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Examination of the Effects of Personal and Purchasing Unit Characteristics on Types of Problems Experienced and Types of Contracts That Are Problematic

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Abstract

This paper provides a contribution to the knowledge of contract administration by examining the role of personal and organization characteristics in project success. The research described in this paper examines the effects that personal and organizational characteristics of procurement professionals have on project success, specifically on the frequency and severity

of problems experienced for different types of contracts. The analysis is based on the data collected from a survey of National Institute of Government Purchasing (NIGP) members, conducted by Davison and Sebastian in 2011. The survey included questions on the frequency and severity of contract problems over a variety of contracts and questions related to the characteristics of the respondents and their organization. A set of personal and organizational characteristics (ex. organization type, current position, the length of service in procurement, the length of service in current position, highest level of education, certificates that respondent possesses, the approximate annual volume of purchases made by the respondent and his/her entire agency etc.) were analyzed with contingency tables methodology to examine any relationship to the frequency and severity of contract problems over a variety of contract types.

We assume that certain personal characteristics may influence the frequency of occurrence and the severity of contract administration problems for particular types of contracts. The research results may provide procurement professionals and organizations information on the characteristics that contribute most to project success.

Keywords: Contract Administration, Contract Administration Problems, Critical Success Factors, Purchasing Unit Characteristics, Contract Management, Procurement Staffing Requirements, Certification Value, Education Value

Background

In recent years there have been numerous papers written on the transformation, in function and perception, of the role of public procurement. McCue and Pitzer discuss how the role of public procurement is rapidly changing from a clerical function to a strategic partner [1]. Gragan identified several steps needed to transform the public procurement to a service that supports other agencies [2]. In 2006, the United Kingdom and Canada conducted an in-depth knowledge transfer between the two governments in issues of procurement transformation. For both countries, one of the critical success criteria is the ability to focus on and measure fundamental improvement rather than just short-term price savings [3]. Prier, McCue, Steinfeld discuss how a field or occupation is viewed as a profession. One of the key indicators in determination of a profession is "the subject matter is sufficiently esoteric that the common person does not generally understand it and must rely upon the expertise of another for proper completion of the task". The authors analyzed numerous job descriptions in the following areas: nature of work, duties and job descriptions, education and training, work related experience, required certification and knowledge, skills and abilities. They conclude that there is a unique nature to the public procurement role [4].

Previous papers have discussed the implication that education and certification may be key indicators of a procurement professional's success and competency. Members of the National Institute of Government Purchasing (NIGP) value education, over 56% have a 4 year degrees, and certification, over 55% have a certification [5].

This paper will examine if there is a correlation between any personal characteristics of a procurement professional to a project success.

Previous Research

This paper is based on the data of the survey of National Institute of Government Purchasing (NIGP) members conducted by Davison & Sebastian in 2011 [6]. The framework of the 2011 survey was based on findings from some other papers on contract administration problems such as the research on the establishment of contract goals [7]. Davison & Wright also proposed a conceptual model that related the "5 R's" procurement project success criteria (delivering a product or service in right items, in the right quantity, for the right price, at the right time, with the right quality)[8] to the six types of contractual risks that each purchase of goods of services inevitably faces [9] and expanded the definitions of those risks:

- Proposal risk: The legal document that defines the item or service procured (the right item), the mutual areas of agreement, and how risks will be allocated and rewarded.

- Surety and liability risks: Protection of the agency's financial and legal interests (the right price). The contract will define the insurance requirements, bonding requirements, and licensing that are necessary to protect the agency in the event of contract termination or to meet statutory requirements.

- Schedule risk: Ensuring timely delivery (the right time). The contract will contain clear and specific language describing the contract deliverables, delivery terms, and any penalties for late delivery.

- Contractual risk: Establishing change order procedures, dispute resolution process and termination procedures (the right price and time). The contract is a living document and allowances must be made to accommodate unforeseen conditions that may affect the purchase. The contract will specify who has the authority to make changes, how changes will be made, and what changes will be unilateral. The contract will specify how disputes will be resolved if mutual agreement cannot be reached. The contract will specify the termination process.

- Performance risk: Defining acceptance (the right quality). The contract will define the conditions under which acceptance will occur and what type of inspection will be required.

- Price risk: Defining payment terms (the right price). The contract will define how and when the Contractor will be paid.

Based on these risks Davison proposed that 10 types of contract administration problems impact the success of any project [7].

Table 1. Definition of Contract Administration Problems [7].

Contract Problem	**Examples**
Wrong product	Purchase order or contract clearly identifies correct product, but vendor ships incorrect. No dispute involved
Delay	Purchase order has clearly stated completion date. Completion date delayed (any length of time) due to agency or vendor (with or without cause).
Change order	Change in the scope of work (additional work, money, time), after contract award. Can be requested by either party for any reason.
Personality conflict	Personality conflicts between agency project manager or staff and vendor project manager or employees. Disagreement between the parties that can not be easily resolved. May involve scope of work, materials supplied, payment schedules, or any other aspect of the contract.
Definition of acceptance	Completion of project is delayed due to non acceptance of final product. Example: difference in either party's definition of what was supposed to be delivered or provided
Poor performance	Contract clearly states a level of expected performance (this is not in dispute) and quality problems with vendor's performance of work occur.
Sub- Contractors	The vendor uses subcontractors not on his payroll to perform any or all of the work. Prior approval, for use of subcontractors, was received
Other sources	There are very few vendors that can perform the work.
Risk of failure	The project has a high risk of failure. i.e. new technology, new equipment, new vendor, Project never been done before. Tight timeline or budget
Cost	Project has a high cost.

Davison, Sebastian & Hartley, mapped of the relationship between procurement goals [8], the 6 types of contractual risks [7] and contract problems [7]. Each of the contract problems represents an outcome of a particular contractual risk and may result in a failure to meet the "5 R's" success criteria of the project (Table 2) [10].

Table 2. Mapping of Goals, Risks and Contract Problems [10]

Goal Criteria	Risk	Contract Problem
Right Item and Right Quantity	Proposal Risk	Poor Performance; Risk of Failure; Final Acceptance
Right Price	Surety and liability risk; Contractual Risk; Price Risk	Cost; Change Order; Personality Conflict
Right Time	Schedule Risk; Contractual Risk	Wrong product; Delay; Change Order; Personality Conflict
Right Quality	Performance Risk	Final Acceptance; Poor Performance; Risk of Failure; Subcontractors
Right Source	Surety and liability risk	Cost; Subcontractors; Other Sources; Risk of Failure

Davison also proposed that each purchase can be placed into one of seven contract types and that each of these contract type shares a similar set of contractual risks and potential contract administration problems (Table 3) [7].

Table 3. Definition of Contract Types [7]

Contract Type	Examples
Commodities, Small Purchases	MRO (maintenance, repair and operating supplies) Term contracts: i.e. office supplies, one-time orders for durable goods under $5000
Capital Outlay	Durable goods over $5000
Professional Services	Architects, consultants
Contracted Services	Custodial services, food service
Software	Custom developed and shrink-wrap
Construction	Any type and any dollar amount – New construction or remodeling
Leases	Leased space or equipment – lease without intent to own

A goal of the 2006 Davison & Sebastian survey was to determine the validity of 2004 framework proposed by Davison & Wright on the perceived consequences of ten types of contract administration problems for each of seven contract types on project success and to

determine how likely each of these consequences were perceived to be. The summary of their findings is:

"*When contract problems occur, the research found that problematic consequences were more likely than no consequence for all contract types except lease contracts. The results also showed that when problems occur, the severity of the consequences depend on the type of contract. Advance knowledge of the likelihood of occurrence and the severity of consequences will allow procurement professionals to identify the likely contract administration problems for a specific contract type."* [11]

2010 research was conducted by Davison & Sebastian in collaboration with Public Works and Government Services Canada (PWGSC) to assess the general validity of the original 2006 findings and to expand the overall empirical base [10]. Based on the feedback of PWGSC respondents in 2010, the 2006 survey was updated to address previous methodological limitations of using reality rankings instead of ranks. An updated survey was conducted among NIGP members in 2011 [6] and the results compared to 2006 survey findings. The major findings were, that the 2011 response rate was significantly higher than 2006, the overall results for problematic consequences were comparable to 2006: when contract administration problems occurred, problematic consequences were more likely than no consequences for all contract types except Leases; and the types of most likely to occur problematic consequences depended on the type of contract [6].

The main stream of previous research on the impact of contract administration problems on project success has been based on the idea that prior knowledge of potential problems will aid in better risk mitigation efforts and will lead to more successful projects. A successful project has been defined as fulfillment of "5 R's" principles such as delivering a product or service in right items, in the right quantity, for the right price, at the right time, with the right quality [8]. This definition of success corresponds with the basic principles of Project Management Success definition [12]. A survey conducted by Baccarini and Collins in 1999 among members of the Australian Institute of Project Management (AIPM), which is a professional body representing project managers and project management users in Australia, is aimed at identification of project success criteria and definition. It showed that there is a preponderance of success criteria defined in the narrow terms of time, cost and quality, including also quality of the project management process as success criteria. Avoidance or minimization of problems is a key theme in all of the research.

Previous research shows evidence of the positive relationship between project management success and product success. This infers that the project management team must constantly monitor their project management performance (i.e. time, cost and quality objectives) and reflect how this performance affects the achievement of product success. A survey-based research on contract management critical success factors, derived from the responses of approximately 400 contracting officers who represent seven Department of Defense (DoD) agencies [13-14] showed the similarities in both project management and contract management critical success factors. This implies that project success factors are quite comparable to success factors in public procurement contract administration. Therefore the

quality of contract management in public procurement appears to be one of success factors for public contract administration. A procurement function that can identify risks and provide effective contract management, contract is cited as one of the critical success factors for successful projects [13-15]. The importance of the procurement function and the need for a knowledgeable workforce has been recognized by the U. S federal government [14]. The Defense Acquisition Workforce Improvement Act (DAWIA) [16] was enacted by the United States government to improve the effectiveness of the personnel who manage and implement defense acquisition programs. Educational courses have been developed to provide procurement personnel with the general procurement regulations and best practices and the unique knowledge needed for specific acquisition workforce assignments, jobs, or positions [17].

Previous research supports the value of the procurement function, and provides rationale that procurement is a profession. It is worthwhile to discuss the role a procurement professional has in providing value to the process.

The survey data collected [10-11] has data on both project success (frequency of problems and severity) and characteristics of procurement professionals and their organizations. This data provides us with an opportunity to examine the relationship between personal characteristics such as: experience, certifications, education, and organizational characteristics such as: size of purchasing unit on project success by examining the relationship the characteristics with how frequent problems occur and their severity, for a variety of types of contracts.

Method

In the 2006 and 2011 Davison-Sebastian survey, respondents were asked questions concerning frequency of contract administration problems occurring in each of seven types of contract and their consequences, and were also asked to answer seventeen questions that were directly related either to characteristics of themselves or organizations where they were working. These seventeen questions are represented in Table 4.

Table 4. Questions respondent's personal and organization characteristics

Question	Answers
Country in which you work	United States/ Canada/ Other (please specify)
Your organization type	Federal/ State/ County/ City/ School/ Private Sector/ Other (please specify)
Your current position	Director of Purchasing/ Manager of Logistics or Stores/ Purchasing Manager/ Contract Manager/ Senior Buyer/ Buyer/ Contract Specialist/ Assistant Buyer/ Project Manager/ Engineer/ Other (please specify)
Are you involved in post-award activities (monitoring performance, delay resolution, change orders, dispute resolution, final acceptance)?	No/ If requested/ Some purchases/ All purchases

Which post-award activities are you involved in? (Check all that apply)	Monitoring performance/ Delay resolution/ Change orders/ Dispute resolution/ Final acceptance
Please select the activities for which your organization collects data on contract performance. (Check all that apply)	Monitoring performance/ Delay resolution/ Change orders/ Dispute resolution/ Final acceptance/
In total, how many years have you worked in procurement?	0-2 years/ 3-5 years/ 6-10 years/ 11-20 years/ More than 20 years
In total, how many years have you worked in your current position?	0-2 years/ 3-5 years/ 6-10 years/ 11-20 years/ More than 20 years
What is your highest level of education?	High school diploma/ Technical or vocational school certificate/ Some college/ 2-year college degree/ 4-year college degree/ Masters degree/ Doctorate degree
What best describes your field of education?	Liberal Arts/ Business/ Economics/ Political Science/ Engineering/ Biology or Chemistry/ Public Administration
Which professional certifications do you currently hold? (Check all that apply.)	Certified Professional Public Buyer (CPPB)/ Certified Professional Purchasing Officer (CPPO)/ Certified Purchasing Manager (C.P.M.) or Certified Professional in Supply Management (CPSM)
What year did you receive your most recent certification?	Does not apply/ 2007 – present/ 2000 – 2006/ Prior to 2000
What is the annual purchasing volume (approx.) for your entire agency? (Round to the nearest million $)	Less than $5 million/ $5 – $20 million/ $21 – $50 million/ $51 – $100 million/ $101 – $500 million/ More than $500 million
What is the annual purchasing volume (approx.) of purchases made by you?	Less than $5 million/ $5 – $10 million/ $11 – $20 million/ $21 – $50 million/ More than $50 million
What is your level of purchasing authority?	Less than $25,000/ $25,000 – $100,000/ More than $100,000
How many fulltime employees are in your agency?	Less than 100 employees/ 100 – 400 employees/ 401 – 1000 employees/ 1,001 – 2,000 employees/ More than 2,000
How many fulltime staff are in the purchasing unit?	1 or less/ 2 – 5 employees/ 6 – 10 employees/ 11 – 20 employees/ More than 20 employees

The first idea of constructing regression was rejected because the data was presented in form of intervals and categories, not continuous data. Moreover, due to numerous cases of missing data we decided to use contingency tables to identify whether personal characteristics influence the occurrence of contract administration problems.

The use of correspondence analysis for the examination of dependence between variables in contingency tables is described by Moussa and Ouda's [18]. Authors consider correspondence analysis to be an efficient method of describing variables relationship nature. The main result of the study is the program CORRESPOND which the authors wrote for the correspondence analysis of contingency tables of maximum thirty-five 35 rows and thirty-five columns.

Tools that can be used in contingency tables' analysis in case of categorical variables are described by Beh and D'Ambra [19]. An appropriate way of analysis should be chosen depending on the assumption of a type of relationship between two categorical variables. The authors focus on examination of eight statistical tools that could be used for numerical or graphical description of dependence between two asymmetric categorical variables. Overall, after analyzing two real-life contingency tables Beh and D'Ambra consider such techniques as the Goodman-Kruskal index, graphical displays, confidence circles, dimensionality of the solution to be appropriate for examination of association between two asymmetric categorical variables.

The further research for three variable contingency table is presented in the paper of Simonetti, Beh and D'Ambra, who examine the relationship between various factors and the level of patient satisfaction in a Neapolitan hospital [20]. The authors insist that for the analysis of categorical type of data the use of multivariate contingency tables and non-symmetric correspondence analysis is most preferred.

The goal of the present study is to identify the presence or absence of the dependence between personal characteristics of procurement personnel and contract administration problems in different types of procurement contracts.

Correspondingly personal/organizational characteristics serve as independent variables and types of problems (Wrong product, Delay, Change order, Definition of acceptance, Personality conflict, Poor performance, Sub-contractors, Cost, Other sources, Risk of failure) as dependent variables with type of contract (Commodities, Small Purchases; Capital Outlay; Professional Services; Contracted Services; Software; Construction; Leases) fixed.

The null hypothesis of the independence of specific personal characteristic and the frequency of particular contract administration problem was tested using contingency tables that are built for each characteristic (by each type of contract and type of contract problem). In every table we tested the null hypothesis of independence of the personal characteristics of the respondent and the frequency of the problem in the particular type of procurement contracts.

Limitations

One of the limitations of our research lies in the nature of some of the questions which require answers in form of categories that cannot be ranked (e.g. Field of education or Country the respondent works in etc.). Those types of questions were not included in our analysis. We selected the following eleven characteristics for further analysis:

1. organization type;
2. current position
3. how many years has the respondent worked in procurement;
4. how many years has the respondent worked in his/her current position
5. highest level of education;

6. certificates of the respondent;

7. the annual purchasing volume (approx.) for the respondent's entire agency;

8. the annual purchasing volume (approx.) of purchases made by the respondent;

9. the number of full-time employees in the purchasing unit

10. the number of full-time employees in the agency

11. the level of purchasing authority of the respondent

The following characteristics were not included for these reasons:

1. Country in which you work (only three possible answers, due to difference public procurement systems, principles and legislation of procurement staff education, training and certification in USA and Canada the results would not be relevant for the research goal)

2. Are you involved in post-award activities (monitoring performance, delay resolution, change orders, dispute resolution, final acceptance)? (the survey ended for those who answered negatively)

3. Which post-award activities are you involved in? (the answers are descriptive, no scaling or gradation possible)

4. Please select the activities for which your organization collects data on contract performance. (the same, descriptive answers, no scaling or gradation possible)

5. What best describes your field of education? (descriptive answers, no scaling or gradation possible)

6. What year did you receive your most recent certification (was not included because results on certificate availability showed low relationship with the dependent variables)

Findings

The first personal characteristic variable to be evaluated was **organization type**, (Table 5). Respondents were asked to choose one of the seven types of agency they were working in: federal, state, county, city, school, private sector, other. The descriptive statistics showed that the greatest number of respondents worked in the state and city types of organization with 27% and 25% respectively followed by county agencies with 19 %.

Table 5. Contract administration problems correlating with Organization type

Contract Type	Problems
Commodities	- wrong product - change order - personality conflict - poor performance - sub- contractors - other sources
Capital Outlay	- delay - change order - other sources
Professional Services	- delay - poor performance - cost
Contracted Services	- change order - other sources
Software	---
Leases	---
Construction	- other sources

Summary of Table 5 results

Considering the verification of the main hypothesis about the independence of "organization type" and each of the 10 problems for seven types of contracts, it was found out that *generally the dependence occurs rarely and predominantly in state and city organizations*.

The most significant amount of correlation was found with the contract type Commodities with six problems out of ten. For the contract types Software and Leases, no dependence was discovered between the type of organization and each of the ten problems of contract administration. In the contract type Construction, dependency exists in state and city organizations for the problem of Change orders and Other sources. For the contract types Capital outlay and Professional services correlation was detected in the following contract administration problems: Delay, Change order, Other sources, Poor performance, Cost. For the following contract administration problems: Definition of acceptance and Risk of failure there was no relationship between the type of organization and any of the seven types of contracts. The frequency of occurrence of contract problems encountered by schools and city agencies were similar. In the other types of organizations respondents pointed out the existence of a number of problems but at lower frequency.

Summary Table 6 results for Current Position

The respondents had the following positions to select from: director of purchasing, manager of logistics or stores, purchasing manager, contract manager, senior buyer, buyer, contract specialist, assistant buyer, project manager or other. Almost 25% of all procurement

professionals surveyed noted "other", this was followed by the positions of "purchasing manager", "buyer" and "senior buyer" with 15%, 14% and 13 % respectively.

Table 6. Contract administration problems correlating with Current position, Level of purchasing authority and Respondent's annual purchasing volume

Contract Type	**Current position**	**The level of purchasing authority of the respondent**	**The annual purchasing volume (approx.) of purchases made by the respondent;**
Commodities	- wrong product - definition of acceptance - change order - other sources **- risk of failure**	**- risk of failure**	- personality conflict - poor performance - sub- contractors - cost **- risk of failure**
Capital Outlay	---	- personality conflict - poor performance - sub- contractors - cost	- definition of acceptance - personality conflict - poor performance - cost - risk of failure
Professional Services	- delay	- cost	---
Contracted Services	- change order	- wrong product - change order - poor performance - cost - risk of failure	---
Software	- delay **- personality conflict** - poor performance - risk of failure	- wrong product - change order **- personality conflict** - cost	- definition of acceptance **- personality conflict** - poor performance - cost
Leases	- wrong product - delay - change order	- poor performance	---
Construction	- delay - change order	- wrong product - personality conflict	---

The professional's current position had an effect on the occurrence of two or three problems in 6 contract types. No effect was reported for Capital Outlay. The contract type Commodities had the greatest number of correlations, with five types of problems: Wrong

product received, Definition of acceptance, Order change, Other sources, and Risk of failure. The following contract problems - Sub-contractors and Cost – had no correlation with the characteristic "current position in any of the seven contract types. The occurrence of problems was most frequently noted by the respondents in the post of director procurement (from 20 to 30%) and procurement manager (from 36 to 40 %). Furthermore, purchasing managers and managers answered that their most frequently occurring problems are: Delay and Contract changes. Respondents of junior positions (i.e. assistant buyer and project manager or other) encountered different types of problems less frequently than respondents of other positions.

Summary Table 6 results for Level of Purchasing Authority

The survey respondents had the following levels of purchasing authority (the amount they are allowed to spend without supervision) to select from: less than $25,000, $25,000 - $100,000 and more than $100,000. The greatest number of responses (40%) was for purchasing authority more than $100,000. 33% of respondents have authority for less than $ 25,000.

In cases when the correlation between the variables was revealed it could be described as follows: with the rise of of purchasing authority level from category "less than $ 25,000" to "$25,000-$100,000" the occurrence of problems decrease. However, if the level of respondent's purchasing authority grows from $25,000-$100,000 to more than $100,000 the amount and frequency of contract administration problems increase. This trend is valid for every revealed case of problem dependence on the level of NIGP member's purchasing authority.

The characteristic of Purchasing authority does not have any influence on the occurrence of the following problems: Delay, Definition of acceptance and Other sources for all seven types of procurement contracts. By contrast, at least one problem in every type of contract depends on the level of purchasing authority. For instance, the biggest amount of links was identified for Contracted services contracts (five problems), while the least – for Commodities, Professional services and Leases (Table 6).

Position and titles are often linked to a person's level of procurement authority and correspondingly, to the annual volume of purchases made by the respondent. So we could expect similar correlation results with contract administration problems for these three characteristics. However, the same problem was shared for each of these characteristics in only two 2 contract types: Commodities (Risk of Failure) and Software (Personality Conflict). When compared to "position title" there was a greater number of problems correlated with level of purchasing authority for every contract type except Commodities and Leases. When compared to annual purchasing volume there was a greater number of problems correlated with level of purchasing authority for every contract type except Commodities and Capital Outlay.

Summary Table 6 results for Annual Purchasing Volume

The respondents had the following levels of annual purchasing volume to select from: less than $5 million, $5-$10 million, $11- $20 million, $21- $50 million, more than $50 million.

The biggest share of respondents (29%) reported an annual volume of less than 5 million, followed by 16% reporting an annual volume of $5 to $10 million. Hence, more than a quarter of all people surveyed annually participate in procurement contracts totaling less than 5 million dollars, however it should be noted that 13 % of respondents make purchases for more than $50 million.

The discovered link between the variables could be described as follows: *the greater annual purchasing volume the respondent has, the more often contract administration problems occur, also with the rise of annual purchasing volume the number of contract types that have contract problems also increases.*

In four types of contracts: Professional services, Contracted services, Leases, Construction no dependence of annual volume of purchases and problems of contract administration was revealed for any of the ten problems. In the remaining cases (contracts Commodities, Capital outlay and Software) dependence of the annual volume of respondent's purchases and several contract administration problems was found.

For the contract problems Wrong product, Delay, Change order and Other sources no correlation was found with any of the seven types of contracts. In case of contracts for Capital outlay and the problem Personality conflict with the growth of annual purchasing volume of respondent the percentage of respondents, who indicate that this problem never arises, reduces from 28.5 % (for total purchases less than $ 5 million) to 12.3% (more than $ 50 million). The existence of other problem Cost for the same contracts was mentioned to occur "rare" and "sometimes" by 46 % and 22.4% of respondents whose annual purchase volume was less than $ 5 million, while for those who made purchases for more than $ 50 million the share was 56.9 % and 27.7 %, respectively.

Summary Table 7, Results for Total Years The Respondent Has Worked In Public Procurement

The respondents had the following ranges to select from: 0-2 years, 3-5 years, 6-10 years, 11-20 years, more than 20 years. The vast majority of people, i.e. 35%, responded that they have worked in procurement for more than 20 years, which is followed by 27% of those who are engaged in this area for 11-20 years. Consequently, more than 60 % of NIGP members have rather significant experience in public procurement administration. The proportion of people working in procurement for less than 2 years is only 3 %.

Table 7. Contract administration problems correlating with number of years in procurement and in current position

Contract Type	How many years has the respondent worked in procurement	How many years has the respondent worked in his/her current position
Commodities	- wrong product - personality conflict - poor performance - sub- contractors - risk of failure	---
Capital Outlay	- definition of acceptance - personality conflict - poor performance	---
Professional Services	- risk of failure	---
Contracted Services	- definition of acceptance	---
Software	---	---
Leases	- cost	---
Construction	- wrong product	- personality conflict

The general trend of the correlation was the following: *respondents who worked in public procurement for over six years noted administration problems occurred more often than those with less working experience*. In cases when the relationship between personal characteristic of the number of years experienced in public procurement and the problem was identified the dependence was as follows: *the longer the respondent works in procurement, the more he/she notes administration problems in the government contacts.*

The zero hypotheses about the independence of the total amount of years the respondent has worked in public procurement and each of the ten possible problems of contract administration was not rejected for the Software contracts just as for problems Change order and Other sources in every type of public procurement contract. Therefore, no correlation was identified between the experience in procurement and the specified type of contract (Software) and problems.

Conversely, the variables were dependent in contracts for "Commodities" with five 5 types of problems namely Wrong product, Personality conflict, Poor performance, Sub-contractors and Risk of failure. Similarly, the influence of the total amount of years the respondent has worked in procurement was identified in contracts for Capital outlay, Professional services, Contracted services, Leases and Construction with three (Definition of acceptance, Personality conflict, Poor performance), one (Risk of failure), one (Definition of acceptance), one (Cost) and one (Wrong product) problems respectively (Table 7).

Summary Table 7, Results for Years in Current Position

The respondents had the following ranges to select from**:** 0-2 years, 3-5 years, 6-10 years, 11-20 years and more than 20 years. The biggest share of people surveyed have worked in their current position for 6-10 years and 3-5 years with 23 % and 22 % respectively. Almost 25% of all respondents have worked for less than two 2 years.

The general conclusion to be made from the contingency tables for this characteristic is that in six types of public procurement contracts *each of the ten possible administration problems was independent from the amount of years the respondent has spent in his/her current position*.

Surprisingly, the analysis failed to reveal the dependence between the characteristic of the respondent and contract administration problem for all types of contracts and for each of the ten kinds of problems, except for Construction (Personality Conflict). For construction contracts, the frequency of Personality Conflict problem occurrence rises with the increase of number of years spent by the person in his/her current position up to 6 years. With experience for more than 6 years the problem occurs sometimes. Among respondents who have worked in their current position for more than 20 years the problem becomes much rare than in the previous interval.

Summary Table 8, Results for The Highest Level of Education (Table 8)

The respondents had the following levels of education to select from: high school diploma, technical or vocational school certificate, some college, 2-year college degree, 4-year college degree, master's degree, doctorate degree. The greatest number of respondents (36%) reported having a 4-year college degree, followed by 17% with some college and 16% with a master's degree. 1% of professionals in procurement have a technical or vocational school certificate and 1% have a doctorate degree. Overall, the average level of respondents' education is rather high: more than 50% of people surveyed have at least 4-year college degree.

Table 8. Contract administration problems correlating with Level of education and Certification

	Highest level of education	Public Procurement Certification
Commodities	---	- wrong product - delay - personality conflict
Capital Outlay	---	- delay - poor performance
Professional Services	- definition of acceptance - personality conflict	---
Contracted Services	- wrong product - definition of acceptance - cost	---
Software	- wrong product - delay - definition of acceptance - cost	---
Leases	- cost	---
Construction	- wrong product - change order - personality conflict	---

Summary Table 8, Highest Level of Education

For every contract type except Commodities and Capital Outlay, a relationship between the level of education of the respondent and the occurrence of contract problem was revealed, it could be concluded that the *number of contact administration problems (i.e. their frequency) increases with the level of education of the respondent up to the level of 4-year college degree, and then decreases for the remaining two levels of education*. For Commodities contracts in each of the previously discussed characteristics, unlike the case of education level, there was a dependency between the characteristic and at least one contract problem.

The highest level of education of the respondent did not influence the occurrence of the following contract administration problems: Poor performance, Sub-contractors, Other sources and Risk of failure in any of the contract types.

Summary of Table 8, Results for Certification

The respondents had the following types of professional certifications to choose from: “Professional Certificate public purchaser”, “Professional Certificate in Public Procurement” and “Certificate of Procurement Manager / Professional Certificate in supply chain management”. Considering the fact that respondents could choose one or two, and all three types of certificates, it was decided to create a new variable "number of certificates of the

respondent", which reflects the total number of certificates and takes values from 0 to 3. Therefore, the presence of dependence between the number of certificates and problems of contact administration was verified using the contingency tables.

According to the survey, 52% of respondents do not have any type of certificate, while 37% of NIGP members have one certificate, 9% have two certificates, and only 1% of respondents have all three kinds of certificates. The most common certificate for the respondents is a "Professional Certificate public purchaser".

Dependence of certificate achievement and contract administration problems was found in only 2 contract types: Commodities and Capital outlay for problems Wrong product, Delay, Personality conflict and Poor performance. The influence is the following: with the increase of the number of certificates (from 0 to 2), the frequency of problems occurrence grows. Among respondents who have all three certificates listed in the survey, contract administration problem occurred rarely. To sum up, the more certificates (0 to 2) the respondent has, the more administration problems occur in public procurement contracts for "Commodities" and "Capital outlay".

The results of testing the hypothesis of independence of the respondent's number of certificates and each of the 10 problems for 7 types of government contracts are as follows: the hypothesis was not rejected (i.e. these variables were independent) for each of the 10 problems in the following five types of contracts: Professional services, Contracted services, Software, Leases, Construction. In addition, the number of certificates does not influence the existence of such problems as Definition of acceptance, Change order, Sub-contractors, Cost, Other sources and Risk of failure in any of the seven types of contracts.

Summary Table 9, Results for The Annual Purchasing Volume For The Entire Agency

The respondents had the following annual purchasing volumes to select from: less than $5 million, $5 - $20 million, $21 - $50 million, $51-$100 million, $101- $500 million, more than $500 million. The greatest number of respondents (23%) work in organizations, where the amount of annual purchases is 101-500 million dollars. 16% of respondents work in organizations where the annual purchases exceed $500 million. Less than 2% are employed in organizations with annual purchasing volume $51 - $100 million. Therefore, the total number of respondents who work in organizations with an annual volume of purchases more than $51 million is 53%.

Table 9. Contract administration problems correlating with Annual agencies purchasing volume and number of employees in the agency and in the purchasing unit

	The annual purchasing volume (approx.) for the respondent's entire agency	**The number of full-time employees in the agency**	**The number of full-time employees in the purchasing unit**
Commodities	- wrong product - change order - personality conflict - poor performance	- delay - definition of acceptance - poor performance - cost	- wrong product - delay - change order - poor performance

	- sub- contractors - cost - other sources - risk of failure	- other sources	- other sources
Capital Outlay	- wrong product - delay - change order - definition of acceptance - personality conflict - poor performance - sub- contractors - cost - other sources - risk of failure	- personality conflict - poor performance - cost - other sources	- wrong product - delay - poor performance - risk of failure
Professional Services	- wrong product - delay - definition of acceptance - change order - personality conflict - poor performance - sub- contractors - cost - other sources - risk of failure	- delay - change order - personality conflict - poor performance	- change order - personality conflict - poor performance - risk of failure
Contracted Services	- personality conflict - poor performance - sub- contractors	- delay	- delay - personality conflict - sub- contractors - other sources
Software	- wrong product - personality conflict - poor performance - sub- contractors	- wrong product - delay - definition of acceptance - other sources	- definition of acceptance - change order - personality conflict - poor performance - sub- contractors
Leases	- wrong product - delay - definition of acceptance - personality conflict - sub- contractors - risk of failure	- wrong product - delay - change order - poor performance	---
Construction	- delay - definition of acceptance - change order - personality conflict	- definition of acceptance	- change order - personality conflict - poor performance - other sources

	- poor performance - sub- contractors - cost - risk of failure		

Summary of Table 9, Results for Agency Annual Purchasing Volume

It may be concluded that the relationship between the approximate annual volume of procurement in respondent's agencies and contract administration problems occurs for all seven types of contracts and takes the following form: *the higher the annual amount of agency's procurement is, the greater the likelihood of problems in every type of contract.*

As a result of testing the hypothesis of independence between the annual purchasing volume and each of the ten problems for seven types of contracts, it was revealed that the dependence presents in every type of contract for some problems and for Capital outlay and Professional services – each of the ten possible problems. In Capital outlay contracts, such problems as Change order (12 %) and Other sources (9%) occur often, and the remaining eight problems are mentioned as occurring sometimes by the majority of respondents.

Summary of Table 9, Number of Full-Time Employees in the Agency

The greatest number of respondents (33%) works in organizations that have 2000 employees. 21% work in organizations with personnel between 401-1000 employees. In total, just about 50% of respondents work in large organizations, with at least 1000 employees.

The revealed influence could be defined as follows: *the more full-time employees in the agency, the more likely an occurrence of a contract problem.*

The characteristic of the size of the agency influences the occurrence of problems in every type of contract. For five types of contracts multiple types of problems were influenced. The greatest number of links were found for Commodity purchasing as well as for the problem of delay.

Summary of Table 9, Results for the Number of Full Time Employees Working in the Purchasing Unit

The respondents had the following levels to select from: 1 or less, 2-5 employees, 6-10 employees, 11-20 employees, more than 20 employees. The majority of respondents (28 %) reported 2-5 full time employees in their procurement department. 20% reported 6-10 employees in the department. Thus, nearly 50% reported working in a purchasing department with less than 10 employees.

Overall, as the number of full-time employees in the procurement unit of the agency rise some administrative problems for a number of types of government procurement contracts increase, too.

In six types of contracts the number of full-time employees in procurement unit and the problems of contract administration are dependent for 4 or 5 problems in each type of

contract. For instance, in contracts Software such problems as Definition of acceptance and Personality conflict tend to appear more often with the growth of the number of staff in the procurement unit: the proportion of respondents who indicate the absence of these problems reduces, respectively, from 42% to 17% and from 42% to 30% with an increase in the number of full-time employees in purchasing department. At the same time the share of respondents who indicate the existence of these problems (such as "sometimes") increased from 11.5% to 30% and from 4% to 21%, respectively. No dependency was found to exist for Lease contracts and any type of problem as well as no dependency was shown to exist for Cost problems and any contract type.

Summary and Conclusions

1) As a result of the analysis of the relationship between some of the respondents' personal and organizational characteristics and contract administration problems, it was found that certain characteristics may influence the occurrence of particular types of problems in a number of procurement contracts.

2) Surprisingly, certification and experience were not very significant for the fact of problem occurrence, the most significant were characteristics that describe the size of an organization or a purchasing unit and the purchasing volume. If we rank personal characteristics by the number of cases of links with contract administration problems occurrence, we get the following table (Table 10):

Table 10. Rating of characteristics significance for problem occurrence cases

Rank	Personal characteristic	Number of links to contract administration problems occurrence
1	**Annual purchasing volume of an agency**	49
2	**Number of employees in the purchasing unit**	26
3	**Number of employees in the agency**	23
4	**Purchasing authority**	18
5	**Current position**	16
6	**Organization type**	15
7	**Annual purchasing volume of the respondent**	14
8	**Level of education**	13
9	**Years worked in procurement**	12
10	**Certificates**	5
11	**Years worked in current position**	1

Accordingly, the most significant impact on the frequency of occurring contract administration problems have those characteristics describing the size of a purchasing agency or unit, i.e. the annual purchasing volume of an agency and the number of employees of an agency or purchasing unit. Indeed, these characteristics reveal relationship with all types of

problems in almost all types of procurement contracts. Moreover, the relationship between annual purchasing volume of an agency in the contracts for Capital Outlay and Professional Services exists for every problem.

The common trend of this influence is the following: ***the share of respondents that admitted the presence of particular administration problems increased with the growth of the annual purchasing volume of the agency.*** As well as ***the more employees in procurement unit, the more often contract administration problem arises.*** Consequently, it could be concluded that the higher the annual amount of agency's procurement, the greater the probability of occurrence of contract administration problems. Another explanation might be that in large agencies, more Construction and Software contracts are probably undertaken and managed by the procurement staff. In small agencies construction is less frequent and typically the construction management is outsourced. So small-sized agencies can outsource large and complex purchases that might entail some contract administration problems, therefore the number of administration problems may reduce for them.

3) ***The duration of work at the current position does not have any impact*** on the occurrence of the contract administration problems. ***Almost the same is true for the characteristic of certificates availability***. The latter revealed links with problems occurrence only for Commodities and Capital Outlay. With the increase of the number of certificates (from 0 to 2), the frequency of some problems' occurrence (namely Wrong product, Poor performance, Personality conflict and Delay) grows too. Among respondents who have all three certificates listed in the survey, contract administration problem aroused rarely.

4) Such characteristics as "level of education", "experience of the respondent in procurement" have an impact only on a small number of problems in certain types of contracts. Generally the number of emerging contact administration problems (i.e. their frequency) increases with the level of education of the respondent up to the level of four-year college degree, and then - decreases for the remaining two levels of education. Concerning the procurement practice experience, the dependence was as follows: the longer the respondent works in the procurement, the more often he/she notes the fact of occurrence of contract administration problem.

5) The remaining characteristics that reflect the position or authority of a respondent ("purchasing authority", "current position", "the annual purchasing volume of purchases made by the respondent") influence a larger number of problems in different types of procurement contracts. Generally respondents of the junior positions (i.e. assistant buyer and project manager or other) encounter different problems of contract administration less than the respondents of other positions; as well as the greater the volume of purchases of the respondent, the more often contract administration problems occur. On the other hand, the trend of the relation between problems frequency and purchasing authority is not that straight. With the rise of purchasing authority level from the category less than $ 25,000 to $25,000-$100,000 the incidence of problems decrease, however, if the level of respondent's purchasing authority grows from $25,000-$100,000 to more than $100,000 the amount and frequency of contract administration problems increase, too.

6) As far as the organization type is concerned, we cannot depict any relationship due to the categorical nature of the variable, but it can be noted that most of the problems arise in State, County and City types of organizations. The hypothesis about the independence of the organization type and each of the ten problems was not rejected in three types of contracts (Leases, Software, Construction). For the remaining types of contracts the characteristic has an influence on some problems ranging from two to six problems.

Discussion

The challenge from a policy perspective is that the study shows the relationship of personal characteristic factors that are relatively easy to measure, such as education, certification and years of experience; and the number and seriousness of contract administration problems encountered is not very strong. How does the organization and the professional tackle the challenge of describing which attributes the professional needs to be most successful in managing projects? How should job descriptions, minimum educational and experience requirements, compensation and training programs be structured?

This challenge is not unique to public procurement. Numerous studies have been conducted on key factors for improving student learning. These studies have shown that on average, the relationship between a teachers highest degree obtained or level of experience and certification to student outcomes is very weak. Goldhaber states “the evidence shows that good teachers make a clear difference in student achievement. The problem is that we don’t really know what makes a good teacher”. He further states the measurable aspects of a teacher’s quality: experience, education level, certification status, etc, make up 3% of the differences in student achievement that are attributable to a teachers influence. The other 97% are intangible aspects such as enthusiasm and skill in transferring knowledge [21].

Previous research on the role of public procurement has recognized that public procurement performs multiple functions for their agency. One of the functions is that of a gatekeeper; ensuring public dollars are spent via a fair and transparent process. The attributes typically ascribed to these responsibilities are clerical in nature and include personal characteristics such as a certification and detailed knowledge in the procurement process. Another procurement function is to provide strategic leadership on developing innovative solutions for complex procurements. Personal characteristics such as: extensive written and verbal communication skills, complex problem solving, which are not easy to measure, are often listed [4]. In the Education field research on the need for a multiple attribute approach that include difficult to measure attributes has been conducted. Goldhaber proposes going beyond the easy to measure attributes and adopting a multi attribute approach that includes: teacher degree and experience levels, subject matter knowledge and improving their pedagogical knowledge, teaching teachers how to teach [21]. Numerous procurement agencies are using a multiple attribute approach that includes attributes outside of easily measurable ones. Basheka surveyed public procurement professionals in Uganda listed the 20 skills most required by local government. The skills listed are universally applicable to any procurement department, but are a challenge to measure and quantify: the Ability to develop supplier relationships, Skills of verbal communication, Possession of an inquisitive mind, Ability to

solve noble problems, Interpersonal skills [22]. NIGP has recognized the need for multiple attribute approach to public procurement certification by offering 2 types of certifications: Certified Public Procurement Buyer (CPPB) which places emphasis on demonstrating a comprehension of procurement practices; the other certification, Certified Public Procurement Official (CPPO), places an emphasis on demonstrating comprehension of leadership, and communication skills. Both certifications require a formal degree, experience and testing. The job descriptions proposed by Prier, McCue, Steinfeld, also support the concept of a multiple attribute job description that includes attributes that aren't easy to measure [4]. In the United Kingdom discussion on the use of continuous improvement through self-assessment when assessing a procurement departments success in delivering high-quality public services and best value for money involves the need for multiple attributes when identifying key performance indicators for the areas of process, skills and development and deployment and leadership [23].

Future Research

There are many ways to measure successful outcomes in public procurement, project success due to lack of problems is just one. Ensuring a fair process, improving transaction efficiency, customer service, cost savings, and achieving best value are also important indicators of success. Future research could examine if there is need for a procurement professional to possess multiple attributes, (problem solving, communication, critical analysis) beyond the easy to measure one, to be successful in each of these outcomes. For the professional and the agency achievement of these attributes comes at a cost. How does the professional or the agency determine which attribute(s) contribute the most to success? If an attribute is not easy to measure, how will its value be gauged? As public procurement continues down the path of demonstrating it is a profession, there will be challenges and opportunities for the agency on how to determine the value of the professional in the process, and for the professional as to how best improve their value to meet the demands of the profession.

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References

A. Amirkhanyan. (2008). What is the Effect of Performance Measurement on Perceived Accountability Effectiveness in State and Local Government Contracts, Retrieved May 15, 2012 from

http://www.maxwell.syr.edu/uploadedFiles/conferences/pmrc/Files/Amirkhanyan_What%20is%20the%20Effect%20of%20Performance%20Measurement%20on%20Perceived%20Accountability%20Effectiveness%20in%20State%20and%20Local%20Government%20Contracts.pdf

A. Garcia, H. Keyner, T. Robillard, & M. VanMullekom. (1997). The Defense Acquisition Workforce Improvement Act: Five Years. Acquisition Review Quarterly—Summer 1997 Retrieved August 22, 2013 from http://www.dau.mil/AckerLibrary/AckerLibraryDocs/garci.pdf

B. Basheka. (2006). Public Procurement Skills Requirement Framework for Local Government Systems in Uganda: Perceptions from Professionals Retrieved August 2, 2013 from http://www.ippa.org/IPPC4/Proceedings/14ProcurementProfession/Paper14-1.pdf

B. Davison, & E. Wright. (2004). Contract Administration (CA). Washington D.C.: National Institute of Government Purchasing.

B. Davison, & R.J. Sebastian. (2009). A detailed analysis of the relationship between contract administration problems and contract type. *Journal of Public Procurement*, *9*(2). Boca Roton FL, PrAcademics Press.

B. Davison, & R.J. Sebastian. (2009). *The Root Causes of Contract Administration Problems, 1*(2), E2. *Journal of Management Research.*

B. Davison, R.J. Sebastian, & Public Works and Government Services Canada (PWGSC). (2011). Transferability of Research on Persistent Risks in Supplier Engagement and Contract Type. *Journal of Management Research*, *3*(2). E7 ISSN 1941-899X

B. Davison, R.J. Sebastian, & T. Borger. (2012). *A Further Examination of the Relationship between Contract Administration Problems and Contract Type.* The 5th International Public Procurement Conference Proceedings 21-23 September 2012. Retrieved July 23, 2013 from http://www.ippa.org/IPPC5/Proceedings/Part4/PAPER4-10.pdf

B. Simonetti, E.J. Beh, & L. D'Ambra. (2010). The analysis of dependence for three ways contingency tables with ordinal variables: A case study of patient satisfaction data. *Journal of Applied Statistics, 37*(1), 91–103. http://dx.doi.org/10.1080/02664760802653552

Baccarini, D. J., & Collins, A. (2004). The Concept of Project Success - What 150 Australian Project Managers think. In Australian Institute of Project Management, Oct 1, 2004, Western Australia: Australian Institute of Project Managemnt.)

C. Hinson, & C.P. McCue. (2004): Procurement Planning, Sourcing and Requirements Analysis, Herndon VA. National Institute of Government Purchasing.

C.C. Hood, & H. Rothstein. (2000). Business Risk Management in Government: Pitfalls and Possibilities, Retrieved April 10, 2012 from, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=471221

C.D. Prince, J. Koppich, T. Westat Azar Morse, M. Bhatt, & P. Witham. (2008). What do we know about the relationship between student achievement and teachers' educational attainment and experience, which is the traditional way that teacher salaries are determined? Center for Education Compensation Reform, Retrieved August 14, 2013, from http://cecr.ed.gov/guides/researchSyntheses/Research%20Synthesis_Q%20A2.pdf

C.P. McCue, & G.A. Gianakis. (2001). Public Purchasing: Who's Minding the Store? *Journal of Public Procurement, 1*(1),71-95, Boco Roton, PrAcademics Press.

C.P. McCue, & J.T. Pitzer. (2000). Centralized vs. Decentralized Purchasing: Current Trends in Governmental Procurement Practices. *Journal of Public Budgeting, Accounting and Financial Management, 12*(3), 400-420

C.P. McCue, & J.T. Pitzer. (2005). *Fundamentals of Leadership and Management in Public Procurement.* Washington D.C, National Institute of Government Purchasing .

D. Ancona, T.A. Kochan, M. Scully, J. Van Maanen, & D.E. Westney. (2005). *Managing for the Future: Organizational Behavior & Processes*. (3rd ed.).South-Western College Publishing; Boston, MA

D. Drabkin, & K.V. Thai. (2003). U.S. Federal Government Procurement: Structure, Process and Current Issues (IPSERA). International Purchasing and Supply Education and Research Association's Comparative Public Procurement Cases Workshop, Budapest Hungary.

D. Goldhaber, & D. Brewer. (1997, July). Evaluating the effect of teacher degree level on educational performance. In W. Fowler (Ed.), *Developments in school finance*, 1996, pp. 199–210. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved August 10, 2013 from http://nces.ed.gov/pubs97/97535l.pdf

D. Goldhaber. (2002). The Mystery of Good Teaching. Spring 2002 Education Next, Harvard Kennedy School Cambridge, MA 021 Retrieved August 22, 2013 http://educationnext.org/the-mystery-of-good-teaching/

D.J. Baccarini, & A. Collins. (2003). Critical success factors for projects. Retrieved on April 20, 2012 from http://espace.library.curtin.edu.au:80/R?func=dbin-jump-full&local_base=gen01-era02&object_id=20333

D.P. Gragan. (2005). Harnessing Procurement Transformation. American City and County February 24, 2005 Retrieved August 11, 2013 http://americancityandcounty.com/resource-center/harnessing-procurement-transformation

E. Prier, C.P. McCue, & J. Steinfeld. (2013). Identifying Position Domains in Public Sector Procurement: Towards the Establishment of Standardized Job Descriptions for the Profession. National Council for Public Procurement and Contracting.

E.J. Beh, & L. D'Ambra. (2009): Some interpretative tools for non-symmetrical correspondence analysis. *Journal of Classification, 26,* 55-76.

Gordon, S.B., Zemansky, S.D., & Sekwat, A., (2000). The Public Purchasing Profession Revisited. *Journal of Public Budgeting, Accounting & Financial Management, 12*(2), 248-271

Government Accountability Office (GAO). (1992). Implementation of the Defense Acquisition Workforce Improvement Act United States. (GAO/NSIAD 92-97) Washington, D.C. Author Retrieved August 23, 2013 http://www.gao.gov/assets/220/217653.pdf

Government Accountability Office (GAO). (2005, March). Contract Management: Opportunities to Improve Surveillance on Department of Defense Service Contracts (GAO-05-274). Washington, DC: Author.

Government Accountability Office (GAO). (2007, January). Defense Acquisitions: Improved Management and Oversight Needed to Better Control DoD's Acquisition of Services (GAO-07-832T). Washington, DC: Author.

Government Accountability Office (GAO). (2009, January). High-Risk Series: An Update (GAO-09-271). Washington, DC: Author.

Government Accountability Office (GAO). (2009, March). Department of Defense: Additional Actions and Data Are Needed to Effectively Manage and Oversee DOD's Acquisition Workforce (GAO-09-342). Washington, DC: Author

J. I. Schwartz. (2006). *Regulation and Deregulation in Public Procurement Law Reform in the United States*. Boca Raton, FL. PrAcademics Press.

J. R. Bartle, & R. LaCourse Korosec. (2001). Procurement and Contracting in State Government (A Report of the Government Performance Project). Syracuse University, The Maxwell School Campbell Public Affairs Institute; Syracuse, NY

J. Waterman, & L. Knight. (2010). Achieving Continuous Improvement Through Self Assessment. The 4th International Public Procurement Conference Proceedings August 26-28, 2010. Retrieved July 12, 2013, http://www.ippa.org/IPPC4/Proceedings/12ProcurementPerformance/Paper12-2.pdf

J.H. Dobbins, & R.G. Donnelly. (1998). Summary Research on Critical Success Factors in Federal Government Program Management. Retrieved April 20, 2012, from: https://docs.google.com/viewer?a=v&q=cache:JzUxFFcZytQJ:www.dau.mil/pubscats/PubsCats/AR%2520Journal/arq98/dobbins.pdf+&hl=en&gl=us&pid=bl&srcid=ADGEESiHUaHBcZ5ET5V4iLhvibH_-MLJPnr-oruB8Ne0amesy2LfDYq5TL0xxlso8NUSJxNYqRRbBZL6KdkD3MOtFDzhG_sjk6q8D37q8emlTLQ_yJlSb7iY0518OMDh75iwF-EIif_n&sig=AHIEtbTTFlnhcbGMbWS__U6F3QQDcCI82w

K. Harris (1998). Worst Practices? Discovering Knowledge in Failures (Publication ID Number KA-04-9834). Gartner Group, Stamford CT

K. P. Puma, & B. A. Scherr. (2009). Assessing Contract Management Maturity: U.S. Army Joint Munitions and Lethality Contracting Center, Army Contracting Command, Picatinny Arsenal. Naval Postgraduate School, Monterey California, September 2009

K.F. Snyder. (2006). Procurement Leadership: From Means to End. *Journal of Public Procurement, 6* (3), 274-294. Boca Roton FL. PrAcademics Press.

K.V. Thai. (2004). Introduction to Public Procurement (IPP). Washington D.C.: National Institute of Government Purchasing (NIGP).

L. Darling-Hammond, D.J. Holtzman, S.J. Gatlin, & J. Vasquez Heiling. (2011). Does Teacher Preparation Matter?. *Education Commission of the States,* Boulder CO.

M. Alexandrova, & L. Ivanova. (2013). Critical Success Factors of Project Management: Empirical Evidence From Projects Supported By EU Programs. 9th International ASECU Conference on "Systemic Economic Crisis: Current Issues and Perspectives

M. Amberg, F. Fischl, & M. Wiener. (2005). Background of Critical Success Factors Research Working Paper 2-2205, Retrieved May 20, 2012 from https://docs.google.com/viewer?a=v&q=cache:BHg7oxo0QNUJ:pdf.aminer.org/000/245/894/critical_success_factors_csfs_and_the_growth_of_it_in.pdf+&hl=en&gl=us&pid=bl&srcid=ADGEESgXpJ-SUYc8OYx2-nnoiQ57P2Fy2I1HRDmeJfmzw7ZCP2OdJLqeVNYQwpO9gYdXElSfPX2XJS5_R3VvLcj9bM6Ba-OZfaEVpAP6OW7Srx4bDbAg6gGp-91GI4UWlIBnPCCi7Wg7&sig=AHIEtbRr387eOrGTtz_f6pbVFeCibdws9g

M. Gilbert. (2012). Professionalisation and Capacity Building Subject: the Need for Procurement Leaders, Leadership and Reform. The 5th International Public Procurement Conference Proceedings 21-23 September 2012. Retrieved July 26, 2013 http://www.ippa.org/IPPC5/Proceedings/Part12/PAPER12-1.pdf

M. Sykes, & T. Hartley. (2006). Procurement Transformation in Canada and the United Kingdom. The 2nd International Public Procurement Conference Proceedings 21-23 September. Retrieved August 28, 2013 from http://www.ippa.ws/IPPC2/PROCEEDINGS/Article_22_SkylesHartley.pdf

M.A.A. Moussa, & B.A. Ouda. (1988): Correspondence analysis of contingency tables. *Computer Methods and Programs in Biomedicine, 27*, 111-119. http://dx.doi.org/10.1016/0169-2607(88)90024-7

N.J. Hall. (2006). Trends in Public Procurement Certification in North America. Retrieved August 1, 2013 from http://www.ippa.org/IPPC4/Proceedings/14ProcurementProfession/Paper14-5.pdf

National Institute of Government Purchasing (NIGP). (2000). Contract Management (CM), 1st Edition. Washington D.C.: National Institute of Government Purchasing (NIGP).

R. G. Rendon. (2006). Measuring Contract Management Process Maturity: A Tool for Enhancing the Value Chain 91st Annual International Supply Management Conference, May 2006

R.A. Malatest & Associaties Ltd & Ford, Gerald Advocacy. (2012). *Vendor performance management study / Canada Association of Management Consultants*.

R.G. Rendon. (2010). Professionalization of the U.S. Defense Acquisition Workforce: Progress, Problems and Future Directions. Retrieved March 27, 2013 from http://www.ippa.org/IPPC4/Proceedings/19Others/Paper19-2.pdf

Rendon, Rene G. (2010). Critical Success Factors in Government Contract Management. Retrieved March 20, 2012 from http://www.ippa.org/IPPC4/Proceedings/19Others/Paper19-2.pdf

S. Don. (2013). A Methodology for Predicting the Significant Potential Contract Risks at the Tender Evaluation Stage for Construction Projects at State Energy Companies in Trinidad and Tobago Retrieved July 28, 2013, http://www.ippa.org/IPPC5/Proceedings/Part4/PAPER4-4.pdf

S. N. Sherman. (1996). *Government Procurement Management*. Germantown, MD: Wordcrafters Publications.

T. Abi-Karam. (2001). Risk Management in Design Build. Paper presented at the International Conference on Construction in the 21st Century, April 25-26, 2002, in Miami, Florida.

T. Kalvet, & V. Lember. (2005). Risks Management in Public Procurement for Innovation: The Case of the Nordic-Baltic Sea Cities, The 4th International Public Procurement Conference Proceedings August 26-28, 2010. Retrieved April 25, 2012, from http://www.ippa.org/IPPC4/Proceedings/17SupplyChainManagement/Paper17-4.pdf

W. Phillips. (2012). Enforcement of The Army DAIWA Certification Compliance Policy. Memorandum. Retrieved August 28, 2013. From http://asc.army.mil/docs/policy/DACM_Memo_8-Enforcement_of_DAWIA_Certification_Compliance_Policy_with%20Policy.pdf