

A Case Study of a Data Warehouse in the Finnish Police

Arla Juntunen

Department of Marketing and Management Helsinki School of Economics, Finland

Finland's Government Ministry of the Interior, Police Department, Finland

INTRODUCTION

The high level objectives of public authorities are to create value at minimal cost, and achieve ongoing support and commitment from its funding authority. Similar to the private sector, today's government agencies face a rapidly changing operating environment and many challenges. Where public organizations differ is that they need to manage this environment while answering to demands for increased service, reduced costs, fewer resources and at the same time increased efficiency and accountability. Public organization must cope with changing expectations of multiple contact groups, emerging regulation, changes in politics, decentralization of organization, and centralization of certain functions providing similar services, and growing demand for better accountability. The aim of public management is to create public value.

Public sector managers create value through their organization's performance and demonstrated accomplishments. The public value is difficult to define: it is something that exists within each community. It is created and affected by the citizens, businesses and organizations of that community (cf. also Moore, 1995). This increased interest to questions of value is partly due to the adoption of values and value-related concepts taken from business, like value creation and added value. It is argued that the public sector adopts business-like techniques to increase efficiency (Khademian, 1995; cf. Turban et al. 2007; Chen et al. 2005). In addition, there is a growing concern to the non-tangible, political, and ethical aspects of the public sector governance and actions (See Berg, 2001) Decision making that turns the resources in to public value is a daily challenge in the government (Khademian, 1999; Flynn, 2007) and not only because of the social or political factors. Most of decision problems are no longer well-structured problems that are easy to be solved by experience. Even problems that used to be fairly simple to define

and solve are now much more complex because of the globalization of the economy, and rapid pace of changes in the technology and political and social environment. Therefore, modern decision makers often need to integrate quickly and reliably knowledge from different areas of data sources to use it in their decision making process. Moreover, the tools and applications developed for knowledge representations in key application areas are extremely diversified, therefore knowledge and data modeling and integration is important (See also the decision support systems (DSS) modeling methods and paradigms: Ruan et al., 2001; Carlsson & Fuller, 2002; Fink, 2002; Makowski & Wierzbicki, 2003). The applications of real-world problems and the abundance of different software tools allow to integrate several methods, specifications and analysis and to apply them to new, arising, complex problems.

In addition, business like methods and measurements to assist in managing and evaluating performance are hot topics in the government, and therefore, many government bodies are currently developing or have an existing data warehouse and a reporting solution. Recently, there has been a growing interest in measuring performance and productivity as a consequence of the convergence of two issues: (1) increased demand for accountability on the part of governing bodies, the media, and the public in general, and (2) a commitment of managers and government bodies to focus on results and to work more intentionally towards efficiency and improved performance (Poister, 2003).

This chapter discusses the issues and challenges of the adoption, implementation, effects and outcomes of the data warehouse and its use in analyzing the different operations of the police work, and the increased efficiency and productivity in the Finnish police organization due to the implementation and utilization of the data warehouse and reporting solution called PolStat (Police Statistics). Furthermore, the design of a data warehouse and analyzing system is not an easy task. It requires considering all phases from the requirements

specification to the final implementation including the ETL process. It should also take into account that the inclusion of different data items depends on both, users' needs and data availability in source systems. (Malinowski & Zimányi, 2007). The efficiency and productivity of the organization is measured with the key indicators defined and described by the police organization itself. The indicator data is stored in the data warehouse. The different organizational units are allowed to add their own static or dynamic reports into PolStat. The suggestions of how to further develop the content and measures are gathered from all over the organization as well as from external partners, like the customs and the border control.

The Data Warehouse and business intelligence are seen as a strategic management tool in the Finnish Police; a tool for better and comprehensive assessment of the police performance; a tool for balancing the most important perspectives of the police performance; and finally, a tool to communicate the current status of the police organization versus the development compared to previous years. Effectively, the Data Warehouse is also the means by which the police work as a whole will be made open and accountable to all interested parties. The system developed identifies what is to be achieved (target i.e. commonly agreed views of the police work and organization based on relevant measures), how to achieve the target, and by who, and the monthly estimates based on current data versus the previous years since 1997.

This chapter offers an overview of the development process of the data warehouse in the Finnish police, its critical success factors and challenges. The writer had an opportunity to make a follow-up study from the beginning of the process, and this contribution is an outline of the project initiated in the Police Department in 2002 and of main findings.

BACKGROUND

Storing (1981) stated that the separation of powers includes the assumption that certain kinds of functions are best performed in unique ways by distinctive organizational units: "With each branch distinct from the others, each can perform its function in its appropriate way." (Storing, 1981, 59 - 60). The Finnish Police operates under the direction of the Ministry of the Interior. The Police Department of the Ministry of the Interior acts as

the Supreme Police Command of Finland. The Supreme Police Command, which heads all police operations, decides on national strategies and ensures that the basic preconditions for effective operations exist. Within its command are five Provincial Police Commands; three national units, namely the National Bureau of Investigation, the Security Police and the National Traffic Police, the Police IT Management Agency, the Police Technical Center and the Helsinki Police Department and the police training establishments.

Inside the police organization, the challenge to improve the management by results—steering and—reporting has been among the main drivers why the development of the data warehouse started. The most important drivers to build a new data warehouse based on Oracle database, Informatica (ETL -extract, transform and load -tool), and Cognos Reporting and Analyzing tools in 2002 was the need to improve the strategic management and planning of the Finnish Police, and to develop a more suitable and comprehensive management reporting system (Management Information System, MIS) and to be able to collect and combine data from internal and external data sources.

The data warehouse content development is based on organizational needs and current governmental strategies and 'hot topics'. The strategy and vision drives the development. The assessment model (see Figure 1) supports the strategy and strategic goals and it assists the organization to understand the cyclic process of the data warehouse development. The performance planning consists of defining the organizational strategy including its vision and strategic objectives, defining and developing specific measurable goals. The current data collection and analysis processes are developed after the initial planning phase.

The measures developed are used to assess the organizational effectiveness, productivity, accountability and public value. Performance measures can be divided to direct and indirect, hard and soft measures (Bayley 1996, 47-48). Direct and hard performance measures are for example crime rates and criminal victimizations. Direct and soft measures are for example public confidence in police work, and satisfaction with police actions or feeling insecure in public places like streets at night time. Indirect and hard performance measures are for example number of police and police response times, arrests and a number of follow-up contacts with crime victims. Indirect soft measures are for example the awareness of the public reputation of the police, and

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