### JOB ANALYSIS FOR THE CPPB AND CPPO EXAMINATIONS

Universal Public Purchasing Certification Council Governance Board<sup>1</sup>

**ABSTRACT.** Universal Public Purchasing Certification Council (UPPCC) is an independent nonprofit entity formed to govern and administer the Certified Public Purchasing Officers (CPPO) and Certified Professional Public Buyers (CPPB) certification programs. Periodically, UPPCC performs a job analysis study to ensure that the certification exams are aligned with the skills, knowledge, and abilities needed for successful job performance in public procurement. This article provides a brief summary of the 2007 job analysis study.

#### INTRODUCTION

The major purpose of the job analysis was to identify the tasks and knowledge that are important for competent performance by public procurement professionals. The development of a content-valid examination is based on validated tasks and knowledge identified through the job analysis process.

This article will begin with a brief overview of UPPCC. Then, it describes the job analysis including:

- rationale for conducting the job analysis;
- methods used to define job-related tasks and knowledge;
- types of data analysis conducted and their results; and
- results and conduct of the test specifications meeting.

### AN OVERVIEW OF UPPCC

# Historical Developments of the Universal Public Purchasing Certification Council

The education and continuing professional development of those individuals involved in public procurement have been primary

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objectives of the National Institute of Governmental Purchasing (NIGP) since its founding in 1944. In 1964, this quest for excellence in public procurement was more clearly defined when NIGP developed and initiated its CPPO program. The CPPO program of NIGP was, at the time of its initiation, the only professional certification offered by a national professional procurement association in North America. The concept underlying the development of the CPPO program was to establish a standard by which qualifications of any public procurement official could be evaluated for a managerial or supervisory level position in public procurement.

In order to more effectively promote and insure public procurement professionalism, NIGP and the National Association of State Procurement Officials (NASPO), jointly established UPPCC in 1978. The functions of UPPCC are as follows:

- to establish, monitor, and revise requirements for certification;
- to continue research efforts relating to the certification of public purchasers;
- to coordinate with other NIGP and NASPO programs in order to further the certification of public procurement officers; and
- to do all things necessary and proper to promote and insure professionalism in public procurement.

Realizing the need for a certification program for non-managers, UPPCC, its Board of Examiners (BOE), and NIGP's Education and Professional Development Committee developed the Professional Public Buyer (PPB) certificate. The first PPB certificate was issued in 1979. This designation was changed by the UPPCC to Certified Professional Public Buyer (CPPB) in 1991.

In summation, currently, UPPCC has two certification programs: a Certified Public Purchasing Officer, and a Certified Professional Public Buyer. The CPPB level applies to individuals who have demonstrated prescribed levels of professional competency as a buyer in public procurement, and are not required to meet the additional managerial experience of the CPPO level. Realizing that procurement standards and norms should be the same in the public procurement environment, the UPPCC certification programs have been

established to meet the requirements of all public procurement personnel in federal, state, and local governments.

Certification is the process by which public procurement practitioners demonstrate a standard of competency – skills and knowledge – for the benefit of the public. Certification reflects established standards and competencies for those engaged in public procurement and attests to the purchaser's ability to obtain maximum value for the taxpayer's dollar.

# **Identifying Standard of Competency**

Nearly a half century ago, before launching the CPPO certification program, NIGP formed a team leading academicians and public procurement practitioners to develop a curriculum for public procurement. This curriculum, which was first published in a handbook, entitled *Prerequisites for Certification of Public Purchasing Agents*<sup>2</sup> (National Institute of Governmental Purchasing, 1962), served as the basis of the Universal Public Purchasing Certification Program in the United States. The curriculum covered core public procurement knowledge and also topics in the areas of business administration, public administration, and related fields.

To ensure that the certification exams are aligned with skills and knowledge needed for successful job performance in the public procurement profession, UPPCC conducted its first job analysis in April 1999. Then, because public procurement evolved rapidly after that study, UPPCC launched another job analysis in 2007. This article provides a summary of this most recent study of UPPCC.

#### **METHODOLOGY**

The job analysis for the CPPB and CPPO examinations involved a multi-method approach that included meetings with subject-matter experts and a survey. This section of the report describes the activities conducted for the job analysis.

First, subject-matter experts identified the tasks and knowledge they believed were important to the work performed by CPPBs and CPPOs. Then, a survey was developed and disseminated to public procurement professionals. The purpose of the survey was to obtain verification (or refutation) that the tasks and knowledge statements identified by the subject-matter experts are important to the work of public procurement professionals.

Survey research functions as a "check and balance" on the judgments of the subject-matter experts and reduces the likelihood that unimportant areas will be considered in the development of the test specifications. The use of a survey is also an efficient and cost-effective method of obtaining input from large numbers of subject-matter experts and makes it possible for ratings to be analyzed separately by appropriate respondent subgroups.

The survey results provide information to guide the development of test specifications and content-valid examinations. What matters most is that a credentialing examination covers the important knowledge needed to perform job activities.

The methodology used to conduct the job analysis is described in detail below and included the following steps:

- 1. Conduct a planning meeting,
- 2. Development of the survey,
- 3. Dissemination of the survey,
- 4. Analysis of the survey data, and
- 5. Development of the test specifications for the CPPB and CPPO examinations.

# Conduct of a Planning Meeting

A project-planning meeting was held on December 15, 2006, via teleconference. Meeting participants included the staff responsible for the conduct of the job analysis and UPPCC staff. During the planning meeting, several issues were discussed including selection of the Task Force Committee members<sup>3</sup> and Test Specifications Committee members,<sup>4</sup> meeting dates, and survey delivery.

## **Development of the Survey**

# Conduct of the Job Analysis Task Force Meeting

UPPCC convened a Task Force Committee comprised of a representative group of public procurement professionals.<sup>3</sup> The Task

Force meeting was conducted on February 12 and 13, 2007, in Chantilly, Virginia. The purpose of the meeting was to develop the survey content. Prometric (a global provider of comprehensive testing and assessment services) staff facilitated the meeting.

Prometric staff sent a pre-meeting mailing to the Task Force that included a document consisting of the meeting agenda, a list of tasks and knowledge validated in the previous job analysis, and a list of Task Force participants. Activities conducted during the meeting included reviewing and, as needed, revising the major domains, tasks, and knowledge statements that are necessary for competent performance by public procurement professionals. Survey rating scales and background and general information questions were presented, discussed, and revised as needed.

## **Survey Construction**

During the Task Force meeting, Prometric staff constructed the draft online survey. The following tasks and knowledge domains were covered on the survey:

- 1. Administration aspects of purchasing,
- 2. Procurement requests,
- 3. Solicitation and evaluation of bids/proposals,
- 4. Supplier analysis,
- 5. Negotiation process,
- 6. Contract award and administration,
- 7. External/internal relationships,
- 8. Materiels management,
- 9. Operational support,
- 10. Human resources/personnel, and
- 11. Forecasting and strategies.

Before the conclusion of the meeting, Task Force members assigned preliminary weightings to each of the 11 topic areas for each exam. They did that prior to the next section as their preliminary weightings were then validated by the weightings in the survey data.

## Survey Review by Task Force Committee

Each Task Force member received a copy of the draft survey. The purpose of the review was to provide the Committee with an opportunity to view their work and recommend any revisions. Comments were compiled by Prometric staff and reviewed via web conference with UPPCC staff and the Task Force members. Recommended refinements were incorporated, as appropriate, into the survey in preparation for a pilot test.

## Survey Pilot Test

The purpose of the small-scale pilot test was to have public procurement professionals who had no previous involvement in the development of the survey review it and offer suggestions for its improvement. A total of ten public procurement professionals participated in the survey pilot test. Pilot participants were asked to review the survey for clarity of wording, ease of use, and comprehensiveness of content coverage. Comments were compiled by Prometric and reviewed via web conference with a subset of the Task Force members. The survey was revised and finalized based on the review of the pilot test comments.

## Final Version of the Survey

The final version of the online survey consisted of the following six sections: (1) Background and General Information, (2) Tasks, (3) Knowledge, (4) Recommendations for Test Content, (5) Comments, and (6) Industry Information. In Section 1, participants were asked to provide general and background information about themselves and their professional activities. In Section 2, participants were asked to rate statements related to their tasks in various areas (or domains) of public procurement. In Section 3, participants were asked to indicate how important various tasks and knowledge are in their current position. In Section 4, participants were asked to indicate the content weights of eleven selected knowledge areas for the CPPO examination, and the content weights of eight knowledge areas for the CPPB examination. In Section 5, survey participants were provided the opportunity to comment on how they expect their work roles to change over the next few years, what tasks will be performed, and what knowledge will be needed to meet changing job demands. Respondents were also asked to identify professional development and continuing education that could be used to improve performance in their current work roles.

## Analysis of the Survey Data

As previously noted, the purpose of the survey was to validate the tasks and knowledge that relatively large numbers of public procurement professionals judged to be relevant (verified as important) to their work. These objectives are accomplished through an analysis of the mean importance ratings for tasks and knowledge. The derivation of test specifications from those statements verified as important by the surveyed professionals provides a substantial evidential basis for the content validity (content relevance) of credentialing examinations.

Based on information obtained from the survey, data analyses by respondent subgroups (e.g., job title) are possible when sample size permits. A subgroup category is required to have at least 30 respondents to be included in the mean analyses. This is a necessary condition to ensure that the mean value based upon the sample of respondents is an accurate estimate of the corresponding population mean value.

The following quantitative data analyses were produced:

- Means, standard deviations, and frequency (percentage) distributions for tasks and knowledge importance and content coverage ratings;
- Means and standard deviations for test content recommendations; and
- Index of agreement values for designated subgroups.

## Criterion for Interpretation of Mean Importance Ratings

Since a major purpose of the survey is to ensure that only validated tasks and knowledge statements are included in the development of test specifications, a criterion (cut point) for inclusion needs to be established.

A criterion that has been used in similar studies is a mean importance rating (on a five-point scale, with 0 = of no importance, and 4 = very important) that represents the midpoint between

moderately important and important. For the importance rating scale used across many studies, the value of this criterion is 2.50.

It is believed that this criterion is consistent with the intent of content validity, which is to measure only important knowledge in the credentialing examination. Therefore, for this job analysis, the value of this criterion was set at 2.50.

The task and knowledge statements were placed into one of three categories—pass, borderline, or fail—based on their mean importance ratings:

- The "pass" category contains those statements whose mean ratings are at or above 2.50, and are considered eligible for inclusion in the development of test specifications.
- The "borderline" category contains those statements whose mean ratings are between 2.40 and 2.49. This category is included to provide a point of discussion for the Test Specifications Committee to determine if the statement(s) warrant(s) inclusion in the test specifications.
- The "fail" category contains those statements whose mean ratings are less than 2.40. It is recommended that statements in this category be excluded from consideration in the test specifications.

If the Test Specifications Committee believes that a statement rated below 2.50 should be included in the specifications and can provide compelling written rationales, those statements may be considered for inclusion. For example, although a task or knowledge may have a mean rating of less than 2.50, more than 50% of the respondents may have rated the statement as important or very important. In this instance, the Test Specifications Committee might recommend the inclusion of the statement on the test specifications. The written rationale would note that a majority of the survey respondents rated the statement as important.

# Development of the Test Specifications for the CPPB and CPPO Examinations

A meeting was facilitated by the Prometric staff to develop the test specifications based on the job analysis results. The meeting was conducted on June 6 to 8, 2007, via web conference. The meeting focused on the following:

- Finalizing the tasks and knowledge statements that are important for inclusion on the CPPB and CPPO examinations, based on the survey results;
- Establishing the percentage test content weights for each knowledge area on the CPPB and CPPO examinations. These percentage test weights are used to guide examination development activities; and,
- Linking tasks and knowledge statements to verify that the knowledge statements tested on the CPPB and CPPO examinations are related to the performance of important tasks by public procurement professionals.

#### **RESULTS**

# **Survey Response Rate**

A total of 1,848 of 16,775 invitations were submitted, representing a response rate of 11.02%, as shown in Table 1. Based on the analysis of survey responses, a representative group of public procurement professionals completed the survey in sufficient numbers to meet the requirements for statistical analysis of the results.

TABLE 1
Response Rates for the Job Analysis Survey for the CPPB and CPPO
Examinations

	Number
Surveys Disseminated	18,798
Nondeliverable Surveys	2,023
Surveys Delivered	16,775
Completed Surveys Submitted	1,848
Percent of Surveys Submitted	11.02%

# **Demographic Characteristics of Survey Respondents**

The profile of survey respondents by most frequently occurring response is shown in Table 2. A majority of respondents (41.34%)

TABLE 2
Demographic Characteristics of Respondents

Types of Demographic Characteristics	# of	%
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Years Worked in Public Procurement	,	
1-5 years	351	41.34
6-10 years	413	22.35
11-15 years	329	17.80
16-20 years	0	
21-25 years	0	
26 or more years	239	12.93
Other (experience in the private sector)	8	.43
Total	1,848	100.0
Years Worked in Current Positions		
1-5 years	1,018	55.09
6-10 years		22.35
11-15 years	329	17.08
16-20 years	0	
21-25 years	0	
26 or more years	33	1.79
Total	1,848	100.0
Current Work Role		
Directors/Managers of Procurement		24.92
Senior Buyers/Contract Specialists		22.70
Intermediate Level Buyers/Contract Specialists	273	14.79
Contract Administrators/Contract Management		11.86
Entry level Buyers/Contract Specialists	120	
Assistant Directors/Unit Supervisors	111	
Other Positions		13.21
Total	1,848	100.0
Types of Government Where Respondents Currently W		
State/Provincial Government		25.77
Municipal Government		24.56
County Government	330	18.17
College/Universities	216	11.89
Education (K-12)		7.10
Others	227	
Total		100.0
Size of Respondents Procurement Staff, Including Sup	•	
1-5 Employees		30.91
5-10 Employees		25.31
11-20 Employees		19.81
21-50 Employees	294	16.32

TABLE 2 (Continued)

Types of Demographic Characteristics	# of	%
	Respondents	
51-100 Employees	81	4.50
More than 100 Employees	57	3.16
Total	1,802	100.0
Size of Respondents' Organizations/Agencies	•	
1-100 Employees	66	3.66
101-500 Employees	367	20.37
501-1,000 Employees	283	15.70
1001-5,000 Employees	601	33.35
5,101-10,000 Employees	221	12.26
More than 10,000 Employees	264	14.65
Total	1,802	100.0
Respondents' Salaries	•	
Less than \$20,000	1	0.06
\$20,000-29,999	57	3.18
\$30,000-39,999	246	13.71
\$40,000-49,999	409	22.80
\$50,000-59,999	352	19.62
\$60,000-69,999	277	15.44
\$70,000-79,999	161	8.97
\$80,000-89,999	111	6.19
\$90,000-99,999	76	4.24
\$100,000-124,999	87	4.85
Over \$125,000	17	0.95
Total	1,794	100.0
Respondents' Highest Academic Degree		
High School Diploma or Equivalent	578	32.08
Associate degree	197	10.93
Bachelor's Degree	708	39.28
Master's Degree	298	16.54
Doctorate Degree	21	1.17
Total	1,802	100.0
Respondents' Ages	-	
Under 25	8	0.44
25-35	136	7.55
36-45	454	25.21
46-55	808	44.86
56- or older	395	21.93
Total	1801	100.0

TABLE 2 (Continued)

Types of Demographic Characteristics	# of Respondents	%
Respondents' Gender		
Female	1,058	59.17
Male	730	40.83
Total	1,788	100.0

worked in the field of public procurement from 1 to 10 years. Most respondents (79.92%) had worked in their current position from 1 to 10 years. A majority of respondents are directors/managers of procurement (24.92%) and senior level buyers/contract specialists (22.70%). A majority of respondents (56.99%) have a bachelor's degree or higher; and 32.08% of respondents have a high school education or equivalent. About one fourth of respondents are working in state/provincial governments and about one third of respondents' procurement offices have a staff of five employees or fewer. About 75% respondents' salaries are under \$70,000 annually. One fifth of respondents are 55 years old or older.

### Task and Knowledge Ratings by Overall Group of Respondents

The following provides a summary of survey respondents' ratings of the tasks and knowledge statements. A majority of tasks and knowledge statements achieved high means (at or above 2.50), thereby validating their importance to competent performance for public procurement professionals.

#### Tasks

Means for the tasks included on the survey are provided in Table 3. Of the 112 tasks, 65 (58.04%) achieved high importance means. Table 3 shows the tasks that were placed in pass, borderline, and fail categories in 11 public procurement domains or areas of public procurement.

TABLE 3
Tasks by Means, and Pass, Borderline, and Fail Categories

Tasks	Mean	Pass	Borderline	Fail
Domain 1. Administration Aspects of Purchasing				
1. Develop and promote the mission statement, vision, and operating values of the procurement department (e.g., ethics, diversity, professionalism, accountability)	3.29	Х		
2. Design operational forms (e.g., board certification, checklists, purchase orders)	2.74	Х		
3. Maintain operational forms (e.g., board certification, checklists, purchase orders)	2.91	Х		
4. Implement an automated purchasing system (e.g., integrate business processes, interfaces)	2.90	Х		
5. Utilize an automated purchasing system	3.37	Х		
6. Develop a procurement card program	2.21			Х
7. Administer a procurement card program	2.18			Χ
8. Utilize a procurement card program	2.24			Х
9. Develop an electronic commerce program	1.80			Х
10. Administer an electronic commerce program	1.76			Х
11. Utilize an electronic commerce program	1.99			Х
12. Develop and implement a cost-reduction or cost-	2.45		Х	
avoidance program (e.g., value analysis, total cost of ownership)				
13. Develop a minority/women/small business/ socio- economic and disadvantaged supplier program	1.99			Χ
14. Ensure compliance with a minority/women/small business/socio-economic and disadvantaged supplier program	2.44		Х	
15. Develop and implement a standardization process (e.g., materials, procedures, specification)	2.95	Х		
16. Develop goals, objectives, and measurement criteria for purchasing department	3.02	Х		
17. Implement goals, objectives, and measurement criteria for purchasing department	3.07	Х		
18. Develop operating work policies, guidelines, and procedures for the control of the department's work flow	3.09	Х		

TABLE 3 (Continued)

Tasks	Mean	Pass	Borderline	Fail
19. Implement operating work policies, guidelines, and	3.13	Х		
procedures for the control of the department's work flow				
20. Develop cooperative purchasing programs with other public/private agencies	2.59	Х		
21. Ensure the maintenance of files (e.g., product/ service specifications, descriptions, prices, order history, material safety data sheet (MSDS)	3.07	Х		
22. Develop an environmentally preferred purchasing program (e.g., buy-recycled programs, green, sustainable)	2.20			Х
23. Ensure compliance with an environmentally preferred purchasing program (e.g., buy-recycled programs, green, sustainable)	2.27			Х
24. Prepare and deliver reports for management	3.09	Х		
25. Prepare departmental operating budget	2.30			Х
26. Prepare and update purchasing policies and	2.94	Х		
procedures [e.g., vendor brochures, training manuals, code of ethics, standard operating procedures (SOP)]				
27. Serve on teams that perform department compliance audits and reviews	2.29			Х
28. Monitor professional and legislative trends and laws (e.g., rules, regulations, executive orders)	2.71	Х		
29. Perform process improvement programs (e.g., value added versus non-value added tasks)	2.56	Х		
30. Manage non-compliance in the procurement process (e.g., ratification process, confirming orders, illegal purchases, unauthorized commitment)	3.00	Х		
Domain 2. Procurement Requests				
Review purchase requisitions to determine appropriateness to requirements, adequacy, and completeness of specifications	3.48	х		
Review procurement requests to determine compliance with established laws, policies, and procedures	3.56	х		
	•			

TABLE 3 (Continued)

Tasks	Mean	Pass	Borderline	Fail
3. Review purchase requisitions to insure adequacy of	3.18	Х		
available funds and appropriate approvals				
4. Conduct market research to ascertain the	2.69	Х		
use/availability of commercial items and services				
5. Consult on decisions regarding making, leasing, or	2.75	Х		
buying equipment				
Domain 3. Solicitation and Evaluation of Bids/Proposals				
1. Identify, select, and educate sources of services or supplies	3.21	Х		
2. Develop and review product and service specifications, requirements, terms/conditions, and pricing schedules	3.33	Х		
3. Determine appropriate methods of procurement (e.g., small purchases, procurement cards, competitive sealed bids, competitive proposals, cooperative purchasing)	3.50	х		
Determine appropriate contract type (blanket order, term contracts)	3.38	Х		
5. Solicit quotes for small purchases (e.g., telephone quotes, fax quotes, e-mail)	2.86	Х		
6. Solicit competitive sealed bids	3.38	Х		
7. Solicit sealed proposals	3.34	Х		
8. Monitor the solicitation process (e.g., fair, full, and open competition; transparency)	3.58	х		
Conduct pre-bid or pre-proposal conferences and prepare minutes	3.09	Х		
10. Prepare addendum	3.17	Х		
11. Evaluate all solicitation responses	3.38	Х		
12. Review final recommendation for award	3.47	Х		
13. Respond to solicitation protests	3.18	Х		
14. Conduct hearings (e.g., protest, responsibility, debarment)	2.65	х		
15. Determine payment methods and options	2.67	Х		
Domain 4. Supplier Analysis				
Conduct supplier visits and evaluations	2.46		Х	

TABLE 3 (Continued)

Tasks  2. Review supplier samples and/or demonstrations with the buying organization management and/or customer departments 3. Evaluate supplier performance 4. Monitor supplier responsibility (e.g., financial, legal, certification, license)  Domain 5. Negotiation Process 1. Select negotiation team members 2. Prepare and review negotiation strategies 3. Approve negotiations strategies 4. Conduct contract and potential supplier negotiations 2. Prepare and review and obtain approval of contracts when required (e.g., legal, risk management, health and safety)  2. Prepare and issue contractual documents 3. 2.9 x 3. Administer contracts and purchase orders from award to completion 4. Conduct follow-up procedures and expedite deliveries when necessary 5. Modify contractual obligations 6. Seek appropriate resolution for contract non-compliance 7. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier protests, claims, and appeals 9. Terminate contractual obligations 1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media) 3. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments) 3. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments) 3. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments) 3. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments) 3. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments) 3. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)		1	,		
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2. Prepare and review negotiation strategies 2. Approve negotiations strategies 2. 51 x 4. Conduct contract and potential supplier negotiations 2. 70 x  Domain 6. Contract Award and Administration 1. Route for review and obtain approval of contracts when required (e.g., legal, risk management, health and safety) 2. Prepare and issue contractual documents 3. 29 x 3. Administer contracts and purchase orders from award to completion 4. Conduct follow-up procedures and expedite deliveries when necessary 5. Modify contractual obligations 6. Seek appropriate resolution for contract non- compliance 7. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier protests, claims, and appeals 2. 97 x 9. Terminate contractual obligations 3. 01 x  Domain 7. External/Internal Relationships 1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media) 2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	•	2.44		Х	
4. Conduct contract and potential supplier negotiations 2.70 x  Domain 6. Contract Award and Administration  1. Route for review and obtain approval of contracts when required (e.g., legal, risk management, health and safety)  2. Prepare and issue contractual documents 3.29 x  3. Administer contracts and purchase orders from award to completion  4. Conduct follow-up procedures and expedite deliveries when necessary  5. Modify contractual obligations 3.05 x  6. Seek appropriate resolution for contract noncompliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals 2.97 x  9. Terminate contractual obligations 3.01 x  Domain 7. External/Internal Relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	_	2.60	Х		
4. Conduct contract and potential supplier negotiations 2.70 x  Domain 6. Contract Award and Administration  1. Route for review and obtain approval of contracts when required (e.g., legal, risk management, health and safety)  2. Prepare and issue contractual documents 3.29 x  3. Administer contracts and purchase orders from award to completion  4. Conduct follow-up procedures and expedite deliveries when necessary  5. Modify contractual obligations 3.05 x  6. Seek appropriate resolution for contract noncompliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals 2.97 x  9. Terminate contractual obligations 3.01 x  Domain 7. External/Internal Relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	3. Approve negotiations strategies	2.51	Х		
Domain 6. Contract Award and Administration  1. Route for review and obtain approval of contracts when required (e.g., legal, risk management, health and safety)  2. Prepare and issue contractual documents  3. Administer contracts and purchase orders from award to completion  4. Conduct follow-up procedures and expedite deliveries when necessary  5. Modify contractual obligations  6. Seek appropriate resolution for contract non-compliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)		2.70	Х		
when required (e.g., legal, risk management, health and safety)  2. Prepare and issue contractual documents 3.29 x 3. Administer contracts and purchase orders from award to completion 4. Conduct follow-up procedures and expedite deliveries when necessary 5. Modify contractual obligations 6. Seek appropriate resolution for contract noncompliance 7. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier protests, claims, and appeals 9. Terminate contractual obligations 2.97 x 9. Terminate contractual obligations 3.01 x  Domain 7. External/Internal Relationships 1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media) 2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)		1	1		
when required (e.g., legal, risk management, health and safety)  2. Prepare and issue contractual documents 3.29 x 3. Administer contracts and purchase orders from award to completion 4. Conduct follow-up procedures and expedite deliveries when necessary 5. Modify contractual obligations 6. Seek appropriate resolution for contract noncompliance 7. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier protests, claims, and appeals 9. Terminate contractual obligations 2.97 x 9. Terminate contractual obligations 3.01 x  Domain 7. External/Internal Relationships 1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media) 2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	1. Route for review and obtain approval of contracts	3.24	Х		
and safety)  2. Prepare and issue contractual documents  3. Administer contracts and purchase orders from award to completion  4. Conduct follow-up procedures and expedite deliveries when necessary  5. Modify contractual obligations  6. Seek appropriate resolution for contract noncompliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  1. Develop and manage effective relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)					
3. Administer contracts and purchase orders from award to completion  4. Conduct follow-up procedures and expedite deliveries when necessary  5. Modify contractual obligations  6. Seek appropriate resolution for contract noncompliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  2.97 x  9. Terminate contractual obligations  3.01 x  Domain 7. External/Internal Relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	1				
award to completion  4. Conduct follow-up procedures and expedite deliveries when necessary  5. Modify contractual obligations  6. Seek appropriate resolution for contract non- compliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  9. Terminate contractual obligations  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	2. Prepare and issue contractual documents	3.29	Х		
4. Conduct follow-up procedures and expedite deliveries when necessary  5. Modify contractual obligations 6. Seek appropriate resolution for contract non- compliance 7. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier protests, claims, and appeals 9. Terminate contractual obligations 2.97 x 9. Terminate contractual obligations 3.01 x  Domain 7. External/Internal Relationships 1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media) 2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	3. Administer contracts and purchase orders from	3.29	Х		
deliveries when necessary  5. Modify contractual obligations  6. Seek appropriate resolution for contract noncompliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	award to completion				
5. Modify contractual obligations 6. Seek appropriate resolution for contract non- compliance 7. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier protests, claims, and appeals 9. Terminate contractual obligations 3.01 x  Domain 7. External/Internal Relationships 1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media) 2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	4. Conduct follow-up procedures and expedite	3.08	Х		
6. Seek appropriate resolution for contract non- compliance 7. Manage supplier and departmental concerns and inquiries regarding processes and practices 8. Manage supplier protests, claims, and appeals 9. Terminate contractual obligations 3.01 x  Domain 7. External/Internal Relationships 1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media) 2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)  3.20 X  3.20 X  3.20 X  3.20 X  3.21 X  3.72 X					
compliance  7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  2.97 x  9. Terminate contractual obligations  3.01 x  Domain 7. External/Internal Relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	5. Modify contractual obligations	3.05	Х		
7. Manage supplier and departmental concerns and inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  1. Develop and manage effective relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	6. Seek appropriate resolution for contract non-	3.20	Х		
inquiries regarding processes and practices  8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  1. Develop and manage effective relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	compliance				
8. Manage supplier protests, claims, and appeals  9. Terminate contractual obligations  3.01 x  Domain 7. External/Internal Relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	7. Manage supplier and departmental concerns and	3.20	Χ		
9. Terminate contractual obligations  Domain 7. External/Internal Relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)					
Domain 7. External/Internal Relationships  1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)  3.72 x	8. Manage supplier protests, claims, and appeals		Х		
1. Develop and manage effective relationships with external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	9. Terminate contractual obligations	3.01	Х		
external customers (e.g., suppliers, contractors, public, media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)	Domain 7. External/Internal Relationships				
media)  2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)  3.72 x		3.51	Х		
2. Develop and manage effective relationships with internal customers (e.g., clients, boards, departments)					
internal customers (e.g., clients, boards, departments)	•				
		3.72	Х		
3. Develop and manage effective relationships with 3.72 x					
	3. Develop and manage effective relationships with	3.72	Х		
management	management				

TABLE 3 (Continued)

Tasks	Mean	Pass	Borderline	Fail
4. Conduct training classes for external and internal	2.92	Х		
customers				
5. Participate in cross-functional and/or multifunctional	2.97	Х		
teams (e.g., project management, process				
improvement				
Domain 8. Materials Management				
1. Define material destination, transportation, and	2.32			Х
packing requirements				
2. Follow up and expedite orders	2.53	Х		
3. Monitor receiving activities	2.18			Х
4. Ensure that materials are distributed to the	2.21			Х
customers				
5. Resolve delivery and receiving problems	2.64	Х		
6. Develop and conduct the needs analysis for	1.85			Χ
warehousing, insurance, and logistics requirements				
7. Organize and control the inventory of materials	1.78			Х
8. Determine sources of and reconcile inventory	1.80			Х
discrepancies				
9. Review inventory to verify that materials are rotating	1.46			Χ
and turning at desired rates				
10. Establish and maintain minimum stock, order	1.46			Х
points, and order quantity				
11. Manage fixed assets inventory	1.56			Х
12. Maintain fixed assets inventory	1.55			Х
13. Identify the trends in warehousing methods and	1.47			Х
identify suppliers best suited to provide those services				
(e.g., just-in-time, outsourcing, bar coding)				
14. Maintain and update material safety data sheet	1.56			Х
records				
15. Determine proper method for disposal of obsolete	2.00			Χ
and surplus equipment and materials				L
16. Manage and dispose of obsolete and surplus	1.99			Х
equipment				
17. Ensure proper storage, disposal and transportation	1.71			Χ
of hazardous and regulated materials				
· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			_

TABLE 3 (Continued)

Tasks  Domain 9. Operational Support	Mean	Pass	Borderline	Fail
Manage telecommunications	1.39	1		\ \
Manage deleconfinding attoris     Manage accounts payable	1.43			X
Manage accounts payable     Manage central printing and copying operations	1.30			
	1.26			X
4. Manage the organization-wide fleet of vehicles				X
5. Manage risk management function	1.45			Χ
6. Manage mail services	1.32			Х
7. Manage property/facility maintenance for the	1.26			Х
organization				
Domain 10. Human Resources/Personnel				•
1. Manage purchasing department personnel (e.g.,	2.50	Х		
right-sizing, hire, train, evaluate, counsel, discipline)				
2. Facilitate professional development of staff	2.60	Χ		
3. Develop knowledge documentation (e.g., knowledge	2.51	Х		
mapping, process documentation, detailed job task)				
4. Develop staff succession plan	2.16			Х
5. Promote staff cohesiveness (e.g., team building)	2.72	Х		
6. Ensure compliance with the values of the	3.03	Х		
organization (e.g., ethics, integrity, accountability)				
Domain 11. Forecasting and Strategies				
1. Conduct business analyses (e.g., made-or-buy,	2.09			Х
outsourcing, privatization, partnering)				
2. Review economic trends and conditions that affect	2.41		Х	
procurement				
3. Perform cost/benefit analyses on planned	2.37			Х
acquisitions				
4. Plan and implement purchasing strategies and	2.31			Х
objectives based on forecast data, market factors, and				
economic trends				
5. Provide forecast data of future market conditions to	1.96			Χ
management and requisitioning departments				
6. Provide suppliers with service requirements based	2.13			Х
on forecasted usage levels (e.g., solicitation, existing				
contractors)				
7. Plan short-term material and service needs with	2.07			Х
customer agencies and management				

TABLE 3 (Continued)

Tasks	Mean	Pass	Borderline	Fail
8. Plan long-term material and service needs with customer agencies and management	2.16			Χ
9. Formulate a continuity of operations plan (e.g., disaster preparedness)	2.14			Х

Notes: Pass indicates mean = 2.50 or above; Borderline indicates mean = 2.40 to 2.49; Fail indicates mean = Less than 2.40, on a five-point scale with 0= of no importance and 4 = very important.

# Knowledge

Means for the knowledge statements included on the survey are presented in Table 4. Of the 122 knowledge statements, 85 (69.67%) achieved high importance means. Table 4 also shows the knowledge statements that were placed in pass, borderline, and fail categories by domains or areas of public procurement.

TABLE 4
Knowledge Statements by Means; and Pass, Borderline, and Fail Categories

Tasks	Mean	Pass	Border- line	Fail
Domain 1. Administration Aspects of Purchasing				
1. Procurement department goals and objective	3.55	Χ		
2. Procurement department measurement criteria	3.24	Х		
Organizational policies and standard procedures	3.50	Х		
4. Automated purchasing systems	3.27	Х		
5.Contract, solicitation, agreement, and lease file content	3.50	Х		
6. Material safety data sheet	1.94			Χ
7. Cooperative purchasing program development	2.59	Х		

TABLE 4 (continued)

	Mean	Pass	Border- line	=
Tasks		Ра	B i	Fail
8. Cost-reduction or cost-avoidance techniques	2.82	Х		
(e.g., value analysis, total cost of ownership)				
9. Criteria for evaluating purchasing	2.87	Х		
department's performance				
10. Department audits and review processes	2.79	Х		
11. Electronic commerce programs	2.32			Χ
12. Environmentally preferred purchasing	2.32			Χ
programs (e.g., buy-recycled programs, green, sustainable)				
13. Small, disadvantaged, minority, women-	2.46		Х	
owned and socio-economic business programs				
14. Product/service specifications, descriptions,	3.11	Χ		
and prices (e.g., order history)				
15. Purchasing policies and procedures	3.81	Χ		
16. Departmental operating budgets (e.g.,	2.79	Χ		
budget cycle, budget preparation)				
17. Budgeting techniques (e.g., performance-	2.30			Χ
based budgeting, zero-based budgeting, line-item				
budgeting)				
18. Operating forms (e.g., board certification,	3.01	Х		
checklists, purchase orders)				
19. Operating form design (e.g., board	2.68	Χ		
certification, checklists, purchase orders)				
20. Procurement card programs	2.53	Χ		
21. Benchmarking techniques and processes	2.50	Χ		
22. Process improvement programs (e.g., value	2.68	Χ		
added versus non-value added)				
23. Standardization programs	2.73	Χ		
24. Effective oral and written communication	3.69	Χ		
25. Procurement trends and information	3.08	Χ		
resources				
26. Management philosophies and techniques	2.09		_	Х
(e.g., Maslow's Hierarchy of Needs, McGregor's				
Theory X/Theory Y)				
27. Code of ethics and professional values	3.72	Χ		
28. Problem-solving processes	3.60	Χ		

TABLE 4 (continued)

	1		1	
Tasks	Mean	Pass	Border- line	Fail
Domain 2. Procurement Requests			•	•
1. Acquisition methods and techniques	3.48	Х		
2. Supply and demand concepts	2.28	Х		
3. Total cost of ownership concepts, including	2.77	Х		
disposal, residual value, and environmental				
concerns				
4. Make, lease, or buy concepts	2.56	Χ		
5. Financing and leveraging strategies for	2.33			Χ
purchases				
6. Market research to ascertain use/availability	2.54	Х		
of commercial items and services				
7. Roles and responsibilities of common service	3.04	Х		
providers, departments, and clients				
8. Various methods of supply (e.g., controlled	2.56	Χ		
goods, hazardous materials, materiel and				
inventory, material and inventory management,				
re-use, recycling)				
9. Requisition approval process (e.g., adequacy	3.16	Х		
of available funds, appropriate authorizations)				
10. Established laws, policies, and procedures	3.65	Χ		
11. Specification components and process (e.g.,	3.40	Х		
adequacy, completeness)				
Domain 3. Solicitation and Evaluation of Bids/Propo	osals			
1. Appropriate contract type (blanket order, term	3.53	Х		
contracts)				
2. Appropriate contract terms and conditions	3.66	Χ		
3. Methods of procurement:				
- Small purchases (e.g., telephone quotes, fax				
quotes, e-mail, procurement cards)	3.26	Х		
- Competitive sealed bids and proposals	3.62	Χ		
- Competitive negotiations	3.34	Χ		
- Preference purchasing	2.87	Х		
- Non-competitive sole-source, single available	0.00			
source	3.38	Х		
- Emergency	3.31	Х		
- Cooperative purchasing (e.g., joint	2.00			
solicitation, piggyback)	3.06	Х		
- Incentive contracting	2.28			Χ

TABLE 4 (continued)

,				
Tasks	Mean	Pass	Border- line	Fail
4. Construction and construction-related services contracting	2.39			Х
5. Pre-bid conferences and minutes preparation	2.96	Χ		
6. Solicitation process (e.g., issuing solicitation, addenda, solicitation openings)	3.37	Х		
7. Evaluation techniques (e.g., responsiveness, responsibility, price analysis, cost analysis)	3.44	Х		
8. Product solicitation and service specifications, requirements, terms/conditions, and pricing schedules)	3.42	Х		
9. Sources of services or supplies	3.23	Χ		
10. Various methods of payment and basis of payment options	2.67	Х		
11. Fair and open competition concepts	3.57	Χ		
12. Protest processes and procedures	3.09	Χ		
13. Hearing processes and procedures	2.82	Х		
Domain 4. Supplier Analysis	1		I	
Techniques to ensure supplier compliance to specifications	3.14	Х		
2. Supplier requirements (e.g., space, delivery, industry standards)	2.88	Х		
3. Techniques to evaluate supplier performance	2.93	Χ		
4.Purpose for supplier visits (e.g., site reviews and observations)	2.57	Х		
5. Interviewing techniques	2.65	Χ		
Evaluation methods of supplier samples and demonstrations	2.71	Х		
Domain 5. Negotiation Process			l	
Negotiations strategies and techniques	3.03	Χ		
Problem-solving and decision-making techniques and processes	3.49	Х		
Domain 6. Contract Award and Administration	1		1	ı .
Elements of a contract	3.54	Х		
Contractual document preparation	3.45	X		
3. Award recommendation process	3.51	X		
4. Contractual approval process (e.g., legal, risk	3.40	X		
management, health and safety)				
5. Contract management	3.31	Χ		

TABLE 4 (continued)

more r (continued)				
Tasks	Mean	Pass	Border- line	Fail
6. Contractual problems and resolutions (e.g., notice to cure, liquidated damages)	3.23	Х		
7. Follow-up procedures and expediting	3.07	Χ		
8. Supplier claims, and appeals	2.84	Х		
9. Contract modifications (e.g., change orders, amendments)	3.29	Х		
10. Contract termination	3.23	Х		
Domain 7. External/Internal Relationships	0.20	^		
Organizational structure	3.14	Х		
Organizational culture (e.g., management style, tradition, history, political)	3.12	X		
3. Basics of interpersonal relationships	3.31	Х		
4. Conflict resolution techniques	3.392	Х		
5. Technologies for communication (e.g., videoconferencing, e-mail, internet, extranet, teleconferencing)	3.25	Х		
6. Training needs and methods of delivery for external customers (e.g., How to Do Business, Ethics)	3.03	Х		
7. Training needs and methods of delivery for internal customers (e.g., Ethics, Specification Writing, Automated System Usage)	3.22	Х		
8. Effective training techniques (e.g., lecture, textbook)	2.94	х		
9. Types of presentations and appropriate use (e.g., formal/informal, oral/written)	3.00	Х		
10. Team dynamics	3.11	Х		
Domain 8. Materiels Management				
Material destination, transportation, and packing requirements	2.04			Х
2. Receiving process and procedures	2.15			Х
3. Ordering process (e.g., route, expedite, follow up)	2.45		Х	
4. Fixed assets inventory	1.74			Х
5. Inventory management techniques and principles (e.g., just in time, min/max levels, last in first out, first in last out)	1.68			Х

TABLE 4 (continued)

		•		
Tasks	Mean	Pass	Border- line	Fail
6. Warehousing, insurance, and logistics	1.64			Х
requirements	4.07			
7. Obsolete and surplus equipment and	1.87			Х
materials management	4 57			
8. Inventory reconciliation process	1.57			X
9. Storage, disposal, and transportation of	1.66			Х
hazardous and regulated materials				
10. Warehousing trends	1.39			Χ
Domain 9. Operational Support				
Central printing and copying operations	1.52			Χ
2. Accounts payable management	1.74			Χ
3. Fleet management	1.32			Χ
4. Risk management	1.79			Χ
5. Mail service operations	1.36			Χ
6. Property/facility management	1.44			Χ
7. Telecommunications management	1.46			Χ
Domain 10. Human Resources/Personnel	1		I	
Purchasing department personnel processes:				
- Staffing levels	2.50	Χ		
- Hiring	2.38			Χ
- Training	2.84	Χ		
- Evaluation	2.57	Х		
- Counseling	2.37			Χ
- Disciplining	2.28			Χ
- Terminating	2.21			Х
2. Staff professional development needs	2.78	Х		
3. Succession planning techniques	2.41		Х	
4. Knowledge documentation (e.g., knowledge	2.64	Х		
mapping, process documentation, detailed job				
task)				
Domain 11. Forecasting and Strategies			ı	
1. Analytical and research techniques and	2.41		Х	
models				
2. Departmental strategic, operational, and	2.58	Х		
business plans and priorities				
3. Forecasting techniques and strategies	2.25			Х
4. Purchasing strategies based on forecast data,	2.34			Х
market factors, and economic trends				
			1	

**TABLE 4** (continued)

Tasks	Mean	Pass	Border- line	Fail
5. Strategic planning	2.45		Х	
6. Material and service needs of customer agencies and management	2.63	Х		
7. Cost/benefit analyses on planned acquisitions	2.37			Х
8. Continuity of operations plan (e.g., disaster preparedness)	2.45		Х	

Notes: Pass indicates mean = 2.50 or Above; Borderline indicates mean = 2.40 to 2.49; Fail indicates mean = Less than 2.40, on a five-point scale with 0= of no importance; and 4 = very important.

# Subgroup Analysis of Tasks and Knowledge Ratings

The index of agreement is a measure of the extent to which subgroups of respondents agree on which tasks and knowledge statements are important. Using the mean importance ratings for task and knowledge statements, indices of agreement were computed:

- If the subgroup means are above the critical importance value (mean ratings at or above 2.50), then they are in agreement that the content is important.
- If the subgroup means are below the critical importance value (mean ratings less than 2.50), then the subgroups are in agreement that the content is considered less important.
- By contrast, if one subgroup's (for example, female) mean ratings are above the critical importance value and another subgroup's (for example, male) means are below the critical importance value then the subgroups are in disagreement as to whether the content is important.

The index of agreement provides a method of computing the similarity in judgments between groups that is more tailored to the purpose of a job analysis than the correlation coefficient. Although the correlation coefficient measures the tendency toward agreement along the full range of possible ratings, the agreement index focuses

on whether two groups agree that the content should (or should not) be included in an examination.

As one of the major purposes of this job analysis is to identify appropriate test content, the agreement index provides a statistical method to address this question at the subgroup level. Furthermore, the agreement index requires only 30 respondents per subgroup for computation, whereas the correlation coefficient requires at least 100 respondents per subgroup to provide a reliable measure of agreement.

An illustrative example for two groups shows how the index is computed. If two groups passed the same 120 knowledge areas and failed the same 2 knowledge areas (out of the 124 total knowledge areas in the survey), the consistency index would be computed as: Agreement = (120 + 2)/124 = 0.98.

The index of agreement coefficients for tasks and knowledge, as computed, shows that:

- 1. There is a very high level of agreement among respondents regarding the importance of both tasks and knowledge for most comparisons.
- 2. Respondents with 26 years or more tended to rate tasks and knowledge as more important than those with 25 years or less of experience.
- 3. Respondents who work in lower level positions (such as entrylevel buyer) tended to rate tasks and knowledge as more important than those in middle level and higher level positions.
- 4. Respondents who hold a CPPO certification tended to rate most tasks as more important than those who hold a CPPB certification.
- 5. CPPB holders with 26 years of more tended to rate tasks and knowledge as more important than those with 25 years or less of experience, particularly in the domains of human resources/personnel and forecasting and strategies. Tables 5 and 6 show the total number of tasks and knowledge statements; and the number of task and knowledge statements placed in pass, borderline, and fail categories by domain and UPPCC certification held.<sup>5</sup>

TABLE 5
Tasks by Pass, Borderline, and Fail categories and UPPCC
Certification Held

		CPPB Only			CPPO	Only/CPPB	and CPPO
	No. of		Border-				
Task Domains	Tasks	Pass	line	Fail	Pass	Borderline	Fail
1. Administration Aspects of Purchasing	30	16	2	12	22	1	7
2. Procurement Requests	5	5	0	0	5	0	0
3. Solicitation and Evaluation of Bids/Proposals	15	15	0	0	14	1	0
4. Supplier Analysis	5	4	1	0	3	2	0
5. Negotiation Process	4	3	1	0	4	0	0
6. Contract Award and Administration	9	9	0	0	9	0	0
7. External/Internal Relationships	5	5	0	0	5	0	0
8. Materiels Management	17	2	0	15	1	3	13
9. Operational Support	7	0	0	7	0	0	7
10. Human Resources/Personnel	6	3	2	1	6	0	0
11. Forecasting and Strategies	9	0	1	8	6	0	3
Total	112	62	7	43	75	7	30
Percentage	100.00%	55.36%	6.25%	38.39%	66.96%	6.25%	26.79%

Notes: Pass = Mean = 2.50 or Above; Borderline = Mean = 2.40 to 2.49; Fail = Mean = Less than 2.40, on a five-point scale with 0= of no importance and 4 = very important.

TABLE 6
Knowledge Statements by Pass, Borderline, and Fail categories and UPPCC Certification Held

		CPPB Only			CPPO O	nly/CPPE	3 and CPPO
	No. of		Border-			Border-	
	Knowledge	Pass	line	Fail	Pass	line	Fail
Knowledge Domains	Statements						
1. Administration Aspects of Purchasing	28	21	2	5	24	1	3
2. Procurement Requests	11	10	0	1	10	1	0
3. Solicitation and Evaluation of Bids/Proposals	20	18	0	2	20	0	0
4. Supplier Analysis	6	6	0	0	6	0	0
5. Negotiation Process	2	2	0	0	2	0	0
6. Contract Award and Administration	10	10	0	0	10	0	0
7. External/Internal Relationships	10	10	0	0	10	0	0
8. Materiels Management	10	0	1	9	0	0	10
9. Operational Support	7	0	0	7	0	0	7
10. Human Resources/Personnel	10	3	1	6	10	0	0
11. Forecasting and Strategies	8	2	3	3	8	0	0
Total	122	82	7	33	100	2	20
Percentage	100.00%	67.21%	5.74%	27.05%	81.97%	1.64%	16.39%

Notes: Pass = Mean = 2.50 or above; Borderline = Mean = 2.40 to 2.49; Fail = Mean = Less than 2.40, on a five-point scale with 0= of no importance and 4 = very important.

## **Content Coverage Ratings**

The survey participants were asked to indicate how well the statements within each of the task and knowledge domains covered important aspects of that area. These responses provide an indication of the adequacy (comprehensiveness) of the survey content.

The five-point rating scale included 1=Very Poorly, 2=Poorly, 3=Adequately, 4=Well, and 5=Very Well. The means and standard deviations for the task and knowledge ratings are provided in Tables 4 and 5. For the task domains, the means ranged from 3.72 to 3.92. The means across the knowledge domains ranged from 3.78 to 3.98 (Tables 7 and 8). These means provide supportive evidence that the tasks and knowledge were adequately covered on the survey.

TABLE 7
Mean, Standard Deviation, and Frequency Distribution Percentage of Task Content Coverage

	Content Coverage						
			Frequency Percentag				ge
Task Domain	Mean	SD	Very poorly	Poorly	Adequately	Well	Very well
1. Administration Aspects of Purchasing	3.85	0.78	0.1	1.9	32.7	43.7	21.6
2. Procurement Requests	3.84	0.77	0.00	1.3	35.3	41.6	21.8
3. Solicitation and Evaluation of Bids/Proposals	3.92	0.76	0.7	0.6	31.0	43.8	24.6
4. Supplier Analysis	3.87	0.75	0.0	0.6	33.9	43.4	22.1
5. Negotiation Process	3.82	0.78	0.2	1.3	35.7	41.4	21.3
6. Contract Award and Administration	3.90	0.77	0.0	0.7	32.6	42.7	24.0
7. External/Internal Relationships	3.91	0.76	0.0	0.6	32.1	43.2	24.1
8. Materiels Management	3.81	0.78	0.4	1.0	35.8	42.5	20.4
9. Operational Support	3.72	0.78	0.6	1.7	40.2	40.4	17.1
10. Human Resources/Personnel	3.87	0.78	0.2	0.8	34.1	41.9	23.0
11. Forecasting and Strategies	3.77	0.75	0.2	1.2	37.9	43.2	17.6

Notes: Means are on a five-point scale with 0= of no importance and 4 = very important.

TABLE 8

Mean, Standard Deviation, and Frequency Distribution Percentage of
Knowledge Content Coverage

	Content Coverage						
			Frequency Percentage				
Knowledge Domain	Mean	SD	Very poorly	Poorly	Adequately	Well	Very well
Administration Aspects of Purchasing	3.98	0.75	0.0	0.2	28.5	44.7	26.5
2. Procurement Requests	3.92	0.74	0.0	0.3	31.2	45.0	23.4
3. Solicitation and Evaluation of Bids/Proposals	3.92	0.75	0.0	0.4	31.0	44.3	24.3
4. Supplier Analysis	3.84	0.74	0.0	0.5	35.1	44.2	20.2
5. Negotiation Process	3.88	0.77	0.1	1.0	33.3	42.7	23.0
6. Contract Award and Administration	3.95	0.76	0.1	0.3	30.3	43.3	25.9
7. External/Internal Relationships	3.90	0.75	0.1	0.4	32.8	43.8	23.6
8. Materiels Management	3.80	0.76	0.2	1.1	36.4	43.1	19.3
9. Operational Support	3.78	0.75	0.1	1.2	37.6	42.7	18.3
10. Human Resources/Personnel	3.86	0.77	0.1	0.6	35.1	41.6	22.6
11. Forecasting and Strategies	3.81	0.74	0.2	0.5	36.6	43.9	18.8

Notes: Means are on a five-point scale with 0= of no importance and 4 = very important.

#### **Test Content Recommendations**

In "Section 4: Recommendations for Test Content" of the survey, participants were asked the following question: "Listed below are topic areas that may be covered on the CPPB or CPPO exam. Please indicate what percentage of each area should be included in the exam. Please enter only whole numbers (e.g., 29, 42, 7). If you feel an area should not be represented on the examination, enter 0 in the space provided. Please be sure your responses sum to 100." This information was used by the Test Specifications Committee as an aid in making decisions about how much emphasis the knowledge

domains should receive on the test content outline. The mean weights across all survey respondents for the CPPB exam are presented in Table 9, while the results for the CPPO exam are presented in Table 10.

TABLE 9
Survey Respondents' Test Content Recommendations for the CPPB
Examination by Mean Percentages and Standard Deviations

Topic Areas	Mean (%)	SD (%)
1. Administration Aspects of Purchasing	14.13	7.68
2. Procurement Requests	14.23	6.35
3. Solicitation and Evaluation of Bids/ Proposals	19.77	7.20
4. Supplier Analysis	9.09	4.30
5. Negotiation Process	11.28	5.18
6. Contract Award and Administration	14.79	6.06
7. External/Internal Relationships	9.39	5.00
8. Materiels Management	7.68	5.12

TABLE 10
Survey Respondents' Test Content Recommendations for the CPPO
Examination by Mean Percentages and Standard Deviations

Topic Areas	Mean (%)	SD (%)
1. Administration Aspects of Purchasing	12.73	7.03
2. Procurement Requests	9.20	5.29
3. Solicitation and Evaluation of Bids/Proposals	13.27	6.71
4. Supplier Analysis	7.34	3.53
5. Negotiation Process	10.24	4.38
6. Contract Award and Administration	11.55	4.95
7. External/Internal Relationships	8.39	4.23
8. Materiels Management	6.47	3.78
9. Operational Support	6.73	3.66
10. Human Resources/Personnel	7.29	4.86
11. Forecasting and Strategies	7.39	4.97

# DEVELOPMENT OF TEST SPECIFICATIONS FOR THE CPPB AND CPPO EXAMINATIONS

As previously noted, the Test Specifications Committee developed the test specifications for the CPPB and CPPO examinations in June 2007. Decisions made by the Test Specifications Committee regarding the task and knowledge statements to be included in (or excluded from) the test specifications were based on a careful review of the survey results.<sup>6</sup>

## **Development of Test Content Weights**

The Test Specifications Committee participated in an exercise that required each member to individually assign a percentage weight to each of the knowledge domains. Weights were then entered into an Excel spreadsheet and shown onscreen via a web conference. The Committee members were able to compare the test content weights derived from the survey responses to the estimates of the Job Analysis Task Force as well as their own. This resulted in a productive discussion among the Committee members regarding the optimal percentages for the CPPB and CPPO examinations. Table 10 and Table 11 presents the test specifications recommendations including the percentage content weights by domain, the number of questions, and the percentage of questions by cognitive level:

- Recall: Identify terms; specific facts; methods; procedures; basic concepts; basic theories; principles and processes
- Application: Apply concepts and principles to situations; recognize relationships among data; apply theories to practical situations; calculate solutions to mathematical problems; interpret charts and translate graphic data; classify items; interpret information.

TABLE 11
Test Content Weights for the CPPB Examination Recommended by the Test Specifications Committee

				Cognitive Level	
CPPB Content Areas	(1)	(2)	(3)	(4)	(5)
I. Administration Aspects of	23	19.00%	33	50%	50%
Purchasing					

TABLE 11 (Continued)

				Cognitive Level	
CPPB Content Areas	(1)	(2)	(3)	(4)	(5)
II. Procurement Requests	10	17.00%	30	30%	70%
III. Solicitation and Evaluation of Bids/Proposals	18	20.00%	35	25%	75%
IV. Supplier Analysis	6	8.00%	14	30%	70%
V. Negotiation Process	2	3.00%	5	60%	40%
VI. Contract Award and Administration	10	18.00%	32	40%	60%
VII. External/Internal Relationships	10	9.00%	16	25%	75%
VIII. Materiels Management	1	2.00%	2	100%	0%
IX. Human Resources/ Personnel	3	2.00%	4	50%	50%
X. Forecasting and Strategies	2	2.00%	4	50%	50%
Total	85	100.00%	175		

Legends: Column 1 = Number of Knowledge Statements; Column 2 = Test Specifications Committee Percentage Recommendations; Column 3 = Number of Test Items; Column 4 = Recall; Column 5 = Application.

TABLE 12
Test Content Weights for the CPPO Examination Recommended by the Test Specifications Committee

				Cognitive Level	
CPPO Content Areas	(1)	(2)	(3)	(4)	(5)
I. Administration Aspects of Purchasing	26	15.00%	26	20%	80%
II. Procurement Requests	10	8.00%	14	30%	70%
III. Solicitation and Evaluation of Bids/Proposals	20	10.00%	18	40%	60%
IV. Supplier Analysis	6	7.00%	12	30%	70%
V. Negotiation Process	3	8.00%	14	40%	60%
VI. Contract Award and Administration	10	10.00%	18	30%	70%
VII. External/Internal Relationships	10	15.00%	26	40%	60%

				Cognitive Level	
CPPO Content Areas	(1)	(2)	(3)	(4)	(5)
VIII. Materiels Management	2	3.00%	4	75%	25%
IX. Human Resources/Personnel	10	14.00%	25	40%	60%
X. Forecasting and Strategies	8	10.00%	18	40%	60%
Total	105	100.00%	175		

**TABLE 12** (Continued)

Legends: Column 1 = Number of Knowledge Statements; Column 2 = Test Specifications Committee Percentage Recommendations; Column 3 = Number of Test Items; Column 4 = Recall; Column 5 = Application.

## Linkage of Task and Knowledge/Skill Statements

Task and knowledge linking verifies that each knowledge area included on an examination is related to the competent performance of important tasks. As such, linking documents the content validity of the knowledge included in the test specifications. Linking does not require the production of an exhaustive listing; rather, task-knowledge links are developed to ensure that each knowledge is identified as being related to the performance of at least one, or in most cases several, important tasks. Linking also provides guidance for itemwriting activities. When item writers develop questions for specific knowledge areas, they have a listing of tasks that relate to the knowledge. This provides context for developing examination questions, and assists the item writers in question design.

#### SUMMARY AND CONCLUSIONS

The Job Analysis for the CPPB and CPPO Examinations was conducted to:

- identify and validate tasks and knowledge important to the work performed by public procurement professionals;
- create test specifications that may be used to develop new versions of the CPPB and CPPO examinations; and,
- identify professional development/continuing education needs and anticipated changes in the work role of public procurement professionals.

The tasks and knowledge statements were developed through an iterative process involving the combined efforts of UPPCC, subject-matter experts, and Prometric staff. These statements were then put into survey format and subjected to verification/refutation through the dissemination of a survey to public procurement professionals.

The survey participants were asked to rate the importance of performing specific tasks and the importance of specific knowledge to perform their job tasks.

The results of the job analysis support the following:

- The majority of tasks and knowledge were verified as important through the survey and provide the foundation of empirically derived information from which to develop test specifications for the CPPB and CPPO examination.
- Evidence was provided in this job analysis that the comprehensiveness of the content within the task and knowledge domains was adequately covered.
- A variety of professional development/continuing education needs and expected changes in job activities over the next few years were identified.

In summary, the job analysis took a multi-method approach to identifying the tasks and knowledge important to the work performed by public procurement professionals. The results of the study can be used to develop new versions of the CPPB and CPPO Examinations.

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### **NOTES**

- 1. John Adler, Vice President of Purchasing, Dallas (Texas) Area Rapid Transit; Rick Berry, Director of Materiel Management, Old Dominion University; Micheline Brunette, Senior Policy Analyst, Treasury Board of Secretariat, Canada; Donald Buffum Director, Procurement & Contracts, Mississippi State University; John P. Coggins, Purchasing & Materials Manager, Orange County (California) Fire Authority; Jack Gallt, Executive Director, National Association of State Procurement Officials; David P. Gragan, Director, Office of Contracting & Procurement District of Columbia Office of Contracting & Procurement; Rick Grimm, Chief Executive Officer, National Institute of Governmental Purchasing, Inc.; Norma J. Hall, Program Manager, Training, Strategic Planning, & Performance Measures, State of South Carolina; Mark Hutchison, Sr., Procurement Manager, Office Services, Department of Administrative Services, State of Ohio; Darin L. Matthews, Division Manager, Portland (Oregon) Metro; Clifford McCue, Associate Professor, School of Public Administration, Florida Atlantic University: Louis Moore, Director of Purchasing, City of St. Petersburg, Florida; Colleen Post, Senior Director, Treasury Board Secretariat of Canada; and Khi V. Thai, Professor, School of Public Administration, Florida Atlantic University.
- 2. This handbook, prepared under the auspices of the National Institute of Governmental Purchasing, Inc., was the first curriculum for public purchasing officers.
- 3. The Task Force Committee consists of Denni Baumer, Veronica Caston-Frost, Alfred Elias, Samuel Feinberg, Quentin Furrow, Mindy Giberstone, Goreeti Mak, Jim O'Neill, Alan Philips, Tony Reed, Paul Reister, Jena Richmond, Ruth Smith, Charles Tedesco, and Heather Turner.
- 4. The Test Specifications Committee consists of Jon Bischetsrieder, Don Buffum, Veronica Caston-Frost, Alfred Elias, Samuel Feinberg, Elene Fromanger, Quentin Furrow, Wendy Geltch, Mindy Giberstone, Norma Hall, Jim Miluski, Louis Moore, Tony Reed, and Jena Richmond.

- 5. For detailed information, see Schloder and McCorkle (2007).
- 6. The Committee scaled back the CPPO domain areas from 11 (Table 9) to 10 domain areas (Table 11); and increased the CPPB domain areas from 8 (Table 8) to 10 domain areas (Table 10). The reason for that shift was that survey respondents did not validate the survey committee's thoughts that the tasks and knowledge in the operational support category for CPPO (Domain 9 from Table 9) were important enough to be tested for certification. As a result, the entire operational support domain failed and was removed from CPPO test qualifications. The operational support domain failed and was removed from CPPO test specifications. The reverse happened with CPPB. Domain areas, human resources/personnel, and forecasting and strategies, were added to the CPPB test specification because the tasks and knowledge statements within those two domain areas scored very high among survey respondents and as a result were added.

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- Schloder, K. & McCorkle, R. (2007). Job Analysis for the Certified Professional Public Buyer (CPPB) and Certified Public Purchasing Officer (CPPO) Examinations. Herndon, VA: Universal Public Purchasing Certification Council.