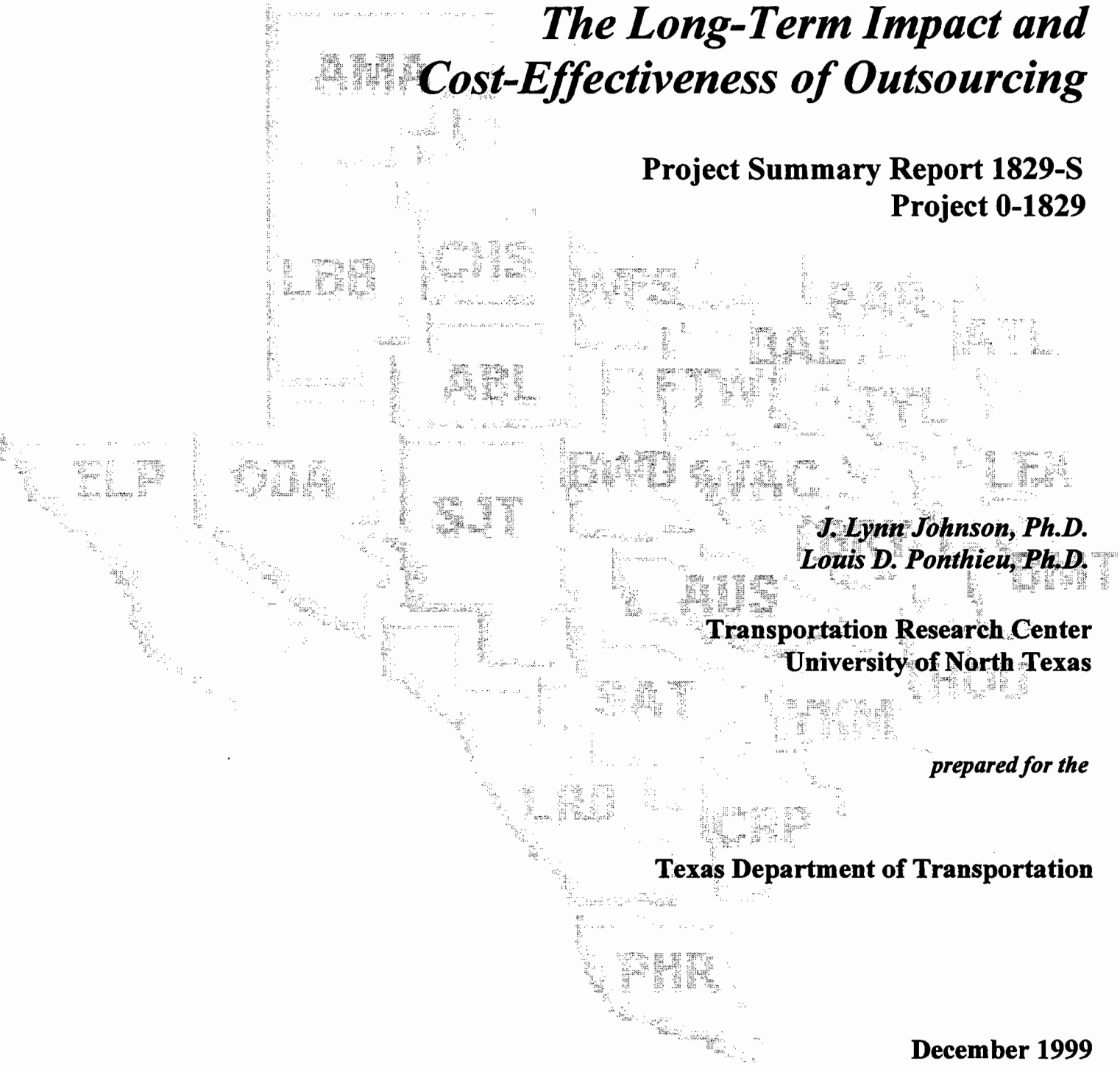
The Long-Term Impact and Cost-Effectiveness of Outsourcing

Project Summary Report 1829-S
Project 0-1829



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16. Abstract: This study was concerned with determining and evaluating the long-term impact and cost-effectiveness of outsourcing certain TxDOT functions. A 30-item Functional Outsourcing Assessment Instrument incorporating the evaluation factors was developed and utilized in this research. Nine surveys (1 for each of the nine functions under study) were sent to each of the 25 district offices of TxDOT. In addition, one survey for each function was sent to the appropriate central office for completion. An economic and vendor analysis was also completed for each district and for the state as a whole, and a nine-state survey was completed to benchmark practices by other states relative to the functions selected for study. Completed surveys on each of the nine functions were received from all 25 districts and one completed survey for each appropriate survey from the applicable central office of TxDOT. The findings of the study suggest that TxDOT should: (1) increase outsourcing of the Base-in-Place Repair and Paint-and-Bead Striping functions, (2) selectively outsource certain subfunctions of the Information Systems/Resources; Facilities Management and Maintenance; and Training, Quality and Development functions, (3) increase outsourcing, under effective contract management procedures, of the Right-of-Way Acquisition, Recruiting, and Partnering/Quality Facilitation functions, and (4) continue to insource the Benefits Processing function.

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The Long-Term Impact and Cost-Effectiveness of Outsourcing

Project Summary Report 1829-S

TxDOT Research Project 0-1829, "Evaluate the Long-Term Impact and Cost-Effectiveness of Outsourcing"

by

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Texas Department of Transportation (TxDOT)

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IMPLEMENTATION STATEMENT

The recommendations presented in the project summary report should be implemented, particularly those dealing with implementation of a continuing system of outsourcing evaluation and decision making utilizing the Functional Sourcing Decision Support Model (FSDSM) suggested by this research. Training of personnel involved in contracting activities should also be implemented.

AUTHORS' DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view of policies of the Texas Department of Transportation (TxDOT). This report does not constitute a standard, specification, or regulation.

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There was no invention or discovery conceived or first actually reduced to practice in the course of or under this contract, including any art, method, process, machine, manufacture, design or composition of matter, or any new useful improvement thereof, or any variety of plant which is or may be patentable under the patent laws of the United States of America or any foreign country.

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The state of Texas does not endorse products, manufacturers, or vendors. Trade names and names of manufacturers and vendors appear herein solely because they are considered essential to the objectives of this report.

ACKNOWLEDGMENTS

The authors gratefully acknowledge and sincerely thank the following TxDOT individuals and offices for their participation and valuable contribution to the successful completion of this project: Project Director Dennis R. Cooley, District Engineer, Lufkin; Project Coordinator Owen Whitworth, TxDOT Audit Office, Austin; the district engineers and staff in each of the 25 TxDOT districts participating in this study; and the division directors and staff of the Maintenance, Human Resources, General Services, Information Systems, and Right-of-Way central offices, Austin.

CREDITS FOR SPONSOR

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BACKGROUND AND INTRODUCTION

1.1 Need and Justification for the Study

TxDOT has historically entered contractual agreements with private sector vendors to supply products or services that the department could not efficiently or effectively perform in-house. Construction, for example, is, and has always been, accomplished by the private sector. Recently, some functions that have traditionally been performed in-house by TxDOT are being considered for, or have been outsourced to some degree (e.g., certain maintenance, research, design, right-of-way management, rest areas, training, and certain aspects of human resource management, among others). In large part, this movement toward outsourcing functions traditionally performed in-house is due to personnel reductions within the department, TxDOT workforce inexperience, an emphasis on economic efficiency, and legislative mandates.

For example, between 1970 and 1995, TxDOT has experienced an effective workforce reduction from 21,000 employees to less than 15,000 employees. Normal attrition and the hiring of TxDOT personnel by the private sector has worked to reduce the capability of TxDOT to perform many functions in-house.

The emphasis on economic efficiency is an on-going concern of a viable and progressive organization such as TxDOT. Moreover, HB 9, 72nd Legislature mandated that TxDOT contract 50% of the maintenance work if TxDOT could show that it was efficient to do so. HB9, 72nd Legislature also mandated that TxDOT contract not less than 25% of all dollars expended for vehicle maintenance and repair, providing that repair facilities exist and that TxDOT could save 10%. Rider 44, HB1, 75th Legislature mandated that TxDOT spend at least $207 million dollars during the next biennium on consultant contracts. It is expected that there will be a continuing legislative emphasis on outsourcing and privatization.

The most comprehensive study of DOTs outsourcing is that conducted under the sponsorship of the Transportation Research Board's National Research Council (*NCHRP Synthesis of Highway Practice 246: Outsourcing of State Highway Facilities and Services*, Transportation Research Board, National Research Council, Washington, D.C., 1997). Although Texas did not participate in this study, 34 states provided information in the areas of characteristics of contracted activities, factors influencing the decision to outsource, assessing outsource feasibility, impediments to outsourcing, pre- and post-award activities, the prevalence of cost-effectiveness and other analyses of outsourcing, found benefits of outsourcing, suggestions for successful outsourcing, problems in outsourcing, and issues surrounding public-private partnerships. The study found that the most frequently outsourced functions among the survey respondents, to some degree, were: administration (training), planning (research), design (plans and specifications), right-of-way (appraisals), construction management, operations (pavement markings), maintenance (roadway surfaces), urban area litter pickup, urban area landscaping, and rest area management/maintenance.

According to study results released in May, 1997, from the Mountain View, California-based research company INPUT, nearly two-thirds of organizations plan to extend their business process outsourcing over the next three years. INPUT projects that the outsourcing market will reach $7.5 billion in 2001. The business processes that are most likely to be outsourced include payroll, accounting, and human resources administration. However, a report from the International Data Corporation projected that the global outsourcing market will exceed $121 billion by the year 2000. According to a 1997 Dun & Bradstreet report, of the 1.6 million companies in their information base, companies with less than 10 employees are the most likely to outsource. The most frequent industry using an outsourcing company is the business service sector. This industry is followed closely by retail trade, wholesalers and manufacturers. Industries with the lowest use of outsourcing include mining and public utilities. According to the same study, 30 percent of the companies using an outsourcing firm have sales in the $1 to $5 million dollar range. More than 63 percent of the companies using outsourcing services have been in business 11 years or more. Findings by the New York-based Outsourcing Institute indicate that on average, companies are realizing a 9-percent cost savings and a 15-percent increase in capacity and quality through outsourcing. Further, according to the Outsourcing Institute, outsourcing is very much a top-down decision, with 61 percent of companies stating that the decision to outsource "was the result of a senior executive directive". Almost three-quarters of companies use a request for proposals (RFP) to evaluate and select the winning supplier.

Even in light of the above described trends, TxDOT often lacks sufficient information necessary to (a) fully evaluate the effectiveness of functions which have been outsourced, and (b) make effective decisions regarding future outsourcing. Through intensive research, TxDOT sought to answer such questions as:

- What functions have been outsourced in TxDOT, other agencies, and in other state departments of transportation?
- What cost savings have been accomplished by outsourcing these functions?
- What additional costs have been incurred due to outsourcing these functions?
- How have costs of outsourcing escalated after the initial contract period?
- What quality differences, if any, exist between in-house and outsourced work?
- Of the agencies or organizations that have outsourced, how satisfied are they after 3-5 years?
- What outsourced functions have been brought back in-house?
- What functions are most efficient to outsource and what functions should be done in-house?
- Is a cost/benefit analysis of the outsource/in-house functions possible?

- What impact does outsourcing have on in-house capabilities?
- How do costs for outsourced functions vary as in-house capabilities are lost?
- When is outsourcing justified?
- What outsourcing legislation affects TxDOT efficiency?

1.2 Statement of the Problem

The problem of this study was to determine and evaluate the long-term impact and cost-effectiveness of outsourcing certain TxDOT functions.

1.3 Objectives of the Study

This study was concerned with determining and evaluating the long-term impact and cost-effectiveness of outsourcing certain TxDOT functions. More specifically, the objectives of this research were:

- to identify and evaluate TxDOT functions as they relate to outsourcing and to make specific recommendations as to which functions should be outsourced and which should be accomplished in-house;
- to provide TxDOT management with the specific information necessary to make informed and efficient decisions concerning outsourcing in each geographical and economic area of the state;
- to provide TxDOT administration with the information necessary to inform the Texas Legislature and the Governor's Office of statute changes required to make TxDOT more efficient in its approach to outsourcing; and
- to provide a model, decision tree, or flow chart that would assist TxDOT managers in their outsourcing decision-making processes.

1.4 Focus of the Study

The focus of this project was to review TxDOT's in-house capabilities versus private sector capabilities and to determine which sourcing arrangement would be the most efficient and beneficial to use relative to the functions studied. The focus included aspects of administration, accounting, information resources, human resources, planning, design, operations and maintenance. In-house construction was not a viable function to study and was not considered in this study.

The study gave consideration to geographic locations and local economic capabilities. Response times and emergency operations were also considered.

1.5 Research Methods and Procedures

Nine independent TxDOT functions were selected for intensive study. These were:

1. Base-in-Place Repair
2. Paint-and-Bead Striping
3. Information Systems/Resources
4. Right-of-Way Acquisition
5. Facilities Management and Maintenance
6. Training, Quality and Development
7. Recruiting
8. Benefits Processing
9. Partnering/Quality Facilitation

The primary and secondary sources of information utilized in this research were:

- an outsourcing survey of each of the 25 TxDOT district offices,
- central (division) office outsourcing surveys relative to the functions under study,
- benchmark information from other states concerning their outsourcing practices,
- actual and/or potential vendors (suppliers) of these functions, and
- benchmark practices suggested by the outsourcing literature.

The nine functions were independently evaluated on a common set of six factors. These factors are defined in Table 1. These factors were:

- External Mandates and Influences
- Strategic and Organization Effectiveness
- Organization Systems and Operations
- Cost and Cost Efficiency
- Human Resources and Organization Culture
- Vendor-Related factors.

A pretested 30-item Functional Outsourcing Assessment Instrument incorporating the evaluation factors was developed and utilized in this research (see Figure 1). Nine surveys (1 for each of the nine functions under study) were sent to each of the 25 district offices of TxDOT. In addition, one

survey for each function was sent to the appropriate central office for completion. To round out the assessment of the actual and potential for outsourcing by TxDOT survey respondents, an economic and vendor analysis was also completed for each district and for the state as a whole, and a nine-state survey was completed to benchmark practices by other states relative to the functions selected for study.

Completed surveys on each of the nine functions were received from all 25 districts and one completed survey for each appropriate survey from the applicable central office of TxDOT. A response rate of 100 percent was therefore achieved in this study. Data were analyzed using the General Linear Model Univariate (GLM) procedure. Tukey's Honestly Significant Difference (HSD) test was used for multiple comparisons.

The districts were divided into 3 regions: 1 - metro districts, 2 - urban districts, and 3 - rural districts. The central office of concern was designated region 4. Thus 4 regions constituted the "regions" covariate for purposes of data analysis in this study. The regional breakdown of the districts followed accepted TxDOT district size categorization. Small, medium and large in size is a relative differentiation based on population, budget, employment, etc., rather than a geographic differentiation (e.g. square miles). Each district below is also designated below by its accepted 3 letter code.

Metropolitan Districts (Large in Size)

1. Austin (AUS)
2. Dallas (DAL)
3. Fort Worth (FTW)
4. Houston (HOU)
5. San Antonio (SAT)

Urban Districts (Medium in Size)

1. Beaumont (BMT)
2. Corpus Christi CRP
3. El Paso (ELP)
4. Lubbock (LBB)
5. Pharr (PHR)
6. Tyler (TYL)
7. Waco (WAC)

Rural Districts (Small in Size)

1. Abilene (ABL)
2. Amarillo (AMA)
3. Atlanta (ATL)
4. Brownwood (BWD)
5. Bryan (BRY)
6. Childress (CHS)
7. Laredo (LRD)
8. Lufkin (LFK)
9. Odessa (ODA)
10. Paris (PAR)
11. San Angelo (SJT)
12. Wichita Falls (WFS)
13. Yoakum (YKM)

Table 1 - Factors Used to Assess the Long-Term Impact and Cost-Effectiveness of Outsourcing

Factor Number	Factor Name, Definition, and Included Subfactors
1	**External Mandates and Influences:** Evaluates any existing or potential external mandates and influences to insource/outsource the function under study, including all existing or proposed legal, legislative, regulatory, and/or contractual arrangements. Includes assessment of any existing or potential liability issues relative to insourcing/outsourcing the function under study.
2	**Strategic and Organization Effectiveness:** Evaluates the strategic importance of the function under study including its criticality to mission accomplishment and its role in establishing and/or sustaining competitive advantage. Assesses the extent to which the function is a core competency of the organization and the effects of insourcing/outsourcing the function thereon. Includes an assessment of confidentiality requirements of the function; insourcing/outsourcing effects on customer service; and the effects of insourcing/outsourcing the function on the quality of production. Includes an assessment of the need to gain or retain technology and/or critical skills through insourcing/outsourcing.
3	**Organization Systems and Operations:** Assesses the effect of insourcing/outsourcing the function under study on: organization strategy; organization systems; administrative procedures; capacity, volume, scheduling and seasonal variation factors; output and productivity; inbound and outbound logistics including inventory and procurement; communication and interdependency between and among departments; control of the function issues; and contract management considerations.
4	**Cost and Cost Efficiency:** Assesses the cost and cost efficiency of insourcing/outsourcing the function under study. Includes an assessment of all internal and external, direct and indirect, tangible and intangible, and discretionary and nondiscretionary costs. Includes consideration of the cost, usage and convertibility potential of related equipment and facilities.
5	**Human Resources and Organization Culture:** Assesses the impact of insourcing/outsourcing the function under study on human resources, organization culture, and the core values of the organization.
6	**Vendors:** Assesses the availability, quality and reliability, actual and potential relations, cost and cost consistency of vendors (suppliers) relative to insourcing/outsourcing the function under study.

Figure 1 - Survey Instrument

Base-in-Place Repair

(Maintenance Codes 120 & 851)

District-Level Outsourcing Survey

This confidential survey seeks to determine TxDOT district-level reaction to the potential and actual contracting out of the above-named function consistent with the objectives of TxDOT Research Project Number 0-1829.

- Please evaluate each of the following statements relative to the above-named function using the scale provided to indicate your assessment.
- The 25 districts vary widely in the extent to which this function is outsourced (some a lot; others little or none). ***Please respond to each statement regardless of the amount of this function you currently outsource.*** Each statement is written so that all points-of-view will be represented.
- Each district will complete only one (1) survey relative to the above-named function. Please assure that your response represents a district point-of-view.
- "Outsourcing" means the same as "contracting-out".
- "Insourcing" means the same as "perform in-house".
- "This function" means the same as "this activity".
- Feel free to write comments on the survey or on separate sheets.
- Please forward any supporting documentation (internal or external studies, reports, cost analyses, etc.) relative to this function that would be helpful in determining the outsourcing potential of this function.
- Please complete and return your survey as soon as possible.

Please mail this completed survey with any attachments you may have to: Dr. Louis D. Ponthieu, University of North Texas, Box 311234, Denton, TX 76203. Please e-mail any questions you may have to ponthieu@unt.edu, or call 940.565.3155. FAX responses to 940.565.4394.

Figure 1 (continued) - Survey Instrument

Base-in-Place Repair

5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly Disagree

1. This function is a core competency of this district, and should not be contracted out.
2. This function is of high strategic importance, and its performance in-house is critical to accomplishing the mission of this district.
3. This function deals with confidential information. Revealing such information to outside vendors may have a detrimental effect on this district.
4. There are regulations or laws that would prohibit this district from outsourcing this function.
5. There are arrangements or contractual agreements with suppliers, customers, or other parties that make it difficult for this district to outsource this function.
6. This function is interdependent with other functions of the district. Outsourcing this function negatively impacts (would negatively impact) effective interaction of district functions.
7. Outsourcing this function negatively impacts (would negatively impact) the culture or organizational values of this district.
8. Outsourcing this function negatively impacts (would negatively impact) the organization strategy, systems, and/or administrative procedures of this district.
9. Outsourcing this function results in (would result in) employees losing loyalty and faith in our organization.
10. Outsourcing this function results in (would result in) a negative reaction from the general public, customers, or other stakeholders.
11. Most of the employees who currently perform this function in-house have been (would be) retrained and relocated to other areas of the organization under conditions of outsourcing this function.
12. Contracting out this function negatively impacts (would negatively impact) the productivity or quantity of output of this function.
13. Contracting out this function negatively affects (would negatively affect) the quality of output of this function.
14. Outsourcing this function would result in significant capacity, volume, or scheduling problems in this district.
15. Outsourcing this function has (would have) a negative economic or social impact on our current employees.
16. All costs considered, insourcing this function costs less than outsourcing it. ("All costs" means all actual & potential, internal & external, direct & indirect, tangible & intangible, discretionary & nondiscretionary costs) .

Figure 1 (continued) - Survey Instrument

Base-in-Place Repair

5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly Disagree

17. This function should be performed in-house because the critical human resource skills we have in this activity cannot be matched by external vendors.

18. Outsourcing this function results in (would result in) greater cost efficiencies to the department than does in-house performance of this activity.

19. The seasonal fluctuation of activity in this function makes it difficult to outsource this function.

20. There is a sufficient number of available, quality, and reliable vendors of this function in this district .

21. We anticipate no significant contract administration difficulties if this function is contracted-out.

22. There are (may be) significant liability problems in contracting-out this function.

23. Outsourcing this function results in (would result in) inventory and procurement problems in this district.

24. Outsourcing this function results in (would result in) significant vendor-relation problems.

25. Outside vendors can provide this activity at significant cost savings to this district.

26. Outside vendors may (do) raise their prices without cause after the initial contract period under conditions of outsourcing this function.

27. This function should not be outsourced because of the sizable capital investment we have in equipment and/or facilities allocated to this function. ("Investment" means cost, usage, and actual/potential convertibility of equipment and facilities, etc.)

28. Outsourcing this function results in (would result in) significantly new tasks and responsibilities for this district.

29. This function should be performed in-house because of critical technology we have in this activity that cannot be matched by external vendors. ("Technology" means knowledge, information, systems, proprietary processes, hardware, etc.)

30. Outsourcing this function makes it (would make it) difficult to maintain control of this activity.

31. What percent of expenditures for this function did your district outsource in 1998?

32. What is your estimate of the amount of $$ cost savings that results (would result) from outsourcing this function in your district?

33. Please provide a list of actual/potential vendors of this activity available to your district. A company name, address and telephone contact number would be helpful on each.

34. Please provide any additional information, comments, observations or evaluations relative to outsourcing/insourcing this function in your district.

The research instrument was pilot tested on a select group of 60 senior-level college business students and 18 operating private sector business managers having outsourcing experience. This methodology is consistent with other studies when testing an instrument for reliability and readability. An SPSS factor analysis was completed and all statements loaded onto the evaluation factors selected. The Cronbach's alpha for the survey instrument used in this study was 0.91.

In reporting, mean column numbers represented the average degree of disagreement with outsourcing for individual factors, individual regions and overall average disagreement, where 5.0 represented strongest disagreement and 1.0 represented strongest agreement. Therefore, a number less than 3.0 favored outsourcing, a number greater than 3.0 favored insourcing.

For GLM Univariate Analysis, a significant difference on a factor(s) and/or a region(s) meant that factors and/or regions differed in the strength to which they agreed or disagreed with outsourcing the function in question. A lower number indicated agreement with outsourcing, a higher number favored insourcing, relative strength considered.

In the individual functions data analysis tables presented in the final report of this study, **Factor 1** (outsourcing as impacted by *External Mandates and Influences*) was the mean average of all responses to survey statements 4, 5 and 22; **Factor 2** (the impact of outsourcing on *Strategic and Organization Effectiveness*) was the mean average of all responses to survey statements 1, 2, 3, 10, 13, 17 and 29; **Factor 3** (the impact of outsourcing on *Organization Systems and Operations*) was the mean average of all responses to survey statements 6, 8, 12, 14, 19, 21, 23, 28 and 30; **Factor 4** (the impact of outsourcing on *Cost and Cost Efficiency*) was the mean average of all responses to survey statements 16, 18, 25 and 27; **Factor 5** (the impact of outsourcing on *Human Resources and Organization Culture*) was the mean average of all responses to survey statements 7, 9, 11, and 15; and **Factor 6** (outsourcing as impacted by *Vendor-Related factors*) was the mean average of all responses to survey statements 20, 24 and 26.

Responses to survey statements 11, 18, 20, 21 and 25 were reversed in data analysis so that averages of < 3.0 would indicate a favorableness to outsourcing, and averages of ≥ 3.0 would indicate a favorableness to Insourcing, relative strength of each indicated by the direction of the mean from 3.0.

SECTION 2.0

SUMMARY OF FINDINGS AND RECOMMENDATIONS

2.1 Findings of the Study

2.1.1 Specific Findings Relative to the Functions Studied

Table 2 presents a summary of the findings of this study regarding the long-term impact, cost-effectiveness, and potential of outsourcing the TxDOT functions selected for study in this research. The judgements contained in Table 2 represent a synthesis of both quantitative and qualitative data gathered from the district and central office outsourcing surveys relative to the functions studied, benchmark information from other states concerning their outsourcing practices, information from actual and/or potential vendors (suppliers) of the products or services relative to these functions, and general benchmark practices suggested by the outsourcing literature.

- The long-term impact of outsourcing the nine functions studied was generally positive. Two functions were assessed as having a positive long-term impact; one positive to marginal; three marginal to positive; one marginal; one marginal to negative; and one clearly negative.

- The long-term effectiveness of outsourcing the nine functions studied was assessed as marginal. Two functions were assessed as clearly having a positive long-term effectiveness; two marginal; four marginal to negative; and one clearly negative.

- The outsourcing potential of the nine functions studied was generally marginal to selectively positive. Two functions were assessed as having high potential for outsourcing. Six functions were assessed as having marginal to selectively positive potential for outsourcing. One function was assessed as having a very low potential for outsourcing.

- TxDOT compared favorably with other states in outsourcing the functions studied. TxDOT outsources three of the functions more than did the other states surveyed; in two functions about the same as other states; and less than other states in four of the functions studied.

- The incentive to outsource the functions studied varied. In two cases, outsourcing was clearly motivated by external mandates, while need, vendor quality, availability, and cost were incentives in six functions. No incentive was observed in one of the functions studied.

- Outsourcing was more expensive, or accomplished at a higher cost, in all of the functions studied. Selective positive cost-effectiveness was reported in four of the functions studied.

- The systems/operations effects of outsourcing the functions studied was generally found to be neutral to positive with seven functions being neutral to positive and two functions neutral to clearly negative. This finding suggests that outsourcing does not generally affect systems and operations.

Table 2 - Summary of 0-1829 Research Findings Regarding the Long-Term Impact, Cost-Effectiveness, and Potential of Outsourcing the TxDOT Functions Selected for Study in This Research

CO = central (division) office

Research Findings	Base-in-Place Repair (BIPR)	Pain-and-Bead Striping (PBS)	Information Systems/Resources (IS/R)	Facilities Management Maintenance (FMM)	Right-of-Way Acquisition (ROWA)	Training, Quality & Development (TQD)	Recruiting	Benefits Processing (BP)	Partnering/ Quality Facilitation (P/QF)
Long-Term Impact	positive	positive	marginal to negative	positive to marginal	marginal	marginal to positive	marginal to positive	negative	districts positive; CO very negative
Long-Term Effectiveness	positive	positive	negative to marginal	districts marginal; CO negative	marginal	marginal; CO negative	marginal	negative	marginal; CO negative
Outsourcing Potential at this time	high	high	low to marginal; selective high	marginal; selective high	marginal	marginal; selective high	marginal; selective medium	low	marginal; selective high
Benchmarks (other states)	favorable (more than other states)	favorable (more than other states)	marginal (about the same as other states)	marginal (about the same as other states)	unfavorable (less than other states)	unfavorable (less than other states)	unfavorable (less than other states)	favorable (more than other states)	unfavorable (less than other states)
Incentive to Outsource	mandates	mandates	expertise, technical skills	vendor quality/ availability, cost	workload, expertise	vendor quality, availability, cost	need, occupational level/skill required	none observed	need, external influences
Direct Cost-Effectiveness	negative	negative	negative; selective positive	negative; selective positive	negative selective positive	negative; selective positive	neutral to negative	very negative	neutral to negative
Systems/ Operations Effects	positive	positive	negative	positive to neutral	neutral	urban and rural districts neutral to positive; central office and metro districts negative	neutral to positive	neutral to negative	positive
Organizational Effectiveness Effects	positive	positive	negative	positive	neutral to negative	rural districts positive; other regions negative	neutral to positive	negative	neutral to positive
Human Resources & Culture Effects	positive	positive	positive	positive	neutral to positive	positive in urban and rural districts; neutral to negative in metro districts and central office	neutral to positive	negative	districts neutral to positive; central office negative
Vendor-Related Effects	favorable	favorable	unfavorable to neutral	favorable; varies by district & division	neutral to unfavorable	neutral to unfavorable	favorable	neutral to unfavorable	very favorable
District - Division Agreement	yes	yes	yes	no	yes	no	yes	yes	no
Recommendation	increase Emphasis	increase Emphasis	selective outsourcing of needed skills	selective outsourcing of subfunctions	increase outsourcing under effective contract management	selective outsourcing of some subfunctions	increase outsourcing under effective contract management	continue to insource at this time	increase outsourcing under effective contract management

- Actual and potential outsourcing did not generally affect organizational effectiveness relative to the functions studied. Outsourcing resulted in a perceived negative impact on organizational effectiveness in only two of the functions studied.

- Actual or potential outsourcing did not generally affect human resources or organization culture relative to the functions studied. Outsourcing resulted in a perceived negative impact on human resources and organization culture in only one of the functions studied.

- Vendor-related factors (e.g. availability, cost and quality), were generally found to be favorable to outsourcing the functions studied. Outsourcing of five functions were assessed as favorable, or positive, relative to vendor-related factors, while four of the functions studied were assessed as having negative, or unfavorable, vendor-related effects.

- The districts and the relevant central offices generally agreed on the impact and cost-effectiveness of outsourcing the functions studied. There was disagreement between districts and central offices in three of the functions studied. These differences may be attributed to differences in perspective, information, resources, special situations, and/or local conditions.

2.1.2 General Findings Having Implications for Outsourcing These and Other TxDOT Functions

The general findings of this study having implications for outsourcing these and other TxDOT functions may be summarized as follows:

- Determining the extent to which a function should be outsourced is a complex undertaking, and must involve the use of multidimensional factors and evaluation criteria, rather than reliance on direct costing alone.

- Partial outsourcing can be a viable alternative to either 100% outsourcing or 100% in-house performance of functions. The tendency to polarize sourcing on an all or nothing at all basis inhibits effective outsource decision making.

- The direct cost savings associated with outsourcing the functions studied have generally been small. Meager direct cost savings in the short run may also be expected in outsourcing other TxDOT functions. When indirect transaction costs are considered, significant cost savings are likely in noncore competency areas over time.

- Organizations typically have only a few core competencies. It is arguable whether any of the functions studied in this research represent a core competency of TxDOT. The tendency to view all functions as core competencies tends to inhibit effective outsource decision making.

- Costs typically increase after an initial outsourcing period. That is, vendors generally tend to raise their prices once they have an organization locked into an outsourcing arrangement.

- There is no evidence to suggest that there are necessary quality or other differences between work performed in-house and outsourced work. Differences vary by function, vendors, and the effectiveness of contract management by the outsourcing organization.

- Evidence suggests that outsourcing organizations become more satisfied with outsourcing after a three-to-five year period. This trend may be due to organization re-engineering to effect outsourcing or to more effective contract management over time.

- Functions do not tend to be brought back in-house once they have been outsourced. Outsourcing increased, rather than declined, over time relative to the functions studied.

- Effective contract management is a necessary ingredient in successful outsourcing. Likewise, effective partnering with suppliers can make the difference in outsourcing success.

- Traditional direct costing tends to be an ineffective indicator determining the extent to which a function should be outsourced. Outsource decision making is more effective when a constellation of relevant factors are considered.

- A true cost-benefit analysis of functions is difficult when deciding whether to outsource a function or perform it in-house. True cost-benefit analysis involves a consideration of transaction costs; that is all actual and potential, internal and external, direct and indirect, tangible and intangible, discretionary and nondiscretionary costs associated with an outsourcing/in-house transaction.

- Outsourcing can negatively impact an organization's in-house capability to deliver. If the outsourced function is not a core competency, such impact may be problematic.

- Outsourcing is justified when the function in question is not a core competency of the organization and when the overall impact of outsourcing on the organization is positive.

- Pilot studies are valuable adjuncts to the outsourcing decision making process. Such studies may indicate the extent to which a function should be outsourced over time.

2.2 Recommendations

2.2.1 Recommendations Regarding Outsourcing of the Functions Studied

Based on the findings of this study, TxDOT should:

1. increase outsourcing of the Base-in-Place Repair and Paint-and-Bead Striping functions,

2. selectively outsource certain subfunctions of the Information Systems/Resources; Facilities Management and Maintenance; and Training, Quality and Development functions, and

3. increase outsourcing of the Right-of-Way Acquisition, Recruiting, and Partnering/Quality Facilitation functions. Continue to insource the Benefits Processing function.

2.2.2 Recommendations Regarding Outsourcing of Other TxDOT Functions

Based on the findings of this study, TxDOT should:

1. broaden the criteria by which outsourcing decisions are evaluated. Although cost savings is an important factor in a decision to outsource, reliance on direct cost alone may understate the potential and value of outsourcing since traditional direct cost does not include the cost and benefit of transactions. Transaction cost as a criteria for evaluation would typically include "all cost" such as actual and potential, internal and external, direct and indirect, tangible and intangible, discretionary and nondiscretionary costs associated with outsourcing/in-house transactions. Such imputed costs may make more functions economically outsourceable;

2. engage itself in effective contract management training. Included here would be a predetermination of effective contract management skills;

3. continue to benchmark itself against the DOTs in other states and with trends and outsourcing approaches utilized by private industry;

4. increase emphasis on the value and necessity of effective partnering with suppliers;

5. promote and emphasize a broader approach in dealing with the Legislature. More detailed analysis will need to be presented in any attempt to defend in-house performance vs. outsourcing of proposed functions; and

6. determine which TxDOT functions represent core competencies and which are noncore. In the longer run, core competencies should be retained and performed in-house; the remainder should be outsourced to some extent.

2.2.3 Recommendations Regarding Use of the Functional Sourcing Decision Support Model (FSDSM) and Outsourcing Decision Flowchart

Based on the findings of this study, TxDOT should:

1. use the Functional Sourcing Decision Flowchart (Figure 2) and the Functional Sourcing Decision Procedure illustrated in Figure 3 to make effective outsourcing decisions; and

2. use the Functional Sourcing Decision Support Model (FSDSM) proposed by this research (Tables 3 - 5 and FSDSM completion examples, Tables 6-8) to account for and weigh all of the factors important in making an outsourcing decision.

Complementary methods should be used to analyze the outsourcing potential of business functions. The first method is the Functional Sourcing Decision Flowchart shown in Figure 2. This illustration provides a simple process for making an outsourcing decision. Each business function is analyzed separately and is processed through the flowchart. The six evaluation factors (see page 4 of this Project Summary) are applied individually with a positive response indicating a propensity to insource or partially outsource, and a negative response indicating a propensity to outsource. Even if there is an external mandate or influence to outsource, for example, insourcing may still be justified because of the negativity of the other factors.

The second method recommended for making an outsourcing decision is the Functional Sourcing Decision Support System procedure illustrated in Figure 3 and specifically proposed as a quantitative model called the *Functional Sourcing Decision Support Model* (FSDSM). This quantitative model is a self-calculating MS Excel file, which uses evaluative input from users to determine outsourcing potential of a function. The FSDSM incorporates three spreadsheets as illustrated in Tables 3 - 5. Tables 6 - 8 show the quantitative model in a hypothetical situation and provides insight into what can be expected from the analysis. The Functional Sourcing Decision Support System and Model involves three procedural steps:

- The first step is completion of the factor weighting survey (Table 3). The factor weighting survey, which should be completed by significant strategists/upper-level managers, is designed to offset emotional or external influences that frequently occur in the outsourcing decision process. This analysis should be completed in the spirit of the survey's purpose- - to evaluate the importance of the evaluation factors in relation to the function being evaluated, the organizational environment, and the current situation. Such an approach gives decision-makers, those ultimately responsible for the consequences of the decision, more stake in the results of the decision model. After a thorough analysis and consideration of the facts and issues involved in the function to be evaluated as suggested by the factor definitions, management determines the relative importance of the functional sourcing Evaluation Factor Weights (EFWs) by assigning a 0.0 – 1.0 weight to each evaluation factor. The sum of the weights for all evaluation factors should be 1.0. Some of the evaluation factors may have no implications on the decision, and will receive a weight of 0.0. The spreadsheet used to complete this step contains the six evaluation factors, the evaluation factor definitions, and three columns for evaluators to assign factor weights. In this illustration, the program can use one, two, or three sets of factor weight assessments for the calculations.

- The second step is completion of the Functional Sourcing Assessment (FSA) Questionnaire (Table 4). This step involves a thorough analysis and assessment of the facts and issues involved in the function to be evaluated as suggested by each of the 30 questions in the FSA. Assessors indicate their level of agreement/ disagreement to each question relative to the function being assessed. Assessment is rated between one and five (Strongly Agree = 5, Strongly Disagree = 1). Assessments of three team members are illustrated in Table 7.

- The third step uses the Evaluation Factor Weights (EFW) determined in Step 1 and the Functional Sourcing Assessment (FSA) results from Step 2. The EFWs are taken directly

from the EFW spreadsheet. The questions from the FSA are categorized into the six evaluation factors, as shown below, to correlate the two sets of data. The question results are averaged for each evaluation factor category to provide the data for the final Functional Sourcing Decision Index (FSDI) calculation. Question results (11, 18, 20, 21, and 25) are reversed for purpose of analysis.

1. External Mandates and Influences (Questions 4, 5, 22)
2. Strategic and Organizational Effectiveness (Questions 1, 2, 3, 10, 13, 17, 29)
3. Organizational Systems and Operations (Questions 6, 8, 12, 14, 19, 21, 23, 28, 30)
4. Cost and Cost Efficiency (Questions 16, 18, 25, 27)
5. Human Resources and Organizational Culture (Questions 7, 9, 11, 15)
6. Vendors (Questions 20, 24, 26)

To obtain the final results from the six categories, the EFW results are multiplied by the FSA correlated values. The final six numbers are summed to determine the Functional Sourcing Decision Index. If the result is **3.0 or greater**, the results indicate that the task should remain in-house with a strength reflective of how far the mean is away from 3.0. Likewise, if the result is **less than 3.0,** the indication is that the task should be considered for outsourcing with the strength of the indication shown by the distance the mean is from 3.0.

When considering the final result, the decision-makers will have three options: 1) insource the function, 2) outsource the function, or 3) partial outsourcing. Partial outsourcing should be more of a consideration if the result is closer to 3.0, but is always an option no matter the result.

The method proposed by this research includes not only cost and cost-effectiveness, but also numerous other factors ranging from government requirements to vendor availability. Without this comprehensive approach, not all the important factors would be considered, and the information would be insufficient to make the best decision in a given situation. The method described in this paper successfully satisfies the need for a comprehensive outsourcing decision-making model..

As the popularity of outsourcing grows, it will become imperative that outsourcing decision-making processes become more rationalized. Therefore, organizations considering outsourcing a function or activity should evaluate all factors and elements. A decision model similar to the one developed here can help to facilitate this decision-making process.

Figure 2 - Functional Sourcing Decision Flowchart

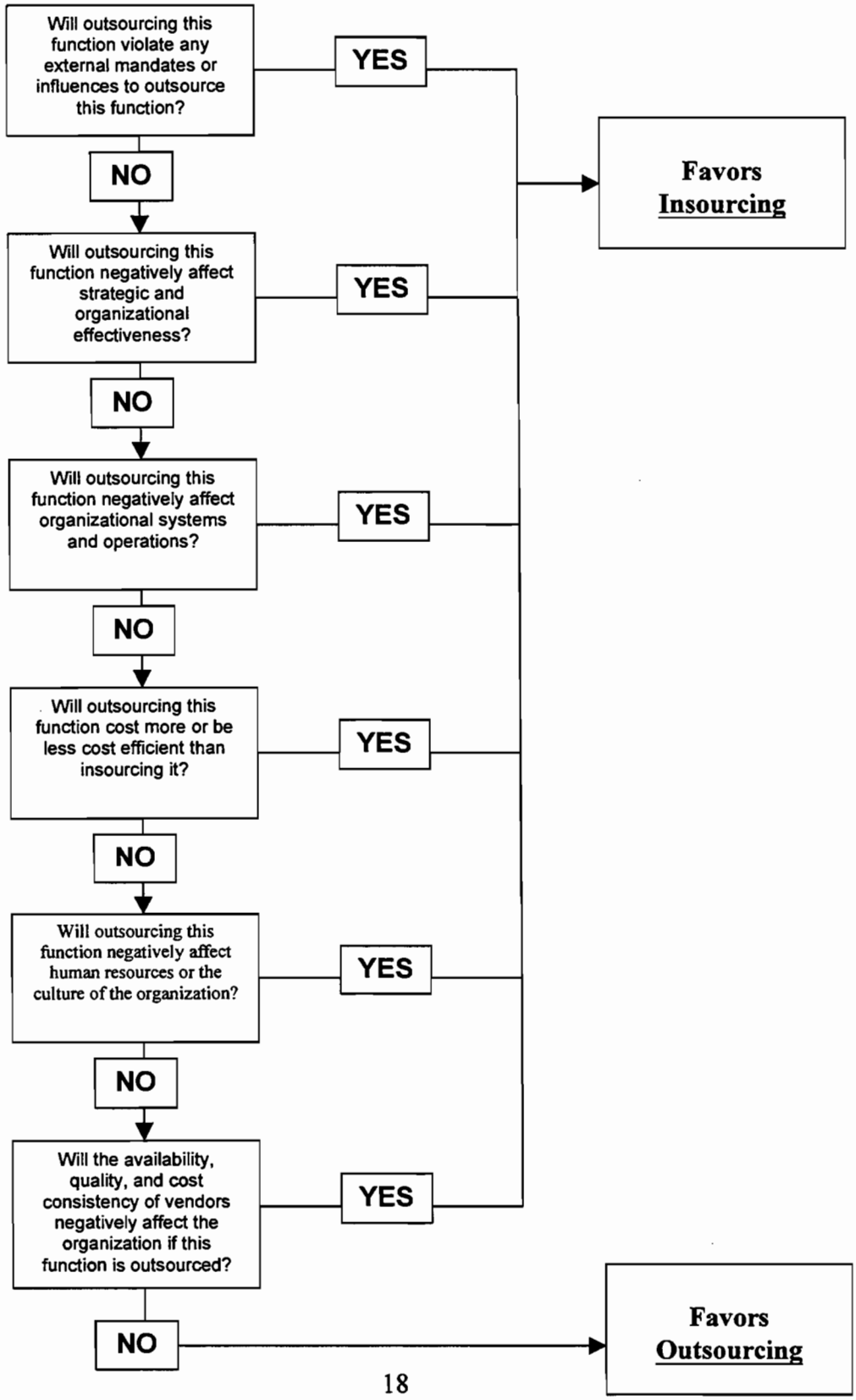

Figure 3 - Functional Sourcing Decision Procedure

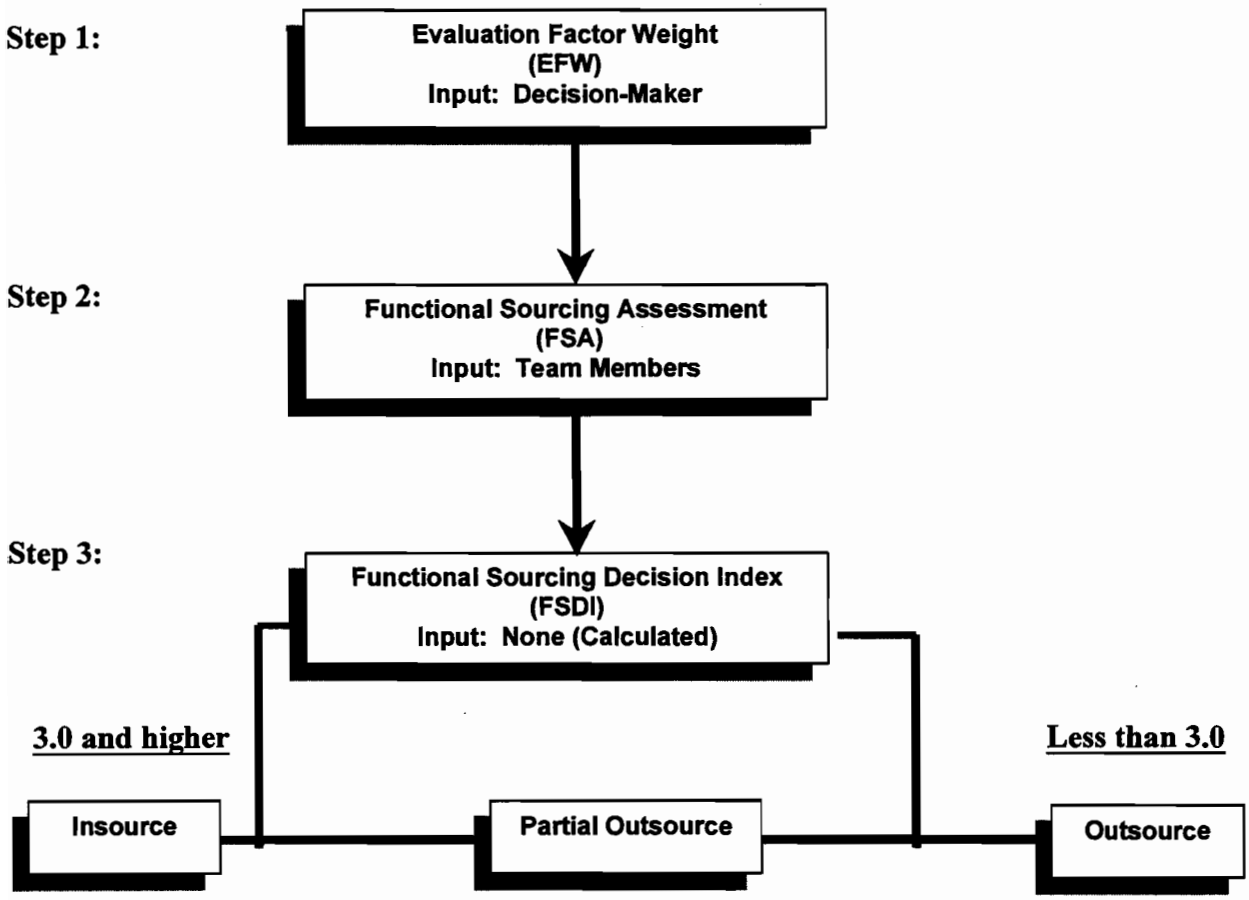

Table 3 - Functional Sourcing Decision Support Model (FSDSM) Worksheet 1 - Evaluation Factor Weights (EFW)

* Indicate the relative weight (importance) of each factor in evaluation by assigning a value of 0.00 - 1.00 to each factor. COLUMN TOTALS MUST EQUAL 1.00.						
** Automatically calculated values. EFW is the average Evaluation Factor Weight for Assessors (A) 1, 2, & 3.						
F#	**Evaluation Factor Name**	**Evaluation Factor Definition**	**A 1***	**A 2***	**A 3***	**EFW****
1	**External Mandates and Influences**	This factor evaluates existing or potential **external mandates and influences** to insource/outsource the function under study, including all existing or proposed **legal, legislative, regulatory,** and/or **contractual arrangements** relative to the function under study. Also evaluates any existing or potential **liability issues** relative to insourcing/outsourcing the function under study.				
2	**Strategic and Organization Effectiveness**	This factor evaluates the strategic importance of the function under study including its **criticality to mission accomplishment** and its **role in establishing and/or sustaining competitive advantage**. Evaluates the **extent to which the function is a core competency** of the organization and the subsequent effects of insourcing/outsourcing the function under study thereon. Includes an evaluation of the **confidentiality requirements** of the function; insourcing/outsourcing **effects on customer service**; and the effects of insourcing/outsourcing the function on the **quality of production**. This factor also evaluates **the need to gain or retain technology and/or critical skills** through insourcing/outsourcing.				
3	**Organizational Systems and Operations**	This factor evaluates **the effect** of insourcing/outsourcing the function under study on: **organization strategy; organization systems; administrative procedures; capacity, volume, scheduling and seasonal variation factors; output and productivity; inbound and outbound logistics including inventory and procurement; communication and interdependency between and among departments; control of the function issues; and contract management considerations.**				
4	**Cost and Cost Efficiency**	This factor evaluates the **cost and cost efficiency** of insourcing/outsourcing the function under study, including all **internal and external, direct and indirect, tangible and intangible, and discretionary and nondiscretionary transaction costs.** Includes a consideration of the **cost, usage and convertibility potential of related equipment and facilities.**				
5	**Human Resources and Organization Culture**	This factor evaluates the **impact** of insourcing/outsourcing the function under study **on human resources, organization culture, and the core values of the organization.**				
6	**Vendors**	This factor evaluates the **availability, quality and reliability, actual and potential relations, cost, and cost consistency of vendors (suppliers)** relative to insourcing/outsourcing the function under study.				
		Total				

Table 4 - Functional Sourcing Decision Support Model (FSDSM) Worksheet 2 - Functional Sourcing Assessment (FSA)

	Evaluate each of the following statements using 5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly Disagree				
* Input 1-5 whole numbers indicating Agreement/Disagreement as above for 1-3 individual/group assessors.					
* Automatically calculated values. FSA is the average Functional Sourcing Assessment for Assessors (A) 1, 2 & 3.					
S#	**Statement**	**A1***	**A2***	**A3***	**FSA****
1	This function is a **core competency** of TxDOT and should not be contracted out.				
2	This function is of high **strategic importance** to TxDOT and its performance in-house is critical to accomplishing the mission of TxDOT.				
3	This function deals with **confidential information**. Revealing such information to outside vendors may have a detrimental effect on TxDOT.				
4	There are **regulations or laws** that would prohibit TxDOT from outsourcing this function.				
5	There are **arrangements or contractual agreements** with suppliers, customers, or other parties that make it difficult for TxDOT to outsource this function.				
6	This function is **interdependent with other functions**. Outsourcing this function negatively impacts (would negatively impact) effective interaction within TxDOT.				
7	Outsourcing this function negatively impacts (would negatively impact) the **culture or organizational values** of TxDOT.				
8	Outsourcing this function negatively impacts (would negatively impact) the **organization strategy, systems, and/or administrative procedures** of TxDOT.				
9	Outsourcing this function results in (would result in) **employee** losing **loyalty and faith** in TxDOT.				
10	Outsourcing this function results in (would result in) a negative **reaction from the general public, customers, or other stakeholders**.				
11	Most of the **employees** who currently perform this function in-house have been (would be) **retrained and relocated** to other areas of TxDOT under conditions of outsourcing this function.				
12	Contracting out this function negatively impacts (would negatively impact) the **productivity or quantity of output** of this function.				
13	Contracting out this function negatively affects (would negatively affect) the **quality of output** of this function.				
14	Outsourcing this function would result in significant **capacity, volume, or scheduling** problems in TxDOT.				
15	Outsourcing this function has (would have) a negative **economic or social impact on our current employees**.				
16	All costs considered, insourcing this function **costs** less than outsourcing it. ("All costs" means the net sum of all actual & potential, internal & external, direct & indirect, tangible & intangible, discretionary & nondiscretionary transaction costs of this function.)				
17	This function should be performed in-house because the **critical human resource skills** in this activity cannot be matched by external vendors.				
18	Outsourcing this function results in (would result in) greater **cost efficiencies** to the company than does in-house performance of this activity.				
19	The **seasonal fluctuation** of activity in this function makes it difficult to outsource this function.				
20	There is a sufficient number of available, quality, and reliable **private vendors** of this function.				
21	We anticipate no significant **contract administration** difficulties if this function is contracted out.				
22	There are (may be) significant **liability** problems in contracting out this function.				
23	Outsourcing this function results in (would result in) **inventory and procurement** problems for the company.				
24	Outsourcing this function results in (would result in) significant **vendor-relation** problems.				
25	Outside vendors can provide this activity at significant **cost savings** to TxDOT.				
26	Outside vendors may (do) **raise** their **prices** without cause after the initial contract period under conditions of outsourcing this function.				
27	This function should not be outsourced because of the sizable **capital investment** we have in equipment and/or facilities allocated to this function. ("Investment" means cost, usage, and actual/potential convertibility of equipment and facilities, etc.)				
28	Outsourcing this function results in (would result in) significant new **tasks and responsibilities** for TxDOT.				
29	This function should be performed in-house because of **critical technology** we have in this activity that cannot be matched by external vendors. (" Technology" means knowledge, information, systems, proprietary processes, hardware, etc.)				
30	Outsourcing this function makes it (would make it) difficult to maintain **control** of this activity.				

Table 5 - Functional Sourcing Decision Support Model (FSDSM) Worksheet 3 - Functional Sourcing Decision Index (FSDI)

* All values on this sheet are calculated from previously completed EFW & FSA evaluations/assessments.				
Evaluation Factor Number	**Evaluation Factor Name**	**Evaluation Factor Weight (EFW)**	**Functional Sourcing Assessment (FSA)**	**Adjusted Factor Assessment**
1	External Mandates and Influences			
2	Strategic and Organization Effectiveness			
3	Organizational Systems and Operations			
4	Cost and Cost Efficiency			
5	Human Resources and Organization Culture			
6	Vendors			
	Total Factor Importance	0.00		
			Functional Sourcing Decision Index (FSDI) =	

Table 6 - Functional Sourcing Decision Support Model (FSDSM) Worksheet 1 Sample - Evaluation Factor Weights (EFW)

* Indicate the relative weight (importance) of each factor in evaluation by assigning a value of 0.00 - 1.00 to each factor. COLUMN TOTALS MUST EQUAL 1.00.						
** Automatically calculated values. EFW is the average Evaluation Factor Weight for Assessors (A) 1, 2, & 3.						
F#	**Evaluation Factor Name**	**Evaluation Factor Definition**	**A 1***	**A 2***	**A 3***	**EFW****
1	**External Mandates and Influences**	This factor evaluates existing or potential **external mandates and influences** to insource/outsource the function under study, including all existing or proposed **legal, legislative, regulatory**, and/or **contractual arrangements** relative to the function under study. Also evaluates any existing or potential **liability issues** relative to insourcing/outsourcing the function under study.	**0.50**	**0.10**	**-**	**0.20**
2	**Strategic and Organization Effectiveness**	This factor evaluates the strategic importance of the function under study including its **criticality to mission accomplishment** and its **role in establishing and/or sustaining competitive advantage.** Evaluates the **extent to which the function is a core competency** of the organization and the subsequent effects of insourcing/outsourcing the function under study thereon. Includes an evaluation of the **confidentiality requirements** of the function; insourcing/outsourcing **effects on customer service**; and the effects of insourcing/outsourcing the function on the **quality of production**. This factor also evaluates **the need to gain or retain technology and/or critical skills** through insourcing/outsourcing.	**0.15**	**0.20**	**0.25**	**0.20**
3	**Organizational Systems and Operations**	This factor evaluates **the effect** of insourcing/outsourcing the function under study on: **organization strategy; organization systems; administrative procedures; capacity, volume, scheduling and seasonal variation factors; output and productivity; inbound and outbound logistics including inventory and procurement; communication and interdependency between and among departments; control of the function issues; and contract management considerations.**	**0.20**	**0.10**	**0.05**	**0.12**
4	**Cost and Cost Efficiency**	This factor evaluates the **cost and cost efficiency** of insourcing/outsourcing the function under study, including all **internal and external, direct and indirect, tangible and intangible, and discretionary and nondiscretionary transaction costs.** Includes a consideration of the **cost, usage and convertibility potential of related equipment and facilities.**	**0.15**	**0.50**	**0.40**	**0.35**
5	**Human Resources and Organization Culture**	This factor evaluates the **impact** of insourcing/outsourcing the function under study **on human resources, organization culture, and the core values of the organization.**	**-**	**0.05**	**0.20**	**0.08**
6	**Vendors**	This factor evaluates the **availability, quality and reliability, actual and potential relations, cost, and cost consistency of vendors (suppliers)** relative to insourcing/outsourcing the function under study.	**-**	**0.05**	**0.10**	**0.05**
		Total	**1.00**	**1.00**	**1.00**	**1.00**

Table 7 - Functional Sourcing Decision Support Model (FSDSM) Worksheet 2 Sample - Functional Sourcing Assessment (FSA)

	Evaluate each of the following statements using 5 = Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree; 1 = Strongly Disagree				
* Input 1-5 whole numbers indicating Agreement/Disagreement as above for 1-3 individual/group assessors.					
* Automatically calculated values. FSA is the average Functional Sourcing Assessment for Assessors (A) 1, 2 & 3.					
S#	**Statement**	A1*	A2*	A3*	FSA**
1	This function is a **core competency** of TxDOT and should not be contracted out.	4	3	5	4.00
2	This function is of high **strategic importance** to TxDOT and its performance in-house is critical to accomplishing the mission of TxDOT.	2	3	4	3.00
3	This function deals with **confidential information**. Revealing such information to outside vendors may have a detrimental effect on TxDOT.	5	3	4	4.00
4	There are **regulations or laws** that would prohibit TxDOT from outsourcing this function.	3	2	4	3.00
5	There are **arrangements or contractual agreements** with suppliers, customers, or other parties that make it difficult to outsource this function.	2	3	2	2.33
6	This function is **interdependent with other functions.** Outsourcing this function negatively impacts (would negatively impact) interaction.	3	5	4	4.00
7	Outsourcing this function negatively impacts (would negatively impact) the **culture or organizational values** of TxDOT.	4	3	2	3.00
8	Outsourcing this function negatively impacts (would negatively impact) the **organization strategy, systems, and/or administrative procedures** of TxDOT.	2	3	3	2.67
9	Outsourcing this function results in (would result in) **employee** losing **loyalty and faith** in TxDOT.	2	1	2	1.67
10	Outsourcing this function results in (would result in) a negative **reaction from the general public, customers, or other stakeholders**.	1	1	4	2.00
11	Most of the **employees** who currently perform this function in-house have been (would be) **retrained and relocated** to other areas of TxDOT under conditions of outsourcing this function.	5	1	4	3.33
12	Contracting out this function negatively impacts (would negatively impact) the **productivity or quantity of output** of this function.	2	4	2	2.67
13	Contracting out this function negatively affects (would negatively affect) the **quality of output** of this function.	3	2	4	3.00
14	Outsourcing this function would result in significant **capacity, volume, or scheduling** problems in TxDOT.	3	2	1	2.00
15	Outsourcing this function has (would have) a negative **economic or social impact on our current employees**.	1	3	1	1.67
16	All costs considered, insourcing this function **costs** less than outsourcing it. ("All costs" means the net sum of all actual & potential, internal & external, direct & indirect, tangible & intangible, discretionary & nondiscretionary transaction costs of this function.)	2	3	4	3.00
17	This function should be performed in-house because the **critical human resource skills** in this activity cannot be matched by external vendors.	4	4	5	4.33
18	Outsourcing this function results in (would result in) greater **cost efficiencies** to the company than does in-house performance of this activity.	1	4	5	3.33
19	The **seasonal fluctuation** of activity in this function makes it difficult to outsource this function.	1	4	4	3.00
20	There is a sufficient number of available, quality, and reliable **private vendors** of this function.	5	2	4	3.67
21	We anticipate no significant **contract administration** difficulties if this function is contracted out.	2	4	3	3.00
22	There are (may be) significant **liability** problems in contracting out this function.	3	3	2	2.67
23	Outsourcing this function results in (would result in) **inventory and procurement** problems for the company.	2	3	2	2.33
24	Outsourcing this function results in (would result in) significant **vendor-relation** problems.	4	3	3	3.33
25	Outside vendors can provide this activity at significant **cost savings** to TxDOT.	4	3	4	3.67
26	Outside vendors may (do) **raise** their **prices** without cause after the initial contract period under conditions of outsourcing this function.	1	3	3	2.33
27	This function should not be outsourced because of the sizable **capital investment** we have in equipment and/or facilities allocated to this function. ("Investment" means cost, usage, and actual/potential convertibility of equipment and facilities, etc.)	2	4	3	3.00
28	Outsourcing this function results in (would result in) significant new **tasks and responsibilities** for TxDOT.	5	5	3	4.33
29	This function should be performed in-house because of **critical technology** we have in this activity that cannot be matched by external vendors. (" Technology" means knowledge, information, systems, proprietary processes, hardware, etc.)	5	4	4	4.33

Table 8 - Functional Sourcing Decision Support Model (FSDSM) Worksheet 3 Sample - Functional Sourcing Decision Index (FSDI)

* All values on this sheet are calculated from previously completed EFW & FSA evaluations/assessments.				
Evaluation Factor Number	**Evaluation Factor Name**	**Evaluation Factor Weight (EFW)**	**Functional Sourcing Assessment (FSA)**	**Adjusted Factor Assessment**
1	External Mandates and Influences	**0.20**	**2.7**	**0.53**
2	Strategic and Organization Effectiveness	**0.20**	**3.5**	**0.70**
3	Organizational Systems and Operations	**0.12**	**3.0**	**0.35**
4	Cost and Cost Efficiency	**0.35**	**2.8**	**0.96**
5	Human Resources and Organization Culture	**0.08**	**2.3**	**0.19**
6	Vendors	**0.05**	**2.7**	**0.13**
	Total Factor Importance	**1.00**		
			Functional Sourcing Decision Index (FSDI) =	**2.88**

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