

The factor structure of the competing values framework: Roles managers display and consider important from manager and others' perspectives

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ABSTRACT

The Competing Values Framework (CVF) describes eight leadership roles that managers must display to be effective. The current study investigated the factor structure of these roles. Six hundred and fifty middle managers participated in a 360° feedback program that sought responses from their bosses (n = 573), peers (n = 2230) and staff (n = 2246). Confirmatory factor analyses identified four factors – Innovator, Broker, Deliverer and Developer – that were both displayed and considered important by raters. Some of the original roles did not load successfully onto the factors and were discarded. New items are required to measure the roles, with tests conducted for gender, cultural and sector differences. The findings have implications for 360° feedback processes used in assessing managers. No researchers have looked at the factor structure of role importance and compared it to the factor structure of roles displayed. To ascertain role significance will assist with our understanding of the benchmarks used to evaluate behaviour.

Keywords: Leadership roles, self and others' evaluations, conceptual equivalence, psychometric equivalence.

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INTRODUCTION

The competing values framework (CVF) has been used extensively to measure leadership roles that managers display. Less use has been made of the framework when identifying the roles managers regard as important. This framework is frequently used as part of 360° feedback programs. The purpose of the current study is to determine the actual structure of the roles displayed and importance. Also of interest is a comparison between the perceptions of the manager and their significant others (boss, peer and staff) of these roles.

COMPETING VALUES FRAMEWORK (CVF)

Over the last two decades the CVF has attracted a lot of attention from both researchers and practitioners alike. Robert Quinn and his associates originally developed the model to explain the various leadership roles required for personal effectiveness in complex organisational environments (Quinn and McGrath 1982; Quinn and Rohrbaugh 1983; Quinn 1988). This model identified eight roles that managers must deliver if they are to be effective. The eight roles are Innovator, Broker, Producer, Director, Coordinator, Monitor, Facilitator and Mentor. A brief description of the behaviours associated with each of these roles is provided in Appendix A.

One line of research supports the initial conceptualisation of the CVF being an eight role model whether it is applied to managers (Giek and Lees 1993; Denison, Hooijberg et al. 1995; Hooijberg and Choi 2000; Hooijberg and Choi 2001; Martin and Simons 2002) or CEOs (Hart and Quinn 1993; Wyse and Vilkinas 2004). However other studies have raised some uncertainty about the number of roles, Hooijberg and Choi (2000; Hooijberg and Choi 2001) only found support for six roles.

The purpose of the current study is to address this point of conjecture and determine the factor structure of the CVF. Note the above table only focusses on the CVF roles that managers display. Quinn and his

colleagues did develop measures for the importance of these roles. Both display and importance of the roles will be the focus of the current study.

Previous Research: Roles Displayed

Hooijberg and Choi (2000) investigated the factor structure of the CVF model to determine if it is comprised of eight roles. Using a 360 degree feedback approach with 252 managers and their staff, peers and bosses from public utilities, they argued that there are six rather than eight roles operating in the model. Using confirmatory factor analysis (CFA) they found that high intercorrelations existed among Producer, Director and Coordinator. This suggested to them the existence of a coalesced factor which they labelled Goal Achievement. In another study undertaken in the public sector, the same authors reported further support for their six role model (Hooijberg & Choi, 2001). The six roles were Innovator, Broker, Goal Achievement, Monitor, Facilitator and Mentor.

Taking a different approach Shim, Lusch, & Goldsberry (2002) used cluster analysis to explore the structure of the CVF roles. Their study involved 205 retail managers. They identified three clusters which they labelled loner/internal focus (Coordinator, Monitor), team builder/goal oriented (Mentor, Facilitator, Producer and Director) and conceptual producer/external focus (Innovator, Broker).

Other research on the CVF has been interested in the spatial representation of the model (Quinn 1992; Quinn 1992; Quinn 1992; Denison, Hooijberg et al. 1995; Buenger, Daft et al. 1996; Kalliath, Bluedorn et al. 1999; Vilkinas and Cartan 2006). In the main, the results of their work confirmed that the CVF was a two dimensional model with eight roles.

Previous Research: Role Importance

Quinn also identified and developed a measure for the importance of each of the eight roles originally advocated in his research (Quinn 1992; Quinn 1992; Quinn 1992). Quinn stated that:

Comparing your NOW scores with your SHOULD scores will give you an indication of how closely your managerial behaviours are in line with those demanded by your position. (pp.10)

To date there has been no published research on their factor structure and the assumption has been made that it is the same as for the roles displayed.

Rater Perceptions

The use of 360° feedback processes in organisations as a management development tool has increased significantly in recent years (Becton and Schraeder 2004; Diefendorff, Silverman et al. 2005); and it is important to know whether managers and their significant others' (boss, peers and staff) evaluations differ and to what extent. It is also important to know if the evaluations of the significant others (SO) are in agreement with each other. Shipper and Davy (2002), in their study of managerial skills of 1125 middle managers, reported that the evaluations of peers and staff were more accurate than manager evaluations.

Purpose of study

The purpose of the current study was to determine:

- the factor structure for each rater group: the manager themselves, boss, peer and staff for roles displayed, and role importance.
- if the raters agreed or disagreed with their perceptions of the roles the managers displayed, and role importance.
- if the raters thought that the roles should be displayed more than they currently were.

The answers to these questions will add to previous research aimed at confirming the number of roles within the CVF. Also, given the popularity of 360° feedback as a performance management tool, it will be of assistance to practitioners; it will provide insights into both the level of rater agreement on leadership roles and performance [as recognised by Hooijberg and Choi (2000) and Cheung (1999)].

METHOD

Participants

Six hundred and fifty (650) middle managers located in organisations throughout Australia were recruited for the study. The group was heterogeneous as they came from a range of organizations: eg public sector, private sector and a number of industries (electricity, water supply, defence). There was also diversity in their occupations: eg engineers, scientists, administrators, accountants and trade people. Each was participating in a management development program developed for their organisation. The participants were predominantly male (71.38%), with an average age of 40.97 years.

Data were collected based on a 360° feedback process commonly used in organisations (Alimo-Metcalf 1998; Dalton 1998; Hooijberg and Choi 2000; Hooijberg and Choi 2001; Toegel and Conger 2003). Each manager selected a set of their staff (N = 2246), peers (N = 2230) and bosses (N = 573), referred to as their significant others, to respond to a questionnaire. Each respondent had frequent contact with and overall knowledge of the manager in their managerial role.

Questionnaire: Roles Displayed

The questionnaire (see Appendix A) measured the eight operational roles using the measures developed by Quinn et al. (2003) and Denison et al. (1995) who used these items in their study of 700 managers. They reported that the measures for each of the eight roles 'are separate and distinct and have been measured with some accuracy' (Denison et al. 1995, p.533).

For each role there were two descriptive phrases. In the role of Innovator, for example, responses were sought to the phrases: 'Comes up with inventive ideas' and 'Experiments with new concepts and ideas'. Responses were recorded on a seven-point Likert scale ranging from 1, anchored by *almost never*, to 7, anchored by *almost always*.

Questionnaire: Role Importance

The same items, as for display, were used to measure the importance of each role. Responses were recorded on a 7-point Likert scale ranging from 1, anchored by *not important at all*, to 7, anchored by *very important*.

DATA ANALYSIS

Roles Displayed

To determine the factor structure of the roles displayed, five confirmatory factor analyses were performed on the leadership roles, one for each rater group: the managers themselves, their boss, peers and staff and one for all the raters combined. EFA analysis was appropriate as the CVF predicted a particular structure (Gerbing and Hamilton 1996). The 16 items used to measure the extent to which each of the eight roles was displayed were entered into the factor analyses. The principal components method was used to extract the initial solution (Lee and Hooley 2004). Then the varimax rotation method with Kaiser normalization was employed. The CVF predicted that eight factors would emerge from the analysis. The actual number of factors accepted was based on their eigenvalue and the variance explained (Kim and Mueller 1978). To determine if there were any significant differences in the raters' perceptions of displayed roles, a 4 x 4 analysis of variance (ANOVA) with Role (Innovator, Broker, Deliverer, Developer) as the within-subject factor and Position (boss, peer, staff, manager) as the between-subject factor was undertaken. As the assumption for Mauchley's test of sphericity was not met, the results were corrected using the Huynh-Feldt statistic.

Role Importance

To determine the factor structure of role importance, five exploratory factor analyses (EFA) were performed on the leadership roles, one for each rater group: the managers themselves and their boss; peers and staff; and one for all the raters combined. The 16 items used to measure the extent to which each of the eight roles was important were entered the factor analyses. As above, the principal components method was used to extract the initial solution. Then the varimax rotation method with Kaiser

normalization was employed. The CVF predicted that eight factors would emerge from the analysis. The actual number of factors accepted was based on their eigenvalue and the variance explained (Kim and Mueller 1978).

To determine if there were any significant differences in the raters' perceptions of role importance a 4 x 4 analysis of variance (ANOVA) with Role (Innovator, Broker, Deliverer, Developer) as the within-subject factor and Position (boss, peer, staff, manager) as the between subject factor was undertaken. As the assumption for Mauchley's test of sphericity was not met, the results were corrected using the Huynh-Feldt statistic.

Display – Importance Difference

To determine if each of the roles should be displayed more than they currently were, a series of paired t-tests were performed.

RESULTS

Roles Displayed

Using an eigenvalue equal to 1.0 or more and variance explained of greater than 5.0 per cent the optimal number of factors to be extracted proved to be four (see Table 1). Eleven items from the questionnaire loaded onto four unique factors for each rater with minimum cross loadings. The cross loadings were less than .450. A factor loading of 0.3 or greater is regarded as significant for samples of greater than 350 (Hair, Anderson et al. 1998). The amount of variance explained by each factor for each rater is shown in Table 1. It ranged from 15.38% for Innovator to 26.36 % for Deliverer, with the cumulative variance being 78.57%.

For each of the raters, factor 1 was titled the Deliverer as it was composed of four of the six items that measure the producer (10,12), director (13) and coordinator (11). This coalesced role is about getting the work done, setting priorities and coordinating activities. The second factor was titled Developer as it contained three of the four items used to measure mentor (5, 7) and facilitator (8). This factor is about

developing individuals and teams as suggested by the two roles. The next two factors are the same as predicted under the CVF. Factor 3 was titled the Broker as it contained the items (2, 14) to measure that role and factor 4 was titled Innovator as it contained the items (1, 6) used to measure this role. The two items measuring the Monitor identified within the CVF did not load onto one factor consistently across the four raters. The same factors were identified by the four raters(see Appendix B).

Measures of internal consistency (Cronbach's alpha) were computed for each factor and are also reported in Table 1. They ranged from .79 for Innovator to .87 for Deliverer. Each of the alpha coefficients was greater than .70 which is acceptable (Hair, Anderson et al. 1998; Kerlinger and Lee 2000).

Role Importance

Using an eigenvalue equal to 1.0 or more and variance explained of greater than 5.0 per cent the optimal number of factors to be extracted proved to be four (see Table 1). Eleven items from the questionnaire loaded onto four unique factors for each rater with minimum cross loadings. The cross loadings were less than .450. The amount of variance explained by each factor for each rater is shown in Table 1. It ranges from 14.04% for Innovator to 23.04% for Deliverer, with cumulative variance explained being 72.08%. For each of the raters, factor 1 contained the same items as did roles displayed. It was titled the Deliverer. The second factor was titled Developer as it contained the same three items as were found under factor 2 in roles displayed. The next two factors are the same as predicted under the CVF and for roles displayed. Thus factor 3 was titled the Broker and factor 4 was titled Innovator. As with roles displayed, for the four raters the same items loaded onto the same factors (see Appendix C). Similarly, the two items measuring the Monitor identified within the CVF did not load onto one factor consistently across the four raters.

Measures of internal consistency (Cronbach's alpha) were computed for each factor and are also reported in Table 2. They ranged from .69 for Innovator to .81 for Deliverer. Each of the alpha coefficients was greater than .70 (with the exception of Innovator which was just below .70) which is acceptable (Hair, Anderson et al. 1998)

Table 1: Results of Exploratory factor analysis for display and importance of roles

	Display (N = 4122)		Importance (N = 4158)	
	Factor Loading	Mean	Factor Loading	Mean
Deliverer		5.31		6.21
10. Get the unit to meet expected goals	.841	5.40	.824	6.28
11. Anticipates workflow problems, avoids crises	.749	5.12	.698	6.13
12. Sees the unit delivers on stated goals	.869	5.41	.849	6.25
13. Clarifies the unit's position and direction	.711	5.23	.626	6.18
Eigenvalues	2.90		2.535	
% variance	26.36		23.04	
Cumulative % variance	26.36		23.04	
Alpha	.87		.81	
Developer		5.40		6.01
5. Treats each individual in a sensitive, caring way	.909	5.40	.869	6.01
7. Shows empathy and concern in dealing with subordinates	.911	5.46	.851	6.06
8. Encourages participative decision making in the group	.674	5.33	.642	5.97
Eigenvalues	2.33		2.173	
% variance	21.22		19.76	
Cumulative % variance	47.58		42.80	
Alpha	.843		.79	
Broker		4.90		5.73
2. Exerts upward influence in the organization	.857	4.87	.844	5.70
14. Influence decisions made at high level	.840	4.93	.851	5.76
Eigenvalues	1.72		1.677	
% variance	15.61		15.24	
Cumulative % variance	63.19		58.04	
Alpha	.84		.76	

Table 1: Results of Exploratory factor analysis for display and importance of roles (cont)

	Display (N = 4122)		Importance (N = 4158)	
	Factor Loading	Mean	Factor Loading	Mean
Innovator		5.09		5.65
1. Comes up with inventive ideas	.838	4.99	.852	5.58
6. Experiments with new concepts and ideas	.848	5.18	.776	5.71
Eigenvalues	1.69		1.544	
% variance	15.38		14.04	
Cumulative % variance	78.57		72.08	
Alpha	.79		.69	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Items removed

The following items were removed as their factor loading was less than .500 or the cross loaded inconsistently. Using this criteria, all of the Monitor's items were removed (see Table 2) and one item was removed for each of the director, coordinator and facilitator.

Table 2: Items removed

Role	Item
Director	3. Makes the units goals very clear
Monitor	4. Maintains high logistical control
Monitor	9. Compares records, reports and so on to detect discrepancies.
Coordinator	15. Brings a sense of order into the unit
Facilitator	16. Surfaces key differences among group members; works participatively to resolve them

Rater Similarities and Differences

Roles displayed

The data were analysed to determine any similarities or differences in perceptions between the managers and the various raters for the roles displayed by the manager. A second analysis investigated any similarities or differences that existed between the significant others.

Managers and Significant Others' Comparisons. There was a main within-subjects effect for Role [$F(2.757, 11355.376) = 275.420, p = .000$]. There was also a significant within-subjects Display Role by

Position interaction [$F(8.272, 11355.376) = 12.647, p = .000$]. There was a main between-subject effect for Position [$F(3,4118) = 8.136, p = .000$]. Bonferroni corrected pairwise comparisons of the Position estimated marginal means showed that staff had significantly higher display scores for the manager than that reported by boss, peers and manager themselves (see Table 3).

Table 3: Significant differences between managers and significant others and between significant others

Roles	Manager compared to significant others' perception	Significant others' perception compared
<i>Display</i>	Means scores*	Mean scores*
Overall	Staff > Boss, Peers, Manager 5.25 > 5.08, 5.13, 5.11	Boss = Peers < Staff 5.08, 5.13 < 5.25
Innovator	Manager = Boss, Peers, Staff 4.97 = 5.01, 5.05, 5.17	Boss = Peers = Staff 5.01, 5.05, 5.17
Broker	Manager < Boss, Peers, < Staff 4.62 < 4.74, 4.84 < 5.06	Boss = Peers < Staff 4.74, 4.84 < 5.06
Deliverer	Manager = Boss, Peers, Staff 5.28 = 5.24, 5.29, 5.32	Boss = Peers = Staff 5.24, 5.29, 5.32
Developer	Manager > Boss, Peers, Staff 5.59 > 5.33, 5.32, 5.32	Boss = Peers = Staff 5.33, 5.32, 5.32
<i>Importance</i>		
Overall	Manager > Boss, Peers, Staff 5.99 > 5.80, 5.88, 5.91	Boss = Peers = Staff 5.80, 5.88, 5.91
Innovator	Manager = Boss, Peers, Staff 5.70 = 5.65, 5.65, 5.62	Boss = Peers = Staff 5.65, 5.65, 5.62
Broker	Manager = Peers, Staff 5.71 = 5.69, 5.82 Manager > Boss 5.71 > 5.53	Peers, Staff > Boss 5.69, 5.82 > 5.53
Deliverer	Manager > Boss, Peers, Staff 6.37 > 6.23, 6.21, 6.16	Boss = Peers = Staff 6.23, 6.21, 6.16
Developer	Manager = Peers, Staff 6.17 = 5.98, 6.05 Manager > Boss 6.17 > 5.80	Peers, Staff > Boss 5.98, 6.05 > 5.80

* Note: An "=" means that there is no significant differences.

There were no significant differences in the perceptions of the managers and their significant others regarding the extent to which the manager displayed the Innovator or Deliverer (see Table 3). That is, all four raters agreed on the extent to which the manager was innovative and delivered the job at hand. For the Broker role, the managers indicated that they did not display it as much as their significant others

thought they did (see Table 3). However, staff saw that the manager did significantly more of this role than did the boss or peers. For the Developer role, the managers indicated that they did more of the activities under this role than each rater group said they did (see Table 3). The managers had the same perceptions as their significant others for two of the displayed roles, Innovator and Deliverer, but differed for Broker and Developer.

Significant Others Comparisons. The boss and peers were in agreement for all four displayed roles. They also agreed with staff for three of the roles, but not for Broker (see Table 3).

Role Importance

The role importance data were subjected to the same analysis as the “role displayed” data. The first comparison was between the managers and significant others for each role. Then the perceptions of significant others were compared.

Manager and Significant Others Comparisons. There was a main within-subjects effect for Role [$F(2.822, 11722.260) = 490.030, p = .000$]. There was also a significant within-subjects Importance Role by Position interaction [$F(8.466, 11722.260) = 13.528, p = .000$]. There was a main between-subject effect for Position [$F(3,4154) = 6.185, p = .000$]. Bonferroni corrected pairwise comparisons of the Position estimated marginal means showed that manager had significantly higher importance scores than boss, peers and staff, (see Table 3).

The importance for one leadership role, Innovator, was the same for the manager and their significant others (see Table 3). The manager also agreed with peers and staff on the importance of the Broker and Developer roles but did not agree with their bosses who thought that the Broker and Developer roles were less important than did the staff, peers and manager (see Table 3). The managers considered the Deliverer role to be more important than did their significant others (see Table 3). Thus the managers had the same perceptions as peers and staff for the importance of three of the roles. They agreed with the boss on the importance of only one role, Innovator.

Significant Others Comparisons. The boss, peers and staff were in agreement on the importance of two of the roles (Innovator and Deliverer). But the boss disagreed with the peer and staff on the other two roles (Broker and Developer).

Display-Importance comparison

The series of paired t-tests performed on the display and important trials showed significant difference between display and importance for each role (see Table 4). The managers were seen to display all of the roles frequently (μ ranging from 4.90 to 5.40) but all the raters said they needed to deliver more of each role until they were displayed very frequently (μ ranging from 5.64 to 6.21).

Table 4. Paired samples T-test results for display and importance

Paired roles	T-test	Significance (df = 4154)
Innovator display – importance	34.25	.000
Broker display – importance	45.57	.000
Deliverer display – importance	61.67	.000
Developer display – importance	35.90	.000

DISCUSSION

Factor structure

The first purpose of the study was to determine the factor structure of the leadership roles for each rater group. For both “roles displayed” and “role importance” each rater group identified the same four factors – Deliverer, Developer, Broker and Innovator. The consistency between rater groups was similar to the studies by Hooijberg and Choe (2000; Hooijberg and Choi 2001). It is an important result in that it indicates that each rater group shares a similar mindset and are passing judgment using the same framework for leadership roles. That is, there is conceptual equivalence where the items on the ICVF have the same factor structure across the four rater groups (Diefendorf et al 2005). Such results support the validity of using the Integrated Competing Values Framework for 360 degree feedback.

In terms of the composition of each of the roles, the Innovator and Broker were single role factors as predicted by the CVF. However, the remaining roles did not load onto single factors as predicted. The

Mentor and Facilitator roles consolidated to form one factor which was titled the Developer. This name was chosen to reflect what the two roles do – they develop individuals and teams. Hooijberg and Choi did not find support for such a consolidated role. But Shim et al. (2002) reported that the Mentor and Facilitator formed one cluster. But in their case the Producer and Director were also part of the same cluster. These latter findings were not supported in the current study. The Producer and Director fall into a different factor from the Developer. The difference may be a consequence of the different analysis undertaken or the population studied. Shim et al. involved retail managers in their research. This group was not included in the current study. This sampling issue could be taken up in further research.

Finally, the last of the CVF's roles, the Producer, Director and Coordinator, load onto one factor to form a composite role, similar to that found by Hooijberg and Choi (2000). They called this new role Goal Achievement. Vilkinas and Cartan would prefer to call this coalesced role 'Deliverer' as, it is suggested, this better represents what the role covers – getting the work done through setting priorities and coordinating activities – and is more in keeping with the names given to the other roles.

The new composite roles of Developer and Deliverer are consistent with the findings of Yulk, Gordon, & Tabe (2002) in a study unrelated to the CVF. They reported that within leadership research there are three metacategories of leadership behaviour. Two of these categories they titled Task and Relations and the other was Change. Their definition of task behaviour is similar to the behaviour displayed by the Deliverer and the behaviour described under their relations category resembles those behaviours displayed by the Developer. In addition, Hooijberg and Choi (2000) refer to the quadrant containing the Producer and Director as 'task leadership' (p.344) and the one containing the Facilitator and Mentor as 'people leadership' (p.344). These new coalesced roles of Developer and Deliverer, identified in this study, are also consistent with another study by (Vilkinas and Cartan 2006)).

Of particular interest was the result for the Monitor role. It is difficult to accept that this role as conceived by the original CVF would not be part of the role repertoire expected of contemporary managers. With a

greater emphasis on individual and collective accountability and an increasing attention to a "bottom line" focus, a concern for logistical control, data analysis and error detection might reasonably be expected. One possible explanation is that both managers and raters assumed this quite detailed function might be more appropriately performed by those reporting to managers rather than the managers themselves? This cannot be satisfactorily explained by considering the sample of respondents, as they were spread over several industry and business sectors. This is an important issue for future research.

Rater Comparisons

The second purpose of the study was to determine if raters agreed or disagreed with their perceptions of the roles the managers displayed and role importance. There are two key findings relating to rater perceptions. Firstly, there were similarities and differences in the perceptions of the managers and their significant others and between the significant others.

Managers and significant others

Roles displayed. The managers held similar views to their significant others on the extent to which two of the roles were displayed, Innovator and Deliverer. However, for the Broker and Developer they held different perceptions. That is, for the Broker role, the managers' self-perceptions were that they displayed less of this role than their significant others said they did. While for the Developer role, the managers said they did more of this role than their significant others said they did. While all four rater sources had the same factor structure for the roles displayed (conceptual equivalence) and psychometric equivalence for Innovator and Deliverer they did not have psychometric equivalence for other two roles (Diedendorff et al 2005). That is, the managers responded to the ICVF questionnaire for Broker and Developer in a significantly different ways to their significant others.

There are several possible reasons for these differing perceptions: perhaps the manager does a lot more than the raters actually witness; there may be differences in expectations; the manager may have a low behaviour awareness (a distinct possibility if all the raters are in agreement). In fact, Shipper and Davy (2002), in their study of managerial skills of 1125 middle managers, reported that the evaluations of peers and staff were more accurate than manager evaluations. If this is generally true, then managers may have

an inaccurate perception of the Broker and Developer roles but appear to more accurately judge the roles of Innovator and Deliverer, where they were in agreement with their significant others (see Table 3). If this is the case, then clearly processes involving feedback and discussion need to be engaged which ensure that any inaccurate perceptions can be clarified.

If, as mooted above, these differences are a consequence of lack of information on the part of raters then perhaps the message for managers in the first instance is that they need to be alert to the possibility of inconsistent perceptions of the roles they display. This is particularly the case with the Innovator and Developer roles that are perhaps more ephemeral in nature. Given the importance of shared perceptions in the work environment managers might well consider a strategy aimed at ensuring that all stakeholders (represented in this study as raters) are more fully aware of all aspects of their performance.

Organizations are increasingly relying on sophisticated performance management systems, and in particular those involving 360° feedback, as critical strategic tools. In this context it is critical that managers and their stakeholders have a shared perception of the roles displayed by that manager. This study indicates that this is not always the case. Armed with this information, managers and HR functionaries might well consider processes which limit misunderstandings and misconceptions in this arena.

Role importance. There were also similarities and differences in the opinions of the managers and their significant others when considering the importance of the roles (see Table 3). Overall the managers regarded the roles as more important than did the significant others. This is perhaps not surprising, as one could expect the position holder to place a higher value on their roles and see them as making an important contribution (perhaps one that is not always recognised by others) to the organisation. The managers and their significant others held similar views on the importance of the Innovator and the managers and their peers and staff also agreed on the importance of the Broker and Developer roles. There were differences held by the manager and their bosses on the importance of each of these three roles. While all four rater sources had the same factor structure for the role importance (conceptual

equivalence) and psychometric equivalence for Innovator they did not have psychometric equivalence for other three roles (Diedendorff et al 2005). That is, the managers responded to the ICVF questionnaire for Deliverer in a significantly different way to their significant others and for the Broker and Developer roles significantly differently than their Boss.

For the Deliverer role, the managers said it was more important than did their significant others (see Table 3). This could reflect the performance systems in place in most organisations which tend to measure and value the type of hard deliverables which directly emanate from Deliverer type activities. The reasons behind this could be many. For instance, managers might be setting high goals for themselves, or they may simply have an inflated opinion of the impact of their roles. These reasons need to be explored in future research as they have implications for the development plans set for managers.

Significant others comparison

Roles displayed. For three of the roles, Deliverer, Developer and Innovator, the significant others held a similar views so their scores could be aggregated. But for the Broker role staff gave a higher rating than did their boss and peers so the staff scores need to be separated (see Table 3). This might be explained by the fact they are closer to the managers in day-to-day operations and witness more of their activities. All three rater sources had the same factor structure for roles displayed (conceptual equivalence) and psychometric equivalence for three roles but not for the Broker role (Diedendorff et al 2005). That is, the staff responded to the ICVF questionnaire for Broker in a significantly different way to the boss and peers. In the context of 360° performance management processes, differences of perception are in fact expected and valued. They can provide vital clues for performance improvement strategy

Role importance. With respect to importance, the significant others were in agreement on the importance of two roles, Innovator and Deliverer and staff and peers were in agreement and differed from the boss in two of the other roles. For the Broker and Developer, the boss saw each of these roles as less important than did the peers and staff. These two roles might be less valued by the type of boss who adopts a short

term, results oriented world view rather than one who nurtures the longer term and less measurable roles associated with staff development and network building. While all three rater sources had the same factor structure for the role importance (conceptual equivalence) only peer and staff had psychometric equivalence for the four roles (Diedendorff et al 2005). That is, the boss responded to the ICVF questionnaire in a significantly different way to the staff and peers. These findings suggest the evaluations of the significant others, particularly the peers and staff can be aggregated, when giving feedback to managers.

FUTURE RESEARCH

To further validate this model, it needs to be tested across diverse samples of managers and also tested for gender, cultural and sector differences. In these expanded samples the data needs to be tested to determine if conceptual equivalence continues to exist and to what extent psychometric equivalence exists.

Future research is also needed to further investigate the items measuring the monitor as the current items did not load onto one factor and it is not clear why these items did not load onto one factor. In addition, more items need to be developed to measure the Innovator and Broker roles as two times are not strong enough measures.

CONCLUSION

The CVF is not an eight role model as predicted, but should rather be conceptualized as a four role model with the Director, Producer and Coordinator forming one role called the Deliver and the Facilitator and Mentor forming a single role titled the Developer. The Integrator and Broker roles stayed as predicted under the CVF. One of the roles, Monitor was not strong enough to be included.

There was conceptual equivalence across all four raters. For both roles displayed and role importance. Psychometric equivalence was not established with the managers holding both similar and dissimilar perceptions from their significant others on the roles they displayed and considered important. Similarly for role importance, there was psychometric non-equivalence, with the significant others agreeing and

disagreeing on the extent to which the managers displayed certain roles and on which roles were considered important. These findings have practical implications for performance management processes within organisations and in particular the 360° feedback process.

Appendix A

Questionnaire items by role *

1	2	3	4	5	6	7
Almost never	very seldom	Seldom	Occasionally	frequently	Very frequently	almost always

The Innovator Role (.78)

1. Comes up with inventive ideas
6. Experiments with new concepts and ideas

The Broker Role (.80)

2. Exerts upward influence in the organisation
14. Influence decisions made at high levels

The Producer Role (.86)

10. Gets the unit to meet expected goals
12. Sees the unit delivers on stated goals

The Director Role (.77)

3. Makes the unit's role very clear
13. Clarifies the unit's priorities and directions

The Coordinator Role (.77)

11. Anticipates workflow problems, avoids crisis
15. Brings a sense of order into the unit

The Monitor Role (.66)

4. Maintains tight logistical control
9. Compares records, reports, and so on to detect discrepancies

The Facilitator Role (.77)

8. Encourages participative decision making in the group
16. Surfaces key differences among group members, then works participatively to resolve them

The Mentor Role (.87)

5. Treats each individual in a sensitive, caring way
7. Shows empathy and concern in dealing with subordinates

Note: these items were originally developed by Quinn et al.

Alpha coefficient is shown in the parenthesis, Vilkinas and Cartan (2001)

Appendix B

Results of Exploratory factor analysis for roles displayed by rater.

	Boss (N = 380)		Peer (N = 1621)		Staff (N = 1680)		Manager (N = 441)	
	Factor Loading	Mean	Factor Loading	Mean	Factor Loading	Mean	Factor Loading	Mean
Deliverer								
10. Get the unit to meet expected goals	.884	5.32	.838	5.38	.827	5.44	.849	5.39
11. Anticipates workflow problems, avoids crises	.782	5.11	.748	5.16	.761	5.10	.621	5.08
12. Sees the unit delivers on stated goals	.908	5.37	.876	5.38	.856	5.46	.863	5.37
13. Clarifies the unit's position and direction	.621	5.15	.668	5.20	.761	5.25	.639	5.25
Eigenvalues	2.923		2.833		3.025		2.430	
% variance	26.573		25.757		27.499		22.088	
Cumulative % variance	26.573		25.757		27.499		22.088	
Alpha	.8846		.8675		.8913		.7774	
Developer								
5. Treats each individual in a sensitive, caring way	.935	5.31	.911	5.33	.901	5.43	.885	5.56
7. Shows empathy and concern in dealing with subordinates	.912	5.41	.915	5.37	.909	5.50	.879	5.67
8. Encourages participative decision making in the group	.685	5.26	.712	5.23	.632	5.38	.620	5.52
Eigenvalues	2.323		2.378		2.308		2.084	
% variance	21.118		21.618		20.984		18.945	
Cumulative % variance	47.691		47.375		48.483		41.033	
Alpha	.8498		.8559		.8437		.7503	
Broker								
2. Exerts upward influence in the organization	.852	4.67	.843	4.82	.855	5.02	.872	4.61
14. Influence decisions made at high level	.774	4.80	.855	4.88	.815	5.08	.883	4.61
Eigenvalues	1.887		1.761		1.699		1.677	
% variance	17.157		16.009		15.441		15.248	

Cumulative % variance	64.848		63.384		79.595		56.280	
Alpha	.8383		.8404		.8370		.8127	
Innovator								
1. Comes up with inventive ideas	.841	4.94	.838	4.94	.834	5.08	.851	4.80
6. Experiments with new concepts and ideas	.853	5.07	.863	5.14	.836	5.25	.797	5.12
Eigenvalues	1.765		1.708		1.724		1.517	
% variance	16.049		15.530		15.671		13.788	
Cumulative % variance	80.898		78.913		64.153		70.068	
Alpha	.8385		.8117		.7825		.6477	

Appendix C

Results of Exploratory factor analysis for importance of roles by rater

	Boss (N = 385)		Peer (N = 1644)		Staff (N = 1688)		Manager (N = 441)	
	Factor Loading	Mean	Factor Loading	Mean	Factor Loading	Mean	Factor Loading	Mean
Deliverer								
10. Get the unit to meet expected goals	.817	6.35	.822	6.28	.814	6.19	.816	6.44
11. Anticipates workflow problems, avoids crises	.777	6.12	.695	6.13	.698	6.10	.661	6.21
12. Sees the unit delivers on stated goals	.864	6.35	.840	6.27	.851	6.16	.821	6.42
13. Clarifies the unit's position and direction	.584	6.07	.587	6.15	.674	6.17	.616	6.39
Eigenvalues	2.694		2.441		2.647		2.342	
% variance	24.492		22.195		24.061		21.292	
Cumulative % variance	24.492		22.195		24.061		21.292	
Alpha	.8253		.8056		.8290		.7595	
Developer								
5. Treats each individual in a sensitive, caring way	.880	5.78	.863	5.96	.876	6.04	.856	6.16
7. Shows empathy and concern in dealing with subordinates	.866	5.86	.857	6.03	.845	6.08	.822	6.20
8. Encourages participative decision making in the group	.583	5.76	.684	5.91	.572	6.02	.651	6.12
Eigenvalues	2.125		2.225		2.081		2.088	
% variance	19.320		20.228		18.922		18.985	
Cumulative % variance	43.812		42.424		42.982		40.277	
Alpha	.8230		.8037		.7804		.7443	
Broker								
2. Exerts upward influence in the organization	.860	5.50	.833	5.66	.842	5.77	.853	5.69
14. Influence decisions made at high level	.842	5.55	.854	5.71	.834	5.86	.877	5.71

Eigenvalues	1.719		1.744		1.620		1.685	
% variance	15.624		15.859		14.730		15.318	
Cumulative % variance	75.194		58.282		57.712		55.595	
Alpha	.7693		.7676		.7418		.7967	
Innovator								
1. Comes up with inventive ideas	.852	5.62	.859	5.59	.848	5.54	.833	5.65
6. Experiments with new concepts and ideas	.871	5.67	.797	5.70	.748	5.69	.713	5.73
Eigenvalues	1.733		1.577		1.582		1.312	
% variance	15.759		14.333		14.384		11.925	
Cumulative % variance	59.570		72.615		72.096		67.520	
Alpha	.7942		.7289		.6762		.4781	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

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