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Developing a Resource for Using Standard School
Nutrition Productivity Measures

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Developing a Resource for Using Standard School Nutrition Productivity Measures

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Institute of Child Nutrition
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The purpose of the Institute of Child Nutrition is to improve the operation of child nutrition programs through research, education and training, and information dissemination.

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VISION
The vision of the Institute of Child Nutrition is to be the leader in providing education, research, and resources to promote excellence in child nutrition programs.

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EXECUTIVE SUMMARY

In 2015, the Institute of Child Nutrition (ICN), Applied Research Division (ARD) conducted a four-phase study to explore school nutrition (SN) directors' usage and perceptions of Key Performance Indicators (KPIs) and identify the best format for a resource to support the needs of SN professionals (Rushing, 2015). Phase I consisted of a site visit to a SN program where the director had demonstrated success in utilizing KPIs for operational decision making. In Phase II, an expert panel of 10 SN professionals with experience administering KPIs was convened to discuss issues associated with utilizing KPIs in SN programs. In Phase III, the information gathered was used to develop a national survey. The survey was validated with the assistance of a review panel of 21 SN professionals and mailed to a random sample of 700 SN directors representing the seven United States Department of Agriculture (USDA) regions. The survey, *Key Performance Indicators for Measuring Productivity in School Nutrition Programs*, consisted of 105 multiple choice questions divided into two sections: *Your Opinion* and *Personal/Program Characteristics*. The findings of the national survey suggest most SN professionals do not receive adequate training on KPIs. Therefore, the purpose of this project was to use this data to develop a research-based resource to assist SN professionals in effectively utilizing standard SN KPIs.

This project was conducted in two phases. In Phase I, an expert work group determined the format and content of a draft resource. In Phase II, a review panel convened to validate the

resource for the intended audience. Afterwards, the resource was revised based upon input from the review panel, and formatted with the assistance of a graphic designer.

In Phase I, SN professionals who had participated in previous SN research associated with KPIs and financial management agreed to be members of an expert work group. This group included 10 SN directors, one state agency director, and one representative from the ICN Training and Development division. The expert work group process consisted of four electronic activities, culminating into a day-long, face-to-face meeting.

For the first electronic activity, participants were sent a draft of Chapter 1 of the resource, and an evaluation form. Chapter 1 included the 15 KPIs identified by previous research, each subdivided into the following sections: Description, Why calculate, How to Calculate, Sample Calculations, Where to Capture Data, How to Use, Industry Standards, Factors that Influence, and References. The evaluation form asked participants to evaluate the content of each KPI section for completeness and accuracy, to provide missing or accurate content as needed, and to identify the sources of any new content provided. Participants were asked to complete activity one and return it via e-mail the completed evaluation form within a three-week period. Afterwards, draft Chapter 1 of the resource was revised based on participants' comments and suggestions.

The second electronic work group activity was sent three weeks after activity one. For this activity, participants were sent a draft of Chapter 2, and an evaluation form. The draft of Chapter 2 consisted of four sections: Benchmarking, Trend Analysis, Developing Action Plans, and Communicating with Key Stakeholders. The evaluation form asked participants to evaluate the content of each section of Chapter 2 for completeness and accuracy, to provide missing or accurate content as needed, and to identify the sources of any new content provided. Participants

were asked to complete activity two and return it by e-mail the completed evaluation form within a three-week period. Afterwards, Chapter 2 was revised based on participants' comments and suggestions.

Electronic activity three was sent to the expert work group three weeks after activity two. This activity, which would represent the case study component of Chapter 1 of the resource, was only sent to participants who were SN directors. (Academic professionals were not asked to complete this activity.) Each participant was asked to develop two case study narratives, based on information they provided at the time of the invitation, describing examples of how they have successfully utilized KPIs in their jobs.

The fourth electronic work group activity was sent three weeks after activity three. For this activity, each of the 12 participants was sent an evaluation form and three case studies, not including the one they created, in a manner so that each case study was reviewed by three participants. The evaluation form asked participants to evaluate each case study for completeness, clarity, appropriateness, and to provide comments as needed. Participants were asked to complete activity four and return it by e-mail within a three-week period. Afterwards, a complete draft of Chapter 1 was revised based on participants' comments and suggestions.

The face-to-face expert work group meeting took place three weeks after the fourth electronic work group activity on the campus of The University of Southern Mississippi. Participants were divided into four groups to review and adjust four KPIs, with corresponding case studies to review and adjust. After this activity was completed, each group reported their suggested revisions, and engaged the rest of the participants in a consensus building discussion.

After the face-to-face expert work group meeting, the KPI resource was revised based on the consensus from the group. Afterwards, the resource was sent to the expert work group

electronically one last time for review. Any final comments were addressed, and the resource was revised accordingly.

Thirty prospective review panel members were asked to evaluate the resource for completeness, accuracy, clarity, and suitability for the end user. The KPI resource was revised based on input from the review panel, and then formatted with the assistance of a graphic designer.

Ten of the expert work group participants at the face-to-face meeting completed the 22-question survey about their school district and themselves. The SN program characteristics of participants are provided in Table 1. Participants were from the Southwest (30%), Mountain Plains (30%), Southeast (20%) and West (10%) United States Department of Agriculture (USDA) regions.

During the expert work group meeting, participants came to consensus on the content for the resource. This content included four primary components: An Introduction, Chapter 1, Chapter 2, Chapter 3, and an Appendices.

Chapter 1, titled, "The Key Performance Indicators," covers 12 KPIs grouped into three general areas: Meal Counts and Participation, Financial and Inventory Management, and Productivity and Labor. 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.

Chapter 2, titled, "The Case Study," 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.

Chapter 3, titled, "Utilizing Key Performance Indicators," includes four brief discussions on how to utilize the results of KPI calculations, and includes the following: 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 an SN program.

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, it is advised that SN management professionals receive training based on the contents of this resource once they have completed the following ICN courses: *Orientation to School Nutrition Management* and *Financial Management: A Course for School Nutrition Directors*. To help facilitate this process, it is recommend that a stand-alone KPI training program be developed based on the contents of this resource, which includes a workbook and instructor's guide that is available in face-to-face and online formats through the ICN. Additionally, it is recommended that a KPI training component be added to the following ICN courses: *Orientation to School Nutrition Management*, and to the 12-hour and 8-hour *Financial Management: A Course for School Nutrition Directors*" training.

INTRODUCTION

School nutrition (SN) directors operate in an ever changing and challenging environment. Successfully navigating this environment requires effective decision making. According to the *School Nutrition Operations Report* (2014), the most pressing issues facing SN directors are increasing program participation (44.0%), implementing meal patterns (43.1%), managing food cost (41.7%), and complying with competitive food regulations (40.7%). To achieve success, SN directors must make decisions related to these and other areas that result in positive outcomes. Examples of such decisions may include determining the answer to following questions:

- What utilization of time and resources will have the most positive effect on program participation?

- Which food production methods will most efficiently facilitate the implementation of meal pattern standards?

- What purchasing, staffing, and training adjustments should be implemented to offset increasing food costs?

- What purchasing and marketing changes could be made to ensure compliance with competitive food regulations without adversely effecting program revenues?

The challenge for SN directors is determining what decisions to make to achieve the most favorable outcome for a SN program.

Data-driven decision making is a logical method 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, using the data to make decisions that increase program performance, and communicating the results of those decisions to key stakeholders. This critical operational data is called key performance indicators (KPIs) (Boettger, 2009).

Key performance indicators are tools that allow SN professionals to utilize a rigorous numbers-oriented approach to target specific areas of emphasis, and to gauge results in an objective and measurable way. These tools allow users to identify problem areas, to measure progress in correcting these problems, and to demonstrate program improvement. Key performance indicators can 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) based on participation, cost, and revenue (Buzalaka, 2010; Fahey, 2011).

There are many KPIs pertinent to SN program management that have been identified in SN literature:

- Average Daily Participation;

- Breakeven Point;

- Expenditures;

- Cost Per Meal Equivalent;

- Cost as a Percentage of Revenue;

- Days of Inventory On-Hand;

- Inventory Turnover Rate;

- Meal Equivalents;

- Meals Per Labor Hour;

- Revenues; and

- Revenue Per Meal Equivalents (Boettger, 2009; Cater, Conklin, and Cross, 2005; Institute of Child Nutrition, 2015; National Food Service Management Institute, 2012; Pannell-Martin and Boettger, 2014).

However, none these KPIs are of any value if they are not effectively utilized.

In 2015, the Institute of Child Nutrition (ICN), Applied Research Division (ARD), conducted a four-phase study to explore SN directors' usage and perceptions of KPIs and to identify the best format of a KPI resource to support SN professionals. (Rushing, 2015). Phase I consisted of a site visit to a SN program where the director had demonstrated success in utilizing KPIs for operational decision making. The site visit included structured interviews with the SN director and SN managerial staff, and a tour of the SN program to view routine operations. During the structured interviews, the following information was gathered: the specific KPIs used by various levels of SN staff members; the frequency KPIs were calculated; how KPIs were utilized; and the strengths/barriers of using each KPI. The tour of the SN operation included visits to several schools in the district to observe how and what data were captured for calculating KPIs (Rushing, 2015).

In Phase II, an expert panel of 10 SN professionals with experience administering KPIs was convened to discuss issues associated with utilizing KPIs in SN programs. The intent of Phase I and Phase II of the study was to gather information to support the development of a national survey. Prior to conducting the expert panel, discussion topics for the meeting were developed based on the site visit, the research objectives, and previous research. Examples of discussion topics included the following:

- What are the standard KPI s for decision making and program evaluation in SN programs?
- What is the best way to calculate each KPI?
- What factors should be considered when utilizing each KPI?
- What is most SN professionals' exposure to and knowledge of each KPI?

- Which level of SN professional should be utilizing each KPI?

- What types of decisions are made based on each KPI?

- What are the industry standards for each KPI?

- What are advantages and disadvantages of using each KPI? (Rushing, 2015).

In Phase III, a national survey was developed and validated with the assistance of a review panel of 21 SN professionals and mailed to a random sample of 700 SN directors representing the seven USDA regions. The survey, *Key Performance Indicators for Measuring Productivity in School Nutrition Programs*, consisted of 105 multiple choice questions divided into two sections: *Your Opinion* and *Personal/Program Characteristics*. For several of the opinion questions, respondents were asked to base their responses on the following 11 KPIs recommended by the expert panel: Absenteeism Rate, Average Daily Participation, Breakeven Point, Cost as a Percent of Revenue, Cost Per Meal, Days of Inventory On-Hand, Inventory Turnover Rate, Meals Per Labor Hour, Percent Overproduction, Revenue Per Meal, and Staff Turnover Rate. Examples of these opinion questions included:

- What is your level of understanding of each KPI?

- Do you have access to the necessary data to calculate each KPI?

- How often do you calculate each KPI?

- Do you use each KPI for decision making?

- What level of SN professional in your district use each KPI?

- Where do you obtain the data for calculating each KPI?

- Do use benchmarks to evaluate each KPI?

- Which SN professional in your district receive KPI training?

- What is value and "ease of use" of each KPI? (Rushing, 2015)

The findings of the national survey suggested most SN professionals have the following opinions:

- Access to KPI data is readily available.

- Key performance indicators provide essential information about SN programs.

- Key performance indicators are valuable managerial tools for program evaluation and decision making.

- Key performance indicators are easy, but time consuming to use.

- School nutrition professionals do not receive adequate training on KPIs.

The 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. School nutrition professionals from medium and large districts were more likely to perceive KPIs as a valuable tool for managing SN operations when 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 as easy when compared to SN professionals from small districts (Rushing, 2015).

Data gathered from Phases I-III were used in Phase IV. This data helped guide a think tank consisting of eight SN professionals in identifying the best format and content areas of a resource. The resource would support SN professionals in effective utilization of KPIs for operational decision making and program evaluation (Rushing, 2015).

Think tank participants recommended that the target audience for the resource be unit and district-level SN managerial staff at all school districts, regardless of district size. Three primary

uses of the resource were identified: as an operational guide, as a communication tool, and as a staff development instrument. It was recommended that the resource contain the following sections: Table of Contents, Introduction; Key Terms; Key Performance Indicators; Systems for Collecting and Organizing KPI Data; Continuous Improvement Model for Using KPIs; Case Studies Using KPIs; Appendices; and an Index. Participants suggested that the KPI section of the resource cover the following 15 alphabetized KPIs: Absenteeism Rate, Average Daily Participation, Break-Even Point, Cost as a Percentage of Revenue, Days of Inventory On-Hand, Expenditures, Inventory Turnover Rate, Menu Cost, Meal Equivalents, Meals Per Labor Hour, Percent Over-Production, Per Meal Cost, Revenue Per Meal Equivalent, Revenues, and Staff Turnover Rate (Rushing, 2015).

Research Objectives

As identified through prior research addressed above, there is a need for the development of a resource to support SN professionals in managing their programs. Therefore, the purpose of this project is to develop a research-based resource to assist SN professionals in effectively utilizing standard SN key performance indicators (KPIs).

METHODOLOGY

Research Plan

This study builds on the findings from the GY12 project that explored standard SN KPIs. The project was divided into two phases. In Phase I an expert work group determined the format and content of a draft resource. In Phase II a review panel convened to validate the resource for the intended audience. Afterwards, the resource was revised based input from the review panel and formatted with the assistance of a graphic designer.

Phase I

Expert Work Group

Thirteen SN professionals who had participated in previous SN research associated with KPIs and financial management agreed to be members of an expert work group. This group included 10 SN directors, one state agency director, and one representative from the Institute of Child Nutrition (ICN) Training and Development division. The invitation provided a consent form and an overview of the study, including the planned activities and expected time constraints. The invitation also asked participants to identify KPIs that they would be willing to develop a short case narrative to describe how they have successfully used the KPI for SN program management (Rushing, 2015).

Electronic Work Group Activity One

The expert work group process consisted of four electronic activities culminating with a day-long face-to-face meeting. For the first electronic activity, participants were sent a draft of Chapter 1 of the resource, and an evaluation form. Chapter 1 included the 15 KPIs identified by previous research, each subdivided into the following sections: Description, Why Calculate, How to Calculate, Sample Calculations, Where to Capture Data, How to Use, Industry Standards,

Factors that Influence, and References. The draft content for Chapter 1 was gathered from current SN program management and foodservice management resources. The evaluation form asked participants to evaluate the content of each KPI section for completeness and accuracy, to provide missing or accurate content as needed, and to identify the sources of any new content provided. Participants were asked to complete activity one and return by e-mail the completed evaluation form within a three-week period. Afterwards, draft Chapter 1 of the resource was revised, based on participants' comments and suggestions. In areas where participants' comments/suggestions were conflicting, or where there was some confusion with regard to the comments, notes were made so these issues could be discussed at the face-to-face meeting.

Electronic Work Group Activity Two

The second electronic work group activity was sent three weeks after activity one. For this activity, participants were sent two documents, a draft of Chapter 2 of the resource and an evaluation form. The draft of Chapter 2 consisted of four sections: Benchmarking, Trend Analysis, Developing Action Plans, and Communicating with Key Stakeholders. The content for this chapter was gathered from current SN program management and foodservice management resources. The evaluation form asked participants to evaluate the content of each section of Chapter 2 for completeness and accuracy, to provide missing or accurate content as needed, and to identify the sources of any new content provided. Participants were asked to complete activity two and return by e-mail the completed evaluation form within a three-week period. Afterwards, Chapter 2 was revised based on participants' comments and suggestions. As with activity one, in areas where participants' comments/suggestions were conflicting, or where there was some confusion with regard to the comments, notes were made so these issues could be addressed at the face-to-face meeting.

Electronic Work Group Activity Three

Electronic activity three was sent to the expert work group three weeks after activity two. This activity, which would represent the case study component of Chapter 1 of the resource, was only sent to participants who were SN directors. (Academic professionals were not asked to complete this activity.) Each participant was asked to develop two case study narratives, based on information they provided at the time of the invitation, that described examples of how they have successfully utilized KPIs in their jobs. Participants were provided a template, which requested that case study be limited to 500 words in length. The template included suggested information to be included about the SN director's district (i.e., student enrollment size, number of schools in school district, etc.) as well as seven categories of suggested data to incorporate in the narrative, including the following: KPI name, purpose, source of data, calculation, trend analysis, benchmarking, utilization, and communication to key stakeholders. The academic professionals, who were not asked to complete case studies, were asked to provide ideas and examples of material to include in the appendix of the resource. Participants were asked to complete these activities, and to submit them by e-mail within a three-week period.

Electronic Work Group Activity Four

The fourth electronic work group activity was sent three weeks after activity three. For this activity, each of the 12 participants were sent an evaluation form and three case studies, not including the one they created, in a manner so that each case study was reviewed by three participants. The evaluation form asked participants to evaluate each case study for completeness, clarity, appropriateness, and to provide comments as needed. Participants were asked to complete activity four and return it by e-mail within a three-week period. Afterwards, a complete draft of Chapter 1 was revised based on participants' comments and suggestions.

Face-to-Face Meeting

The face-to-face expert work group meeting took place three weeks after the fourth electronic work group activity on the campus of The University of Southern Mississippi. One week prior to the meeting, participants were sent the draft KPI resource (including Chapter 1 and 2), and were asked to review it before the meeting.

On the day of the meeting, participants were asked to complete and return consent forms, along with a 22-question survey to gather information about their school districts and themselves. Participants were divided into four groups to review and adjust four KPIs with corresponding case studies to review and adjust. After this activity was completed, each group reported their suggested revisions, and engaged the rest of the participants in a consensus building discussion. For the final activity, the group engaged in a discussion to determine the best modes, other than an online and hard copy resource, that the ICN could provide KPI information to end users. Discussion questions included the following: Does the ICN need to create face-to-face or online training activities based on this resource? Do electronic spread sheets for calculating each KPI need to be created and made available on the ICN Web site?

Final Electronic Review

After the face-to-face expert work group meeting, the KPI resource was revised based on the consensus from the group. Afterwards, the resource was sent out the expert work group electronically one last time to review. Any final comments were addressed, and the resource was revised accordingly.

Phase II

Review Panel

The draft resource was revised based on comments from the expert work group review. The ICN identified 30 prospective SN professionals from past SN research associated with KPIs and financial management to contact regarding the review of the draft resource. Prospective review panel members were e-mailed a review packet containing a cover letter, a consent form, the draft resource, a guided review form, and a demographic questionnaire. The cover letter stated the purpose of the research study, and provided instructions for the review procedures, including the provision of contact information, and return of the evaluation to the ICN. Review panel members were asked to evaluate the resource for its completeness, accuracy, clarity, and suitability for the end user. The KPI resource was revised based on input from the review panel, and then formatted with the assistance of a graphic designer.

Based on the comments from the review panel, the case study component of each KPI was removed from Chapter 1, and a new chapter was developed dedicated to one large case study that included all 12 KPIs. A draft of the case study chapter was submitted to a review panel member with extensive experience successfully utilizing KPIs to successfully manage her SN program. After revising and resubmitting the resources a few times to the review panel member, a final draft of the case study chapter was agreed upon.

RESULTS

Phase I

Expert Work Group Face-to-Face Meeting

Ten of the expert work group participants at the face-to-face meeting completed the

22-question survey about their school district and themselves. The school nutrition (SN) program

characteristics of participants are provided in Table 1. Participants were from the Southwest

(30%), Mountain Plains (30%), Southeast (20%) and West (10%) United States Department of

Agriculture (USDA) regions. The largest percentage of participants were from districts with

student enrollments between 2,000 and 29,000 (43%). Seventy eight-percent of participants

indicated their SN programs were self-operated. The most common purchasing method was

decentralized (70%), and the most common food production method was a combination of

centralized and decentralized processing and preparation (45%). The nutrition and feedings

programs participated in by the majority of respondents were: The National School Lunch

Program (100%), School Breakfast Program (100.0%), Summer Food Service Program (78%),

and Farm-to-School (78%). The programs with the lowest levels of participation by SN programs

were Healthier School Day (0%), After School Meal Program (22%), and Child and Adult Care

Feeding Program (22%). All of participants indicated point-of-sale software is utilized at their

SN program (100%). (See Table 1.)

Table 1

Expert Work Group School Nutrition Program Characteristics

Question	Frequency[a]	%
What USDA Region is your school district located?		
Southwest	3	33%
Mountain Plains	3	33%
Southeast	2	23%
West	1	11%
Mid-Atlantic	0	0%
Mid-West	0	0%
Northeast	0	0%
What is the student enrollment in your school district?		
$\leq$ 1,999	1	14%
2,000-29,999	3	43%
$\geq$ 30,000 or greater	2	29%
Not Applicable	1	14%
How is your SN program managed?		
Self-operated	7	78%
Contract management company	1	11%
Not Applicable	1	11%
Which purchasing method does your SN program use?		
Decentralized (foodservice orders to vendors are placed at the school level)	7	70%
A combination of centralized and decentralized ordering	2	20%
Centralized (foodservice orders to vendors are made at the district level)	0	0%
Not Applicable	1	10%
Does your SN program have a central warehouse?		
No	6	67%
Yes	2	22%
Not Applicable	1	11%
Are the employees in your school district unionized?		
No	6	67%
Yes	2	22%
Not Applicable	1	11%

[a]Total *N* varies based on responses for each question.
[b]Total exceeds 100%, since respondents could select more than one response.

(Table 1 continues)

(Table 1 continued)

Expert Work Group School Nutrition Program Characteristics

Question	Frequency[a]	%
Which production method best describes your SN program?		
A combination of centralized and decentralized food processing and preparation	4	45%
Food processed/prepared at a central location(s) and distributed to satellite kitchens	3	33%
Food processed/prepared at individual school kitchens	1	11%
Not Applicable	1	11%
Which production style best describes the SN program throughout your school district?		
Most food items prepared from scratch	8	89%
Some food items prepared from scratch	0	0%
No food items prepared from scratch	0	0%
Not Applicable	1	11%
Which description best describes the SN program throughout your school district?		
A mixture of disposable trays and eating utensils and dish machine ware washing	3	33%
Mostly dish machine ware washing	3	33%
Mostly disposable trays and eating utensils	2	22%
Not Applicable	1	11%
What percent of students are approved for free and reduced price meals in your school district?		
0-19%	0	0%
20-39%	2	22%
40-59%	3	34%
60-79%	2	22%
$\geq 80\%$	1	11%
Not Applicable	1	11%
What is the percent average daily participation (%ADP) of students in the NSLP at your school or district?		
0-24%	0	0%
25-49%	4	45%
50-74%	3	33%
$\geq 75\%$	1	11%
Not Applicable	1	11%

[a]Total *N* varies based on responses for each question.
[b]Total exceeds, 100% since respondents could select more than one response.

(Table 1 continues)

(Table 1 continued)

Expert Work Group School Nutrition Program Characteristics

Question	Frequency[a]	%
Which of the following programs does your school district participate in? (Select all that apply.)[b]		
National School Lunch Program	9	100%
School Breakfast Program	9	100%
Summer Food Service Program	7	78%
Farm to School	7	78%
After School Snack Program	6	67%
Fresh Fruit and Vegetable Program	5	56%
HealthierUS School Challenge	4	44%
Child and Adult Care Food Program	2	22%
After School Meal Program	2	22%
Healthier School Day	0	0%
Not Applicable	1	11%
What method is used to conduct inventory at your school district?		
Periodic (take on a routine basis such as weekly, monthly, quarterly, annually)	5	56%
Both of the above	3	33%
Perpetual (inventory amount is updated continually as product are used)	0	0%
Not Applicable	1	11%
If you answered periodic to the above question, how often is inventory taken at your school district?		
Monthly	5	56%
Quarterly	3	33%
Not Applicable	1	11%
Do you use Point-of-Sale software in your school district?		
Yes	8	89%
No	0	0%
Not Applicable	1	11%

[a]Total *N* varies based on responses for each question.
[b]Total exceed 100%, since respondents could select more than one response.

Table 2 provides a listing of the personal characteristics of survey participants. Fifty percent had a Master's degree or higher, while 30%% had a bachelor's degree. The most common areas of study for those with a bachelor's degree or higher was nutrition and dietetics or food and nutrition (both 50%), while 10% had a business degree. The majority of participants indicated they had the following certifications: Registered Dietitian (70%) School Nutrition Specialist Credential (60%). A large percentage of participants indicated that they had worked in SN programs for 20 years or more (40%). When asked where they worked prior to taking their current position, 40% indicated they worked as a healthcare foodservice director/manager, or as a district-level SN director in a smaller district (30%).

Table 2

Expert Work Group Personal Characteristics

Question	Frequency[a]	%
What statement best describes your position?		
School nutrition director	8	89%
District-level SN supervisor	0	0%
School-level SN manager	0	0%
Not Applicable	1	11%
What is your highest level of education?		
Associate's degree	1	10%
Bachelor's degree	3	30%
Some graduate credits	1	10%
Master's degree	2	20%
Graduate hours beyond master's degree	1	10%
Doctoral degree	2	20%

[a] Total N varies based on responses for each question.
[b] Total exceed 100%, since respondents could select more than one response.

(Table 2 continues)

(Table 2 continued)

Expert Work Group Personal Characteristics

Question	Frequency[a]	%
If you have a Bachelor's degree or higher, what was your primary area of study? (Please check all that apply.)[b]		
Nutrition/dietetics	5	50%
Food and nutrition	5	50%
Other	2	20%
Business	1	10%
What is your certification/credentialed status? (Select all that apply.)[b]		
Registered Dietitian	7	70%
School Nutrition Specialist Credential	6	60%
Licensed Dietitian/Nutritionist	5	50%
State Department of Education Certified	2	20%
Not certified	1	10%
How many years have you worked in SN programs?		
1 to 10 years	0	0%
11 to 15 years	2	20%
16 to 20 years	4	40%
Greater than 20 years	4	40%
Not Applicable	0	10%
How long have you been in your current position?		
1 to 5 years	2	22%
6 to 10 years	1	11%
11 to 15 years	2	22%
16 to 20 years	2	22%
Greater than 20 years	2	22%
Prior to taking your current position, did you work as a? (Please select all that apply.)[b]		
Healthcare foodservice director/manager	4	40%
District-level SN director in a smaller district	3	30%
Other	2	20%
District-level SN supervisor in larger district	2	20%
District-level SN director in a larger district	2	20%
Restaurant manager	1	10%
School teacher	1	10%
State agency staff	1	10%

[a]Total N varies based on responses for each question.
[b] Total exceed 100%, since respondents could select more than one response.

During the expert work group meeting, participants came to consensus on the content for the resource. This content included four primary components: An Introduction, Chapter 1 The KPIs, Chapter 2 Managing and Utilizing Key Performance Indicators, and the Appendices. The introduction addressed three topics: "What are Key Performance Indicators," "How the Resource was Developed," and "Purpose/Contents/How to Use."

Chapter 1 consisted of 12 KPIs of the original 15 KPIs from the first electronic work group. The expert work group participants recommended that Menu Cost would be removed from the KPI list due to the large amount of content that would be needed to address this KPI adequately. Days of Inventory On-Hand was removed because the group felt this calculation provided the same information as Inventory Turnover Rate. Percent Overproduction was deleted, because the panel members did not feel this information was vital to the resource. Chapter 1 was divided as follows for ease of use:

- Meal Counts and Participation

    o Meal Equivalents (MEQs)

    o Average Daily Participation (ADP)

- Financial and Inventory Management

    o Revenues

    o Expenditures

    o Revenue Per Meal Equivalent (MEQ)

    o Cost Per Meal Cost (MEQ) (Note: The group suggested changing the title from Expense Per MEQ, for consistency.)

    o Cost as a Percentage of Revenue

    o Break-Even Point (BEP)

- o Inventory Turnover Rate

- Productivity and Labor

  - o Meals Per Labor Hour (MPLH)

  - o Staff Turnover Rate

  - o Absenteeism Rate

Each KPI addressed the following 11 topic areas:

1. Description

2. Why Calculate

3. How to Calculate

4. How Often to Calculate (added during the face-to-face meeting)

5. Sample Calculations

6. Where to Capture Data

7. How to Use

8. Industry Standards

9. Factors that Influence

10. References

11. Case Study

Chapter 2 consisted of four sections, and no major changes were recommended from expert work group. Those sections included: Benchmarking, Trend Analysis, Developing Action Plans, and Communicating with Key Stakeholders. The expert work group decided that the Appendices include three elements: A SMART Goals planning sheet, a sample Statement of Activities report, and a detailed explanation of how to calculate MEQs, the last of which the group recommend adding.

The expert work group participants also discussed the best modes, other than an online and hard copy resource, that the ICN could provide KPI information to end users. The following items were identified: Stand-alone training; include KPI training as part of *Orientation to Child Nutrition Managers*; provide KPI training as an online course; create a YouTube instructional video; and add/include KPI training to the 12-hour and 8-hour *Financial Management for School Nutrition Directors* courses.

Final Electronic Review

Following the expert work group meeting, the KPI resource was revised based on the group discussion. Afterwards, the resource was sent to the expert work group electronically for review. During this process, only minor changes were suggested. Afterwards, the document was revised based on those suggestions in preparation for the review panel.

Phase II

Review Panel

Once the data from the expert work group was revised based on expert work group comments, a draft resource was sent to 30 prospective review panel members who had participated in previous SN research projects associated with KPIs and financial management. Thirteen individuals completed and submitted consent forms, and the review panel evaluation forms; however, only 10 individuals completed the personal and program characteristics form.

The SN program characteristics of review panel members are provided in Table 3. Panel members were from school districts located in six of the seven USDA regions. Most panelists were from districts with student enrollments between 2,000 and 29,000 (63%). Eighty six percent of panelists indicated their SN programs were self-operated. The most common purchasing method was centralized (45%), and the most common food production method was a

combination of centralized and decentralized processing and preparation (63%). The nutrition and feeding programs participated in by the majority of respondents were: The National School Lunch Program (100%), School Breakfast Program (100.0%), Summer Food Service Program (63%), and After School Snack Program (63%).

Table 3

Review Panel School Nutrition Program Characteristics

Question	Frequency[a]	%
What USDA Region is your school district located?		
Southwest	3	33%
Northeast	2	23%
Mountain Plains	1	11%
Southeast	1	11%
Mid-Atlantic	1	11%
Mid-West	1	11%
West	0	0%
What is the student enrollment in your school district?		
$\leq 1,999$	0	0%
2,000-29,999	5	63%
$\geq 30,000$ or greater	3	37%
How is your SN program managed?		
Self-operated	6	86%
Contract management company	1	14%
Which purchasing method does your SN program use?		
Centralized (foodservice orders to vendors are made at the district level)	4	45%
A combination of centralized and decentralized ordering	3	33%
Decentralized (foodservice orders to vendors are placed at the school level)	2	22%

[a]Total N varies based on responses for each question.
[b]Total exceeds 100%, since respondents could select more than one response.

(Table 3 continues)

(Table 3 continued)

Review Panel School Nutrition Program Characteristics

Question	Frequency[a]	%
Does your SN program have a central warehouse?		
No	5	63%
Yes	3	37%
Are the employees in your school district unionized?		
No	6	75%
Yes	2	25%
Which production method best describes your SN program?		
A combination of centralized and decentralized food processing and preparation	5	63%
Food processed/prepared at individual school kitchens	2	24%
Food processed/prepared at a central location(s) and distributed to satellite kitchens	1	13%
Which production style best describes the SN program throughout your school district?		
Some food items prepared from scratch	5	63%
Most food items prepared from scratch	3	37%
No food items prepared from scratch	0	0%
Which description best describes the SN program throughout your school district?		
A mixture of disposable trays and eating utensils and dish machine ware washing	5	56%
Mostly disposable trays and eating utensils	3	33%
Mostly dish machine ware washing	1	11%
What percent of students are approved for free and reduced price meals in your school district?		
0-19%	2	25%
20-39%	1	12%
40-59%	2	25%
60-79%	3	38%
$\geq$ 80%	0	0%

[a]Total N varies based on responses for each question.
[b]Total exceeds 100%, since respondents could select more than one response.

(Table 3 continues)

(Table 3 continued)

Review Panel School Nutrition Program Characteristics

Question	Frequency[a]	%
What is the percent average daily participation (%ADP) of students in the National School Lunch Program (NSLP) at your school or district?		
0-24%	1	13%
25-49%	1	13%
50-74%	4	50%
≥ 75%	2	26%
Which of the following programs does your school district participate in? (Select all that apply)[b]		
National School Lunch Program	8	100%
School Breakfast Program	8	100%
Summer Food Service Program	5	63%
After School Snack Program	5	63%
Farm to School	4	50%
Fresh Fruit and Vegetable Program	2	25%
HealthierUS School Challenge	1	13%
Child and Adult Care Food Program	1	13%
After School Meal Program	0	0%
Healthier School Day	0	0%
What method is used to conduct inventory at your school district?		
Periodic (take on a routine basis such as weekly, monthly, quarterly, annually)	4	67%
Both of the above	2	33%
Perpetual (inventory amount is updated continually as product are used)	0	0%
If you answered periodic to the above question, how often is inventory taken at your school district?		
Monthly	5	72%
Quarterly	1	14%
Weekly	1	14%
Do you use point-of-sale software in your school district?		
Yes	8	100%
No	0	0%

[a]Total N varies based on responses for each question.
[b]Total exceeds 100%, since respondents could select more than one response.

The personal characteristics of review panelists is provided in Table 8. One-half (50%) of the panel members had a Master's degree or higher, while 30%% had a bachelor's degree. The most common areas of study for those with a bachelor's degree or higher was Foodservice Management (39%) followed by other (25%). When asked about certification/credentialed status, participants indicated they had the following School Nutrition Specialist credential (36%), Registered Dietitian (9%), Licensed Dietitian/Nutritionist (9%), state department of education certified (9%), and School Nutrition Association certified (9%), while 27% were not certified. The majority of panelists indicated that they had worked in SN programs for 20 years or more (56%). When asked where they worked prior to taking their current position, 38% indicated other, while 23% reported working as district-level SN director in a smaller district or as a restaurant manager (23%).

Table 4

Review Panel Personal Characteristics

Question	Frequency[a]	%
What statement best describes your position?		
School nutrition director	8	80%
Other	2	20%
District-level SN supervisor	0	0%
School-level SN manager	0	0%
What is your highest level of education?		
Some college credit	1	10%
Associate's degree	1	10%
Bachelor's degree	3	30%
Master's degree	4	40%
Doctoral degree	1	10%

[a]Total N varies based on responses for each question.
[b]Total exceeds 100%, since respondents could select more than one response.

(Table 4 continues)

(Table 4 continued)

Review Panel Personal Characteristics

Question	Frequency[a]	%
If you have a Bachelor's degree or higher, what was your primary area of study? (Please check all that apply.)[b]		
Foodservice Management	3	39%
Other	2	25%
Hospitality Management	1	12%
Nutrition / Dietetics	1	12%
Business	1	12%
What is your certification/credentialed status? (Select all that apply)[b]		
School Nutrition Specialist Credential	4	36%
Not certified	3	27%
Registered Dietitian	1	9%
Licensed Dietitian/Nutritionist	1	9%
State Department of Education Certified	1	9%
School Nutrition Association Certified	1	9%
How many years have you worked in SN programs?		
1 to 10 years	2	22%
11 to 15 years	1	11%
16 to 20 years	1	11%
Greater than 20 years	5	56%
How long have you been in your current position?		
1 to 5 years	2	22%
6 to 10 years	1	11%
11 to 15 years	2	22%
16 to 20 years	2	22%
Greater than 20 years	2	22%
Prior to taking your current position, did you work as a? (Please select all that apply.)[b]		
Other	5	38%
District-level SN director in a smaller district	3	23%
Restaurant manager	3	23%
District-level SN supervisor in larger district	1	8%
Healthcare foodservice director/ manager	1	8%

[a]Total N varies based on responses for each question.
[b]Total exceeds 100%, since respondents could select more than one response.

As demonstrated in Table 5, the majority or panelists perceived the introduction section was clearly worded and appropriate for SN directors. Further, as shown in Tables 6-8, the vast majority of review panel members agreed or strongly agreed that the content of Chapters 1 and 2 and the Appendices were accurate, complete, clearly worded, and appropriate for SN directors.

Table 5

Review Panel Evaluation of the Introduction (*N*=13)

Area Evaluated	Evaluation Criteria	Missing Data	Strongly Disagree/ Disagree	Agree/ Strongly Agree
What are Key Performance Indicators?				
	Clearly Worded	0%	15%	85%
	Appropriate for SN Directors	15%	8%	77%
How was the resource developed?				
	Clearly Worded	0%	0%	100%
	Appropriate for SN Directors	0%	0%	100%
Purpose/Contents				
	Clearly Worded	0%	8%	88%
	Appropriate for SN Directors	0%	8%	88%

Table 6

Review Panel Evaluation of Chapter 1: The Key Performance Indicators (*N*=13)

Area Evaluated	Evaluation Criteria	Missing Data[a]	Strongly Disagree /Disagree	Agree / Strongly Agree
Description				
	Accurate	10%	1%	89%
	Complete	5%	0%	95%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	5%	1%	95%
Why Calculate				
	Accurate	9%	0%	91%
	Complete	10%	0%	90%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	15%	0%	85%
How to Calculate				
	Accurate	13%	1%	86%
	Complete	13%	1%	86%
	Clearly Worded	13%	2%	85%
	Appropriate for SN Directors	14%	1%	85%
Sample Calculations				
	Accurate	15%	1%	84%
	Complete	14%	0%	86%
	Clearly Worded	15%	1%	84%
	Appropriate for SN Directors	13%	1%	86%
Where to Capture Data				
	Accurate	10%	1%	89%
	Complete	10%	0%	90%
	Clearly Worded	9%	0%	91%
	Appropriate for SN Directors	10%	0%	90%

[a]*N*=13. Every review panel member did not evaluate the entire resource. This column represents non-responses to evaluation questions.

(Table 6 continues)

(Table 6 continued)

Review Panel Evaluation of Chapter 1: The Key Performance Indicators (*N*=13)

Area Evaluated	Evaluation Criteria	Missing Data[a]	Strongly Disagree /Disagree	Agree / Strongly Agree
How to Use				
	Accurate	7%	0%	93%
	Complete	7%	0%	93%
	Clearly Worded	5%	1%	94%
	Appropriate for SN Directors	6%	0%	95%
Industry Standards				
	Accurate	10%	1%	88%
	Complete	9%	1%	90%
	Clearly Worded	1%	1%	88%
	Appropriate for SN Directors	9%	1%	90%
Factors that Influence				
	Accurate	11%	0%	89%
	Complete	11%	0%	89%
	Clearly Worded	11%	0%	89%
	Appropriate for SN Directors	10%	0%	90%
References				
	Accurate	8%	1%	91%
	Complete	9%	1%	90%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	8%	0%	92%
Case Study				
	Accurate	17%	1%	82%
	Complete	19%	0%	81%
	Clearly Worded	19%	0%	81%
	Appropriate for SN Directors	15%	0%	85%

[a]*N*=13. Every review panel member did not evaluate the entire resource. This column represents non-responses to evaluation questions.

Table 7

Review Panel Evaluation of Chapter 3: Utilizing Key Performance Indicators (*N*=13)

Area Evaluated	Evaluation Criteria	Missing Data[a]	Strongly Disagree /Disagree	Agree / Strongly Agree
Benchmarking				
	Accurate	8%	0%	92%
	Complete	8%	0%	92%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	5%	0%	85%
Trend Analysis				
	Accurate	8%	8%	84%
	Complete	8%	8%	84%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	8%	0%	92%
Developing Action Plans/How to Calculate				
	Accurate	8%	0%	92%
	Complete	8%	0%	92%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	9%	0%	92%
Communicating with Key Stakeholders				
	Accurate	9%	0%	92%
	Complete	8%	0%	92%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	8%	0%	92%

[a]*N*=13. Every review panel member did not evaluate the entire resource. This column represents non-responses to evaluation questions.

Table 8

Review Panel Evaluation of the Appendices (*N*=13)

Area Evaluated	Evaluation Criteria	Missing Data[a]	Strongly Disagree/ Disagree	Agree/ Strongly Agree
Smart Goals Action Planning Template				
	Accurate	8%	0%	92%
	Complete	8%	0%	92%
	Clearly Worded	8%	0%	92%
	Appropriate for SN Directors	8%	0%	92%
Statement of Activities Report				
	Accurate	23%	0%	77%
	Complete	23%	0%	77%
	Clearly Worded	23%	0%	77%
	Appropriate for SN Directors	8%	8%	84%

Many of the comments from review panelists were very positive. Some examples are provided below.

"It was all very clear, concise, and of value to programs."

"I can attest that the format and flow is very clear; this will be an incredibly useful tool for industry professionals."

"What a great resource for all of us in school nutrition. The team who put this together did a wonderful job!"

However, several review panel comments indicated the consistency and clarity of the case studies needed to be improved.

"The case study does not present a good rationale."

"The case study does not present a good use of this tool."

"This is a weak case study."

"The case study is not clearly written, and likely would be improved from a rewrite."

"There is a lot of unnecessary information in the case study."

Based on review panel comments, the case study component of each KPI was removed from Chapter 1 and a new chapter was developed, dedicated to one large case study that incorporated all 12 KPIs. This new case study chapter contained one background section representing one school district for which each KPI in the case study was based. After completing a draft of the case study chapter, it was submitted to a review panel member with extensive experience successfully utilizing KPIs to successfully manage her SN program. After revising and resubmitting the resources a few times to the reviewer, the final draft of the case study chapter contained the following four sections: Background Data (including SN program characteristics), Meal Counts and Participation, Financial and Inventory Management, and Productivity and Labor. 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.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The results of this research project are the culmination of a multi-phase, multi-year project. In 2015, the Institute for Child Nutrition (ICN), Applied Research Division began a four-phase study to explore school nutrition (SN) directors' usage and perceptions of KPIs. Phase I consisted of a site visit to an SN program where KPIs have been successfully utilized. The data gathered during the site visits included the following:

- The specific KPIs used by various levels of SN staff members;

- The frequency KPIs were calculated;

- How KPIs were utilized;

- The strengths and barriers of using each KPI; and

- The barriers/disadvantages of using each KPI.

In Phase II, an expert panel of 10 SN professionals experienced in applying KPIs convened to discuss issues associated with utilizing KPIs to support the development of a national survey. In Phase III, a national survey was developed and validated with the assistance of a review panel of 21 SN professionals and mailed to a random sample of 700 SN directors representing the seven USDA regions. The findings suggested most SN professionals believe KPIs are valuable managerial tools; yet, most SN professionals do not receive adequate training on KPIs. Data gathered from Phases I-III were used in Phase IV to guide a think tank consisting of eight SN professionals in identifying the best format and content areas of a resource to support SN professionals' in effective utilization of KPIs for operational decision making and program evaluation.

In 2016, a two-phase project was conducted to guide the development of a resource, which began with the 2015 project, to support district and unit-level SN professionals in using and interpreting standard SN key performance indicators. In Phase I, an electronic and face-to-face expert work group of 13 SN professionals determined the format and content of a draft resource. In Phase II, an electronic review panel of 10 SN professionals, reviewed, revised, and validated the resource. Afterwards, the resource revised based input from the review panel and formatted with the assistance of a graphic designer.

The final product is a resource, titled "*Essential KPIs for School Nutrition Success*" (Appendix) that 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, 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.

The purpose of the *Description* section is to introduce users to the KPI, and to 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.

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. It is important to note that for many of the KPIs, there is more than one correct way to complete the calculation. Only one calculation was selected for each KPI for simplicity and ease of use.

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. It is important to note that 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 breakdown and analyze data based on several factors

including the following: 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, etc.).

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 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) was, that data was 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. The information in this section was provided primarily by the expert panel and review panel. This list is not all inclusive, due to the vast number of possible factors. 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 of which calculation or data to select.

Chapter 2, titled *The Case Study*, 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. These sections 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, titled *Utilizing Key Performance Indicators*, 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 T*rend 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.

Recommendations

It is recommended that SN professionals use this resource as reference guide for identifying and utilizing KPIs. To select the appropriate KPI, it is suggested that the user first choose one of the three topic areas they wish investigate from the table of contents (Meal Counts and Participation, Financial and Inventory Management, and Productivity and Labor) and then identify the specific KPI or KPIs under that topic area that best meets their needs. Once a KPI or KPIs have been calculated, the user is encouraged to utilize Chapter 3 to support benchmarking their findings, conducting a trend analysis, developing action plans for program improvement, and communicating their finding with their managerial staff and other stakeholders, as appropriate.

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, it is advised that SN management professionals receive training based on the contents of this resource once they have completed the following ICN courses: *Orientation to School Nutrition Management* and *Financial Management: A Course for School Nutrition Directors*. To help facilitate this process, it is recommend that a stand-alone KPI training program be developed based on the contents of this resource, which includes a workbook and instructor's guide that is available in face-to-face and online formats through the ICN. Additionally, it is recommended that a KPI training component be added to the following ICN courses: *Orientation to School Nutrition Management*, and to the 12-hour and 8-hour *Financial Management: A Course for School Nutrition Directors*" course.

REFERENCES

Boettger, J. (2009). RX for a healthy school nutrition program. *School Business Affairs*.

    Retrieved from

    http://indianasna.org/content/indianasna/documents/RXforHealthyProgram.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.com. 45(11). Retrieved from:

    http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=a88b88b4-e4a4-475a-b2b0-

    58c60a82774d%40sessionmgr115&vid=9&hid=124.

Cater, J., Conklin, M., and Cross, E., (2005). *NFSMI Financial Management Information

    System*. (NFSMI R-86-05). The University of Mississippi.

Fahey, J. P. (2011). How are you doing? Key performance indicators and benchmarking. *School

    Business Affairs. 77*(3). Retrieved from: http://files.eric.ed.gov/fulltext/EJ919592.pdf.

Institute of Child Nutrition. (2015). *Financial management: A course for school nutrition

    directors* (2nd ed.). University, MS: Author.

National Food Service Management Institute. (2012). *Inventory management and tracking

    reference guide*. University, MS: Author.

Nettles, M. F. & Rushing, K. (2012). *Data-Driven Decision Making: Guide for School Nutrition

    Programs*. University, MS: National Food Service Management Institute.

Pannell-Martin and Boettger, J. (2014). *School Food & Nutrition Service Management for the

    21st Century*. (6th ed.). Aiken, South Carolina: Author.

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.

Appendix

Essential KPIs for School Nutrition Success

Essential KPIs
for School Nutrition Success

INSTITUTE OF
child nutrition

APPLIED RESEARCH DIVISION · THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Essential **KPI**s
for School Nutrition Success

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The University of Mississippi

The Institute of Child Nutrition was authorized by Congress in 1989 and established in 1990 at The University of Mississippi in Oxford and is operated in collaboration with The University of Southern Mississippi in Hattiesburg. The Institute operates under a grant agreement with the United States Department of Agriculture, Food and Nutrition Service.

PURPOSE
The purpose of the Institute of Child Nutrition is to improve the operation of child nutrition programs through research, education and training, and information dissemination.

MISSION
The mission of the Institute of Child Nutrition is to provide information and services that promote the continuous improvement of child nutrition programs.

VISION
The vision of the Institute of Child Nutrition is to be the leader in providing education, research, and resources to promote excellence in child nutrition programs.

For more information, please contact helpdesk@theicn.org

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Introduction

WHAT ARE KEY PERFORMANCE INDICATORS (KPIs)?

Performance measurement is an essential managerial function. It exposes the gaps between current and desired performance, and provides evidence if progress has been made toward closing the gaps. Key performance indicators are measures that focus on the most critical aspects of an organization's performance. These measures provide a rigorous, numbers-oriented approach to target specific areas of emphasis, and assess results in an objective manner. Key performance indicators allow users to set standards of expectation, identify problem areas, and measure progress in correcting these problems. Further, KPIs can be used to 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 (e.g., breakfast in the classroom, salad bars, and farm to school) on participation, cost, and revenue. Examples of school nutrition (SN) KPIs are Meals Per Labor Hour (MPLH) and Revenue Per Meal Equivalent (MEQ).

HOW THIS RESOURCE WAS DEVELOPED

In 2015, The Institute of Child Nutrition (ICN), Applied Research Division, began a multifaceted, exploratory research project to investigate SN professionals' usage and perceptions of KPIs for managing SN programs. An expert panel of 10 SN professionals experienced in utilizing KPIs explored the following issues:

- Which KPIs are commonly used in SN program management?
- What is the best way to calculate each KPI?
- What factors should be considered when calculating and utilizing each KPI?
- What is most SN professionals' understanding of each KPI?
- Which level of SN professional utilizes each KPI?
- How is each KPI utilized?
- What are the advantages and disadvantages of using each KPI?

Results of the expert panel guided the development of a national survey, which was validated by a review panel of 21 SN professionals, and then mailed to a random sample of 700 SN directors equally representing the seven United States Department of Agriculture regions. The findings of the survey suggested the following: School nutrition directors have access to the necessary data for calculating KPIs; Key performance indicators provide essential data for program evaluation and decision making; Key performance indicators are easy to use, but time consuming to calculate; and SN professionals do not receive adequate training on KPIs.

The findings from the national survey were presented to an expert panel of eight SN professionals who helped identify the content areas and best format for a KPI resource to meet the needs of SN professionals. Next, using information from several SN professionals, foodservice management, and government Web sites, the content for the resource was drafted. Afterwards, an expert panel of 11 SN professionals, utilizing consensus building activities, reviewed the content and made suggestions for revision. Once the draft resource was revised based on suggestions from the expert panel, the resource was assessed and validated by a review panel of eight SN professionals. The result of this process is the resource you are now reading.

PURPOSE / CONTENTS

The purpose of this resource is to provide SN professionals with a straight-forward, easy-to-use reference for identifying and applying the KPIs that focus on the most critical aspects of their SN program performance to achieve success. The resource includes three chapters and an appendix.

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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 seven KPIs grouped under this heading, and they are identified in the table of contents. In **Chapter 1**, under each KPI, there are the following 10 sections:

1. **Description**
2. **Why Calculate**
3. **How Often to Calculate**
4. **How to Calculate**
5. **Sample Calculations**
6. **Where to Capture Data**
7. **How to Use**
8. **Industry Standards**
9. **Factors that Influence**
10. **References**

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

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 is based on 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. It is important to note that, for many of the KPIs, there is more than one correct way to complete the calculation. Only one calculation was selected for each KPI for simplicity and ease of use.

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; 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. It is important to note that 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.

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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 breakdown and analyze data based on several factors. Some of these factors could be: 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, etc.).

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 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) was, that data was 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. The information in this section was provided primarily by the expert panel and review panel. This list is not all inclusive, due to the vast number of possible factors. Therefore, the factors provided represent the issues expert panel participants felt were most important and of the 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 of which calculation or data to select.

Chapter 2 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. These sections 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 an SN program.

Chapter 3 includes four sections that contain brief discussions on how to utilize the results of KPI calculations: 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 an SN program. The **"Benchmarking"** section defines benchmarking, explains different types of benchmarking, and provides simple-to-follow steps for beginning KPI benchmarking at an 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 Stakeholders"** section provides suggestions on how to present KPI data to key stakeholders of an SN program.

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Effective application of this resource requires a basic understanding of financial and operations management of an SN program. Therefore, it is suggested that users of this resource participate in the ICN training programs, such as "Orientation to School Nutrition Management" and "Financial Management." Please look on the ICN Web site, **http://theicn.org/,** or contact the ICN for more information about these and other training opportunities.

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REFERENCES

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

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.com*, 45(11), 16-20. Retrieved from: http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=a88b88b4-e4a4-475a-b2b0-58c60a82774d%40sessionmgr115&vid=9&hid=124.

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.

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

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

Rushing, K. (2015). *Exploring standard child nutrition key performance indicators*. Hattiesburg, MS: Institute of Child Nutrition, Applied Research Division.

U.S. Department of Agriculture, Food and Nutrition Services. (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 Services. (2014). *HealthierUS school challenge: Smarter lunchrooms*. Retrieved from: http://www.fns.usda.gov/sites/default/files/tn/2014hussc_criteria.pdf.

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CHAPTER 1

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THE KEY PERFORMANCE INDICATORS

1. MEAL COUNTS AND PARTICIPATION
   A. MEAL EQUIVALENTS (MEQ)
   B. AVERAGE DAILY PARTICIPATION (ADP)

2. FINANCIAL AND INVENTORY MANAGEMENT
   A. REVENUES
   B. EXPENDITURES
   C. REVENUE PER MEAL EQUIVALENT (MEQ)
   D. COST PER MEAL EQUIVALENT (MEQ)
   E. COST AS A PERCENTAGE OF REVENUE
   F. BREAK-EVEN POINT (BEP)
   G. INVENTORY TURNOVER RATE

3. PRODUCTIVITY AND LABOR
   A. MEALS PER LABOR HOUR (MPLH)
   B. STAFF TURNOVER RATE
   C. ABSENTEEISM RATE

Chapter 1. The Key Performance Indicators

SECTION I: MEAL COUNTS AND PARTICIPATION

A. MEAL EQUIVALENTS (MEQ)
B. AVERAGE DAILY PARTICIPATION (ADP)

MEAL EQUIVALENTS (MEQ)

DESCRIPTION: The MEQ is the conversion of different meal services (i.e., breakfast, supper, and snacks) and non-program food sales to the equivalent of one federally reimbursable student lunch for comparison purposes.

WHY CALCULATE: In school nutrition (SN) programs, a federally reimbursable student lunch is the standard unit of measurement most often used to gauge the effectiveness and efficiency of a program. Converting operational data for all food sales to meal equivalents allows the SN professional to calculate three key performance indicators (KPIs), while effectively benchmarking financial performance, both internally and externally. These three KPIs are revenue per meal equivalent, cost per meal equivalent, and meals per labor hour.

HOW OFTEN TO CALCULATE: Weekly, monthly, and annually.

HOW TO CALCULATE:

MEALS SERVICE	CONVERSION FACTOR	RATIONALE
1 Lunch or 1 Supper (Student or Adult)	= 1.00	All student reimbursable lunches, student reimbursable suppers, and full-paid adult lunches are counted as one MEQ. If a student purchases more than one lunch on a given day, the second lunch is considered non-reimbursable, and is reported as a non-program food sale[1]. The category for reporting is determined by state agency requirements. Lunches eaten by SN employees at no charge are considered "in-kind" meals, and should not be counted as a meal equivalent.
1 Breakfast	= 0.67	The most common calculation for determining breakfast MEQs specifies that three breakfasts count as two MEQs ($2 \div 3 = .67$). However, it is important to note that the MEQ ratio used for calculating breakfast MEQs varies from state to state, and SN administrators should check with their state agencies for guidance. Once a ratio is selected, it should remain consistent for the entire reporting period (year) for comparison and benchmarking purposes.
1 Snack	= 0.33	National School Lunch Program (NSLP) snacks are served to children and youth in after-school care programs that are eligible for United States Department of Agriculture (USDA) reimbursement. While there are no current research studies to support the meal equivalency ratio, a survey of selected state agencies indicated most states use a 3-to-1 ratio of snacks to MEQs. Using this equivalency, snacks can be converted to MEQs as follows: MEQ = Number of snacks served x conversion factor ($1 \div 3 = 0.33$).
Non-Program Food Sales[1]	= Dollar amount of non-program food sales ÷ (current free lunch reimbursement rate[2] + current USDA Foods value[3] [which changes annually]).	The MEQ calculations for all other SN program categories are based on the annual federal reimbursement rate for a free lunch plus the entitlement USDA Foods value. Non-Program Food Sales[1] Free lunch reimbursement rate[2] + USDA Foods value[3]
		The same formula would apply for other SN program events, such as catered meals or special school functions.

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[1]**Non-Program Food Sales:** Food other than a reimbursable meal sold in an SN program participating in a USDA Child Nutrition Program (i.e., NSLP, School Breakfast Program [SBP], etc.). This food is purchased using funds from the school food authority of the school, including food that is sold in competition with the SN program.

[2] **Free Lunch Reimbursement Rate:** This changes annually. This rate can be found on the USDA Food and Nutrition Services (FNS) Web site at the following link: **https://www.fns.usda.gov/school-meals/rates-reimbursement**.

[3] **Value of USDA Foods:** This changes annually. This value can be found on the USDA FNS Web site at the following link: **https://www.fns.usda.gov/fdd/value-donated-foods-notices**. For states such as Kansas that receive cash in lieu of USDA Foods, please contact your state agency to determine what figure to use here.

SAMPLE CALCULATIONS: In a given month, an SN program served the following:

- 11,000 student reimbursable breakfasts;
- 400 adult non-reimbursable breakfasts;
- 24,000 student reimbursable lunches;
- 700 adult lunches; and
- 20,000 after-school snacks.
- The program received $9,000 dollars in non-program food sales.

MEAL CATEGORIES	CONVERSION FACTORS				MEQ
11,000 student reimbursable breakfasts	x	0.67	=		7,370 MEQ
400 adult non-reimbursable breakfasts	x	0.67	=		268 MEQ
24,000 student reimbursable lunches	x	1.00	=		24,000 MEQ
700 adult lunches	x	1.00	=		700 MEQ
20,000 after-school snacks	x	0.33	=		6,600 MEQ
$9,000 dollars in non-program food sales	÷	(3.09 + .2375)*	=		2,704 MEQ
		Total			41,642 MEQ

*Based on reimbursement rates and the USDA Foods value effective beginning July 1, 2016, for school year 2016-2017. Reimbursement rates should be updated annually.

WHERE TO CAPTURE DATA: Meal count and sales data are captured electronically (via computer system) or manually (via student checklists or counting forms) at the point-of-sale systems utilized by SN programs. This data can be found in reports such as day end sales reports, edit check worksheets, and/or deposit reports.

HOW TO USE: Conversion of all SN program food sales to MEQs allows the calculation of three KPIs: Revenue per MEQ, Cost per MEQ, and MPLH.

INDUSTRY STANDARDS: Not applicable.

FACTORS THAT INFLUENCE: Not applicable.

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REFERENCES

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.

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 21st century* (6th ed.). Aiken, South Carolina: Author.

U.S. Department of Agriculture, Food and Nutrition Services. (2016). *School meals – Rates of reimbursements*. Retrieved from http://www.fns.usda.gov/school-meals/rates-reimbursement.

U.S. Department of Agriculture, Food and Nutrition Services. *Healthy, Hunger-Free Kids Act 2010*, Section 206 Defining Non-program Food Sales. Retrieved from http://www.fns.usda.gov/sites/default/files/HealthyHungerFreeKidsActof2010.pdf#page=1&zoom=auto,-35,798.

U.S. Department of Agriculture, Food and Nutrition Services. (2016). *Food distribution – Value of donated foods notices*. Retrieved from: http://www.fns.usda.gov/fdd/value-donated-foods-notices.

AVERAGE DAILY PARTICIPATION (ADP)

DESCRIPTION: The ADP is the average number of student reimbursable meals served in a school nutrition (SN) program on a daily basis.

WHY CALCULATE: Calculating and monitoring ADP monthly can assist SN professionals in forecasting and in decision making, such as determining labor requirements, food purchasing, and non-food purchasing projections, which strengthens a program's resources through cost control. The ADP data allows SN professionals to establish participation goals and to create objectives for meeting those goals. When collected over several years, ADP data assists with identifying trends and projecting future needs. Further, the ADP can be used to assess the popularity of menu options, evaluate productivity, and gauge customer satisfaction.

HOW OFTEN TO CALCULATE: Daily, weekly, monthly, or as often as needed.

HOW TO CALCULATE: The ADP can be calculated by dividing the number of student meals served during the month by the operating days in the month. Typically, participation is determined separately for breakfast, lunch, and other meal services offered. The formulas for calculating ADP for lunch and breakfast are as follows:

$$\text{ADP Breakfast} = \frac{\text{Number of Breakfasts Served in a Month}}{\text{Number of Operating Days in Month}}$$

$$\text{ADP Lunch} = \frac{\text{Number of Lunches Served in a Month}}{\text{Number of Operating Days in Month}}$$

SAMPLE CALCULATIONS (ADP): A school served 11,400 reimbursable student breakfasts during the month of October, with 21 operating days.

$$\text{ADP Breakfast} = \frac{(11,400)}{21} = 542.8 \text{ or } 543$$

The school also served 24,700 reimbursable student lunches.

$$\text{ADP Lunch} = \frac{(24,700)}{21} = 1,176.1 \text{ or } 1,176$$

This school had an ADP of 543 for breakfast, and 1,176 for lunch for the month.

In addition to determining the ADP numbers, it is helpful to know the ratio of students eating a school meal to the average number of students attending the school. This ratio is called the **ADP Rate**. The formulas for calculating breakfast and lunch ADP rate are as follows:

$$\text{ADP Rate Breakfast} = \frac{\text{Breakfast ADP}}{\text{Average Daily Attendance}}$$

$$\text{ADP Rate Lunch} = \frac{\text{Lunch ADP}}{\text{Average Daily Attendance}}$$

The United States Department of Agriculture (USDA) calculates ADP rates based on ***Average Daily Attendance*** rather than enrollment. Calculating ADP in this manner is considered fairer to schools, as the calculation does not include students who are absent or do not eat lunch or breakfast. To calculate average daily attendance, obtain the average daily attendance number from the school and subtract the number of students who do not have access to the meal service.

For the reporting period of October, an average of 2,200 students attended school in the district on a daily basis. (The information was obtained from the school district office.) However, 100 students did not have access to lunch because they were half-day kindergarten students.

An average of 524 students ate breakfast on a daily basis. This information is from the example used to calculate MEQs (11,400 ÷ 21 [operating days for the month] = 543). An average of 1,143 students ate the reimbursable lunch (24,700 ÷ 21 [operating days for the month] = 1176).

ADP rates for October were calculated as follows:

$$\textbf{ADP Rate Breakfast} \quad = \quad \frac{543}{(2,200\text{-}100)} \quad = \quad 0.259 \text{ or } 26\%$$

$$\textbf{ADP Rate Lunch} \quad = \quad \frac{1170}{(2,200\text{-}100)} \quad = \quad 0.557 \text{ or } 56\%$$

WHERE TO CAPTURE DATA: Meal count data is usually captured electronically or manually at the point-of-sale system utilized by SN programs. Daily attendance comes electronically from the student information system, the school office, or from the registrar.

HOW TO USE: The ADP can be used as a major forecasting tool to:

- Prevent waste in excess labor hours and overproduction of food;
- Monitor participation trends over time;
- Monitor customer satisfaction and address customer concerns;
- Identify opportunities for increasing meal participation;
- Determine labor needs and assignments;
- Create food production schedules;
- Evaluate menu items; and
- Measure program growth.

INDUSTRY STANDARDS*:

- ADP for elementary school breakfast = 35%
- ADP for elementary school lunch = 75%
- ADP for middle school breakfast = 35%
- ADP for middle school lunch = 75%
- ADP for high school breakfast = 25%
- ADP for high school lunch = 65%

*Based on HealthierUS School Challenge Gold Standards.

FACTORS THAT INFLUENCE: Student participation in the school meals program may vary depending on controllable and non-controllable variables, such as:

Controllable

- Student acceptance
- Speed of service/wait time
- Menu options/recipes
- Friendliness of staff

Non-Controllable

- The percentage of students eligible for free or reduced price meals
- Rural versus urban location
- Age/grade of students served
- Weather
- Time of the year

Potential to Influence

- Type of production system (i.e., conventional vs. satellite)
- Atmosphere
- Locations and number of service areas
- School activities
- Closed versus open campuses
- School district regulations
- Administrative support
- Bus schedules
- Nutrition education
- Adult role models
- Number of families applying for free and reduced price meals

REFERENCES

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.

U.S. Department of Agriculture, Food and Nutrition Services. (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 Services. (2014). *HealthierUS school challenge: Smarter lunchrooms*. Retrieved from http://www.fns.usda.gov/sites/default/files/tn/2014hussc_criteria.pdf.

U.S. Department of Agriculture Memo SP 43-2011 National Average Daily Attendance Factor for Coordinated Review Effort; and Title 7, *Code of Federal Regulations*, sections 210.2 and 210.8(a)(3).

Chapter 1. The Key Performance Indicators

SECTION 2: FINANCIAL AND INVENTORY MANAGEMENT

A. REVENUES
B. EXPENDITURES
C. REVENUE PER MEAL EQUIVALENT (MEQ)
D. COST PER MEAL EQUIVALENT (MEQ)
E. COST AS A PERCENTAGE OF REVENUE
F. BREAK-EVEN POINT (BEP)
G. INVENTORY TURNOVER RATE

REVENUES

DESCRIPTION: School nutrition (SN) program revenues are all monies received by or accruing to the nonprofit food service account, and include, but are not limited to, the following potential sources. Some of these categories differ from state to state. Please check with your state agency for guidance:

1. **Federal Sources:** Payments received from federal funds for reimbursable meals, after-school snacks, and suppers, as well as the value of United States Department of Agriculture (USDA) foods received, cash received in lieu of USDA Foods, federal grants, and funds for other federal nutrition programs.

2. **State Sources:** Funds received by the SN program from the state government (i.e., "state matching" funds).

3. **Local Sources:** Funds received from sources such as local government aid, grants, or contributions. This does not include local funds transferred into an SN program that must be paid back to a school district (i.e., loans to an SN program).

4. **Student Meal Sales:** Funds identified as revenue received from the sale of reimbursable meals to students. Included are monies received from full-paying and reduced price students.

5. **Adult Meal Sales:** All revenue received from the sale of meals to adults. Meals sold to school employees, parents, and guests of the school district should be included in this category.

6. **Contract Meal Sales:** Funds received from the sale of meals prepared/served for an agreed price to an agency, organization, business, or group who have entered into a contractual agreement with the SN program.

7. **Non-Program Food Sales:** Funds received from food sales such as à la carte, extra meal components (milk), snacks, and special school or catered meals. Some states and districts record adult meal sales in this category.

8. **Miscellaneous/Other Revenue:** Other revenue not classified or included elsewhere, such as rebates, sale of surplus equipment, lease or rental of equipment, grant funds (i.e., "No Kid Hungry," Dairy Council breakfast grants, federal equipment grants, etc.), and concession sales.

9. **Interest:** Money earned on bank deposits, investments, etc.

10. **Fund Transfer-In:** Funds transferred to the SN program from other Board of Education funds. (This does not include "loans to an SN program" that must be repaid to the district.)

WHY CALCULATE: The management of a program's revenue is critical to the financial stability of an SN program. A successful SN director must ensure there is enough revenue to meet expenditure obligations. According to federal guidelines, an SN program cannot show a deficit (negative ending balance). Therefore, the goal of an SN program should be to end each fiscal year with a positive (minimum of zero) balance.

HOW OFTEN TO CALCULATE: Monthly, at a minimum.

HOW TO CALCULATE: See "Where to Capture Data" below.

SAMPLE CALCULATIONS: Not applicable.

WHERE TO CAPTURE DATA: Revenues, with the exception of fund balance, are listed on a revenue and expenditures statement. (This is sometimes called an income statement or a statement of activities. [See Appendix B for sample report.]) This report is usually prepared at the end of the month by the SN office or the school business office. Fund Balance can be found on the statement of net position.

The statement of net position, or the balance sheet, is a financial statement prepared at the end of each accounting period to reflect the financial position of the SN operation at a particular point in time. This report is normally considered a required financial statement in accordance with generally accepted accounting principles. It contains critical information about the program's **assets**, **liabilities**, and the **fund** balance.

HOW TO USE: This key performance indicator (KPI) can be used to monitor trends for each individual revenue line item for the current period, the previous period, and the year-to-date. Trends and directions for improvement may be identified that will assist SN professionals in making better financial decisions.

INDUSTRY STANDARDS: It is generally accepted that total SN program revenues should meet or exceed total expenditures, thus making a program self-supporting. School nutrition programs are usually expected to be self-supporting, and not requiring budget transfers from the school district.

FACTORS THAT INFLUENCE:

- Quality of the SN program
- Federal reimbursement (the percentage of students eligible for free and reduced price meals)
- Average daily participation (ADP)
- Non-program (à la carte) food sales
- District policies (e.g., open/closed campus, adequate meal periods)
- Meal pricing

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.

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.

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

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

EXPENDITURES

DESCRIPTION: Expenditures are those allowable costs that can be identified specifically with the production and service of meals to school children. Listed below are the typical expenditure categories for a school nutrition (SN) program. Some of these categories differ from state to state. Please check with your state agency for guidance:

Major Expenditure Categories

1. **Salaries and Wages:** Expenses include regular pay, extra time, overtime pay, vacation pay, severance pay, holiday pay, substitute pay, administrative salaries, and other salaries and wages paid from SN program funds.

2. **Employee Benefits:** Expenses include social security, health/life insurance, workers' compensation, and unemployment insurance. This item may include employee meals, job-related medical expenses not covered by insurance, and other expenses, such as uniforms.

3. **Purchased Food:** The amount expended for the purchase of all food sold in the SN program, charges for processing USDA Foods from bulk or raw form to ready-to-use end products, and the cost of USDA food delivery to school districts. (Some states may require USDA Food processing fees under purchased services.)

4. **USDA Foods:** The value of USDA Foods used, including food purchased with a commodity letter of credit, and cash in lieu of USDA Foods.

5. **Paper Goods and Cleaning Supplies:** The cost of disposable paper goods and supplies, such as dish machine and other chemicals used for production and service of food at the school site.

Other Expenditure Categories

1. **General Operating Supplies:** The cost of general supplies necessary for the operation of the SN program, including office supplies.

2. **Purchased Services:** Fees expended for professional and technical services, including accounting, legal advice, and training. Architects, consultants, computer specialists, food service management fees, and other similar services are also included. (Some states may require USDA Foods processing fees under purchased food.)

3. **Maintenance:** Property service, such as maintenance and upkeep of property. This includes energy costs, payments to other agencies for repairs and maintenance of SN program equipment, and repair or upkeep of cafeteria facilities. (These may be a direct cost or an indirect cost, but cannot be both.)

4. **Miscellaneous:** Expenditures not classified or included elsewhere.

5. **Capital Assets:** Costs for acquiring fixed assets, such as initial equipment or replacement of equipment. Expenditures for technology hardware and software and vehicles are also recorded here. Unit cost (capitalization threshold) and useful life may be specified by the business entity.

6. **Non-Capitalized Assets:** Equipment under the capital threshold, such as small wares.

7. **Indirect Costs:** General school district overhead attributable to the SN program, including SN activities and support services provided by other district departments that are recovered through an approved cost allocation plan.

8. **Fund Transfer-Out:** Funds transferred to another district fund and/or repayment of loans to the district.

WHY CALCULATE: Analyzing expenditures can provide valuable information. For example, significant changes in cost categories are a red flag to monitor spending in a specific area. Deviations from goals (budget) indicate the need for further investigation. Other reasons to monitor expenditures are to identify transaction/accounting errors/discrepancies, and to identify monthly and annual trends.

HOW OFTEN TO CALCULATE: Monthly, at a minimum.

HOW TO CALCULATE: See "Where to Capture Data" below.

SAMPLE CALCULATIONS: Not applicable.

WHERE TO CAPTURE DATA: Expenditures revenues, with the exception of fund balance, are listed on a revenue and expenditures statement. (This is sometimes called an income statement or a statement of activities. [See Appendix B for sample report.]) This report is usually prepared at the end of the month by the SN office or the school business office. Fund balance can be found on the statement of net position.

The Statement of Net Position or the Balance Sheet is a financial statement prepared at the end of each accounting period to reflect the financial position of the SN operation at a particular point in time. This report is normally considered a required financial statement in accordance with generally accepted accounting principles. It contains critical information about the program's *assets*, *liabilities*, and the *fund balance*.

HOW TO USE: Ideally, trends for each individual expenditure line item should be monitored for the current period, the previous period, and the year-to-date. Trends and directions for improvement can be identified so that effective financial decisions are made.

INDUSTRY STANDARDS: It is generally accepted that total SN program revenues should meet or exceed total expenditures, thus making a program self-supporting. Pannell-Martin and Boettger (2014) suggest that the goal for labor cost plus benefits should be to keep labor costs below 40% of total revenues. The following figures are not industry standards, but instead benchmarks observed in the School Lunch and Breakfast Cost Study-II, Final Report (2008):

- Food costs = 38% of total cost
- Labor costs = 46% of total cost
- Other costs = 16% of total cost

FACTORS THAT INFLUENCE:

- Wages, salaries, and benefits costs
- Food costs
- Supply costs
- Centralized vs. decentralized production
- Scratch vs. convenience production
- Contract vs. self-operated districts/schools
- Payment or non-payment of indirect costs
- Market conditions
- Food waste
- Purchasing practices
- Absenteeism rate

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/pubsearch/pubsinfo.asp?pubid=2015347.

Bartlett, S., Glantz, F., & Logan, C. (2008). *Nutrition and Analysis, School Lunch and Breakfast Cost Study-II, Final Report*. U.S. Department of Agriculture, Food and Nutrition Service, Office of Research, Alexandria, VA.

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.

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

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

REVENUE PER MEAL EQUIVALENT (MEQ)

DESCRIPTION: Revenue Per MEQ is a revenue management tool to help manage and analyze trends and project revenues.

WHY CALCULATE: It is important to calculate and compare Revenue per MEQ to costs per MEQ to ensure there is sufficient revenue to cover meal costs. Additionally, this calculation simplifies the analysis of revenue by source. Trends and directions for improvement can be identified so that better financial decisions are made.

HOW OFTEN TO CALCULATE: Weekly or monthly.

HOW TO CALCULATE: Revenue ÷ Total MEQs = Revenue per MEQ.

SAMPLE CALCULATIONS: If total MEQs for a period are = 41,642, and revenue for the period is listed in column one below, revenue per MEQ can be calculated by revenue source or total revenue, as demonstrated in the table below. (The figure 41,642 was obtained from the MEQ calculation on pages 13-15 of this resource.)

REVENUE SOURCE	REVENUES		TOTAL MEQS		REVENUE PER MEQ
STUDENT MEAL SALES	$18,250	÷	41,642	=	$0.4383
ADULT MEAL SALES	$1,250	÷	41,642	=	$0.0300
NON-PROGRAM FOOD SALES	$5,140	÷	41,642	=	$0.1234
CONTRACT FOOD SALES	$640	÷	41,642	=	$0.0154
FEDERAL REIMBURSEMENT	$96,740	÷	41,642	=	$2.3231
USDA FOODS	$7,180	÷	41,642	=	$0.1724
STATE REIMBURSEMENT	$850	÷	41,642	=	$0.0204
INTEREST	$140	÷	41,642	=	$0.0034
MISCELLANEOUS	$260	÷	41,642	=	$0.0062
TOTAL REVENUE	$130,450	÷	41,642	=	$3.13

WHERE TO CAPTURE DATA: Meal count data is needed to calculate MEQs. Meal count data is usually captured electronically or manually at the point-of-sale system utilized by SN programs.

The revenue and expenditures statement is where revenue data can be found. (This is sometimes called an income statement or statement of activities. [See Appendix B for sample report.]) This report identifies revenues, expenditures, and fund balance for the current period, the previous period, and the year-to-date. This report is usually prepared at the end of the month by the SN office or the school business office.

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HOW TO USE: Revenue per MEQ should be compared to cost per MEQ to ensure costs are lower than revenues to ensure the SN program is self-supporting. This key performance indicator (KPI) can be used to determine areas where revenue can be increased, and to make better fiscal decisions, such as whether to increase prices (especially for adult meals, contracted sales, and non-program food sales). Revenue per MEQ can be compared to budget projections, to the previous month's revenue per MEQ, and to the previous year's figures. Trends and directions for improvement can be identified so that effective financial decisions are made. Ideally, revenue per MEQ should meet or exceed the federal reimbursement rate for a meal.

INDUSTRY STANDARDS: Ideally, revenue per MEQ should meet or exceed the federal reimbursement rate for a meal (Institute of Child Nutrition 2015a).

FACTORS THAT INFLUENCE:

- Average daily participation (ADP)
- Average daily attendance (ADA)
- Labor costs
- Food costs
- Pricing of meals and à la carte items
- Use of USDA Foods
- The percentage of students eligible for free and reduced price meals
- Open or closed campus
- Method of food service delivery

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.

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

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

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

COST PER MEAL EQUIVALENT (MEQ)

DESCRIPTION: Cost per MEQ is the dollar amount utilized by a school nutrition (SN) program to produce one MEQ.

WHY CALCULATE: Calculating this key performance indicator (KPI) is essential to measuring the performance of the SN program. When the costs to produce a meal exceed the revenue per MEQ, actions must be taken.

HOW OFTEN TO CALCULATE: Weekly or monthly.

HOW TO CALCULATE: Expenditures ÷ Total MEQs = Cost per MEQ.

SAMPLE CALCULATIONS: If the total MEQ for a period is = 41,642 and expenditures for the period are listed in the column below, cost per MEQ can be calculated by expenditure source or total expenditures, as demonstrated in the table below. (The total 41,642 was obtained from the MEQ calculation on pages 13-14 of this resource.)

EXPENDITURE (COST) SOURCE	COSTS / EXPENDITURES		TOTAL MEQ		COST PER MEQ
SALARIES AND WAGES:	$40,000	÷	41,642	=	0.9610
EMPLOYEE BENEFITS:	$15,000	÷	41,642	=	0.3602
PURCHASED FOOD:	$40,000	÷	41,642	=	0.9610
USDA FOODS:	$12,000	÷	41,642	=	0.2882
FOOD PRODUCTION/CLEANING SUPPLIES:	$22,000	÷	41,642	=	0.5283
TOTAL EXPENDITURES:	$129,000	÷	41,642	=	3.0987

WHERE TO CAPTURE DATA: Meal count data is needed to calculate MEQs. Meal count data is usually captured electronically or manually at the point-of-sale system utilized by SN programs.

The revenue and expenditures statement is where revenue data can be found. (This is sometimes called an income statement of activities. [See Appendix B for sample report.]) This report identifies revenues, expenditures, and fund balance for the current period, the previous period, and the year-to-date. This report is usually prepared at the end of the month by the SN office or the school business office.

HOW TO USE: When expenditures are categorized, each cost (e.g., food, labor, supplies, and other costs) can be calculated per MEQ. Cost per MEQ can be compared to budget projections, to the previous month's cost per MEQ, and to the previous year's figures. Trends and directions for improvement can be identified so that better financial decisions are made. Cost per MEQ should be compared to revenue per MEQ to ensure costs are lower than revenues to ensure an SN program is self-supporting.

INDUSTRY STANDARDS: Cost per MEQ should be less than revenue per MEQ (Institute of Child Nutrition, 2015a).

FACTORS THAT INFLUENCE:

- Type of meal preparation system
- Availability of labor
- School "start-up" expenses
- Seasonal price changes (e.g., fresh fruit and other market driven items)
- One-time purchases (e.g., equipment)
- Unplanned expenses (e.g., repair bills, food loss due to power failure)

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.

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 21st century* (6th ed.). Aiken, South Carolina: Author.

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

COST AS A PERCENTAGE OF REVENUE

DESCRIPTION: Cost as a percentage of revenue, often referred to as operating ratios, relates expenses to revenue. When calculating operating ratios, cost is usually analyzed in terms of food cost or labor cost.

WHY CALCULATE: Operating ratios help school nutrition (SN) directors evaluate and monitor their operations. These ratios are useful to management, because they allow comparison of actual results against anticipated operational plans.

Food Cost Percentage: School nutrition directors rely on this ratio to determine whether expenditures for purchased food are reasonable and consistent with benchmarks.

Labor Cost Percentage: This percentage is useful to SN directors as a benchmark for making comparisons from school to school within a district, or from district-to-district within a state or region.

HOW OFTEN TO CALCULATE: Monthly.

HOW TO CALCULATE:

$$\text{Food Cost Percentage} = \frac{\text{Cost of Purchased Food}}{\text{Total Revenue}}$$

$$\text{Labor Cost Percentage} = \frac{\text{Payroll, Benefits, Other Related Labor Expenses}}{\text{Total Revenue}}$$

SAMPLE CALCULATIONS (ADP):

Food Cost Percentage: An SN program had a total revenue of $130,450 for the month of October and a food cost of $52,000 for the same month. Using the formula above, we can see that this operation had a 40% food cost in relation to total revenue for the month. This tells the SN director that $0.40 of every revenue dollar was spent for food in the month of October.

$$\$52,000 \div \$130,450 \quad = \quad 0.398\%, \text{ or } 40\%$$

Labor Cost Percentage: For the same month, the SN program had a payroll, including benefits and other labor expenses, of $55,000. This tells the SN director that $0.42 of every revenue dollar was spent for labor and benefits in the month of October.

$$\$55,000 \div \$130,450 \quad = \quad 0.421, \text{ or } 42\%$$

WHERE TO CAPTURE DATA: The revenue and expenditures statement is where revenue data can be found. (This is sometimes called an income statement or a statement of activities. [See Appendix B for sample report.]) This report identifies revenues, expenditures, and fund balance for the current period, the previous period, and year-to-date. It is usually prepared at the end of the month by the SN office or the school business office.

HOW TO USE: Cost as a percentage of revenue is an important tool in annual budget development and monthly operations monitoring. When expenditures are calculated as a percentage of total revenue, they can be compared to budget projections, to the previous month's percentages, to a previous year's figures, to industry standards, and to similar schools for the same period. Trends and directions for improvement can be identified so that better financial decisions are made. All expenditures can be calculated as a percentage of total revenue.

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INDUSTRY STANDARDS:

- According to Pannell-Martin and Boettger (2014), a goal should be to keep labor costs (including benefits) to no more than 40% of the revenue.

FACTORS THAT INFLUENCE:

A higher than expected food cost percentage may occur due to:

- Incorrect portion control;
- Overproduction and food waste;
- Inaccurate inventories due to counting or valuation errors;
- Not fully utilizing USDA Foods allotments;
- Theft;
- High food costs;
- Menu planning;
- Use of pre-prepared and packaged foods versus "scratch" ingredients;
- Inaccurate meal counting and claiming;
- Unexpected expenses (such as fuel surcharges); or
- State/regional differences.

A lower than expected food cost percentage should be investigated. While it may mean cost control methods are working better than expected, it could also indicate:

- Inaccurate inventories,
- Inaccurate reporting,
- Inadequate portion sizes, or
- Unpaid invoices.

A higher than expected labor cost percentage may occur due to:

- State/regional differences, or
- Too many labor hours being allocated for the number of meals served.

A lower than expected labor cost percentage may occur due to:

- Inadequate staffing, which leads to poor service.

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.

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 21st century* (6th ed.). Aiken, South Carolina: Author.

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

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BREAK-EVEN POINT (BEP)

DESCRIPTION: The BEP is the point at which revenues and expenditures are equal. The BEP is the amount of revenue (sales or income) needed to cover fixed and variable costs. When revenues exceed expenditures, excess revenue or an increase in fund balance occurs. When expenditures exceed revenues, a loss or a decrease in fund balance occurs.

WHY CALCULATE: Knowing the status of the school nutrition (SN) program regarding the BEP allows an SN director to gauge whether the program is self-sufficient and to make changes as needed. The BEP can be used to determine if starting an initiative (i.e., a supper program, an after-school snack program, etc.) will be financially feasible.

HOW OFTEN TO CALCULATE: Monthly or annually.

HOW TO CALCULATE: The formula for calculating the BEP is as follows*:

$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{Contribution Margin}} = \frac{\text{Fixed Costs}}{1 - \text{Variable Cost \%}}$$

$$= \frac{\text{Fixed Costs}}{1 - (\text{Variable Cost} \div \text{Revenue})}$$

Fixed Costs: Costs that do not vary with sales volume or number of customers served, but stay fixed over time. The most common fixed costs are central office costs, manager's salary, basic telephone charges, core staff (not including substitute cost), and trash removal (unless by weight).

Variable Costs: Costs that change with sales volume or number of customers served. The most common variable costs are food, supplies, paper goods, and some labor (temporary and part-time).

Contribution Margin: The percent of revenue that can be used to cover fixed costs. For example, if the contribution margin is 46%, then 46 cents of every dollar in revenue goes to pay the fixed costs.

* Charter and non-public schools that participate in the National School Lunch Program (NSLP) may use vended food service management companies, and this would not be calculated the same way. Please consult with state agency child nutrition authorities for guidance.

SAMPLE CALCULATIONS (ADP):

ITEM	REVENUES	FIXED COSTS	VARIABLE COSTS
REVENUE FOR THE PERIOD:	$130,450		
FOOD COST:			$52,000
LABOR COST (CORE STAFF):		$40,000	
BENEFIT COST		$15,000	
GENERAL SUPPLIES / PAPER SUPPLIES COST:			$22,000
TOTALS	$130,450	$55,000	$74,000

$$\text{BEP} = \frac{\text{Fixed Costs}}{1 - (\text{Variable Costs} \div \text{Revenue})}$$

$$\text{BEP} = \frac{\$55,000}{1 - (\$74,000 \div \$130,450)} = \frac{\$55,000}{.43} = \$127,906$$

Revenues of $130,450 > BEP ($127,906) = The SN program is covering its costs.

WHERE TO CAPTURE DATA: The revenue and expenditures statement is where revenue data can be found. (This is sometimes called an income statement or a statement of activities. [See Appendix B for sample report.]) This report identifies revenues, expenditures, and fund balance for the current period, the previous period, and the year-to-date. This report is usually prepared at the end of the month by the SN office or the school business office.

HOW TO USE: The BEP can be used to determine if starting an initiative (i.e., a supper program, an after-school snack program, etc.) will be financially feasible. Trends in BEP over time can indicate directions for improvement for making better financial decisions. The BEP can be calculated annually to create annual benchmark goals.

INDUSTRY STANDARDS: At a minimum, most SN programs are expected to be self-sustaining. Therefore, most SN programs are expected to, at a minimum, break-even (Institute of Child Nutrition, 2015a).

FACTORS THAT INFLUENCE: An important concept to keep in mind is the impact of increasing participation or the number of meals served on fixed and variable costs. Increasing volume if fixed costs are high will lower the BEP, while increasing volume if variable costs are high will raise the BEP. For example, if food costs are too high and participation increases, the financial position of the SN program will worsen. However, if labor costs are too high and participation increases, the financial position of the SN program should improve.

Changes in Revenues:

- Federal sources
- State sources
- Local sources
- Student meal sales
- Adult meal sales
- Contract meal sales
- Non-program food sales
- Miscellaneous other revenue
- Interest
- Fund transfer-in
- Uncollected revenue

Changes in Expenditures:

- Food production supplies
- Salaries and wages
- Employee benefits
- Purchased food products
- The USDA Foods used
- General operating supplies
- Purchased services
- Property operation
- Miscellaneous
- Capital assets
- Indirect costs
- Fund transfer-out

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.

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

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

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.

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

SAMPLE CALCULATION(S) FOR A MONTH:

Beginning Inventory   = $6,600

Purchases During the Month   = $11,400

Ending Inventory   = $5,400

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

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 21st century* (6th ed.). Aiken, South Carolina: Author.

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

Chapter 1. The Key Performance Indicators
SECTION 3: PRODUCTIVITY AND LABOR

A. MEALS PER LABOR HOUR (MPLH)
B. STAFF TURNOVER RATE
C. ABSENTEEISM RATE

MEALS PER LABOR HOUR (MPLH)

DESCRIPTION: The number of meal equivalents (MEQs) served per labor hour represents the primary measure of productivity and production efficiency for school nutrition (SN) programs.

WHY CALCULATE: Evaluating productivity is vital to the financial success of the SN program. Many SN professionals use the productivity index of MPLH to monitor the efficiency of their operation, and to determine appropriate staffing. It is essential in formulating labor budgets and determining efficient use of resources.

HOW OFTEN TO CALCULATE: Weekly, monthly, and annually.

HOW TO CALCULATE: MPLH index is calculated on the actual productive, paid labor hours assigned to a site-level SN program.

The MPLH can be determined for a school site by dividing the total meal equivalents for a given time period by the total number of productive paid labor hours (see below) for the same time period.

Planned Productive Labor Hours (PPLH) include the amount of labor planned by an SN program, for managers, kitchen staff, and cashiers. Paid hours for substitutes are included, but not paid hours for sick, personal, or holiday leave.

$$\text{MPLH} = \frac{\text{Number of Meals or Meal Equivalents}}{\text{Number of Planned Productive Labor Hours}}$$

SAMPLE CALCULATIONS:

Step 1: Calculate total MEQ for the period (calculated previously in the MEQ key performance indicator [KPI] = 41,643).

Step 2: Calculate total hours of labor paid monthly, including all SN employees and managers/supervisors.

NUMBER OF STAFF MEMBERS THAT WORK THE SAME NUMBER OF HOURS DAILY	X	HOURS WORKED DAILY	X	DAYS IN THE PERIOD	=	TOTAL STAFF HOURS PLANNED FOR THE PERIOD
2	x	7	x	21	=	294
7	x	6	x	21	=	882
7	x	5	x	21	=	735
6	x	3	x	21	=	378
22	x	21	x	21	=	2,289

Step 3:

$$\text{MPLH} \quad = \quad \frac{\text{Number of Meals or MEQs}}{\text{Number of Paid Productive Labor Hours}} \quad = \quad \frac{41{,}643}{2{,}289} \quad = \quad 18.19 \text{ MPLH}$$

After MPLH is calculated, the SN director can make a decision regarding staffing. If the evaluation indicates an excess of labor hours and increasing participation is not an alternative, adjustments in labor hours may be necessary.

The following method can be used to determine the number of labor hours needed for the desired productivity level:

1. Decide the desired number of MPLH for the district for a month. (Assume 17 MPLH is based on the type of meal service offered for the sample calculation).

2. Divide the total MEQ by the desired number of MPLH to determine the total labor hours needed per month. Divide that number by the number of serving days in a month to determine the number of labor hours needed per day.

Example: $\dfrac{41{,}643 \text{ (Total MEQs)}}{17 \text{ (Desired MPLH)}}$ = 2,450 (Total labor hours needed per month) ÷ 21 = 117 hours per day.

WHERE TO CAPTURE DATA: Meal count data is usually captured electronically or manually at the point-of-sale system utilized by SN programs, and can be found in reports such as day end sales reports, edit check worksheets, and/or deposit reports. Labor hours are captured in the school district time keeping system (time card data, timesheet logs, etc.) or payroll records that can usually be found at the school business office or the district Human Resources office.

HOW TO USE: This measure can help in determining how many employees or how many scheduled hours per employee are needed in a single production unit or throughout the district. The MPLH index most effectively compares labor utilization within a system, because labor is dependent on the type of production systems (i.e., conventional, cook chill, and assembly serve) and distribution/service systems (satellite, on-site, and combination) used in an SN program. The MPLH can be used to compare productivity between different school sites.

Explaining the importance of MPLH, how it is calculated, the variables that affect it, and how additional hours can be earned, is very motivating for managers. It allows them to better manage their own operations, and gives them a level of control and understanding they might not otherwise have. Effective managers are able to explain staffing to their employees in clear and understandable terms, and can encourage the entire team to work towards a common goal of ensuring adequate meal participation to support adequate labor hours.

INDUSTRY STANDARDS: An on-site production system can produce between 14 to 18 MPLH, while a central kitchen can produce between 50 to 75 MPLH (Pannell-Martin and Boettger, 2014).

"Staffing Guidelines for On-Site Production" is reprinted with permission, and may be found in the following resource: Pannell-Martin, D. & Boettger, J. (2014). School food & nutrition service management for the 21st century (6th ed.). Aiken, South Carolina: Author.

Staffing Guidelines for On-Site Production

NUMBER OF MEAL EQUIVALENTS	MEALS PER LABOR HOUR FOR LOW AND HIGH PRODUCTIVITY			
	CONVENTIONAL SYSTEM[1] MPLH		CONVENIENCE SYSTEM[2] MPLH	
	LOW	HIGH	LOW	HIGH
UP TO 100	8	10	10	12
101-150	9	11	11	13
151-200	10-11	12	12	14
201-250	12	14	14	15
251-300	13	15	15	16
301-400	14	16	16	18
401-500	14	17	18	19
501-600	15	17	18	19
601-700	16	18	19	20
701-800	17	19	20	22
801 AND UP	18	20	21	23

[1]A conventional system is the preparation of some foods from raw ingredients on premises (e.g., using some baked goods, prepared pizza, and washing the dishes).

[2]A convenience system is using maximum amount of processed foods (e.g., using all baked goods, precooked chicken, ready-to-serve raw fruits and vegetables, portion-pack condiments, and washing only trays and using disposable dinnerware).

FACTORS THAT INFLUENCE:

- Size of operation
- Availability and type of facilities and equipment
- Number of serving lines
- Organization of the food production area (workflow)
- Type of service provided
- Scheduling of lunch periods
- Disposable vs. reusable trays
- Skill level of employees
- Complexity of the menu
- Conventional versus convenience production
- Number of meal choices

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.

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 21st century* (6th ed.). Aiken, South Carolina: Author.

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

STAFF TURNOVER RATE

DESCRIPTION: Staff turnover rate is the rate at which staff members leave employment, either voluntary or involuntary, and are replaced by new employees.

WHY CALCULATE: The timing of recruiting efforts can affect a school nutrition (SN) program's ability to hire and train new employees to be ready for work when needed. It is extremely important to calculate this in areas with low unemployment rates. Hiring and training new employees is a costly process, and high turnover rates are indicative of internal problems, such as poor work environment, lack of opportunities for development and advancement, and poor supervision.

HOW OFTEN TO CALCULATE: Monthly and annually.

HOW TO CALCULATE:

The calculation for staff turnover is as follows:

Staff Turnover Rate =
The number of employees who terminate during a period ÷ the number of employees at midyear X 100.

SAMPLE CALCULATION(S): A total of two employees terminate during a period (voluntary or otherwise). At midyear, the SN program has a total of 22 full-time and part-time employees. Therefore, the staff turnover rate for the SN program is as follows:

Staff Turnover Rate = 2 ÷ 22 x 100 = 9.1%

WHERE TO CAPTURE DATA:

- Payroll records
- School nutrition records
- School district human resources department

HOW TO USE: Staff turnover rate allows an SN director to determine how often positions must be filled, and at what times of the year. This allows directors to plan recruiting and new staff training activities in advance. Annual calculation of this key performance indicator (KPI) can help in determining supervisory management issues and potential areas for supervisory staff development. Since high turnover rates can be indicative of internal problems (i.e., poor work environment, lack of opportunities for development and advancement, poor supervision, etc.) exploration of the current states of these areas should be undertaken to determine and address the specific issues.

INDUSTRY STANDARDS: It is difficult for management to keep trained employees when the staff turnover rate exceeds 10%. The turnover rates for two industry sectors from 2011 to 2015 are listed in the table below from the Bureau of Labor Statistics. If school foodservice employees are employed by a district, they would fall into the "State and Local" sector; if they are employed by a contract management company, they would fall into the "Accommodation and Food Services" sector. Please note that within both industry sectors are many types of employees other than food services. Therefore, these numbers are presented just to demonstrate the difference in turnover rates between industries that contain school foodservice employees.

Developing a Resource for Using Standard School Nutrition Productivity Measures

ANNUAL TOTAL SEPARATIONS RATES BY INDUSTRY AND REGION, NOT SEASONALLY ADJUSTED*					
INDUSTRY	**2011**	**2012**	**2013**	**2014**	**2015**
Accommodation and Food Services	58.9	60.8	62.6	66.7	72.1
State and Local	16.0	16.3	16.1	16.4	18.3

*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.

FACTORS THAT INFLUENCE:

- Geographic location/population/labor pool/state of the economy

Employees often seek new employment for the following reasons:

- Poor hiring practices;
- Lack of development opportunities;
- Better opportunities elsewhere;
- Poor treatment;
- Inadequate pay;
- Poor job satisfaction;
- Poor morale;
- Illness/family Illness;
- Relocation; and
- Retirement.

Employee retention can be increased by:

- Careful hiring practices;
- Providing routine training for all non-managerial employees;
- Providing continuous training for managers to improve their supervisory skills;
- Providing development opportunities for all salaried employees; and
- Seeking to understand and improve employee satisfaction through staff surveys, performance appraisals, and exit interviews.

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REFERENCES

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

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

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

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

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.

Developing a Resource for Using Standard School Nutrition Productivity Measures

Developing a Resource for Using Standard School Nutrition Productivity Measures

REFERENCES

Bureau of Labor Statistics. (2015). *Absences from work of employed full-time wage and salary workers by age, sex, race, and Hispanic or Latino ethnicity. Retrieved from: https://www.bls.gov/cps/cpsaat46. htm*

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

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

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.

CHAPTER 2

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THE CASE STUDY

1. BACKGROUND DATA
   - A. SCHOOL DISTRICT AND SCHOOL NUTRITION PROGRAM CHARACTERISTICS
   - B. THE SCENARIO
2. MEAL COUNTS AND PARTICIPATION
   - A. MEAL EQUIVALENTS (MEQ) FOR EACH SCHOOL FOR SEPTEMBER
   - B. AVERAGE DAILY PARTICIPATION (ADP) FOR EACH SCHOOL FOR SEPTEMBER
3. FINANCIAL AND INVENTORY MANAGEMENT
   - A. STATEMENT OF ACTIVITIES (REVENUES AND EXPENDITURES) FOR EACH SCHOOL FOR SEPTEMBER
   - B. REVENUES AND COST PER MEAL EQUIVALENT (MEQ) FOR EACH SCHOOL FOR SEPTEMBER
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   - D. BREAK-EVEN POINT (BEP) FOR EACH SCHOOL FOR SEPTEMBER
   - E. COST OF GOODS SOLD FOR EACH SCHOOL FOR SEPTEMBER
   - F. INVENTORY TURNOVER RATE FOR EACH SCHOOL FOR SEPTEMBER
4. PRODUCTIVITY AND LABOR
   - A. PLANNED PRODUCTIVE HOURS (PPH) FOR EACH SCHOOL FOR SEPTEMBER
   - B. MEALS PER LABOR HOUR (MPLH) FOR EACH SCHOOL FOR SEPTEMBER
   - C. TOTAL LABOR HOURS NEEDED TO ACHIEVE DESIRED MEALS PER LABOR HOUR (MPLH) FOR EACH SCHOOL FOR SEPTEMBER
   - D. STAFF TURNOVER RATE FOR EACH SCHOOL FOR SEPTEMBER
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Chapter 2: The Case Study
SECTION I: BACKGROUND DATA

A. SCHOOL DISTRICT AND
   SCHOOL NUTRITION PROGRAM
   CHARACTERISTICS
B. THE SCENARIO

SCHOOL DISTRICT AND SCHOOL NUTRITION PROGRAM CHARACTERISTICS

- Period:..September
- Days in the Period (September):...21
- Days in the School Year:..180
- School Nutrition (SN) Management Type:.................................Self-operated
- United States Department of Agriculture (USDA) Region: ....Mountain Plains
- Number of District Schools:..3 (1 Elementary School, 1 Middle School, and 1 High School)
- District Student Enrollment:..1,300
- Average Daily Attendance:
  - Elementary School..425
  - Middle School...475
  - High School..400
- District Total: 1,300
- Students Approved - Free/Reduced Price Meals:...................43%
- Meal Service Description: ....Traditional cafeteria service at breakfast and lunch
- Menu Planning:..1-month cycle menus, the same for all schools
- Food Preparation:..Combination convenience & scratch, food prep at each school
- Meal Prices: ....Lunch $3.20, Breakfast: $1.75 (for all three schools)
- School Nutrition Staffing:
  - Elementary School..1 manager, 8 hours daily = 8 hours daily 5 kitchen staff, 5 hours daily = 25 hours daily
  - Middle School...1 manager, 8 hours daily = 8 hours daily 6 kitchen staff, 5 hours daily = 30 hours daily
  - High School..1 manager, 8 hours daily = 8 hours daily 5 kitchen staff, 5 hours daily = 25 hours daily
- Storage - Food and Supplies:..Storage at each school where products are received from vendors
- Inventory for September
  - Elementary School..Beginning $7,500
    Ending $8,000
  - Middle School...Beginning $10,500
    Ending $10,000
  - High School..Beginning $10,500
    Ending $11,000

THE SCENARIO

In the beginning of October, the SN director, Linda Right, wanted to analyze how each school cafeteria performed in September. She decided to calculate and analyze each of the 10 standard school nutrition (SN) key performance indicators (KPIs) for each school, compare the results from each school, and compare the results to industry standards, when available. Afterwards, she used the results of these calculations to develop goals for the SN program.

Chapter 2: The Case Study
SECTION 2: MEAL COUNTS AND PARTICIPATION

A. MEAL EQUIVALENTS (MEQ) FOR EACH
   SCHOOL FOR SEPTEMBER
B. AVERAGE DAILY PARTICIPATION (ADP)
   FOR EACH SCHOOL FOR SEPTEMBER

MEAL COUNTS AND PARTICIPATION

(The KPIs included in this section are Meal Equivalents [MEQs] and Average Daily Participation [ADP].)

Linda began by calculating the MEQs for September for each school. These calculations are outlined in Table 1. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 13-18). It was necessary to calculate MEQs to determine revenue per MEQ, cost per MEQ, and meals per labor hour (MPLH).

Table 1

MEAL CATEGORY	TOTAL MEALS SERVED & NON-PROGRAM SALES	X	CONVERSION FACTOR	=	TOTAL MEQ
ELEMENTARY SCHOOL					
STUDENT LUNCH	6,675	x	1	=	6,675
ADULT LUNCH	312	x	1	=	312
STUDENT BREAKFAST	3,129	x	.67	=	2,096
SNACKS	2,231	x	.33	=	736
NON-PROGRAM FOOD SALES	$900	÷	3.3275*	=	270
TOTAL MEQS - ELEMENTARY					10,089
MIDDLE SCHOOL					
STUDENT LUNCH	7,224	x	1	=	7,224
ADULT LUNCH	250	x	1	=	250
STUDENT BREAKFAST	3,528	x	.67	=	2,364
SNACKS	2,494	x	.33	=	823
NON-PROGRAM FOOD SALES	$4,400	÷	3.3275*	=	1,323
TOTAL MEQS – MIDDLE SCHOOL					11,984
HIGH SCHOOL					
STUDENT LUNCH	4,046	x	1	=	4,046
ADULT LUNCH	435	x	1	=	435
STUDENT BREAKFAST	924	x	.67	=	619
SNACKS	0	x	.33	=	0
NON-PROGRAM FOOD SALES	$8,000	÷	3.3275*	=	2,404
TOTAL MEQS – HIGH SCHOOL					7,504
TOTAL MEQ - DISTRICT					29,577

*The conversion factor for non-program food sales = dollar amount of non-program food sales ÷ (current free lunch reimbursement rate + current United States Department of Agriculture [USDA] food value). Free lunch reimbursement rate changes annually. This rate can be found on the USDA Food and Nutrition service (FNS) Web site at the following link: **http://www.fns.usda.gov/school-meals/rates-reimbursement**. The USDA food value also changes annually. This value can be found on the USDA FNS Web site at the following link: **http://www.fns.usda.gov/fdd/value-donated-foods-notices**. For states such as Kansas that receive cash in lieu of USDA food, please contact your state agency to determine what figure to use here.

After completing the calculations for MEQs, Linda calculated the average daily participation (ADP). These calculations are shown in Table 2.

Table 2

AVERAGE DAILY PARTICIPATION (ADP) FOR EACH SCHOOL FOR SEPTEMBER											
SCHOOL	MEAL SERVED	NUMBER OF MEALS SERVED FOR SEPTEMBER	÷	NUMBER OF SERVING DAYS FOR SEPTEMBER	=	ADP	÷	AVERAGE DAILY ATTENDANCE (ADP)	=	ADP RATE (%)	INDUSTRY STANDARD
Elementary School	Breakfast	3,129	÷	21	=	149	÷	425	=	35%	35%
	Lunch	6,675	÷	21	=	318	÷	425	=	75%	75%
Middle School	Breakfast	3,528	÷	21	=	168	÷	475	=	35%	35%
	Lunch	7,224	÷	21	=	344	÷	475	=	72%	75%
High School	Breakfast	924	÷	21	=	44	÷	400	=	11%	25%
	Lunch	4,046	÷	21	=	193	÷	400	=	48%	65%

An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 13-18). Results of these calculations demonstrate the greatest opportunity for increasing participation was breakfast and lunch at the high school, because the ADP rate for the high school for both meals was below the industry standards.

Chapter 2: The Case Study

SECTION 3: FINANCIAL AND INVENTORY MANAGEMENT

A. STATEMENT OF ACTIVITIES (REVENUES AND EXPENDITURES) FOR EACH SCHOOL FOR SEPTEMBER

B. REVENUES AND COST PER MEAL EQUIVALENT (MEQ) FOR EACH SCHOOL FOR SEPTEMBER

C. COST AS A PERCENTAGE OF REVENUE FOR EACH CATEGORY BY EACH SCHOOL FOR SEPTEMBER

D. BREAK-EVEN POINT (BEP) FOR EACH SCHOOL FOR SEPTEMBER

E. COST OF GOODS SOLD FOR EACH SCHOOL FOR SEPTEMBER

F. INVENTORY TURNOVER RATE FOR EACH SCHOOL FOR SEPTEMBER

FINANCIAL AND INVENTORY MANAGEMENT

(The KPIs included in this section are Statement of Activities [Revenues and Expenditures], Revenue Per MEQ, Cost Per MEQ, Break-Even Point, Cost as a Percentage of Revenue, and Inventory Turnover Rate.)

Next, Linda obtained a copy of the statement of activities report for September from the district business office (Table 3). An explanation of the data found on the statement of activities report is listed in Chapter 1 (pages 20-24, and page 79).

Table 3

STATEMENT OF ACTIVITIES (REVENUES AND EXPENDITURES) FOR EACH SCHOOL FOR SEPTEMBER				
REVENUE SOURCE	**ELEMENTARY SCHOOL**	**MIDDLE SCHOOL**	**HIGH SCHOOL**	**DISTRICT TOTALS**
STUDENT MEAL SALES	$15,300	$16,700	$8,300	$40,300
ADULT MEAL SALES	$1,000	$800	$700	$2,500
OTHER FOOD SALES	$900	$4,400	$8,000	$13,300
CONTRACT MEALS	$400	$400	$400	$1,200
INTEREST	$100	$100	$100	$300
STATE SOURCES	$1,000	$2,000	$1,000	$4,000
FEDERAL SOURCES (INCLUDES USDA FOOD VALUE)	$21,600	$15,200	$11,900	$48,700
TOTAL REVENUE	$40,300	$39,600	$30,400	$110,300
EXPENDITURES	**ELEMENTARY SCHOOL**	**MIDDLE SCHOOL**	**HIGH SCHOOL**	**DISTRICT TOTALS**
SALARIES AND WAGES	$6,800	$7,800	$6,800	$21,400
EMPLOYEE BENEFITS	$7,000	$7,500	$7,000	$21,500
PURCHASED SERVICES	$200	$200	$200	$600
PROPERTY SERVICES	$300	$300	$300	$900
PURCHASED FOOD/ USDA FOODS	$17,400	$18,800	$14,600	$50,800
SUPPLIES	$1,800	$2,000	$2,500	$6,300
MISCELLANEOUS	$300	$400	$400	$1,100
CAPITAL ASSETS	$0	$0	$0	$0.00
INDIRECT COSTS	$600	$1,000	$1,200	$2,800
TOTAL EXPENDITURES	$34,400	$38,000	$33,000	$105,400
NET EXCESS/DEFICIT	$5,900	$1,600	($2,600)	$4,900

She observed the district SN program had a positive fund balance for September of +$4,900, while the high school had a loss of -$2,600.

The revenue per MEQ and cost per MEQ for each school were calculated and compared for the month of September. The results of these calculations are listed in Table 4. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 25-28).

Table 4

REVENUES AND COST PER MEAL EQUIVALENT (MEQ) FOR EACH SCHOOL FOR SEPTEMBER			
REVENUE SOURCE	**ELEMENTARY SCHOOL**	**MIDDLE SCHOOL**	**HIGH SCHOOL**
STUDENT MEAL SALES	$1.52	$1.39	$1.11
ADULT MEAL SALES	$0.10	$0.07	$0.09
OTHER FOOD SALES	$0.09	$0.37	$1.07
CONTRACT MEALS	$0.04	$0.03	$0.05
INTEREST	$0.01	$0.01	$0.01
STATE SOURCES	$0.10	$0.17	$0.13
FEDERAL SOURCES (INCLUDES USDA FOODS VALUE)	$2.14	$1.27	$1.59
TOTAL REVENUE PER MEQ	$3.99	$3.30	$4.05
EXPENDITURES	**ELEMENTARY SCHOOL**	**MIDDLE SCHOOL**	**HIGH SCHOOL**
SALARIES AND WAGES	$0.67	$0.65	$0.91
EMPLOYEE BENEFITS	$0.69	$0.63	$0.93
PURCHASED SERVICES	$0.02	$0.02	$0.03
PROPERTY SERVICES	$0.03	$0.03	$0.04
PURCHASED FOOD/USDA FOODS	$1.72	$1.57	$1.95
SUPPLIES	$0.18	$0.17	$0.33
MISCELLANEOUS	$0.03	$0.03	$0.05
CAPITAL ASSETS	$0.00	$0.00	$0.00
INDIRECT COSTS	$0.06	$0.08	$0.16
TOTAL COST PER MEQ	$3.41	$3.17	$4.40

Upon comparing the values in Table 4, Linda made the following observations:

- The revenue per MEQ for other food sales and total revenue per MEQ were significantly higher for the high school, when compared to the other schools.
- The cost per MEQ for salaries and wages, employee benefits, purchased food/USDA Foods, indirect costs and total cost per MEQ were significantly higher for the high school, when compared to the other schools.

Linda calculated and compared the cost as a percentage of revenue for each school. The results of these calculations are listed in Table 5. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 29-31).

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Table 5

COST AS A PERCENTAGE OF REVENUE FOR EACH EXPENSE CATEGORY FOR EACH SCHOOL FOR SEPTEMBER			
EXPENDITURES	**ELEMENTARY SCHOOL**	**MIDDLE SCHOOL**	**HIGH SCHOOL**
SALARIES AND WAGES	17%	20%	22%
EMPLOYEE BENEFITS	17%	19%	23%
PURCHASED SERVICES	0%	1%	1%
PROPERTY SERVICES	1%	1%	1%
PURCHASED FOOD/USDA FOODS	43%	47%	48%
SUPPLIES	4%	5%	8%
MISCELLANEOUS	1%	1%	1%
CAPITAL ASSETS	0%	0%	0%
INDIRECT COSTS	1%	3%	4%
TOTAL EXPENDITURES	**85%**	**96%**	**109%**

The elementary school was below the suggested threshold for labor cost (including benefits) of 40%, at 34% (17% + 17%). Total expenditures for the high school exceeded total revenues, causing a 109% cost as a percentage of revenue.

The break-even point (BEP) for each school was the next KPI calculation. A detailed listing of the calculation, which includes the results, is listed in Table 6. An explanation of these calculations, including where to locate the data for making these calculations, is listed in Chapter 1 (pages 32-34).

Table 6

BREAK-EVEN POINT (BEP) FOR EACH SCHOOL FOR SEPTEMBER								
ELEMENTARY SCHOOL			MIDDLE SCHOOL			HIGH SCHOOL		
REVENUES	FIXED COSTS	VARIABLE COSTS	REVENUES	FIXED COSTS	VARIABLE COSTS	REVENUES	FIXED COSTS	VARIABLE COSTS
TOTAL REVENUE $40,300			$39,600			$30,400		
EXPENDITURES								
SALARIES AND WAGES	$6,800			$7,800			$6,800	
EMPLOYEE BENEFITS	$7,000			$7,500			$7,000	
PURCHASED SERVICES		$200			$200			$200
PROPERTY SERVICES		$300			$300			$300
PURCHASED FOOD/ USDA FOODS		$17,400			$18,800			$14,600
SUPPLIES		$1,800			$2,000			$2,500
MISCELLANEOUS		$300			$400			$400
CAPITAL ASSETS		$0			$0			$0
INDIRECT COSTS		$600			$1,000			$1,200
TOTALS	$40,300	$13,800	$20,600	$39,600	$15,300	$22,700	$30,400	$13,800	$19,200

BEP = FIXED COST ÷ [1-(VARIABLE COST ÷ REVENUE)]	
ELEMENTARY SCHOOL BEP =	= $13,800 ÷ [1-($20,600 ÷ $40,300)] = $13,800 ÷ .4888 = $28,232 Revenues of 40,300 > BEP of $28,232. The elementary school program is covering its costs.
MIDDLE SCHOOL BEP =	= $15,300 ÷ [1-($22,700 ÷ $39,600)] = $15,300 ÷ .4268 = $35,848 Revenues of $39,600 > BEP of $35,848. The middle school program is covering its costs.
HIGH SCHOOL BEP =	= $13,800 ÷ [1-($19,200 ÷ $30,400)] = $13,800 ÷ .3684 = $37,459 Revenues of $30,400 < BEP of $37,459. The high school program is not covering its costs.

As Table 6 demonstrates, the revenues generated by the elementary and middle schools for September exceeded the individual break-even points for each school ($28,232 and $35,848, respectively), indicating that each of these units was covering its cost and self-sufficient for September. The revenues generated by the high school for September ($30,400) were well below the break-even point of $37,459, indicating the high school did not cover its costs for the previous month.

Next, Linda turned her attention to inventory management. First, she calculated the cost of goods sold, which is needed to calculate inventory turnover rate. An outline of these calculations, which includes the results, is listed in Table 7. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 35-36).

Table 7

COST OF GOODS SOLD FOR EACH SCHOOL FOR SEPTEMBER								
	BEGINNING INVENTORY	+	FOOD PURCHASES + USDA FOODS	=	INVENTORY AVAILABLE DURING SEPTEMBER	-	ENDING INVENTORY	=	COST OF GOODS SOLD
ELEMENTARY SCHOOL	$7,500	+	$17,400	=	$24,900	-	$8,000	=	$16,900
MIDDLE SCHOOL	$10,500	+	$18,800	=	$29,300	-	$10,000	=	$19,300
HIGH SCHOOL	$10,500	+	$14,600	=	$25,100	-	$11,000	=	$14,100
DISTRICT TOTALS	$28,500	+	$50,800	=	$79,300	-	$29,000	=	$50,300

As table 8 demonstrates, the inventory turnover rate for the high school meets the industry standard of 2-3 turns per month. However, the inventory turnover rate for middle school and high school exceeded the standard (1.9 and 1.3 respectively). This indicates the middle school and high school are keeping too much inventory on-hand each month.

Table 8

INVENTORY TURNOVER RATE FOR EACH SCHOOL FOR SEPTEMBER					
	COST OF GOODS SOLD	÷	AVERAGE INVENTORY VALUE	=	INVENTORY TURNOVER RATE
ELEMENTARY SCHOOL	$16,900	÷	$7,750	=	2.2
MIDDLE SCHOOL	$19,300	÷	$10,250	=	1.9
HIGH SCHOOL	$14,100	÷	$10,750	=	1.3

Chapter 2: The Case Study

SECTION 4: PRODUCTIVITY AND LABOR

A. PLANNED PRODUCTIVE HOURS (PPH) FOR EACH SCHOOL FOR SEPTEMBER
B. MEALS PER LABOR HOUR (MPLH) FOR EACH SCHOOL FOR SEPTEMBER
C. TOTAL LABOR HOURS NEEDED TO ACHIEVE DESIRED MEALS PER LABOR HOUR (MPLH) FOR EACH SCHOOL FOR SEPTEMBER
D. STAFF TURNOVER RATE FOR EACH SCHOOL FOR SEPTEMBER
E. ABSENTEEISM RATE FOR EACH SCHOOL FOR SEPTEMBER

PRODUCTIVITY AND LABOR

Productivity and labor were the next KPIs Linda addressed. To calculate MPLH, Linda first had to calculate planned productive hours. The results of these calculations are listed in Table 9. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 38-41).

Table 9

PLANNED PRODUCTIVE HOURS (PPH) FOR EACH SCHOOL FOR SEPTEMBER							
	NUMBER OF STAFF MEMBERS THAT WORK THE SAME NUMBER OF HOURS DAILY	X	HOURS WORKED DAILY	X	DAYS IN A PERIOD	=	TOTAL STAFF HOURS FOR THE PERIOD	TOTAL PLANNED PRODUCTIVE STAFF HOURS BY SCHOOL FOR THE PERIOD
ELEMENTARY SCHOOL	1	x	8	x	21	=	168	168 + 525 = 693
	5	x	5	x	21	=	525	
MIDDLE SCHOOL	1	x	8	x	21	=	168	168 + 630 = 798
	6	x	5	x	21	=	630	
HIGH SCHOOL	1	x	8	x	21	=	168	168 + 525 = 693
	5	x	5	x	21	=	525	

After determining planned productive hours for September for each school, Linda calculated MPLH, as detailed in Table 10 below. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 38-41).

Table 10

MEALS PER LABOR HOUR (MPLH) FOR EACH SCHOOL FOR SEPTEMBER					
	MEQ FOR SEPTEMBER	÷	PLANNED PRODUCTIVE HOURS FOR SEPTEMBER	=	MPLH
ELEMENTARY SCHOOL	10,089	÷	693	=	14.6
MIDDLE SCHOOL	11,984	÷	798	=	15.0
HIGH SCHOOL	7,504	÷	693	=	10.8

The MPLH for each school were as follows: elementary school 14.6, middle school 15, and high school 10.8. Based on the staffing guidelines for onsite preparation listed under the MPLH KPI in Chapter 1 (pages 38-41), these productivity numbers appear low (especially for the high school) considering the number of MEQ served at each school in September and the fact that each school uses a combination of scratch and convenience foods. Next, Linda wanted to determine the number of labor hours she would need to meet to achieve an MPLH of 18 at each school. To accomplish this, she completed the calculations detailed in Table 11. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 38-41).

Table 11

TOTAL LABOR HOURS NEEDED TO ACHIEVE DESIRED MEALS PER LABOR HOUR (MPLH) FOR EACH SCHOOL FOR SEPTEMBER					
	MEQ FOR SEPTEMBER	÷	DESIRED MPLH	=	TOTAL LABOR HOURS NEEDED PER MONTH
ELEMENTARY SCHOOL	10,089	÷	18	=	561
MIDDLE SCHOOL	11,984	÷	18	=	666
HIGH SCHOOL	7,504	÷	18	=	417

Table 11 demonstrated that for Linda to achieve 18 MPLH at each school, she would need to plan for the following labor hours for September for each school: elementary school = 561, middle school = 666, and high school = 417.

Next, Linda wanted to determine the staff turnover rate for each school and for the district. As the results of the calculations in Table 12 demonstrate, the staff turnover rate for the district SN program for September was 5.3%. The middle school lost one employee, creating a turnover rate for that school of 14.3%. An explanation of these calculations, which includes where to locate the data for making these calculations, is listed in Chapter 1 (pages 42-44).

Table 12

STAFF TURNOVER RATE FOR EACH SCHOOL FOR SEPTEMBER						
	NUMBER OF EMPLOYEES WHO TERMINATED DURING SEPTEMBER	÷	NUMBER OF EMPLOYEES	X 100	=	STAFF TURNOVER RATE
ELEMENTARY SCHOOL	0	÷	6	X 100	=	0.0%
MIDDLE SCHOOL	1	÷	7	X 100	=	14.3%
HIGH SCHOOL	0	÷	6	X 100	=	0.0%
DISTRICT TOTALS	1	÷	19	X 100	=	5.3%

Next, Linda assessed the absenteeism rate for each school and for the district. As indicated in Table 13, the absenteeism rate for the district SN program for September was 3.0%, while the absenteeism rate for each school was as follows: elementary school = 2.9%, middle school = 1.9%, and high school = 4.3%. An explanation of these calculations is listed in Chapter 1 (pages 45-46). Based on the industry standard of ≤ 3.2%, the high school is the only unit that exceeded this threshold, with a 4.33% absenteeism rate.

Table 13

ABSENTEEISM RATE FOR EACH SCHOOL FOR SEPTEMBER						
	NUMBER OF LOST HOURS IN SEPTEMBER DUE TO ABSENCES OTHER THAN PAID VACATION	÷	TOTAL PLANNED HOURS	X 100	=	ABSENTEEISM RATE
ELEMENTARY SCHOOL	20	÷	693	X 100	=	2.9%
MIDDLE SCHOOL	15	÷	798	X 100	=	1.9%
HIGH SCHOOL	30	÷	693	X 100	=	4.3%
DISTRICT TOTALS	65	÷	2184	X 100	=	3.0%

Chapter 2: The Case Study

SECTION 5: GOALS BASED ON KPI RESULTS

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GOALS BASED ON KPI RESULTS

Based on the results of each KPI calculation, Linda established the following goals for the SN program:

1. Increase the high school breakfast ADP rate to 20% by the end of the semester.

   ○ Survey students about menu items to determine likes and dislikes.
   ○ Consider grab-n-go breakfast.

2. Increase the high school lunch ADP rate to 50% by the end of the semester.

   ○ Develop a student menu committee.
   ○ Taste test new menu items.

3. Gradually increase the MPLH at all three schools.

   ○ Re-evaluate the staff plan at each school.
   ○ Reduce hours staffed at each school.
   ○ Reduce number of staff at the high school cafeteria through attrition.

4. Increase the inventory turnover rate at the middle school and high school to 2-3 turns per month in November.

   ○ Train the unit manager on forecasting and purchasing appropriate quantities based on par values.

5. Reduce absenteeism rate at the high school to below industry standards by the end of the semester.

   ○ Staff training.
   ○ Consider using perfect attendance incentives.

CHAPTER 3

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UTILIZING
KEY PERFORMANCE INDICATORS

I. BENCHMARKING

    A. INTERNAL BENCHMARKING

    B. INDUSTRY BENCHMARKING

    C. STEPS TO BENCHMARKING

2. TREND ANALYSIS

3. DEVELOPING ACTION PLANS

4. COMMUNICATING WITH KEY STAKEHOLDERS

Chapter 3: Utilizing Key Performance Indicators
SECTION I: BENCHMARKING

A. INTERNAL BENCHMARKING
B. INDUSTRY BENCHMARKING
C. STEPS TO BENCHMARKING

BENCHMARKING:

Benchmarking is defined as comparing one's performance with a similar operation's or unit's performance to assist users in identifying best practices, and to identify areas to focus improvement efforts on.

There are two types of benchmarking applicable to school nutrition (SN) programs - internal and industry based.

Internal Benchmarking:

- Collecting and analyzing key performance indicator (KPI) data from a single school or schools within a district over time for comparison to itself for measuring school or district performance, and
- Collecting and analyzing KPI data from multiple units within the same organization (over time or for a specific time or period) for comparison to measure performance. (Example: Comparing the average daily participation [ADP] for all elementary schools in the same school district.)

Industry Benchmarking:

- Evaluating an SN program based on industry trends.
- The National Restaurant Association regularly collects and publishes KPI data for restaurants, such as food and labor cost percentages, and sales percentages from food and beverages.
- The *School Nutrition Operations Report* and the *School Nutrition Trends Report* are compiled annually by the School Nutrition Association. These reports provide some industry KPI benchmark information, specifically average daily participation.
- Some state agencies have benchmark data related to participation and costs/expenditures. Please check with your local state agency director to see what is available in your state.
- Other additional industry data sources include the Council of the Great City Schools Survey, some private companies (e.g., Forecast5 **http://forecasttanalytics.com**) and United States Department of Agriculture (USDA) research studies.

Steps to benchmarking:

- Determine which KPIs to benchmark;
- Identify sources of data to calculate the KPIs;
- Collect, calculate and analyze KPI data over time, as needed. (Various ways to analyze KPI data include: week-to-week, month-to-month, year-to-year, school-to-school, district-to-district, grade-to-grade, etc.);
- Compare results to the benchmark;
- Communicate with relevant stakeholders;
- Take actions; and
- Consider offering incentives to a team or unit that achieves a benchmark goal(s).

REFERENCES

Hwang, J. H. & Sneed, J. (2004). Benchmarking financial performance in school. *The Journal of Child Nutrition Management*. Retrieved from http://docs.schoolnutrition.org/newsroom/jcnm/04spring/hwang/.

Lambert, L. (2006). *Continuous quality improvement process tailored for the SN environment* (NFSMI R-95-05) University, MS: The University of Mississippi.

Leibfried, K. H., & McNair, C. J. (1992). *Benchmarking: A tool for continuous improvement*. New York: HarperCollins Publishers, Inc.

Nettles, M. F. & Rushing, K. (2012). *Data-driven decision making: Guide for school nutrition programs*. University, MS: National Food Service Management Institute.

Spendolini, M. J. (1992). *The benchmarking book*. AMACOM, New York.

Chapter 3: Utilizing Key Performance Indicators
SECTION 2: TREND ANALYSIS

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TREND ANALYSIS:

Trend analysis is a comparison of results over several periods of time. Changes in results may be noted in absolute amounts or percentages. Trends may be used to assess historical data and to provide a basis for forecasting. Graphically representing trends helps to detect and understand changes (Gregoire, 2017, p. 411).

Figure 1 depicts meals per labor hour (MPLH) that have been tracked monthly for four schools in a district, and the district as a whole for a year. The graph indicates that School 3 has the lowest productivity level, while School 1 has the highest productivity level; this difference may be related to labor. If School 1 is understaffed and School 3 is overstaffed, this may easily be resolved by moving an employee from School 3 to School 1. The graph also suggests that productivity for the district gradually drops between August and December, then gradually increases between January and March, then declines again in April and May. It should be noted that many factors impact productivity. For example, snow days and days leading up to holidays and spring fever, which often occurs post-labor day, may trend lower participation.

Information gained from this graph can be used to evaluate the effectiveness of the school nutrition (SN) program for each school and the district as a whole. Some things to consider when comparing each school are the size of the school, the number of serving lines, the type of service provided, the scheduling of meal periods, the production systems, the skill level of employees, and the complexity of the menus. Another item for consideration is why productivity for the SN program for the district as a whole fluctuates throughout the school year. Once decisions have been made about data depicted on this graph, the graph can be used as a means to justify why changes are being made to stakeholders, such as SN staff, school administrators, and the school board.

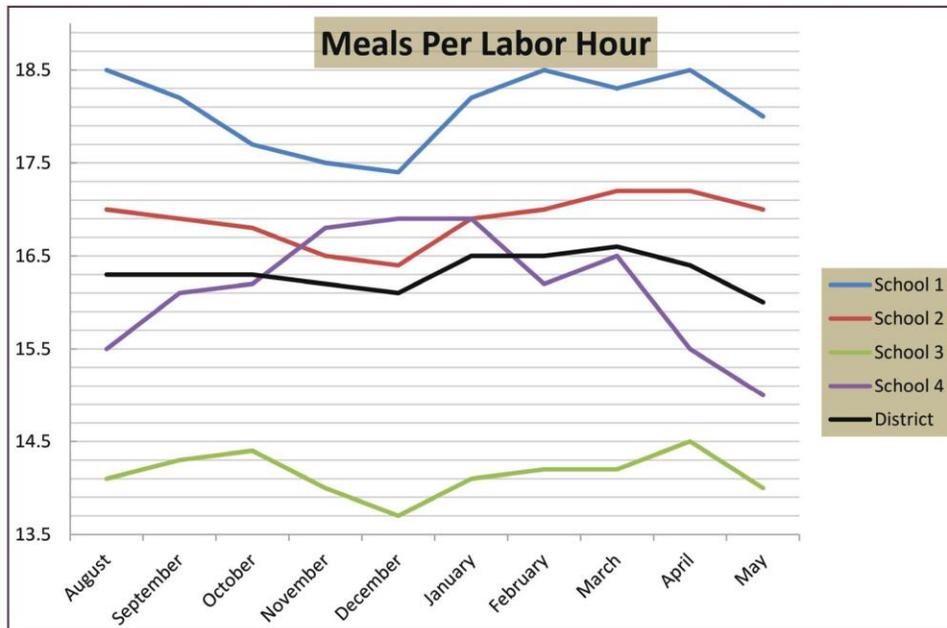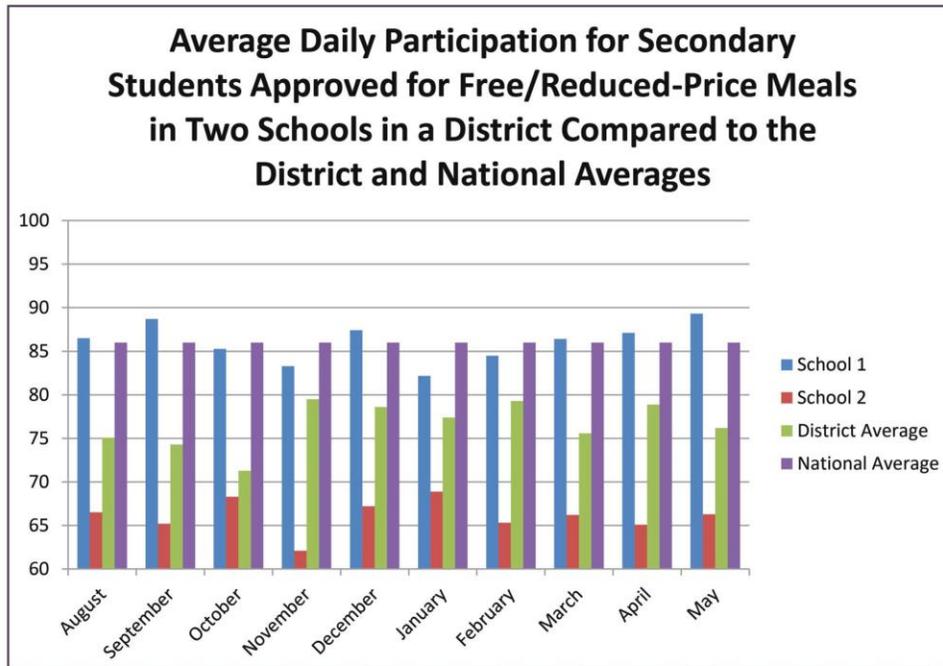**Figure 1. Meals Per Labor Hour (Trend Analysis)**

Figure 2 depicts the average daily participation (ADP) rate for secondary students approved for free and reduced priced meals. This was tracked monthly for two schools in a district, and the district as a whole, for a year compared to the national average for ADP for secondary students. The graph indicates School 2 consistently falls below the district and national average, while School 1 consistently rises above the district average and near the national average. The graph suggests there are opportunities to improve the participation of secondary students who have been approved for free and reduced priced meals in School 2, and participation in the district as a whole. Once decisions have been made about data depicted on this graph, the graph can be used as a means to justify how changes are being made to stakeholders, such as SN staff, school administrators, and the school board.

Figure 2. Average Daily Participation (ADP) for Secondary Schools (Trend Analysis)

REFERENCES

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

Hwang, J. H. & Sneed, J. (2004). *Benchmarking financial performance in school. The Journal of Child Nutrition Management*. Retrieved from http://docs.schoolnutrition.org/newsroom/jcnm/04spring/hwang/.

Lambert, L. (2006) *Continuous quality improvement process tailored for the SN environment* (NFSMI R-95-05) University, MS: The University of Mississippi.

Leibfried, K. H., & McNair, C.J. (1992). *Benchmarking: A tool for continuous improvement*. New York: HarperCollins Publishers, Inc.

Nettles, M. F. & Rushing, K. (2012). *Data-driven decision making: Guide for school nutrition programs*. University, MS: National Food Service Management Institute.

Spendolini, M. J. (1992). *The benchmarking book*. AMACON, New York.

Chapter 3: Utilizing Key Performance Indicators

SECTION 3: DEVELOPING ACTION PLANS

DEVELOPING ACTION PLANS:

Once the results of key performance indicator (KPI) data have been interpreted, the next steps are to propose action plans and to communicate the findings.

- Share the data with the people who need it most, and encourage these groups to engage in dialogues that will help them come to a deeper and shared understanding of the data.

- Prioritize the results, and weigh the relative merit of possible solutions. School nutrition (SN) programs must continue to look for new answers to old problems.

- Develop improvement goals that are "SMART" (Specific, Measurable, Achievable, Realistic, and Time-Bound).
  - **Specific** – Goals should be simplistically written and clearly define what you are going to do.
  - **Measurable** – Goals can be quantified to a determined amount of a specified unit; indicator of progress.
  - **Achievable** – Goals state what results can realistically be achieved, given available resources, but may stretch the team.
  - **Relevant** – Goals must be ones that you are willing and able to work on and must be based on current or forecasted needs.
  - **Time-Bound** – Goals should be linked to a timeframe that creates a practical sense of urgency.

- When creating an action plan, consider the following steps:
  - Outline the actions or steps that need to occur.
  - Identify the person(s) who will be responsible for implementing the steps.
  - List indicators of completion or progress.
  - Set a target date for achieving each step.
  - Specify the resources that will be required, such as staff, money, or materials.

- Another approach to formulating action plans is to focus on these questions:
  - What does the data tell us?
  - What does it not tell us?
  - What else would we need to know?
  - What are we doing well?
  - What needs for SN program improvement might arise from these data?

- See Appendix A for an action planning template and a sample action plan.

- Once the decision to act has been made and implemented, new data can be collected to assess the effectiveness of those actions, leading to a continuous cycle of collection, organization, and synthesis of data in support of decision making.

REFERENCES

Institute of Child Nutrition. (2015). *Team up for school nutrition success*. University, MS: Author.

Nettles, M. F. & Rushing, K. (2012). *Data-driven decision making: Guide for school nutrition programs*. University, MS: National Food Service Management Institute.

Chapter 3: Utilizing Key Performance Indicators

SECTION 4: COMMUNICATING WITH KEY STAKEHOLDERS

COMMUNICATING WITH KEY STAKEHOLDERS:

- It is important to target the communication and tell the same story, or parts of it, in different ways to different groups. For example, when talking with school nutrition (SN) staff about meals per labor hour (MPLH), discuss the effect of labor on production. When presenting to the school board about MPLH, discuss the effect on finances and production.

- Demonstrate to administration and stakeholders how the SN program is being held accountable for results.

- Make the communication concise. Be sure to allow individuals to ask questions.

- Use facts and data to justify decisions and to present action plans for improvement.

- Present the data in easy-to-read charts or graphics and prepare short, jargon-free reports (i.e., use non-program food sales instead of à la carte sales).

- Consider working with the public relations/media department to issue a press release to the community, as appropriate, highlighting lessons learned and any action that will be taken to respond to stakeholders' issues and improve the SN program.

- Figures 1 and 2 in the Trend Analysis section provide examples of how results can be prepared graphically for making decisions and for presenting these decisions to key stakeholders.

REFERENCES

Nettles, M. F. & Rushing, K. (2012). *Data-driven decision making: Guide for school nutrition programs*. University, MS: National Food Service Management Institute.

APPENDICES

1. SMART GOALS ACTION PLANNING TEMPLATE
2. STATEMENT OF ACTIVITIES REPORT
3. STEP-BY-STEP CALCULATIONS FOR MEAL EQUIVALENTS (MEQs)

Smart Goals Action Planning Template

DOES THE GOAL MEET THE FOLLOWING CRITERIA?			SMART GOAL
	YES	NO	
SMART			
MEASURABLE			
ACHIEVABLE			
REALISTIC			
TIME BOUND			

ACTION PLAN

PLAN STEPS YOU WILL TAKE TO ACHIEVE THE GOAL	PERSON RESPONSIBLE	MEASURE OF SUCCESS	TARGET DATE	DATE COMPLETE
1.				
2.				
3.				
4.				
RESOURCES NEEDED TO ACHIEVE THE GOAL:				

Institute of Child Nutrition. (2015). *Team up for school nutrition success*. University, MS: Author.

Statement of Activities Report

Also referred to as a revenues and expenditures report, income statement, profit and loss statement, and operating statement.

REVENUE SOURCE	CURRENT MONTH	PREVIOUS MONTH	YEAR-TO-DATE (YTD)*
LOCAL SOURCES			
STUDENT MEAL SALES	$24,978	$23,025	$96,150
ADULT MEAL SALES	2,376	2,175	9,102
OTHER FOOD SALES	11,326	10,785	44,222
CONTRACT MEALS	1,575	1,560	6,250
INTEREST	260	255	1,030
STATE SOURCES	18,831	0	18,831
FEDERAL SOURCES (INCLUDES UNITED STATES DEPARTMENT OF AGRICULTURE [USDA] FOODS VALUE)	186,639	182,220	737,718
MISCELLANEOUS	0	8,010	8,010
FUND TRANSFER-IN	0	0	0
TOTAL REVENUE	**$245,985**	**$228,030**	**$921,313**
EXPENDITURES	**CURRENT MONTH**	**PREVIOUS MONTH**	**YTD**
SALARIES AND WAGES	$65,875	$63,900	$259,550
EMPLOYEE BENEFITS	28,975	25,364	108,678
PURCHASED SERVICES	375	326	1,402
PROPERTY SERVICES	305	280	1,170
PURCHASED FOOD/USDA FOODS	96,190	90,183	372,746
SUPPLIES	24,750	21,360	92,220
MISCELLANEOUS	625	0	950
CAPITAL ASSETS	0	55,000	70,000
INDIRECT COSTS	5,835	5,830	23,330
FUND TRANSFER-OUT	0	0	0
TOTAL EXPENDITURES	**222,930**	**262,243**	**930,046**
NET EXCESS/DEFICIT	**$23,055**	**($34,213)**	**($8,733)**

*Assume four months data shown in the YTD column on this statement.
Institute of Child Nutrition. (2015). *ICN financial management information system* (2nd ed.). University, MS: Author.

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Step-by-Step Calculations for Meal Equivalents (MEQS)

In school nutrition (SN) programs, the production of meals is the unit of measurement used to gauge the effectiveness and efficiency of an SN program. The student reimbursable lunch is the standard unit of measurement most often used. Converting operational data for all food sales, including student lunches, breakfasts, snacks, and non-program foods, to meal equivalents, allows the SN administrator to determine a cost-per-meal equivalent, and to evaluate productivity. Meal costs based on meal equivalents allow SN administrators to better benchmark financial performance, both internally and externally. Examples of meal equivalent conversion formulas and calculations are presented below.

LUNCH
All student reimbursable lunches, student reimbursable suppers, and full-paid adult lunches are counted as one meal equivalent. If a student purchases more than one lunch on a given day, the second lunch is considered non-reimbursable, and is reported as a non-program food sale. The category for reporting is determined by state agency requirements. Lunches eaten by SN employees at no charge are considered "in-kind" meals, and should not be counted as a meal equivalent.

BREAKFAST
The most common calculation for determining breakfast meal equivalents specifies that three breakfasts count as two meal equivalents. However, it is important to note that the meal equivalent ratio used for calculating breakfast meal equivalents varies from state to state, and SN administrators should check with their state agencies for guidance. Once a ratio is selected, it should remain consistent for the entire reporting period (year) for comparison and benchmarking purposes.

Using the financial management information systems formula, breakfast meal equivalents are calculated as follows:

Meal equivalent = Number of breakfasts served x Conversion factor (2÷3 = .67)

Example: An SN program served 300 student reimbursable breakfasts and 58 adult non-reimbursable breakfasts on a given day. Using the formula that three breakfasts are equivalent to two lunches, three breakfasts count as two meal equivalents, or 236 meal equivalents.

Number of breakfasts served x Conversion factor = Meal equivalent

358 x 0.67 = 239.86, or 240

AFTER-SCHOOL SNACKS
The National School Lunch Program (NSLP) snacks are served to children and youth in after-school care programs that are eligible for United States Department of Agriculture (USDA) reimbursement. While there are no current research studies to support the meal equivalency ratio, a survey of selected state agencies indicated most states use a 3-to-1 ratio of snacks to meal equivalent. Using this equivalency, snacks can be converted to meal equivalents as follows:

Meal equivalent = Number of snacks served x Conversion factor (1÷3 = 0.33)

Example: An elementary school served 450 students reimbursable after-school snacks. Using the formula that three snacks are equivalent to one meal, the snacks served to students on this particular day were equivalent to 149 meal equivalents.

Number of snacks served x Conversion factor = Meal equivalent

450 x 0.33 = 148.5, or 149

NON-PROGRAM FOOD SALES

Meal equivalent calculations for all other SN program categories are based on the annual federal reimbursement rate for a free lunch plus the entitlement USDA food value. The revenue from non-program food sales can be converted to meal equivalents as follows:

$$\text{Meal Equivalent} = \frac{\text{Non-program Sales Revenue}}{\text{Free Lunch Reimbursement} + \text{USDA Foods Value Per Meal}}$$

Example: Assume that an SN operation sold non-program food items on a given day that totaled $234.00 in revenue. Using the formula above, we can convert the revenue from non-reimbursable food sales to the equivalent of 70 lunches.

$$\frac{\text{Non-program Sales Revenue}}{\text{Free Lunch Reimbursement} + \text{USDA Foods Value Per Meal}} \qquad \frac{\$234.00}{\$3.09 + .2375\,(\$3.3275)*}$$

Meal Equivalent = 70.32, or 70

*Based on reimbursement rates and USDA food value effective beginning July 1, 2016, for school year 2016-2017. Reimbursement rates should be updated annually.

The same formula would apply for other SN program events, such as catered meals or special school functions.

$$\text{Meal Equivalent} = \frac{\text{Catered Meal Sales Revenue}}{\text{Free Lunch Reimbursement} + \text{USDA Foods Value Per Meal}}$$

Example: An SN operation offers catering services to departments within the school system. During one month, the SN department catered three events with resulting sales of $935.70. To determine the meal equivalents for catered sales, the SN administrator divided the catering sales total by the value of the federal reimbursement for free meals plus the USDA Foods value of the lunch. Using this calculation, the catering sales for that month converted to 281 lunch equivalents.

$$\frac{\text{Catered Meal Sales Revenue}}{\text{Free Lunch Reimbursement} + \text{USDA Foods Value Per Meal}} \qquad \frac{\$935.70}{\$3.09 + .2375\,(\$3.3275)*}$$

Meal Equivalent = 280.99, or 281

*Based on reimbursement rates and USDA food value effective beginning July 1, 2016, for school year 2016-2017. Reimbursement rates should be updated annually.

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

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