

## Essential KPIs for School Nutrition Program Success

Keith Rushing, PhD, RD

### ABSTRACT

#### Purpose/Objectives

The purpose of the project was to develop a research based resource to support SN professionals in effectively utilizing KPIs to manage their programs.

#### Methods

This project consisted of four phases. In Phase 1, a think tank of eight school nutrition professionals identified the general topic areas and format for the resource. During Phase 2, Institute of Child Nutrition (ICN) researchers identified draft content for the resource using information school nutrition management and foodservice management textbooks and resources and government Web sites. For Phase 3, an expert work group of 11 school nutrition (SN) professionals working electronically and face-to-face over a period of a few months, adapted the draft content and format of the resource to best meet the needs of school nutrition directors and managers. In Phase 4, the resource was assessed and validated by a review panel of eight SN professionals.

#### Results

The result of the project is a resource titled *Essential KPIs for School Nutrition Program Success*. The resource includes three chapters (1. The KPIs, 2. Case Study, 3. Utilizing KPIs) and an appendix. The 12 KPIs included in chapter 1 are: Meal Equivalents (MEQ), Average Daily Participation (ADP) Revenues, Expenditures, Revenue Per Meal Equivalent (MEQ), Cost Per Meal Equivalent (MEQ), Cost as a Percentage of Revenue, Break-Even Point (BEP), Inventory Turnover Rate, Meals Per Labor Hour (MPLH), Staff Turnover Rate, and Absenteeism Rate.

#### Applications to Child Nutrition Professionals

ICN, Applied Research Division recommends that SN professionals use this resource as a desk reference for identifying and utilizing KPIs to help effectively manage their SN programs. Further, SN directors can use this resource to train their management staff on utilizing KPIs. ICN is in the process of developing a series of online training programs based on the content of the resource. Once the program is complete, it will be made available on the ICN website.

**Keywords:** key performance indicators, data driven decision, productivity, matrix

### INTRODUCTION

School nutrition (SN) directors operate in a dynamic, complex, and multifaceted environment. The general function and scope of a SN director's job includes oversight of all aspects of a district-wide SN program including: facilities and equipment management; financial management; food production and operation management; food security, sanitation, and safety; human resource management; marketing and communication; menu and nutrition management; procurement and inventory management; program management and accountability; and

technology and information systems. Additionally, SN directors are expected to operate a sound nutrition assistance food program and comply with corresponding federal, state, and local regulations, while maintaining an environment that supports healthy food habits of students, program integrity, fiscal accountability, and customer satisfaction. Successfully navigating this environment requires wise decisions that result in positive outcomes (Institute of Child Nutrition [ICN], 2010).

Data-driven decision making is a logical solution to address this challenge. According to Nettles and Rushing (2012), data-driven decision making involves collecting critical operational data, analyzing the data in a meaningful way, and using the data to make decisions that increase program performance. This critical operational data is called Key Performance Indicators (KPIs) (Boettger, 2009).

KPIs are tools that allow SN professionals to utilize a rigorous numbers oriented approach to target specific areas of emphasis and gauge results in an objective and measurable way. These tools enable users to identify problem areas, measure progress in correcting these problems, and demonstrate program improvement. KPIs can also be used to help identify where resources should be invested to have the most positive impact (such as equipment or labor), and they can be used to track the progress of major initiatives (such as breakfast in the classroom, salad bars, and farm to school) on participation, cost, and revenue. (Buzalaka, 2010; Fahey, 2011)

There are many KPIs pertinent to food service and SN program management that have been identified in the literature. That list includes: Meal Equivalents (MEQ), Average Daily Participation (ADP) Revenues, Expenditures, Revenue Per Meal Equivalent (MEQ), Cost Per Meal Equivalent (MEQ), Cost as a Percentage of Revenue, Break-Even Point (BEP), Inventory Turnover Rate, Meals Per Labor Hour (MPLH), Staff Turnover Rate and Absenteeism Rate. (Cater, Conklin, & Cross, 2005; Gregoire, 2017; ICN, 2015; National Food Service Management Institute [NFSMI], 2012; Martin & Oakley, 2008; Pannell-Martin & Boettger, 2014; Parmenter, 2010; Payne-Palacio & Theis, 2016).

In 2015, the ICN Applied Research Division (ARD) conducted a national survey study to explore SN directors' usage and perceptions of KPIs (Rushing, 2015). Findings from the study suggest most SN professionals have the following opinions: Access to KPI data is readily available; KPIs provide essential information about SN programs; KPIs are valuable managerial tools for program evaluation and decision making; KPIs are easy, but time consuming to use; and SN professionals do not receive adequate training on KPIs. Results of the survey indicated a significant relationship between district enrollment size and SN professionals' perceptions of KPIs related to understanding, value, and ease of use. To simplify this explanation, district enrollment ranges were categorized as follows: small  $\leq 1,999$ , medium = 2,000-29,999, and large  $\geq 30,000$ . SN professionals from medium and large districts were more likely to perceive KPIs as a valuable tool for managing SN operations compared to SN professionals from small districts. Further, SN professionals from medium and large districts were more likely to perceive the process of capturing KPIs data and calculating KPIs is easy compared to SN professionals from small districts. (Rushing, 2015).

## **METHODS**

This preceding research indicated the need for the development of a resource to support SN professionals in effectively utilizing KPIs to manage their programs. Therefore, in 2014, the ICN

ARD began a four phase process to develop a resource for SN directors that would be concise and easy to use. In Phase 1, a think tank of eight school nutrition professionals identified the general topic areas and format for the resource. In Phase 2, ICN researchers identified draft content for the resource using information from school nutrition management and foodservice management textbooks and resources and government Web sites (Allison, 2015; Cater, Conklin, & Cross, 2005; Gregoire, 2017; ICN, 2015; NFSMI, 2012; Martin & Oakley, 2008; Pannell-Martin & Boettger, 2014; Parmenter, 2010; Payne-Palacio & Theis, 2016; The Australian Industry Group, 2016; The National Restaurant Association Educational Foundation, 2013, U.S. Department of Agriculture, Food and Nutrition Services (USDA FNS) 1988; USDA FNS 2012; USDA FNS, 2014; U.S. Department of Labor, Bureau of Labor Statistics, 2016). In Phase 3, an expert work group of 11 SN professional working electronically and face-to-face over a period of a few months, adapted the draft content and format of the resource to best meet the needs of school nutrition directors and managers. In Phase 4, the resource was assessed and validated by a review panel of eight SN professionals. The result of this process is the resource titled *Essential KPIs for School Nutrition Success*.

## RESULTS

*Essential KPIs for School Nutrition Program Success* contains an introduction section, three chapters and an appendix. In the introduction section, users are provided a definition of KPIs, a description of how applied research was utilized to create the resource, and a detailed explanation of the purpose and contents of the resource.

### Chapter 1: The Key Performance Indicators

Chapter 1, The Key Performance Indicators, covers 12 KPIs grouped into three general areas (Meal Counts and Participation, Financial and Inventory Management, and Productivity and Labor). The rationale for grouping the KPIs was to provide users with a simple way for selecting the appropriate KPI based on the general topic. For example, if a user wants to find a KPI that deals with Financial or Inventory Management, there are six KPIs grouped under this heading and identified in the table of contents. In Chapter 1, under each KPI there are the following 10 sections: *Description*, *Why Calculate*, *How Often to Calculate*, *How to Calculate*, *Sample Calculations*, *Where to Capture Data*, *How to Use*, *Industry Standards*, *Factors That Influence*, and *References*. A sample KPI, Inventory Turnover Rate is provided in Figure 1.

The purpose of the *Description* section is to introduce users to the KPI and explain the general function of the KPI. The majority of this content was derived from the literature review and simplified by the expert panel and review panel.

The purpose of the *Why Calculate* section is to explain the importance and value of utilizing the KPI. The content in this section was derived from the literature review and expert panel and review panel.

### **INVENTORY TURNOVER RATE**

**Description:** Inventory turnover is a measure of inventory efficiency. Specifically, it is the number of times inventory is utilized in a period. It can be used to determine if an operation is holding too much inventory.

**Why Calculate:** The financial goal of inventory management is to control food and supply investments. Inventory turnover rate provides an indication of an SN program's ability to control inventory levels.

**How Often to Calculate:** Monthly and annually.

**How to Calculate:**

The beginning purchased inventory is the same figure as the previous month's ending purchased inventory.

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \frac{(\text{Beginning Inventory} + \text{Period Purchases}) - \text{Ending Inventory}}{(\text{Beginning Inventory} + \text{Ending Inventory}) \div 2}$$

**Sample Calculation(s) for a Month:**

Beginning Inventory	=	\$6,600.00
Purchases During the Month	=	\$11,400.00
Ending Inventory	=	\$5,400.00

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory Value}} = \frac{(\$6,600 + \$11,400) - \$5,400}{(\$6,600 + \$5,400) \div 2} = \frac{\$12,600}{\$6,000} = 2.1$$

2.1 = The number of times inventory turned over or was used up and replenished in a period.

**Where to Capture Data:**

- Revenue and expenditure report (to show monthly purchases)
- Point-of-sale inventory system
- Inventory records from the beginning and end of a period

**How to Use:** Inventory turnover benchmarks should be established for each school in a district. When inventory turnover rate is low (or high inventory levels), it presents a number of problems. It is difficult to keep track of what products are on hand, more storage space is required, money is tied up, and it is harder to control waste or pilferage than when inventory turnover rate is high (or inventory levels are low).

**Industry Standards:** A school that receives a weekly delivery for most products should have a turnover rate of once every 7-10 days or 2-3 times a month (National Food Service Management Institute, 2012).

**Factors That Influence:**

- Forecasting
- Inventory loss due to waste, theft, spoilage, and other product loss
- Secure and safe storage practices reduce inventory loss and ensure shelf life is maximized
- Frequency of deliveries
- Storage space
- Use and number of weeks of cycle menus
- Minimizing menu substitutions
- A large bid
- Order procedures (centrally placed orders allow for review and revision)
- Meals and meal counts
- Meal service interruptions where there is a loss of food service opportunity (i.e. snow days)
- Non-compliance with regulations

## **References**

Gregoire, M. (2017). *Foodservice organizations: A managerial and systems approach* (8th ed.). Pearson, Boston, MA.

Institute of Child Nutrition. (2015). *Financial management: A course for school nutrition directors* (2nd ed.). University, MS: Author.

Institute of Child Nutrition. (2015). *ICN financial management information system*. (2nd ed.). University, MS: Author.

National Food Service Management Institute. (2012). *Inventory management and tracking reference guide*. University, MS: Author.

Pannell-Martin, D., & Boettger, J. (2014). *School food & nutrition service management for the 21<sup>st</sup> century* (6th ed.). Aiken, South Carolina: Author.

Payne-Palacio, J. & Theis, M. (2016). *Foodservice management: Principles and practices* (13th ed.). Pearson, Boston, MA.

### ***Figure 1: Inventory Turnover Rate***

The *How Often to Calculate* section provides suggestions on the frequency of calculating the KPI. In some instances, this information was found in the literature review. However, the majority of this content came from expert panel and review panel participants. It is important to note that this content is suggestions, and there may be relevant rationale for using other frequencies.

The function of the *How to Calculate* section is to explain mathematically how to calculate the KPI. The content in this section was derived mainly from literature review sources. In some instances, different calculations were observed between different sources. To adjust for this, if the information was found in another ICN resource, that calculation was used to eliminate discrepancy between ICN resources. If the calculation was not found in another ICN resource, then the simplest calculation was usually selected. Guidance from the expert panel and review panel was used to make this selection. Only one calculation was selected for each KPI for simplicity and ease of use. However, for many of the KPIs, there is more than one correct way to complete the calculation.

The purpose of the *Sample Calculations* section is to demonstrate how to calculate the KPI. When applicable, the same set of background information was used and carried through for each KPI sample calculation. For example, when calculating meal equivalents (MEQ) and average daily participation (ADP), the same meal count numbers were used, and when calculating cost per MEQ and revenue per MEQ, the same total MEQs were used.

In the *Where to Capture Data* section, advice is provided on where to locate the necessary data for calculating the KPI. The majority of the information in the section came from the expert panel and review panel. Because of the vast diversity in how school districts are administered across the country, the location, name, and types of reports where data can be found for calculating KPIs sometimes differ from district to district. Therefore, if the information source presented in this section is not accurate for your SN program, please seek guidance from the state agency for the correct location, source, and/or report.

The purpose of the *How to Use* section is to explain how to use the data once a calculation has been made. The majority of information in this section came from expert panel and review panel participants. It is important to note that this section is not all inclusive, meaning there are many ways to use KPI data, so many in fact they could not all be presented in a concise manner. Therefore, the items included were selected based on importance and value. With almost every KPI, it is possible to break down and analyze data based on several factors including the district as a whole, between different districts, by student grade level, by unit or school, by student payment level (i.e., paid, reduced price, free), and by time period (i.e., day, week, month, quarter, annually).

The purpose of the *Industry Standards* section is to provide a reference by which users can compare the results of their KPI calculations. The challenge is that while some industry standards were found when conducting the literature review, there are not industry standards for many of the KPIs. When an industry standard was available, it was provided. When no standard was available but other data (such as industry trends) were available, that data were provided and a notation was made.

The *Factors That Influence* section identifies factors that may cause the value of the KPI to increase or decrease. Information in this section was provided primarily by the expert panel and review panel. Due to the vast number of possible factors, this list is not all inclusive. Therefore, the factors provided represent the issues expert panel participants considered to be the most important and of greatest value to users of this resource.

The *References* section provides a listing of all the references that were used to create the content for the KPI. As mentioned earlier, sometimes it was observed that methods for calculating KPIs differed from one reference to another. Therefore, for the sake of simplicity only one calculation was presented for each KPI. However, all the references were listed, even if the calculation was not used in the resource. The purpose in doing this was to provide users with all the sources of information, so they can make their own decision on which calculation or data to select.

## **Chapter 2: The KPIs**

Chapter 2, The KPIs, contains a case study with four sections. Section one provides background data for the case study including SN program characteristics. Sections two through four are grouped into three general areas (Meal Counts and Participation, Financial and Inventory Management, and Productivity and Labor) and include each of the 12 KPIs found in Chapter 1. The case study provides examples of how each KPI can be utilized to evaluate how well an SN program is performing for a given period. By basing the case study on one school district, with specific characteristics listed in the background section (such as district enrollment and average daily attendance), the user is able to see how each KPI can be applied to evaluate different aspects of a SN program.

## **Chapter 3: Managing and Utilizing KPIs**

Chapter 3, Managing and Utilizing KPIs, includes four brief discussions on how to utilize results of KPI calculations, including: *Benchmarking*, *Trend Analysis*, *Developing Action Plans*, and *Communicating with Key Stakeholders*. The purpose of this chapter is to demonstrate that calculating the KPI is only part of the equation, and that the next step is deciding what to do with this information to continually improve a SN program. The *Benchmarking* section defines benchmarking, explains different types of benchmarking, and provides simple-to-follow steps for beginning KPI benchmarking at a SN program. The *Trend Analysis* section provides examples of

how trend data can be utilized for decision making and program evaluation. The *Developing an Action Plan* section provides easy to use, step-by-step information for developing realistic and achievable action plans based on KPI data. The *Communicating with Key Stake Holders* section provides suggestions on how to present KPI data to key stakeholders of a SN program.

## APPLICATIONS

SN professionals may use this resource, *Essential KPIs for School Nutrition Success*, as a desk reference for identifying and utilizing KPIs to support decision making and program evaluation. For example, SN directors should convert all food sales to the KPI Meal Equivalents (MEQs) to calculate revenue per meal equivalent, cost per meal equivalent, and meals per labor hour, which can be used to benchmark financial performance. The KPI Average Daily Participation (ADP) can assist in forecasting and in decision making, such as determining labor requirements and food and non-food purchasing projections. Monitoring the KPIs Revenue and Expenditures for trends by individual line item for the current period, the previous period, and the year-to-date will assist SN professionals in making better financial decisions. The KPI Revenue per MEQ can be compared to KPI Cost per MEQ to ensure costs are lower than revenues and to determine areas where revenue can be increased and expenditures can be decreased. The KPI Cost as a Percentage of Revenue can be compared to budget projections and previous period figures, to determine trends and directions for improvement. The KPI Breakeven Point (BEP) indicates whether a SN program is self-sufficient, and it can be used to determine the financial feasibility of starting an initiative such as supper program or after-school snack program. Inventory turnover rate is a KPI that indicates a SN program's ability to control inventory levels. The KPI Meals Per Labor Hour (MPLH) can be used to efficiently plan and assess staffing. The KPI Staff Turnover Rate can be used to identify internal problems, such as poor work environment, lack of opportunities for development and advancement, and poor supervision. The KPI Absenteeism Rate can be monitored over time to determine trends and to improve management decisions that affect absenteeism.

SN directors can use this resource to train their management staff on utilizing KPIs. To help make this possible, the resource is available on the ICN Website at the following hyperlink: <http://nfsmi.org/documentlibraryfiles/PDF/20170329015554.pdf>. As indicated in an earlier study (Rushing, 2015), most SN professionals believe that KPIs are valuable tools for program evaluation and decision making, and most believe SN professionals do not receive adequate training on KPIs. Therefore, ICN is in the process of developing a series of online training programs based on the content of this resource. Once the program is complete, it will be made available on the ICN website.

## REFERENCES

- Allison, G. S. (2015). *Financial accounting for local and state school systems: 2014 edition*. U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Retrieved from <https://nces.ed.gov/pubs2015/2015347.pdf>
- Boettger, J. (2009, December). RX for a healthy school nutrition program. *School Business Affairs*. Retrieved from <http://files.eric.ed.gov/fulltext/EJ919377.pdf>

Buzalaka, M. (2010). Why KPIs? Using key performance indicators gives school nutrition directors a powerful management tool in a time of high fiscal stress. *Food Management*, 45(11), 16-20.

Cater, J., Conklin, M., & Cross, E., (2005). *NFSMI Financial management information system*. (NFSMI R-86-05). The University of Mississippi. Retrieved from <http://nfsmi.org/documentlibraryfiles/PDF/20170308022115.pdf>

Fahey, J. P. (2011). How are you doing? Key performance indicators and benchmarking. *School Business Affairs*, 77(3), 20-22. Retrieved from <http://files.eric.ed.gov/fulltext/EJ919592.pdf>

Gregoire, M. (2017). *Foodservice organizations: A managerial and systems approach*. (8<sup>th</sup> ed.). Pearson: Boston, MA.

Institute of Child Nutrition. (2015). *Financial management: A course for school nutrition directors* (2nd Ed.). University, MS: Author. Retrieved from <http://nfsmi.org/documentlibraryfiles/PDF/20170308020527.pdf>

National Food Service Management Institute. (2012). *Inventory management and tracking reference guide*. University, MS: Author. Retrieved from <http://nfsmi.org/documentlibraryfiles/PDF/20121114100354.pdf>

Nettles, M. F., Asperin, A., & Carr, D. (2010). Competencies, knowledge, and skills for district-level school nutrition professionals in the 21<sup>st</sup> century. University, MS: National Food Service Management Institute. Retrieved from <http://nfsmi.org/documentlibraryfiles/PDF/20100917085233.pdf>

Nettles, M. F., & Rushing, K. (2012). *Data-driven decision making: Guide for school nutrition programs*. University, MS: National Food Service Management Institute. Retrieved from <http://www.theicn.org/documentlibraryfiles/PDF/20130108021843.pdf>

Martin, J. & Oakley, C. (2008). *Managing child nutrition programs: Leadership for excellence* (2nd ed.). Jones and Bartlett; Sudbury, MA.

Pannell-Martin, D., & Boettger, J. (2014). *School food & nutrition service management for the 21<sup>st</sup> century*. (6<sup>th</sup> ed.). Aiken, South Carolina: SFS21, LLC.

Parmenter, D. (2010). *Key performance indicators (KPI): Developing, implementing, and using winning KPIs* (2nd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Payne-Palacio, J., & Theis, M. (2016). *Foodservice management: Principles and practices* (13th ed.). Pearson; Boston, MA.

School Nutrition Association. (2014). *School nutrition operations report: The state of school nutrition 2014*. National Harbor, MD: School Nutrition Association.



Rushing, K. (2015). *Exploring the usage and perceived value of key performance indicators (KPIs) by SN professionals*. University, MS: National Food Service Management Institute. Retrieved from <http://www.nfsmi.org/documentlibraryfiles/PDF/20151207094024.pdf>

The Australian Industry Group. (2016). *Measuring absenteeism*. Retrieved from <https://www.hrinform.com.au/qa-forum/p-what-are-some-ways-we-can-measure-absenteeism-in-our-workplace-p>

The National Restaurant Association Educational Foundation. (2013). *Hospitality human resources management and supervision* (2nd ed.). Boston, MA; Pearson Education Inc.

U.S. Department of Agriculture, Food and Nutrition Service. (2012). *HealthierUS School Challenge frequently asked questions*. Retrieved from <http://www.fns.usda.gov/sites/default/files/faq.pdf>

U.S. Department of Agriculture, Food and Nutrition Service. (2014). *HealthierUS School Challenge: Smarter lunchrooms*. Retrieved from [http://www.fns.usda.gov/sites/default/files/tn/2014huscc\\_criteria.pdf](http://www.fns.usda.gov/sites/default/files/tn/2014huscc_criteria.pdf)

U.S. Department of Agriculture, Food and Nutrition Service. (1988). *Code of Federal Regulations*, sections 210. [https://www.fns.usda.gov/sites/default/files/7cfr210\\_09.pdf](https://www.fns.usda.gov/sites/default/files/7cfr210_09.pdf)

U.S. Department of Labor, Bureau of Labor Statistics. (2016). *Job openings and labor turnover survey and news release*. Retrieved from [http://www.bls.gov/news.release/archives/jolts\\_03172016.htm](http://www.bls.gov/news.release/archives/jolts_03172016.htm)

## **BIOGRAPHY**

Rushing is Director of the Applied Research Division of the Institute of Child Nutrition located at The University of Southern Mississippi in Hattiesburg, Mississippi.