

Hauschildt, Jürgen; Kirchmann, Edgar

Working Paper — Digitized Version

Teamwork for innovation: The "troika" of promoters

Manuskripte aus den Instituten für Betriebswirtschaftslehre der Universität Kiel, No. 487

Provided in Cooperation with:

Christian-Albrechts-University of Kiel, Institute of Business Administration

Suggested Citation: Hauschildt, Jürgen; Kirchmann, Edgar (1998) : Teamwork for innovation: The "troika" of promoters, Manuskripte aus den Instituten für Betriebswirtschaftslehre der Universität Kiel, No. 487, Universität Kiel, Institut für Betriebswirtschaftslehre, Kiel

This Version is available at:

<https://hdl.handle.net/10419/177331>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Nr. 487

Teamwork for Innovation - the "Troika" of Promoters

Jürgen Hauschildt and Edgar Kirchmann

Institut für betriebswirtschaftliche Innovationsforschung
Christian-Albrechts-Universität zu Kiel

September 1998

Teamwork for Innovation - the "Troika" of Promoters

| | |
|--|-----------|
| Summary | 0 |
| 1. Introduction | 1 |
| 2. The problem: From dyad to troika? | 2 |
| 3. Empirical test | 4 |
| 3.1 Sample | 4 |
| 3.2 Identification of the promoters | 4 |
| 4. Results | 5 |
| 4.1 The existence of process promoters | 5 |
| 4.2 Promotor structures and information activity | 6 |
| 4.3 Promotor structures and degree of innovativeness | 8 |
| 4.4 Promotor structures and success of innovation | 9 |
| 5. Discussion | 11 |
| Bibliography | 12 |

Summary

The management of innovation requires "champions" or "promoters" who enthusiastically engage themselves in favor of the new product or the new process idea. The more complex these innovations are, the more it becomes evident that this task cannot be fulfilled by a single person. Hence, division of labor becomes essential for the success of the innovation. According to the so-called promotor model, at least a dyad of a "power promotor" and a "technology promotor" is necessary to overcome the barriers of unwillingness and of ignorance. With growing complexity, additional problems of communication and process management will occur. This will demand a third team member, the "process promotor", who is needed to overcome the barriers of non-responsibility and non-communication between the organizational units involved and to act as a navigator of the process. In this article we present an empirical investigation of 133 innovations in the German plant construction and engineering industry. The results confirm the hypothesis that the success of the innovation is dependent on the existence of a "troika" of promoters.

1. Introduction

Eberhard Witte developed the *promotor model* around 25 years ago (Witte 1973)¹. This model has been generally accepted since then by both academics and practitioners. In a representative study of initial installations of computers in Germany, Witte was able to prove conclusively that innovations are only successful if energetic individuals give active support to the new product or process. In contrast to earlier American work, Witte had developed a set of hypotheses for his empirical investigation based on conflict theory: Innovations require more than the performance of routine tasks. Innovation normally comes up against massive *resistance*, thus stimulating different conflicts. This resistance stems partly from ignorance and partly from unwillingness on the part of those passively affected by or actively engaged in the innovation. These different kinds of resistance must be overcome by a specific conflict management using appropriate types of power: specific knowledge must be employed against barriers of ignorance. Innovators have to act as "educators" or "technologists" in order to win over reluctant colleagues or customers. A person is therefore required who is able to contribute specific technical knowledge to the innovation process - the *technology promotor* or *promotor by know-how*. The psychological barrier of unwillingness, on the other hand, must be overcome by a different force: the *power promotor*. The power promotor uses hierarchical power to shield the innovation from opposition and to establish it in the face of resistance. The technology promotor and the power promotor form a *dyad*. They co-operate closely, develop a common language and provide enthusiastic support to the new idea.

The core of Witte's theoretical concept is a conflict power approach. It is founded on three basic assumptions:

1. In order to overcome each variant of resistance, a specific energy is required. The barrier of unwillingness is overcome by hierarchical potential, the barrier of ignorance by applying specific technical knowledge. A correspondence exists between resistance and the energy that overcomes resistance ("*correspondence theorem*").
2. These energies are supplied by different people. The power promotor contributes *hierarchical potential* to the innovation process, while the technology promotor contributes specific technical knowledge. These inputs are provided by division of labor. Each contribution is embodied by a specific person ("*theorem of the division of labor*").
3. The innovation process is successful when power promotor and technology promotor work together and are well co-ordinated, therefore *co-operating* in the truest sense of the word ("*interaction theorem*").

All three theorems were empirically tested and confirmed by Witte. Surmounting each of the different barriers by division of labor and with proper co-ordination was in fact shown to produce the optimum solution overall.

The findings are by no means unanimous, however. In a considerable number of cases there is no division of labor at all. Witte's own investigation notes that in 21 % of the

¹ Witte has introduced the Latin term "promotor" instead of the English version "promoter" to avoid negative connotations. In English speaking countries the term "champion" is used synonymously.

233 cases investigated *no promotor* appeared (Witte, 1973, p 38). The well-known SAPPHO study, conducted by Rothwell and his research team, also demonstrated considerable accumulation of roles (Rothwell et al., 1975, p 22 ff). The findings of Chakrabarti (1974, p 59) and Chakrabarti/O'Keefe (1977, p 340) do point clearly to the existence of several promotors, but in half of the cases all innovative activity is concentrated in a single key person. In later studies, too, such as Markham et al. (1991, p 217 ff), a considerable number of cases have no promotor or only a single promotor.

This *centralization* of the innovative function in one position is *by no means the rule*, however: in Witte's study, the dyad structure occurs in 37% of cases (Witte, 1973, p 35), while in Chakrabarti/O'Keefe's studies it appears in 48% of cases. More recent studies by Bantel/Jackson (1989, p 107 ff.) and Howell/Higgins (1990, p 317 ff.) show that innovation teams may well contain between 5 and 7 people.

Highly variable degrees of division of labor are therefore present in innovation processes.

2. The problem: From dyad to troika?

Following a meta-analysis of the literature, Chakrabarti/Hauschildt (1989, p 161 ff.) put forward the hypothesis that, in addition to the technology promotor and the power promotor, a third promotor is required to ensure the successful conclusion of innovation processes. This promotor is always needed when particularly complex material is to be handled and/or the innovation project is to be accomplished in a large, complex firm. *Problem complexity and system complexity demand a "process promotor"*. The process promotor has the task of overcoming further barriers, the barriers of non-responsibility and indifference which are primarily caused by organizational and administrative resistance to the new idea. The process promotor derives his influence from organizational know-how. He knows who could be affected by the innovation. He forges the link between the technology promotor and the power promotor. He is able to translate the language of innovative technology into the language traditionally spoken and understood in the firm. He is the champion of innovation. He is able to turn an idea into a plan of action. He has diplomatic skills and knows how to approach and win over different types of people on a one-to-one basis. Figure 1 shows this "troika"- constellation of the promotors.

This theoretical idea, according to which the promotor dyad should be expanded to a promotor troika, has also been well accepted by both academics and practitioners. Gemünden/Walter (1995, p 971-986) carry this idea even further. They note that innovations are increasingly leading to co-operation between several firms. As a result, new forms of resistance are appearing in the inter-firm innovation process, which can once again be overcome by a specific promotor, the *"relations promotor"* or *"alliance champion"* (Forrest/Martin 1992, p. 51). It is still unclear whether the relations promotor represents a further development of the process promotor or whether an extra person is required. *Will the troika become a quadriga?*

At this point it seems appropriate to stop, and carry out a new empirical test: *is it at all possible to prove the existence and efficiency of a process promotor?* Hauschildt/Chakrabarti's meta-analysis had only drawn attention to additional functions, perhaps also to a role, but not, however, to a further person. The correspondence theorem appears to be

empirically confirmed. Is this also case for the theorem of the division of labor, in this case the three-person model?

This leads to the fundamental proposition of our survey:

Proposition:

In addition to technology promotors and power promotors, process promotors also appear in a considerable number of innovation processes ("troika-constellation").

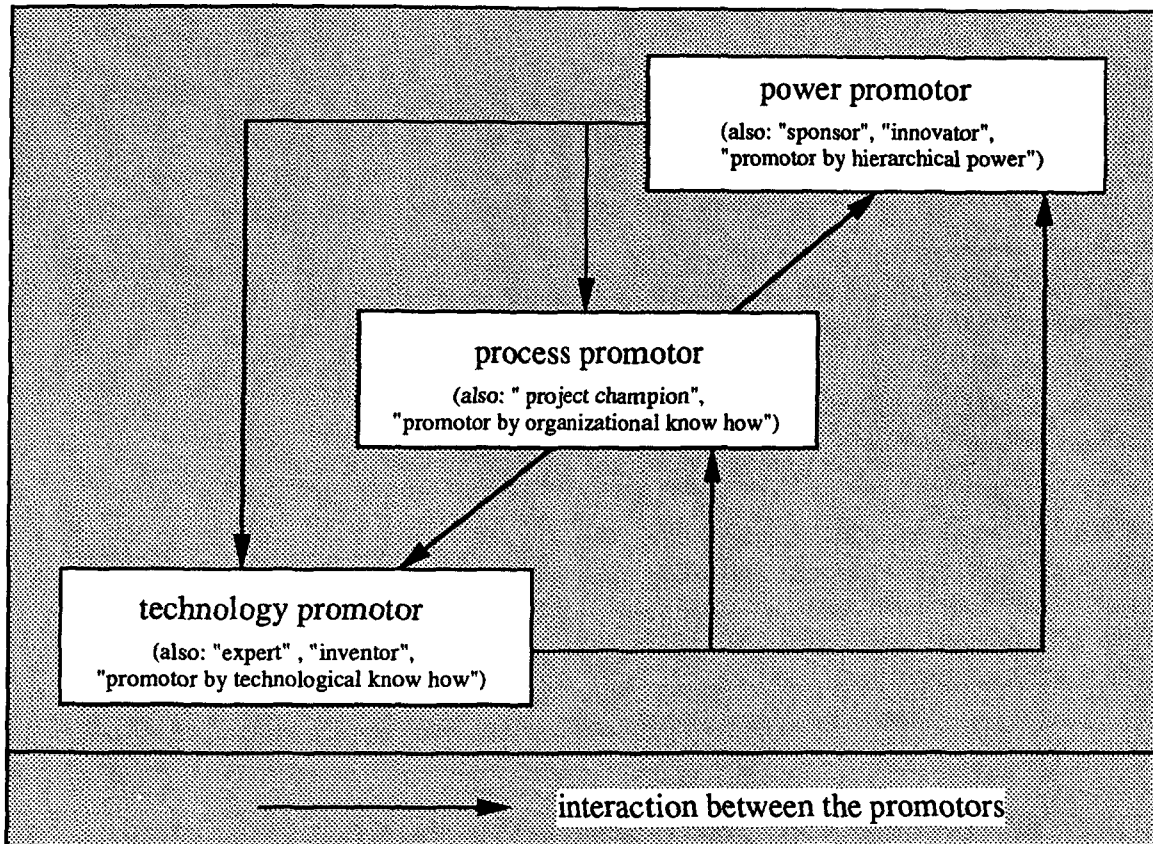


Figure 1: The "Troika"-model of innovation promotors

If we can identify a troika-constellation in a sufficient number of cases we might be able to compare it with other promotor structures, such as the "dyad" structure or single promotors of different kinds. But we emphasize that we are not looking for roles but for individuals who work together to bring the innovation to an end. Our investigation will ask for their commitments to act as promotors and their contributions to the innovation in order to get an impression of their specialization and their division of labor. Consequently, we will not ask whether the division of labor is the result of a formal decision or whether it happened spontaneously.

Let us assume that different promotor constellations can be identified. Then two hypotheses can be tested: one which refers to the conflict regulating function of the management of innovation, the other which deals with its information activities.

(1) According to the Witte model and the meta analysis of the empirical findings (Chakrabarti/Hauschildt 1988) different power bases are necessary to overcome the resistance against innovation. This fundamental hypothesis is to be tested again. Thus, our first hypothesis states:

Hypothesis 1:

The troika of separate power, process, and technology promotors copes more effectively with conflicts and is therefore more successful than any other promotor constellation ("conflict explanation").

(2) Innovation management is more than coping with conflicts and overcoming resistance. Moreover, innovation processes are *information processes*, i.e. processes of the search for, processing and transfer of information (q.v. Rogers 1982, p 110, Hauschildt 1992, pp 105-110). Rogers states:

"Managing information flows is an important part of successful innovation... In this sense, the most innovative firm in an industry is likely one that best manages its information flows". (Rogers 1982, p 111)

Management of such information processes may therefore be interpreted as a variable, intervening in the direct relationship between promotor structures and the success of the innovation process. Information processes have to be oriented towards different aspects of the innovation problem: technical, managerial, financial, organizational. We assume that the different promotors will be able and willing to perceive, collect, and absorb the informations in their specific domains. Thus, our hypothesis 2 states:

Hypothesis 2:

The troika constellation of separate power, process and technology promotors considers innovation-related information to a greater extent and is therefore more successful than any other promotor constellation ("information explanation").

3. Empirical test

3.1 Sample

These hypotheses were tested by a questionnaire and a series of interviews concerning product innovations generated jointly by manufacturers and users in the *West German plant construction and engineering industry* (Kirchmann, 1994, p 114 ff). An oral interview was conducted in 30 firms. A total of 203 additional, medium-sized firms received a questionnaire, addressed to the manager in charge of the innovation project after they had been identified by telephone-calls. Out of these 203 firms, 123 returned it. The *response rate* of 60.6 % is indicative of the importance of these problems for the firms in question.

Following the questionnaire and interviews, around 153 sets of data were available. 20 of these could not be analyzed within the framework of the study, however, as they contained inconsistencies or were incomplete. A total of 133 *product innovations in 133 firms* were therefore available for the empirical test.

3.2 Identification of the promoters

Promoters are individuals who give active, intensive support to the innovation process. As a result of their commitment to the innovation, their identification by project colleagues is not a particular problem as a rule (Witte 1973, p 29; Jervis 1975, p 22; Taylor 1975, p 240 ff.; de Meyer 1984, p 240; Ettlie et al. 1984, p 687).

Our preliminary study also showed that interviewees had no trouble to speak of in giving answers concerning the existence of promoters in the product innovation process. Promoters were identified in the questionnaire according to the definitional typology: interviewees were asked to say whether colleagues were present during the innovation process who fitted at least one of the following descriptions (for a similar procedure in identifying "innovation champions", see Ettlie/Bridges/O'Keefe 1984, p 686 ff).¹

- Active and intensive contributor to promoting the innovation process by means of *hierarchical potential* (PoP).
- Active and intensive contributor to promoting the innovation process by means of *specific technical knowledge* (TeP).
- *Active and intensive mediator* between members of the organization who gave particular support to the innovative process by means of their hierarchical potential and colleagues who particularly supported the innovation process by means of specific technical knowledge (PrP).

To minimize the risk of attributional bias here, a conscious decision was made not to use the terms "power promotor", "technology promotor" or "process promotor" in the survey. This was done to prevent interviewees from unduly assigning themselves the role of a "promotor" (q.v. Howell/Higgins 1990, p 327).

¹ The introductory question is: "Were there any employees in your firm who gave particularly active and intensive support to the realisation of the new product development?"

4. Results

4.1 The existence of process promotor

The interviewees were given the following options:

- to list *no* employees with promotor characteristics,
- to list *all* employees whom they felt met the description of a power or technology promotor and
- to define *each* employee mentioned as either a power promotor, technology promotor or a combination of both types in one person.

The possible answers thus embraced all of Witte's promotor structures. In addition, the existence of a process promotor, who mediates between the power promotor and the technology promotor, was surveyed. Figure 2 shows the structures. The first five structures correspond to the promotor structures introduced by Witte. The troika is an addition to this. Together with the extended model selected by Chakrabarti/Hauschildt, this gives a total of six promotor structures.

The findings concerning the existence of these structures are given in the last column of Figure 2. The distribution is surprising, particularly with regard to the sole power promotor. Not one of the 133 interviewees considered it possible to resolve an innovation process of this nature by the sole involvement of a power promotor. *If power promotors appeared, then only in conjunction with other promotor types.* In clear contrast to this is *the dominance of a sole technology promotor.* This structure appeared in more than one third (39 %) of all cases of new product development under the influence of a promotor.

| Promotor structure | Abbreviation | Description | Frequency of occurrence |
|--------------------------|-----------------|--|-------------------------|
| No promotors | NoP | No promotors are involved in the innovation process. | 37 (28 %) |
| Sole technology promotor | TeP | One or more technology promotors only are involved in the innovation process. | 52 (39 %) |
| Sole power promotor | PoP | One or more power promotors only are involved in the innovation process. | 0 (0 %) |
| Double role | TePoP | One or more promotors are involved in the innovation process, all of whom combine the characteristics of technology and power promotors. | 4 (3 %) |
| Dyad | PoP + TeP | One or more power promotors and technology promotors are involved in the innovation process. | 19 (14 %) |
| Troika | PoP + PrP + TeP | One or more of each of the power, process and technology promotor are involved in the innovation process | 21 (16 %) |

Figure 2: Definition and distribution of promotor structures

The assumption of an accumulation of roles in one person is rejected, however. Only in four of the 133 cases surveyed did the double role of power and technology promotor appear. *In contrast, dyads and troikas are present in a considerable number of cases.* These two structures are found together in almost one third of all innovation processes. The troika is even slightly more frequent than the dyad. This observation alone is sufficient to demonstrate that *the troika is by no means a peripheral phenomenon in the practice of innovation management.*

The development of a new product quite obviously demands a *technology promotor*. Innovations are, first and foremost, a technical or technological phenomenon. They therefore require above all the commitment of individuals who give the innovation process active, intensive support by means of specific technical knowledge. The technology promotor is the nucleus of the innovation process. This may explain why the sole technology promotor could be identified in the present study, while the sole power promotor is entirely absent. Promotor structures are evidently not totally independent of the type of innovation (Kimberly/Evanisko 1981, p 689, Gopalakrishnan/Damanpour 1994, p 110). In Witte's studies, an administrative process innovation was studied, while the present research concerns a technical product innovation. The barrier of unwillingness seems less significant in our sample.

The observed frequency distribution renders analysis of the success of some promotor structures unnecessary. The sole power promotor cannot be the subject of closer investigation. As the double role structure is only present in four cases, no definite inferences may be drawn by statistical analysis. This case will therefore also be excluded from further analysis.

4.2 Promotor structures and information activity

In product innovation the customer is the most important source of information. Thus, we asked in the questionnaire to evaluate the importance of the information acquired from customers.

The findings on the basis of a scale from one to seven are illustrated in Figure 3.

The *sole technology promotor* makes the least contribution to the acquisition of innovation-related information. Here it is particularly interesting to note that this structure has an even lower score than the promotor-less structure. According to the findings of the SAPPHO project, this could be attributable to the "not invented here syndrome" (q.v. Jervis 1975, p 24; Rothwell 1975, p 145): technology promotors on their own are critical of external information and tend to be reluctant to accept findings made by outside parties.

With the addition of a *power promotor*, the relevance of the information acquired increases. Whether this positive effect is caused directly by the action of the power promotor or whether his mere existence is capable of bringing about the increase is a question which cannot be answered here. The latter possibility is supported by the contention put forward by Gemünden (1981, p 161) that the technology promotor is only prepared to make increased contact with outside parties when supported by a person who enjoys wide-ranging authority.

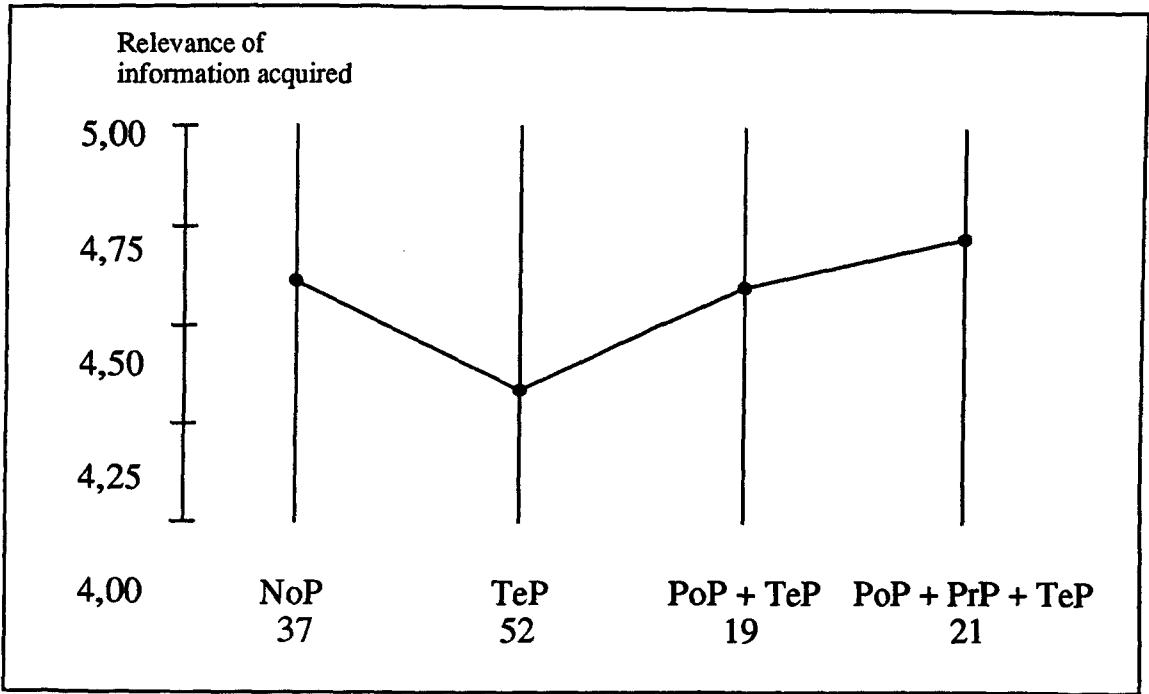


Figure 3: Promotor structures and importance of information

The best result is achieved by the troika. It would seem above all to be the presence of a process promotor which increases the search for innovation related-information. Through his role as mediator between power and technology promotor and the associated knowledge which he has of the organization regarding physical resources and personnel, the process promotor opens up further sources of information. This is an initial indication of the effects of division of labor in innovation management. This finding is subject to reservations, however. The variance analysis shows that the findings concerning the relevance of the information search allow no more than the inference of a trend. At the 5 % level, the F-test does not indicate any significant mean differences across all promotor structures. Strictly speaking, therefore, H3 is not confirmed, although the findings do not actually refute it. It seems that the cognitive roles of the promotors might be less important than the conflict regulating ones.

4.3 Promotor structures and degree of innovativeness

This brings us to the question of how successful each of the various promotor structures are. To begin with, the relationship with the degree of innovation is tested. In Witte's research, the degree of innovation was the most important success variable. First of all, however, a more precise definition is needed: what is meant is the degree of innovation *achieved*, not the degree of innovation *aimed for*, which has more the function of an independent variable. The question should therefore be: To what extent can promoters make use of the information acquired for the innovation process to obtain a high degree of innovativeness in innovation? (see Figure 4). The degree of innovativeness was measured on a scale¹ from one to seven.

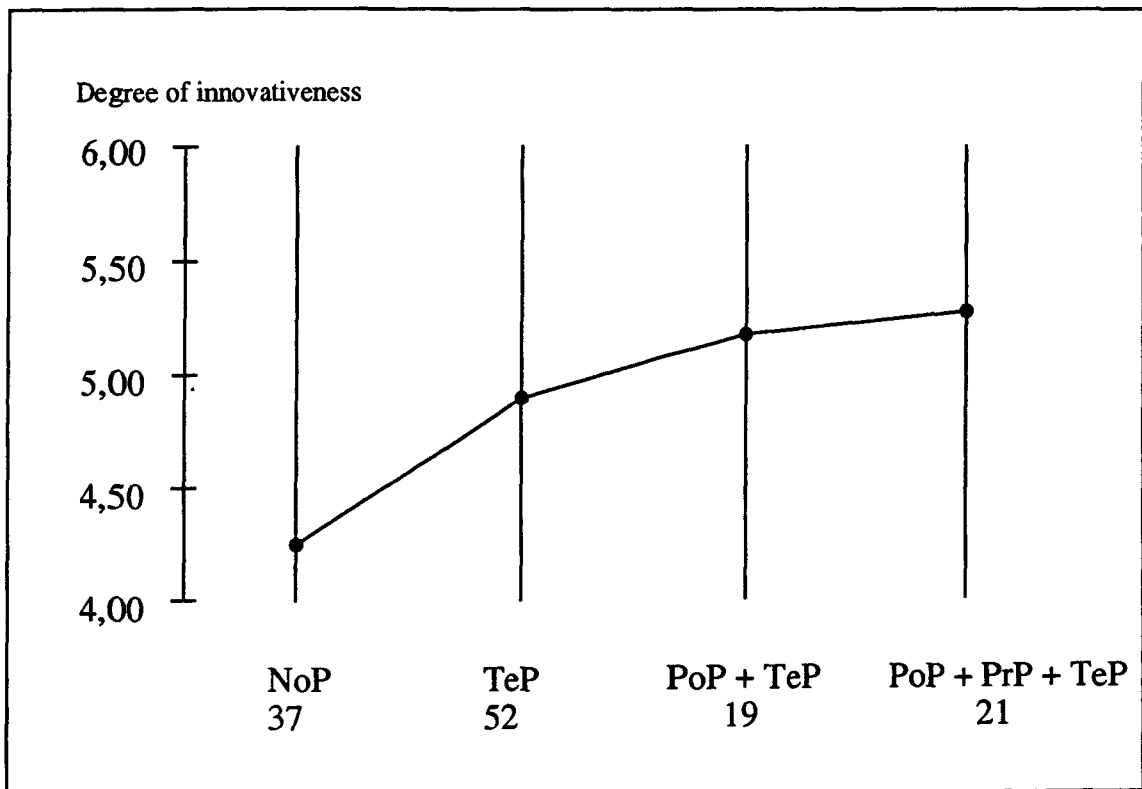


Figure 4: Promotor structures and degree of innovativeness
(as seen by the manufacturer)

¹ The question was as follows: "To what extent was the joint product development an innovation for your customer?"

With a significance of $p \leq 0.031$, the structures show significant mean differences. Furthermore, an additional LSD test shows the a-posteriori comparative tests between:

- the promotor-less structure and the troika,
- between the promotor-less structure and the dyad and, at the 10 % significance level,
- between the promotor-less structure and the sole technical promotor to be significant at the 5% level.

The technology promotor acting alone is able to create a more ambitious new product than a promotor-less structure. With the added presence of a power promotor, possible barriers of unwillingness may also be overcome. Accordingly, *a further increase in the degree of innovation is found with the classical dyad structure*. This confirms once again that Witte's promotor model leads to higher degrees of innovation than those achieved by promotor-less structures or sole-promotor.

If the promotor model is expanded by the addition of a process promotor, however, the solutions to the innovation problems reach an even more ambitious level. Of all the promotor structures distinguished in this research, *the troika makes the highest contribution in terms of effectiveness*. The positive influence of a process promotor is unmistakable.

The causal direction of the relationship could also be interpreted the other way round: if the company is seeking a particularly ambitious quantum leap in innovation, it is compelled to bring in another promotor, so that as well as the barrier of ignorance and the barrier of unwillingness, administrative barriers may also be dismantled. Seen from this angle, the *desired* degree of innovation may be interpreted as a strategic key variable.

4.4 Promotor structures and success of innovation

The findings to date on the various promotor structures have demonstrated that the troika of separate power, process and technology promotors is most capable of giving active, intensive support to the innovation process and the information transfer process. The promotor structures, in particular the troika, examined here for the first time will now be analyzed according to their *contribution to technical and financial innovative success*. The starting hypothesis anticipates a positive correlation between innovation success and the division of labor between promotors. The technical and financial dimensions of this hypothesis are examined separately. The success dimensions were measured on a scale¹ from one to seven (Hauschildt 1991, p 605 ff). Figure 5 summarizes the results obtained.

¹ The questions were as follows:

"To what extent have your company's expectations from the innovation project been achieved?

- technically (not at all totally)

- financially (not at all totally)"

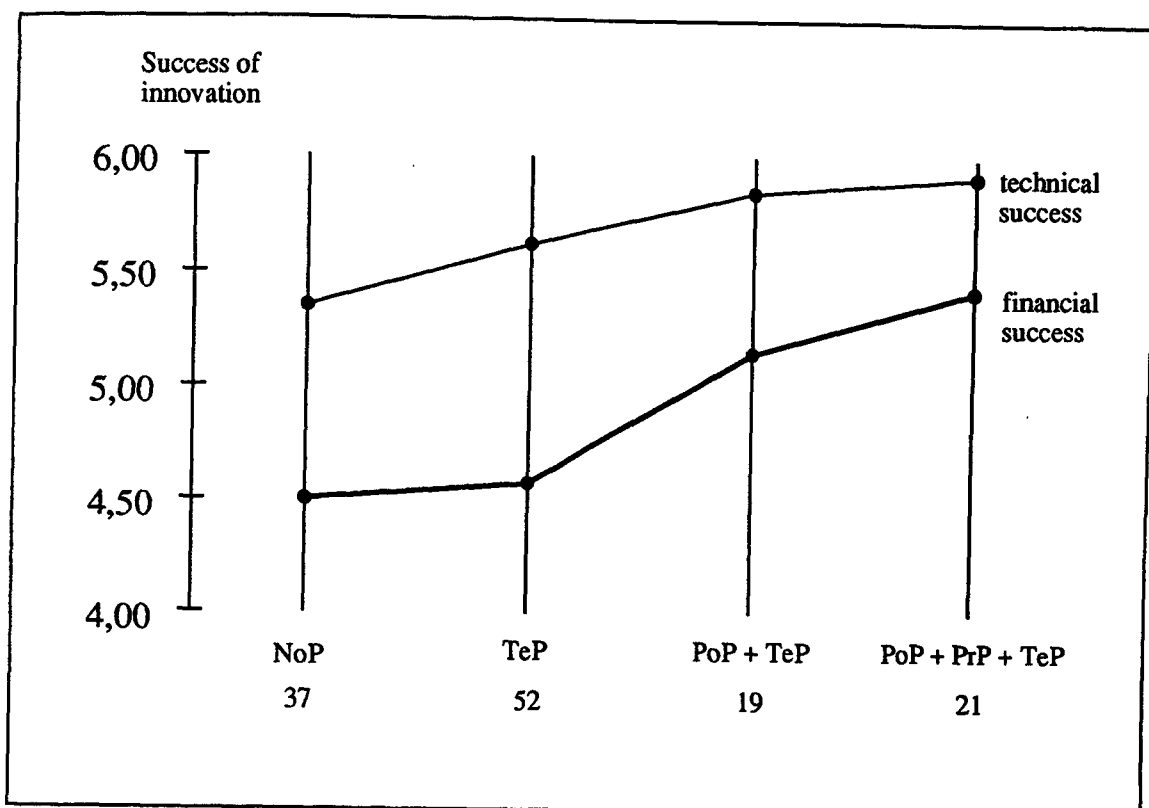


Figure 5: Promotor structures and innovation success

If we start with the dimension of technical success, the hypothesis would, at first glance, appear to be confirmed. The application of a single-factor variance analysis to test for significant differences shows, however, that the F-test does not produce a significant overall outcome for technical innovative success, thus only permitting inferences regarding a trend. The a-posteriori comparative tests show the difference between the promotor-less structure and the troika to be significant - though only at the 10 % level.

Of greater importance, however, is the dimension of commercial success. In this case, the starting hypothesis is impressively confirmed. According to the F-test, a significant overall rise occurs at the 5 % level. Under the same test conditions, the comparisons between

- the promotor-less structure and the troika with three promotors and
- between the sole technology promotor and the troika

revealed significant differences in the commercial success of innovations.

With increasing differentiation of the division of labor between the promotors, innovation success increases. The troika of separate power, technology and process promotors in particular makes it possible to achieve a high level of innovation success. In addition, a comparison of the findings for technical and commercial success prompts the following interpretation: technical innovation success is no more than a necessary, though by no means a sufficient condition on the way to commercial success.

5. Discussion

In summary, the analysis shows that the existence of promoters, and division of labor between them, has a positive effect upon the innovation process. The "dyad" of the power and technology promotor generally achieves better results in the innovation process than the sole-promotor or promotor-less structures. Of particular note, however, is that type of division of labor in innovation management which includes not only the power and the technology promotor, but also a process promotor. *Of all the promotor structures, this "troika" can support the innovation and information transfer process most successfully.*

We hope that these findings can be confirmed in other investigations. But even so, there are considerable opportunities and further questions for important research, such as:

Which key events stimulate individuals to act as promoters of innovations?

How do promoters come together? The first phase of innovation processes is normally lost in mystic obscurity. Yet it is in this phase that the process by which promoters come together takes place, a process which can obviously only be described in social and psychological categories.

And once these promoters do actually encounter one another - how is the personal fit determined and secured? A good fit is essential for the subsequent innovation project to come to a successful conclusion with all its difficulties, and to get it completed in the face of all resistance. Such teams need considerable group cohesion in order to withstand all the pressures from outside.

We know very little about the conditions under which promotor structures are dissolved. Even if a promising promotor team comes on the scene at the beginning of a process, it is by no means certain that it will see the process through and complete it successfully. On what reefs might the tandem or troika founder?

The interaction of the promoters and champions is couched in somewhat mysterious terms as "good co-operation". What does that mean specifically? We know very little about whether and how the individual promoters have to take a hand during the innovation process. Do they play changing roles? Do they always appear as a team? What contribution is absolutely essential for which key occurrences?

Promoters and champions are active "temporarily", for a brief period. They have the end of the innovation process in mind. What awaits them then? On the surface, this concerns the question of incentives, of rewards, of penalties, of all types of sanction that firms hold in reserve for successful or unsuccessful managers. The problem is so acute because promoters and champions generally do not commit themselves because of extrinsic drivers, but intrinsically. They get involved, they commit, they are not called in or appointed. How does a firm react to such self-appointed activists? How does it deal with failed or unsuccessful innovators?

What role does the change in organizational or corporate culture play in the readiness to participate and the success of promoters and champions in innovation processes? Even if we no longer accept the classical dichotomy of "mechanistic" and "organic" organization culture, Burns and Stalker (1961) nevertheless show that there is a problem here: the more mechanistic an organizational culture is, the more important power promoters are. The more organic it is, the more important process and technology promoters are. The forms of organizational change mentioned above tend more to indicate that organic forms are gaining in importance. Will the role of the power promotor become obsolete?

Bibliography

- Bantel, K.A./Jackson, S.E.: Top management and innovations in banking: Does the composition of the top team make a difference? In: *Strategic Management Journal*, Vol. 10, 1989, p 107 ff.
- Burns, T./Stalker, G.M.: *The Management of Innovation*, London 1961.
- Chakrabarti, A.K.: The Role of Champions in Product Innovation. In: *California Management Review*, Vol. XVII, 1974, p 59.
- Chakrabarti, A.K./Hauschildt, J.: The division of labour in innovation management. In: *R&D Management*, Vol. 19, 1989, pp 161-171.
- Chakrabarti, A.K./O'Keefe, R.D.: A Study of Key Communicators in Research and Development Laboratories. In: *Groups and Organisation Studies*, Issue 3, 1977, p 340.
- Ettlie, J.E./Bridges, W.P./O'Keefe, R.D.: Organisation strategy and structural differences for radical versus incremental innovation. In: *Management Science*, Vol. 30, 1984, p 687.
- Forrest, J.E./Martin, M.J.C.: Strategic alliance between large and small research intensive organisations: experiences in the biotechnological industry. In: *R&D Management*, Vol. 22, 1992, pp.41-53
- Gemünden, H.G.: Innovationsmarketing. Interaktionsbeziehungen zwischen Hersteller und Verwender innovativer Investitionsgüter. In: *Innovationsmarketing*, Tübingen 1981, p 161.
- Gemünden, H.G./Walter, A.: Der Beziehungspromotor - Schlüsselperson für interorganisationale Innovationsprozesse. In: *Zeitschrift für Betriebswirtschaft*, Vol. 65, 1995, pp 971-986
- Gemünden, H.G./Walter, A.: Die Förderung des Technologietransfers durch Beziehungspromotoren. In: *Zeitschrift Führung + Organisation*, Vol. 65, 1996, pp 237-245.
- Gopalakrishnan, S./Damanpour, F.: Patterns of generation and adoption of innovation in organizations: Contingency models of innovation attributes. In: *Journal of Engineering and Technology Management*, Vol. 11, 1994, pp 95-116.
- Hauschildt, J.: Towards measuring the success of innovation. In: *Technology Management - The New International Language*, ed. D. Kocaoglu and K. Niwa, proceedings of PICMET, Portland 1991, pp 605 -608.
- Hauschildt, J.: External acquisition of knowledge for innovations - a research agenda. In: *R&D Management*, Vol. 22, 1992, pp 105-110.
- Howell, J.M./Higgins, C.A.: Champions of technological innovation. In: *Administrative Science Quarterly*, Vol. 35, 1990, p 317 ff.
- Jervis, P.: Innovation and technology transfer. The roles and characteristics of individuals. In: *IEEE Transactions on Engineering Management*, Vol. EM-22, 1975, p 22f.
- Kimberly, J.R./Evanisko, M.J.: Organizational Innovation: The Influence of Individual, Organizational, and Contextual Factors on Hospital Adoption of Technological and

- Administrative Innovations. In: Academy of Management Journal, Vol. 24, 1981, pp 689-713.
- Kirchmann, E.M.W.: Innovationskooperation zwischen Herstellern und Anwendern, Wiesbaden, 1994, p 114 ff.
- Kirchmann, E.M.W.: Enge Kooperation. Durch frühzeitige Einbeziehung des Kunden zu neuen Produkten und Verfahren. In: Blick durch die Wirtschaft, 5 August 1996, p 9.
- Markham, S.K./Green, S.G./Basu, R.: Champions and antagonists: Relationships with R&D project characteristics and management. In: Journal of Engineering and Technology Management, Vol. 8, 1991, p 217 ff.
- Meyer, A. de: A technological lifecycle approach to the organisational factors determining gatekeeper activities. In: R&D Management, Vol. 14, 1984, p 240.
- Rogers, E.M.: Information exchange and technological Innovation. In: Sahal, D. (Ed.): The transfer and utilization of technical knowledge, Lexington et al. 1982, p 110.
- Rothwell, R.: Intracorporate entrepreneurs. In: Management Decision, Vol. 13, 1975, p 145.
- Rothwell, R./Freeman, C./Horsley, A./Jervis, V./Robertson, A. B./Townsend, J.: SAPPHO updated - project SAPPHO phase II. In: Research Policy, Vol. 3, 1974, p 280.
- Taylor, R.L.: The technological gatekeeper. In: R&D Management, Vol. 5, 1975, p 240 ff.
- Witte, E: Organisation für Innovationsentscheidungen. Das Promotoren-Modell, Göttingen 1973.