Chapter 5: Collaboration Trends
5. Collaboration Trends Among the Software Companies in the Study

5.1 Introduction

The present chapter deals with the collaboration trends among the software companies in the study. The word collaborate comes from the Latin "collaborate", which means "to labor together." According to Webster's Dictionary Collaboration is "to work jointly or together with others, especially in an intellectual endeavor." Collaboration is a broad term which is used by business community, academic community and many others. The present study adopts a more inclusive approach in defining the concept of collaboration. The definition of collaboration has been adopted from the software industry and the study looks into collaboration among software companies from their perspective. In the software industry all kinds of inter organisational arrangements are considered as collaborations and the scope of collaboration includes the following - Joint venture, minority holding, cross holding, licensing of technology, joint R&D programme, joint product development, enhanced supplier relationship (content partnerships), authorized implementation partnerships/solutions partnership, development of standards, joint-production contracts, licensing of brands, reselling & distribution arrangements (e.g., customer access partnerships, off-the-shelf products, etc.), marketing arrangements to access Indian markets, marketing arrangements to access foreign markets, bidding consortium, institutional linkages (e.g., with VC firms, industry consortia etc.). At a macro level collaboration involves goal-oriented interaction between two organisations on the basis of complementarity strength. Also the concept of organisation is used in a broader sense to
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indicate various forms like agency, firm, private limited company, public limited company etc.;

The present section describes the collaboration patterns among the companies under the following headings: basis for collaboration, nature of collaborating company, country of the collaborator, collaboration areas, duration of the collaboration, number of projects executed during the collaboration period, collaboration participation with investment and people ratios, reasons for collaboration, factors contributing to the strength of collaboration, factors that hamper the outcome of collaborations and advantages & disadvantages of the collaboration.

The significance of the strength of the organisational collaboration is expressed with the help of a composite index called collaboration strength index (CSI). The collaboration strength is a sum combination of three variables viz., collaboration basis, collaboration duration and the number of projects executed with the collaborator during the last financial year (2000-01). CSI is represented in quantitative terms on a scale of zero to one, zero signifying no strength in the collaboration relationship and one as the perfect collaboration relationship. CSI is calculated using the following formula.

$$CSI = \Sigma \{(CDP) + (CBP) +(NPP)\}$$ which means (collaboration duration) + (collaboration basis) + (number of projects executed with the collaborator)

5.2 Basis for Collaboration

Collaboration is a goal-oriented process in which two or more organisations interact on the complementary strengths. Basis for collaboration is defined as the platform on which the collaboration relationship is executed or the significant factor that brings two
organisations together to form a collaboration relationship. Basis for Collaboration is the crux of the relationship. Indian software companies are known for their technology strengths and the huge number of trained software professionals they employ. Many companies in USA & Europe have insufficient human resources and the cost of software development is very high when compared with developing the same software in India. Thus sharing of human resources and technology becomes high priority for the foreign companies and providing outsourcing services and sharing technological innovation becomes priority for Indian companies. Outsourcing services are provided by as many as seventy-five per cent of the companies and this is six times more than the other bases for collaboration like - resource and technology.

Companies were asked to mention the basis on which they have formed a collaborative relationship, outsourcing service was the explicit choice of 25 (78.13%), 24 (75%) and 24 (75%) companies as their first, second and third priorities respectively. This clearly indicates the obvious trend towards outsourcing and majority of the companies in the country have outsourcing relationship with one or more companies out side the country. This trend was ratified by the director of a software company who came back to India from US to start a software company to provide outsourcing companies in USA:

"According to my experience majority of the Indian software companies survive on providing outsourcing services since last two years and this is the present trend. This trend of providing outsourcing services has replaced the body-shopping trend in the late nineties - from 1995 to 2000. May be after few years this trend might be replaced by some other trend."
The companies in the sample formed collaborations on the basis of resources, technology and risk sharing. There were four companies (12.5%) which reported first and second priorities as resource based collaboration. Similarly, there were two (6.25%) companies which reported technology based collaboration as their first priority, four (12.5%) companies as their second priority and six (18.75%) companies as their third priority. Risk sharing as the basis of collaboration has been reported as the first priority by one company (3.13%) and two (2.25%) as their third priority. This clearly indicates the perception of Indian companies towards risk sharing as the basis for collaboration. Very few companies perceive that risk can be shared through collaboration. When asked why most of the Indian companies lack risk sharing vision, a senior vice-president of an Indian based MNC explained:

"Indian companies view only financial loss as risk whereas the foreign companies look at risk from a different perspective and they also look at - the opportunity cost & time, brand image, and financial burden"

5.3 Collaboration Patterns

During the survey the companies were asked to give details about their three significant collaboration relationships that they have established till date. These collaborative relationships are represented as first collaboration relationship, second collaboration relationship, and third collaboration relationship respectively through out the section. The collaboration patterns among the companies was studied in detail with reference to a specific collaboration relationship and the factors like nature of the collaborating company, country of the collaborator, collaboration areas, collaboration duration and basis for collaboration
were studied. All the sample companies were asked to provide details for at least three
collaboration relationships and thus for each of the three collaboration profiles the above
mentioned factors were looked into.

Table No 5.1: Number of collaborations and the size of the company

<table>
<thead>
<tr>
<th>Size of the company</th>
<th>Number of Collaborations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;5</td>
</tr>
<tr>
<td>Big</td>
<td>0 (0.0 %)</td>
</tr>
<tr>
<td>Medium</td>
<td>0 (0.0 %)</td>
</tr>
<tr>
<td>Small</td>
<td>5 (31.25%)</td>
</tr>
<tr>
<td>Total</td>
<td>5 (15.62%)</td>
</tr>
</tbody>
</table>

There seems to be a positive relationship between the size of the company and the
number of collaborations. Table no 5.1 indicates that many of the big & medium companies
have more than six collaborations when compared with small companies with less number
of collaborations. From this it can be inferred that the bigger the size of the company more
is the number of collaborations and the converse is also true, i.e., the number of
 collaborations is more for big companies. The average number of collaborations for the
sample companies with foreign companies is 6.72 and with Indian companies is 3.13. The
big (14.4 foreign & 0.4 domestic) companies tend to have more number of collaborations
when compared with medium - (7.54 foreign & 3.27 domestic) and small (3.75 foreign &
3.87 domestic) companies. (see Table 5.1)
5.4 Nature of Collaborating Company

The organisation which is included in the study is designated as collaborating company and the organisation with which the collaborating company is establishing collaborative relationship is designated as collaborator's company. Thus the nature of collaborator's company is reflected by the business activity that the collaborator company is involved in. Companies are classified on the basis of the nature of business activities and they are: software development (Production), sales, marketing and business development, research and development, professional services, outsourcing and others. Majority of the companies in USA and Europe have been involved in outsourcing their software development work to Indian companies and thus they claim outsourcing management as their core competency. This was further established by the sample companies in the study with two-thirds of the companies collaborating with outsourcing companies.

In the first priority collaboration relationship 24 companies (75%) are collaborating with outsourcing companies, followed by six (18.75%) with business development companies, one (3.13%) with software development company and one (3.13%) with professional services company. Even in the second priority collaboration relationship 25 companies (78.13%) are collaborating with outsourcing companies followed by five (15.63%) with business development and two (6.25%) with software development companies. In the third collaboration relationship again 16 companies (50%) are collaborating with outsourcing companies followed by five (15.63%) with business development, four (12.5%) with research & development, three (9.37%) with software development, two (3.13%) with professional services and two (3.13%) with other companies. (see Chart No 5.1)
5.5 Country of incorporation of the collaborating company

Country of incorporation of the collaborating company is the country in which the collaborator company is incorporated or located. Indian software companies are known for executing outsourced work and companies across the globe have outsourced projects to Indian software companies. Collaborators of the companies in the sample are distributed across the world and three oldest collaboration relationships (in terms of date of commencement) are considered for the present study. They are as follow. For the first collaboration relationship 27 (84.37%) companies have their collaborator company in USA & Canada followed by five (15.63%) in Middle East & Africa. For the second collaboration relationship again 22 (68.75%) companies have their collaborator in USA & Canada followed by seven (21.88%) in Europe, one (3.13%) in Asia Pacific & Japan and two (6.25%) in other countries. For the third collaboration relationship there are only 13 (40.63%) companies
with collaborators in USA & Canada followed by 10 (31.25%) in Europe, three (9.38%) in Middle East & Africa, two (6.25%) in Australia & New Zealand and four (12.5%) in other countries. (see Chart No 5.2)

**Chart No 5.2: Country of collaboration and no of companies**

5.6 Areas of collaboration

Collaboration areas refer to the areas in software in which both collaborating and collaborator company have established the relationship. Companies in the sample, were having collaboration in different software areas like enterprise-wide applications, internet and web applications, enterprise resource planning, e-commerce & e-business and packaged software. The sample companies have demonstrated a pattern very close to the national trend (reported by Nasscom, 2000) with majority of the companies providing enterprise-wide solutions and in the study also it was found that one-third of the companies follow the
trend. This is followed by internet and web solutions both at the national level and among sample companies with one-third companies providing the internet and web solutions.

In the first collaboration relationship there were 11 (34.37%) companies collaborating in enterprise wide application, followed by 10 (31.25%) in internet & web applications, five (15.63%) in ERP, four (12.5%) in packaged software and two (6.25%) in e-commerce & e-business. In the second collaboration relationship nine (28.13%) companies were collaborating in enterprise wide applications followed by 18 (56.25%) in internet & web, 6 (18.75%) in e-commerce & e-business, 5 (15.63%) in ERP and 4 (12.5%) in packaged software. In the third collaboration relationship 10 (31.25%) companies were collaborating in enterprise-wide applications followed by 12 (37.5%) in packaged software, four (12.5%) in e-commerce & e-business, three (9.37%) each in ERP & internet & web applications. (see Chart No 5.3)

Chart No 5.3: Collaboration areas and no of companies
5.7 **Collaboration Duration**

Collaboration duration is defined as the period of collaboration relationship between the collaborating and collaborator company. The strength of collaboration relationship depends upon duration of the collaboration. All the 32 sample companies have an average of 12.54 years of collaboration duration and it is higher for big companies (22.6 years), near to medium companies (14.9 years) and less for small companies (9.46).

The relationship between collaboration duration and success of software development companies was summarized by a CEO of a medium software company:

"the more the number of years spent in collaboration the more will be the comfort level between us. With passing of years in collaboration relationship we tend to keep-up our commitments and continuously strive to improve the efficiency in terms of time, effort, size and quality. So, I feel the more the duration of collaboration the more efficient will be software development"

The sample companies were asked to mention the duration of their collaboration with three main collaborators. The duration was classified into four groups viz., less than 2.5 years, 2.6 to 5 years, 5.1 to 7.5 years and more than 7.6 years. In the first collaboration relationship there were 13 (40.63%) companies in the 5.1 to 7.5 years group followed by 11 (34.37%) companies in 2.6 to 5 years group and four (12.5%) each in less than 2.5 and more than 7.6 years group. In the second collaboration relationship there were 17 (53.13%) companies in 2.6 to 5 years group followed by seven (21.88%) companies in 5.1 to 7.5 years group, six (18.75%) in less than 2.5 years groups and two (6.15%) in more than 7.6 years group. In the third collaboration relationship there were 15 (46.88%) companies in 2.6 to 5
years group followed by 13 (40.63%) companies in less than 2.5 years group and two (6.25%) each in 5.1 to 7.5 years group and more than 7.6 years group. (see Chart No 5.4)

Chart No 5.4: Collaboration duration and no of companies

5.8 Number of Projects

Total number of projects executed during the last year in collaboration with the respective collaborator. The Indian software companies execute a number of projects for their collaborators located in different countries. Each year every software company executes projects for their collaborators. The number of projects are divided into four groups viz., less than 3 projects, 4 to 6 projects, 7 to 9 projects and more than 10 projects executed in the last financial year. In all the collaboration relationships there were 14 (43.75%) companies in 4 to 6 projects group followed by eight (25.0%) in 7 to 9 projects group, seven (21.88%) in less than 3 project group and three (9.37%) in more than 10 projects group. (see Chart No 5.5)
5.9 Collaboration Participation: Investment Ratio

In every collaboration relationship there are two important aspects where both the collaborators contribute certain percentage of financial investment and number of people participating in the project. Financial investment is the amount invested by the collaborating company for various reasons like Capital Investment, Infrastructure Building, Hardware & Software, Travel & Communication expenses, etc. for the execution of the project. The participation ratio is classified and divided into five groups viz., 0:100 percent, 25:75 percent, 50:50 percent, 75:25 percent & 100:0 percent as Indian company vs Foreign collaborator ratio. In the first category (0:100) there were 12 companies followed by 10 in 25:75 percent group, 8 in 50:50 percent group, and two in 75:25 percent group. In the second collaboration relationship there were 11 companies in 0:100 percent group followed by nine in 25:75 percent group, 6 in 75:25 percent group, four in 50:50 percent group and two in 100:0 percent group. In the third collaboration relationship there are 12 companies in 50:50
percent group followed by 10 in 25:75 percent group, 4 each in 0:100 & 100:0 percent group and two in 75:15 percent group. (Table 5.6)

Chart No 5.6: Collaboration participation (Investment) and no of companies

<table>
<thead>
<tr>
<th>Percentages</th>
<th>0:100</th>
<th>25:75</th>
<th>50:50</th>
<th>75:25</th>
<th>100:0</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collab1</td>
<td>12</td>
<td>11</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Collab2</td>
<td>11</td>
<td>9</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Collab3</td>
<td>4</td>
<td>10</td>
<td>12</td>
<td>2</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

5.10 Collaboration Participation: People Ratio

The second important aspect of collaboration relationship is the number of people participating in the project execution from both the sides. The participation ratio is classified and grouped in the same way as in the case of Financial Investment Ratio Grouping. Interestingly there were no companies in the 0:100 percent group indicating that at any cost people from Indian companies must participate in the project execution. In the first collaboration relationship there were 18 (56.25%) companies in the 100:0 percent group followed by 13 (40.63%) in 75:25 percent group and one (3.13%) in 50:50 percent group. In the second collaboration relationship there were 25 (78.13%) companies in the 100:0 percent group followed by four (12.5%) in 50:50 percent group and three (9.37%) in 75:25 percent group. In the third collaboration relationship there were 12 (37.5%) companies in 100:0
percent group, followed by 9 (28.13%) companies is 50:50 percent group, 6 (18.75%) in 75:25 percent group and 5 (15.63%) in 25:75 percent group. (see Chart No 5.7)

**Chart No 5.7: Collaboration participation (People) and no of companies**

![Chart No 5.7: Collaboration participation (People) and no of companies](chart)

### 5.11 Product Ownership and Intellectual Property Rights

The ownership pattern of the end products is not clearly established in most of the sample companies. According to the collaboration understanding and project agreements, the ownership rights of the products are clearly established. But in practice most of the Indian companies re-use large number of components / software items in the subsequent projects. Because of this factor most of the companies refused or avoided answering questions related to ownership or intellectual property rights. Nevertheless, the information was gathered through informal interviews and all the respondents had emphasized that the statements made by them should not be related with their names or associate with company's name. The general trend in the industry is that unless specified in the software development agreement, the product ownership is with the collaborator and if the product is
in a specialised area the collaborators were demanding the source code and force the collaborating company not to reuse the code or components. If both the participating companies share the investment, either finance or people, then the product will have joint ownership and the ratio of ownership will be based upon the investment and risk sharing. Most of the sample companies in the study have invested in terms of human resources and got the 25 per cent to 40 per cent ownership in the products that they have developed with the collaborator investing finance for infrastructure, hardware and software.

5.12 Reasons for Collaboration

The reasons for collaboration are the factors that make the collaborating company to go for a collaboration with the collaborator company. The sample companies were asked to mention the reasons for collaboration. The reasons revealed by the respondents are classified into the following groups viz., risk sharing, access to technology, access to resources (finance & human), outsourcing and the market position of the partners. When asked about their first priority of reasons 23 (71.88%) companies have mentioned outsourcing as the prime reason for collaboration followed by 5 (15.63%) for risk sharing, 2 (6.25%) for market position of the partner, one (3.13%) each for access to technology and access to resources. In the second priority as many as 16 (50%) companies have mentioned the market position of the partners as reason for collaboration followed by seven (21.88%) for access to technology, four (12.5%) for risk sharing, three (9.37%) for outsourcing and two (6.25%) for access to resources. In the third priority 13 (40.63%) companies have mentioned risk sharing as the prime reason for collaboration followed by eight (25%) for the market position of the partners.
position of the partners, five (15.63%) for access to technology, four (12.5%) for outsourcing and two (6.25%) for access to resources. (see Chart No 5.8)

**Chart No 5.8: Reasons for collaboration and no of companies**

![](image)

### 5.13 Factors promoting collaboration

Factors promoting collaboration are those that contribute to the strength of the relationship and if they are present they make the collaboration relationship more stronger and if not present they do not affect the strength of the relationship. The sample companies were asked to mention the positive factors that contribute to the strength of the collaboration relationship. Seventeen (53.13%) companies have mentioned selecting the right partners as the top most positive factor followed by six (18.75%) as technical expertise, five (15.63%) as understanding the partners requirement, and four (12.5%) as interpersonal relations & commitment as their first priority. In the second priority 12 (37.5%) companies
have mentioned organisational commitment as the most important factor followed by nine (28.13%) as understanding the partners requirement, six (18.75%) as selecting the right partner and five (15.63) as technical expertise. In the third priority 11 (34.27%) companies have mentioned technical expertise and 11 (34.27%) have mentioned understanding the partners requirement as top factor, followed by seven (21.88%) as interpersonal relations & communication, two (6.25%) as organisational commitment and one (3.13%) as selecting the right partner. (see Chart No 5.9)

A Business Development Manager of a product development company has commented on ideal conditions promoting collaboration:

To achieve the true benefits of collaboration, three things must occur: the benefits of collaboration need to be seen as important for the success of the organisation, and for all its members; the process of collaboration must be recognized and rewarded by the organization's personnel evaluation methods; and employees need to be trained in how to collaborate and how to use the tools for collaboration that are available.
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Chart No 5.9: Factors promoting collaboration and no of companies

![Chart No 5.9: Factors promoting collaboration and no of companies](image)

5.14 Factors hindering collaboration:

Hindering factors are those if present weaken the collaboration relationship and if they are not present do not contribute the strength but nullify the effect on the collaboration relationship. Similarly when asked about the negative factors that hinder the strength of the collaboration, 23 (71.88%) companies have mentioned employee turnover as the prime reason followed by eight (25%) as 'not able to share risks' and one (3.13%) as no organisational learning. In the second priority 15 (46.88%) companies have mentioned 'not able to share risks', nine (28.13%) companies as employee turnover and eight (25%) companies as personal & ego problems, as the negative factors. In the third priority 12 (37.5%) companies have mentioned personal & ego problems, closely followed by 11 (34.37%) companies that have mentioned as no organisational learning and nine (28.13%) companies as 'not able to share risks' as the negative factors that weaken the strength of the collaboration.  

(see Chart No 5.10)
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5.15 Summary of Findings

The significance of the strength of the organisational collaboration is expressed with the help of a composite index called collaboration strength index (CSI). CSI is represented in quantitative terms on a scale of zero to one, zero signifying no strength in the collaboration relationship and one as the perfect collaboration relationship. As envisaged, around eighty per cent of the companies in the study had outsourcing as the basis for collaboration and seventy-five per cent of them have collaborated with American companies. Enterprise wide applications and web & internet applications are the prime areas for collaboration for sixty-five per cent of the companies. The study indicates that seventy-five percent of the companies have been collaborating since 2.6 to 7.5 years. Sixty-nine per cent of the companies have executed 4 to 9 projects with their collaborator during the last financial year i.e., 2000-01. More than two-thirds of the companies in the study have formed collaboration based upon the outsourcing relationship. In terms of investment participation,
one-third of Indian companies in the study have received 100% investment from their collaborators and in terms of people, more than fifty per cent of the Indian companies have participated in collaboration with 100% people.