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Stakeholder behavior in operational research: Connecting the why, who, and how of stakeholder involvement

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Abstract

The relevance of stakeholder behavior is widely acknowledged in operational research. However, the specific line of reasoning behind involving stakeholder behavior often remains implicit. This is problematic as there are very different reasons with important implications for the design and implementation for operation research studies. To support transforming the currently often unconscious capability of addressing stakeholder behavior in operational research into a more conscious one, this chapter expands on four different motives: improving decision quality, building consensus, improving relationships, and the intrinsic value of involving stakeholders. For each of these four motives the implications are discussed for how to involve stakeholders, and which stakeholders to involve.

Biography

Dr. Vincent de Gooyert is assistant professor of Research Methodology at the Nijmegen School of Management, Radboud University. Building on his background in both engineering and sociology, he specializes in sustainability and in system dynamics. Vincent was a visiting scholar at the MIT Sloan School of Management and Schulich School of Business, York

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1. Introduction

The aim of behavioral operational research (BOR) is to acknowledge and incorporate behavioral effects: effects that “relate to the group interaction and communication when facilitating with OR models” (Hämäläinen et al. 2013). The BOR research agenda revolves around questions as ‘what are the consequences of humans being involved in OR’, and ‘what is the human impact on the OR process’ (Hämäläinen et al. 2013)? Behavioral mechanisms have important implications for the process, models, and outcomes of OR efforts (White 2016). In addition, behavioral mechanisms are one of the elements of the problems that OR projects aim to study (e.g. de Gooyert et al. 2016).

Earlier studies discussed the relevance of stakeholders in operational research (Ackerman and Eden 2011; Bryson 2004). This is especially true in the realm of problem structuring methods, which try to deal with ‘wicked’ problems where different stakeholders adopt different views on what the nature of the problem to be dealt with is (Franco and Montibeller 2010), and where there can be considerable tensions between stakeholders (Malpass and Cassidy, this book). However, what the relevance of stakeholders is exactly and what the implications are for operational research is often dealt with superficially (Müller et al. 2012) and implicitly (de Gooyert et al. 2017). Earlier studies come with recommendations and tools on how to deal with stakeholders in OR (Ackerman and Eden 2011; Bryson 2004), and who to involve (Müller et al. 2012). However, such recommendations are often generic of nature. In this chapter, my aim is to make the now often unconscious capability of involving stakeholders in OR more explicit, by distinguishing between different reasons for involving stakeholders, and their implications for how to involve which stakeholders.

2. Motives for involving stakeholders

In this section, I draw on stakeholder theory, operational research, as well as on my own experiences in practicing, supervising, and teaching stakeholder involvement in operational research, to describe four different motives for involving stakeholders. The motives are 1) improving decision quality, 2) building consensus, 3) improving relationships, and 4) the intrinsic value of involving stakeholders. In practice, operational research studies may combine motives, and the motives to involve stakeholders may change during the course of a project. Together, these motives provide answers to the question on ‘why’ to involve stakeholders in operational research.

Improving decision quality

Operational research applies mathematics, or modeling more broadly, to support solving real-world problems. The outcome of operational research can be understood as decision support: the aim is to provide information that helps making a better decision compared with the situation in which there would be no operational research study. One motivation to involve stakeholders is that this may lead to a better outcome of an operational research study in terms of decision quality compared, because it fosters *learning*. When stakeholders are involved in an operational research study, this allows exchange of information, confronting each other with data (Rouwette et al. 2016, p. 64), and debating the validity of competing beliefs about the problematic situation and potential solutions. Some (soft) operational research methods explicitly mention learning as an important outcome of applying such methods (e.g. Vennix, 1996).

The assumption behind improving decision quality as the motivation for stakeholder involvement is that the decision maker and the operational researchers themselves do not

possess all knowledge relevant for addressing the problem. This assumption does not have to be true, especially for well-defined problems, for which ‘expert mode’ problem solving would suffice (Franco and Montibeller 2010, p. 489). For more ill-structured problems, the data necessary to achieve a rich understanding of the problem commonly is spread out over many individuals (e.g. Camillus 2008). Involving stakeholders can result in covering more data, but also in improved ‘sensemaking’: translating the data into information that supports solving a problem (Daft and Weick 1984; Weick 1995). In addition, some information on the problem can be “difficult to examine, describe, and use” (Ford and Sterman 1998, p. 309). Involving stakeholders in operational research is one way of bringing together information, allowing to draw on tacit knowledge that would otherwise remain implicit and out of scope.

Building consensus

Another motivation to involve stakeholders can be the aim to reach consensus on the nature of the problem, and related, the potential of various solutions to solve the problem. One way in which OR can help in this respect is by using models as boundary objects (Malpass and Cassidy, this chapter). Building consensus is a different motive compared to improving decision quality through sharing information/ learning, because even with the same information available to all parties, there might be disagreement on which solution to pursue. Consensus in that sense has more to do with the *values* that problem owners and stakeholders hold on to. Differences in values lead to differences in opinions on the desirability of implementing certain solutions. The aim of involving stakeholders can then be to reach a compromise, ‘increasing commitment’ towards the agreed upon solutions (de Gooyert et al. 2016, p. 136).

The relevance of reaching consensus is acknowledged in the literature. Consensus in itself is not always deemed desirable or appropriate, as it might be a signal of groupthink

(Janis 1972). This is also called 'premature consensus' (Hines and House 2001) and can be a signal that not enough information has been gathered, that more divergent steps are required. However, although consensus is not a sufficient condition for a successful operational research project, it is seen by some as a necessary condition. Based on a study of over 400 decisions, Nutt (2004) argues that involving stakeholders is required to address the concerns and considerations of those stakeholders. Overlooking these concerns can have as a consequence that these stakeholders resist the implementation of the decision, delaying the implementation and decreasing the chances of successful implementation altogether (Nutt 2002; 2004; 2008).

Resistance can be caused by not incorporating the values of stakeholders, but also by the procedure leading up to a decision being perceived as unfair by stakeholders (Cropanzano et al. 2007). If stakeholders are of the opinion that they should have been involved in a decision-making process where they were not, this perceived injustice may lead them to oppose the implementation of solutions. Stakeholders may even agree to support the implementation of solutions that they deem undesirable themselves, because they perceive the procedure leading up to the decision as being fair (Korsgaard et al. 1995). Having an open dialogue is an important antecedent of the perceived fairness of a decision-making process (Kim and Mauborgne 1995) and involving stakeholders in operational research allows for having such an open dialogue.

Improving relationships

Many relationships between problem owners and stakeholders are repetitive of nature. Building consensus may help to avoid resistance in the context of a certain problem, but the same parties are likely to meet each other again in other situations in the future. The consensus to implement a solution for a specific problem, does not mean that the same parties

will automatically agree on the solutions for other problems as well. Therefore, another motivation to involve stakeholders in operational research, is to invest in a stakeholder relationship more generally. This can be seen as an investment in the relationship with stakeholders, without necessarily knowing on beforehand what the exact return on that investment will be. The parties find themselves in a network characterized by repetitive interdependencies and investing in stakeholder relationships without clear immediate returns makes sense from this network perspective, while the same investments would not make sense from a project-based perspective (de Bruijn and ten Heuvelhof 2018). Investing in stakeholder relationships has shown to lead to several hard to measure effects as increased trust (Franco 2008), more favorable attitudes towards the problem owner, improved cooperation (Bosse et al. 2009; Choi and Wang 2009) and avoided conflicts (Hillman and Keim 2001).

The intrinsic value of involving stakeholders

A fourth motive sees involving stakeholders in operational research not as a means to an end, but as an end in itself. The argument is that involving stakeholders has an intrinsic value on its own. Several underlying arguments can be found in the stakeholder theory supporting this view. These arguments together form the ‘normative cores’ of stakeholder theory (Donaldson and Preston 1995).

A first example is Freeman and Evan’s (1990) extension of the transaction costs approach as described by Williamson (1984), which they use to argue that stakeholder theory is in line with the transaction costs approach. While Jones (1995) makes this into an economic argument of lowering transaction costs, Freeman and Evan (1990) make this into a moral argument. Their firm-as-contract analysis argues that all stakeholders, especially those with asset specific stakes, have a right to bargain and deserve a “fair contract” (Freeman and Evan

1990, p. 352). More specifically, they state that “managers administer contracts among employees, owners, suppliers, customers, and the community. Since each of these groups can invest in asset specific transactions which affect the other groups, methods of conflict resolution, or safeguards must be found” (Freeman and Evan 1990, p. 352).

Property rights form another foundation that is both used as an economic (Asher et al. 2005) as well as a moral argument. Donaldson and Preston use what they call a pluralistic theory of property rights to argue that stakeholder theory is normatively justified by the need, ability, effort, and mutual agreement between an organization and its stakeholders (Donaldson and Preston 1995, p. 81-84). They show that property rights are always embedded in human rights. Property rights are never unlimited, as the interest of other stakeholders will always impose restrictions included in those property rights.

Another basis for a moral argument is the principle of stakeholder fairness. Phillips (1997) argues that an obligation of fairness arises whenever an organization accepts the benefits of a mutually beneficial scheme of co-operation requiring sacrifice or contribution on the parts of the participants and there exists the possibility of free-riding (Phillips 1997, p. 57). The degree of the obligation to fairness is in proportion to the benefits accepted. Besides property rights and the principle of fairness mentioned above, other foundations for moral stakeholder arguments are: common good, feminist ethics, risk, integrative social contracts theory, Kantianism and doctrine of fair contracts (Phillips et al. 2003, p. 481)

3. Which stakeholder to involve?

A widely used definition of stakeholders is “groups and individuals who can affect, or are affected by, the achievement of an organization’s mission” (Freeman 1984, p. 52). Since the origin of stakeholder theory, many answers have been given to the question which stakeholders should be taken into account. Mitchell et al. (1997) contribute to answering this

question by making a distinction between three characteristics that stakeholders may possess: power, legitimacy and urgency. *Power* is defined as “the ability of those who possess power to bring about the outcomes they desire” (Salancik and Pfeffer 1974, p. 3 in Mitchell et al. 1997, p. 865). *Legitimacy* is defined as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman 1995, p. 574, in Mitchell et al. 1997, p. 866). *Urgency* is defined as “the degree to which stakeholder claims call for immediate attention”, based on “the following two attributes: (1) time sensitivity – the degree to which managerial delay in attending to the claim or relationship is unacceptable to the stakeholder, and (2) criticality – the importance of the claim or the relationship to the stakeholder” (based on Jones 1991, in Mitchell et al. 1997, p. 867). Using these three characteristics, they define eight types of stakeholders that differ in their amount of *salience*: “the degree to which managers give priority to competing stakeholder claims” (Mitchell et al. 1997, p. 854).

Depending on the motive to involve stakeholders in operational research, it makes more sense to involve certain types of stakeholders and not others. Therefore, I discuss for each motive below which stakeholders play a more prominent role compared to others.

Improving decision quality

When the aim is to involve stakeholders in operational research to improve decision quality through learning, the selection of stakeholders depends on the knowledge they can bring to the table. Often used stakeholder selection techniques such as the power interest grid (Ackerman and Eden 2011; Bryson 2004; Freeman 1984) and the Mitchell, Agle, and Wood framework (1991) put a lot of emphasis on the power of a stakeholder. However, if decision quality is the primary focus, power plays not a prominent role at all. Stakeholders should be

selected on the basis on their expertise on a problem, or the access that they have to relevant data (e.g. Ford and Sterman 1998). In terms of the power interest grid, it is likely that those stakeholders that score high on 'interest' should be involved, as these stakeholders are more likely to also have knowledge on a problem, given their interest.

It could be a deliberate strategy to also involve stakeholders that have only a weak relationship to the problem whatsoever. These 'fringe stakeholders' (Hart and Sharma 2004) might bring a fresh perspective to the table because these stakeholders have a different perception of the problem compared to the usual suspects. Discussing a problem which such stakeholders opens new perspectives on the problem that were beyond imagination without them (Hart and Sharma 2004; Pina e Cunha and Chia 2007). These fringe stakeholders score low on both power and interest, and therefore would have not been identified using traditional stakeholder identification techniques.

Building consensus

Building consensus is an important way of increasing the likelihood of successful implementation of a solution, through increasing commitment from those stakeholders that might otherwise resist implementation. Therefore, when the aim is to build consensus, the focus lies on stakeholders that have the power to resist implementation. In principle, the interest of stakeholders is of less relevance, although those stakeholders that score high on interest are more likely to have a desire to use their power, because they care more about whether a certain solution gets implemented or not. In terms of Freeman's definition of stakeholders, those 'able to affect' the problem play a more important role in the context of the motive of building consensus than those 'that are affected' (Freeman 1984, p. 52).

Perceived unfairness of a decision-making process is a potential source of resistance to implementation (Cropanzano et al. 2007; Korsgaard et al. 1995) and from this perspective it

follows that those stakeholders need to be involved that are of the opinion that they should be involved. In terms of Mitchell, Agle, and Wood (1997) these are the stakeholders that score high on urgency. Nutt (2002) stresses that failing to uncover the concerns of such stakeholders may result in a decision debacle.

Improving relationships

When the aim is to improve the relationship with stakeholders more generally, the selection of stakeholders depends on the likelihood of encountering the same stakeholder again in future situations. Especially in the context of unstructured, or ‘wicked’ problems (Camillus 2008), problems typically are not ‘solved’ after finishing a project aimed at that specific problem. Rather, the policies implemented to manage the problematic situation are likely to have their own unintended consequences on the longer term, leading to new, related problematic situations (Camillus 2008). In such complex settings, relationships between stakeholders are likely to be multilateral and asymmetrical (de Bruijn and ten Heuvelhof 2018). A problem owner typically depends on more than one stakeholder and while in one situation the problem owner depends on a certain stakeholder, the dependency could as well be reversed in a next situation. Identifying stakeholders in this context comes down to identifying those stakeholders that the problem owner is likely to encounter in future situations. These could very well be stakeholders that have low interest in the specific problem under study. The stakeholders will probably score high on power, as this makes it more likely that these stakeholders are able to ‘return the favor’ of the investment in the stakeholder relationship by the problem owner. However, this is a more general conception of power of a stakeholder than the typical problem-specific power used in stakeholder identification techniques.

The intrinsic value of involving stakeholders

Some stakeholders are involved because of the intrinsic value of involving those stakeholders. One argument can be the moral obligation that is felt to involve certain stakeholders. This typically concerns stakeholders that score low on power and high on interest. After all, stakeholders that score high on power can defend their own interest, they do not need a problem owner to empower them. Stakeholder that score low on interest on the other hand, care less whether they are involved or not. In terms of Freeman's definition of stakeholders, those 'that are affected' by the problem owner play a more important here than those 'able to affect' (Freeman 1984, p. 52), the opposite of the stakeholders in the context of building consensus. In terms of Mitchell, Agle, and Wood (1997) legitimacy is the determining characteristic here. Stakeholders become important when this is considered appropriate based on value, beliefs, and definitions (Mitchell et al. 1997, p. 866). Some (soft) operational research methods are specifically aimed at giving a voice to stakeholders that would otherwise remain marginal, such as community operational research (Midgley et al. 2018) and community based system dynamics (Hovmand 2014).

4. How to involve stakeholders in behavioral operational research?

Stakeholder theory provides methods that can help managers to improve their thought process about stakeholders. Freeman suggests drawing a stakeholder map (1984, p. 54 and further): managers should identify the stakes that different stakeholders have to support balancing conflicting and competing roles. Furthermore, he suggests drawing a stakeholder grid based on two dimensions, namely the amount of power and the size of the stake that stakeholders have in a certain issue, the widely used power-interest grid (1984, p. 62). These techniques are aimed at improving managers' ability to take the perspective of stakeholders. By trying to conceive how stakeholders would react to different decisions, managers thus 'try to keep stakeholder reactions in the back of their minds when making decisions.

A second way of taking stakeholders into account is by actively approaching them. If managers do nothing more than standing in the stakeholders' shoes, it may well be that these stakeholders never find out that they are taken into account. Therefore, organizations can use communication techniques like presenting the way that they came to their decisions to show stakeholders that they are accounted for (Freeman 1984, p. 78).

A third way of taking stakeholders into account is by actually involving them in the decision-making process. Freeman mentions two techniques that fall in this category, namely negotiation and making voluntary agreements (1984, p. 78). Freeman stresses that involving stakeholders is the only way to cope with what he calls the congruence problem, which is the problem that the perception that an organization has concerning its stakeholders, is not necessarily in line with reality. "The congruence problem is a real one in most companies for there are few organizational processes to check the assumptions that managers make every day about their stakeholder" (Freeman 1984, p. 64). I conclude that three main ways of taking stakeholders into account can be distinguished: standing in the shoes of stakeholders, communicating with stakeholders and involving stakeholders in the decision-making process. Depending on the motive to involve stakeholders in operational research, it makes more sense to adopt certain types of stakeholder involvement and not others. Therefore, I discuss for each motive below which type of stakeholder involvement plays a more prominent role compared to others.

Improving decision quality

When the aim is to improve decision quality, stakeholder involvement can be selective.

Assuming that the problem owner and the operational researchers have enough information to include the perspective of stakeholders without involving them, it can be enough to have the OR team stand in the shoes of the stakeholders. Or, assuming that the problem owner and the

operational researchers have enough information if identify which parts of expertise are lacking, stakeholders could be involved just to provide those missing pieces of information, in a later phase of the modeling cycle (Manzi, this book).

Building consensus

While standing in the shoes of stakeholders may suffice to improve decision quality, this type of taking stakeholders into account in behavioral operational research is not enough when the aim is to build consensus. Building consensus requires debating opposing views on a problem (Amason 1996). Besides, not involving stakeholders or involving them superficially can be problematic because if stakeholders get the impression that involvement is only symbolic, it may do more harm than good (Korsgaard et al. 1995).

Improving relationships

Improving relationships is about reciprocity: a problem owner invests in stakeholder relationships without knowing exactly what the return on this investment is going to be. If that is the case, stakeholder involvement may vary from selective participation to deep involvement. The logic of reciprocity then suggests that the problem owner should expect low returns on small investments, and high returns on large investments.

The intrinsic value of involving stakeholders

When stakeholder involvement is an end in itself, rather than a means to another end, stakeholder involvement is likely to be extensive. Practices as community operational research and community based system dynamics rely on deep participation to empower marginal stakeholders (Hovmand 2014; Midgley et al. 2018). Stakeholder involvement will likely commence early on in the modeling cycle (Manzi, this book).

5. Conclusion

Behavioral OR deals with questions as ‘what are the consequences of humans being involved in OR’, and ‘what is the human impact on the OR process’ (Hämäläinen et al. 2013)? Many OR studies involve not just the problem owner and the OR researchers, but also other stakeholders. However, the implications of these stakeholders are often dealt with superficially (Müller et al. 2012) and implicitly (de Gooyert et al. 2017). This is problematic, as there are very different reasons to involve stakeholders with implications for which stakeholders to involve and how to involve them. In this chapter, I distinguished between four different motives to involve stakeholders in OR: improving decision quality, building consensus, improving relationships, and because of the intrinsic value of involving stakeholders. Table 1 below summarizes the implications of these motives for the selection of stakeholders and adjusting the design of an OR study in terms of how the stakeholders are involved. I hope this chapter helps turning the now often unconscious capability of involving stakeholders in OR into one that is more conscious.

Table 1: Connecting the why, who, and how of stakeholder involvement

Why involve stakeholders in behavioral operational research?			
Improving decision quality	Building consensus	Improving relationships	Intrinsic value of stakeholders
Who to involve in behavioral operational research?			
Based on expertise. High interest, low or high power	Based on potential resistance. High interest, high power.	Based on network structure. Low/high interest, high power.	Based on legitimacy. High interest, low power
How to involve stakeholders in behavioral operational research?			
Selective participation to add specific knowledge or perspectives	Deep involvement to uncover hidden concerns and to avoid cynicism	Different levels of reciprocity, on the long term return follows investment	Deep involvement to give voice to marginal stakeholders

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