THE RELATIONSHIP BETWEEN CONTRACT ADMINISTRATION PROBLEMS AND CONTRACT TYPES

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ABSTRACT. Guided by a conceptual model developed by Davison and Wright, the research was conducted to determine which types of contract administration problems (e.g., delays) were perceived as most likely for seven types of contracts (e.g., small supplies and purchases). The survey was sent electronically to all members of the National Institute of Government Purchasing (NIGP). Postcards with the survey URL were also distributed to a random sample of members of the Institute for Supply Management (ISM). Data were obtained from 577 respondents. The results for the perceived relationship between the occurrences of contract administration problems for the various contract types provided partial support for the conceptual model. The results also showed that construction contracts were perceived as having the most problems overall and other sources was perceived as the most common contract administration problem. The implications and limitations of the research are discussed.

INTRODUCTION

The contractual goal of the procurement of any good or service is successful project completion. Successful project completion is defined, by NIGP, as successful procurement of the right item, in the right quantity, for the right price, at the right time, with the right quality, known as the 5 "R's" (Thai, IPP, 2004).

To complete a project successfully, contractual goals should be established to accomplish each of the "5 R's" The establishment of

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contract goals begins with identifying the typical contract risks and potential contract administration problems associated with the purchase that could affect any of the "5 R's" (Davison & Wright, 2004).

By understanding the relationship between the contract type and potential contract problems, procurement professionals can anticipate the types of contract administration problems that are likely to occur for a specific type of purchase. In turn this will allow them to prepare effective specifications, contracts, and contract administration plans to avoid the potential problems or minimize the potential negative consequences. (Davison & Wright, 2004 CA)

IDENTIFYING POTENTIAL CONTRACT ADMINISTRATION PROBLEMS

While there are numerous items and services that can be purchased, each purchase of goods and services faces the same set of contractual risks that affect the successful accomplishment of any of the 5 "R's". Abi-Karam (2002) suggested that every purchase should be evaluated for six types of risks: Proposal risk, surety and liability risks, schedule risk, contractual risk, performance risk and price risk.

Davison and Wright expanded on the definition of these risks to include their relationship to the 5 "R's" (Davison & Wright, 2004)

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 can not 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 observation and communication with peers, Davison (2004 CA), proposes that each of these 6 contractual risks is comprised of a set of contract problems that may occur each time the good or service is procured (Table 1). Each contract problem that occurs can threaten the success of the project by impacting any or all of the 5 "R's" in an adverse manner, such as, delivery of incorrect product, incorrect quantity, an increase in project costs, a delay in delivery, poor quality or the ultimate unsuccessful result, contract termination (Davison & Wright, CA, 2004)

TABLE 1
Typical Contract Administration Problems

Contractual Risk and Contract Administration Problem	Examples
Proposal risk: Unclear scope of work	Ambiguous specifications lead to disputes over required performance, acceptance.
Surety and Liability risk: Increased cost	Inadequate bonds and insurance to cover vendor failure.
Schedule risk: Wrong product	Purchase order or contract clearly identifies correct product, but vendor ships incorrect. No dispute involved
Schedule risk: Delay	Purchase order has clearly stated completion date. Completion date delayed (any length of time) due to agency or vendor (with or without cause).
Contractual risk: Change order	Change in the scope of work (additional work, money, time), after contract award. Can be requested by either party for any reason.

Contractual risk: Dispute resolution and 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.
Performance risk: 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
Performance risk: 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.
Performance risk: 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
Performance risk: Other sources	There are very few vendors that can perform the work.
Performance risk: 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
Price Risk: Cost	Project has a high cost.

IDENTIFYING CONTRACT TYPES

Based on observation and communication with peers, Davison proposed that, after reviewing the set of contractual risk characteristics for the purchase of each good or service, it is possible that each purchase can be put into one of seven contract types (Table 2) (Davison & Wright, CA, 2004), and each contract type shares a similar set of contractual risks and potential contract administration problems (Table 3). (Davison & Wright CA, 2004). This study empirically tested the validity of the conceptual framework offered in Table 3.

TABLE 2
Contract Types

Contract Type	Examples
Commodities, Small Purchases	MRO (Maintenance, Repair and Operating supplies) Term Contracts: ie. 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 shrinkwrap
Construction	Any type and any dollar amount – New construction or remodeling
Leases	Leased Space or equipment – lease without intent to own

TABLE 3
Comparison of Typical Contract Administration Problems and Contract Types

Contract Type	Typical contract administration problems									
	Wrong Product	Delays	Definition of Acceptance	Change Order	Conflict	Other Sources	Poor Performance	Risk of Failure Termination	Subcontractors	Cost
Commodities- Small Purchases	X	X								
Capital Outlay	X	X						X		X
Professional Services (Architects)		X	X	X	X	X				
Contracted Services (Custodial Services)			X	X	X		X	X	X	
Software		X	X	X		X	X	X	X	
Leases		X		X	X	X		X	X	X
Construction			X	X	X	X	X	X	X	X

Source: Davison & Wright (2004).

METHODOLOGY

Subjects and procedure

The subjects were the members of two organizations--the National Institute of Governmental Purchasing, Inc. (NIGP) and the Institute of Supply Management (ISM). A "blast" email with a hot link to the survey was sent to all 10627 NIGP members on May 2, 2006 (Appendix A). ISM has over 40000 members. A random sample of 2000 members was sent a postcard (Appendix B) with the survey URL printed on it. These cards were also left outside of meeting rooms at an ISM regional meeting and approximately 50 cards were picked up. The email to NIGP members that had the link to the survey had a cover letter.

To pilot the survey it was sent to 10 NIGP members, 7 of whom replied. Though some commented on its length and complexity, no major issues were raised

SURVEY INSTRUMENT

The survey initially asked a number of background questions, including, country in which the respondent worked, type of agency worked for, current position, total years in purchasing, years in current position, highest level of education, field of education, professional certifications currently held, year when most recent certification was obtained, approximate annual purchasing volume for the respondent's entire agency, approximate annual purchasing volume made by the respondent, respondent's level of purchasing authority, number of full time employees in respondent's agency, number of full time employees in respondent's purchasing unit, types of purchases respondent has current responsibility for, and the number of purchase orders or contracts issued by the respondent for the major contract categories investigated in the study—Commodities, Capital Outlay, Professional Services, Contracted Services, Software, Leases, Construction, and Other. A copy of the complete survey is in Appendix C.

The survey then provided definitions of the seven major contract purchase types and ten major contract management problems—Wrong Product, Delay, Final Acceptance, Change Order, Personality Conflict, Poor Performance, Sub Contractors, Cost, Other sources, and Risk of Failure. Using these definitions, respondents were then asked to rank

order the frequency with which these problems occur for each type of contract. The exact instructions for this question follow:

"For purchases made within the past year, rank order the problems that apply in terms of how often they occur for each contract type with 1 being most frequent (as applicable) to 10 being least frequent (as applicable) or choose 99 for those that do not apply. The definitions of contract type are listed in Attachment A, and the definitions of contract problems are listed on Attachment B. **Please use each of the ten ranks only once.**"

Lastly, the respondents were asked to indicate the typical consequences they experienced for each type of problem within each type of contract.

FINDINGS

Response rate

The total number of respondents from both samples was 577. Since all respondents accessed the survey through the same link, it is impossible to state definitively how many came from each organization. However, 492 of the respondents indicated they worked for a government or public agency. Only 16 said they worked for a private agency while 4 worked for a utility and 43 worked for an educational institution. Two respondents did not indicate where they worked.

The timing of the responses as well as type of organizations for which they worked suggests that the vast majority of the respondents, approximately 500, were NIGP members. Because 442 of the emails were not delivered due to bad addresses, the response rate for NIGP is 5 % (500/10185). All that can be confidently stated is that the response rate for ISM was less than that for NIGP. These results are not surprising in that ISM members had to type in a long URL to access the survey whereas NIGP members simply had to click on a link. In addition, a small number (34) of the postcards which were sent were returned to the sender for a variety of reasons, such as no forwarding address, insufficient address, or insufficient postage for international addresses, further contributing to the relatively low response rate.

Though the response rates are low, the overall size of the sample is good. The relatively low response rates are not surprising in view of the complexity and length of the survey.

Respondent characteristics

The respondents were experienced in their fields and had substantial purchasing authority. The median number of years they said they had in purchasing was 16 with a median of 5 years in their current positions. The median annual purchasing volume for their entire agency was 50 million while their median purchasing volume for the last year was 7 million. The respondents also tended to work for rather large agencies. The median number of full time employees in their agencies was 600 and the median number of full time employees in their purchasing units was 8. The respondents, on average, were well educated with over 60 % of the sample having a 4 year college degree or beyond. Their educational fields of study were rather varied but the vast majority (56%) had studied business. Liberal arts (11%) and public administration (9%) were the other most common fields of study.

Perceived occurrence of contract administration problems for each contract type

The major results for this study were intended to be the average ranks of the type of problems within type of contract category. Perusal of the initial average ranks suggested that the respondents had not used ranks in evaluating the problems. Examination of the raw data supported this suspicion. Instead of ranking the frequency of the problems for each contract type, it is clear that the respondents used the ten ranks as a rating scale instead. Consequently, the raw data obtained represent rating scale averages and not average ranks. For this initial analysis these rating scale averages were converted to ranks with 1 being the lowest average or most common problem and 10 being the highest average or least common problem.

A summary of the perceived occurrence of each contract administration problem for each contract type is presented in Table 4. For example, the results in the table indicate that delays were perceived to be the most common contract administration problem for supplies and small purchases while subcontractors were seen as the least likely problem for this kind of problem.

Comparison of the conceptual model's predictions with the research results

Table 5 compares the Davison and Wright conceptual model predictions with the actual survey results. The model's predictions are

indicated by an X whereas the numbers in the table represent the survey results or mean ratings of the perceived likelihood of problems ranked from 1-10. The typical contract administration problems predicted by the conceptual model for commodities (small purchases) and capital outlay purchases were different than the survey results. The conceptual model did not identify 3 of the top 4 typical problems for small purchases and 2 of the top 4 typical problems for capital outlay purchases. For each of the remaining types of purchases the conceptual model accurately predicted 3 out of the top 4 typical problems.

Perceived occurrence of contract administration problems by type of contract

To determine which type of contract was perceived as having the greatest overall likelihood of problems, averages of the mean ratings for all ten contract administration problems were computed for each of the seven types of contract. The averages were then ranked from most common (1) to least common (7). The results of these analyses are presented in Table 6 where it is shown that Construction contracts were perceived as having the overall greatest likelihood of problems and leases the smallest.

Perceived occurrence of contract administration problems over all types of contracts

To determine which type of contract administration problem was most common across the seven types of contracts, averages of the mean ratings for the seven types of contracts were computed for the ten types of contract administration problems. The averages were then ranked from most common (1) to least common (10). The results of these analyses are shown in Table 7 where it can be seen that other sources was the most common type of contract administration problem across all contract types and wrong product was the least common type of problem overall.

DISCUSSION

Perceived occurrence of contract administration problems for each contract type

The rankings of the perceived occurrence of contract administration problems can be utilized by public purchasing personnel to focus human

and financial resources on the problems that are likely to occur for a specific type of purchase. This will be especially useful for personnel who have responsibility for a specific type of purchase, i.e. software or construction. This information will also benefit personnel who have a responsibility for a wide variety of purchases and may be unable to prepare for every type of potential contract administration problem.   If resources are scarce, human and financial resources can be allocated to where they have the best use.

Comparison of the conceptual model's predictions with the research results

Overall, the conceptual model, prepared by Davison and Wright accurately predicted which of the 10 typical problems were perceived as most likely to occur for five of the contract types (3 out of 4 correct). The conceptual model was not as accurate in predicting the typical problems for the small purchases (1 out 4 correct) and for capital outlay purchases (2 out of 4 correct). The difference in predication accuracy, for small purchases and capital outlay, may be due to the smaller number of typical problems predicted by the conceptual model. The conceptual model predicts 2 typical problems for small purchases, and 4 typical problems for capital outlay. For the remaining purchase types the number of predicted problems ranged from 5 to 9 for each purchase type.

Perceived occurrence of contract administration problems by type of contract

Table 6 provides data on which type of purchase is likely to have the highest perceived occurrence of contract administration problems. These data can be used by public purchasing personnel to identify the types of purchases that are likely to encounter the highest number of contract administration problems. This knowledge could be helpful in developing contract administration plans, in the allocation of human and financial resources for implementing the plan, and identifying training needs for specific purchases.

Perceived occurrence of contract administration problems over all types of contracts

Table 7 provides data on which contract administration problem has the highest perceived occurrence for all types of purchases. These data can be used by public purchasing personnel to identify the contract administration problems that are likely to occur. This knowledge could

be helpful in developing contract administration plans, in the allocation of human and financial resources for implementing the plan, and identifying training needs for handling specific contract administration problems.

Limitations of the research

The current research has several limitations, one of which was the response rate. The low overall response rate may be due to a number of reasons. First, distributing a postcard with the survey URL is in retrospect clearly not an effective data collection technique. Secondly, even for those respondents who received the electronic version of the survey, completing it turned out to be more time consuming and difficult than anticipated despite the results of the pilot work.

Another limitation of the research is that the raw data collected are in reality ratings and not ranks. At the agency level there may be no means to collect data electronically on the contract administration problems encountered. The absence of these hard data may have contributed to the respondents' inability to rank order the frequency with which the ten types of problems occurred for each type of purchase. They instead tended to use the extreme ranks, 1 and 10, in particular as ratings of the perceived occurrence of the various problems.

SUMMARY AND CONCLUSION

The cost of dealing with contract administration problems can be tremendous both in dollars and time. The Gartner Group estimates that 70% of software contracts fail each year, at a cost of billions of dollars. The results of the survey displayed in Table 4, will provide public purchasing personnel information about which contract administration problems are perceived as most likely to occur for a given type of purchase. With this information the public purchasing personnel can prepare specifications, contracts and contract administration plans to avoid or minimize the adverse impact of contract administration problems. Training needs can also be identified.

TABLE 4
Perceived occurrence of contract administration problems for each contract type

Contract Type	Perceived Occurrence of Contract Administration Problems Ranking Order									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Supplies and Small Purchases	D	C	PP	CO	WP	O	Cft	DoA	RoF/T	Subc
Capital Outlay	D	C	CO	PP	O	Cft	Subc	DoA	F/TR	WP
Professional Services	CO	D	C	Cft	DoA	PP	Subc	O	F/TR	WP
Contracted Services	F/TR	DoA	CO	O	Clt	C	Subc	C	PP	D
Software	C	O	D	DoA	CO	PP	Clt	F/TR	WP	Subc
Leases	C	O	D	PP	DoA	CO	Clt	F/TR	Subc	WP
Construction	CO	D	C	Subc	Cft	DoA	PP	F/TR	WP	O

Notes: C = Cost; Cft = conflict; CO = change order; D = delay; DoA = definition of acceptance; F/TR = Risk of failure or termination; O = other sources; PP = poor performance; Subc = subcontractor; WP = wrong product.

TABLE 5
Comparison of the conceptual model's predictions with the research results

Contract Type	Typical contract administration problems									
	Wrong Product	Delays	Definition of Acceptance	Change Order	Conflict	Other Sources	Poor Performance	Risk of Failure Termination	Sub contractors	Cost
Commodities Small Purchases	X, 5	X, 1		4			3			2
Capital Outlay	X, 10	X, 1		3			4	X,9		X, 2
Professional Services (Architects)		X, 2	X, 5	X, 1	X, 4	X, 8				3
Contracted Services (Custodial Services)			X, 2	X, 3	X, 5	4	X, 9	X, 1	X, 7	
Software		X, 3	X, 4	X, 5		X, 2	X, 6	X, 8	X, 10	1
Leases		X, 3		X, 5	X, 7	X, 2	4	X, 8	X, 9	X, 1
Construction		X, 2	X, 6	X, 1	X, 5	X, 10	X, 7	X, 8	X, 4	X, 3

Notes: X = Davison & Wright model; 1-10 = Survey result rank.

TABLE 6
Perceived occurrence of contract administration problems by type of contract

Contract type	Rank*
Construction	1
Contracted Services	2
Professional Services	3
Software	4
Capital Outlay	5
Supplies, Small Purchases	6
Leases	7

Note: *Highest perceived occurrence of contract administration problems.

TABLE 7
Perceived occurrence of contract administration problems over all types of contracts

Contract administration problems	Rank*
Other Sources	1
Delays	2
Cost	3
Change Order	4
Poor Performance	5
Definition of Acceptance	6
Conflict	7
Subcontractors	8
Risk of Failure	9
Wrong Product	10

Note: *Highest perceived occurrence of contract administration problems.

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APPENDIX A
E-Mail Content

Dear NIGP Member:

We ask for your help in completing the following survey. It examines the relationship between the type of items or services procured and the problems typically encountered during contract administration. The results may help procurement professionals anticipate the types of administration problems that are likely to occur for specific types of purchases. This information, in turn, will help procurement professionals develop plans to avoid the problems or minimize their potential negative consequences.

The survey will take approximately 10-15 minutes to complete. Your responses will be tabulated by university support personnel and will be completely confidential and anonymous.

Please complete the survey at your earliest convenience or by May 8, 2006. Our survey is at the following location:

http://surveys.stcloudstate.edu/contractsurvery/contractsurvey.htm

Thank you in advance for your help.

APPENDIX B
Post Card Content

The postcard sent to ISM members had the following information:

"As part of the Institute for Supply Management(tm)'s mission to lead supply management, ISM encourages the pursuit of academic research. As a member of ISM, you have been selected to participate in this research project.

Responding to the survey is completely voluntary. ISM Policy allows for the release of limited member information to researchers, to be used only for specific approved research projects."

The Relationship between Contract Administration Problems and Contract Type

http://surveys.stcloudstate.edu/contractsurvey/contractsurvey.htm

We ask for your help in completing this survey. It examines the relationship between the type of items or services procured and the problems typically encountered during contract administration. The results may help procurement professionals anticipate the types of administration problems that are likely to occur for specific types of purchases. This information, in turn, will help procurement professionals develop plans to avoid the problems or minimize their potential negative consequences. The survey will take approximately 10-15 minutes to complete. Please complete the survey at your earliest convenience or by **May 12, 2006.** Thank you in advance for your help.