CHAPTER 5

MODEL FOR EVALUATING THE INFORMATION SYSTEM
There is a continuous need for evaluation of IS. It is due to the changing needs of the various stakeholders that are further affected by changing business needs. In post implementation scenario, the IS should be evaluated in a comprehensive manner. The IS effectiveness for the overall business operations is the key. None of the existing models provide the overall evaluation of IS effectiveness, and the ways for improving it.

The following text discusses a model that satisfies the needs mentioned above. They are:

- Evaluation of IS in post implementation scenario of IS in the bank.
- To provide an integrated approach for evaluation of IS.
- An easy way to identify the weaknesses and improving them.
- To study the factors of success and failures of IS in the bank.

Initially scope of IS effectiveness for the suggested model was specified.

### 5.1 Scope of IS Effectiveness

*The scope of IS effectiveness should cover the organization as a whole. An IS should be beneficial to the organization as a whole.*

The organization evaluating IS in post implementation scenario must take a comprehensive view of IS involvement to measure its effectiveness. Even if IS is working well for individual units of the organization, it might mot be effective for the whole organization. Figure 8 shows the scope of IS effectiveness and the model in Figure 9 showed the composite view of IS effectiveness in the organization. This view is an integrated view of IS evaluation.
Figure 8: Scope of the Proposed Model
(The rectangles indicate the approaches or views for evaluating Information system through various perspectives. The arrow directions indicate that all three perspectives must direct the effort toward achieving effectiveness of IS.)

There would be lack of effectiveness if one or more individual views are missed out from the total view. Any IS process could be evaluated for effectiveness if it contributes to the organizational factors. If the functions/business units are not performing after the implementation of IS then it leads to dissatisfaction of people/unit or non-achievement of value of IS for business and its customers. If it is the problem of IS then it needs to be upgraded and customized further as per user requirement. But if it is the problem of non-acceptance by the people, then lot of training and counseling
is required in organization for various stakeholders. In both cases, continuous monitoring and evaluation has to be a permanent feature of such an organization.

5.2 Name of the Model
The model has been named as SFTI Model (Strategic-Functional-Technical Integration Model).

5.3 Purpose of the Model
The model helps in evaluation of Information System in an organization. It also helps in providing an integrated approach for evaluation of IS.

5.4 Scope of the Model
Figure 9 shows the scope of the proposed model. The rectangles indicate the approaches or views for evaluating Information System through various perspectives. The arrow directions indicate that all three perspectives must direct the effort toward achieving effectiveness of IS. We limit our scope of evaluation in post implementation scenario only. It provides an integrated approach for evaluation of IS. This model is proposed for facilitating continuous and regular monitoring. It will also help to study the factors of success and failures of IS in an organization in general, and a bank in particular. The complete model is shown in Figure 9.
5. Model for Evaluating the IS

5.5 Features of the Model

5.5.1 Integrated

The model is designed in an integrated manner by taking a comprehensive view of multiple factors contributing to the IS effectiveness and consolidating them further.
5.5.2 Flexible
The model framework is flexible and it could be applied in a customized manner to take care of organizational preferences.

5.5.3 Modular
As the evaluation of IS effectiveness is a continuous process, it is possible that after evaluation, one or more factors or parameters need to be enhanced and re-evaluated. The model is so designed that it allows its use as a whole or partially, depending on what area is the focus of the improvement in the organization at a particular instance.

5.5.4 Generic
Although the model is developed after interactions with the respondents from banking industry and also testing on the same set of respondents, the model is flexible and could be customized as per need of any organization in any segment.

5.5.5 Easy to use
The structure of the model correlates well with the questionnaire, involves only simple mathematical calculations and the complete visuals to highlight the comparative views of strengths and weaknesses of the IS in the organization.

5.5.6 Controlled subjectivity
An Information System is a social as well as technical system. Since subjectivity and uncertainty are the intrinsic qualities of a social system and
objectivity and certainty are the inbuilt features of technology, it is unwise to ignore either of the two categories. This model moves towards balancing the two. The scale of 1 to 5 for measuring the thickness of arrow lines to read the effectiveness of IS is like providing sufficient room for subjectivity. At the same time, giving a composite numeric score is an attempt to calculate the subjective matter also within the degree of opinion.

5.6 Vocabulary of the model
This part gives an outline of the generic model for evaluation of Information System in an organization.

5.6.1 SFTI Model (Strategic-Functional-Technical Integration Model)
In the above SFTI Model identified factors are being shown which were categorized into three categories of Strategic, Functional and Technical Integration that lead us to evaluation process of Information System in an organization. The three classified categories of integration are views, and the factors approaching these views are sub-views. If these KPIs are ranked high in a particular bank on the scale of 1 to 5 (1 is low and 5 is high) then it means the organization is working properly with its IS. The thickness and design of arrow lines vary and reflects upon contribution of that particular factor toward effective performance of IS in a bank. ‘Solid Arrow line with specifications 6 point thick & Solid’ mark indicate strong score of 5 or high contribution of that particular factor toward effective working of IS in a particular bank. ‘Solid Arrow line with specifications 3 point thick & Solid’ means a score of 4 or comparatively high contribution of that particular factor. A ‘Solid Arrow line
with specifications 1 point thick & Solid’ means a score of 3 or fair contribution of that particular factor. A ‘Dashed Arrow line with specifications 1/2 point thick & Dashed’ means a score of 2 or not enough contribution of that particular factor. A ‘Dashed Arrow line with specifications 1/4 point thick & Dotted-Dashed’ means a score of 1 or poor contribution of that particular factor. If all arrow lines are solid or thick or doubled arrow marked then it means all factors are contributing fairly high in effectiveness of IS. If all arrow lines are of same design and thickness then it means all factors have equal contribution to the effectiveness of IS. It is explained below in Table 16.

**Table 16 : Design Specifications of Arrow lines to be used in proposed model for evaluation**

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Arrow line Thickness &amp; Design</th>
<th>Design Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.00 to 5.00</td>
<td>6 point thick &amp; Solid</td>
<td></td>
</tr>
<tr>
<td>3.00 to 3.99</td>
<td>3 point thick &amp; Solid</td>
<td></td>
</tr>
<tr>
<td>2.00 to 2.99</td>
<td>1 point thick &amp; Solid</td>
<td></td>
</tr>
<tr>
<td>1.00 to 1.99</td>
<td>1/2 point thick &amp; Dashed</td>
<td></td>
</tr>
<tr>
<td>0.00 to 0.99</td>
<td>1/4 point thick &amp; Dotted-Dashed</td>
<td></td>
</tr>
</tbody>
</table>

It is highly possible that the score got after evaluation process would not be an absolute value of 1, 2, 3, 4, and 5. It could be a value in decimal or fraction.
5.6.2 Instrument

Each sub-view was illustrated through the questionnaire applied to record the responses of the respondents in the segment under study. The respondents were chosen as a right mix of employees at various levels in various banks that need to be appraised. The instrument was based on Likert scale and indicated the level of effectiveness as an opinion of the respondent.

5.6.3 Steps for Effectiveness Evaluation

Each sub-view or category has been given a series of steps to compute the effectiveness of IS by compiling the data collected using the questionnaire.

5.6.4 Information System Effectiveness Scorecard

The effectiveness scorecard can be built in the format as shown in Table 17.

<table>
<thead>
<tr>
<th>S.No</th>
<th>View of IS Effectiveness</th>
<th>Effectiveness Score (1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strategic Integration</td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Long Term Planning</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Resource Utilization</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Flexibility for Data Handling</td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Cost Control Management</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Customer Satisfaction Level</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Functional Integration</td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Transactional Effectiveness</td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Data Management</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Flow of Information</td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>System Efficiency</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Technical Integration</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Data Integrity &amp; Network Security</td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>E-Documentation</td>
<td></td>
</tr>
</tbody>
</table>
5. Model for Evaluating the IS

3.3 Backup Policy

<table>
<thead>
<tr>
<th>Total IS Effectiveness</th>
</tr>
</thead>
</table>

The above format gives the comprehensive view of effectiveness across all classifications relevant for the scope of IS effectiveness.

5.7 Structure of the model

The proposed model comprises three parts parallel to the three classifications of effectiveness as listed below from i) to iii) as established in Figure 9 and fourth one listed as iv) gives model for total effectiveness.

i) IS Evaluation Model for Strategic Effectiveness

ii) IS Evaluation Model for Functional Effectiveness

iii) IS Evaluation Model for Technical Effectiveness

iv) IS Evaluation Model for Total Effectiveness

Further each classification or component can be expressed and studied with the help of

i) SFTI Model

ii) Questionnaire

iii) Steps for IS Effectiveness Evaluation

The SFTI Model diagram represents the evaluation score of effectiveness for any component of effectiveness. The thickness and design of the arm defines the level of effectiveness of IS in the organization. The score for each KPI in the SFTI model is measured through a component in the questionnaire and key to compute. The scores are normalized on a 5 point Likert scale. The choice of 5 point scale has been kept specifically to keep the model compatible with realistic approach suggested by bank employees during testing of questionnaire. The questions in the instrument have been validated.
through study of literature and also correlation resulting from study undertaken. The IS effectiveness scorecard gives the effectiveness score of various Key Performance Indicators in a tabular format.

5.8 Application of the model

The model can be applied to any organization using the following steps.

i) Identify the part(s) / sub-part(s) for which the IS effectiveness could be evaluated. It is recommended that the first time evaluation must be done for all the sub-parts defined for the model. However, subsequent evaluations could be done on selected parts / sub-parts which are under special focus for improvement.

ii) Select the sample of respondents representing the population of the organization under study.

iii) Get the responses as per the instrument for the part(s) under consideration.

iv) Evaluate the effectiveness of Information System as per the steps defined for the evaluation for the instrument.

v) Take the counter actions for improving the areas indicating low level of effectiveness score.

vi) Repeat steps (ii) – (v) till the desired level of effectiveness is achieved for area under concern.

vii) Repeat steps (i) – (vi) at a regular interval of time depending on the business conditions of the organization.
5.9 IS Evaluation Model for Strategic Effectiveness

5.9.1 Build the SFTI Model for Evaluating IS Strategic Effectiveness

Identify the Key Performance Indicators as the factors, which are significant for the success of IS in the organization. These KPIs define the dimensions to

Figure 10: SFTI Model (Strategic-Functional-Technical Integration Model) in Standard Form for Evaluating KPIs for Strategic Integration
study the effectiveness of the Information System used. Following steps should be undertaken to evaluate the strategic effectiveness of IS in the organization. The SFTI Model looks like the one shown in Figure 10.

5.9.2 Strategic Integration of Information System

Apply the instrument as shown in Table 18 to get the perceptions of the employees of the organization under consideration.

<table>
<thead>
<tr>
<th>Factor(s) for Strategic Integration</th>
<th>Variables used for determining KPIs</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Term Planning</td>
<td>• Easier trade with banks of other nations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Supports long term planning activities of the bank.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Easier to tap the right customer at the right time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Utilization</td>
<td>• System for identifying abnormal transactions in IS.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Helps in creating new opportunities for cross-selling and targeting products.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Helps in reshaping jobs and workflows, hence rightsizing the workforce.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Easier and quicker to do performance appraisal of the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 5. Model for Evaluating the IS

#### Flexibility for Data Handling
- Increased flexibility and given multiple options for handling data and evaluating information.
- Adaptable to changes in business dynamics in the internal & external environment.

#### Cost Control Management
- Reduced cost per transaction
- Increase in Return on Investment on IS.
- Increase in percentage of online transactions.
- Improved decision-making by providing explicit and clear reports in required format.

#### Customer Satisfaction Level
- Increased percentage of existing customers of the bank opting for new products and services of bank.

### 5.9.3 Evaluation Steps for Strategic Integration of IS in the Organization

- Determine the organization for which evaluation of IS needs to be carried out for Strategic Integration in an organization.
- Select the sample of users to represent the population using the IS in a particular organization, say R.
5. Model for Evaluating the IS

- Apply instrument as shown in Table 18 to get the views of respondents chosen in the sample.

- Compute the total score ($S_{vi}$) for each variable $i$ for all respondents in a particular organization as

$$S_{vi} = \sum (W_i \cdot r_i)$$

Where $W_i$ is the weight associated with each choice,
$r_i$ is the number of respondents giving a particular score to one variable.

- Compute the average score ($S_{avi}$) by dividing total score by number of respondents ($R$) of a particular organization as

$$S_{avi} = \frac{\sum (W_i \cdot r_i)}{R}$$

- The above steps are repeated for other variables of the same factor.
Finally, a factor score ($S_{KF}$) for $K^{th}$ factor is found as

$$S_{KF} = \sum S_{avi}$$

- Compute the KPIs score ($ESI$) for strategic integration of IS in an organization by adding average scores of various variables in factors under Strategic Integration as

$$ESI = \frac{\sum (S_{KF})}{FSI}$$

where $FSI$ is number of factors in Strategic Integration.

The resulting effectiveness of strategic integration of IS in an organization can be studied on a scale of five. A score of 1 should be considered as a poor effectiveness, 5 as the best effectiveness for the IS Strategic Evaluation Model.
5.9.4 Study the Evaluation of KPIs through SFTI Model

Plot the SFTI model with the score on each dimension as design of arrow lines of varied thickness to see the comparative overview of effectiveness of

Figure 11: SFTI Model in applied form for evaluating KPIs for Strategic Integration

(Thickness and design of arrow lines depicts the degree of contribution of a particular factor towards the effective performance of Information System in a bank)
IS w.r.t. various Key Performance Indicators for Strategic Integration (see Figure 11). Ideally, the effectiveness would be most with respect to strategic integration if the line arrow is thick and bold (6 points and solid), i.e. the score for effectiveness is five. If the line arrow is lesser thick and / or dotted the effectiveness of that particular KPI for strategic integration is less. It means there is need of investigation of variables for that particular factor or KPI, in a particular organization.

5.10 IS Evaluation Model for Functional Effectiveness

5.10.1 Build the SFTI Model for evaluating IS Functional Effectiveness

First, the Key Performance Indicators or factors should be identified, which are critical for the success of IS in the organization. These KPIs define the scope to study the effectiveness of the product. Following steps should be undertaken to evaluate the functional effectiveness of IS in the organization. The SFTI Model will look like the one shown in Figure 12.

5.10.2 Functional Integration of IS

Apply the instrument as shown in Table 19 to get the perceptions of the employees of the organization under consideration.

**Table 19 : Partial View of Instrument for Functional Integration of IS**

<table>
<thead>
<tr>
<th>Factor(s) for Functional Integration</th>
<th>Variables used for determining KPIs</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transactional Effectiveness</td>
<td>• Reduced time per transaction or overall process time.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Simplified work processes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 5. Model for Evaluating the IS

<table>
<thead>
<tr>
<th>Category</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leading to reduced workload and paperwork and physical movements.</strong></td>
<td>• Proper handling of adjustments and corrections.</td>
</tr>
<tr>
<td><strong>Increase in level of customer satisfaction, hence increase in satisfied customer base.</strong></td>
<td>• Increase in level of customer satisfaction, hence increase in satisfied customer base.</td>
</tr>
<tr>
<td><strong>Data Management</strong></td>
<td>• Management of data administration by giving access rights for data entry, verification, cancel, reverse, view, etc.</td>
</tr>
<tr>
<td><strong>Reduced chances of error or irregularities in transactions of customer accounts.</strong></td>
<td>• Reduced chances of error or irregularities in transactions of customer accounts.</td>
</tr>
<tr>
<td><strong>Availability of internet banking facilities.</strong></td>
<td>• Availability of internet banking facilities.</td>
</tr>
<tr>
<td><strong>Flow of Information</strong></td>
<td>• Availability of documented procedures and user manuals for all activities.</td>
</tr>
<tr>
<td><strong>Efficient flow of information inward or outward of the organization.</strong></td>
<td>• Efficient flow of information inward or outward of the organization.</td>
</tr>
<tr>
<td><strong>Enabling better communication among the employees of various functional areas and various branches.</strong></td>
<td>• Enabling better communication among the employees of various functional areas and various branches.</td>
</tr>
<tr>
<td><strong>System Efficiency</strong></td>
<td>• Following banking standards for managing all entries.</td>
</tr>
<tr>
<td><strong>Removal of redundancy or duplication of work.</strong></td>
<td>• Removal of redundancy or duplication of work.</td>
</tr>
<tr>
<td><strong>Increase in data accuracy levels.</strong></td>
<td>• Increase in data accuracy levels.</td>
</tr>
<tr>
<td><strong>Increased products and services innovation.</strong></td>
<td>• Increased products and services innovation.</td>
</tr>
</tbody>
</table>
Figure 12: SFTI Model (Strategic-Functional-Technical Integration Model) in Standard form for Evaluating KPIs for Functional Integration
5.10.3 Evaluation Steps for Functional Integration of IS in the Organization

- Determine the organization for which evaluation of IS need to be carried out for functional integration in an organization.
- Select the sample of users to represent the population using the IS in a particular organization, say R.
- Apply instrument as shown in Table 19 to get the views of respondents chosen in the sample.
- Compute the total score \( (S_{vi}) \) for each variable \( i \) for all respondents in a particular organization as
  \[
  S_{vi} = \sum (W_i \cdot r_i)
  \]
  Where \( W_i \) is the weight associated with each choice, \( r_i \) is the number of respondents giving a particular score to one variable.
- Compute the average score \( (S_{av}) \) by dividing total score by number of respondents \( R \) of a particular organization as
  \[
  S_{av} = \frac{\sum (W_i \cdot r_i)}{R}
  \]
- The above steps are repeated for other variables of the same factor.

Finally, a factor score \( (S_{KF}) \) for \( K^{th} \) factor is found as
  \[
  S_{KF} = \sum S_{av_i}
  \]
- Compute the KPIs score \( (E_{FI}) \) for functional integration of IS in an organization by adding average scores of various variables in factors under Functional Integration as
  \[
  E_{FI} = \frac{\sum (S_{KF})}{F_{FI}}
  \]
where $F_{FI}$ is number of factors in Functional Integration.

The resulting effectiveness of functional integration of IS in an organization can be studied on a scale of five. A score of 1 should be considered as a poor effectiveness, 5 as the best effectiveness for the IS Functional Evaluation Model.

![SFTI Model in Applied Form for Evaluating KPIs for Functional Integration](image)

*Figure 13: SFTI Model in Applied Form for Evaluating KPIs for Functional Integration*

*(Thickness and design of arrow lines depicts the degree of contribution of a particular factor towards the effective performance of Information System in a bank)*
5.10.4 Study the Evaluation of KPIs through SFTI Model

Plot the SFTI model with the score on each dimension as design of arrow lines of varied thickness to see the comparative overview of effectiveness of IS w.r.t. various Key Performance Indicators for Functional Integration (see Figure 13). Ideally, the effectiveness would be most with respect to functional integration if the line arrow is thick and bold (6 points and solid), i.e. the score for effectiveness is five. If the line arrow is lesser thick and / or dotted the effectiveness of that particular KPI for functional integration is less. It means there is need of investigation of variables for that particular factor or KPI, in a particular organization.

5.11 IS Evaluation Model for Technical Effectiveness

5.11.1 Build the SFTI Model for Evaluating IS Technical Effectiveness

Identify the Key Performance Indicators as the factors, which are critical for the success of IS in the organization. These KPIs define the dimensions to study the effectiveness of the Information System. The following steps should be undertaken to evaluate the technical effectiveness of IS in the organization. The SFTI Model will look like the one shown in Figure 14.

5.11.2 Technical Integration of IS

Apply the instrument as shown in Table 20 to get the perceptions of the employees of the organization under consideration.
Figure 14: SFTI Model (Strategic-Functional-Technical Integration Model) in Standard Form for Evaluating KPIs for Technical Integration

(Thickness and design of arrow lines depicts the degree of contribution of a particular factor towards the effective performance of Information System in a bank)
### Table 20: Partial View of Instrument for Technical Integration of IS

<table>
<thead>
<tr>
<th>Factor(s) for Technical Integration</th>
<th>Variables used for determining KPIs</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Integrity &amp; Network Security</td>
<td>• Management of data security by proper use of login and password policy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Providing security to database against viruses.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Protection to Bank’s network and server infrastructure against intrusions and malfunctioning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Establishment of secure communication channels for remote access of system applications.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Proper system for capturing and logging changes to master Information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Maintenance of consistency and integrity of data during migration of data.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Proper mechanism to manage back date entries.</td>
<td></td>
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<tr>
<td></td>
<td>• Proper business continuity plan in case of contingencies like server crash, etc.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
5.11.3 Evaluation Steps for Technical Integration of IS in an Organization

- Determine the organization for which evaluation of IS need to be carried out for technical integration in an organization.
- Select the sample of users to represent the population using the IS in a particular organization, say $R$.
- Apply instrument as shown in Table 20 to get the views of respondents chosen in the sample.
- Compute the total score ($S_{vi}$) for each variable $i$ for all respondents in a particular organization as

$$S_{vi} = \Sigma (W_i \cdot r_i)$$

Where $W_i$ is the weight associated with each choice,

$r_i$ is the number of respondents giving a particular score to one variable.

- Compute the average score ($S_{av}$) by dividing total score by number of respondents ($R$) of a particular organization as
\[ S_{avi} = \sum (W_i \cdot r_i) \]

- The above steps are repeated for other variables of the same factor. Finally, a factor score \((S_{KF})\) for \(K^{th}\) factor is found as

\[ S_{KF} = \sum S_{avi} \]

- Compute the KPIs score \((E_{TI})\) for technical integration of IS in an organization by adding average scores of various variables in factors under Technical Integration as

\[ E_{TI} = \sum (S_{KF}) \]

\[ F_{TI} \]

where \(F_{SI}\) is number of factors in Technical Integration.

The resulting effectiveness of technical integration of IS in an organization can be studied on a scale of five. A score of 1 should be considered as a poor effectiveness, 5 as the best effectiveness for the IS Technical Evaluation Model.

5.11.4 Study the Evaluation of KPIs through SFTI Model for Technical Integration

Plot the SFTI model with the score on each dimension as design of arrow lines of varied thickness to see the comparative overview of effectiveness of IS w.r.t. various Key Performance Indicators for Technical Integration (see Figure 15). Ideally, the effectiveness would be most with respect to technical integration if the line arrow is thick and bold (6 points and solid), i.e. the score for effectiveness is five. If the line arrow is lesser thick and / or dotted the effectiveness of that particular KPI for technical integration is less. It means
there is need of investigation of variables for that particular factor or KPI, in a particular organization.

Figure 15: SFTI Model in Applied Form for Evaluating KPIs for Technical Integration

Figure 15: SFTI Model in Applied Form for Evaluating KPIs for Technical Integration
5.12 SFTI Model for Total IS Evaluation based on KPIs

5.12.1 Build the SFTI Model for Evaluation of KPIs

Total IS effectiveness is a collective result of Strategic, Functional and Technical effectiveness. The dimensions of the SFTI model evaluating the Key Performance Indicators are shown in Figure 16.

Figure 16: SFTI Model (Strategic-Functional-Technical Integration Model) in Standard Form
5.12.2 Evaluation Steps for Total Integration of IS in an Organization

- Determine the organization for which evaluation need to be carried out for Total Integration of IS in an organization.

- Compute the average score for Strategic Integration by dividing total score by number of factors covered in it for a particular organization as explained in section 5.9.3.

\[ E_{SI} = \frac{\sum (S_{KF})}{F_{SI}} \]

- Compute the average score for Functional Integration by dividing total score by number of factors covered in it for a particular organization as explained in section 5.10.3.

\[ E_{FI} = \frac{\sum (S_{KF})}{F_{FI}} \]

- Compute the average score for Technical Integration by dividing total score by number of factors covered in it for a particular organization as explained in section 5.11.3.

\[ E_{TI} = \frac{\sum (S_{KF})}{F_{TI}} \]

- Compute Total Integration of IS in an organization by evaluating KPIs for Strategic, Functional and Technical and getting average score for them as

\[ E_{Total} = \frac{(E_{SI} + E_{FI} + E_{TI})}{3} \]
5. Model for Evaluating the IS

5.12.3 Study the Evaluation of KPIs through SFTI Model for Total Integration of IS

Plot the SFTI model with the score on each dimension to see the comparative overview of effectiveness of IS w.r.t. various Key Performance Indicators for

Figure 17: SFTI Model (Strategic-Functional-Technical Integration Model) in Applied Form

(Thickness and design of arrow lines depicts the degree of contribution of a particular factor towards the effective performance of Information System in a bank)
complete Integration (see Figure 17). Ideally, the effectiveness would be most with respect to total integration if the line arrow is thick and bold (6 points and solid), i.e. the score for effectiveness is five. If the line arrow is less thick and / or dotted the effectiveness of that particular KPI for total integration is less. It means there is need of investigation of variables for that particular factor or KPI, in a particular organization.

This chapter discusses a model for evaluating Key Performance Indicators of IS in the bank. Name, purpose and scope of the model have also been elaborated initially. The structure of the model with its design and features has also been detailed out. An IS effectiveness score card was framed to help in evaluation process. Then the steps for application of the model have been detailed out. Finally the evaluation model was explained stepwise and diagrammatically for strategic integration, functional integration, and technical integration of IS in the organization, and in totality.