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The Influence of Transformational and Transactional Leadership on the Determinants of the Work Environment for Creativity

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Abstract: The objective of this paper was to empirically investigate through an industry survey, the impact of transformational and transactional leadership on the work environment dimensions that support creativity. Results indicate a strong and significant positive relationship between transformational leadership and the 'stimulant' dimensions of the work environment for creativity. The findings also indicate that the work environment factors that impede creativity are not associated with transformational nor with transactional leadership. These findings confirm the value of transformational leadership in organisations and urge leaders to embark on behaviours that are essential in the process of creating and applying new knowledge.

Keywords: creative work environment ♦ innovation ♦ knowledge management ♦ organisational creativity ♦ transformational and transactional leadership.

1. Introduction

If knowledge management is to have any real impact on the way we do business and not just be a passing fad then it needs to fundamentally focus on creativity and innovation (Richards, Foster & Morgan, 1998). Thus, organisations need to continuously develop, create and innovate (Kay 1993) in order to sustain their competitive advantage in the new economy. Considerable evidence suggests that employees' creativity makes an important contribution to organisational innovation, effectiveness and survival (Amabile 1996; Reiter-Palmon & Illies 2004). Consequently, organisations need to create the culture and climate that facilitates and encourages employees' idea generation – new knowledge – and creative thinking (Amabile 1988; Eyton 1996; Goldsmith 1996). In other words, for employees to be creative there must a work environment that creates the perception of support for creativity and innovation (Amabile & Gryskiewicz 1989; Cummings & Oldham 1997; Mumford, Whetzel & Reiter-Palmon 1997).

As a result, researchers have become increasingly interested in studying the environmental factors (i.e. social, emotional, and work conditions) conducive to creativity and innovation (Amabile, Conti, Coon, Lazenby & Herron 1996; Ford 1996; Oldham & Cummings 1996). Theory and research suggest that employees will be creative when they are given adequate resources to conduct their work (Delbecq & Mills 1985), when their work is intellectually challenging (Amabile & Gryskiewicz 1987), and when they are given high level of autonomy and control over their own work (King & West 1985). Although Oldham and Cummings (1996) demonstrated that supportive supervision made a significant contribution to the number of patent disclosures employees wrote over a two-year period, leadership has not been treated as a particularly important influence on creativity (Mumford, Scott, Gaddis & Strange 2002).

Overall, the literature linking leader behaviours to individual creative performance is scant (Amabile, Schatzel, Moneta & Kramer 2004), and the literature linking transformational and transactional leadership to work environment dimensions that are most conducive to creativity and innovation is even smaller. Current research lacks the empirical evidence supporting the relationship between transformational and transactional leadership and the determinants of the creative work environment. The purpose of this research is to empirically examine the extent to which the factors of transformational and transactional leadership support a creative work environment, which in turn encourages the process of creating and applying new knowledge. The study involves a questionnaire-based survey of members of self-managing teams from a high technology organisation in the United Arab Emirates.

2. Literature review

2.1 Creativity theories – the work environment for creativity

Richards et al. (1998) argue that creativity and innovation are at the heart of knowledge management. As such, creativity and innovation are at the cutting edge of knowledge management/acquisition, which is essential in making radical changes in a way that new products ands services are generated. On the other hand, current views of creativity, particularly in organisational settings, focus on creative products or services (Reiter-Palmon & Illies 2004). A creative product or service is defined as one that is both (a) novel or original and (b) potentially useful or appropriate to the organisation (Amabile 1996; Ford, 1996). But what are the factors (i.e. social and work) that contribute to the generation of creative products and services? What is the contribution of the individual in the process of creating and applying new knowledge? Over the years, researchers and theorists have viewed the concept of creativity from different perspectives.

In early research, Barron (1955) and MacKinnon (1962), focused on the personality traits of outstanding creative individuals. Research suggests that individuals with creative personalities exhibit higher creativity than those with less creative personalities (Feist 1999). Moreover, Woodman, Sawyer and Griffin (1993), included personality variables, cognitive factors, intrinsic motivation, and knowledge in their model of organisational creativity. Yet, research in social psychology suggests that supportive behaviour on the part of others in the work place (i.e. co-workers and supervisors) enhances employees' creativity (Amabile et al. 1996; Oldham & Cummings 1996; Tierney, Farmer and Graen 1999). The supportive behaviour of others outside the organisation (Koestmer, Walker & Fichman, 1999) has also an impact on employees' creativity. Other areas of research have suggested that organisational support and evaluation of new ideas is necessary to encourage employees' creativity (Kanter 1983). Rewards and bonuses were also reported as essential ingredients in the process of creating a creative work environment (Amabile et al. 1996). On the other hand, it has been suggested that there are factors (i.e. internal political problems, conservatism and rigid formal structures) that could impede creativity amongst individuals (Amabile & Gryskiewicz 1987).

From the above literature, it is important to realise that the 'story of creativity has many paths with no real conclusions'. Therefore, with so many different antecedents of creativity, where should organisations begin? What is the impact of the perceived work environment on creativity? Is there a theory that provides the conceptual foundation for studying employee creativity? A review of the literature revealed that there are three major theories of organisational creativity – the componential theory of Amabile (1988), the interactionist theory of Woodman et al. (1993), and the multiple social domains theory of Ford (1996) – all of which include the work environment as an influence on employee creativity. According to Amabile et al. (2004) however, the componential theory of creativity is the only theory that specifies creativity features that contribute to the perceived work environment for creativity. But, how can organisations assess the perceived work environment dimensions that might influence employees' creativity? Amabile and colleagues (1996) have drawn on the literature of creativity and developed an instrument which assesses the dimensions of the work environment that have been suggested in empirical research and theory as essential for organisational creativity. This instrument is referred in the literature as KEYS.

Eight determinants (dimensions) of the work environment for creativity are measured by KEYS. Of the eight, six are referred to as 'stimulant' dimensions and have a positive (+) influence on the creative work environment, while the remaining two are referred to as 'obstacle' dimensions and have a negative (-) effect (Amabile et al. 1996). The eight determinants, and the main areas covered by each, are shown in the Appendix. However, these determinants do not occur spontaneously or in a vacuum. They evolve out of the context, the social and work conditions of the organisation and their impact is conditioned by the subjective perceptions of creative individuals whose creativity is governed by the support of their work environment. This draws attention; among other things (i.e. support from work and non-work sources, individuals' personality traits), to what leaders say and do, day by day, that leads employees to perceive

that they do or do not have the leaders' support for their creative endeavours (Amabile et al. 2004).

A slowly expanding body of literature over the past 30 years has documented the importance of perceived leader support for subordinate creativity (For a review, see Mumford et al. 2002). Studies have demonstrated that team members' collective view of support from their leader is associated with the team's success in creative endeavours (Amabile & Conti 1999; Amabile et al. 1996). Thus, there must be a dynamic interaction between leadership and creativity in a way of supporting, encouraging and energising the perceptions and behaviours of employees that influence the creative work environment.

2.2 Influences of specific leader behaviours

Leadership is defined broadly as influence processes affecting the choice of objectives of the group or organisation and the perceptions of followers (i.e. creative individuals) (Yukl 1981).

Various theories of leadership have emerged over the past fifty years. The most noticeable are: the classical Ohio Studies of initiating structure and consideration (Stogdill 1974); the task-orientation and relationship-orientation leadership (Blake & Mouton, 1964); the participative leadership (Vroom & Yetton 1973); and the transformational and transactional leadership (Bass 1985).

A review of the literature suggests that neither the classic Ohio two-factor leadership model, nor the Ekvall (1991) relationship-orientation, and change-orientation leadership, can easily accommodate the facilitator kind of leadership that is needed for creativity. The literature suggests that a leadership role of a facilitative kind fosters the generation of new (creative) outputs (Ekvall 1991). It is also reported that supportive, no-controlling supervision (Oldham & Cummings 1996) enhances creativity (Oldham & Cummings 1996), and employees are more creative when they are given high levels of autonomy (King & West 1985). Moreover, it is argued that creative leadership style seems to have much in common with Bass's (1985) transformational leadership (Rickards & Moger 2000). It is thus, reasonable to expect that the leadership style that focuses on specific techniques, such as, involving employees in the decision-making process and problem-solving, empowering, and supporting them to develop greater autonomy, coaching and teaching them, and helping them to look at old problems in new ways (Burns 1978; Bass 1985, 1990), is essential to influence the behaviour of employees in creating a work environment conducive to creativity. The leadership style focusing on such specific techniques is known as 'transformational' leadership. Consequently, the dimensions of transformational and transactional leadership were employed to predict the determinants of the creative work environment.

2.2.1 Transformational and transactional leadership

Transformational and transactional leadership dimensions were derived from Bass's (1985) theory and research. Bass (1985) developed the multifactor leadership questionnaire (MLQ-Form 5), which measures five leadership factors. These are: *attributed charisma, individualised consideration* and *intellectual stimulation* forming the transformational leadership dimension. *Contingent reward* and *management-by-exception* forming the transactional leadership dimension. (For definitions of these factors, see Hater and Bass, 1988: 696.)

A review of the literature suggests that creativity is not the exclusive property of geniuses, but a set of skills and habits anyone can develop. It is not about where one works, it is about giving oneself permission to be creative (Weiss 2002). It is about management creating a culture that supports and encourages creativity and innovation (Reter-Palmon & Illies 2004), thereby creating and applying new knowledge (Richards et al. 1998). One study provides important evidence that subordinates' creativity is a function of their perceptions of the general work environment for creativity, which is, in turn, a function of their relationship with the leader; a leader who is characterised by trust, mutual linking, and respect (Zhou & Shalley in press). The foundation of creative leadership then is based on specific leader behaviours akin to relationship-oriented ("consideration") and transformational leadership (Rickards & Moger

2000). Moreover, Jones (1996) suggested that the leader with hierarchical attitudes (i.e. diametrically opposite to creative leader) will create a rigid formal structure which blocks dialogue and hence creativity. It is thus reasonable to hypothesise that the factors representing the 'stimulant' components of the creative work environment will be more strongly, and more positively correlated with the factors of transformational leadership, than will be the factors representing the 'obstacle' components of the creative work environment. The assumed connectedness between transformational leadership and the determinants of the work environment for creativity is expressed in Hypothesis 1.

> **Hypothesis 1:** *Correlations between each of the transformational leadership behaviours and the 'stimulant' determinants of the creative work environment will be stronger, and more positive, than those with the 'obstacle' determinants of the creative work environment.*

Moreover, Amabile and colleagues (2004) have provided empirical evidence that team leader supportive behaviour, which includes both task-oriented and relationship-oriented support, is an important aspect of the perceived work environment for creativity. It is thus plausible to predict that the factors representing the 'stimulant' components of the creative work environment will be more strongly, and more positively correlated with the factors of transactional leadership, than will be the factors representing the 'obstacle' components of the creative work environment. The assumed connectedness between transactional leadership and the determinants of the work environment for creativity is expressed in Hypothesis 2.

> **Hypothesis 2:** *Correlations between each of the transactional leadership behaviours and the 'stimulant' determinants of the creative work environment will be stronger, and more positive, than those with the 'obstacle' determinants of the creative work environment.*

3. Subjects and procedure

3.1 Sample

The study focused in a service organisation operating in the United Arab Emirates (UAE). Nine departments involved in communications technology have participated in the study, all of which are recognised for their creativity. Respondents were full-time employees of the participating departments and volunteered to participate in the study. Questionnaires, written in English, containing items measuring the determinants of the creative work environment and the dimensions of transformational/transactional leadership were distributed to 173 members of self-managing teams in the nine departments. One hundred eighteen (118) employees returned usable questionnaires; yielding a 68 percent response rate. Most were from the new product development (57 percent), and customer service (17 percent) departments. The remaining ones were spread among various other areas including education/training, consulting, etc (26 percent). The majority were within the 21-30 age group (81 percent). Given the relatively young age of the sample, the level of work experience is accordingly low. Eighty two (82) percent of the respondents have had five or less years of work experience. The respondents were 6 percent female and 94 percent males and all had either a technical or university qualification taught in the English language. Anonymity was guaranteed and no names or other identifying information were asked.

3.2 Analytical procedure

Confirmatory factor analyses (CFAs) were performed using the analysis of moment structures (AMOS, version 5) software (Arbuckle 2003) for the factor analysis of the measurement models. Using CFAs, we assessed the validity of the measurement models of the variables used in the paper. A mixture of fit-indices was employed to assess the overall fit of the measurement models. The ratio of chi-square to degrees of freedom (χ^2/df) has been computed, with ratios of less than 2.0 indicating a good fit. However, since absolute indices can be adversely effected by sample size (Loehlin 1992), four other relative indices, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI), and the Tucker and Lewis index (TLI) were computed to provide a more robust evaluation of model fit (Tanaka 1987; Tucker & Lewis 1973). For GFI, AGFI, CFI and TLI, coefficients closer to unity indicate a

good fit, with acceptable levels of fit being above 0.90 (Marsh, Balla & McDonald 1988). For root mean square residual (RMR), and root mean square error approximation (RMSEA), evidence of good fit is considered to be values less than 0.05; values from 0.05 to 0.10 are indicative of moderate fit and values greater than 0.10 are taken to be evidence of a poorly fitting model (Browne & Cudeck 1993).

Given adequate validity of those measures, we reduced the number of indicator variables by creating a composite scale for each latent variable (Politis 2001). These scales were subjected to a series of correlational and regression analysis.

4. Results

4.1 Measurement models

The variables that we measure on the survey are: transformational and transactional leadership, and the determinants of the work environment for creativity.

4.1.1 Independent variables

Transformational and *transactional* leadership measures were assessed using Bass's (1985) 73-item multifactor leadership questionnaire (MLQ–Form 5). The MLQ-5 questionnaire employs a 5-point response scale (0 = not at all; 4 = frequently if not always) and consists of five subscales: three subscales forming the transformational leadership (i.e. attributed charisma, individualised consideration, and intellectual stimulation), and two subscales forming the transactional leadership (i.e. contingent reward and management-by-exception). We conducted CFA of all MLQ items in order to check for construct independence .We first fit a five-factor model to the data, corresponding to that proposed by Bass. The fit indices of CFI, AGFI, CFI, TLI, RMR, and RMSEA were 0.91, 0.96, 0.97, 0.89, 0.05, and 0.07, respectively, suggesting that the five factor model provides a good fit. Thus, the data supported the independence of five factors, namely, attributed charisma (α = 0.91); individualised consideration (α = 0.85); intellectual stimulation (α = 0.78); contingent reward (α = 0.87); and management-by-exception (α = 0.67). Twelve items of the MLQ were dropped due to cross loading and/or poor loading of the order of, or less than 0.11.

4.1.2 Dependent variables

Determinants of the work environment for creativity made up of eight subcategories, namely, organisational encouragement, supervisory encouragement, work group supports, freedom, sufficient resources, challenging work, workload pressure, and organisational impediments. These categories were assessed using Amabile et al.'s (1996) 66-item instrument (KEYS). The instrument employs a 4-point response scale (1 = never; 4 = always). We conducted CFA of all KEYS items in order to check for construct independence. We first fit an eight-factor model to the data, corresponding to that proposed by Amabile et al. (1996). The fit indices of CFI, AGFI, CFI, TLI, RMR, and RMSEA were 0.88, 0.90, 0.93, 0.89, 0.06, and 0.08, respectively, suggesting that the eight factor model provides a reasonable fit. Thus, the data supported the independence of eight factors, namely, organisational encouragement (8 items, α = 0.83), supervisory encouragement (7 items, α = 0.85), work group support (8 items, α = 0.77), freedom (3 items, α = 0.67), sufficient resources (5 items, α = 0.72), challenging work (4 items, α = 0.81), workload pressure (3 items, α = 0.80), and organisational impediments (7 items, α = 0.72). Twenty one items of the KEYS were dropped due to cross loading and/or poor loading of the order of, or less than 0.08.

Moreover, for the purpose of this study we created a "stimulant" index to creativity by averaging scores for organisational encouragement, supervisory encouragement, work group support, freedom, sufficient resources, and challenging work items (α = 0.88). In addition, we averaged scores from workload pressure and organisational impediments items to form the "obstacle" index to creativity (α = 0.71). The model of Figure 1 summarises the variables used in this paper.

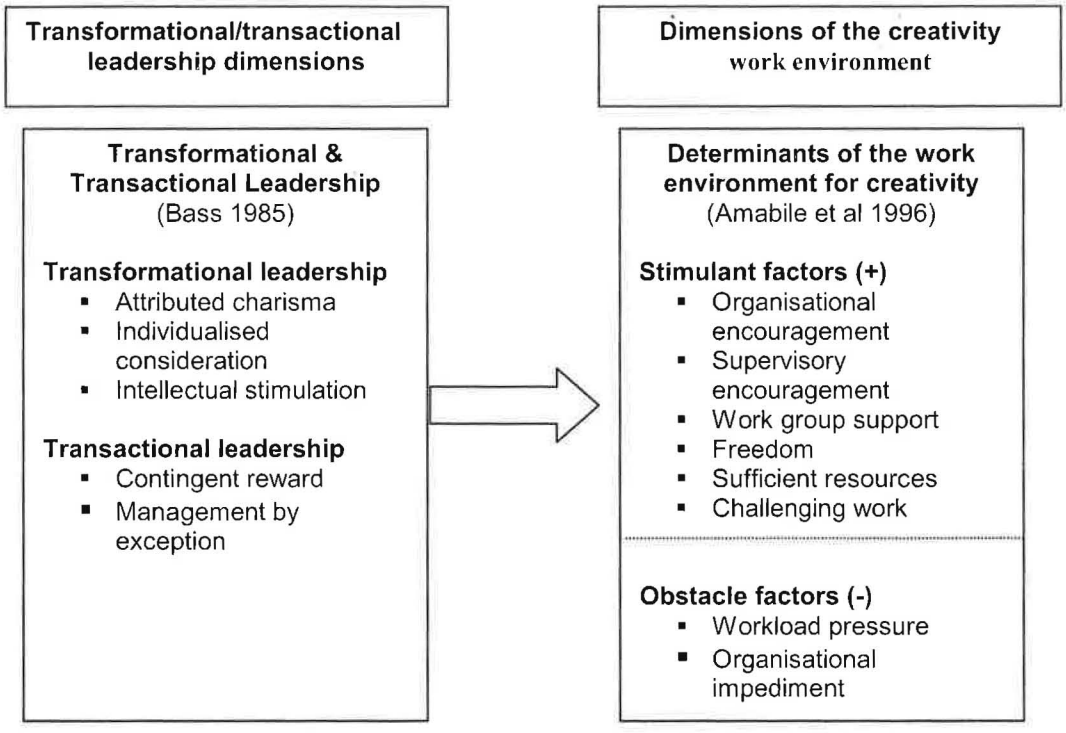


Figure 1: Summary of variables used in the paper

4.2 Hypothesis testing

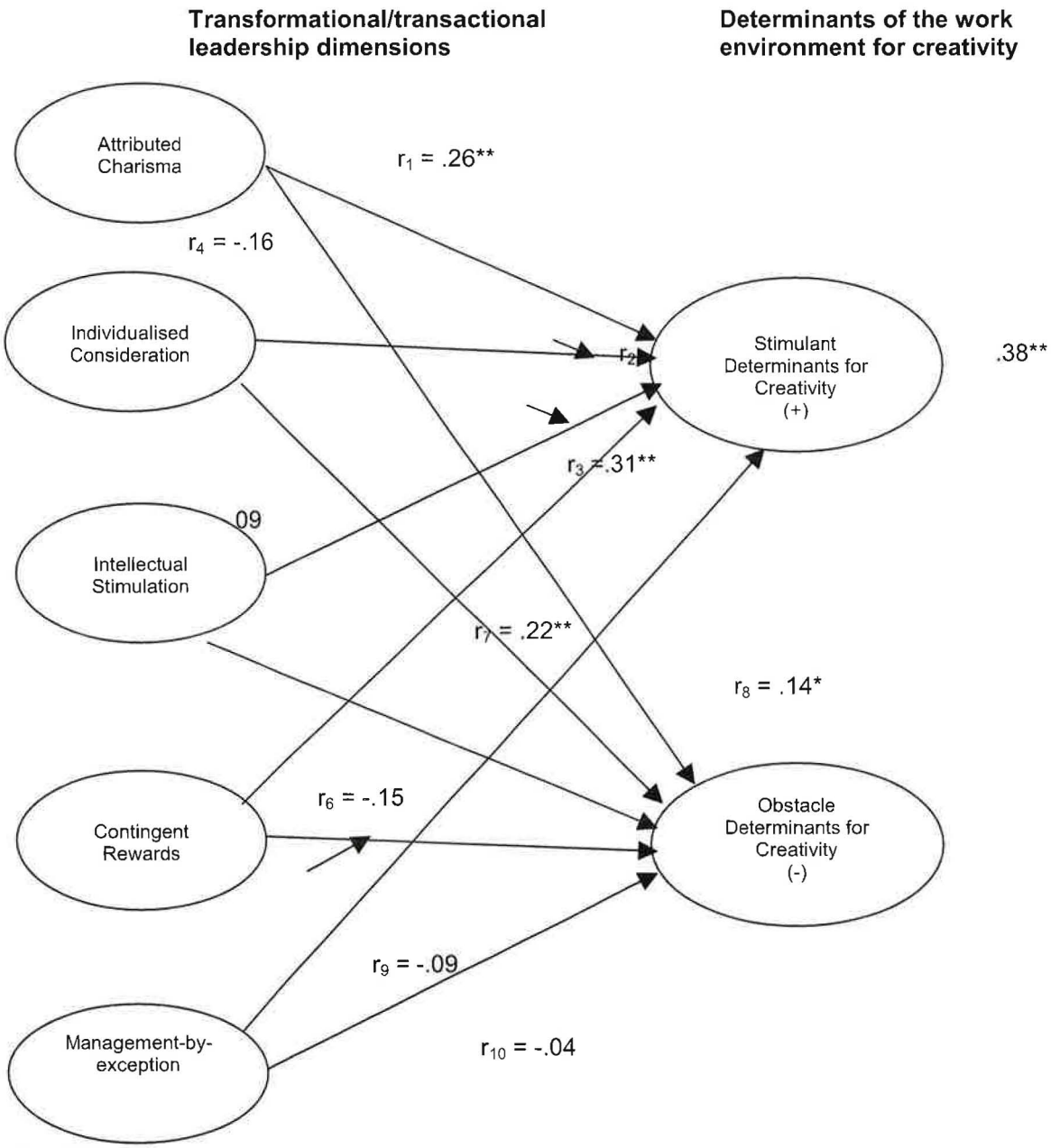
A descriptive analysis of responses for all variables used in this paper was performed first to identify any prevailing patterns. The mean score, for attributed charisma was 1.93 out of 5 (std.dev = 1.08, min = 0.00, max = 3.69); for individualised consideration 2.07 (std.dev = 1.03, min = 0.13, max = 4.00); for intellectual stimulation 2.01 (std.dev = 1.06, min = 0.00, max = 4.00); for contingent rewards 1.91 (std.dev = 1.05, min = 0.00, max = 3.86); and for management-by-exception 2.19 (std.dev = 0.72, min = 0.76, max = 3.81). This amounts to the majority of the mean scores lying somewhere between the high end of "once in a while" and the lower end of "sometimes".

The mean score, for organisational encouragement was 2.65 out of 4 (std.dev = 0.60, min = 1.63, max = 4.00); for supervisory encouragement 2.75 (std.dev = 0.55, min = 2.00, max = 3.86); for work group support 2.87 (std.dev = 0.52, min = 1.88, max = 4.00); for freedom 2.60 (std.dev = 0.81, min = 1.00, max = 4.00); for sufficient resources 2.63 (std.dev = 0.48, min = 1.80, max = 3.80); for challenging work 2.82 (std.dev = 0.71, min = 1.00, max = 4.00); for workload pressure 2.78 (std.dev = 0.84, min = 1.00, max = 4.00); and for organisational impediments 2.64 (std.dev = 0.54, min = 1.43, max = 3.43). Moreover, the mean score for the *stimulant* index to creativity was 2.71 out of 4 (std.dev = 0.49, min = 1.84, max = 3.83), and for the *obstacle* index to creativity was 2.71 (std.dev = 0.57, min = 1.79, max = 3.64). This amounts to the majority of the mean scores lying somewhere between the high end of "sometimes" and "often".

The hypothesized relationship between transformational and transactional leadership and the determinants for creativity was tested using Pearsons's correlation coefficients. All three transformational leadership variables showed significant correlations with the *stimulant* factors of creativity ($\rho < 0.01$). The results indicate that the correlations between transformational leadership variables and the stimulant determinants of creativity are stronger, and more positive, than those with the obstacle determinants of creativity, supporting Hypothesis 1. Specifically, the results showed strong positive correlations between the stimulant factors of creativity and attributed charisma ($r_1 = 0.26$); individualised stimulation ($r_2 = 0.38$); and intellectual stimulation ($r_3 = 0.31$). Moreover, the results showed non-significant and negative

correlations between the obstacle determinants of creativity and attributed charisma (r_4 = -0.16); individualised stimulation (r_5 = -0.09); and intellectual stimulation (r_6 = -0.15).

Furthermore, results indicate that the correlations between transactional leadership variables and the stimulant determinants of creativity are stronger, and more positive, than those with the obstacle determinants of creativity, supporting Hypothesis 2. The results showed moderate positive correlations between the stimulant factors of creativity and contingent rewards (r_7 = 0.22, $\rho < 0.01$); and management-by-exception (r_8 = 0.14, $\rho < 0.05$), and negative, near zero, and non-significant correlations between the obstacle determinants of creativity and contingent rewards (r_9 = -0.09); and management-by-exception (r_{10} = -0.04). Figure 2 summarises these results.



N = 118.
*p < 0.05; ** p < 0.01; *** p < 0.001

Figure 2: Pearsons's correlation coefficients for the hypothesised model

In view of significant correlations between the variables, further tests were performed to identify the main factors affecting the determinants of the creative work environment. This analysis was performed using regression models. The regression results indicated that the transformational variables jointly (i.e. attributed charisma, individualised stimulation, and intellectual stimulation) explained nearly a third variance of the stimulant factors of creativity (R-square = 0.29, F = 4.7, $\rho < 0.01$), while the transactional variables alone (i.e. contingent rewards, and management-by-exception) explained only 9% of the variance (R-square = 0.09, F = 7.1, $\rho < 0.05$). (Note that both of the independent variables jointly (i.e. transformational and transactional) explained just over a third variance of the stimulant factors of creativity (R-square = 0.34, F = 3.6, $\rho < 0.01$.)) There was no significant direct effect found of the transformational and transactional variables towards the obstacle factors of creativity (R-square = 0.07, F = 2.16, $\rho > 0.05$; R-square = 0.02, F = 1.17, $\rho > 0.05$, respectively).

In summary, the results of this study have shown that (a) there is a positive and significant relationship between transformational/transactional leadership and the stimulant determinants of the work environment for creativity; (b) the factors representing transformational leadership are better predictors of the stimulant determinants of the creative work environment than those of transactional leadership; and (c) the obstacle determinants of the work environment for creativity are negatively associated with both transformational and transactional leadership.

5. Discussion

This paper addresses the impact of the specific transformational and transactional leadership behaviours on the determinants of the work environment conducive to creativity in a communications technology organisation that is recognised for its creativity. The findings are consistent with the realm of supportive management style and employees' creative performance theories. The results of the study reinforce the componential theory of Amabile (1988), and indeed go beyond prior research of particular areas of leader support, such as the leader's tendency to provide both clear strategic direction and procedural autonomy in carrying out the work (Pelz & Andrews 1976), or supportive, no-controlling supervision (Oldham & Cummings 1996).

The key finding of this study is undoubtedly that the leaders, who see what is important, transmit a sense of mission, provide coaching/teaching, and arouse employees to think in new ways and emphasise problem solving, are most effective in facilitating the stimulant determinants of the creative work environment, as established by Amabile et al. (1996). Specifically, the three transformational leadership variables alone explained over 29% of the variance of the stimulant determinants of creativity. This finding is particularly significant and important in the work environment for creativity landscape that is rich in theory and rhetoric, but scarce in empirical evidence. The findings suggest that it is those particular transformational leader behaviours (i.e. attributed charisma, individualised consideration and intellectual stimulation) that appear to have the impact on the perceived work environment that influence employees' creative freedom, encouragement and intrinsic motivation for creativity. These leadership behaviours are indeed essential in the process of creating new knowledge, applying knowledge and in the words of Peter Druker (1993) "making it productive".

Furthermore, it is also important to note that the remaining 71% of the variance is not explained by the variables tested in this study. One could assume that a portion of the remaining variance could be explained by other leadership styles, such as Stogdill's (1974) consideration leadership, and Manz and Sims's (1987) self-management leadership, both of which contain certain themes common to those measured by Bass's (1985) transformational leadership dimensions. In addition, another portion of the remaining variance could be explained by the subordinates' perceptions of themselves – particularly their competence and the value of their work (Amabile et al. 2004), the employees' mood (Isen 1999); and the employees' personality characteristics (Amabile 1996; Feist 1999). Thus, future research should examine models that integrate the Ohio studies consideration leadership; the self-management leadership factor of the Manz and Sims's (1987) studies; the transformational/transactional leadership factors of the

Bass's (1985) studies; the variables of personality characteristics; employee's mood; and the subordinates' perceptions of themselves.

This study also has implications for theories of leader behaviour. The classic two-factor theory of leader bahaviour (Fleishman 1953) proposes that effective leaders must engage in both task and relationship management (i.e. initiating structure and consideration behaviours). Our findings showed that transformational leadership (comparable to consideration behaviour) is a better predictor of the stimulant determinants of the creative work environment than transactional leadership (comparable to initiating structure). It appears that *effective* creative leadership requires skills not only in managing both subordinate tasks and subordinates relationship, but also in integrating the two simultaneously. Moreover, our findings indeed support the superiority of transformational over transactional leadership behaviour (Politis 2002).

Finally, from the management perspective, the study suggests that managers whose job involves significant creative problem solving should develop a skill: in communication and other aspects of interpersonal interaction; an openness to and appreciation of subordinates' ideas; in treating followers as individuals and arousing them to think in new ways; in improving subordinates' thoughts, feelings, and creative performance. Such managerial skills will impact the process by which new thoughts and ideas (new knowledge) are created in organisations, thereby sustaining and improving their competitive advantage.

While this research has established a clear relationship between transformational and transactional leadership and the stimulant factors to creativity, some caution must be exercised when interpreting these findings due to a number of limiting factors. First, although a quantitative study is able to establish a relatively clear picture of relationships between phenomena, it is less apt at explaining the reasons behind it. Thus, future qualitative research needs to be considered to explore the exact reasons why transformational/transactional leadership tends to lead to stronger associations with the stimulant determinants of the work environment for creativity than with the obstacle determinants for creativity. Other limitations include the use of a relatively undeveloped instrument measuring the perceptions of the creative work environment (note: 21 items were dropped from the measurement model due to cross or poor loading), inability to establish causality, and the relatively small sample size.

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