

THE MANAGEMENT OF ORGANIZATIONAL INNOVATION

Research Grant Proposal
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I. Project Summary:

In a research project that was funded by the Faculty Development Committee last year, I reviewed the current body of literature on the management of innovation and analyzed significant research and case studies to identify categories, patterns, and trends. The outputs included: 1) a bibliography of literature on the management of innovation, 2) a categorization of the literature on the management of innovation, and 3) recommendations for further research on the management of innovation. These outputs are shown in a paper that I presented at the Spring 2001 Midwest Business Administration Association Conference (Fischer, 2001) which is contained in the appendix to this proposal.

It is my belief that a more structured approach to the management of innovation is needed. One objective of that research effort was to identify areas of organizational innovation management that have a strong potential for further research. The literature search and categorization of prior work was the beginning of a research track on the management of organizational innovation.

This proposal expands on that research track. I am proposing to: 1) develop a questionnaire to be used to evaluate the innovative potential of organizations based on factors that may be controlled by managers, 2) create a template for writing case studies of innovations, 3) create a web site that contains an abbreviated version of the questionnaire as well as other information on organizational innovation, and 4) develop a strategy for researching innovation management.

II. Narrative:

1. Current Situation

a. Organizational Innovation Innovation in organizations is something that is highly desired but frequently left to chance and individual initiative rather than being led and managed. The sense is that innovation is a serendipitous process that cannot be effectively promoted by managers. However, there exists a substantial body of research and case studies on the effectiveness of various approaches to manage organizational innovation. This research is primarily focused on the research and development or advertising functions in organizations. Textbooks on management do not devote a great deal of space to the management and leadership of innovation. However, this managerial activity will become more important as more firms evolve into “intellectual organizations” in which ideas and innovations are the principal outputs. Also, other organizations whose outputs are traditional goods and services will find a greater need to innovate throughout the organization in order to remain competitive.

b. Job Transitions: Industrial to Information to Innovation The nature of jobs has changed dramatically in the last ten years. As we passed from the industrial age to the information age, there was a major shift in jobs in American business and government from industrial and clerical to information processing. The number of people who perform their jobs in front of computers has increased significantly. However, these new jobs are often routine and may be easily automated. The increase in jobs in the future will

be in creative work. Organizations that thrive in the future will be ones that find ways to increase the amount of innovation produced by their members.

c. Managing for Innovation Managers need to be trained to create mechanisms and systems that support and facilitate innovation. This is not confined to the management of researchers, engineers, and advertising professionals. More and more, managers of all functional areas will need to know how to create an optimal level of organizational innovation in their departments.

d. Need for the Research There is a need to develop a more systematic study of the management of organizational innovation. Although creativity itself is usually an unstructured process, I believe that there are structured approaches for managing innovation that will result in increased creative output. This research will lay the groundwork for ongoing research on the management of innovation in organizations. The trend in organizations today is toward more research and innovation in general. More inquiry into the management of this process is needed.

2. The Project Plan

The project will consist of four parts: i) develop a questionnaire to be used to evaluate the innovative potential of organizations based on factors that may be controlled by managers, ii) create a template for writing case studies of innovations, iii) create a web site that contains an abbreviated version of the questionnaire as well as other information on the topic of organizational innovation, and iv) develop a written strategic plan for researching innovation management.

a. Questionnaire A questionnaire will be developed to evaluate the innovation potential of organizations, departments or sections of organizations.

The following categories will be used in developing questions:

- ◆ Brainstorming/Idea Generation
- ◆ Change Management
- ◆ Climate/Culture
- ◆ Compensation/Rewards
- ◆ Control and Measurement
- ◆ Customers/Clients
- ◆ Empowerment
- ◆ Entrepreneurship/Intrepreneurship
- ◆ Knowledge Management
- ◆ Leadership/Project Champions
- ◆ Motivation
- ◆ Networks - External
- ◆ Networks - Internal
- ◆ Organizational Structure
- ◆ Physical Location
- ◆ Planning/Goal Setting
- ◆ Resources
- ◆ Strategy
- ◆ Support
- ◆ Systems
- ◆ Team Building

- ◆ Training/Education
- ◆ Visualization

b. Case Writing Template A template will be created to provide a standardized method for writing case studies of innovations. This will present an efficient approach for case writing that will allow students to participate in this research method. It will be structured but will permit open-ended questions as well to allow the interviewee to provide unique information about the innovative process.

c. Web Site The main purposes of the web site will be 1) to provide information on the management of innovation, and 2) to present an abbreviated version of the questionnaire that interested persons may evaluate their organizations and obtain an immediate “innovation quotient” or score. If they were interested, they could volunteer to participate in further research using the complete questionnaire.

d. Strategy for Innovation Management Research The literature search identified ten research areas with particularly high potential:

- ◆ Knowledge Management
- ◆ Motivation
- ◆ Control and Measurement
- ◆ Training/Education
- ◆ Planning/Goal Setting
- ◆ Visualization
- ◆ Brainstorming/Idea Generation
- ◆ Compensation/Rewards
- ◆ Customers/Clients
- ◆ Support

These topics contain the directions that my future research efforts will take. I will focus on one or more of these areas and develop a strategic plan for future research efforts.

I intend to apply for outside funding to pursue these research efforts. This proposal is to develop a research strategy that would be the basis for writing one or more grants next year to obtain outside support.

The involvement of students in the research effort is a goal of this project. Undergraduate students benefit from exposure to research methodology and gain an appreciation for the need for research and the way new knowledge is generated. I was able to use two independent study students in my literature search on this subject. As the research progresses, I feel that I will be able to use more students. This phase of the research could employ students in designing, pre-testing and piloting the survey instrument. Students could become involved in interviewing to gather information in the development of the case studies. The use of students to gather data through the case study method could be an ongoing feature of my business strategy class (BUS456) or the basis for independent studies.

3. Faculty Expertise

My dissertation research was a study of factors that influence success in the transfer of technology from R&D to production (Fischer, 1987). My advisor specialized in the study of the R&D function in organizations. We spent a great deal of time, under a

National Science Foundation grant, studying the management of R&D. We also did a study for the U.S. Library of Congress.

My Ph.D. was in Industrial Engineering and I have worked in engineering and R&D departments. I taught in the Industrial Engineering Department at Western Michigan University and have a good understanding of technology management.

4. Plans for Evaluation and Dissemination

The final product of the literature search and analysis of research on the management of organizational innovation that was done under last year's Faculty Development Grant was a presentation at the Spring 2001 Midwest Business Administration Association Conference in Chicago on March 8, 2001 (Fischer, 2001). I intend to present the findings of this project at that conference next year. Initial results of information from the questionnaire and case studies will be used as the basis for the paper.

A shortened version of the questionnaire will be placed on the Internet for public access. Hopefully, this will generate some interest in my approach – perhaps it will even provide leads for field sites. I believe that academic researchers should use the Internet as a medium for disseminating their work. This is my intention for my research on the management of innovation. The web site will provide links to other research and contacts.

Finally, I plan to use the research strategy as the basis for at least one outside grant application.

III. Time Line:

I have no other commitments during the summer months. I will devote 12 weeks to the project. The four parts of the research would be done concurrently.

Questionnaire

First Draft - 2 Wks.

Pilot - 2 Wks.

Case Writing Template

First Draft – 1 Wk.

Pilot – 2 Wks.

Web Site

Create Web Site – 2 Wks. (with student assistant)

Strategy for Innovation Management Research

Evaluate Sources of Outside Funding - 1 Wk.

Write Strategic Research Plan – 2 Wks.

IV. Budget:

I propose to spend \$3,500 on a combination of support for a student assistant, and myself during June through August 2001, to produce the deliverables mentioned above. An itemization of the proposed expenditures is as follows:

Faculty salary	\$3,000
Student stipend	400
Travel expenses.....	<u>100</u>
Total	\$3,500

V. Current and Previous Grants:

Organizational Innovation – A Review of the Literature, Elmhurst College Faculty Research Grant, 1999-2000 Academic Year, \$500.

VI. Publications:

Fischer, Bruce D., “Managing Innovation – An Analysis of the Literature,” Spring 2001 Midwest Business Administration Association Conference, Chicago, Illinois, March 8, 2001.

Fischer, Bruce D. and Robert M. Wygant, “A Review of the Use of Allowances,” International Modapts Association Spring 2001 Conference, Cocoa Beach, Florida, May 3, 2001.

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Fischer, Bruce D., “Managing Innovation – An Analysis of the Literature,” Spring 2001 Midwest Business Administration Association Conference, Chicago, Illinois, March 8, 2001.

APPENDIX

MANAGING INNOVATION – AN ANALYSIS OF THE LITERATURE

The following paper was published in the Proceedings of the Spring 2001 Midwest Business Administration Association Conference and is based on the work done on a Faculty Research Grant for Academic Year 1999-2000.

MANAGING INNOVATION – AN ANALYSIS OF THE LITERATURE

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ABSTRACT

The need for innovation and creativity in organizations has spawned a number of studies on managing innovation in organizations. This paper reviews the current body of literature on managing innovation, analyzes the areas studied, and suggests areas for further study.

SUMMARY

The management of innovation and creativity in organizations is of increasing importance as we advance into the information age. Which aspects of the management of innovation are most important and which have been studied most? This literature review looks at recent journal publications covering the management of innovation and categorizes the topics covered. Twenty-three categories were created. The survey identifies ten categories which could benefit from further work.

METHODOLOGY

The approach used was to search several data bases to locate journal articles that dealt with the management of innovation and creativity. The major management journals were searched as well as those of other fields. A total of 200 journal articles were selected. Twenty-three categories of topics affecting the management of innovation are shown in Figure 1.

The articles were placed in the categories that described their principal themes. Some were placed in more than one category. The 200 articles resulted in 304 category placements due to some articles having multiple themes.

Each article was also categorized by its type using the following four classifications: Case Study (C), Empirical Study (E), Literature Search (L), and Think Piece (T) (see Figure 2).

RESULTS

The ratings for the 200 articles are shown in Figure 3 with the categories and the article type. Eleven of the categories were discussed in 10 or more articles. The remaining 12 categories were only discussed in from three to eight articles.

DISCUSSION OF THE CATEGORIES

The categories are listed in Figure 3 and below, in descending order, by the number of articles covering the category. The number in parentheses is the number of articles that discussed the category.

Climate/Culture (56)

Climate and culture deal with the numerous things that managers control that make the ambiance of the workplace conducive to innovation. It was not surprising that this category accounted for the largest number of articles. Innovation is a process that is nurtured by various everyday factors and influences on the job.

This category should be broken down into smaller categories in subsequent research, starting with climate and culture as separate categories. These could be further broken down. One study, for example, covered a case with Japanese management of American workers focusing on the greater success these managers had in implementing manufacturing innovations (Brannen, 1991). There could be a separate category for

studies of national cultural differences in managing innovation. This points out another significant difference in the various articles - some focused on managing innovation for creating new product and processes while many others evaluated the management of the implementation of organizational change. My premise was that both involve the management of innovation. Some innovation is incremental (linear) and some is quantum (nonlinear). These two types of innovation, incremental and quantum, require significantly different management approaches and are more important than the differences that exist between technological innovation and administrative innovation.

Strategy (55)

The strategy category was nearly tied with climate/culture for having the most articles. While climate/culture deals with influences at the micro-level of the organization, strategy provides an overview or macro-level perspective. Strategic factors are controlled by managers and cover the issues that are usually most associated with the management of innovation.

Many of the articles (Gilbert, 1994; Herbig and Kramer, 1993) discuss various strategic alternatives available to managers such as radical or incremental, low or high tech, first mover or late mover, and inventive versus imitative. Some of the articles deal with the management of technological innovation (Werther, Berman and Vasconcellos, 1994) while others are concerned with managing all forms of innovation including administrative change as well as technological innovation (Miller, 1995).

Internal Networks (23)

Internal networks are those connections between individuals, groups, departments, etc. of the organization that facilitate interaction, communication, and innovation (Rycroft and Kash, 1999). The networks may be structured or unstructured, planned or ad hoc (Conklin and Tapp, 2000). The high number of articles concerning these networks shows the importance of idea sharing between members of organizations and the problem of “silos” or isolated groups that can inhibit innovation (Tomas and Gomez, 1995).

Organizational Structure (17)

It came as no surprise that a number of papers focused on how to structure an organization to encourage innovation (Bush and Frohman, 1991; Bahrami, 1992; Heller, 1999). Structure is an aspect of the management of innovation that is easily controlled by managers. This construct is related to internal networks since it includes the creation of formal internal networks.

External Networks (15)

Liaisons with external organizations are critical to obtaining knowledge and to creating joint ventures and sharing resources. Structuring external networks for optimal innovation is a critical function of management of innovation and has significant overlap with strategy (Ahuja, 2000).

Leadership/Project Champions (14)

The importance of leadership and championing innovation was reflected in the high number of articles on this topic.

Knowledge Management (14)

Although there were a significant number of articles on knowledge management, it seems that the importance of knowledge to innovation warrants an even greater emphasis on knowledge management. Perhaps the changes that have been occurring in the last few years around the Internet will increase the emphasis on finding ways to improve on the way information on knowledge is handled.

Motivation (12)

The motivation of innovators is a unique area of work motivation. Much opportunity exists to improve our understanding of the ways that managers can motivate innovative activity.

Control and Measurement (10)

The research on this category frequently tried to identify a balance between the necessary accounting for expenses and progress on innovation and the inhibiting effects of too much control of innovation.

Entrepreneurship/Intrepreneurship (10)

The willingness to take risks and the sense of control are aspects of entrepreneurship and its corporate equivalent - intrepreneurship. When the entrepreneurial spirit exists, innovation is easy.

Training/Education (10)

This construct includes all forms of education and training including experience that comes from prior innovative efforts.

Resources (8)

The allocation of resources for innovation can have a significant influence on the output of innovation and creativity.

Planning/Goal Setting (7)

Planning for innovation is the responsibility of management. How it is done and by whom is an important area of management concern. Generally, there is not enough planning and that is also the case for research on planning for innovation.

Change Management (7)

Approaches for managing change have been quite widely researched.

Systems ((7)

This category contains approaches for systematically creating innovative organizations. It includes comprehensive, organization-wide interventions for managing and encouraging innovation and creativity.

Empowerment (7)

The empowerment movement has greatly increased organizational effectiveness and is quite effective in creating a culture conducive to innovation.

Physical Location (6)

Physical location deals with the placement of offices and other facilities in relation to each other. Also included are any articles that describe the impact of physical facilities on innovation.

Team Building (6)

The building of team efforts including cross-functional teams is an important concept in the managing of innovation.

Visualization (5)

The visualization of change and innovation is crucial in creating or implementing new ways of doing things. It has been said that if you can't "see" it you can't do it. Exactly how and why does this work? How can it be increased and improved?

Brainstorming/Idea Generation (4)

The process of generating alternatives is the start of innovation. There are various proven techniques to facilitate this process. However, there are not enough ideas and some organizations produce and develop many times as many ideas as others. What are they doing that the others are not? More study of this process is needed.

Compensation/Rewards (4)

It was surprising that there were so few articles written about compensation systems and rewards since they are so instrumental in attracting and retaining key people in high tech companies. This is an important area for further study since the most innovative companies use it so extensively.

Customers/Clients (4)

The emphasis on the customer that has been significant in improving quality and customer service can also improve organizational innovation.

Support (3)

A major responsibility of management is to support the activities of their subordinates. Support includes a wide variety of factors. These factors are not well researched.

FINDINGS

Some of the studies focused on the management of quantum innovation efforts and others focused on incremental innovation. The papers generally recommended significantly different management for the two innovation types (McDermott and Handfield, 2000). Incremental innovation may be best managed by creating a more mechanistic organization while quantum innovation definitely requires an organic organization (Burns and Stalker, 1961). A challenge exists for managers since both types of innovation are desirable. Further research could focus on how to create an organization that has the controls and structure of a mechanistic form while permitting the flexibility of an organic form when quantum innovation is needed. One solution to this need is the approach that 3M used in allowing researchers to spend a portion of their time working on projects of their own choosing. This could be extended to include all members of an organization.

CONCLUSIONS

The following list contains ten areas of the management of innovation that have not received attention by researchers in proportion to their importance for advancing the field.

- Knowledge Management
- Motivation
- Control and Measurement
- Training/Education
- Planning/Goal Setting
- Visualization
- Brainstorming/Idea Generation
- Compensation/Rewards
- Customers/Clients
- Support

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Figure 1

CATEGORIES OF INNOVATION MANAGEMENT

CATEGORY

Brainstorming/Idea Generation
Change Management
Climate/Culture
Compensation/Rewards
Control and Measurement
Customers/Clients
Empowerment

Entrepreneurship/Intrepreneurship
 Knowledge Management
 Leadership/Project Champions
 Motivation
 Networks - External
 Networks - Internal
 Organizational Structure
 Physical Location
 Planning/Goal Setting
 Resources
 Strategy
 Support
 Systems
 Team Building
 Training/Education
 Visualization

Figure 2

ARTICLE TYPES

<u>RESEARCH TYPE</u>	<u>CODE</u>
CASE STUDY	C
EMPIRICAL STUDY	E
LITERATURE REVIEW	L
THINK PIECE	T

Figure 3

CATEGORIES OF 200 ARTICLES ON INNOVATION MANAGEMENT

CATEGORY	ARTICLE TYPE				TOTAL
	C	E	L	T	
Climate/Culture	19	9	3	25	56
Strategy	15	12	3	25	55
Networks - Internal	10	6		7	23
Organizational Structure	7	5		5	17
Networks - External	5	6		4	15
Leadership/Project Champions	2	6	1	5	14
Knowledge Management	5	3		6	14
Motivation	3	1		8	12
Control and Measurement	3	5		2	10
Entrepreneurship/Intrepreneurship	2	3		5	10
Training/Education	3	3		4	10
Resources	1	2	2	3	8
Planning/Goal Setting	2	4		1	7
Change Management	2		1	4	7
Systems	4			3	7
Empowerment	2	2		3	7
Physical Location	4	1		1	6
Team Building		3	1	2	6
Visualization	3			2	5
Brainstorming/Idea Generation	1		1	2	4
Compensation/Rewards	1	1	1	1	4

Customers/Clients	2	1		1	4
Support	2	1			3
TOTALS	98	74	13	119	304