Title: A Critical Review of "Following the Leader in R&D: The Joint Effect of Subordinate Problem-Solving Style and Leader-Member Relations on Innovative Behavior"

Course: EMGT 520/620
Term: Fall
Year: 1998
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Report No: P98048

Abstract: A paper titled "Following the Leader in R&D: The Joint Effect of Subordinate Problem-Solving Style and Leader-Member Relations on Innovative Behavior" is critically reviewed in this individual report.

A Critical Review of "Following the Leader in R&D: The Joint Effect of Subordinate Problem-Solving Style and Leader-Member Relations on Innovative Behavior"

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EMP-P98048

Leadership Practices at R&D Sites

This is an evaluation on the paper 'Following the Leader in R&D: The Joint Effect of Subordinate Problem-Solving Style and Leader-Member Relations on Innovative Behavior' by Susanne G. Scott and Reginald A. Bruce, published in IEEE Transactions on Engineering Management, Vol. 45, No1, p 3-10 in February 1998[1], based on further literature research and personal views.

Following the Leader in R&D

The R&D site at a company is distinct from others in that this site is the place where innovation takes place. There is no more argument that this is the place where creativity takes place and provides the company with tremendous competitive advantages - if it can produce efficiently. Therefore special consideration should be given to the management practices at the research and development centers and their special requirements , other than equipment should be determined and provided.

The above mentioned paper discusses the leader-member-exchange (LMX) theory and explores its contribution in combination with problem-solving style to innovative behaviour. The paper hypothesizes that the higher the level of LMX between the leader and the subordinate, the higher the level of innovative behaviour will be; and also that the higher the level of bisociative thinking, and less the associative thinking, the higher the innovative behaviour will be. The authors go on to detail a study they undertook, surveying subordinates and leaders at two different R&D sites to test their hypotheses. They conclude that their findings were in support of their hypotheses and further research should follow to investigate the effect of team-member and peer relationships on innovative behaviour.

Theory, Methodology and Results

The LMX theory employs two types of nature of the relationship between a supervisor and the subordinate. These, being transformational and transactional, in fact take place on the two extreme hands of the relationship between supervisor and subordinate, and the actual relationship is expected to be a combination of both with varying intensities of the two concepts.[1,2]

The LMX theory states that the extent of social relationship exchange between leader and subordinate at the workplace determines the subordinate satisfaction and productivity.[2] While the theory gained wide acceptance, the boundaries of the theory have been questioned in the past. Research on what the social relationship exchange includes, and whether supervisor career mentoring (SCM) of the leader for the subordinate's progress in his or her career is considered part of this exchange has been made.[3] This study found that such an exchange was found to be supportive on the subordinate's side, while the supervisors recognize a distinction between LMX and SCM. One question raised by the paper *'Following the Leader in R&D'* would be if the employees at an R&D site recognize supervisor mentoring as being of transformational or transactional nature, and if this has a positive effect on innovative behaviour.

The authors of the paper also investigated the question of problem-solving style affecting innovative behaviour, treating problem-solving style as a personality trait. The authors stated that this had been given in early stages of innovative behaviour research, but has not been distinguished in more recent studies and emphasize that this is a very important factor for innovations to take place. A recent paper by G. Gordon, J.B. Bush Jr., and P. Rizova[4] in fact emphasizes personal abilities in innovation, using definitions such as integrators, implementers, problem finders, and problem solvers, and further suggest positions for these people within the organization that innovation takes place so that they can work in harmony and more efficiently. Scott and Bruce take a more systematic approach and survey their subjects in their problem solving style, and evaluate the data they gathered. The results showed no significant variation of innovative behaviour with education of the individual, but a positive relation with increasing levels of bisociative thinking habits. Taking a closer look at the description of the samples studied, we see that 100% and 98.8% of the subjects had baccalaureate degrees, respectively. Considering the almost homogeneous formation of the samples with respect to their education, the result is not surprising. There is not a variety of education among the samples, so there should not be a variation in problem solving style.

The study follows in steps of past literature review in building its theory,[3, 5, 6,7,8] and makes a systematic search of the hypotheses using control groups. Regarding the special positioning of the subject, the authors make a good case of studying two sample groups with nearly the same quantifiable characteristics to ensure the soundness of their study. This has a special position because finding a control group with nearly the same characteristics as that of the first sample should not be easy in the R&D area. The R&D site suggests a competitive advantage for any company and the muscle each company wants to and has the ability to develop will vary.

The selection of sampling is successful also because groups have 110 and 146 members respectively, which should be necessary and sufficient to build statistically sound results, with not too few, nor too many samples. Procedures followed for the groups were the same, as far as the authors state, which adds to their credibility. Use of a control group in this study is important because literature research on similar research displays that researchers have often not used a control group[2, 8] often leaving a need for further study.

The authors have discussed the issues presented in this study under a broader heading in their 1994 paper "Determinants of Innovative Behavior".[8] They have taken a chance to study the roles of LMX and problem solving style with a second project, in depth with this paper. The present paper provides more support for their results in 1994.

However, both papers find that relationships between team members should be explored further. I believe this will emerge as an important factor in innovative behaviour. The leader-subordinate relationship studies have displayed mutual trust, and an understanding of partnership adds to the innovative process, is an important motivation factor, and positively affects the performance of both parties. [1,8] In many

organizations today, teams take on a huge part of tasks to be performed. However, organizations differ in their understanding of their teams and team members. Dr. Shin states that team members need not work on the same teams over different projects for the success of the project[9]. Traditional view follows to question this. The debate is over whether too much competency between team members is beneficial for the company and the employee. Dr. Shin states that the company benefits in an excellent way from this structuring, but the classical view that team members should and can trust each other to be efficient, but that too much competency destroys the mutual trust raises the question how much competency is there, and should there be in the R&D site?

Conclusion

Providing the competitive muscle for companies in the global arena of business today, R&D sites deserve special attention in identifying their needs and meeting them. The paper discussed provides important information on leader-subordinate relations and problem solving style. The conclusion from the study is that innovative behavior is positively affected by high level of leader-member relations, and bisociative thinking.

Further research should be made to understand the effect of member-member relations which constitute another part of workplace relations. Another point that deserves attention is what factors promote bisociative thinking? Are these purely personal traits? Or can these be promoted through education, learning, and organizational relations?

The references the authors refer to are pillars of the area (Graen, Bass, Yukl, Scandura). I have identified a paper by Quey-Jen Yeh which relies on a study made in Taiwan on managerial style and the job characteristics of R&D professionals[10] with results supporting the findings of 'Following the Leader in R&D'. This may be an example that innovative behaviour in different cultures is affected in similar ways by similar factors. Intercultural studies on the emergence of innovations would be very interesting.

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November 23, 1998
EMGT 520

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