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Review

A meticulous investigation on the power of perceived training quality near training on T&D in Indian Information Technology (IT)/Information Technology Enabled Services (ITeS) industry

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Training is one of the most inevitable compulsions for personal and professional evolution. One has to be on a rocket which always points towards a continuous and continual development. As time passes, it is not the fittest who survive, it is the one who quickly adapts to the change that survives, and this can only be through a continual and lifelong training and learning process which is goal oriented and systematic. Many studies have been conducted on training and the needs of training but the scope further existed to explore whether the concept has relevance in those IT and ITes companies which have the highest process level of maturity Capability Model level 5 (CMM level 5). The resolution of this study was to define a talented research on the prominence of training in CMM level 5 Indian Information Technology (IT)/Information Technology Enabled Services (ITeS) industry. The study was also designed to establish whether various factors reported are having significant relationships with major factors as training quality and perceived benefits. The task of improving the training quality would begin with a strong effort of measuring it and this thesis has tried to develop a scale for measuring the prominence of training in CMM level 5 Indian IT and ITes industries. Various factors were identified and the relationships were also studied. As a part of the study, a model of the relationship was also proposed. To further confirm the relationship between these variables, hypotheses were formulated and they were tested with the latest statistical tools for confirmation. To arrive at a conclusion, all the variables and factors were conceptualised on the strength of established theory and were measured using suitable indicators based on the response of the respondents by conducting a survey using structured questionnaires. The study concludes that to enhance the training quality it is mandatory that training quality with respect to the content, delivery, place and trainer need to be upgraded, and the perceived benefits of the training have to be made well aware to the trainees to create a positive image in the mind of the trainees before the training program.

Key words: Perceived training quality, trainer quality, content quality, delivery quality

INTRODUCTION

India has climbed to countless pinnacles, an absolute Everest, in the software business. Software books for 25% of the total Indian trades. From a bare minimum of $2 billion industry in 1994 to 1995, the Indian Information Technology (IT)/Information Technology Enabled Services (ITes) industry has grown phenomenally over the years.

The Indian information technology part has been contributory in pouring the nation's economy onto the rapid growth curve. According to the Nasscom-Deloitte study, the IT/ITes industry's contribution to the country's gross domestic product (GDP) has increased to a share of 5.2% in 2007, as against 1.2% in 1998.

Industries are considered to be the engines of economic growth. This is more so in the case of the developing countries like India which aims at achieving faster economic growth. However, with the poor capital formation, the objective of achieving is a higher economic growth could be achieved only through the development of small scale and medium scale industries. The IT and ITes industries are playing a multifaceted role in the economy of Indian like the creation of employment, contributing to export earnings and eventually to the state and the national income of the economy.

With such an immense role being played by the IT and ITes, the major problem confronting the industries is their poor output and high average cost of production. With the important characteristics of such industries being the labour intensive units, an important cause of such a poor performance is their poor labour productivity. Most employees have one or the other weaknesses in their skills necessary at the workplace. A training program allows you to strengthen those skills that each employee needs to improve. An employee who receives the right type and necessary training required for his or her job is able to perform the job better.

A training program allows one to strengthen those skills that each employee needs to improve. More specifically, a well-structured training and development program organized by the firm ensures the employees to upgrade and update his skills and background knowledge constantly and consistently. Providing the necessary training creates an overall well-informed staff with employees who can take possession of one another as needed, work on teams or work independently without continuous help and administration from others. A development program brings all employees to a higher level so they all have similar skills and knowledge.

The Indian software industry has grown from $ 150 million in 1991 to 1992 to a staggering $ 5.7 billion (including over $ 4 billion worth of software exports) in 1999 to 2000. With the industry's annual growth rate dipping to 16 to 17% in 2008 from about 30% in 2004, the aggregate revenues were $ 60 billion, including export revenues of $47 billion in 2008.

Training can be defined as the systematic development of the knowledge, skills and attitudes required by an individual to perform adequately a given task or job (Armstrong, 2006). It can also be defined as the act of increasing knowledge and skills of an employee for doing a particular job (Flippo, 1993).

Training and development of workforces is precarious in businesses in this epoch of antagonism due to the point that organizations need to endure, cultivate and progress. Inevitably, training and development has turn out to be an issue of strategic prominence. According to Wills (1994), Palo and Padhi (2003) and Baensch (2004), training is deliberated as the procedure for elevation of the knowledge, increasing skills, stimulation of attitude and behavioural changes, and enlightening the capability of the learner to accomplish responsibilities meritoriously and resourcefully in organisations. Stewart (1996) syndicates the two notions of training and development and gives an organisation meaning. This safeguards the involvement of personalities and crowds in accomplishing the organisational goals through the development of applicable awareness, skills and attitude of the employees. The support and enhancement of organisation enactment is principally over and done with expansion of individuals as personalities, work groups and as associates of the comprehensive establishment. Furthermore, training and development of workers is an organized process that intends to ensure that the organisation has effective employees to meet the exigencies of its dynamic environment.

While knowledge management activities have been concentrating on collection of documents and their storage, in the past couple of years companies had realised the fact that employees are the real knowledge and assent of a company and that real knowledge management is by supporting the communication and networking among the employees. IT has highlighted the high potential of networked employees by increasing the productivity and speed of innovations in a company.

Even though, the use of administration records, auxiliary diagrams, business trips for newly employed graduates, job alternation packages and boundless sequence of official sequences characterize training and development as a motorized procedure. It must be celebrated that organizations have initiated to appreciate that it is not satisfactory to consent everything to unintended and natural mixture and experimental and mistake, henceforth, the propagation of training and development in organisations.

Organisations have long back realised the importance of training and have started adopting various means of training. Halleran and Wiggins (2010) and Summers (2012) tried out innovative methods of training for armed forces to better understand their roles and responsibilities. This is now emulated in the IT and ITES industries and innovative techniques of training need to be introduced

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to have a lifelong learning programme.

The purpose of this study is to find out the importance of training and development program in IT and ITES industries and the ways in which they are used as a tool for increasing organisational efficiency. The study will analyze the perception of various training programmes in the mind of the trainees, the attitude towards various training programme, measure the influence of training and evaluate the prominence of feedback and models of evaluation.

It was decided that the US governments would offer annual tax shield of $5000 per employee per year to companies that keep jobs in the US. Indian software and outsourcing industry depends on the US markets for 65% of their revenues. President Obama's proposal aims to alter to raise the revenues of the US government. Senior executives at several corporations now touring India also say that the anti-outsourcing policies are impractical and could adversely impact world trade.

The Indian software industry has grown from $150 million in 1991 to 1992 to a staggering $5.7 billion (including over $4 billion worth of software exports) in 1999 to 2000. With the industry's annual growth rate dipping to 16 to 17% in 2008 from about 30% in 2004, the aggregate revenues were $60 billion, including export revenues of $47 billion in 2008. The IT/ITES industry has proven to be the major growth pole in the service sectors, which in turn, drones the several economic indicators of growth in the country. A study, commissioned by NASSCOM, attempts to identify areas in the economic and social sectors where IT/ITES industry has made a significant contribution of the country's GDP which increased from a share of 1.2% in 1998 to 5.2% in the year 2007. Increasing number of IT/ITES industry in US, UK, Canada, EU and Australia prefers BPO from low-cost countries like India. It evidences that IT/ITES industry has been struggling with several issues concerning availability and quality of talent.

REVIEW OF LITERATURE

Sullivan (2005), in their study, point out that there do exist a relationship between managerial style and knowledge which is affected on the conflict resolution. Conflict resolution can be done with the help of experts' opinion of the managers and positive attitude which would guide them in the right direction of success. It has also pointed out that the presence of a charismatic leader would largely affect the way in decision has been taken by the employees and it would even affect the type of decision that would be taken. Raja et al. (2011) have done a comparative study on e-learning and traditional form of training. In the study, the advantages and disadvantages of both were highlighted; it also pointed out that e-learning when compared with the traditional learning has a lot of advantages, has a wider range of reach and also reaches out to quite a lot of people and even those who do not want to travel to a place for getting things known can also use the facility. Say for example if a training program is conducted to an audience who is not at all interactive and the trainer will also have a very bad feeling and would not be motivated to give maximum productivity out of this session. But in fact, if the trainees are really questioning the concepts being explained by the trainee, are quite inquisitive to know more and have attitude which would make them ask questions to gain knowledge out of the session, it will highly impact the way in which the training programme would be going further; and the level of knowledge that also passes from the trainer to the trainee will also enhance the trainees' expectations to be met.

Kwek et al. (2010), in their study on educational quality process and its influence on perceived quality, confirm that quality has become an important topic and it has highly affected profitability, satisfaction level of the customers and the same also promotes customer retention. These benefits make it important to identify those parameters which would enhance the quality. As a part of the study, around 458 undergraduate business students of a private university were studied and the result showed that the quality of the education process depends on the quality of the examinations, curriculum, and other services like library and laboratory. Sahinidis and Bouris (2008)'s study was designed to investigate the relationship between perceived employee training effectives and job satisfaction, motivation and commitment which was done on a group of 134 employees in the lower management cadre. The study provides support of the hypotheses that was proposed indicating a significant correlation between the employee perceived training effectiveness and their commitment, job satisfaction and motivation. It also points out that this is first of a study of its kind that was done and no such study was done on similar grounds. Similar studies were not conducted and those which were conducted could only propose employees' attitude which appears to be having a greater value when compared with other parameters that were identified which were increased productivity turnover and absenteeism.

Raja et al. (2011), in their study measuring perceived quality of training in the hospitality industry, explore the viability of new training evaluation criteria which is linked to the perceived benefits of an employee and the perceived quality of the training and the methodology that is being used for transfer of knowledge between the trainer and trainee. This study takes into account the fact that the training is a kind of a service that happens in a very structured way and allows information flow from the person who is well educated on a certain concept of the skill to a person who has less awareness of those facts. The study was conducted with the help of 164 trainees from various instructor led training programmes and close observation was done for the set of behaviour that they

could show. An exploratory factor analysis was also done to elucidate the various dimensions of perceived training quality and it has the mind that measurement first used already should have been updated. Raja et al. (2011), in the study on organisational downsizing and its perceived impact on various management practices, point out that many organisations with high amount of quality in their management practices engage a practice of downsizing for various reasons. This study highlights the relationship between organisational quality and its impact on organisational downsizing. This also points out to an extent how the employees would be affected when organisational strategy moves from regular working to downsizing. The study was conducted on a Canadian organisation with a sample size of 343 which was currently under the practice of downsizing due to a certain place in which they want to disclose. This study shows that the strategy of downsizing has changed the attitude of the employees, and this has highly affected the productivity which in turn has reflected on the quality of the management practices currently done. Such companies whose employees' morale is not the focused enhance service quality and customer satisfaction. Calvo-porral and Novo-corti (2013), in the study on perceived quality on higher education which was an empirical study, find out that there is difference in the perceived quality for both private and public universities. The research aims to analyse various dimensions that would affect the perceived quality in higher education for the students from their own perspective. This was a kind of a comparative study which was compared to the various ways in which the practice is done in private as well as public institution. The result shows that there are various variables which are quite effluent like empathy which have to be addressed and differences in the practices for both the private and public centres. These cells pointed out by the study could enhance the quality of the strategy of the institution, and the present study actually relies upon the sample taken by the researcher from the undergraduate students of the same private and public centres. Also it points out that teaching quality of both institutions differed substantially when compared on a certain scale. Golparvar et al. (2012), in their study intended to explore the relationship of training climate with perceived organisational effectiveness in a factory, point out that there exists a relationship between training climate dimensions and perceived organisational effectiveness. The study was conducted with the help of a questionnaire that was given to 203 employees of the manufacturing company and the result shows that there is no relationship between the organisational supports with the perceived customer focus effectiveness; the other training climate components which are identified as a part of the study had a positive relationship and showed significant relationship between perceived organisational effectiveness. The study further explains and points out the relationship between organisational support and leadership effectiveness in the way in which information is being shared and information is effectively used by human resource for an effective and better result. It also points out that the managerial occupational supporters are indeed necessary for a customer centred effectiveness and managerial effectiveness for a better process of effectiveness.

EXPLORATORY FACTOR ANALYSIS FOR PERCEIVED TRAINING QUALITY CONSTRUCT

The next step in the analysis procedure was to explore the dimension structure of perceived training quality construct using exploratory factor analysis; 20 scale items were used to measure training quality with the help of SPSS 20. This approach was recommended in the literature as a means of identifying actual, rather than perceived, factor groupings (Rosen and Surprenant, 1998). The role of factor analysis is to identify the components or factors derived from a set of variables, that is, to identify the subset of correlated variables that form a subset which is reasonably uncorrelated with other subsets (Hair et al., 1998; Tabachnick and Fidell 2014; Tabachnick and Fidell, 2001). An exploratory Maximum likelihood factor analysis with varimax rotation was performed as it incorporates common, specific and error variance and was appropriate when the objective was to identify the minimum number of factors associated with the maximum explanation of variance (Hair et al., 1998). The items that load higher than 0.4 are retained while low loading items are dropped. In general, higher factor loadings are considered better, and typically loadings below 0.30 are not interpreted. As a general rule of thumb, loadings above 0.71 are excellent, 0.63 very good, 0.55 good, 0.45 fair, and 0.32 poor (Tabachnick and Fidell, 2007).

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.880 and the Bartlett test of sphericity was significant ($p<0.001$) with a Chi square value of 4088.091 having 190 degrees of freedom as shown in Table 1; this confirmed the goodness of the data for further analysis and provided support for factorization. The exploratory maximum likelihood factor analysis identified eight components with an Eigen value greater than 1, which together explained over 63.602% of the variance. Tables 1, 2 and 3 illustrate outcome of exploratory factor analysis (EFA).

The factor structure emerged after EFA had items with adequate loadings; each identified factors had marginally less evidence for conflicting cross loadings. All the 20 items could be classified into four dimensions in alignment with the pre-conceptualized pattern. The following conclusions were drawn from the exploratory factor analysis conducted:

(1) There existed four underlying factors which represent

Table 1. KMO and Bartlett's test.

KMO and Bartlett's test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.880
Bartlett's Test of Sphericity	Approx. Chi-Square	4088.091
	Df	190
	Sig.	0.000

Table 2. Total variance extracted.

Component	Total variance explained								
	Initial Eigenvalues			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
1	6.619	33.094	33.094	6.619	33.094	33.094	4.339	21.695	21.695
2	2.935	14.677	47.771	2.935	14.677	47.771	3.014	15.070	36.765
3	1.683	8.417	56.187	1.683	8.417	56.187	2.715	13.573	50.338
4	1.483	7.415	63.602	1.483	7.415	63.602	2.653	13.264	63.602
5	.904	4.521	68.123	-	-	-	-	-	-

Table 3. Factors extracted after EFA.

Rotated component matrix[a]	Component			
	1	2	3	4
tq1	0.643	-	-	-
tq2	0.705	-	-	-
tq3	0.607	-	-	-
tq4	0.774	-	-	-
tq5	0.843	-	-	-
tq6	0.845	-	-	-
tq7	0.772	-	-	-
cq1	-	-	-	0.775
cq2	-	-	-	0.755
cq3	-	-	-	0.794
cq4	-	-	-	0.708
dq1	-	-	0.847	
dq2	-	-	0.542	
dq3	-	-	0.872	-
dq4	-	-	0.876	-
iq1	-	0.800	-	-
iq2	-	0.820	-	-
iq3	-	0.783	-	-
iq4	-	0.704	-	-
iq5	-	0.508	-	-

Extraction method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. [a]Rotation converged in 6 iterations.

the training quality in the perceptions of a CMM Level 5 Indian IT/ITES employee in South India.

(2) Each item was mainly related to only one factor except for relatively lower cross loading shown by certain

Table 4. Factor structure after EFA.

S/N	Factor name	No. of Items	Alpha value
1	Trainer quality	7	0.892
2	Content quality	4	0.813
3	Delivery quality	4	0.809
4	Infrastructural quality	5	0.826

indicators which can be theoretically justified as correlations among reflective measures are expected and possibility of respondents conceive a different factor perception for certain indicators cannot be ruled out.
(3) The identified factors were named on the basis of the theme behind the items that formed a group.

The details are illustrated in Table 4 with reliability co-efficients at this stage of analysis. The next step was to conduct a confirmatory factor analysis of the training quality dimensions identified.

CONFIRMATORY FACTOR ANALYSIS (CFA): PERCEIVED TRAINING QUALITY DIMENSIONS

The primary objective of conducting CFA was to determine the ability of a predefined factor model to fit an observed set of data. It provides estimates for each parameter of the measurement model. CFA is useful in (1) testing the significance of a specific factor loading; (2) testing the relationship between two or more factor loadings; (3) testing whether a set of factors are correlated or uncorrelated; and (4) assessing the convergent and discriminant validity of a set of measures.

CFA has strong links to structural equation modelling and hence the procedures demand verification of certain assumption explained earlier. CFA requires validation of measurement models of each identified factors from EFA followed by validation of structural model containing all factors. The measurement model is the part of an standard error of mean (SEM) model that deals with the latent variables and their indicators. The measurement model was evaluated for validity like any other SEM model, using goodness of fit measures. Maximum likelihood (ML) estimation method was used in all analysis using Amos.22. Maximum likelihood aims to find the parameter values that make the observed data most likely (or conversely maximize the likelihood of the parameters given the data)" (Caron et al., 2006; Brown, 1997). It has several desirable statistical properties:

(1) It provides standard errors (SEs) for each parameter estimate, which are used to calculate p -values (levels of significance) and
(2) It provides confidence intervals, and its fitting function is used to calculate many goodness-of-fit indices

In model evaluation using AMOS software involves the use of significance tests to assess the adequacy of model fit. Fit refers to the ability of a model to reproduce the data (that is, usually the variance-covariance matrix). The fit measures generated by Amos output can be classified into six as absolute fit measures, relative fit measures, parsimony fit measures, Chi square distribution based fit measures, information theoretic fit measures and fit measures based on sample size. There is wide disagreement among researches as to which fit indexes to report. Hooi (2010) and Bradshaw (2012) recommend use of at least three fit tests, one from each of the first three categories above, so as to reflect diverse criteria. Kline (2005) recommended the use of least four tests, such as Chi-square; GFI, NFI, or CFI, NNFI, and SRMR.

Many indices are affected by sample size and for this reason CMIN, GFI and AGFI are no longer preferred measures of goodness of fit. The Parsimonious fit measures are used primarily to compare models on the basis of some criteria that take parsimony. It is suggested that other goodness of fit measures are used to assess acceptable models and parsimony measures are used to select among the set of acceptable models.

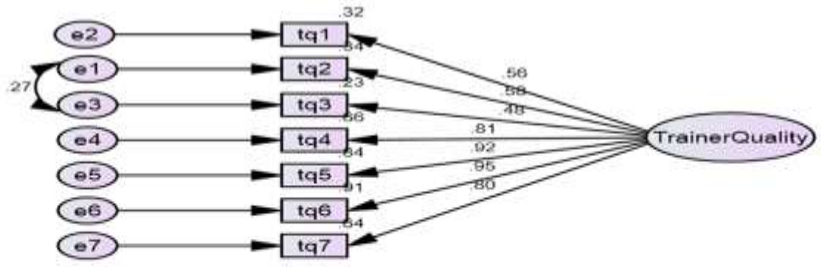
The first stage in confirmatory factor analysis was validating the measurement model for all first order dimensions of training quality construct.

Measurement model for "trainer quality" dimension

The seven indicator variable model of "Trainer Quality" dimension was suggesting poor fitting model in the first estimate. The normed alpha, RMSEA and CFI were above the permissible level. As per modification indices, an error correlation was added between indicator variables "tq2" and "tq3" considering theoretical grounds. To correlate error terms there need to be a strong theoretical justification behind such a move. Jöreskog (1993) and Bollen and Long (1993) develop a well fit and significant model. The model was found to be good fitting model with recommended indices as illustrated in Figure 1. All the paths shown in the model are significant as critical ratios were above 1.96.

Measurement model for "content quality" dimension

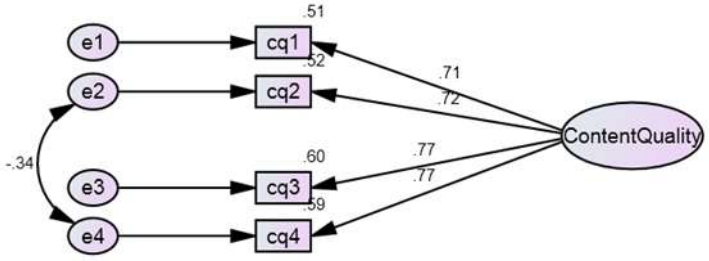
The four indicator variable model of "Content QualitITes" dimension was showing a poor fitting model in the first



Measurment Model for "Trainer Qualities" Dimension

CMIN/DF = 2.377 , CFI = 0.990, GFI = 0.976, SRMR = 0.0292
RMSEA = 0.060, PCLOSE = 0.247, HOELTER = 345

Figure 1. Measurement model for "Trainer Quality" dimension.



Measurment Model for "Content Qualities" Dimension

CMIN/DF = 3.390 , CFI = 0.995, GFI = 0.996, SRMR = 0.0155
RMSEA = 0.079, PCLOSE = 0.197, HOELTER = 752

Figure 2. Measurement model for "Content Quality "dimension.

estimate. The normed alpha, RMSEA, and NFI above the permissible level as illustrated in Figure 2. As per modification indices, an error correlation was added between indicator variables "cq2" and "cq4" in consideration with the theory behind. All the paths shown in the model are significant as critical ratio was above 1.96.

Measurement model for "delivery quality" dimension

The four indicator model reported a best fit model with recommended indices as illustrated in Figure 3. All the paths shown in the model are significant as critical ratio was above 1.96.

Measurement model for "infrastructural quality" dimension

The five indicator variable model of "Infrastructural Quality" dimension suggests a poor fit mode and hence, an error correlation was added between indicator variables "iq2" and "iq4"as per the modification indices considering theoretical grounds. All indices considered are above the desired level with significant paths as illustrated in Figure 4.

STRUCTURAL MODEL FOR PERCEIVED TRAINING QUALITY CONSTRUCT

The statistical significance of relationships among training quality and its extracted dimensions were of interest to this study. The well-fit measurement models of training quality dimensions are taken together to arrive at a fitting structural model for training quality. The model developed is illustrated in Figure 5. The primary task in this model-testing procedure is to determine the goodness-of-fit between the hypothesized model and the sample data.

The first model developed had all fit indices above the permissible limits and hence a good-fitting model explaining the training quality construct.

Table 5 provides RMSEA value for the above

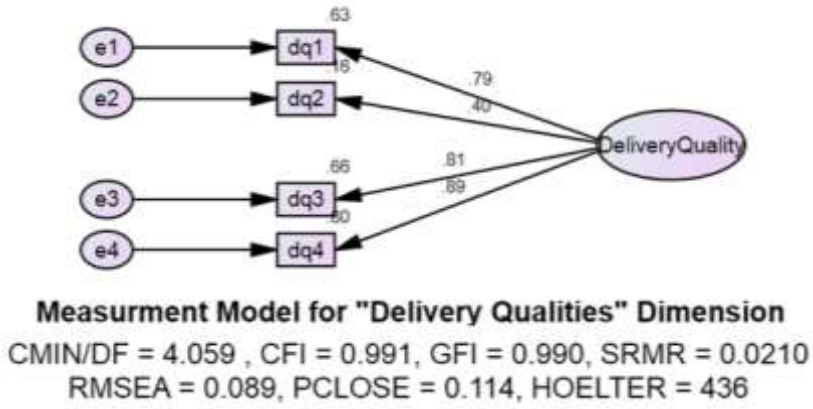


Figure 3. Measurement model for “Delivery Quality “dimension.

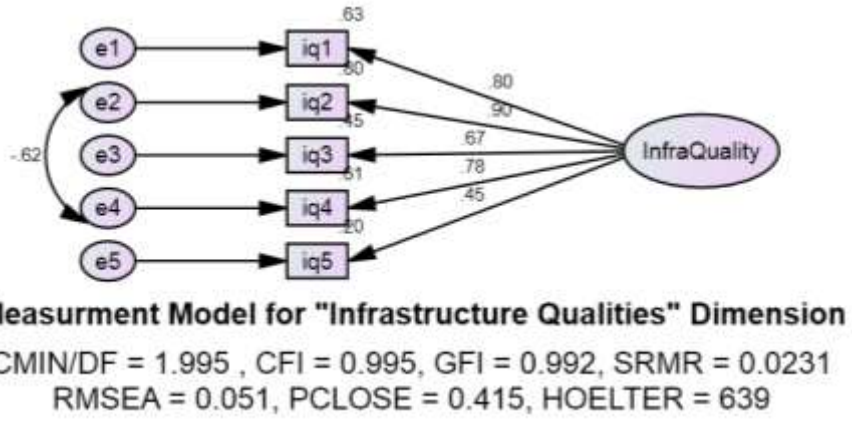


Figure 4. Measurement model for “Infrastructure Quality” dimension.

hypothesized model and was found as 0.045, with the 90% confidence interval ranging from 0.036 to 0.053 and the p-value for the test of closeness of fit equal to 0.843. Interpretation of the confidence interval indicates that, 90% confidence can be assigned that the true RMSEA value in the population will fall within the bounds of 0.036 and 0.053, which represents a good degree of precision (Table 5). Given that (1) the RMSEA point estimate is < 0.08 (.045); (2) the upper bound of the 90% interval is also within permissible limits; and (3) the probability value associated with this test of close fit is >0 .050 (p = 0.843), it can be concluded that the initially hypothesized model fits the data well.

The proposed structure of the hypothesized model on the sample data needs to be tested to find how well the observed data fit this restricted structure. Because it is highly unlikely that a perfect fit will exist between the observed data and the hypothesized model, there will necessarily be a differential between the two; this differential is termed the residual. The model-fitting process can therefore be summarized as follows:

Data = Model + Residual

where Data represents score measurements related to the observed variables as derived from persons comprising the sample. Model represents the hypothesized structure linking the observed variables to the latent variables and, in some models, linking particular. Residual represents the discrepancy between the hypothesized model and the observed data.

The discrepancy between the restricted covariance matrix, demonstrated by the hypothesized model, and the sample covariance matrix is captured by the residual covariance matrix reported in the AMOS output. The standardized residual co-variance should be less than 2.58 to conclude statistically significant co-variance between two variables (Byrne, 2010). Hence, observations were standardized residual co-variance more than 2.58 can be considered for exclusion in further analysis. Another criterion for identifying significant items is verification of critical ratio reported in AMOS output along with estimates. The critical ratios (CR) are to be >

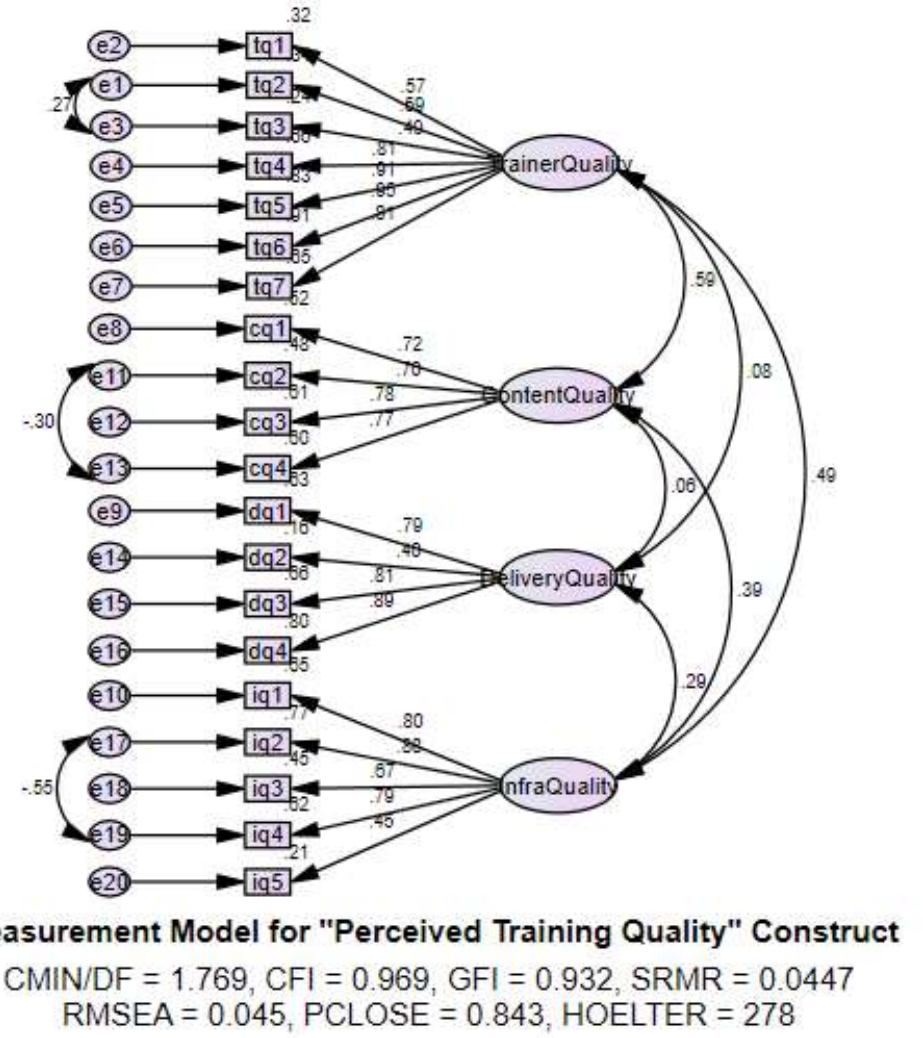


Figure 5. Confirmatory model for training quality construct.

Table 5. RMSEA estimates.

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0.045	0.036	0.053	0.843
Independence model	0.234	0.227	0.240	0.000

±1.96 for concluding statistical significance of items used for measuring latent variables. Non-significant parameters, with the exception of error variances, can be considered unimportant to the model; in the interest of scientific parsimony they should be deleted from the model (Byrne, 2010). Here, all standardized residual covariances among items were below 2.58 and critical ratios above 1.96, to confirm satisfactory completion of the estimation process to draw conclusions on relationship among variables.

VALIDATION OF THE PERCEIVED TRAINING QUALITY SCALE

To demonstrate the soundness of measurement scale developed, first of all, it was necessary to address the issue of common methods variance (CMV). Common methods variance can be a major source of measurement error in data collection when variables are latent and measured using the same survey at one point of time. CMV may inflate the true correlations among latent

constructs and threaten the validity of conclusions. Harman's single-factor test is most widely known approach for assessing CMV in a single-method research design (Organ et al., 2006). In single-factor test, all of the items in the study are subjected to EFA. CMV is assumed to exist if (1) a single factor emerges from unrotated factor solutions, or (2) a first factor explains more than 50% of the variance in the variables (Organ et al., 2006)

The EFA conducted with all variables in the study yielded four distinct factors with an eigenvalue above one. The first factor accounts for 33.094% of the variance at unrotated stage and all factors together account for 63.602% of the total variance to confirm that CMV was not a major concern in this study.

Convergent validity was established when the relationship between measurement items and the factor were significantly different from zero. Based on this criterion, critical ratios were used to evaluate the statistical significance. Parameters which have a critical ratio greater than 1.96 were considered significant based on the level of p=0.05. In this study, all of the measurement items represented their factors significantly, as the critical ratio of every item exceeded the 1.96 value; hence, all of the measurement items satisfied the convergent validity test. Also, the standardized regression weights should be significantly linked to the latent construct and have at least loading estimate of 0.5 and ideally exceed 0.7 (Hair et al., 2006). In this study the factor loading ranged from 0.508 to 0.876 and all loadings except two were found more than recommended value of 0.5. The convergent validity assessment also included the measure of construct reliability and average variance extracted. According to Anderson and Gerbing (1992), variance extracted refers “the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error”. Further, Anderson and Gerbing (1992) suggested that variance extracted to be a more conservative measure than construct reliability. As a rule of thumb good reliability is suggested if, Cronbach’s alpha estimate is higher than 0.7. Further, variance extracted (AVE) for a construct should be larger than 0.5 indicating reliable factors (Hair et al., 2006). Another rule of thumb for checking composite reliability is in comparison with squared multiple correlations provided in the Amos output. Composite reliability is considered high if squared multiple correlation R2 (“smc”) greater than 0.5, moderate if between 0.3 and 0.5 and poor if less than 0.3 (Amos et al., 2014). In this study, the squared multiple correlations reported more than 0.5 except for 14 indicators, between 0.3 to 0.5 for four items and below 0.3 for two items to generally conclude adequate composite reliability.

Discriminant validity was confirmed by examining correlations among the constructs. As a rule of thumb, a 0.85 correlation or higher indicates poor discriminant validity in structural equation modelling (Field, 2004). None of the correlations among variables were above 0.85. The results suggested adequate discriminant validity of the measurement. The validity statistics can be determined using Microsoft Excel based Validity Concerns Toolkit developed by Prof. Gakingston. Table 6 reports the composite reliability (CR), average variance extracted (AVE), maximum shared variance (MSV) and average shared variance (ASV) of the dimensions.

Dimensions were with CR more than 0.7 to meet reliability criteria. All AVE’s were found more than 0.5. Since MSV < AVE and ASV < AVEs, discriminant validity could be established (Hair et al., 2010). Further, all standardized residual co-variances among items were below 2.58 and critical ratios above ±1.96, to confirm significance of items used in the measurement (Byrne, 2004). All standardized regression coefficients were above 0.50 suggesting that each of the items should remain in the model (Hair et al., 2010). From the aforementioned observations, it was confirmed that the scale developed was having adequate psychometric soundness for measuring perceived training quality.

TESTING THE MULTIDIMENSIONAL STRUCTURE OF TRAINING QUALITY CONSTRUCT

This study required to verify the psychometric soundness of the training quality construct, which is conceptualized as multi-dimensional formative one with four first order dimensions. Identification of formative indicator constructs in Amos 22 required modifications as proposed by Jarvis et al., (2003). Accordingly, two theoretically appropriate reflective indicators were introduced and paths were constrained. The estimated model is presented in Figure 6.

The validity statistics can be determined using Microsoft Excel based Validity Concerns Toolkit developed by Prof. Gakingston. Dimensions were with CR more than 0.7 to meet reliability criteria. All AVE were found more than 0.5 to confirm convergent validity and since MSV < AVE and ASV < AVEs, discriminant validity could be established. From the aforementioned observations, it was confirmed that the multi-dimensional formative structure of training quality is psychometrically justifiable.

It was confirmed from the confirmatory factor analysis that perceived training quality is a multidimensional hierarchical, one formed with four first order dimensions namely Trainer Quality, Content Quality, Delivery Quality and Infrastructural Quality. The item structure is illustrated in Table 7.

To assess the model fit with the data, it was recommended that the p-values for average path coefficient (APC), average r-squared (ARS) and average adjusted R-squared (AARS) should be with p<0.05. In addition, it was recommended that the average variance inflation factor (AVIF) be lower than 5. The various quality criteria for assessing the psychometric soundness of the model are reported in Table 8.

Table 6. Quality assessment details for dimensions.

Quality	CR	AVE	MSV	ASV
DeliveryQuality	0.828	0.563	0.084	0.031
TrainerQuality	0.896	0.564	0.346	0.197
ContentQuality	0.831	0.552	0.346	0.167
InfraQuality	0.849	0.539	0.240	0.158

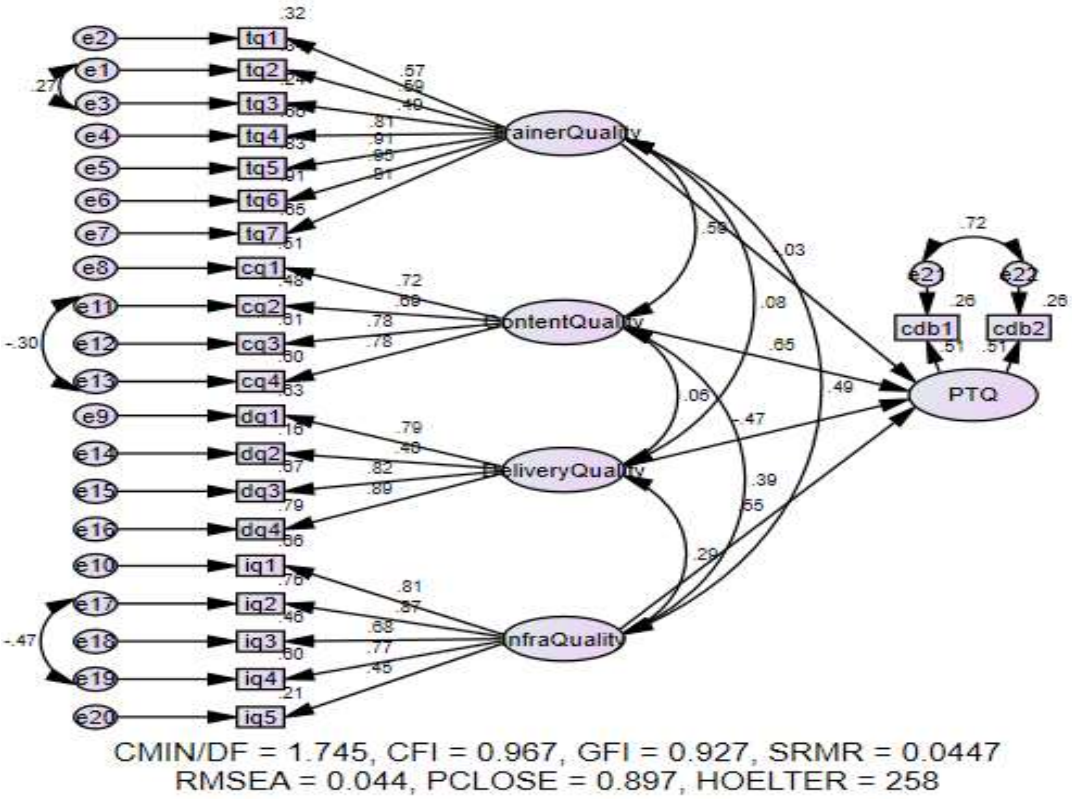


Figure 6. Multi-dimensional formative model of training quality construct.

Table 7. Item structure of training quality construct.

S/N	Factor name	No. of items
1	Trainer quality	7
2	Content quality	4
3	Delivery quality	4
4	Infrastructural quality	5

The research model estimated using WarpPLS 5.0 is illustrated in Figure 7. The significant indicators identified after confirmatory factor analysis was only used for model estimation. The model emerged as a well fit model with admissible fit criteria and other quality guidelines. Expect two paths all other paths emerged as significant as p values were less than 0.05. Various fit criteria are reported as follows:

(1) Average path coefficient (APC)=0.270, P<0.001
(2) Average R-squared (ARS)=0.737, P<0.001
(3) Average adjusted R-squared (AARS)=0.735, P<0.001

Table 8. Fit and quality guidelines for PLS models.

S/N	Consideration		Guideline (WarpPLS 5.0)	
			Reflective constructs	**Formative constructs**
1	Goodness of fit criteria	1	"p" values for Average path coefficient (APC), Average R-squared (ARS) and Average adjusted R-squared (AARS) to be less than 0.05	
		2	Average full collinearity VIF (AFVIF) ok if <= 5, good <= 3.3	
		3	Average block VIF (AVIF), ok if <= 5, good <= 3.3	
		4	Tenenhaus GoF ;small >= 0.1, medium >= 0.25, large >= 0.36	
		5	Sympson's paradox ratio (SPR) acceptable if >= 0.7, ideally = 1	
		6	R-squared contribution ratio (RSCR) acceptable if >= 0.9,	
		7	Statistical suppression ratio (SSR) acceptable if >= 0.7	
		8	Nonlinear bivariate causality direction ratio, good if >= 0.7	
2	Cronbach alpha coefficient		>0.7	NA
3	Composite reliability		>0.7	NA
4	Average variance extracted		>0.5	>0.5
5	Convergent validity		p values associated with the loadings be lower than 0.05; and that the loadings be equal to or greater than 0.5; cross loading less than 0.5	VIF<5; all indicator weights should be with p<0.05
6	Discriminant validity		The square root of the average variance extracted should be higher than any of the correlations involving that latent variable	The square root of the average variance extracted should be higher than any of the correlations involving that latent variable
7	Effect sizes of path co-efficient		Effect sizes (f-squared) of 0.02, 0.15, and 0.35, respectively for small, medium, or large effect (Cohen, 1988)	
8	Predictive validity		Positive higher value of Stone-Geisser Q-squared co-efficients	

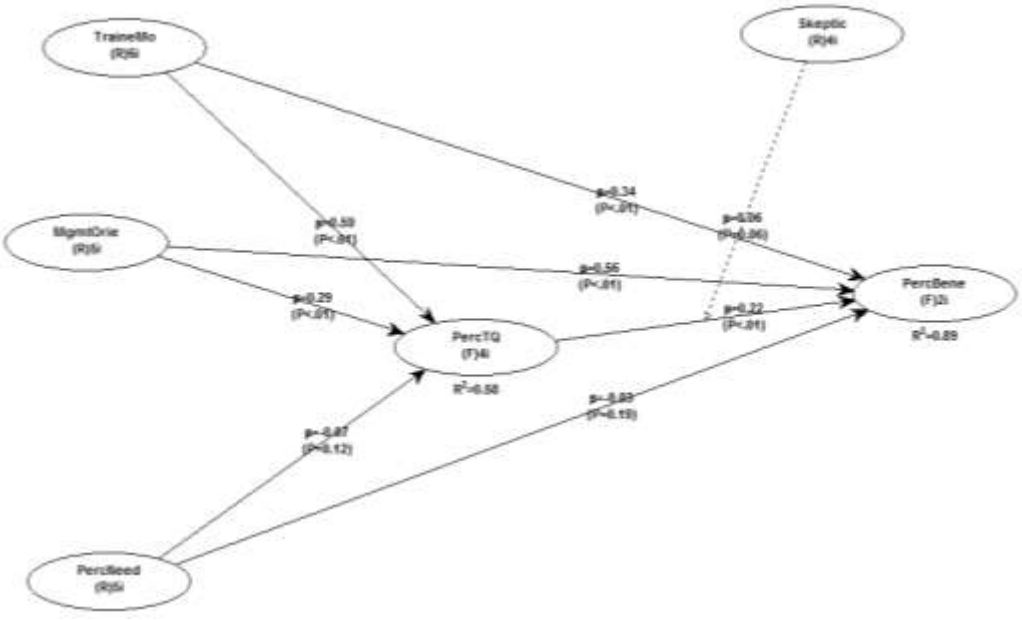


Figure 7. Estimated research model.

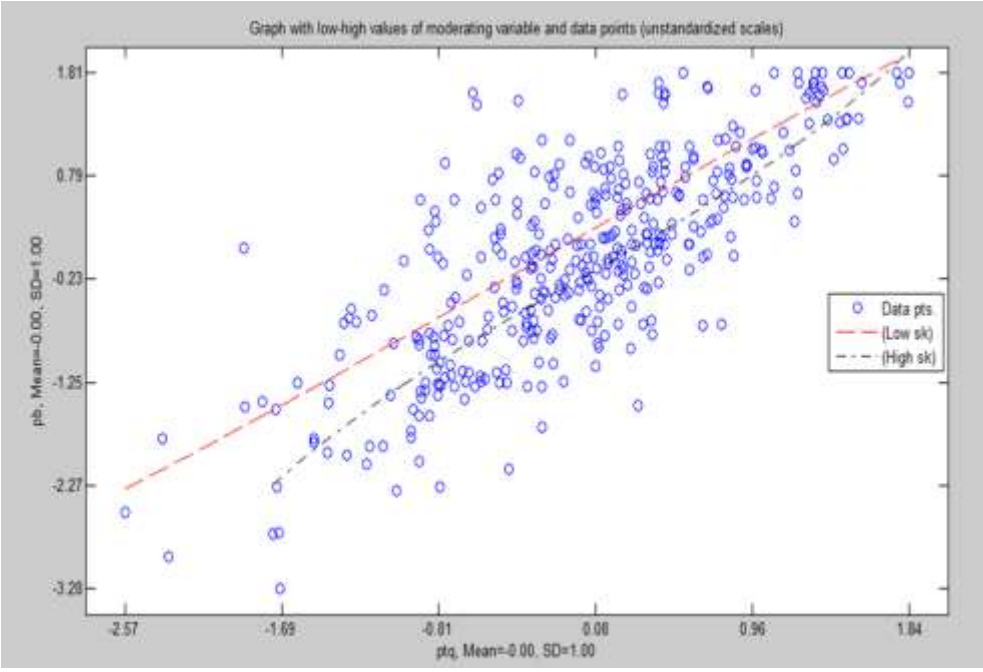


Figure 8. Relation between PB and PTQ vs. SK.

(4) Average block VIF (AVIF)=1.449, acceptable if <= 5, ideally <= 3.3
(5) Average full collinearity VIF (AFVIF)=3.702, acceptable if <= 5, ideally <= 3.3
(6) Tenenhaus GoF (GoF)=0.647, small >= 0.1, medium >= 0.25, large >= 0.36
(7) Sympson's paradox ratio (SPR)=1.000, acceptable if >= 0.7, ideally = 1
(8) R-squared contribution ratio (RSCR)=1.000, acceptable if >= 0.9, ideally = 1
(9) Statistical suppression ratio (SSR)=1.000, acceptable if >= 0.7
(10) Nonlinear bivariate causality direction ratio (NLBCDR)=0.938, acceptable if >= 0.7

It was found that, all the aforementioned fit criteria were met and that the model has acceptable predictive and explanatory quality as the data is well represented by the model. The loading of all items used to measure various latent variables were found adequate with p values less than 0.05. Various other quality criteria were found above threshold limits as illustrated in the table.

Graphs help in evaluating the effect of the independent variable at different values of the moderator. Figure 8 illustrates the moderation effect of skepticism on the relationship between perceived training quality and perceived benefits. The moderation effect also known as interaction effect depends on the sign and the power of the path coefficient of a moderated relationship. The path coefficient of the moderating effect of top management commitment has a value of 0.02 at $p<0.05$. The positive path coefficient of an effect that moderates a positive direct relationship concludes that causal power of training quality to develop benefit will go down in value as favourable perception about scepticism occurs. In case of employees with low level of feeling about scepticism, the formation of benefit feel from training quality is relatively high in comparison with employees having high impact towards modifier. A steady development of benefit feel is found for employees who perceive low levels of scepticism.

The relationship between other variables in the study is also explained in Figure 9. It shows the relationship between significant relationship between training quality and the antecedent variables, trainee motivation and management orientation. It also shows the significant relationship between benefits and the antecedent trainee motivation and management orientation. From Figure 10, it can be noticed that the trainee motivation shows a linear trend with respect to both training quality and benefits whereas there is a slight nonlinear relationship existing between management orientation with training quality and benefits.

A test of homogeneity was performed to check whether the assumption of homogeneity is violated to make valid inferences. Levene's test for homogeneity was not significant ($p>0.05$) as shown in Tables 9, 10, 11 and 12 and hence, it can be concluded that population variance of each group is approximately equal. In order to find out the significant difference in the perception towards training quality, benefits and scepticism among the respondents with different age groups, one-way analysis

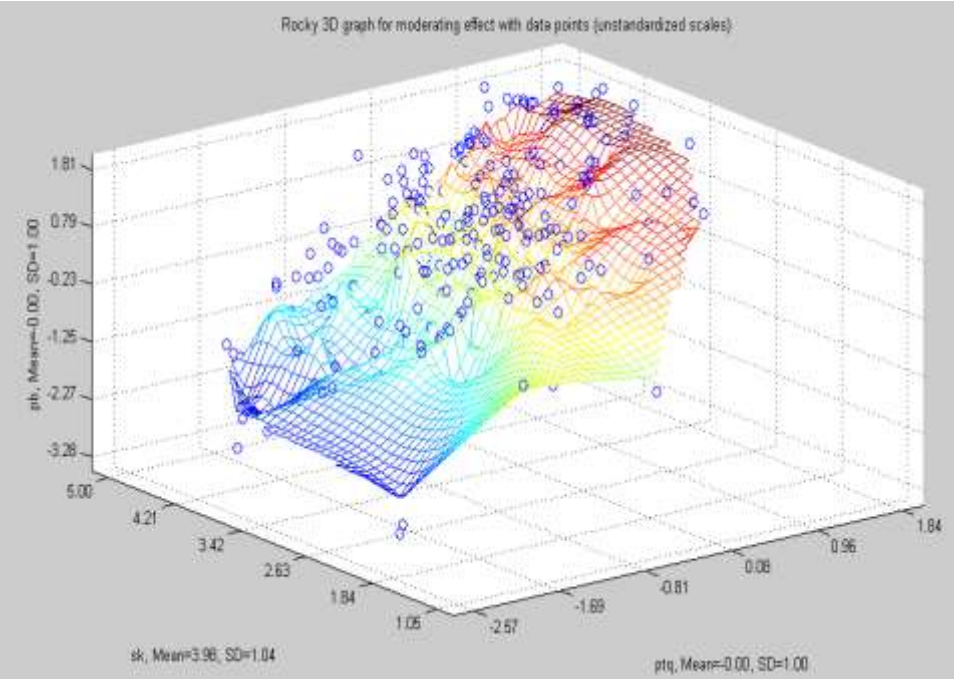


Figure 9. Relation between PB and PTQ vs SK depicted by Rocky Plot.

of variance was administered for each case. The resulted 'F' statistics are illustrated in Table 11 suggesting that there is a significant difference in perceptions of employees about all the three variables studied at 0.05 levels.

Levene's test of homogeneity was performed to check whether the assumption of homogeneity is satisfied. The result gave a p value greater than 0.05, concluding the population variances of each group are approximately equal. The p value (at 10% significance) in the ANOVA Table 11 suggests that there is significant difference in perceptions of employees based on age groups with respect to training quality. From the post hoc result, it can be clearly seen that employees above age group 45 years have a difference in perception when compared to other age groups and the mean value of employees above 45 years are greater than others showing that they perceive training quality stronger than others.

A test of Homogeneity was performed to check whether the assumption of homogeneity is violated to make valid inferences. Levene's test for homogeneity was not significant ($p>0.05$) as shown in Table 13 and hence, it can be concluded that population variance of each group are approximately equal. In order to find out the significant difference in the perception towards training quality, benefits and skepticism among the respondents with different job roles, one-way analysis of variance was administered for each case. The resulted 'F' statistics are illustrated in Tables 14 and 15, suggesting that there is a significant difference in perceptions of employees about all the three variables studied at 0.05 levels.

Levene's test of homogeneity was performed to check whether the assumption of homogeneity is satisfied. The result gave a p value greater than 0.05, concluding the population variances of each group are approximately equal. The p value (at 5% significance) in ANOVA Table 15 suggests that there is no significant difference in perceptions of employees based on their job role with respect to perceived training quality.

A test of homogeneity was performed to check whether the assumption of homogeneity is violated to make valid inferences. Levene's test for homogeneity was not significant ($p>0.05$) as shown in Tables 16, 17, and 18 and hence, it can be concluded that population variance of each group is approximately equal. In order to find out the significant difference in the perception towards training quality, benefits and skepticism among the respondents with different income levels, one-way analysis of variance was administered for each case. The resulted 'F' statistics are illustrated in Table 19, suggesting that there is no significant difference in perceptions of employees about all the three variables studied at 0.05 levels.

A test of homogeneity was performed to check whether the assumption of homogeneity is violated to make valid inferences. Levene's test for homogeneity was not significant ($p>0.05$) as shown in Tables 20 and 21, and hence, it can be concluded that population variance of each group is approximately equal. In order to find out the significant difference in the perception towards training quality, benefits and skepticism among the respondents with different length of association, one-way

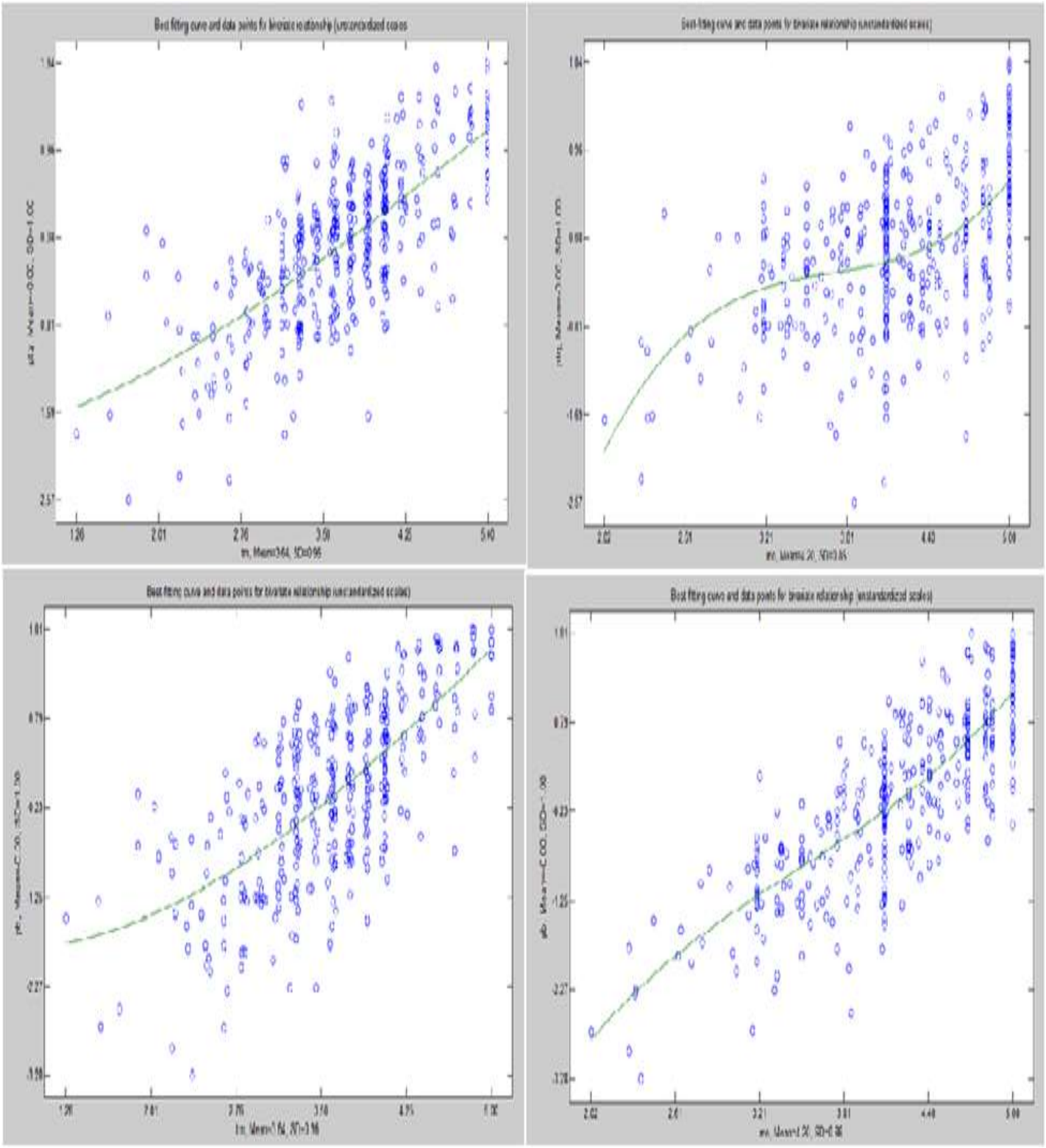


Figure 10. Relationship between variables.

analysis of variance was administered for each case. The resulted 'F' statistics are illustrated in Table 21, suggesting that there is no significant difference in perceptions of employees about all the three variables

Table 9. Descriptives of age.

Age		Frequency	Percent	Valid (%)	Cumulative (%)
Valid	Below 25	74	19.2	19.2	19.2
	26 to 35	139	36.1	36.1	55.3
	36 to 45	124	32.2	32.2	87.5
	Above 45	48	12.5	12.5	100.0
	Total	385	100.0	100.0	-

Table 10. Test of homogeneity of perceived training quality.

Levene Statistic	df1	df2	Sig.
2.158	3	381	0.093

Table 11. ANOVA of perceived training quality.

Perceived training quality	Sum of squares	df	Mean square	F	Sig.
Between groups	4.305	3	1.435	2.51	0.058
Within groups	217.867	381	0.572	-	-
Total	222.173	384	-	-	-

Table 12. Post Hoc of perceived training quality.

Perceived training quality	Age	N	Subset for alpha = 0.05	
			1	2
Tukey HSD[a,b]	36 to 45	124	3.4657	-
	Below 25	74	3.4730	-
	26 to 35	139	3.5288	3.5288
	Above 45	48	-	3.8021
	Sig.	-	0.952	0.101

Means for groups in homogeneous subsets are displayed.

Table 13. Descriptives of job role.

Job role		Frequency	Percent	Valid (%)	Cumulative (%)
Valid	Sr Mgr	7	1.8	1.8	1.8
	Mid Mgr	136	35.3	35.3	37.1
	Jr Mgr	121	31.4	31.4	68.6
	Programmers	121	31.4	31.4	100.0
	Total	385	100.0	100.0	-

Table 14. Test of homogeneity of perceived training.

Levene Statistic	df1	df2	Sig.
0.666	3	381	0.574

Table 15. ANOVA of perceived training quality.

Perceived training quality	Sum of squares	df	Mean square	F	Sig.
Between groups	3.056	3	1.019	1.509	0.212
Within groups	257.254	381	0.675	-	-
Total	260.31	384	-	-	-

Table 16. Descriptives of income level.

Income Level		Frequency	Percent	Valid (%)	Cumulative (%)
Valid	Below 2.5 L	42	10.9	10.9	10.9
	2.5 to 3 L	121	31.4	31.4	42.3
	3 to 4 L	96	24.9	24.9	67.3
	Above 4 L	126	32.7	32.7	100.0
	Total	385	100.0	100.0	-

Table 17. Test of homogeneity of perceived training quality.

Levene Statistic	df1	df2	Sig.
1.625	3	381	0.183

Table 18. ANOVA of perceived training quality.

Perceived training quality	Sum of squares	df	Mean square	F	Sig.
Between groups	1.204	3	0.401	0.751	0.522
Within groups	203.615	381	0.534	-	-
Total	204.818	384	-	-	-

Table 19. Descriptives of length of association.

Length of association		Frequency	Percent	Valid (%)	Cumulative (%)
Valid	Less than 1 year	11	2.9	2.9	2.9
	1 to 3 years	44	11.4	11.4	14.3
	3 to 5 years	60	15.6	15.6	29.9
	Above 5 years	270	70.1	70.1	100.0
	Total	385	100.0	100.0	-

Table 20. Test of homogeneity of perceived training quality.

Levene Statistic	df1	df2	Sig.
0.374	3	381	0.772

Table 21. ANOVA of perceived training quality.

Perceived training quality	Sum of squares	Df	Mean square	F	Sig.
Between groups	0.584	3	0.195	0.363	0.78
Within groups	204.234	381	0.536	-	-
Total	204.818	384	-	-	-

studied at 0.05 levels.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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