Introduction 1

1.1 Objectives and Research Problem

The respect and adoption of each employee's intelligence is the key to continuous company management (Davenport and Prusak 1998). Polanyi (1958) divided knowledge into tacit knowledge and explicit knowledge based on the degree of expression. Nonaka and Takeuchi (1995) defined knowledge as a kind of personal characteristic that is too abstract to transfer or even express using words. According to the professional level, Quinn et al. (1996) categorized knowledge into know-what, know-how, know-why, and care-why. In the case of strategic-knowledge management, anticipative capacity building is key to preparing and developing domestic and international cadres of strategic personnel for all sectors—public, nonprofit, and profit (Schein 1995; Argyris and Schon 1996). Howells (1996) thought that knowledge was a kind of expertise that was not editable.

Nowadays, enterprises perceive knowledge as a strategic resource that contributes to their competitive dominance. The term "knowledge worker" seems to have started appearing after 1973 when Peter Drucker (1973) first presented it. However, a clear definition has not yet been established. Thomas H. Davenport (2005) offered this description: "knowledge workers have high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge." Thus, describing knowledge workers as strategic-knowledge resources is motivated by the following: the concept of effective management of resources in an organization (Sirmon and Hitt 2003); an enterprise's unique potential in the form of knowledge and experience (Barney 1995); and the concept of competence management (Hamel and Prahalad 1994). A strategic-knowledge resource in a company represents the knowledge, skills, and capabilities of the individuals who constitute the company's workforce. Such resources are usually reflected in a person's education, experience, and specific identifiable skills (Hitt et al. 2001). Yet how can resources be managed to create added value for enterprise?

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It is the aim of this monograph to produce a new concept of managing knowledge workers. This research is centered on examining knowledge workers as a group of "specialists in selling" (the model of the so-called knowledge worker-oriented company) and creating a method and decision-making model for assessing the value of strategic-knowledge resources. In particular, empirical research was carried out among innovative companies that conform to the model of such enterprises. A piece of software-"A Consulting IT-system for Knowledge Investment Effects in Companies"—is currently being developed by me based on the designed method for evaluating the effectiveness of investment in knowledge workers in a company and based also on the results gained from questionnaires.

The object of this research was to build a concept of managing knowledge workers. The goals are as follows:

- Defining concepts and models for knowledge-oriented companies.
- Defining the intellectual capital in such companies.
- Defining knowledge workers as a group of specialists in selling.
- Defining employee planning and assessment in knowledge-oriented companies.
- Creating a method for planning and assessing knowledge workers toward increasing innovation within a company.
- Creating a system and decision-making model for assessing knowledge workers for increasing innovation within a company.

The above objectives were conducted by means of an analysis of the following literature:

- Studies dealing with knowledge management and intellectual capital management in companies.
- Studies concerning knowledge workers in company management.
- Studies concerning employee planning and assessment in companies.

I then conducted research into developing methods for planning and assessing knowledge workers with regard to increasing innovation in a company:

- The structure of a knowledge worker-oriented company was defined: knowledge workers form a group of specialists in selling.
- A personnel usefulness function for each m-th knowledge worker in a company was created.
- Empirical studies were conducted among companies.
- An indicator matrix was constructed to assess the effectiveness and efficiency of investment in knowledge workers.
- The group method data handling (GMDH) algorithm was defined, which allows the value of knowledge workers to be determined related to the characteristics of innovation.

My research addressed the following issue. A company has a defined area of operations, and an innovative company has set qualification criteria. There is a set of values related to strategic resources of knowledge (knowledge workers form a group of specialists in selling) in a given company. A method is needed to assess the efficiency in choosing knowledge workers and that will allow the following question to be answered: Is it possible to find an employee who will help a company achieve a desired level of innovation?

This problem can be presented in the form of the following tasks:

1. Available information: the characteristics of a knowledge worker-oriented company with a defined area of operation and a defined value of strategic knowledge resources (knowledge workers). The answer to the following question is sought: How should an algorithm be developed that will allow the qualifying criteria for an innovative company to be connected to the value of strategic knowledge resources?
2. Available information: empirical analyses of the level of innovation in a company (the value of the qualifying criteria for an innovative company). A decision-making model has to be developed to allow the company to make an objective choice of knowledge workers appropriate for the company's innovation needs.

The research problem about finding an algorithm that will enable the qualifying criteria for an innovative company to be connected to strategic knowledge resource is an issue of decision making. The solution may be presented in the form of the following tasks: (1) the possibility of an objective: (a) the model for a knowledge worker-oriented company—the functional areas of the company and the structure of business processes related to those areas; (b) the values of strategic-knowledge resources within a given company; (c) the value of determinants that describe an innovative company; (2) the possibility of assessing the level of innovation in a company according to the value of strategic-knowledge resources.

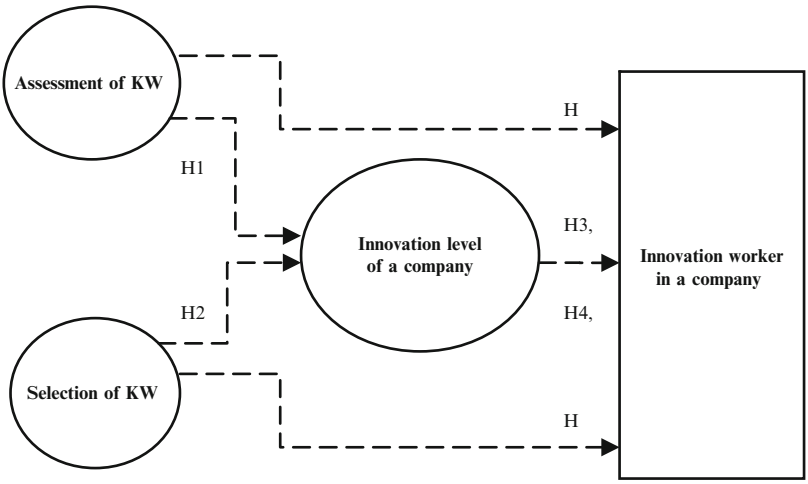
To solve the research problem, a polynomial decision-making model was designed. It consists of three elements: (1) a base of the values of strategic knowledge resource and the values of criteria that describe an innovative company; (2) a GMDH algorithm; and (3) an analyzer of a logical model and an answer generator.

1.2 Research Hypotheses

Following a study of the literature and observing business practices, the following research hypotheses were adopted. I aim to analyze the effect of knowledge worker selection on the innovation level in a company. In particular, the likely consequences on innovation determinants are studied.

H1: Assessment of a knowledge worker enhances the innovation level of a company.

H2: Selection of a knowledge worker enhances the innovation level of a company.



H3. Assessment of a knowledge worker has a direct effect on the innovation level of a company.
H3a. Assessment of a knowledge worker has a direct effect on the quantitative criteria of an innovative company.
H4. Selection of a knowledge worker has a direct effect on the innovation level of a company.
H4a. Selection of a knowledge worker has a direct effect on the quantitative criteria of an innovative company.
H5. Assessment of a knowledge worker has an indirect effect on transforming knowledge workers to innovation workers through an increase in innovation capacity.
H6. Selection of a knowledge worker has an indirect effect on transforming knowledge workers to innovation workers through an increase in innovation capacity.

Knowledge within a company is strongly influenced by the quality and type of formal education possessed by its employees (Janz and Peters 2002; Teixeira and Fortuna 2006; Engelbrecht 1997). Intellectual capital plays a special role in the innovation process. In that sense, it may be appropriate to define innovation workers as a subset of knowledge workers. Innovation workers are defined as those individuals who have better-developed insight than other knowledge workers.

1.3 Scope of Research

In a company, knowledge workers need to acquire a variety of knowledge (information) about their tasks (Drucker 1988). Knowledge management in a company includes the following (Morawski 2006): (1) human resource issues—selection, development, motivation, and evaluation of knowledge workers; (2) structural and

organizational issues—selecting appropriate solutions for a flexible structure, the degree of formalization and centralization of effective flow of knowledge and information; (3) organizational culture issues—knowledge-sharing behavior; and (4) strategy issues—locating and acquiring knowledge from the environment.

I believe that it is crucial to develop efficiency in managing knowledge workers and to develop the innovation level of a company. The rationale for undertaking this research is related to the dynamic growth and development of knowledge workers in businesses and the lack of in-depth studies related to this problem.

The research design therefore has a cognitive dimension and application. The first dimension is in terms of contributing to the diagnosis of organizational models based on knowledge and assessing knowledge workers such that a company can raise its level of innovation. The second dimension is in model selection and assessment of knowledge worker; it involves creating a tool for making an objective selection of knowledge workers toward increasing a company's innovation.

The substantive scope of this work includes cross-processing and a subjective approach; it involves creating a holistic view of the methods of managing knowledge workers for innovative companies. The study sought to answer the following questions as specific objectives:

- What are the conventional methods and tools for employee selection and assessment?
- What are the tools for selecting knowledge workers?
- How can the value of knowledge workers be determined?
- What level of innovation in enterprises can result from selecting knowledge workers?
- How can a relationship be formulated between the value of knowledge workers and the level of business innovation?
- How can knowledge workers be transformed into innovation workers?

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