆*: Regarding support for land, water, incubation center space provided, there is no significant difference in the level of satisfaction of the respondents of company and government. – Rejected.

i.e., there is difference in the level of satisfaction of company executives and government officials regarding support for land, water, incubation center space provided.

*H₀₂*: Regarding electricity provided, there is no significant difference in the level of satisfaction of the respondents of company, Government and R & D. **Accepted.**
H_{07}: Regarding support for roads, lighting, electricity provided, there is no significant difference in the level of satisfaction of the respondents of company and government - Accepted.

Hence there is difference in the level of satisfaction regarding quantity of land, water, incubation center space at 0.05 significance level. This implies that the mean ratings by biotech companies, government and R & D is not same for land, water, incubation center space and there is a significant difference in the satisfaction levels between company employees, government officials and R&D scientists. The details of support expected for land, water, roads, incubation, lighting are give below:

**Land**

From table 4.8, it may be observed that while 48.1% of company executives, 51.0% of R & D scientists feel satisfied with the quantity of land provided. 61.4% of government officials felt that the support for land is adequate. This implies that there is an additional requirement of land for the biotech companies and there is a need for the government to look into this aspect.

**Water**

From the crosstabs table 4.10 it may be observed that 50% of the government officials feel that the water provided is adequate, 39% of biotech executives feel that it is satisfactory and 51.7% of R & D scientists feel that the water provided is satisfactory. Hence additional
supply of water is expected by the biotech industry. At the time of data collection several executives expressed that during summer, in view of water shortage the companies are procuring water tanks from private suppliers at very high rates.

Roads

For roads the mean ratings are not same between company, government and R & D, but they are same for company and government. From the crosstabs table 4.12 it may be observed that with reference to roads 39% and 40.3% of biotech executives feel satisfied and adequate respectively and 52.3% and 27.3% of government officials feel satisfied and adequate respectively. Hence there is no problem with support for roads.

Incubation

For quantity of incubation center space at the genome valley 47.7% of the government feel that it is inadequate and 27.3% of the company executives feel that it is satisfactory. This implies that the quantity of space provided for incubation of biotech companies may have to be enhanced.

Lighting

For lighting the mean ratings are not same between company, government and R & D, but they are same for company and government. From the crosstabs table 4.14 it may be observed that for lighting 33.8% and 44.2% of the biotech executives and 45.5% and 31.8% of government officials feel that the lighting as satisfactory and adequate respectively.
While majority of the company and R & D feel that the support for lighting is adequate, Government feels that the support for lighting is satisfactory.

**Electricity**

Similarly for electricity 40.3% and 23.4% of biotech executives and 34.1% and 45.5% of government officials feel satisfied and adequate respectively. Further, regarding electricity the hypothesis is accepted by all, meaning overall level of satisfaction by all categories.

Hence so far biotech industry and R & D are concerned roads, lighting and electricity in not a serious problem.

### 5.2.2 Tariff on Land, Water, Electricity and Incubation

\( H_03: \) Regarding tariff per unit of land, water, electricity, incubation space provided, there is no significant difference in the level of satisfaction of the respondents of company, Government and R & D – **Rejected**.

\( H_08: \) Regarding tariff on land, there is no significant difference in the level of satisfaction of the respondents of company and government - **Rejected**.

\( H_09: \) Regarding tariff on water, electricity, incubation, there is no significant difference in the level of satisfaction of the respondents of company and government - **Accepted**.

**Tariff on Land**
According to table 4.20, 54.5% of government officials and 28.4% of biotech executives feel that the tariff on land is high. 20.5% of government and 43.2% of company executives feel that the tariff on land is reasonable. The government can explore the possibilities of investing the excess resources generated to support the needs of the industry. The mean ratings on tariff on land is not same in all 3 cases.

**Tariff on Water**

From the crosstabs table 4.22, 45.3% company executives and 40.9% of government officials feel that that the tariff on water is reasonable.

**Tariff on Electricity**

From the crosstabs table 4.24 it may be observed 37.3% of company executives and 61.4% of government officials feel that the tariff on electricity is reasonable. Only about 28% of the company executives feel that the tariff on electricity is high,

**Tariff on Incubation**

From the crosstabs table 4.26 it may be observed that while 75% of the R & D scientists and 48.6% of company executives don’t know about the tariff on incubation. Among the rest of the respondents 23% of company executives and 40.9% of government officials feel that the tariff on incubation is reasonable and 17.6% of the company executives feel that the tariff on incubation is high.
Regarding tariff on water, electricity and incubation centre space, the mean rating, when data are analyzed the entire sample of 266, is same. This could be because majority of the respondents expressed that they don’t know about the tariff on water, electricity and incubation centre space. But when data are analyzed between company and government it is not same (since hypothesis H₀9 is accepted). During the stage of data collection, several company executives expressed that the commercial rates charged like for other manufacturing industries is not justified because several biotech companies are still at R & D stage and have not gone commercial yet. Further, they expressed that there are risks associated with R & D effort and hence a subsidy on this would attract many companies to invest in biotech industry.

5.2.3 Enabling Government Policy & Support

**H₀4: Regarding government policy and support, there is no significant difference in the level of satisfaction of the respondents of company, Government and R & D - Rejected**

(i.e., H₀4 : Regarding Government Policy on incentive and support on land, capital investment, VAT/Sales tax, support for Events/forums, special department to address the issues of the Biotech industry, time taken by single window clearances, time taken for licenses, clearances by inspector of Factories, clearances by pollution control board there is no significant difference in the level of satisfaction of the respondents of company, Government and R & D - Rejected)
This implies that the mean rating by all is not same for all the items under enabling government policy and support. It may be noted from the crosstabs that majority of the R & D scientists expressed that they don’t know about the enabling government policy and support. Hence in order to understand the specific issues of concern for the biotech industry chi-square tests are separately conducted for the data collected from company and government and there is acceptance on some of the items of support systems. The following are the results of the hypotheses tested for company and government with reference to enabling government policy and support.

**H₀10: Regarding enabling government policy and support for land, license, forums and events, there is no significant difference in the level of satisfaction of the respondents of company and government**

- **Rejected.**

This implies that there is varying levels of satisfaction between company and government. i.e., the mean rating by all is not same for government support and incentive for land and events and forums.

**Government Support and Incentive for Land**

From table 4.28 it may be noted that, 50.7% of biotech industry respondents feel satisfied and only 9.6% feel adequate while 38.1% and 33.1% government officials feel satisfied and adequate respectively for the support on land provided to the biotech industry. Hence there is a
need to bridge this gap for the development and sustenance of the biotech industry.

Support for Events and Forums

For support on events and forums also the mean rating by biotech companies and government is not same. Going to details from cross table 4.34 it may be observed that only 34.7% of the biotech executives felt satisfied with the government support for events and forums. 47.7 % and 63.7% of the government officials and scientists feel that the incentive support for events and forums is inadequate. This clearly implies that the government and scientists should spare their valuable time and money to organize many events and forums to assure the biotech industry to listen to their concerns related to infrastructure and R & D and come with solutions to solve the biotech industry problems.

Support for Licenses

From crosstabs 4.40, with regards to the time taken for issue of licenses, 41.9% of biotech executives, 67.4% of the government officials and 33.3 % of the scientists feel that it is slow. This is a clear indication that the government has to take special steps to ensure that the time taken for issue of licenses is reduced to encourage investments in biotech industry.

Hₐ11: Regarding enabling government policy and support for capital investment, VAT/exise/sales tax, factory clearance, clearance from pollution control board, single window clearance, there is no
significant difference in the level of satisfaction of the respondents
of company and government - Accepted.

Implies that the mean rating for support for the above items of
support systems is same.

Capital Investment

The results of the crosstabs in table 4.30 indicate that the
government incentive and support for capital investment in not adequate
as opined by both biotech companies and the government.

VAT/Excise/Sales Tax

From cross table 4.32, it may be noted that 40.3% of company
executives and 37.2% of government officials feel that the support on
VAT/excise/sales tax is not adequate. 41.9% of the government officials
feel that it is satisfactory. The industry is expecting more concessions in
this regard.

Factory and Pollution Control Clearance

From crosstab table 4.42, 55.8% and from table 4.39, 53.5% of
government officials expressed that the time take for factory clearance
and pollution control board clearance is slow. The overall opinion is also
indicated it is slow. Hence there is a need to speed up the clearances.

Single Window Clearance

From table 4.38 it may be seen that, 57.7% of biotech companies
and 44.2% of governments officials expressed that the time taken by
single window is slow. For single window clearance both groups felt that
the time taken is slow and there is a need for liaison by the industry in this regard. Appropriate policy decision with reference to time to be taken by the government for single window clearance would enhance the level of satisfaction of the biotech industry and this will increase the pace of investments in this sector.

According to the Government policy makers, there is no special provision for biotech industry and the same support given other industries is also extended to the biotech industry. In view of this, there is a need to enhance the concessions to the biotech industry and also to reduce the time taken for clearances so that the entrepreneurs are attracted to invest in this sector, which is still at a nascent stage.

5.2.4 Availability of Biotech Ready Cluster and Climate

For the purpose of discussion, the hypothesis $H_05$ is divided into two $H_05A$ and $H_05B$ only to compare the results of chi-square tests of company, government and R & D with that of only company and government. Hypothesis $H_05A$ is compared with $H_012$ and $H_05B$ with $H_013$ to have better clarity in perception of different groups of respondents.

$H_05$: Regarding Biotech Ready Cluster and Climate, there is no significant difference in the level of satisfaction of the respondents of company, Government and R & D - Rejected.

And also for company and government data $H_05$ is rejected.
(I.e., \(H_0^{5A}\) : There is no association between level of satisfaction with reference to Availability of Biotech Ready HR, Special Dept. to Address Biotech Industry Issues, Availability of Investment Agency, Transport(Air, Road, Rail Connectivity), Safe & Secure for Business from Political and communal issues, adequate funding, R & D Beneficial to the Biotech Industry, R & D Testing, Transport, Quality Cost, Funding for innovative biotech firms, Adequate Facility at Incubation Centers, Adoption of biotech companies by R & D institutions, Direct Support from R & D institutions by Biotech Companies* and type of organization (Company, Government, and R & D) - Rejected.)

To test \(H_0^5\), table 4.46 to table 4.77 gives the results of crosstabs and chi-square tests between satisfaction level regarding biotech ready cluster and climate(*) and type of organization. In the data analysis the respective sub-hypotheses were tested independently and all the null hypotheses are rejected. Hence \(H_0^{5A}\) and \(H_0^{5B}\) are rejected. This implies that the mean rating for all the items under biotech ready cluster and climate are not same. This could be because majority of the R & D scientists expressed that they don’t know. Hence in order to understand the issues of the biotech industry chi-square tests are conducted separately for the biotech company and government as sample and the results discussed as follows:

\(H_0^{12}\): Regarding biotech ready cluster and climate for availability of biotech ready human resources, special department to address
biotech industry issues, availability of investment agency, transport (air, road, rail connectivity), safety & security for business from political and communal issues, adequate funding, R & D testing, transport, quality cost, funding for innovative biotech firms, adequate facility at incubation centers, adoption of biotech companies by R & D institutions, direct support from R & D institutions by biotech companies, there is no significant difference in the level of satisfaction of the respondents of company and government – Accepted.

When data are analyzed for company and government the above hypotheses is accepted. This implies that the mean opinion about the above items of support systems is same for company and government. H_0^5 is rejected for all three categories and also rejected when chi-square test is conducted for the data on Company and R & D. Hence the mean ratings are not same. But H_0^12 between companies and government is accepted and hence the mean ratings are same.

Availability of Biotech Ready HR

From crosstab table 4.46 it may be observed that 54.1 % of the biotech executives and 40.9 % of the government officials feel that the availability of biotech ready HR is inadequate. The overall opinion is also that it is inadequate. Hence there is a need for industry-institution-interaction for enhancing the quantity and quality of biotech ready human resource. It
Special Department to Address Biotech Industry Issues

About this according to table 4.37, 46 percent, 26 percent, 22 percent 6 percent (250 sample) said don’t know, inadequate, satisfactory, adequate in that order. Implies that the impact of special department to address biotech industry issues is not felt by the biotech industry.

Availability of Investment Agency

From table 4.48, it may be inferred that 50.7% of the company executives feel that the availability of biotech investment agency is inadequate 47.7 percent of the government officials felt that it is satisfactory. In view of the differences in opinion it is necessary to communicate / liaison to sort this issue.

Transport(Air, Road, Rail Connectivity)

From table 4.52, 47.9 percent of the company executives felt inadequate for availability of connectivity in the genome valley and 40.5 percent of the government officials expressed that the availability of connectivity is satisfactory. The overall opinion is it is in adequate. In particular for daily commuting by the employees the APSRTC buses don’t stop at Turkapally (genome valley). The government may instruct APSRTC that all express/Hi-Tech buses towards genome valley should stop there.

Safe & Secure for Business from Political and Communal Issues

From table 4.54 it may be observed that 43.4 percent of the company executives felt satisfied with reference to safety & security for business
from political and communal issues in the genome valley and 42.5 percent of the government officials expressed that the safety & security for business from political and communal issues is inadequate. Since there is association between safety & security for business from political and communal issues and the development and sustenance of the biotech industry, it is necessary to have political will to assure the industry that it is safe irrespective of the current political turmoil in the state.

Adequate funding

From the crosstabs table 4.64, it may be observed that while 45.1 percent of the R & D scientists don’t know regarding availability of adequate funding innovative biotech companies in the genome valley. 38% of the company executives marginally agreed, 34.1 percent government officials and 23 percent of scientists disagreed with reference to the availability of adequate funding for innovative biotech companies in the genome valley.

R & D Beneficial to the Biotech Industry.

From table 4.66, it may be observed that majority of the respondents agreed or marginally agreed that the R & D organizations in and around Hyderabad is beneficial to the biotech industry.

R & D Testing

From table 4.50, it may inferred that majority of the respondents disagree about the availability of biotech R & D testing centers around
genome valley. 55.8 percent of government officials also disagreed to the availability of biotech R & D testing centres. This implies that the biotech industry is seldom synergizing with the biotech R & D organizations around Hyderabad.

**Availability of Quality & Cost Effective Biotech Cluster**

From the crosstabs table 4.56 it may be observed that while 54.7 percent of the R & D scientists don’t know regarding availability of quality & cost effective Biotech cluster. 38.9 percent of the company executives, 45.5 percent of the government officials and 22.7 percent of the scientists marginally agreed about the availability of quality & cost effective biotech cluster in the genome valley.

**Funding mechanism for innovative biotech firms**

From table 4.64 it may be observed that 38% of the company executives marginally agreed, 34.1 percent of the government officials disagreed and also 23 percent of the R & D scientists disagreed about the availability of funding mechanism for the innovative biotech firms. Hence there should be adequate funding mechanism for innovative biotech firms.

**Adequate Facility at Incubation Centers**

From the crosstabs it may be observed that while 58.2 percent of the R & D scientists and 28.2 percent of company executives don’t know regarding adequate facilities for incubation at SP Biotech and IKP Knowledge Park. 50 percent of the government officials marginally agreed and 27.8 percent of company executives agreed that there are adequate
facilities for incubation centers at SP Biotech and IKP knowledge park in the genome valley.

**Adoption of biotech companies by R & D institutions**

From chi-square table 4.73 it may be observed that the significant value is < 0.05, indicating that there is association between organization type (company and R & D) and adoption of biotech companies by government R & D labs. However, the opinion of all the respondents is almost equally divided between agreement, marginal agreement and disagreement. Meaning there is a greater need for communication between Government R & D institutions and the biotech companies at the genome valley.

**Direct Support from R & D institutions by Biotech Companies**

From the chi-square table 4.75, since (sig. value <0.05 for company and R & D), there is association between organization type and practical possibility for taking direct R & D support from the academic institutions in and around Hyderabad. From the crosstabs it may be observed that 33.9 percent of the R & D scientists and 30% of government officials don’t know regarding practical possibility for taking direct R & D support from the academic institutions in and around Hyderabad. 38.3 percent of the company executives and 40 percent of government officials marginally agreed and 33.9 percent of scientists agreed that it is practically possible to take direct R & D support from the academic and R & D institutions in and around Hyderabad in the genome valley. This implies that the academic and
R & D institutions are willing to provide the support to the biotech industry. As mentioned in other studies in the literature there is a need for establishment of appropriate communication channels.

$H_{05B}$: Regarding companies are working as per the vision of the biotech policy, biotech companies are really green and not just using the green, anticipated activities are launched in the genome valley and R & D institutions are commercializing through biotech industry there is no significant difference in the level of satisfaction of the respondents of Company, Government, and R & D - Rejected.

$H_{013}$: Regarding whether companies are working as per the vision of the biotech policy, biotech companies are really green and not just using the green, anticipated activities are launched in the genome valley and R & D institutions are commercializing through biotech industry, there is no significant difference in the level of satisfaction of the respondents of company and government - Rejected.

It may be re-iterated that the above hypotheses was also rejected when the chi-square tests are conducted with all three categories of sample. This implies that the mean rating for all the above items in $H_{013}$ are not same.

Vision
From the crosstabs table 4.61 it may be observed that while 54.9% of the R & D scientists don’t know regarding companies working as per the vision of the biotech policy. 37.5 percent of the company executives and 59.1% of the government officials and 22.1 percent of the scientists marginally agreed that the companies working as per the vision of the biotech policy in the genome valley.

Green Name

From the crosstabs table 4.63 it may be observed that while 44.7% of the R & D scientists don’t know regarding the statement biotech companies are really green and not just using the green name, 37.2% of government officially agreed, 46.7 percent of the company executives marginally agreed and 25.2 percent of scientists disagreed with the statement “biotech companies are really green and not just using the green name”

Anticipated Activities

From the crosstabs table 4.59 it may be observed that while 54.5 percent of the R & D scientists don’t know regarding anticipated activities are launched in the genome valley. 31.3 percent of the company executives disagree with reference to the anticipated activities launched in the genome valley. It may be observed that 68.2% of the government officials marginally agreed with reference to the anticipated activities are launched in the genome valley.

Commercialization
From the crosstabs table 4.69 it may be observed that while 46.7% of the R & D scientists don’t know regarding commercialization of biotech research institutes through genome valley. 37% of the company executives and 25 percent of scientists marginally agreed and 44.2 percent of government officials disagreed that biotech research institutes are commercializing their technologies through genome valley.

_H0 14 There is no significance association between organization type(company, Government and R & D) and objections by inspector of factories, objections by pollution control board and A.P Policies biotech industry expectations is accepted._

From chi square tables  4.77, 4.79, 4.81 it may be observed that the mean ratings by all three categories of respondents is the same and majority respondents opinioned that there are no objections by inspector of factories and Pollution control board.

5.2.5 Hypotheses Between Biotech Companies and R & D Organizations

Similarly chi square test for data collected from companies and R & D organizations gave mixed results as compared to the overall analysis of data.

_H0 15: Regarding support for land and electricity, there is no significant difference in the level of satisfaction of the respondents of company and R & D - Accepted_
H_016: Regarding availability of biotech ready HR, availability of biotech R&D institutes & testing centers, there is no significant difference in the level of satisfaction of the respondents of company and R & D - Accepted

H_017: Regarding R & D beneficial to the biotech industry, commercializing of R & D through genome valley, adoption of biotech companies by R&D labs, adequate facilities at the incubation centers, biotech companies can take direct support from R & D organizations, there is no significant difference in the level of satisfaction of the respondents of company and R & D - Accepted

When results are obtained from analysis of the data for company, government and R & D the hypotheses H_015 to H_017 are rejected but when the results of only company and R & D are analyzed the hypotheses are accepted. The results of crosstabs further suggest that the biotech companies and R & D feel that improved relations between both can be mutually beneficial. It may be observed that there is varying levels of satisfaction with reference to the above parameters. This can be achieved through proper networking and the channel of forums and events can be well utilized to communicate mutual interests. Since the government feels that the support for forums and events is inadequate it can enhance the support for forums and events further.

5.3 REGRESSION EQUATIONS
From the correlation and regression analysis in Chapter IV the following regression equations are identified:

**Incentive & support for Capital invest** = 0.036 + 0.270(Incentive & support for acquiring land) + 0.418(Incentive & support VAT) + 0.012(Incentive & support for climate) + 0.249(special Department to address biotech industry issues).

**Biotech R&D Beneficial to Growth** = 0.902 + 0.162(Adequate Funding for innovative companies) + 0.218(R&D Commercialization through Genome valley) + 0.146(Adequate incubation Facilities) + 0.296(R&D institutes Adopting biotech firms).

### 5.4 CONCLUSION

- Government officials feel that the support for land and water is adequate but the industry feels that it is satisfactory. Hence the government should take efforts to bridge this gap. As the government agrees that the tariff on land is high it can consider to reduce the tariff on land or improve the support systems for the benefit of the biotech industry.

- Providing appropriate facilities can enhance the development and sustenance of the biotech industry in the genome valley. It may be mentioned that during the process of data collection, several executives expressed that the commercial tariff on land, water, electricity, incubation centre space provided by Government is in not justified because they have not yet commercialized their activities and also there is risk associated with the R & D activities.
The policy makers need to address this issue of the biotech industry at the genome valley.

- The time taken for licenses, clearances by inspector of factories, clearances by pollution control board, single window is rated as slow by the majority of the respondents. In particular government officials themselves rated slow on the above items. Hence the time may be reduced for the above to support the biotech industry.

- There is also a need for establishing adequate funding mechanism. The government is already doing its best with reference to the availability of connectivity (AIR, RAIL & Road- Domestic & International) and with time the industry is hopeful of having effective and efficient logistics.

- The biotech company executives and R & D scientists disagreed to the availability of the biotech ready human resource in the genome valley. Hence the companies, academia and R & D institutions should come out with policies to increase the quantity and quality of biotech ready human resources.

- The null hypotheses $H_015, H_016, H_017$, between company and R & D is accepted, hence communication between biotech companies and the R & D organizations should be strengthened for the mutual benefit in terms of extending testing facilities, capitalizing by R & D labs by extending their incubation facilities and providing direct support to the industry and also by adopting of biotech
companies by government R &D Labs to try out their results for commercial production. It may be noted that majority of the scientists expressed that they don’t know for one question or the other. This is quite logical because scientists seldom think about the external environment, except keeping updated with the R & D developments in their chosen fields of research. Proper communication of these findings across all stakeholders can enhance the quality and quantity of support from the government and R & D institutions to the biotech industry.

- Academia and R & D scientists are suggest that it is practically possible to take direct from them hence efforts should be made to enhance the coordination between biotech companies and R & D to suit mutual interests.

- The government feels that inadequate support is given for capital investment, safety and security for biotech industry from political and communal issues. This may be improved.

- There is difference of opinion with reference to events and forums between company and R & D. While the former marginally agreed with the enabling biotech climate through events and forums the later (scientists) disagreed. This indicates there is further scope for organizing events and forums for reducing the communication gap. Hence improvement is this regard will be welcomed by the industry.
• The government may explore the possibilities of funding innovative biotech firms in addition to funding of the R & D institutions. Or a system of win-win-by biotech companies and R & D institutions should be established and implemented.

5.5 LIMITATIONS OF THE STUDY

• Scientific and Technical analysis of the support systems provided is not covered in this study.

• The study did not cover Biotech sub-sectoral analysis.

• The study is not covering the issues related to patents, competition, global restrictions, financial performance of the biotech companies, and contribution of the biotech industry to the GDP.

• Depending on the size of the biotech firms the support required might vary and an in depth analysis would yield further insights. This aspect is also not a part of this study.

5.6 SCOPE FOR FURTHER STUDY

Future studies may focus on the above limitations and evaluate the appropriateness of the support systems provided by the government through Public-Private-Partnership.