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Abstract: In the United States, the performance of public transit systems is often characterized, in both the popular press and academic literature, as being mediocre at best and growing steadily worse. Drawing on insights from the extant literature and a census of all U.S. transit systems, this research argues that "multiple definitions" of transit performance exist and are composed of three macro-constructs which are weighted differently by different stakeholder groups and thereby provide unique definitions for each stakeholder group. Statistical analysis of the data suggests that there are differences in both the absolute importance and relative importance placed on the three macro-constructs by U.S. transit stakeholder groups. Therefore, the examination of public transit performance from a multiple stakeholder points-of-view perspective appears warranted in order to better evaluate the performance of public transit systems.

Keywords: transit performance, public transit, performance assessment, performance constructs, stakeholder

1. Introduction

The performance of public transit systems in the United States is often characterized, in both the popular press and academic literature, as being mediocre at best and growing ever worse. Statistics are often cited which show rising costs, increasing deficits, declining ridership, and other associated ills (see, for example, Lave (1991)). One thing all these publications have in common is the implicit assumption of common agreement in defining transit system performance. That is, the literature on transit system performance, both popular and academic, has generally proceeded from the assumption that there is a common, universally accepted definition of performance held by all stakeholders. The present research argues that no such definition exists (and is unlikely to ever exist) and that the definition of transit system performance is, in fact, dependent upon the point of view of the stakeholder.

Specifically, rather than taking the definition of performance as a given, this research assumes that no universal definition of performance exists and argues that each stakeholder group develops its own unique definition based upon its own particular needs and desires. These "multiple definitions" are composed of a variety of "macro" and "micro" constructs, such as vehicle efficiency and pollution reduction, which are weighted differently by different stakeholder groups and thereby provide unique definitions for each stakeholder group. For this research, the term stakeholder will be used to refer to groups that "are directly or indirectly affected by the implementation and results of social programs" (Rossi and Freemen, 1993: 2).]

A closely related example that supports the "multiple constructs" approach this research advocates is provided by Gault and Doherty (1979) who state that there are many aspects of bus service that make up a passenger's total view of its performance. They state that such aspects as comfort, cleanliness, speed, and reliability are just a few of the components of transit system performance. As passengers are but one stakeholder of public transit, it is logical to infer that the other stakeholders of public transit, for example state governments, metropolitan planning organizations, and transit operators, also define performance in terms of a variety of different aspects (or constructs).

This research builds upon the work of Connolly, Conlon, and Deutsch (1980) who argue for a "multi-constituency" approach to assess the effectiveness of an organization. Connolly, Conlon, and Deutsch (1980) state that the various constituencies of an organization will assess the effectiveness of an organization differently. Specifically, they propose:

> *"...A view of organizational effectiveness in which several (or, potentially, many) different effectiveness statements can be made about the focal organization, reflecting the criterion sets of different individuals and groups we shall refer to as 'constituencies.'" (1980: 212)*

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The "constituencies" advocated by Connolly, Conlon, and Deutsch (1980) are rather diverse and include groups both within the organization (for example, senior management) as well as groups outside of the organization (for example, customers).

The present research utilizes the term "stakeholder" rather than "constituency" because it is interested primarily in the "constituencies" that are directly involved with the transit system on a "macro" basis. That is, this research is concerned with "constituencies" on a firm or organizational level (i.e., the transit operator, the MPO, and the state government).

2. Contribution to business research methods

This research examines if what are purported to be commonly held beliefs with regard to the definition of public transit system performance are, in fact, actually commonly held. This paper utilizes the research on transit system goals and performance measurement to illustrate the importance of verifying the underlying assumptions which compose the foundation of a research area before conducting any new research in that area. It utilizes a survey of all transit systems in the United States to examine whether certain governmental stakeholders of public transit weigh the three constructs of transit system performance – efficiency, effectiveness, and impact – in the same way.

The importance of this paper with regard to business research methods lies in its illustration that failing to examine the underlying assumptions which compose the foundation of a research area may undermine the validity and usefulness of a new research effort. Niccolo Machiavelli (1469 – 1527), the Italian dramatist, historian, and philosopher, acknowledged the importance of strong foundations in his book, The Prince:

> *"He who has not first laid his foundations may be able with great ability to lay them afterwards, but they will be laid with trouble to the architect and danger to the building."*

The same can be said for the need for a strong foundation when conducting research, because defining and understanding the foundation upon which a given research is based is critical before commencing any new research project.

3. Challenges faced by public transit operators

It should be noted that public transit systems face three primary challenges due to the goals and objectives of transit stakeholders. These challenges result due to conflicting goals both within and among stakeholder groups, changing stakeholder goals and objectives over time, and differences in the specific goals and objectives of stakeholders and the importance placed on those goals and objectives by different stakeholder groups.

First, one difficulty faced by transit operators is the often conflicting goals which transit must serve. That is, the achievement of one goal by a given transit system may hinder, or prevent, the achievement of another goal(s). The fact that transit services must respond to a variety of needs, including those of the elderly, the handicapped, and residents of minority areas, has been noted in the literature. The performance goals of public transit can result from the societal goals advocated by governments at the federal, state, and local levels. Federal legislation (such as the Americans with Disabilities Act) and local government plans for urban revitalization and development can impact the performance goals of public transit systems and can result in performance goals conflicting with one another. For example, if a transit system discontinues service on a particular transit corridor due to low ridership, the overall cost efficiency of that system might improve. However, if the elimination of the service hinders the urban revitalization plans of the relevant MPO, the elimination would reduce the performance of the system from the point of view of the MPO (as well as to the passengers who currently use the eliminated service). This problem was identified by Fielding, Glauthier, and Lave (1978) when they noted that many goals may be suggested for transit, but transit systems can not pursue all of them simultaneously. The fact that transit systems that satisfy some of these needs may not appear to be performing well when appraised via traditional performance evaluation techniques has also been identified in the literature (see, for example, Stokes, 1979).

Second, public transit systems are challenged by the dynamic political/legal environment in which they operate. Fielding (1987) identified that the evaluation of public transit is made difficult by changing stakeholder goals. Preserving the commercial advantages of central cities and the jobs of transit employees was initially the primary concern of government with regard to public transit; then social, environmental, and conservation goals were

added in the 1970s. As a result, performance analysis for transit must embrace efficiency, effectiveness, as well as equity dimensions (Fielding, 1992).

Finally, public transit systems are challenged because government objectives may differ from one level of government to another or one level of government may place greater weight on a particular objective than another level of government (Dajani and Gilbert, 1978) (Talley, 1983). As a result, the achievement of a particular goal by a public transit system may result in substantially different interpretations as to the importance of that achievement among transit stakeholders.

4. Literature review

What is transit performance? If “performance” is defined as “the manner in which or the efficiency with which something reacts or fulfills its intended purpose” (Stein, 1983: 1070), transit performance could be defined as “the manner in which or the efficiency with which public transit fulfills its intended purpose.” But what is the “intended purpose” of public transit? An examination of the literature reveals that disagreement exists with regard to what the “intended purpose” of public transit is and thereby what components, or “constructs,” of transit service should be considered when attempting to assess the performance of transit systems.

Phillips (2004), in his article concerning an application of the balanced scorecard approach, provides a general discussion of the metrics of public transit as well as a rationale and methodology for categorizing transit performance measures. This current research is based on the “shopping list” of “macro” and “micro” constructs developed by Phillips (2004) for use by managers when developing balanced scorecards for public transit systems. Phillips (2004) also gathered together, for the first time, a comprehensive list of public transit constructs / goals and their corresponding performance measures in order to allow public transit managers to develop balanced scorecards or any other performance assessment framework in a more efficient manner.

5. General categories of performance measures

The literature, in general, has settled upon two categories of performance measurement: efficiency and effectiveness. The present research will also utilize a third category, “impact,” which is advocated by Dajani and Gilbert (1978). That is, for the purpose of the present research, the concept of transit productivity in the public sector encompasses efficiency, effectiveness, and impact.

“Efficiency” indicates the extent to which the government produces a given output with the least possible use of resources. Efficiency indicators rate the processes by which transit services are produced, particularly through the relationship of inputs to outputs. That is, efficiency is concerned with "doing things right."

“Effectiveness” has been defined as the comparison of produced output (provided service) to intended output or objectives. That is, measures of effectiveness are concerned with the extent to which the service is provided - in terms of quantity, location, and character - corresponds to the goals and objectives established for it by government and the needs of citizens. Thus, effectiveness is concerned with "doing the right things."

The third category, “impact” describes the macro effects of public transit and reflects the efficiency and effectiveness of transit, as well as external and indirect effects on social well-being, economic development, and environmental quality. That is, impact includes externalities and indirect effects both beneficial and adverse, intended and unintended (Dajani and Gilbert, 1979).

6. Methodology

6.1 Respondents

Respondents were U.S. transit systems identified by the Federal Transit Administration as well as their respective MPOs and state governments. Further, it was believed that it was critical to identify a highly placed individual at each of these stakeholder entities in order to ensure that the person filling out the survey was in a position that was senior enough to be able to provide an informed opinion about the organization’s goals and priorities. [However, the use of the “key informant” method to collect information (Campbell, 1955)(Phillips, 1981) was also one of the primary limitations of this research. As a result, the opinion of the chief executive officer of each stakeholder entity was used to approximate the overall importance placed on the constructs of transit performance by a given stakeholder group. The key informant method uses informants that are selected based on their appropriateness to answer the questions being asked as

opposed to random selection. For the purpose of this research, the importance placed on various transit performance constructs is a question best answered by individuals involved in stakeholder strategy formulation: the chief executive officer.]

This procedure resulted in a total of 467 transit system contacts, 341 MPO contacts, and 53 state contacts (including Washington DC and Puerto Rico).

6.2 Development of survey materials

Previous research on governmental bodies has been conducted using survey methodology. The current research also develops a survey which was designed to assess the importance placed, on the basis of stakeholder group, on each of the three constructs of transit performance which were identified via the literature review. Each contact person received a small packet of materials by mail which contained a cover letter explaining the basic purpose of the survey and requesting their participation in this research effort. In addition, each packet contained a copy of the survey and a return envelope which was stamped and addressed to the author. The survey was 5 pages long (front and back) and took respondents approximately 15 minutes to fill out. Due to limited financial resources, only one mailing was possible.

An informal pretest of this study was conducted by mailing the survey to one transit system that expressed a willingness to work with researchers in the past. After this manager had completed the questionnaire, the questionnaire was discussed with him by telephone. This individual was asked to criticize the questionnaire and was asked if any of the questions it contained were unclear or confusing. Based on this respondent's recommendations, the wording of some questions was changed.

7. Survey overview

The first section of the survey focused on the “macro” constructs of transit performance. It began by defining the three broad components of transit performance (e.g., efficiency, effectiveness, and impact), asking participants to rate each item on importance, and then asking participants to rank order the three items by importance. The next section provided brief definitions of the 25 individual elements of transit performance compiled by Phillips (2004) and asked participants to rate each item based on the importance placed on the item by their respective organization. The final section of the survey asked participants to rank order the 8 individual elements of efficiency, the 11 individual elements of effectiveness, and the 6 individual elements of impact.

8. Development of the dependent measures

- *Performance Component Scale*. The first part of the survey asked participants to rate on a 1-7 scale the importance of each of the “macro” constructs of transit performance. Endpoints were labeled “not at all important” – “very important.”
- *Performance Component Rating*. The first part of the survey asked participants to rank order the three “macro” constructs of transit performance. Thus, participants were required to assign rankings of 1^{st}, 2^{nd}, and 3^{rd} to efficiency, effectiveness, and impact.
- *Efficiency Composite*. In the second part of the survey, participants were required to rate each of the 25 individual elements of transit performance on a 1-7 scale with endpoints labeled “not at all important” – “very important.” The 8 items making up the efficiency component were then combined to create an efficiency composite. A reliability analysis indicated that this measure is internally consistent (Cronbach alpha = 0.8518).
- *Effectiveness Composite*. The 11 items making up the effectiveness component in the second part of the survey were combined to create an effectiveness composite. This measure also proved to be internally consistent (Cronbach alpha = 0.8643).
- *Impact Composite*. Finally, the 6 items making up the impact component of performance in the second part of the survey were combined to create an impact composite. Again, this measure was internally consistent (Cronbach alpha = 0.8380).
- When combined, the efficiency composite, effectiveness composite, and the impact composite also demonstrate fairly high internal consistency (Cronbach alpha = 0.8103). This indicates that these factors may indeed be a part of some larger construct such as transit performance, as asserted herein.

- *Efficiency Ranking*. The 8 individual elements of efficiency were rank ordered by the participants such that each individual element received a ranking of between 1st and 8th. No "tie" scores were allowed and each element had to receive one rank
- *Effectiveness Ranking*. The 11 individual elements of effectiveness were also rank ordered by participants with each element receiving a rank of between 1st and 11th. No "tie" scores were allowed and each element had to receive one rank.
- *Impact Ranking*. The 6 individual elements of impact were also rank ordered by participants with each element receiving a rank of between 1st and 6th. No "tie" scores were allowed and each element had to receive one rank.

9. Results

Of the 875 surveys sent out, 289 were returned within three weeks. This resulted in an overall return rate of 33.0% for the surveys. Of those returned, there were 137 usable surveys from transit systems (29.3% return rate), 109 usable surveys from MPOs (32.0% return rate), and 16 usable surveys from state governments (30.2% return rate).

Table 1: Key to variable abbreviations

Variable Abbreviation	Explanation
Effic_s	A single item measure of efficiency, measured on a 1-7 importance scale.
Effec_s	A single item measure of effectiveness, measured on a 1-7 importance scale.
Impac_s	A single item measure of impact, measured on a 1-7 importance scale.
Effic_r	A ranking of efficiency by importance, measured by assigning a 1st, 2nd, or 3rd ranking to efficiency, effectiveness, and impact.
Effec_r	A ranking of effectiveness by importance, measured by assigning a 1st, 2nd, or 3rd ranking to efficiency, effectiveness, and impact.
Impac_r	A ranking of impact by importance, measured by assigning a 1st, 2nd, or 3rd ranking to efficiency, effectiveness, and impact.
Effic1s – Effic8s	Eight single item measures of the micro constructs making up the efficiency construct, measured on 1-7 importance scales.
Effec1s – Effec11s	Eleven single item measures of the micro constructs making up the effectiveness construct, measured on 1-7 importance scales.
Impac1s – Impac6s	Six single item measures of the micro constructs making up the impact construct, measured on 1-7 importance scales.
Effic1r – Effic8r	The eight items making up the rankings of the individual items of efficiency, measured by assigning rankings of 1st – 8th to each of the efficiency items.
Effec1r – Effec11r	The eleven items making up the rankings of the individual items of effectiveness, measured by assigning rankings of 1st – 11th to each of the effectiveness items.
Impac1r – Impac6r	The six items making up the rankings of the individual items of impact, measured by assigning rankings of 1st – 6th to each of the impact items.
Effictot	The 8-item composite of individual scale items of efficiency.
Effectot	The 11-item composite of the individual scale items of effectiveness.
Impactot	The 6-item composite of the individual scale items of impact.

10. Macro-level constructs of transit performance

The literature review identified the three "macro" constructs of transit performance to be efficiency, effectiveness, and impact. In addition, the literature review identified several "micro" constructs associated with each of these "macro" constructs. Efficiency is made up of 8 individual elements, effectiveness is made up of 11 individual elements, and impact is made up of 6 individual elements. In all, 25 individual items are components of the three constructs of transit performance. These 25 individual items can be conceptualized as being "micro" constructs of transit performance. A factor analysis of these individual items was performed in order to confirm that these items did indeed group together as efficiency, effectiveness, and impact. The 25 items were subjected to a promax rotation and the results converged after six iterations. The three factors (i.e., constructs) accounted for 53.01% of the total variance and an inspection of the scree plot indicated that a three factor solution was optimal (see Table 2). Only two of the 25 items failed to load on the proper factor (e.g., effec9s and impac3s). These two items were, however, assigned to the factor to which there is already a strong theoretical basis for these items to belong. Because this is the first study of its kind to examine the

three constructs of transit performance and because the three constructs are strongly correlated with one another, it was deemed acceptable to do this.

Table 2: Factor loadings for the 25 performance items

Item	1st Component	2nd Component	3rd Component
Effic1s	0.141	0.730 *	-0.082
Effic2s	0.048	0.593 *	0.099
Effic3s	0.116	0.399 *	0.358
Effic4s	0.134	0.639 *	-0.052
Effic5s	0.179	0.672 *	-0.051
Effic6s	0.231	0.372 *	0.011
Effic7s	-0.216	0.782 *	0.121
Effic8s	-0.148	0.897 *	-0.044
Effec1s	0.540 *	0.003	0.195
Effec2s	0.850 *	-0.232	0.020
Effec3s	0.739 *	0.012	-0.000
Effec4s	0.342 *	0.071	0.339
Effec5s	0.419 *	0.031	0.275
Effec6s	0.689 *	0.117	-0.170
Effec7s	0.658 *	-0.032	0.106
Effec8s	0.736 *	0.174	-0.073
Effec9s	-0.099 *	0.575	-0.050
Effec10s	0.647 *	0.247	-0.101
Effec11s	0.627 *	0.070	0.053
Impac1s	0.022	-0.013	0.835 *
Impac2s	0.148	-0.254	0.786 *
Impac3s	0.816	-0.185	-0.021 *
Impac4s	-0.001	0.158	0.845 *
Impac5s	0.204	0.018	0.577 *
Impac6s	-0.193	0.029	0.905 *

The three factors are fairly highly correlated with one another: r (1,2) = 0.601, r (1,3) = 0.542, r (2,3) = 0.471.

11. Primary research question: Q1: Do stakeholder groups view the three macro-constructs of performance differently?

In order to answer this question, three separate analyses were conducted. The first analysis assessed the extent to which the single item ratings of performance on importance would be different depending on stakeholder group. An ANOVA with effic_s as the dependent variable and level of government as the independent variable indicated that ratings of efficiency did indeed depend on the stakeholder group. The overall model was significant ($F(2, 257) = 5.759$, $p < .004$) as was the level of government ($F(1) = 11.518$, $p < .001$). A closer look at the means indicated that transit systems rate efficiency as being more important than do MPOs (6.1407 vs. 5.7890, $p < .008$) or state governments (6.1407 vs. 5.4375, $p < .010$) (see Table 3). ANOVAs were also conducted for effec_s and for impac_s, but no significant differences were found.

The second analysis attempted to answer this same question of whether stakeholder groups would view the three constructs of performance differently. This analysis used the forced rating scales as the dependent variables. The ANOVAs and the analysis of means comparisons indicated no significant differences according to this measure (see Table 3).

The third analysis used three composites formed from the "micro" constructs as dependent variables. For the first variable, effictot, the ANOVA revealed that ratings of efficiency do depend on level of government. The overall model was significant ($F(2, 152) = 7.070$, $p < .001$) as was the level of government variable ($F(1) = 12.599$, $p < .0005$). An analysis of the means indicated that transit organizations rate efficiency as significantly more important than do MPOs (5.4361 vs. 5.0330, $p < .0005$) or do state governments (5.4361 vs. 4.9844, $p < .051$). For the second macro construct, effectot, the ANOVA revealed that ratings on effectiveness do indeed depend on the level of government. The overall model was significant ($F(2, 257) = 16.167$, $p < .0005$) as was the level of government variable ($F(1) = 31.084$, $p < .0005$). A closer look at the means indicated that transit systems rated effectiveness as significantly more important than did MPOs (6.0602 vs. 5.646, $p < .0005$) or state governments (6.0602 vs. 5.4318, $p < .0005$). The analysis of the third macro construct, impactot, also found that ratings of impact depend on the level of government. The overall

model was significant (F (2, 256) = 2.339, p < .098) as was the level of government variable (F (1) = 4.042, p < .045). Here, the analysis of means indicated that the transit systems rated impact as significantly more important than did MPOs (5.0662 vs. 4.7809, p < .038) (see Table 3). No significant differences were noted between transit systems or MPOs and state governments.

Table 3: Comparison of means for the 3 macro-constructs

	Efficiency Measure And Mean	Effectiveness Measure And Mean	Impact Measure And Mean
	Effic_s	Effec_s	Impac_s
Transit	6.1407 [c d]	6.2296	5.4060
MPO	5.7890 [c]	6.1376	5.2963
State	5.4375 [d]	6.1875	5.5625
Total	5.9500	6.1885	5.3696
N	260	260	257
	Effic_r	Effec_r	Impac_r
Transit	1.9070	1.5659	2.5271
MPO	1.9608	1.5784	2.4608
State	2.1875	1.5625	2.2500
Total	1.9474	1.5709	2.4818
N	247	247	247
	Effictot	Effectot	Impactot
Transit	5.4361 [a f]	6.0602 [a b]	5.0662 [e]
MPO	5.0330 [a]	5.6246 [a]	4.7809 [e]
State	4.9844 [f]	5.4318 [b]	4.7778
Total	5.2402	5.8406	4.9305
N	255	260	259

Key: for both the scale ratings and the composites of the scale ratings, higher numbers indicate greater levels of reported importance. For the rankings, however, lower numbers indicate greater levels of importance. Levels of significance are as follows: a: p < .0005, b: p < .0005, c: p < .010, d: p < .010, e: p < .050, f: p < .060.

In all, these results indicate that ratings of efficiency, effectiveness, and impact do critically depend on the stakeholder group that is providing the rating. That is, the three stakeholder groups examined - transit systems, MPOs, and state governments - do indeed view the constructs of performance differently. The composite measures seem to provide the best evidence of this dependence.

12. Analysis

The primary research question was examined through the development of testable hypotheses that decompose transit system performance into its three "macro" constructs -- efficiency, effectiveness, and impact -- and then relate these constructs to stakeholder group. The three null hypotheses

$H_0$1: The importance placed on public transit efficiency by a government entity is not related to the level of that entity.

$H_0$2: The importance placed on public transit effectiveness by a government entity is not related to the level of that entity.

$H_0$3: The importance placed on public transit impact by a government entity is not related to the level of that entity.

and the three alternative hypotheses:

H_a1: The importance placed on public transit efficiency by a government entity is negatively related to the level of that entity.

H_a2: The importance placed on public transit effectiveness by a government entity is negatively related to the level of that entity.

H_a3: The importance placed on public transit impact by a government entity is positively related to the level of that entity.

were examined using the three stakeholder groups: transit systems, MPOs, and state governments. Given the statistical results, all of the null hypotheses were rejected. Further, of the three alternative hypotheses, one (H_a3) was not supported. Specifically, significant results were found between the level of government entity (i.e. transit systems, MPOs, and state governments) and the impact construct of transit performance but in the opposite direction of that predicted by H_a3. That is, impact is more important to transit systems than to MPOs.

With regard to H_a1, significant relationships were found between the level of government entity (i.e. transit systems, MPOs, and state governments) and the efficiency construct. Specifically, as predicted, the efficiency component of transit performance is most important to transit systems, followed by MPOs and state governments. The fact that H_a1 is supported suggests that the higher the level of government, the less important efficiency aspects of transit performance (i.e., "doing things right") become. This finding suggests that the assertion that efficient use of transit funds becomes more important as the amount of money involved (as a percentage of a stakeholder's total budget) increases may be true. In addition, it suggests that transit systems may value efficiency more than either MPOs or state governments because inefficiency can result in additional governmental regulation. Thus, the assertion that transit systems tend to value efficiency in order to avoid the imposition of additional regulation may indeed be one possible explanation for the importance placed on efficiency by transit systems.

With regard to H_a2, significant relationships were found between the level of government entity (i.e. transit systems, MPOs, and state governments) and the effectiveness construct. That is, the importance placed on effectiveness appears to decrease as the level of government increases. Further, the analysis suggests that the effectiveness of public transit (i.e. "doing the right things") is more important to transit systems than to either MPOs or state governments. Although further research is needed, the assertion that as the percentage of constituents that are transit users increases, the effective provision of transit becomes more important appears to have some merit.

Finally, the lack of support for H_a3 shows that additional research is needed with regard to the relationship between level of government and importance of transit system impact. It was expected that the higher the level of government, the more important the impact aspects of transit performance would become. However, the exact opposite is implied by the findings of this study. Specifically, the impact of public transit is more important at the transit system level than at the MPO level. This result implies that transit systems are also concerned with the "macro" effects of transit. That is, transit systems value efficiency and effectiveness of transit as well as its external and indirect effects on social well-being, economic development, and environmental quality. It is hoped that future research, which includes data from the federal level, will clarify this result as the assertion that the federal level is most concerned with social engineering and advancement of social well-being, economic development, and environmental quality is a logical one.

13. Discussion

The purpose of this research was to determine whether the definition of transit system performance is, in fact, dependent upon the point of view of the stakeholder. Further, it argued that these "multiple definitions" are composed of a variety of constructs, such as vehicle efficiency and pollution reduction, which are weighted differently by different stakeholder groups and thereby provide unique definitions for each stakeholder group.

The literature review identified the three "macro" constructs of transit performance: efficiency, effectiveness, and impact. It also identified the 25 "micro" constructs of transit performance of which the three "macro" constructs are composed. This literature review was then used as the basis to explore the primary research question of this study:

- Q1: Do stakeholder groups view the three macro-constructs of performance differently?

This question was examined through the development of testable hypotheses that decompose transit system performance into its three "macro" constructs -- efficiency, effectiveness, and impact -- and then relate these constructs to stakeholder group.

The primary contribution of this research is the preliminary confirmation that stakeholder groups do indeed view the three macro-constructs of performance differently and as a result have stakeholder-specific definitions of transit performance. However, given that this study was exploratory in nature, future research is clearly needed to confirm its findings.

One limitation of this research is that stakeholders with vastly differing operations and objectives were grouped together. Although a broad range of stakeholder types exist within each stakeholder group, this research does not categorize transit stakeholders except with regard to the demographics of the areas in which they operate. The assignment of transit systems, MPOs, or states into peer groups is an area of ongoing research and to date there is no generally accepted methodology for peer group formation. Thus, although the methods used in this research are based on prior research, these methodologies are valid but not necessarily optimal.

14. Summary and conclusion

This research suggests that future efforts to assess transit system performance must take into account the various stakeholders of public transit. However, as this is the first research effort to examine the relationship between transit performance and transit stakeholder group, additional research and verification is needed. It is hoped that this research will serve as a starting point for the further examination of this relationship. For example, future research on the development of transit performance measures and measurement sets may be improved if each measure is clearly related to both its applicable construct and the importance placed on that construct by the various transit stakeholders. Further, if transit system operators feel that their "point of view" regarding their performance is being considered by their respective governmental stakeholders, they may be more willing to support programs for transit system performance evaluation and improvement.

This paper also illustrates the importance of examining the underlying assumptions of a research area when beginning a new research project. It suggests that verifying the assumptions which form the foundation upon which a given research is based is critical in order to maximize the value of new research.

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