

MEDIATING EFFECTS IN THE RELATIONSHIP BETWEEN 360-DEGREE
FEEDBACK AND EMPLOYEE PERFORMANCE

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Abstract: 360-degree feedback has been linked to several positive outcomes like improved performance, better interpersonal communication, smoother work relationships, etc. The paper empirically examines the mediating effects in the relationship between 360-degree feedback and employee performance with a sample of executives (N=198) working in four organisations in Western India. The results show that interpersonal communication and quality of working life have a complete mediating effect. Leader member exchange quality and perceived organisational support were found to have a partial but significant mediating effect. An elementary form of an integrated model, which includes all the four mediating variables and their inter-relationships, has been developed conceptually. This model is examined and built up empirically using structural equation modelling.

Key words: 360-degree feedback, employee performance, mediating effects, structural equation modelling

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INTRODUCTION

360-degree feedback is a process whereby multiple sources provide evaluation for the assessee to offer a more balanced and comprehensive view of his/her performance. These evaluations may come from immediate superiors, subordinates, peers, customers, and self. Organisations need to go for 360-degree feedback since it is an effective tool to change the culture and norms of giving and receiving feedback (Dalton, 1998). 360-degree feedback may lead to smoother work relationship among managers and encourage use of teamwork (Antonioni, 1996; 2000). Citing the case of an organisation where 360-degree feedback system was implemented (Antonioni, 2000), the author suggests that 360-degree feedback system led to improved interpersonal communication about work behaviours and expectations. This in turn leads to smoother work relationships. Further, transparent and better quality discussions on process improvements with co-workers, and internal suppliers and customers are also likely to improve teamwork. It is suggested that 360-degree feedback brings positive changes in behaviour (Ghorpade, 2000) when used as a development tool (Bracken, 1994, Conger and Toegel, 2003; Gebelein, 1996; Nowack, 1993; Rogers, Rogers and Metlay, 2002) in an atmosphere of trust, openness and sharing. Researchers have linked 360-degree feedback to enhanced employee performance (Flannigan, 1997; Klagge, 1995; Morical, 1999; Swain & Schubot, 2004) by describing systems and case studies of organisations where these systems have been implemented. The improved performance may come through improved communication and receptiveness to feedback (Rao and Annapurna, 2002; Singh and Vohra, 2005), enhancement in skill levels of participants (Hazucha, Hezlett and Schneider, 1993) and enhanced continuous learning (Tornow, 1998). London and Smither (1995) contend that feedback from multiple sources enhances assessee's understanding of the self vis-à-vis other sources of rating. This, in turn could lead to setting more challenging goals, development in skills, positive changes in behaviour, and improved performance.

Studies have suggested that 360-degree feedback systems lead to enhanced employee performance but have tested this empirically. Further, some of the above mentioned variables (e.g. improved communication, smoother work relationships, etc.) are also related to each other. While literature is replete with studies looking at the positive effects of 360-degree feedback process, none of them have empirically looked at the mediating effects of other variables in these relationships. This study attempts to look at the effect of 360-degree feedback on performance empirically as well as the variables mediating the relationship between 360-degree feedback and employee performance.

THEORETICAL BACKGROUND AND HYPOTHESES

Effect of 360-Degree Feedback System on Employee Performance

Morical (1999) contends that 360-degree processes enhance performance, provide accurate feedback, communicate critical behaviours for success, and provide direction for individualised developmental planning. Tornow (1998) suggests that 360-degree feedback institutionalises performance management and thus leads to organisational development by focusing on key communication processes that promote clarity of performance expectations, feedback, and continuous learning. Researchers (Antonioni, 2000; Dalton, 1998; Ghorpade, 2000; Rao and Annapurna, 2002; Swain and Achubot, 2004) also suggest that 360-degree

feedback may have indirect effect on employee performance by bringing positive changes to their behaviour and improving their communication and receptiveness to objective feedback. Compared to other feedback and appraisal systems, 360-feedback provides a more comprehensive and balanced feedback that enhances performance. Brutus, Fleenor, and London (1998) point out that different rating sources provide unique information about the assessee's performance. It is likely that subordinates observe leadership, communication, and interpersonal skills while superiors note administrative, decision-making, and technical skills besides the dimension of personal motivation. Similarly, peers are likely to observe the performance dimensions of communication, interpersonal skills, decision-making, technical knowledge, and personal motivation while the customers focus on interpersonal, technical, personal motivation and customer orientation dimensions. This provides a complete picture of managerial effectiveness. Further, discrepancies between self-ratings and others' ratings motivate them to make behavioural adjustments for self-development provided they have a self-efficacy for development. Moreover, managers can use this information from others' ratings for goal setting, and performance is likely to improve with systematic planning and organisational support. Thus it is likely that the presence of 360-degree feedback system would have a greater positive effect on employee performance than other feedback systems as suggested in the following hypothesis.

Hypothesis 1. Presence of 360-degree feedback system will have a positive effect on employee performance.

Mediating Effect of Interpersonal Communication

360-degree feedback surveys substitute for what individuals hesitate to tell each other. Using a case study for illustration, Antonioni (2000) found that the CEO of the company believed that the 360-degree feedback process in his organisation improved the productivity of the employees by improving interpersonal communication about work behaviours and expectations. The employees also engaged more in conversations about work-related issues and concerns, which in turn encouraged teamwork and made it more effective. Another case study illustrated that besides providing feedback from multiple constituencies that a manager's role serve, 360-degree feedback brought out immediate and dramatic changes in behaviour when used as a developmental tool (Ghorpade, 2000). In a study on 18 top-level managers assessed by 239 assessors and reassessed by 189 assessors, Rao and Annapurna (2002) examined the magnitude of change exhibited in managerial roles and leadership qualities as a result of 360-degree feedback process. They found that participants exhibited high changes in areas like communication and relationship with subordinates for managerial roles, while little changes were observed in the areas like grooming subordinates, mentoring and guiding, non-bureaucratic nature, conflict resolution and active as a role model. Since improvement in interpersonal communication is linked to enhancement in performance (El-Ansary, 1993; Galimbert, Ignazi, Vercasi, and Riva, 2001), it seems likely that the effect of 360-degree feedback is transferred to performance improvement by increased interpersonal communication. This can be formally hypothesised as follows.

Hypothesis 2. Interpersonal communication will mediate the relationship between 360-degree feedback system and employee performance.

Mediating Effect of Leader Member Exchange Quality

Employees develop exchange relationships with immediate superiors, as evidenced by research on leader-member exchange by Wayne, Shore and Liden (1997). In their study, leader-member exchange was positively related to performance, organisational citizenship behaviour, and 'favour doing'. The results supported a social exchange perspective where an

employee helps a leader by performing required job activities well, and also by going beyond the job requirements in exchange for the benefits provided by the leader through leader-member exchange. The relationship between 360-degree feedback system and performance improvement can be expected to be mediated by the perceptions of the assessees toward the quality of leader member exchange leading to the following hypothesis.

Hypothesis 3. Leader member exchange quality will mediate the relationship between 360-degree feedback system and employee performance.

Mediating Effect of Perceived Organisational Support

Maurer, Barbeite and Mitchell (2002) found that the variables most highly associated with self-efficacy for development were access to learning and development resources, social support for development, and an emphasis on development by the organisation. These variables seem to indicate an individual's perception of organisational support forthcoming in his/her attempt at self-improvement. Employees appear to seek a balance in their exchange relationships with organisations by demonstrating attitudes and behaviours commensurate with the amount of commitment they feel the employer has for them (Wayne et al., 1997). By doing so, the repayment of these obligations reinforces giving and strengthens the mutually beneficial exchange between the employee and organisation (Dienesch and Liden, 1986). Employees develop exchange relationships with organisations, as evidenced by research on perceived organisational support (Wayne, et al., 1997). Outcomes associated with perceived organisational support were more clearly linked with fulfilling obligations to the organisation, including affective commitment, intentions to quit and citizenship behaviour. Eisenberger, Fasolo and Davis-LaMastro (1990) found a positive relationship between perceived organisational support and the constructiveness of anonymous suggestions for improving organisational effectiveness as judged in terms of the usefulness and concreteness of the suggestion. Given Brutus et al.'s (1998) contention that the discrepancy between self and others' ratings may motivate assessees to make behavioural adjustments for self-development provided they have a self-efficacy for development and this in turn may lead to improved performance, it seems likely that the relationship between 360-degree feedback system and performance improvement would be mediated by the perceptions of the assessees toward organisational support. This is formalised in the following hypothesis.

Hypothesis 4. Perceived organisational support will mediate the relationship between the 360-degree feedback system and employee performance.

Mediating Effect of Quality of Working Life

Tornow (1998) defines performance management as a process of managing effective work relationships that promote mutual understanding and opportunity to influence. 360-degree feedback thus acts as an organisational developmental tool, which helps create this connectivity and focuses on maintaining quality of working relationships. Further 360-degree feedback enhances communication, teamwork, perceptions of organisational support etc. as discussed in the preceding literature. Since these are the elements of quality of working life, it is plausible that 360-degree feedback enhances the perceptions of the quality of their working life among employees. Given that enhanced perceptions of quality of working life lead to better performance (Katz, Kochan, and Gobeille, 1983), it is plausible that the effect of 360-degree feedback is transferred to performance improvement by perceptions of better quality of working life. This is put forward in the following hypothesis.

Hypothesis 5. Quality of working life will mediate the relationship between 360-degree feedback system and performance.

Inter-Relationships among Mediating Variables

360-degree feedback involves better interaction with the superior owing to increased communication and interaction (Podsakoff and Jing-Lih, 1986) and thus could lead to better quality of exchange between the member and his superior. Kacmar, Zivnuska, Witt, and Gully (2003) have reported that the perceptions of quality of leader-member exchange are stronger among individuals reporting frequent communications with their supervisors than among those reporting infrequent communications. They also replicated the experiment with public sector workers in the same paper and found the results to be similar. Further, association has been found between a subordinate's report on the quality of their relationship with their supervisors and the perception of the supervisor about the quality of their communication (Yrle, Hartman, and Galle, 2002).

The measures of quality of working life include perceptions of working relationships, and support and encouragement from organisation and superiors, it stands to reason that interpersonal communication would have a direct effect on the perceptions of quality of working life as well. This is further bolstered by Craver's (1983) study, which suggests linkage between improved communications and improved quality of working life.

Although perceived organisational support and leader-member exchange have unique antecedents and are differentially related to outcome variables (Wayne, et al., 1997) it seems plausible that an enhanced perception of the quality of leader-member exchange would also enhance the perceptions of support from the organisation.

Studies (Gellis, Johngchun, and Sung, 2004; Kwakman, 2003) have suggested that there is a relationship between perceptions of quality of working life and those of organisational support.

Based on the preceding literature, an elementary model depicting these relationships can be developed as shown in Figure 1. These inter-relationships among mediating variables is examined later using structural equation modelling.

Insert Figure 1 about here

METHOD

Sample

The data for the survey was collected from executives working in 4 organisations in Western India. Three of these were service organisations while one of them was a manufacturing organisation. Out of these four organisations, two of them had 360-degree feedback system linked to reward and development and the remaining two had the conventional system in which only the superior did the appraisal. Of the 400 questionnaires sent out, 198 usable responses were obtained (49.5%). The respondents included 153 males (77.27%) and varied in terms of age and work experience. The average age of the respondents was 29.2 years and the average work experience was 51.78 months. The respondents were working at executive level in various departments.

Design and Procedures

The first statistical data analysis method to test the effect of mediating variables is structural equation modelling (SEM) using AMOS programme. The details summarised here are discussed in Byrne (2001). SEM is becoming a very popular tool for data analysis in

behavioural sciences, particularly for modelling the relationship between the observed and latent variables. Also, the estimation method is Maximum Likelihood Estimates (MLE). Unlike Ordinary Least Squares (OLS) regression estimates, MLE does not assume uncorrelated error terms. Two main assumptions of MLE are large sample size and multivariate normal distribution of indicator variables. The fit of the model is seen from two aspects: overall fit and relative fit. Two common measures of overall fit are: χ^2 (or Discrepancy) and Standardized Root Mean Residual (SRMR). χ^2 test simultaneously tests that specification of factor loadings, factor variances/covariances, and error variances are valid for the model under study. Higher associated probability value means closer fit between this model and the perfect fit. SRMR is the average difference between the predicted and observed variances and covariances in the model, based on standardized residuals. This index is available only for complete datasets. This index ranges from 0 to 1 and in a well-fitting model this value is small (0.05 or less). The two measures of relative fit are: Tucker-Lewis Index (TLI) and Root Mean Square Error of Approximation (RMSEA). TLI ranges from 0 to 1 and good fit is indicated by value close to 0.95 (for large samples). RMSEA is one of the indices that is less affected by sample size. The following cut-off points are considered for RMSEA: value less than 0.05 indicates good fit, value between 0.05 and 0.08 indicates reasonable fit, value between 0.08 and 0.10 indicates mediocre fit and value greater than 0.10 indicates poor fit.

Initially, the effect of the independent variable (X) on the dependent variable (Y) is seen. The critical ratio (c.r.) is calculated by dividing unstandardised estimate of the regression coefficient with its standard error (s.e.). The effect is statistically significant if the critical ratio has probability value less than 0.05. The mediating effect is present if the presence of the mediating variable (M) decreases the direct effect of X on Y. The direct effect becomes insignificant if the probability value of its critical ratio becomes greater than 0.05. In order to test for the significance level of the mediating effect, the following two models are compared: one, where regression weight of X on Y is freely estimated; and two, where this regression weight is fixed at 0. The difference in χ^2 values of the two models is seen. In case of complete mediation, this difference is insignificant.

Alternative method. There is an alternative method for testing the mediating effect. The estimation is done using Ordinary Least Squares (OLS) method. Preacher and Hayes (2004) have developed a macro for users of SPSS package that carries out the following six-step process. The first five steps are based on the method suggested by Baron and Kenny (1986).

1. b (YX): The first step establishes that there is an effect that may be mediated. The effect of the independent variable (X) on the dependent variable (Y) is seen by the following regression equation:

$$Y = \alpha_1 + a X + e_1$$

2. b (MX): The effect of the independent variable (X) on the mediating variable (M) is seen by the following regression equation:

$$M = \alpha_2 + b X + e_2$$

3. b (YM.X): The independent variable (X) is controlled to establish that the relationship of the dependent variable (Y) with the mediating variable (M) is not on account of both being caused by the independent variable. The regression equation is:

$$Y = \alpha_3 + c M + d X + e_3$$

4. b (YX.M): The fourth step also uses the equation given in the third step. In this step relationship between dependent and independent variable is seen after controlling for the mediating variable. Mediating effect is present if d is significantly less than a. $d = 0$ means that there is complete mediation.

5. Sobel: The mediating effect (a-d) is equal to $b*c$ (given that there is no missing data). The significance of the mediating effect is tested using Sobel Test:

$$z\text{-value} = b*c/s_{bc}, \text{ where } s_{bc} = \text{SQRT}(c^2*s_b^2 + b^2*s_c^2 + s_b^2*s_c^2)$$

This test assumes that sampling distribution of s_{bc} is normal. When z-value exceeds the critical value of ± 1.96 at $\alpha = 0.05$, one can reject the null hypothesis that there is no mediating effect.

6. Effect: In order to overcome the debatable assumption of normal distribution, Preacher and Hayes (2004) have recommended non-parametric bootstrapping procedure where no such assumption is required. A confidence interval is derived using the empirically-derived bootstrapped sampling distribution.

Measures

The presence/absence of 360-degree feedback process was a dummy variable having the value one when an organisation has 360-degree feedback process and 0 otherwise.

The scale used to measure perceptions about self-performance was developed for this study. It consisted of five items. The mean of the performance measure for this study came out to be 3.0081, with a median of 3.0000, a skewness of -0.002 and Kurtosis of -0.535. The standard error of skewness is 0.173 while the standard error of Kurtosis is 0.344. The responses show good distribution on performance since the mean and median are similar, and skewness and Kurtosis are less than twice their standard errors. Overall, there does not seem to be an evident bias due to the dependent variable measure used in this study. The Cronbach Coefficient Alpha for the sample in this study is 0.8811. The regression weights for all five items were significant at $p < 0.001$.

1. I feel that 360-degree feedback system (or current feedback and appraisal system) has been useful for my development.
2. I feel that 360-degree feedback system (or current feedback and appraisal system) has helped me understand my skill requirements better.
3. I feel that 360-degree feedback system (or current feedback and appraisal system) has helped me improve my working style.
4. I feel that 360-degree feedback system (or current feedback and appraisal system) has helped me understand my job requirements better.
5. I feel that 360-degree feedback system (or current feedback and appraisal system) would help me perform better at work.

The twenty-four items used to measure perceptions about interpersonal communication (adapted from Bienvenu, 1971) are shown in Appendix 1. The Cronbach Coefficient Alpha for the sample in this study is 0.9122. The regression weights for twenty-two items were significant at $p < 0.001$. The regression weights for third and fifth items were significant at $p < 0.01$.

The seven items used to measure perceptions about leader member exchange quality (Liden, Wayne and Stilwell, 1993) are shown in Appendix 2. The Cronbach Coefficient

Alpha for the sample in this study is 0.9105. The regression weights for all seven items were significant at $p < 0.001$.

The seventeen items used to measure perceived organisational support (Eisenberger, Huntington, Hutchinson, and Sowa, 1986) are shown in Appendix 3. The Cronbach Coefficient Alpha for the sample in this study is 0.8918. The regression weights for fifteen items were significant at $p < 0.001$. The regression weights for fourth and eleventh items were significant at $p < 0.01$.

The fourteen items used to measure perceptions about quality of working life (adapted from Carlson, 1978; Walton, 1973) are shown in Appendix 4. The Cronbach Coefficient Alpha for the sample in this study is 0.9098. The regression weights for all fourteen items were significant at $p < 0.001$.

RESULTS

There is strong support for Hypothesis 1 that presence of 360-degree feedback has a positive effect on employee performance. Table 1 shows the results for the structured equation modelling. The critical ratio of the unstandardised regression estimate is significant at $p < 0.001$, which means that 360-degree feedback has statistically significant positive effect on performance. The fit of the model is good from both aspects, overall fit and relative fit. χ^2 value at 8 degrees of freedom is 14.828. So the p value is greater than 0.05, which means a good overall fit. SRMR is 0.0385, which again indicates a well-fitting model. The two measures of relative fit, TLI and RMSEA are also within accepted standards. TLI is as high as 0.98, which indicates good fit. RMSEA is 0.066, which indicates reasonable fit.

Insert Table 1 about here

There is strong support for Hypothesis 2. Interpersonal communication has a complete mediating effect in the relationship between 360-degree feedback system and employee performance. Table 2 shows the model where the direct effect of 360-degree feedback on performance is statistically insignificant in the presence of interpersonal communication. The figure in bracket is the standardised regression estimate in the absence of interpersonal communication, which is statistically significant as mentioned above. The fit of the model is reasonable as indicated by RMSEA value of 0.069. The other measures of fit are slightly below the prescribed standards, probably because of substantial increase in parameter to sample size ratio (the number of parameters increased from 13 to 64). Significance level of the mediating effect is tested by comparing the two models: one, where regression weight of 360-degree feedback on performance is freely estimated; and two, where this regression weight is fixed at 0. The difference in χ^2 values of the two models at 1 degree of freedom has p value greater than 0.05, thus verifying complete mediation. The result of complete mediating effect of interpersonal communication is also confirmed by the alternative test of Preacher and Hayes (2004) using SPSS package.

Insert Table 2 about here

There is support for Hypothesis 3. However, the mediating effect of leader-member exchange quality on the relationship between 360-degree feedback system and employee

performance is partial. Table 3 shows the model that illustrates the decrease in significance level of the direct effect of 360-degree feedback on performance in the presence of leader-member exchange quality. SRMR value of 0.0497 indicates a well-fitting model. TLI value of 0.954 indicates good fit and RMSEA value of 0.071 indicates reasonable fit. The test for the significance level of the mediating effect by comparing two models shows p value of χ^2 statistic between 0.01 and 0.05, thus indicating partial mediation. However the alternative test of Preacher and Hayes (2004) using SPSS package shows that the leader-member exchange quality has complete mediating effect.

Insert Table 3 about here

There is support for Hypothesis 4. However, the relationship between 360-degree feedback system and employee performance is only partially mediated by perceived organisational support. The model in Table 4 illustrates the decrease in significance level of the direct effect of 360-degree feedback on performance in the presence of perceived organisational support. All measures of fit are slightly below the prescribed standards. The p value of χ^2 statistic in the test of comparing two models for the significance level of the mediating effect is between 0.01 and 0.05, thus verifying partial mediation. The result of partial mediating effect of perceived organisational support is also confirmed by the alternative test of Preacher and Hayes (2004) using SPSS package.

Insert Table 4 about here

There is strong support for Hypothesis 5. Quality of working life has a complete mediating effect in the relationship between 360-degree feedback system and employee performance. The model in Table 5 depicts that the direct effect of 360-degree feedback on performance is statistically insignificant in the presence of quality of working life. RMSEA value of 0.086 indicates a mediocre fit of the model. The other measures of fit are again slightly below the prescribed standards. Significance level of the mediating effect tested by comparing the two models verifies complete mediation. The alternative test of Preacher and Hayes (2004) using SPSS package confirms the complete mediating effect of quality of working life.

Insert Table 5 about here

The Integrated Model

Table 6 shows the results for the structured equation modelling. The model in Table 6 depicts the inter-relationships among the mediating variables. Unstandardised regression estimates of the relationships shown here are statistically significant with p value of critical ratio less than 0.001. The p values of other relationships are greater than 0.05 and so their regression weights have not been freely estimated but have been fixed at 0. In other words, statistically insignificant relationships are not considered in the model to have a clear and simple model. The presence of interpersonal communication, leader-member exchange

quality, perceived organisational support, and quality of working life makes the relationship between 360-degree feedback and performance statistically insignificant.

Insert Table 6 about here

The dependent variable (performance) is significantly affected by perceived organisational support, which in turn is significantly affected by leader-member exchange quality and quality of working life. Both leader-member exchange quality and quality of working life are significantly affected by interpersonal communication. It is also to be noted that leader-member exchange quality significantly affects perceptions about quality of working life. The independent variable (360-degree feedback) has a statistically significant effect on interpersonal communication.

The fit of the model is reasonable as indicated by RMSEA value of 0.073. However, the other measures of fit are below the prescribed standards (probable reason may again be substantial increase in parameter to sample size ratio).

CONCLUSION

The paper makes major contribution in empirically proving the relationship between 360-degree feedback and employee performance. Though the works by Morical (1999), Tornow (1998), Antonioni (2000), Dalton (1998), Ghorpade (2000), Rao and Annapurna (2002), and Swain and Achubot (2004) suggested that 360-degree feedback has a positive effect on employee performance, this relationship had not been previously examined empirically.

The results of the structural equation modelling show that both, interpersonal communication and quality of working life, have a complete mediating effect in the relationship between 360-degree feedback and performance. Further, both, leader member exchange quality and perceived organisational support, have partial but significant mediating effect. This implies that the improvement in performance by 360-degree feedback is largely due to improved interpersonal communication, finer leader member exchange quality, more perceived organisational support, and better quality of working life. These four aspects need to be taken care of by organisations looking to maximise the effect of 360-degree feedback on employee performance. This paper is an original effort to conceptualise the variables mediating the relationship between 360-degree feedback and employee performance. Not only the individual effect of each variable is conceptualised and empirically examined, but also the relationships among them are explored to get a holistic picture of the phenomenon.

The integrated model shows that perceived organisational support significantly affects employee performance. Organisations looking to improve employee performance should take cognisance of this direct link. The effects of leader-member exchange quality and quality of working life on perceived organisational support has great practical and theoretical significance and needs to be probed more deeply. Results also show that leader-member exchange quality significantly affects perceptions about quality of working life. Finally it is also seen that interpersonal communication mediates the relationship of 360-degree feedback system with leader-member exchange quality (as suggested by Podsakoff and Jing-Lih, 1986) and quality of working life.

This paper also advances the works in the field of interpersonal communication, leader member exchange quality, perceived organisational support, and quality of working life in the context of 360-degree feedback.

Another interesting inference can be made from the results of this study. The sample for this study was drawn from the organisations that used 360-feedback both for developmental purposes and determining rewards and benefits for their managers. A strong positive relation between the presence of this system and improvement in employee performance suggests that 360-degree feedback system could be utilised in the reward system in addition to the development system. This view differs from the observations made in the earlier studies (e.g., Bracken, 1994, Conger and Toegel, 2003; Gebelein, 1996; Nowack, 1993; Rogers, Rogers and Metlay, 2002), which suggested that 360-degree feedback had utility only if used as a development tool and created problems when used in making reward related decisions. The argument given was that assessees attributed discrepancies between self-assessment and others' assessment to external causes if the feedback was linked to pay and other tangible benefits. This does not seem to be the case here with this sample. Perhaps, if administered transparently in an atmosphere of trust and openness, 360-degree feedback may encourage assessees to accept constructive criticism and accept deficiencies. While conclusions from the current study have to be drawn with caution given the cross sectional nature, this certainly suggests that the usefulness of 360-degree feedback in the reward system needs to be reconsidered.

Support from the organisation and superiors, and quality of work life in the organisation may enhance the assessee's self-efficacy for development. It also creates perceptions of commitment and involvement on the part of the top management. This in turn could motivate him to make behavioural changes for self-development as suggested by the theory of social exchange. This is in line with studies (e.g., Frisch, 2001) which suggest that the effectiveness of 360-degree feedback process is enhanced if the organisation supports the integrity of both the collection and use of resultant data efficiently, when superiors are able and motivated to support the development of those who will receive the feedback, and when the recipients of the feedback have self-efficacy for improvement.

Increased communication would go a long way in creating an atmosphere of openness, transparency and trust in the organization. 360-degree feedback itself allows people to talk about things they may hesitate to discuss otherwise. This is in line with the study (Mahapatra and Chawla, 2002) that concludes that Indian managers have a strong inclination to understand the requirements and expectations of the job from the superiors on a continuous basis in addition to high levels of liaison and communicating with them to get the required guidance and support.

The study is cross-sectional in nature and therefore causal inferences would need to be drawn with caution. Future studies may conduct longitudinal studies that are confirmatory in nature. Causal inferences in cross-sectional study should have conceptual bases and this paper has tried to provide such bases. The information on performance was self-reported and thus is liable to be affected by social desirability and self-enhancement effects. This problem was however addressed by giving the respondents limited time to respond and by assuring to them that the data was confidential. The skewness and Kurtosis statistics also suggest that there is no apparent external bias in the sample. However, future studies may use performance data reported by peers/ superiors/ subordinates or a combination of these for the individual assessees.

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Figure 1: An Elementary Model of Inter-Relationships among the Mediating Variables

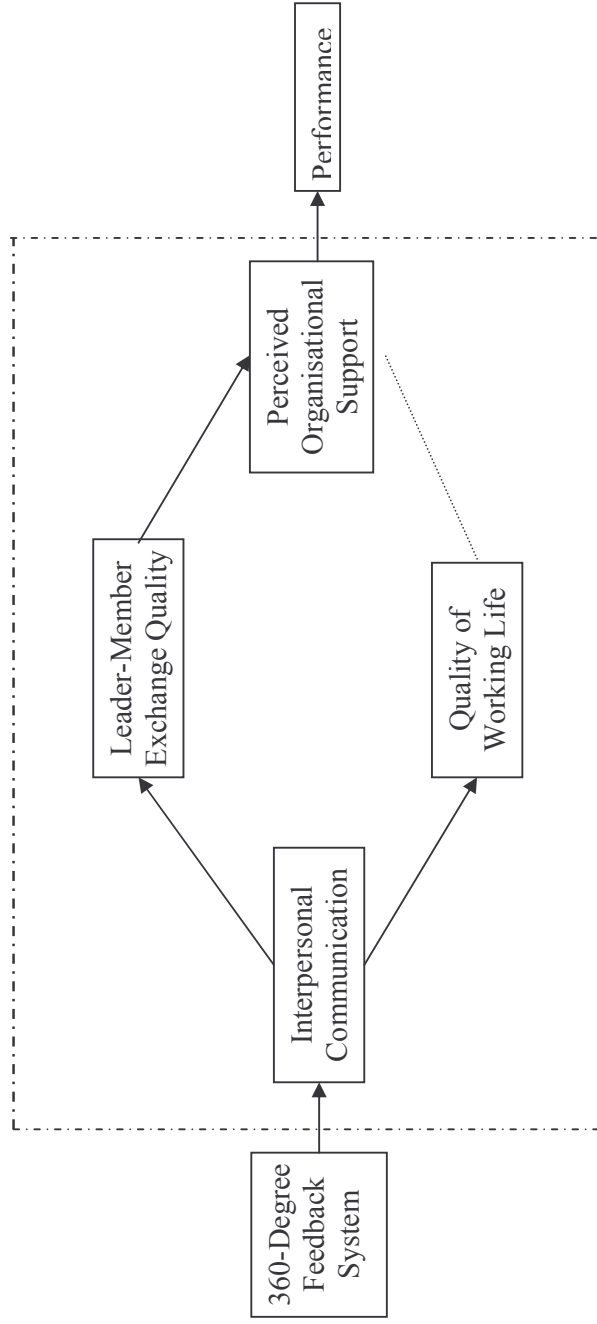


Table 1: Effect of 360-Degree Feedback System on Performance

(i) Model				
<pre> graph LR A[360-Degree Feedback System] -- 0.530*** --> B[Performance] </pre>				
(ii) AMOS Results (N = 198)				
<i>Regression Weights</i>	<i>unstandardised estimate</i>	<i>s.e.</i>	<i>c.r.</i>	<i>standardised estimate</i>
Performance ← 360-Degree	0.762	0.115	6.652***	0.530
<i>Selected Fit Measures</i>	χ^2_{df}	<i>SRMR</i>	<i>TLI</i>	<i>RMSEA</i>
	14.828 ₈	0.0385	0.980	0.066

*** for $p < 0.001$; ** for $p < 0.01$; and * for $p < 0.05$.

The supercripts * shown for standardised estimates in the model are taken from critical ratios of unstandardised estimates.

Table 2: Mediating Effect of Interpersonal Communication

(i) Model						
(ii) AMOS Results (N = 198)						
<i>Regression Weights</i>		<i>unstandardised estimate</i>	<i>s.e.</i>	<i>c.r.</i>	<i>standardised estimate</i>	
Interpersonal Communication ← 360-Degree		0.925	0.116	8.003***	0.712	
Performance ← Interpersonal Communication		0.754	0.121	6.247***	0.679	
Performance ← 360-Degree		0.000			0.000	
<i>Selected Fit Measures</i>		χ^2_{df}	<i>SRMR</i>	<i>TLI</i>	<i>RMSEA</i>	
		778.703 ₄₀₁ ***	0.0686	0.841	0.069	
<i>Test for Mediation</i>		778.703 ₄₀₁ - 777.212 ₄₀₀ = 1.491₁				
(iii) SPSS Results (N = 198)						
Direct and Total Effects (Y = performance, X = 360-degree feedback system, and M = interpersonal communication)						
	<i>coefficient</i>	<i>s.e.</i>	<i>t value</i>			
b (YX)	0.8985	0.1274	7.0501***			
b (MX)	0.8160	0.0653	12.4990***			
b (YM.X)	0.7627	0.1287	5.9268***			
b (YX.M)	0.2762	0.1577	1.7515			
Indirect Effect and Significance Using Normal Distribution						
	<i>value</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>z value</i>	
Sobel	0.6223	0.1165	0.3940	0.8507	5.3413***	
Bootstrap Results for Indirect Effect (Number of Bootstrap Resamples = 2000)						
	<i>mean</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>LL 99 CI</i>	<i>UL 99 CI</i>
Effect	0.6228	0.1359	0.3590	0.8919	0.2726	0.9767

*** for p < 0.001; ** for p < 0.01; and * for p < 0.05.

The superscripts * shown for standardised estimates in the model are taken from critical ratios of unstandardised estimates.

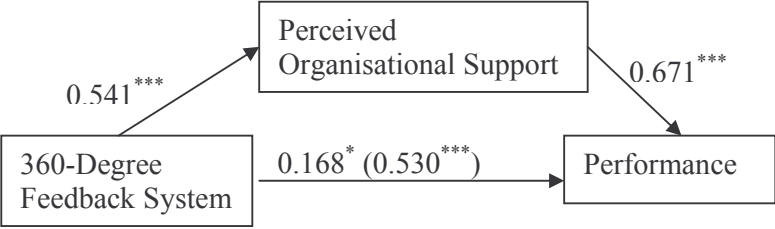
Table 3: Mediating Effect of Leader Member Exchange Quality

(i) Model						
(ii) AMOS Results (N = 198)						
<i>Regression Weights</i>		<i>unstandardised estimate</i>	<i>s.e.</i>	<i>c.r.</i>	<i>standardised estimate</i>	
Leader Member Exchange Quality ← 360-Degree		0.695	0.104	6.706***	0.524	
Performance ← Leader Member Exchange Quality		0.859	0.122	7.061***	0.768	
Performance ← 360-Degree		0.191	0.086	2.236*	0.129	
<i>Selected Fit Measures</i>		χ^2_{df}	<i>SRMR</i>	<i>TLI</i>	<i>RMSEA</i>	
		123.651 ₆₂ ***	0.0497	0.954	0.071	
<i>Test for Mediation</i>		128.645 ₆₃ - 123.651 ₆₂ = 4.994 ₁ *				
(iii) SPSS Results (N = 198)						
Direct and Total Effects (Y = performance, X = 360-degree feedback system, and M = leader member exchange quality)						
	<i>coefficient</i>	<i>s.e.</i>	<i>t value</i>			
b (YX)	0.8985	0.1274	7.0501***			
b (MX)	0.9058	0.1090	8.3127***			
b (YM.X)	0.8248	0.0594	13.8909***			
b (YX.M)	0.1514	0.1053	1.4367			
Indirect Effect and Significance Using Normal Distribution						
	<i>value</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>z value</i>	
Sobel	0.7471	0.1049	0.5414	0.9528	7.1195***	
Bootstrap Results for Indirect Effect (Number of Bootstrap Resamples = 2000)						
	<i>mean</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>LL 99 CI</i>	<i>UL 99 CI</i>
Effect	0.7450	0.0947	0.5650	0.9368	0.5110	0.9863

*** for p < 0.001; ** for p < 0.01; and * for p < 0.05.

The superscripts * shown for standardised estimates in the model are taken from critical ratios of unstandardised estimates.

Table 4: Mediating Effect of Perceived Organisational Support

(i) Model						
 <pre> graph LR A[360-Degree Feedback System] -- 0.541*** --> B[Perceived Organisational Support] B -- 0.671*** --> C[Performance] A -- 0.168* (0.530***) --> C </pre>						
(ii) AMOS Results (N = 198)						
<i>Regression Weights</i>		<i>unstandardised estimate</i>	<i>s.e.</i>	<i>c.r.</i>	<i>standardised estimate</i>	
Perceived Organisational Support ← 360-Degree		0.730	0.109	6.715***	0.541	
Performance ← Perceived Organisational Support		0.730	0.116	6.262***	0.671	
Performance ← 360-Degree		0.246	0.097	2.544*	0.168	
<i>Selected Fit Measures</i>		χ^2_{df}	<i>SRMR</i>	<i>TLI</i>	<i>RMSEA</i>	
		776.283 ₂₂₀ ***	0.1380	0.745	0.113	
<i>Test for Mediation</i>		782.782 ₂₂₁ - 776.283 ₂₂₀ = 6.499 ₁ *				
(iii) SPSS Results (N = 198)						
Direct and Total Effects (Y = performance, X = 360-degree feedback system, and M = perceived organizational support)						
	<i>coefficient</i>	<i>s.e.</i>	<i>t value</i>			
b (YX)	0.8985	0.1274	7.0501***			
b (MX)	0.7099	0.0839	8.4650***			
b (YM.X)	0.5827	0.1005	5.7972***			
b (YX.M)	0.4849	0.1379	3.5160***			
Indirect Effect and Significance Using Normal Distribution						
	<i>value</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>z value</i>	
Sobel	0.4136	0.0869	0.2433	0.5839	4.7605***	
Bootstrap Results for Indirect Effect (Number of Bootstrap Resamples = 2000)						
	<i>mean</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>LL 99 CI</i>	<i>UL 99 CI</i>
Effect	0.4070	0.0812	0.2365	0.5559	0.1632	0.6006

*** for p < 0.001; ** for p < 0.01; and * for p < 0.05.

The superscripts * shown for standardised estimates in the model are taken from critical ratios of unstandardised estimates.

Table 5: Mediating Effect of Quality of Working Life

(i) Model						
<pre> graph LR A[360-Degree Feedback System] -- 0.664*** --> B[Quality of Working Life] B -- 0.740*** --> C[Performance] A -- 0.000 (0.530***) --> C </pre>						
(ii) AMOS Results (N = 198)						
<i>Regression Weights</i>	<i>unstandardised estimate</i>	<i>s.e.</i>	<i>c.r.</i>	<i>standardised estimate</i>		
Quality of Working Life ← 360-Degree	1.185	0.119	9.962***	0.664		
Performance ← Quality of Working Life	0.605	0.077	7.873***	0.740		
Performance ← 360-Degree	0.000			0.000		
<i>Selected Fit Measures</i>	χ^2_{df}	<i>SRMR</i>	<i>TLI</i>	<i>RMSEA</i>		
	408.074 ₁₆₆ ***	0.0717	0.875	0.086		
<i>Test for Mediation</i>	408.074 ₁₆₆ - 406.935 ₁₆₅ = 1.139 ₁					
(iii) SPSS Results (N = 198)						
Direct and Total Effects (Y = performance, X = 360-degree feedback system, and M = quality of working life)						
	<i>coefficient</i>	<i>s.e.</i>	<i>t value</i>			
b (YX)	0.8985	0.1274	7.0501***			
b (MX)	0.9675	0.0812	11.9217***			
b (YM.X)	0.7632	0.0983	7.7664***			
b (YX.M)	0.1600	0.1467	1.0911			
Indirect Effect and Significance Using Normal Distribution						
	<i>value</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>z value</i>	
Sobel	0.7385	0.1138	0.5155	0.9614	6.4913***	
Bootstrap Results for Indirect Effect (Number of Bootstrap Resamples = 2000)						
	<i>mean</i>	<i>s.e.</i>	<i>LL 95 CI</i>	<i>UL 95 CI</i>	<i>LL 99 CI</i>	<i>UL 99 CI</i>
Effect	0.7323	0.1114	0.5099	0.9521	0.4250	1.0258

*** for p < 0.001; ** for p < 0.01; and * for p < 0.05.

The superscripts * shown for standardised estimates in the model are taken from critical ratios of unstandardised estimates.

Table 6: Integrated Model

(i) Model				
<pre> graph LR A[360-Degree Feedback System] -- 0.714*** --> B[Interpersonal Communication] B -- 0.741*** --> C[Leader Member Exchange Quality] B -- 0.682*** --> D[Quality of Working Life] C -- 0.349*** --> D C -- 0.664*** --> E[Perceived Organisational Support] D -- 0.340*** --> E E -- 0.816*** --> F[Performance] </pre>				
(ii) AMOS Results (N = 198)				
<i>Regression Weights</i>	<i>unstandardised estimate</i>	<i>s.e.</i>	<i>c.r.</i>	<i>standardised estimate</i>
Interpersonal Communication ← 360-Degree	0.935	0.115	8.152***	0.714
Leader Member Exchange Quality ← Interpersonal Communication	0.754	0.112	6.711***	0.741
Quality of Working Life ← Interpersonal Communication	0.838	0.116	7.199***	0.682
Quality of Working Life ← Leader Member Exchange Quality	0.420	0.075	5.582***	0.349
Perceived Organisational Support ← Leader Member Exchange Quality	0.709	0.112	6.307***	0.664
Perceived Organisational Support ← Quality of Working Life	0.301	0.068	4.409***	0.340
Performance ← Perceived Organisational Support	0.851	0.112	7.624***	0.816
<i>Selected Fit Measures</i>	χ^2_{df}	<i>SRMR</i>	<i>TLI</i>	<i>RMSEA</i>
	4504.956 ₂₁₈₅ ***	0.0952	0.721	0.073

*** for $p < 0.001$; ** for $p < 0.01$; and * for $p < 0.05$.

The superscripts * shown for standardised estimates in the model are taken from critical ratios of unstandardised estimates.

Appendix 1
Scale used to measure perceptions about interpersonal communication
(adapted from Bienvenu, 1971)

No.	Items
1.	Do your words come out the way you would like them to in conversation?
2.	When you are asked a question that is not clear, do you ask the person to explain what he means?
3.	When you are trying to explain something, do other persons have a tendency to put words in your mouth?
4.	Do you merely assume the other person knows what you are trying to say without your explaining what you really mean?
5.	Do you ever ask the other person to tell you how he feels about the point you may be trying to make?
6.	Is it difficult for you to talk with other people?
7.	In conversation, do you talk about things that are of interest to both you and the other person?
8.	Do you find it difficult to express your ideas when they differ from those around you?
9.	Do you refrain from saying something that you know will only hurt others or make matters worse?
10.	Is it difficult to accept constructive criticism from others?
11.	When someone has hurt your feelings, do you discuss this with him?
12.	Does it upset you a great deal when someone disagrees with you?
13.	When a problem arises between you and another person, can you discuss it without getting angry?
14.	Are you satisfied with the way you settle your differences with others?
15.	Generally, are you able to trust other individuals?
16.	Do you find it difficult to compliment and praise others?
17.	Do you deliberately try to conceal your faults from others?
18.	Do you help others to understand you by saying how you think, feel and believe?
19.	In conversation, do you let the other person finish talking before reacting to what he says?
20.	Do you find yourself not paying attention while in conversation with others?
21.	In a discussion is it difficult for you to see things from the other person's point of view?
22.	In conversation, can you tell the difference between what a person is saying and what he may be feeling?
23.	While speaking, are you aware of how others are reacting to what you are saying?
24.	Do you admit that you are wrong when you know that you are wrong about something?

Appendix 2
Scale used to measure perceptions about leader member exchange quality
(Liden, Wayne and Stilwell, 1993)

No.	Items
1.	Do you know where you stand with your leader...do you usually know how satisfied your leader is with what you do?
2.	How well does your leader understand your job problems and needs?
3.	How well does your leader recognize your potential?
4.	Regardless of how much formal authority he/she has built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work?
5.	Again, regardless of the amount of formal authority your leader has, what are the chances that he/she would "bail you out" at his/her expense?
6.	I have enough confidence in my leader that I would defend and justify his/her decision if he/she were not present to do so.
7.	How would you characterize your working relationship with your leader?

Appendix 3
Scale used to measure perceived organisational support
(Eisenberger, Huntington, Hutchinson, and Sowa, 1986)

No.	Items
1.	The organisation values my contribution to its well-being.
2.	If the organisation could hire someone to replace me at a lower salary it would do so.
3.	The organisation fails to appreciate any extra effort from me.
4.	The organisation strongly considers my goals and values.
5.	The organisation would ignore any complaint from me.
6.	The organisation disregards my best interests when it makes decisions that affect me.
7.	Help is available from the organisation when I have a problem.
8.	The organisation really cares about my well-being.
9.	The organisation is willing to extend itself in order to help me perform my job to the best of my ability.
10.	Even if I did the best job possible, the organisation would fail to notice.
11.	The organisation is willing to help me when I need a special favour.
12.	The organisation cares about my general satisfaction at work.
13.	If given the opportunity, the organisation would take advantage of me.
14.	The organisation shows very little concern for me.
15.	The organisation cares about my opinions.
16.	The organisation takes pride in my accomplishments at work.
17.	The organisation tries to make my job as interesting as possible.

Appendix 4
Scale used to measure perceptions about quality of working life
(adapted from Carlson, 1978; Walton, 1973)

No.	Items
1.	Is the physical working environment in your organisation good?
2.	Are the working conditions in your organisation safe and healthy?
3.	Does the organisation take care of employee welfare?
4.	Are there excessive work demands and pressures in your job that might interfere with doing the job well?
5.	Is your working relationship with your superiors good?
6.	Do employees in work groups provide support and encouragement to each other?
7.	Does your organisation provide you with job security?
8.	Is advancement in your organisation based on merit?
9.	Do you feel committed to and have concern for the future of your organisation?
10.	Do you get opportunities to use your own capabilities on your job?
11.	Does your organisation perform in a socially beneficial manner?
12.	Does your organisation involve you in decision-making processes?
13.	Does your organisation provide you with adequate financial compensation?
14.	Do you work with a disturbed state of mind?