An Intelligent Prediction Of An Employee's Counterproductive Behaviour

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ABSTRACT

Knowledge management, despite concerted attempts by information technology professionals, is not only about only storing knowledge on computers. It is an approach towards management that seeks to ensure that the knowledge in play in an organization's sphere of operation is appropriate for its purposes. Ensuring the appropriateness of knowledge entails examining an organization's objectives and the processes that shape the knowledge in play. Information technology plays a supportive role in knowledge management. It captures and stores knowledge into knowledge repositories. At the same time, it also improves access to knowledge stored in knowledge repositories. Terabytes of data are generated everyday in many organizations. To extract hidden predictive information from large volumes of data, data mining techniques are needed. This paper examines and discusses methods to extract information from polygraph data. To develop a stable work force with dependable work habits, it is important to find the right people for the job. Concerns about honesty and concerns about dependability on the job should be a primary focus in pre-employment screening. Knowledge management in association with risk management approaches, we need to consider three aspects of human behavior, individual productive behavior, workgroup productive behavior and counterproductive behavior. The most commented upon human behavior associated with risk is often counterproductive behavior. Much has been said about pre employment testing to detect counterproductive behaviors. Various tools have been employed to help detect counterproductive behaviors including the use of polygraph techniques. Polygraph Counterproductive Behavior Index Profile will be developed to help identify employee's whose behaviors, attitudes, and work-related values are likely to interfere with their success as employees – consisting of 17 questions used in pre employment polygraph testing. These 17 questions covered 10 major areas to be tabulated into the Polygraph-Counterproductive Behavior Index Profile namely theft propensity, illegal drug use, alcohol use, work history, work attitude, customer service, fundamental data, credibility, computer abuse and sexual harassment. Scale score of 1 to 10 will be developed which will be further divided into 3 major areas of concerns, namely little or no concerns, concerns and serious concerns. Lower scorers are of little or of no concerns. Medium scorers are of concerns while higher scores are of serious concerns.

KEYWORDS:

Knowledge Management, Data Mining, Knowledge Repositories, Counterproductive Behavior, Counterproductive Behavior Index Profile.

1. Introduction

To develop a stable work force with dependable work habits, it is important to find the right people for the job. The identification of applicants' concerns for rules and authority, work motivation, responsibility, and control of impulses and hostility can help provide more productive employees. By measuring these characteristics, Employment Inventory can provide an important economic benefit for an organization. (Paajanen, G. E. 1988).

Hiring new workers is always risky. Applicants who are selected may turn out to be less productive than expected, while those rejected might have proven productive if given the chance. Although the costs to employers of the first type of error are more readily observable, both types can undercut the productive efficiency of a firm.

Knowledge management in association with risk management approaches, we need to consider three aspects of human behavior, individual productive behavior, workgroup productive behavior and counterproductive behavior. The most commented upon human behavior associated with risk is often counterproductive behavior. Counterproductive behavior can include: placing additional burden upon workgroup members through individual lateness (Koslowsky et al, 1997), absence (Farrell and Stamm, 1988), labor turnover (Maertz and Campion, 1998), aggression (Neuman and Barron, 1997), sabotage and theft (Spector, 2000). There seem to be some clear patterns in all of this research.

Counterproductive behavior in employees is a pervasive and expensive problem. Both "property deviance" (primarily employee theft) and "production deviance" (losses in time, quality, or production) cost business unnecessary billions of dollars annually (Clark and Hollinger, 1983; Tersine and Russell, 1981).

An organization can't afford to make hiring mistakes. Investing in selecting the right employees today means payoff in higher retention and happier employees tomorrow. Organizations that are successful in attracting, hiring, and retaining qualified individuals will have the competitive advantage. Concerns about honesty and concerns about dependability on the job should be a primary focus in pre-employment screening. There is increasing interest in assessing substance abuse, including alcohol, and concerns about aggression and violence in the workplace have also become issues. In addition, with the near-universal use of computers in the workplace, the potential now exists for serious disruption through computer abuse. Sexual harassment in the workplace is becoming an increasingly important concern.

In response to the growing need for integrity measures, a decision making tools must be developed as risk management tools to help organizations make better staff selection decisions to uncover counterproductive behavior which is hazardous to any management or organization. As such, polygraph testing is also used. Polygraph testing is widely used in the intelligence community to screen employees, to establish eligibility for access to classified intelligence information, and for general counterintelligence purposes. It is also used as a tool in the investigation of unauthorized disclosures of classified information and other offenses

The term "polygraph" literally means "many writings."(APA, 1999). The name refers to the manner in which selected physiological activities are simultaneously recorded. Polygraph examiners may use conventional instruments, sometimes referred to as analog instruments, or computerized polygraph instruments.

It is important to understand what a polygraph examination entails. A polygraph instrument will collect physiological data from at least three systems in the human body. Convoluted rubber tubes that are placed over the examinee's chest and abdominal area will record respiratory activity. Two small metal plates, attached to the fingers, will record sweat gland activity, and a blood pressure cuff, or similar device will record cardiovascular activity.

A typical polygraph examination will include a period referred to as a pre-test, a chart collection phase and a test data analysis phase. In the pre-test, the polygraph examiner will complete required paperwork and talk with the examinee about the test. During this period, the examiner will discuss the questions to be asked and familiarize the examinee with the testing procedure. During the chart collection phase, the examiner will administer and collect a number of polygraph charts. Following this, the examiner will analyze the charts and render an opinion as to the truthfulness of the person taking the test. The examiner, when appropriate, will offer the examinee an opportunity to explain physiological responses in relation to one or more questions asked during the test. It is important to note that a polygraph does not include the analysis of physiology associated with the voice. Instruments that claim to record voice stress are not polygraphs and have not been shown to have scientific support.

According to Krapohl (1996), the polygraph has proven to be a powerful tool in searching for the truth. It is extensively applied with law enforcement and the U.S. government in security investigations. Approximately 60% of the large police departments in the U.S. use this technique in their pre-employment screening process (Kiang, 1996). In addition to the U.S.,

Kiang indicates that several other countries such as Canada, India, Israel, and Japan employ the use of the polygraph. The reliance on this technique continues and Malaysia has recently introduced the use of the polygraph by their country's police force (Kiang, 1996).

Much has been said about pre employment testing to detect counterproductive behavior. Various tools have employed to help detect counterproductive behavior including the use of polygraph techniques. The reliance on polygraph techniques requires a polygraph expert to administer and interpret the charts. It is very complex and thus it is very difficult to identify counterproductive behavior by non-expert. Solution must be found to direct this problem.

The matter in questions now is: How to detect productive worker? How to detect counterproductive worker? Can decision making on personnel selection be made through a system that can identify certain patterns derived from charts of polygraph examination? Is there a repository of polygraph charts to identify counterproductive behavior? Can counter-productive behavior be measured or identified through automation means? Thus, can a comprehensive hiring system be developed and implemented to identify potential employees?

Prediction of counterproductive behavior patterns is only done manually by experts relying on non-scientific methods such as observation of the charts and physical observation of the intended person. This method results in inaccuracy and being challenged. Thus, how can polygraph examination charts be interpreted to enable a non-expert to predict counterproductive behavior? Is it possible to develop polygraph counterproductive behavior index profile?

2.0 Methodology

Polygraph data from pre employment testing/screening that involved counterproductive behavior of theft propensity, illegal drug use, alcohol use, work history, work attitude, customer service, fundamental data, credibility, computer abuse and sexual harassment will be utilized for the purpose of data mining polygraph data.

This research will look into various data mining techniques possible into mining

polygraph including using rough set theory. The reason for success in knowledge acquisition is that the rough set theory offers opportunities to discover useful information in training examples.

The results of data mining polygraph data will then be developed into polygraph counterproductive index profile. Polygraph Counterproductive Behavior Index Profile is to identify employee's whose behavior, attitudes, and work-related values are likely to interfere with their success as employees - consists of 17 questions used in pre employment polygraph testing. These 17 questions covered 10 majors area to tabulate the Polygraph-Counterproductive Behavior Index Profile namely theft propensity, illegal drug use, alcohol use, work history, work attitude, customer service, fundamental data, credibility, computer abuse and sexual harassment.

COUNTERPRODUCTIVE BEHAVIOR INDEX SCALES AND SCALE SCORE INTERPRETATION

1. Theft Propensity Concerns. Low scorers are honest, dependable and reliable. High scorers can be dishonest undependable.

2. Illegal Drug Use Concerns. Low scorers have no problems with illegal drugs. High scorers report substantial use of illegal drugs and may be disruptive.

3. Alcohol Use Concerns. Low scorers have no problems with alcohol use. High scorers report substantial use of alcohol and may be disruptive.

4. Work History Concerns. Low scorers have no problem with workplace dishonesty. High scorers have the potential for dishonest behavior in the workplace.

5. Work Attitudes Concerns. Low scorers have no problem with workplace dishonesty. High scorers have the potential for dishonest behavior in the workplace.

6. Customer Service Concerns. Low scorers have no problem with workplace dishonesty. High scorers have the potential for dishonest behavior in the workplace.

7. Fundamental Data Concerns. Low scorers have no problem with workplace dishonesty. High scorers have the potential for dishonest behavior in the workplace.

8.Credibility Scale Concerns. Low scorers have no problem with workplace dishonesty. High scorers have the potential for dishonest behavior in the workplace.

9. Computer Abuse Concerns. Low scorers use their workplace computers only for work-related uses. High scorers use their computers in ways that are unrelated to their work activities or are disruptive to their work.

10. Sexual Harassment Concerns. Low scores are unlikely to engage in sexual harassment at work. High scorers have attitudes and behaviors regarding sexuality that are likely to be considered as harassment by the opposite sex.

POLYGRAPH - COUNTERPRODUCTIVE BEHAVIOR INDEX PROFILE

| Name: | Shamsul Bin Ahmad | Id. No: | 12345 | Date: | 18/05/05 | Photo: | |

Rank	1	2	3	4	5	6	7	8	9	10	Rank
Scale Score	Theft Propensity	Illegal Drug Use	Alcohol Use	Work History	Work Attitude	Customer Service	Fundamental Data	Credibility	Computer Abuse	Sexual Harrass	Scale Score
10											10
9											9
8											8
7							x	x			7
6									x		6
5				x	x					x	5
4											4
3		x				x					3
2	x		x								2
1											1
Scale Score	Theft Propensity	Illegal Drug Use	Alcohol Use	Work History	Work Attitude	Customer Service	Fundamental Data	Credibility	Computer Abuse	Sexual Harrass	Scale Score

| Overall Concern Score | 0-33 | | 34-55 | | 56-100 | | |

Color Key

Little / No Concern	Concerns	Serious Concern
Scores in this shaded area indicate that the employee is not likely to engage in counterproductive behavior.	Scores in this shaded area indicate that the employee may engage in counterproductive behavior.	Scores in this shaded area indicate that the employee is likely to engage in counterproductive behavior

3. Result/Discussion

The test results of polygraph testing for single issue or multiple issues in question is either being truthful or deceptive or inconclusive. Besides either being truthful or deceptive or inconclusive, data derived from polygraph testing through data mining will reveal useful information on patterns of counterproductive behavior of theft propensity, illegal drug use, alcohol use, work history, work attitude, customer service, fundamental data, credibility, computer abuse and sexual harassment. Relationship of race, sex, age, education levels and others to counterproductive behavior will be observed and investigated.

4. Conclusion

Data mining is one of the most important techniques that can find potential useful knowledge, such as significant patterns and rules, from databases in supporting of making better discussions. The data mining tasks include association rules extracting, clustering, classifying, forecasting and so on. Data mining polygraph data will reveals knowledge for better decision making. Through this research, polygraph counterproductive index profile of theft propensity, illegal drug use, alcohol use, work history, work attitude, customer service, fundamental data, credibility, computer abuse and sexual harassment will be developed.

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