**Week3 Case Study Report: Inventory Management System Analysis of GrocerPlus**

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SYS 5013: System Engineering Analysis

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The case study on the inventory management system of GrocerPlus is to help them identify the root cause of inefficiency or defects in the existing system process flow, as well as bring up an upgraded system design solution to the board. In order to complete the system assessment and upgrade design task, information gathering is essential and required. Based on the given sources from the case description, we have management staff, store employees, historical data and documents. I would suggest doing information collection via both interactive and unobstrusive methods, which include interviews, workshops, surveys, observations, and current/archive data analysis. In this report, I will introduce these methods and why we choose them to implement our system analysis tasks.

**Interactive: Interviews Method**

This interviews method is a “face-to-face” meeting either physically or through an virtual zoom meeting. It’s the most used interactive approach to collect the needed information by talking directly with the target interviewees like management staff, store employees and operations with prepared close-ended or open-ended questions based on the initiatives of your study.

**Advantages**: We can obtain direct, immediate feedback from system users, which tends to be more accurate and precise. During this process, follow-up questions can help clarify misunderstandings and provide deeper insights. Conducting well-organized interviews fosters trust, encouraging users to share honest feedback, which in turn helps design better features for the future.

**Disadvantages**: Due to budget or time constraints, we may only be able to interview a limited number of people, which could introduce bias based on their roles or backgrounds. Additionally, it can be challenging to accurately capture and summarize the interview into a report, placing higher demands on the interviewer’s knowledge of the system and users. The interviewer must also show respect for differing opinions during the process. Lastly, interviews are typically short-term, limiting the scope of information that can be gathered.

**Information Gathered**: In the interviews, we could collect the information of the company culture, the department functions/scopes/boundaries, processes or activities on the inventory system, and management level inputs.

**Importance**: I would prioritize this method as my favorite because it would give a firsthand perspective from system end-users directly ranging from both management team and operation team. It has better insights during the interview process. Sometimes it might bring up new ideas in the new system design.

**Interactive: Surveys Method**

The surveys method is constructed with a set of prepared open-ended or close-ended questions. Surveys allow the target group more time to reflect and respond thoughtfully. There are various types of surveys, which can be distributed as paper forms or electronically. Paper forms require participants to return them within a set time, enabling statistical analysis of their responses. Electronic surveys, created using tools like Google Forms or Qualtrics, offer the advantage of automated data collection and can generate statistics or charts once users submit their responses.

**Advantages**: Compared to interviews, it may take up less resources and have better structured feedback. We can reach out to a larger group of study objects using surveys. It kind of reduces the bias to some extent with more feedback from more people. More feedback means more data points which would be good for future data analysis like sampling. People could feel more comfortable answering question of surveys when they remain anonymous.

**Disadvantages**: The challenges could be that anonymity cause the hard complexity of data validation. Sometimes too much freedom might also bring up troubles. Also, it’s not a must to do thing which may need more incentives to inspire replies from target group.

**Information Gathered**: In surveys, we can gather feedback on the current inventory system’s ranking, its strengths, and areas for improvement in future designs. This allows us to leverage the positive aspects of the existing system while addressing and improving its weaker points.

**Importance**: Surveys are a valuable tool for system analysts due to their ease of use and low cost. They are an ideal alternative when budgets or resources are limited and can provide ample structured feedback data points from a large number of participants.

**Unobstrusive:** **Observation Method**

The observation method is another kind of physical coexist approach to watch how the management team make decisions or how the store employees use the inventory system. And it does not need to intervene in the daily routines of the managers or employees.

**Advantages**: We can gain the internal company environment where the employee works and how they work with the inventory system in their daily routine. Probably we could gain some insights as a bypass watcher where the daily routine can be enhanced or simplified to make the organization more efficient. We did not disturb the daily routine of each target person or take other times.

**Disadvantages**: One drawback of the observation method in information gathering is that it may not capture offline functions or features when workers aren't using the system on the day of observation. Additionally, observation can present conflicting challenges. On the one hand, we may want to avoid the observer effect, where employees alter their behavior because they know they’re being watched. On the other hand, this can raise privacy concerns if employees are unaware they are being observed.

**Information Gathered**: We can gather data on inventory system usage, real-world work scenarios, and decision-making processes when system issues arise. In some cases, this allows us to directly identify the causes of severe system delays or inefficiencies in process flows.

**Importance**: The observation method could be a great addition to the interactive approaches like interviews or surveys because it could provide some insights that might not be exposed or ignored during the interactive process. It could also provide chances for the system analyst to close distance to watch how the inventory system is going to be used in real work environments.

**Unobstrusive: Current/Archive Data Analysis Methods**

The data analysis method is an essential part of the entire information-gathering process. Whether the data comes from interactive or unobtrusive methods, it ultimately needs to be analyzed to uncover the root causes of major system issues or identify trends for improvement. Current data might include real-time user activity, file I/Os, database storage, and network bandwidth. Archived data could consist of inventory snapshots, past documentation, problem logs, and more. By examining these data points, we can gain new insights into the inventory system.

**Advantages**: Data analysis allows us to gain deeper insights beyond raw data by presenting information through charts, statistics, trends, and other visualizations. This helps us make more informed decisions and identify noise or anomalies that could indicate areas for system improvements. Unlike feedback from target groups, which may be influenced by personal biases, system data is objective and unbiased.

**Disadvantages**: There can be a dilemma in determining which data points are most relevant or valuable for system usage. It's important to avoid allocating excessive resources or attention to low-value data. Excessive unrelated data can introduce noise into decision-making and distract us from identifying the true issues and solutions.

**Information Gathered**: Information gathered through data analysis can include charts, flow diagrams, metrics like stock turnover rates, database transaction logs, order placements, and statistics on a monthly, seasonal, or yearly basis. They usually have higher value than flat raw collected data points.

**Importance**: Data analysis is essential and cannot be overlooked, as it plays a crucial role in both information gathering and processing. By leveraging objective data, we can create trend charts, monitor system performance, and validate user feedback.

**Summary**

To conclude, no single method is sufficient for comprehensive information gathering. Understanding the pros and cons of each approach highlights the value of combining interactive and unobtrusive methods. By using a mix of these methods, we can reduce bias and gather data from diverse sources and formats, leading to a more complete understanding of the system. This holistic approach will ultimately provide valuable insights into the new design of GrocerPlus's inventory management system and help identify system issues through data analytics tools.

**References**

Modell, M. E. (2007). The Interview And Other Data Gathering Methods. Axios. *Marty Modell Blog*. Retrieved from

<http://www.martymodell.com/pgsa2/pgsa07.html>

Rosala, M. (2024, January 26). Open-Ended vs. Closed Questions in User Research. *NNg*. Retrieved from

<https://www.nngroup.com/articles/open-ended-questions/#:~:text=There%20are%20two%20types%20of,limited%20set%20of%20possible%20answers>.