Ethnography to Define Requirements and Data Model

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INTRODUCTION

Ethnographic research offers an orientation to understand the process and structure of a social setting and employs research techniques consistent with this orientation. The ethnographic study is rooted in gaining an understanding of cultural knowledge used to interpret the experience and behavior patterns of the researched participants. The ethnographic method aids the researcher in identifying descriptions and in interpreting language, terms, and meanings as the basis of defining user requirements for information systems.

In the business sector, enterprises that use third-party application providers to support day-to-day operations have limited independence to access, review, and analyze the data needed for strategic and tactical decision making. Because of security and firewall protection controls maintained by the provider, enterprises do not have direct access to the data needed to build analytical reporting solutions for decision support.

This article reports a unique methodology used to define the conceptual model of one enterprise's (PPG Industries, Inc.) business needs to reduce working capital when using application service providers (ASPs).

BACKGROUND

The Methodology

Ethnographic research is the study of both explicit and tacit knowledge within a culture. The technique is based to gain an understanding of the acquired knowledge people use to interpret experience and generate behavior. Whereas explicit cultural knowledge can be communicated at a conscious level and with relative ease, tacit cultural knowledge remains largely outside of people's awareness (Creswell, 1994).

The ethnographic technique aids the researcher in identifying cultural descriptions and uncovering meaning to language within an organization. From my 12 years of experience at PPG Industries, Inc. (PPG), a U.S.-based $8 billion per year manufacturing company specializing in coatings, chemicals, glass and fiberglass, the normal workflow process to define user requirements for decision support is through a quick, low cost, rapid application development approach.

To gain an in-depth understanding of the culture and knowledge base of the Credit Services Department, the ethnographic research technique was selected to construct an understanding to questions such as "why do they do what they do?" and more importantly for me, "what reporting solutions are needed to understand customer payments so that actions can be prioritized accordingly?" The ability to answer the second question was critical in order to define the conceptual model and information system specifications based on Credit's user requirements. While using a third-party vendor solution thorough an ASP model, another challenge was in gaining access to data that was not readily accessible (Boyd, 2001).

Why the Ethnographic Technique?

Ethnographic research is based on understanding the language, terms, and meaning within a culture (Agar, 1980). Ethnography is an appealing approach, because it promotes an understanding of process, terms and meaning, and beliefs of the people in a particular culture. Interviews, discussions, participant observation, and social interaction would help me attain an understanding of a culture. As opposed to the quantitative approach, which reflects on researching a situation, problem, or hypothesis at a given point in time, the qualitative approach using ethnographic techniques is more of an evolutionary process over time, which covers months, if not years, for the researcher. The time consideration is important because of the ever changing and evolving environment of the enterprise. New business plans, direction, and project activities frequently change within a business. Emerging technology processes such as RAD (rapid application development) to streamline the process of developing and implementing information systems continue to change the way information systems are created.

MAIN THRUST

Cultural Setting and Contextual Baseline

To gain an understanding of what the Credit Services Department actually does, an overview of the specific department goals, objectives, and responsibilities are noted in this section and called the contextual baseline, and uses the native, emic terms of the department. A contextual baseline identifies the driving motivators of Credit Services to understand what people do and how they accomplish their jobs. The General Credit Manager noted how the Credit Services Department is viewed as the "financial conscience of PPG in the relationship between sales and receiving payments against those sales by our customers" (Camsuzou, 2001) The Credit Services Department monitors credit ratings to ensure that customers have the financial stability to pay invoices while also tracking and researching with outside banking services on the application of payments against invoices.

Field Work

The interview process included different informants throughout PPG with informants from strategic associates (business unit directors), tactical members (credit managers, business unit managers), and operational members (users with the business units). Fourteen individuals from throughout the enterprise were interviewed as key informants. Also, general observations were captured in the field notebook by sitting and working on a daily basis in the Credit Department area (over 50 employees) from June, 2001 through December, 2001.

Geertz (1973) suggests that qualitative research often is presented as working "up from data… [whereas] in ethnography, the techniques and procedures [do not] define the enterprise. … [what defines it] is the intellectual effort [borrowed] from Ryle called thick descriptions" (p 6). Thick descriptions are a reference to getting an understanding and insight into a culture through the uncovering of facts, at a very detailed level. It's the ability to gain a truer, real understanding of a culture through an interpretation of language, symbols, and signs. Geertz (1973) summarized that the challenge of the ethnographer "does not rest on the ability to capture facts and carry them home like a mask or carving, but on a degree to which he is able to clarify what goes on in such places, to reduce the puzzlement [where] unfamiliar acts naturally give rise [to meaning]" (p. 17). Ethnography is a technique based on a theory where the understanding of a culture can be gained through the analysis of the cumulative, unstructured, and disconnected findings captured during the field research. These findings are assembled into a coherent sequence of bold, structured, and related stories.

Initial Themes

According to Spradley (1979), the next step is the identification of initial themes. The themes are thin descriptions of high-level, overview insights toward a culture. Geertz (1973) states that "systematic modes of assessment [are needed in] interpretative approaches. For a field of study to assert itself as a science, … the conceptual structure of a cultural interpretation should be formulable". (p. 24) He continues to state that theoretical formulations tend to start as general interpretations, but the scientific, theoretical process pushing forward "should [include} the essential task of theory building, not to codify abstract regularities, but to make thick descriptions possible" (p. 26). This theory-building approach, from an overview perspective, helped me to define the initial themes of the Credit Services Department.

After analyzing the transcribed interviews, field notes, and results from categorizing the field-work terms, three general themes began to surface. The themes, also called categories by Spradley (1979), are the following: (1) At the enterprise level of PPG, there is a strategic mission to reduce working capital through improved cash flow. (2) At the functional level for both the Credit Services Department and the business units, there is a tactical vision to decrease daily sales outstanding. (3). In pursuing the first two themes, information systems are used to track customer payment patterns and to monitor incoming cash flow.

Domain Analysis

For Spradley (1979), a domain structure includes the "terms that belong to a category …. and the semantic relationship of terms and categories [that] are linked together"(p. 100). The process of domain identification included contexualizing the terms and categories, drawing overview diagrams of terms and categories, and identifying how the terms and categories related to each other. Spradley (1979) summarized domain analysis as the process "to gain a better understanding, from the gathered field data, the semantic relationships of terms and categories" (p. 107).

Further review of the language to identify the thick descriptions and rich points for PPG to reduce working capital and decrease sales outstanding resulted in defining 43 critical and essential terms. These terms were used as a baseline to define the domain analysis. The semantic relationships are links between two categories that have boundaries either inside or outside of the domain. The domain analysis identifies the relationships among categories.

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