CHAPTER – 3

RESEARCH METHODOLOGY
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The chapter deals with the research methodology adopted for the achievement of the objectives of the current study. The chapter includes a description of the research design and sampling, data collection, sample description, research instruments employed for the measurement of the variables under study and finally the statistical analysis approach has been explained.

3.1 RESEARCH DESIGN AND SAMPLING

A survey design was chosen to reach the research objectives. A cross-sectional design was used, where a sample is drawn from a population at one time. The study was descriptive in nature implying natural observation of the characteristics of the research subject without deliberate manipulation of the variables or control over the settings. The faculty members employed in higher education institutions comprise of the population for the present study. Higher education covers many disciplines. Higher Education Institutions namely universities and colleges located across the country can be broadly categorized into two types namely the public institutions which are fully or partially supported by the Government and the private institutions which are self funded. Hence, for the sake of feasibility and economy the scope of the study was narrowed down to disciplines of Commerce and Business Management (CBM), Science, Engineering and Technology (SET), Applied Medical Sciences (AMS) and Education and Humanities (EHUM). As far as the regional scope of the sample is concerned, respondents were drawn from higher education institutions located in the districts of Amritsar, Bathinda, Jalandhar, Ludhiana, Patiala and the capital of Punjab – Chandigarh. These districts were chosen as they are the hubs of higher education in this region. Each of the districts has at least one University Campus in its jurisdiction. Sample represented faculty members from all disciplines mentioned here.

For appropriate representation of the population, quota sampling technique was followed. A fixed quota of respondents was drawn from each type of HEI,
discipline and district. Hence, the sample was targeted at 10 faculty members from each of the four disciplines of public HEIs and an equal number from private HEIs in each of the six districts selected for the study. Accordingly, a sample size of 480 respondents was targeted.

3.2 DATA COLLECTION

A list of HEIs to be approached for data collection was prepared considering University campuses and colleges having faculty members from the four disciplines covered in the study (Refer Appendix I). A web link was developed for online data collection and simultaneous preparation of database. Data collection was done through personal visits, sending the questionnaire by post and seeking response on the website. Data was collected from 41 Institutions / Departments. Personal visits helped in seeking authentic data, timely collection and making note of qualitative observations regarding the institutional work culture, which further aided in interpretation of results. Nearly 600 questionnaires were distributed to the targeted respondents out of which, 473 questionnaires were received which is a response rate of 78%. 10 questionnaires could not be used as they were incomplete. Finally 463 fully filled questionnaires were utilized for the study.

3.3 SAMPLE DESCRIPTION

The sample consisted of 463 faculty members from 41 Higher Education Institutions out of which 232 were from private sector and 231 were from public institutions. According to faculty work area 27% of the respondents were from commerce and business management 29% from science engineering and technology 22% from applied medical sciences and 22% from education and humanities. 52% were posted in University campus and 48% in affiliated colleges. According to designation, 13% were Lecturers, 64% Assistant Professors, 13% Associate Professors, 7% Professors and 3% Heads of Departments. The gender wise distribution of respondents was 58% female and 42% male. As per educational background 1% were graduates, 56% Post graduates, 37% Doctorates and 6% had done a Post doctoral study program. According to income groups 37% were drawing monthly salary of upto Rs. 30000, 35% in the range of Rs. 30,001 to 50,000, 12% in the range of Rs. 50001 to 70000, 6% in the range of Rs. 700001 to 90,000, 6% in the range of 90,001 to 1,10,000 and 4% above Rs.1,10,000.
3.4 RESEARCH INSTRUMENTS

The research instruments required for the study were developed after working out the information requirements to achieve the stated objectives. Accordingly need was felt for having six metric scales for measuring the level of work engagement, factors affecting work engagement, levels of job crafting, work life balance, work stress and organizational commitment. The seventh, an ordinal scale was required for ranking the measures for enhancement of work engagement. Finally, the demographic details or personal variables were to be captured.

For each scale, the pre-published and tested instruments were explored. Standardized scales were available for all variables except factors affecting work engagement. The available scales were considered in the light of study objectives. Accordingly some were used as such and others were adapted to suit the needs of the study. The questionnaire consisted of eight parts. It was titled as ‘Work and Well Being Survey in Higher Education Institutions in Punjab’. Its development is explained scale wise:

Scale 1 : Utrecht Work Engagement Scale

Various instruments available for measurement of work engagement were explored such as Gallup Workplace Audit (GWA) or Gallup Engagement Index or Q12, Maslach Burnout Inventory (MBI), Oldenburg Burnout Inventory (OLBI), Utrecht Work Engagement Scale (UWES). Macey & Schneider (2008) noted that from both research and practice perspectives, it is one thing to get the conceptualization correct and another thing to get the operationalization correct. If an engagement measure fails on the conceptualization front, it will not measure up on the other front as well. They further observed that in the world of practice some measures of conditions for engagement are relabeled as measures of engagement (such as Buckingham & Coffman, 1999). The focus the measurement should be on the construct of interest; if engagement is the target, then the measure should map the content of the construct (Schiemann and Morgan, 2006). Considering this rationale, Utrecht Work Engagement Scale (UWES) a self-reporting instrument that has been validated in many countries across the world (Schaufeli et al., 2002) was used in the study. UWES, is a valid and reliable indicator of work engagement that can be used for future research on work engagement (Schaufeli and Bakker, 2004).
UWES includes 15 items for the assessment of the three engagement dimensions namely vigor, dedication and absorption. Schaufeli et al. (2006) subsequently developed a nine-item version of the UWES and provided evidence for its cross-national validity. UWES has quite satisfactory psychometric properties that is internal consistencies are well above the criterion of .60 that is recommended for newly developed measurement instruments (Nunnaly & Bernstein, 1994). In the present study work engagement was measured using the short nine-item version of the Utrecht Work Engagement Scale (Schaufeli et al., 2006). It includes three subscales, namely vigor, dedication and absorption (refer Appendix – II, Part IV). The response was sought on a 7 point Likert scale ranging from 0 indicating ‘never’ to 6 indicating ‘always or everyday’. For the analyses, a composite score of all subscales was used because the 1-factor solution has acceptable goodness of fit (Schaufeli et al., 2006). The scale was found to be a reliable measure of work engagement of faculty members in the higher education sector of Punjab India as Cronbach’s alpha was 0.862 which is above the acceptable limit of 0.70 (Hair et al., 2009).

**Scale 2: Factors affecting work engagement**

The scale was developed, on the basis of an extensive and in depth literature review. The process of scale development was an iterative one. After thorough discussions with experts in the field of management and statistical analysis, many iterations of the scale were developed with the broad aim of establishing scale validity and eliminating any sort of overlap between statements. Modifications were suggested in the statement construct with special reference to avoiding double barreled questions. The sequence of statements was kept such that statements related to a common aspect should be kept far from each other. Finally, a 92 item scale was developed that explored the respondents’ perception regarding self, current job and current organization. There was a mix of positive and negatively worded statements to ensure that the respondents read all the statements carefully before they respond (refer Appendix - II, Part I).

The respondents were asked to consider their experiences of the past six months or more in relation to self, current job and current organization, while responding to the statements. They were asked to express their level of agreement or
disagreement for each statement on a seven-point Likert scale ranging from 0 representing ‘strongly disagree’ to 6 representing ‘strongly agree’. A seven point scale was used against a five point scale in order to capture the exact perception of the respondent, by giving a larger range of response. The 92 statement scale was factor analysed and found to consist of ten unique factors or dimensions with Cronbach’s alpha as mentioned in the brackets. Perceived organizational support (0.918), personal and professional orientation (0.894), supervisory support (0.904), climate of participation and recognition (0.899), organizational orientation for results (0.805), interaction with students (0.752), intrinsic rewards (0.750), empowerment (0.644), task variety (0.616), support from associates (0.841). It is noteworthy that all Cronbach’s alpha values were above the acceptable limit of 0.60 for newly developed scales (Hair et al., 2009).

**Scale 3 : Job Crafting**

This scale sought to measure the degree to which respondents engaged in job crafting. Job crafting has been defined as self initiated change behaviours that employees engage in in order to align their jobs with their own preferences, motives and passions (Wrzesniewski and Dutton, 2001). All the 12 statements used in this scale were adapted from job crafting scale developed by Tims et al. (2012). The original scale consisted of 21 statements on 4 dimensions namely increasing structural job resources, increasing social job resources, increasing challenging job demands and decreasing hindering job demands. The fourth dimension namely decreasing hindering job demands, was found to have non-significant correlation with other three dimensions indicating that this dimension was independent from others. In addition, this dimension showed no significant correlation with work engagement (Tims et al., 2012). Hence all items falling under this dimension were excluded from the scale.

The 12 statements gauged how often did the respondents engage in the stated behaviors while pursuing their current job and / or previous jobs. The response was sought on a 7 point Likert scale ranging from 0 indicating never to 6 indicating always or everyday (refer Appendix - II, Part II). On applying Exploratory Factor Analysis, the scale was found to consist of three dimensions. The scale reliability
was estimated using Cronbach’s alpha coefficient (Cronbach, 1951). Cronbach’s alpha values for the three dimensions were 0.862 for increasing structural job resources, 0.809 for increasing social job resources and 0.768 for increasing challenging job demands. The reliability estimates were above the acceptable limit of 0.70 (Hair et al., 2009).

**Scale 4 : Work Life Balance**

Work-life balance scale developed by Hayman (2005) was used to measure the respondents’ self reported work life balance. It consists of 15 statements regarding the perception of influence of work on personal life and vice-versa. The scale consists of a mix of positively and negatively worded statements. The response was sought on a 7 point Likert scale ranging from 0 indicating never to 6 indicating always or everyday (refer Appendix - II, Part III). On applying Exploratory Factor Analysis, the scale was found to consist of three dimensions. Cronbach’s alpha values for the three dimensions were 0.92 for work interference with personal life (WIPL), 0.85 for personal life interference with work (PLIW), and 0.78 for work/personal life enhancement (WPLE). The reliability estimates were above the acceptable limit of 0.70 (Hair et al., 2009).

**Scale 5 : Organizational Commitment**

After exploring various alternatives, Organizational Commitment scale developed by Saks (2006) was used in the study. It was chosen on account of its sound psychometric properties and brevity. The scale consists of 6 statements assessing the respondent’s organizational commitment which is defined as the relative strength of an individual’s identification with and involvement in a particular organization. (Mowday et al., 1979). The respondents were asked to express their level of agreement or disagreement with the given statements considering their current organization. Response was sought on a seven-point Likert scale ranging from 0 representing ‘strongly disagree’ to 6 representing ‘strongly agree’(refer Appendix - II, Part V). The scale was found to be a reliable measure of work engagement of faculty members in the higher education sector of Punjab India as Cronbach’s alpha was computed as 0.911 which is above the acceptable limit of 0.70 (Hair et al., 2009)
Scale 6: Work stress

Work stress was measured using a self-developed pretested scale consisting of 18 items adapted from Organization Role Stress Scale developed by Udai Pareek (1983). The statements relate to various aspects of work stress for example inter role distance, role stagnation, role expectation conflict, role erosion, role overload, role isolation, personal inadequacy, self role distance, role ambiguity and resource inadequacy. The response was sought on a 7-point Likert scale ranging from 0 indicating never to 6 indicating always or everyday (refer Appendix - II, Part VI). On applying Exploratory Factor Analysis, the scale was found to consist of four dimensions. The reliability for the work stress scale was estimated using Cronbach alpha coefficient (Cronbach, 1951). The Cronbach alpha values for the four dimensions were 0.745 for self-role distance, 0.862 for inter role distance, 0.831 for role expectation conflict and 0.68 for role inadequacy. The reliability estimates were above the acceptable limit of 0.70 (Hair et al., 2009).

Scale 7: Measures for improving Work Engagement

An ordinal scale was used to seek response on the top 5 changes that the respondent would want in their jobs and organizations so that they could work with better energy, dedication and involvement which are basically the three dimensions of work engagement. For this purpose they were given a set of 11 statements out of which they were asked to identify top five, while giving a particular rank to one statement only. Thus, response was sought on an ordinal scale. It was supplemented by an open-ended question in which respondents could give their suggestions for work engagement enhancement (refer Appendix - II, Part VII).

Part 8: Demographic Profile

Part VIII of the questionnaire sought information regarding the demographic profile of the respondent in terms of name of the Institution where the respondent was currently employed; whether the Institution was Government, Government aided or Private; faculty work area / department; whether posted at University campus or affiliated college; district of posting; current designation; total experience; experience in current organization; age; gender; educational background and monthly salary (refer Appendix - II, Part VIII). Personal details like names of the respondents or telephonic contacts were not sought as anonymity and
confidentiality were primary requirements for eliciting unbiased responses. Moreover, personal details were not required as per the study objectives.

3.5 STATISTICAL ANALYSIS APPROACH

The statistical tools and techniques used for the study included descriptive statistics, one-way ANOVA, exploratory factor analysis, measurement of scale reliability, correlation analysis, non-metric correlation analysis and hierarchical multivariate regression analysis. The analysis was done using SPSS version 16.0. After entry of the data, the data was checked whether it had been uniformly entered. Data analysis was then performed by applying above said techniques. Brief description of the analytical tools and techniques used for the analysis is given as follows:

3.5.1 Analysis of Variance (ANOVA)

Analysis of Variance (ANOVA) is commonly used for examining the difference of means between two or more populations, based on the information gathered from the samples of the respective populations. This technique was developed by R.A Fisher. ANOVA is based on some assumptions. Each population should have a normal distribution with equal variances. Each sample should be randomly drawn and independent of all other samples. ANOVA is used for comparing the means when there is one metric dependent variable (measured using interval or ratio scale) and one or more non metric or categorical independent variable (Malhotra & Dash, 2011). One-way ANOVA is employed when only one independent variable is used to compare the differences in the mean values of the dependent variable. In one – way ANOVA, testing of hypothesis is carried out by partitioning the total variation of the data in two parts. The first part is the variance between the samples and the second part is the variance within the samples. The variance between the samples can be attributed to treatment effects and the variance within the samples can be attributed to experimental errors. In the present study one-way ANOVA was used to compare the differences in the level of dependent variable namely work engagement of the samples drawn according to each of the personal variables treated as independent variables. The independent variables for testing each of the hypotheses $H_{01}$ to $H_{011}$ stated at the beginning of this chapter were: type
of institution, faculty work area, posting, designation, total experience, experience in current organization, age, gender, educational background and salary respectively. Wherever the difference in mean responses was found to be significant Post-Hoc test using Least Square Difference (LSD) method was applied.

3.5.2 Exploratory Factor Analysis

The present study has used exploratory factor analysis (EFA) to reduce the large number of variables into manageable number of variables. Factor analysis is a technique used for data reduction which examines the relationships among sets of many interrelated variables and represents in the form of a few underlying factors. This technique is exploratory in nature; hence it is also called exploratory factor analysis (EFA) (Malhotra and Dash, 2011). The key statistics associated with factor analysis which were used by the study are described as follows:

- **Bartlett’s test of sphericity:** This statistic was used to test the appropriateness of the data for the factor analysis. Bartlett’s test of sphericity examines the null hypothesis that all variables are uncorrelated in the population. It is based on chi-square transformation of determinant of correlation matrix. Large value of the test favors the rejection of null hypothesis (Malhotra and Dash, 2011). Therefore rejection of null hypothesis determines the appropriateness of the factor model.

- **Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy:** This test was also used to test the appropriateness of factor analysis. A value of 0.5 is desirable to pursue factor analysis. High values between 0.5-1.0 indicate appropriateness of factor analysis, whereas value less than 0.5 mean that factor analysis is not appropriate (Malhotra and Dash, 2011).

- **Principal component analysis:** The study used principal component analysis method of factor analysis. In principal component analysis, the total variance in the data is considered. Principal component analysis method is recommended when the primary concern is to determine the minimum number of factors for subsequent use in analysis (Malhotra and Dash, 2011).

- **Eigen values:** In the study eigen value method was used to determine the number of factors to be retained. Only factors with eigen values greater than 1.0 were retained and other factors were not included in the model (Malhotra and Dash, 2011).
Varimax rotation: In the study the factor matrix was rotated using varimax procedure of rotation. Varimax procedure is an orthogonal rotation which minimizes the number of variables with high loadings on a factor (Malhotra and Dash, 2011).

3.5.3 Scale Reliability

Scale reliability refers to the degree to which a measurement technique can be depended upon to secure consistent results upon repeated application. Reliability is the degree of consistency between multiple measurements of a variable. In this study Cronbach’s alpha was computed for reliability assessment of the various scales. Cronbach’s alpha is the reliability coefficient which determines the reliability of entire scale. If there is no true score and only error in the items then the coefficient alpha will be equal to zero. If all items are perfectly reliable and measure the same thing, then coefficient alpha is equal to 1. The acceptable limit of Cronbach’s alpha is generally .70 but the limit may be decreased to .60 in case of exploratory research (Hair et al., 2009).

3.5.4 Measures of Association

Measures of Association are statistics for measuring the strength of association between two variables. Correlation measures the degree of association between two variables. Karl Pearson’s coefficient of correlation is a measure of the linear correlation between two variables. It is also known as Pearson product-moment correlation coefficient. Pearson's correlation coefficient is the covariance of the two variables divided by the product of their standard deviations. It is commonly represented by the letter r. So if there is one dataset \{x_1, \ldots, x_n\} containing n values and another dataset \{y_1, \ldots, y_n\} containing n values then formula for r is:

\[ r = r_{xy} = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \bar{x})^2} \sqrt{\sum_{i=1}^{n} (y_i - \bar{y})^2}} \]

\[ \bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i \]

Karl Pearson’s coefficient of correlation takes a value between +1 and −1 where 1 indicates total positive correlation, 0 is no correlation and −1 is total
negative correlation. In the present study it was used to analyze whether work engagement, as a dependent variable, is associated with each of the ten factors identified through factor analysis namely perceived organizational support, personal and professional orientation, supervisory coaching, climate of participation and recognition, organizational orientation for results, interaction with students, intrinsic rewards, empowerment, task variety, support from associates, as independent variables. Again, it was used to analyze whether work engagement, as a dependent variable, is associated with the three dimensions of job crafting as independent variables; with the three dimensions of work life balance as independent variables; with the four dimensions of work stress as independent variables and finally with organizational commitment as a one dimensional independent variable.

3.5.5 Non-metric Correlation Analysis

Spearman’s rank correlation is used to test the association between two ranked variables, or one ranked variable and one measurement variable. It is used to see whether the two variables covary. It is assumed that the observations are independent. In the present study Spearman’s rho was used to study the correlation between two ordinal scale variables namely the ranking of measures for enhancement of work engagement by subgroups of respondents classified according to gender, type of institution, designation, salary, faculty work area and district of posting.

3.5.6 Hierarchical Multiple Regression Analysis

A multiple regression analysis method in which the researcher, not a computer program, determines the order that the variables are entered into and removed from the regression equation. It is used when the researcher believes that certain variables should be included in the model and in what order. The general form of multiple regression model is :
\[ Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \cdots + \beta_kX_k + e \]
which is estimated by the following equation
\[ \hat{Y} = a + b_1X_1 + b_2X_2 + b_3X_3 + \cdots + b_kX_k \]
The coefficient \( a \) represents the intercept, \( bs \) are partial regression coefficients.
The statistics associated with Multiple Regression are:

- **Adjusted \( R^2 \):** \( R^2 \), coefficient of Multiple Determination is adjusted for the number of independent variables and the sample size to account for diminishing returns. After the first few variables, the additional variables do not make much contribution.

- **Coefficient of Multiple Determination:** The strength of association in multiple regression is measured by square of the multiple correlation coefficient \( R^2 \), which is also called the coefficient of multiple determination.

- **F test:** The F test is used to test the null hypothesis that the coefficient of Multiple Determination in the population, \( R^2_{\text{pop}} \) is zero. This is equivalent to testing the null hypothesis \( H_0 : \beta_1 = \beta_2 = \beta_3 = \ldots = \beta_k = 0 \). The test statistic has an F distribution with \( k \) and \( (n-k-1) \) degrees of freedom.

- **Partial F Test:** The significance of a partial regression coefficient, \( \beta_i \), of \( X_i \) may be tested using an incremental \( F \) statistic. The incremental \( F \) statistic is based on the increment in the explained sum of squares resulting from addition of the independent variable \( X_i \) to the partial regression equation after all the other independent variables have been included.

- **Partial Regression coefficient:** The partial regression coefficient \( b_1 \), denotes the change in predicted value, \( \hat{Y} \) per unit change in \( X_1 \) when the other independent variables \( X_2 \) to \( X_k \) are kept constant.

In chapter 5 of the present study, hierarchical multiple regression was used to analyse whether work engagement, as a dependent variable, is predicted by the ten factors identified through factor analysis namely perceived organizational support, personal and professional orientation, supervisory coaching, climate of participation and recognition, organizational orientation for results, interaction with students, intrinsic rewards, empowerment, task variety, support from associates, as independent variables. A two stage hierarchical multiple regression analysis was conducted. All personal variables namely type of institution, faculty work area, posting, designation, total experience, experience in current organization, age, gender, educational background, regional background and salary were entered in stage one to treat them as control variables. In chapter 6 of the present study, this technique was used four times to analyze whether work engagement, as a dependent variable, is predicted by job crafting dimensions; work-life balance dimensions;
work stress dimensions and organizational commitment. At each time, a two stage hierarchical multiple regression analysis was conducted. All personal variables were entered in stage one to treat them as control variables. Statistical analyses associated with each research objective are summarized in Table 3.1

Table 3.1: Statistical Analyses Associated with Research Objectives

<table>
<thead>
<tr>
<th>Objective</th>
<th>Hypotheses</th>
<th>Statistical Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>To measure the level of work engagement amongst the employees (faculty members) working in organizations under the study.</td>
<td>N.A</td>
<td>1. Scale Reliability Test Cronbach’s alpha coefficient and descriptive statistics</td>
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<tr>
<td></td>
<td>H₀(1): Work engagement does not differ across the type of institution.</td>
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<td>H₀(2): Work engagement does not differ across faculty work areas.</td>
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<td></td>
<td>H₀(3): Work engagement does not vary with posting.</td>
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<td>H₀(4): Work engagement does not differ across districts.</td>
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<td>H₀(5): Work engagement does not vary with designation.</td>
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<td>H₀(6): Work engagement does not vary with total experience.</td>
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<td></td>
<td>H₀(7): Work engagement does not vary with experience in current organization.</td>
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<td></td>
<td>H₀(8): Work engagement does not differ across age groups.</td>
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<td></td>
<td>H₀(9): Work engagement does not vary with gender.</td>
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<td></td>
<td>H₀(10): Work engagement does not vary with educational background.</td>
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<td>H₀(11): Work engagement does not vary with salary.</td>
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<tr>
<td>To study the relationship (if any) between the level of work engagement and personal variables.</td>
<td>H₀(1): Work engagement does not differ across the type of institution.</td>
<td>1. One-way ANOVA</td>
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<td>H₀(2): Work engagement does not differ across faculty work areas.</td>
<td>2. Post-Hoc tests using Least Square Difference (LSD)</td>
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<td></td>
<td>H₀(3): Work engagement does not vary with posting.</td>
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<td>H₀(4): Work engagement does not differ across districts.</td>
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<td>H₀(11): Work engagement does not vary with salary.</td>
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<td>To identify factors affecting the level of work engagement among faculty members</td>
<td>N.A</td>
<td>1. Exploratory Factor Analysis</td>
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<tr>
<td>Objective</td>
<td>Hypotheses</td>
<td>Statistical Technique</td>
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<td>work engagement amongst employees (faculty members).</td>
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<td>2. Scale Reliability Test – Cronbach’s alpha coefficient</td>
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<td>3. Correlation Analysis – Karl Pearson’s coefficient of correlation</td>
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<td>4. Hierarchical Multiple Regression Analysis</td>
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<tr>
<td>To identify the measures required for enhancement of work engagement amongst the employees (faculty members).</td>
<td>N.A</td>
<td>1. Non-metric Correlation Analysis : Spearman’s rank correlation coefficient</td>
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<tr>
<td>To study the relationship (if any) between the level of work engagement amongst employees (faculty members) and job crafting initiatives, work-life balance, level of work stress, level of organization commitment</td>
<td>H₀(12) : There is no significant relationship between job crafting and work engagement. H₀(13) : There is no significant relationship between work life balance and work engagement. H₀(14) : There is no significant relationship between work stress and work engagement. H₀(15) : There is no significant relationship between organizational commitment and work</td>
<td>1. Exploratory Factor Analysis 2. Scale Reliability Test – Cronbach’s alpha coefficient 3. Correlation Analysis – Karl Pearson’s coefficient of correlation 4. Hierarchical Multiple Regression Analysis</td>
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</table>

### 3.6 LIMITATIONS OF THE STUDY

Like most other studies, this study had its own limitations. Present research study has been carried out under obligatory restraints of time and other resources. Though an effort was made to conduct a thorough and in depth review of literature, yet understanding might have been limited by the researcher’s visualization. The
sample was geographically limited to the state of Punjab for the sake of economy of data collection, as it required personal visits to most of the institutions.

3.7 CHAPTER SUMMARY

The chapter deals with the research methodology adopted for the achievement of the objectives of the current study. The chapter includes a description of the research design and sampling, data collection, sample description, research instruments employed for the measurement of the variables under study and finally the statistical analysis approach has been explained.

A cross-sectional descriptive study was designed using the quota sampling technique for drawing a fixed number of faculty members from each of the four broad faculty work areas namely Commerce and Business Management (CBM), Science, Engineering and Technology (SET), Applied Medical Sciences (AMS) and Education and Humanities (EHUM) from public and private higher education institutions. The respondents from drawn from higher education institutions located in the districts of Amritsar, Bathinda, Jalandhar, Ludhiana, Patiala and the capital of Punjab – Chandigarh as these districts are considered the hubs of higher education in Punjab. The sample consisted of 463 respondents from 41 Higher Education Institutions / Departments. The sample was equitably distributed according to gender, type of institution, posting, designation, faculty work area, posting, total experience, current organization experience, educational background, regional background and salary.

The questionnaire used in the present study consisted of eight parts. Part I dealt with factors affecting work engagement for which a 92 item scale was developed that explored the respondents’ perception regarding self, current job and current organization. There was a mix of positively and negatively worded statements to which response was sought on a seven-point Likert scale ranging from 0 representing ‘strongly disagree’ to 6 representing ‘strongly agree’. The scale was factor analysed and found to consist of ten unique factors or dimensions with Cronbach’s alpha values above the acceptable limit of 0.70 (Hair et al., 2009).

Part II dealt with measurement of degree to which respondents engaged in Job Crafting. A 12 item scale adapted from job crafting scale developed by Tims et al. (2012) was used. The statements gauged how often did the respondents engage in
the stated behaviors while pursuing their current job and / or previous jobs. The response was sought on a 7 point Likert scale ranging from 0 indicating never to 6 indicating always or everyday. On applying Exploratory Factor Analysis, the scale was found to consist of three dimensions having Cronbach’s alpha values above the acceptable limit of 0.70 (Hair et al., 2009).

Part III was dealt with measurement of Work-life balance for which the scale developed by Hayman (2005) was used to measure the respondents’ self reported work life balance. It consists of 15 positively and negatively worded statements regarding the perception of influence of work on personal life and vice-versa. The response was sought on a 7 point Likert scale ranging from 0 indicating never to 6 indicating always or everyday. On applying Exploratory Factor Analysis, the scale was found to consist of three dimensions. The Cronbach’s alpha values for the three dimensions were acceptable limit of 0.70 (Hair et al., 2009).

Part IV measured work engagement using the short nine-item version of the Utrecht Work Engagement Scale (Schaufeli et al., 2006) and an answering scale ranging from 0 = never to 6 = always. For the analyses, a composite score of all subscales was used because the 1-factor solution has acceptable goodness of fit (Schaufeli et al., 2006). The scale reliability was tested by computing Cronbach’s alpha which was above the acceptable limit of 0.70 (Hair et al., 2009).

Part V measured Organizational Commitment through the psychometrically strong yet brief 6 item scale developed by Saks (2006). Response was sought on a seven -point Likert scale ranging from 0 representing ‘strongly disagree’ to 6 representing ‘strongly agree’. The scale was found to be a reliable measure of work engagement with Cronbach’s alpha well above the acceptable limit of 0.70 (Hair et al., 2009).

Part VI measured Work stress using a self developed pretested scale consisting of 18 items adapted from Organization Role Stress Scale developed by Udai Pareek (1983) was used to measure work stress. The response was sought on a 7 point Likert scale ranging from 0 indicating never to 6 indicating always or everyday. On applying Exploratory Factor Analysis, the scale was found to consist of four dimensions. The reliability for the work stress scale was estimated using Cronbach’s alpha coefficient (Cronbach, 1951) which were above the acceptable limit of 0.70 (Hair et al., 2009).
Part VII of the questionnaire dealt with measures for improving Work Engagement on an ordinal scale containing given a set of 11 statements from which the respondent had to rank the top 5 changes required in their jobs and organizations to work with better energy, dedication and involvement. There was an open ended question seeking any other change apart from the mentioned statements. Part VIII sought the demographic profile of the respondents.

Finally, this chapter describes the statistical analysis techniques used for the study namely, one-way ANOVA, exploratory factor analysis, measurement of scale reliability using Cronbach’s alpha, correlation analysis, non-metric correlation analysis and hierarchical multivariate regression analysis. The analysis was done using SPSS version 16.0.