

Interactive governance for satisfaction measurements: Stakeholder involvement in design processes for flood risk management

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Abstract

The European Flood Directive (FD) shifted water management policy from flood protection to flood risk management. To facilitate the shift, a new instrument was introduced called the flood risk management plan. According to the FD, a flood risk management plan shall first take into account relevant aspects from water management, nature conservation, land use, spatial planning, navigation, and port infrastructure. Second, the flood risk management plan will be coordinated at the river basin level. This changes the spatial scope of water management compared to (old) flood protection approach and affects a broader group of stakeholder interests, namely landowners behind dikes. As a result, water management has to introduce a governance approach that facilitates stakeholder involvement in which different spatial interests are balanced, bargained and negotiated. Academic governance literature consists mostly of qualitative case studies, because of their complex nature. As a result, most governance literature operates on assumptions which make it difficult to formulate governance strategies that work based on general patterns. To contribute towards scientific methodologies for comparative research a quantitative method was developed to measure satisfaction in a stakeholder process. The method first provides new insights on the relation between interactive governance processes and the procedural satisfaction of stakeholders. Second, it provides insights that help to improve interactive governance in terms of managing a stakeholder process in such a way that greater procedural satisfaction can be achieved.

KEYWORDS

communication, consensus, stakeholder involvement, interactive governance, participation, procedural satisfaction

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1 | INTRODUCTION

As a reaction to the floods that have occurred in recent decades the European Union (EU) released the Flood Directive (FD). The flood events of the Rhine in 1993 and 1995 caused a rethinking process about strategies for water management, which was further fuelled by the flooding of the River Oder in 1997 and the Danube and Elbe in 2002 (Dworak & Gorchach, 2005; Hartmann & Juepner, 2014; Warner et al., 2013). The rethinking process ultimately led the EU to affirm a position that a more comprehensive way of flood risk management was required compared to the primarily used strategy of flood protection (i.e., building dikes). Management of flood risk is necessary, as stated in the European Spatial Development Perspective (ESDP), because the risk of flood events increases as a result of the “straightening of rivers, settlement of natural floodplains and land uses which accelerate water runoff in rivers catchment areas” (ESDP, 1999: Article 319). To reinforce the claim of more comprehensive flood risk management the FD introduced a new instrument for water management, namely the flood risk management plan (FD, 2007: Article 7 IV). Flood risk management plans have to firstly be coordinated at “the level of the river basin district” and secondly “take into account relevant aspects from water management, spatial planning, land use, nature conservation, navigation and port infrastructure” (FD, 2007: Article 7 I and III). This means that the shift from flood protection (“battle against the water”) towards flood risk management (“accommodating water”) that was ongoing already for a long time in Europe and abroad (see Warner et al., 2013; Wiering & Immink, 2006) is now institutionalised.

The shift from flood protection to flood risk management as formulated in the FD means that water management needs to take into account the area behind the dikes, manage the entire basin of rivers and have to work with other sectors (FD, 2007: Article 6 III; Hartmann & Driessen, 2013; Hartmann & Juepner, 2014; Klijn, Samuels, & van Os, 2008). This changes the spatial scope of water management compared to (old) flood protection approach and affects a broader group of stakeholder interests, namely land owners behind dikes (FD, 2007: Article 10 II). As a result, flood risk management has to facilitate stakeholder involvement in which different spatial interests are balanced, bargained and negotiated (Assmann, 2001; Hartmann & Juepner, 2014; Heiland, 2002; Moss, 2009; Roth & Warner, 2007; Tempels & Hartmann, 2014). The FD however does not specifically describe how to arrange a process to implement the FD in which stakeholders are involved. This means that drafting and implementing a flood risk management plan is dependent of how governments interpret and

specify the FD (Albrecht, 2007; Hartmann & Spit, 2015; Reinhardt, 2008).

One of the ways in which governments can implement the FD is through interactive governance. Concepts like interactive governance provide guiding principles or dimensions to facilitate stakeholder involvement for the purposes of “good” water governance (Ingram, 2011; Schulz, Martin-Ortega, Glenk, & Ioris, 2017), but also provide benefits like support among stakeholders to avoid legal action against implementation (Edelenbos & Klijn, 2006; Irvin & Stansbury, 2004; Kooiman, 1993). Studies have shown that stakeholder management to create support through satisfaction is essential for the implementation of different types of projects (Achterkamp & Vos, 2008; Littau, Jujagiri, & Adlbrecht, 2010). Within literature the benefits of interactive governance, for example creating support, are often taken for granted. Some contributions examine interactive governance from a more critical perspective (Ianniello, Iacuzzi, Fedele, & Brusati, 2018; Mohan & Stokke, 2000; Swyngedouw, 2005). Ianniello et al. (2018) performed a systematic literature analysis to determine how benefits of interactive governance described in literature can be achieved and which obstacles need to be overcome. They concluded that some of the benefits were found in the analysed empirical literature. However, evidence that the use of interactive governance leads to effective (through alignment of resources) and efficient (through stakeholder support) decision-making remains small. One of the recommendations for future research is constructing and using evaluation criteria in standardised quantitative research for data collection. Such research is largely absent, which hinders systematic evaluation and generalisation of findings (Eisenhardt, 1991; Hoon, 2013; Ianniello et al., 2018; Rowe, Horlick-Jones, Walls, Poortinga, & Pidgeon, 2008).

The twofold aim of this article is based upon the recommendations of Ianniello et al. (2018) for further research. First, evaluation criteria are constructed based on interactive governance literature to measure satisfaction of stakeholders. One of the benefits of interactive governance is reaching stakeholder satisfaction for the implementation of spatial plans. Second, the evaluation criteria are used to measure stakeholder satisfaction through a standardised quantitative method. Satisfaction is measured in the Flood Protection Programme in the Dutch province of Limburg. The empirical data gathered through the measurement is used to explore a correlation between the evaluation criteria based on interactive governance and the satisfaction of stakeholders. Within interactive governance literature the assumption is made that procedural satisfaction of stakeholders will increase the more interactively they are involved. The research question of this article is as follows: *Do the four criteria of*

interactive governance correlate positively with the procedural satisfaction of stakeholders in the Flood Protection Programme Limburg?

2 | THE CRITERIA OF INTERACTIVE GOVERNANCE

Interactive governance is a concept to govern society with the definition making clear what is governed and how, namely (Ansell & Torfing, 2016; Torfing, Peters, Pierre, & Sorensen, 2012, pp.2–3): “*the complex process through which a plurality of social and political actors with diverging interests interact in order to formulate, promote, and achieve common objectives by means of mobilizing, exchanging, and deploying a range of ideas, rules, and resources.*” The FD mandates waterboards within the Netherlands to use government-induced interactive governance for flood risk management. Within this form, the government is the initiator of a planning process and decides which, when and how stakeholders are involved. At certain points in the process possibilities are given to stakeholders to provide input for plans and decision making through participation procedures (Edelenbos, 2005; Edelenbos & van Meerkerk, 2016). Government-induced interactive governance is mainly used as an instrument to solve issues effectively and efficiently. It is used to align resources (knowledge, financial means, support) scattered among stakeholder by involving them in a process (Koppenjan & Klijn, 2004; Sørensen & Torfing, 2007). It is also used as a mediation tool to efficiently implement plans by creating support through stakeholder satisfaction. By creating support through satisfaction, stakeholders are discouraged to use resources to stop implementation for example through legal action (Edelenbos & Klijn, 2006; Irvin & Stansbury, 2004; Kooiman, 1993). As such, the use of government-induced interactive governance falls within the mandated participatory planning (MPP) approach to formulate plans and implement policy on, for example, a subnational level. The respective level of government determines the policy issue, in turn formulating measures and monitoring programmes to realise certain objectives of a directive, like the FD, through stakeholder involvement (Newig & Koontz, 2014).

To operationalise interactive governance to a measurement method for the purposes of answering the research question, interactive governance needs to be defined more thoroughly. Further narrowing the scope of this research is also important to inform researchers and practitioners how widely usable the introduced method is. To operationalise interactive governance into evaluation criteria the four criteria outlined by Edelenbos (2000)

are used, namely transparency, equality reasonable debate and influence. The criteria of Edelenbos (2000) are complemented with the criteria of democratic innovation by Smith (2009). The criteria of Smith were used to update the outdated criteria of Edelenbos, because of the strong theoretical correlation between both sets of criteria. The criteria were combined into the following four criteria:

- Equality is about minimising the inequalities between stakeholders on two aspects. First on *presence*, which is about equal involvement and access to a process for stakeholders. Possibilities need to exist for stakeholders to be involved in the process regardless of background, interest and position. Second on *voice*, which is about equal possibilities for stakeholders to be heard and that there is not a difference in the influence actors have with the input they provide. Total equality within a stakeholder process is impossible, but the intent should be to minimise inequality where possible.
- Influence is about the amount of power stakeholders have on a process and its content. To have influence, the input of stakeholders in the form of views, concerns and ideas needs to be taken into account in the decision-making. There are two ways stakeholders can have influence on in a process. First by giving them decision making capabilities. Second, by using their input for decisions and/or (policy) documents.
- Reasonable debate is about conversations in which stakeholders are open and appreciative of each other's perspectives and perceptions. It is through the receptivity of stakeholders that solutions and problem definitions are explored. Stakeholders try to convince each other through reason and fairness and not through resources and positions of power.
- Transparency is about the openness of sharing information and expectations. Sharing information in terms of content and procedure is necessary for stakeholders to define problems and search for solutions. Being open about expectations is important, because expectations of stakeholders can often be high. Not meeting those expectations can result in disappointment and low support for decisions made.

A more detailed description of the four criteria of interactive governance can be found in Nouzari, Hartmann, and Spit (2019). Evaluation criteria are derived from the four criteria described above from which the assumption of a correlation with the procedural satisfaction of stakeholders is explored. Procedural satisfaction in this research is defined as: *the satisfaction of stakeholders for the process they participate in* (De Graaf, 2007).¹

3 | CASE STUDY: FLOOD RISK MANAGEMENT IN THE DUTCH PROVINCE OF LIMBURG

On the 1st of January 2017 new water safety standards have been adopted into the Waterwet. The Waterwet is Dutch legislation regarding the management of water systems in the Netherlands. The legislation aims at limiting or preventing flooding and water scarcity, but also aims at improving the quality of water systems for societal use. New safety standards have been adopted, because of three reasons, namely: (a) increase in population, (b) higher economic value behind the dikes, and (c) wishes to integrate dike reinforcement within the landscape of an area (Rijkswaterstaat, 2020a, 2020b). Primary dikes that do not meet the new safety standards have to be reinforced and are adopted within the Hoogwaterbeschermingsprogramma (Flood Protection Programme). This programme finances all reinforcement projects of primary dikes that are seen as necessary for Dutch national water safety. The goal is to have every primary dike in the Netherlands meet the new safety standards set in the Waterwet (Rijkswaterstaat, 2020b). These dike reinforcements are implemented by waterboards, a governmental organisation responsible for the water management in a certain regional area to provide enough and clean water, but also ensure water safety (Rijksoverheid, 2020).

Waterboard Limburg aspires to have 14 dike sections reinforced in conformity with the new standards and certain parts of the river expanded in 2020. Making designs to reinforce the dikes and expand the river at certain sections is being done in a stakeholder process in which business owners, citizens, NGO's, municipalities and the province of Limburg are involved. These stakeholders are involved in design workshops, citizens meetings, one-on-one meetings and through different media outlets like Facebook and newsletters through which people get informed. Without the stakeholder process Waterboard Limburg may never reach support to realise their ambitions, because of protests, negative media and legal action that might result in court cases to stop the realisation of higher dikes (Waterschap Limburg, 2016).

4 | METHODOLOGY

The research question is answered by measuring procedural satisfaction through a standardised quantitative method based on the conceptualised evaluation criteria of interactive governance. The data collected is used in a multiple regression analysis to establish a positive correlation between the criteria of interactive governance and the procedural satisfaction of stakeholders. This chapter elaborates the research methods used (data collection and -analysis) and choices made.

4.1 | Conceptualising evaluation criteria of interactive governance into a survey

Within government-induced interactive governance the involvement of stakeholders is used as an instrument for the creation of satisfaction among stakeholders. It is this participatory process that stakeholders can show their satisfaction for and that they can be questioned about. As such it is fitting to conceptualise process management criteria based on interactive governance to measure procedural satisfaction.

The conceptualization from the four criteria of interactive governance into evaluation criteria and survey questions is based on the research of Boedeltje (2009), Edelenbos, Steijn, and Klijn (2010) and Klijn and Edelenbos (2012). These contributions also conceptualised governance concepts into survey questions to establish a correlation between independent and dependent variables through a regression analysis. The conceptualization is explained below (Table 1 and appendix for the survey):

1. *Equality* is about equal possibilities for stakeholders to access the process (presence) and to be heard during participation procedures (voice). Satisfaction about presence is not measured in this research as it falls outside the scope. Governmental agencies like waterboards that use government-induced interactive governance decide which stakeholders are involved. Stakeholders cannot convey how satisfied they are about equality of access when they did not decide the selection criteria that were used for their involvement. Satisfaction about equality of voice however is measured through certain aspects. The first aspect is the amount of possibilities to provide input. Dependent on their communicative skills and interests, stakeholders can be satisfied by attending one meeting while others require more. The second aspect is equal possibilities during meetings to speak and provide input. Discussions become dominated by certain interests and perspectives when some stakeholders get more possibilities to speak compared to others that are involved. Such meetings become more valuable for stakeholders that are more vocal than stakeholders that are not.
2. *Influence*: Within government-induced interactive governance stakeholders are asked to provide input, with no guarantee that their input will affect decision-making (Edelenbos, 2005; Edelenbos & van Meerkerk, 2016). Influence on the decision-making is only achieved when the government chooses to use the input provided by stakeholders. As a result, stakeholders influence decision-making through certain steps. The first step is having possibilities to provide input. Within government-induced interactive

TABLE 1 Conceptualised criteria based on interactive governance

Criteria of interactive governance	Conceptualised evaluation criteria
Equality	<ul style="list-style-type: none"> • Number of meetings • Equal opportunity to provide input • Possibilities during meetings to provide input
Influence	<ul style="list-style-type: none"> • Providing input in the early stages of the process (problem definition and solution exploration phase) • Taking ideas, arguments, interests, concerns and expectations seriously
Reasonable debate	<ul style="list-style-type: none"> • Possibilities to provide input for conceptual dike variants • Focus on the substance of problems, solutions and conceptual documents during meetings (for example dike variants)
Transparency	<ul style="list-style-type: none"> • Receiving information in understandable language • Receiving information about what has been done with the provided input of stakeholders • Periodically receiving information about progress made (updates about conversations with other stakeholders and possible dike variants) • Discussing expectations, interests and concerns

governance, participation procedures that provide such possibilities are for example citizen panels or advisory boards. The government can only take the input of stakeholders into account when they provide input. The second step is that the government takes the involved stakeholders seriously or their provided input will be neglected at the decision-making. The third and final step is processing the provided input in decisions, plans and policy. Aside from decision-making stakeholders can also influence plans in the problem definition phase of a process. This requires stakeholders to have possibilities to provide input early during the formulation of issues after which the process starts activities to produce plans to tackle those problems.

3. *Reasonable debate*: Government-induced interactive governance is an instrument to realign resources (for example financial means or knowledge) through the involvement of interdependent stakeholders for the purposes of solving societal issues. As a result, there

need to be opportunities to discuss issues and solutions during the process. During these discussions, stakeholders use the quality of their arguments to convince each other. To facilitate such discussions the stakeholder process needs to provide possibilities to discuss possible plans, problems and solutions, aside from moments where interests and concerns are the main topics.

4. *Transparency* refers to the openness between stakeholders to share information. Openness is achieved in three ways. First, through stakeholders sharing interests, expectations and concerns. To create satisfaction, the government(agency) needs to know what interests need to be taken into account at decision-making. Aside from interests, expectations are shared about the influence of stakeholders on the decision-making. Within government-induced interactive governance the government(agency) decides if the provided input of stakeholders is taken into account. High expectations about the influence stakeholders have on decision-making are difficult to meet and result in dissatisfaction. Second, the government needs to share information about if and how the provided input of stakeholders has been taken into account. When stakeholders are asked to participate, they expect to at least know what has been done with their provided input, even if it was not taken into account. Third, information about provided input of other stakeholders and concept documents needs to be shared to keep stakeholders updated about developments. Stakeholders need to know where plans are heading to not be surprised when decisions are made. Surprises about decisions can easily lead to accusations of tokenism and backdoor politics resulting in low levels of satisfaction. When information like concept documents are shared the understandability of such information is important. Technical terms and bureaucratic language can make information difficult to understand lowering the transparency of a process.

One extra question was added unrelated to interactive governance literature, namely how satisfied stakeholders are about the speed of the stakeholder and design process. This empirically driven aspect was added, because one of the most important needs observed among stakeholders is to get concrete information about how the plans and designs would affect them. Not knowing how the future plans would look like caused uncertainty among for example citizens, because there are some scenarios that would force people to move out their homes and live somewhere else. Some small business could also be affected.

4.2 | Survey data for multiple regression

The survey was constructed in such a way that the resulting data would be suitable for a multiple regression analysis to test the assumption. Stakeholders were asked to convey their procedural satisfaction by giving a grade between 1 and 10 for each conceptualised evaluation criteria which refer to specific parts of the process (Table 1). Stakeholders also gave a final grade that represented their satisfaction for the process as a whole. A 10-point scale is used, with the cut-off point between satisfied and dissatisfied being a 5.5, it is the most commonly used grading system in the Netherlands, making it very intuitive for people and yielding the most reliable research data.²

The assumption made in governance literature is that stakeholders will be satisfied with the process they are involved in when that same process is in line with the criteria of interactive governance. A regression analysis based on the data gathered determines if there is a significant positive correlation between the evaluation criteria (independent variables: grades evaluation criteria) and the procedural satisfaction of stakeholders (dependent variable: final grade).

4.3 | Survey response

To test the assumption data has been gathered through a survey in two different ways to maximise the response. The first batch, consisting of 120 hardcopy surveys, were gathered through stakeholder meetings from June till December 2017. There was not a list of e-mail addresses of the people attending these meetings, because of the open invitation. Hardcopy surveys were used to include this group of stakeholders in the research. The second batch, consisting of 135 surveys (response: 15.03%), were gathered in October till December 2017 through an online survey through 898 mail addresses that were provided by the Waterboard Limburg. Both batches make a total N of 255. The response of the survey during stakeholder meetings cannot be established, because of the open invitation, making it difficult to determine the group size. Part of the online survey group also attended the stakeholder meetings, resulting in some stakeholders contributing to the non-response of the online survey, but compensating that by filling in the hardcopy survey during meetings. This makes determining the percentage of (non-) response difficult. The population consists of governments (municipalities and province: 8%), citizens (82%), interests groups (14%), business owner (19%) and NGO's (8%).³

5 | CORRELATIONS BETWEEN THE CRITERIA OF INTERACTIVE GOVERNANCE

Prior to the regression analysis a factor analysis is conducted to determine the mutual correlation between the evaluation criteria. The factor analysis is used, because the four criteria of interactive governance correlate with each other theoretically. For example, it is difficult for stakeholders to exert influence when they do not have access to the planning process and have no opportunities to let their voices be heard, which would fall under the criteria of equality. Or when stakeholders are able to participate in meetings, but those meetings are only meant to inform the public (which means a lack of influence), there will not be possibilities for stakeholders to have reasonable debates. The expectation is that the theoretical correlation will translate to a statistical correlation between the evaluation criteria distinguished from the four criteria of interactive governance.

As such, an oblique rotation (direct oblimin) is used with the Kaiser's criterion, because we theoretically expect the factors to correlate. The rotation resulted in three factors that correspond largely with the four criteria of interactive governance (Table 2):

- Factor 1: discussing the interests, expectations, concerns, ideas and arguments and taking them seriously falls under the criteria of transparency, influence and reasonable debate. Openness to share and discuss expectations, concerns and interests (transparency), pitching ideas and giving arguments (reasonable debate) and having the input taken seriously (influence) correlate highly with each other. Within government-induced interactive governance the government determines if the provided input will be taken into account. The only way to have influence is by discussing ideas (reasonable debate), sharing concerns and expectations and (transparency) and having the government taking the provided input seriously;
- Factor 2: receiving understandable information about progress made (plans and process) and what has been done with the provided input, falls under the criteria transparency. At the bare minimum stakeholders expect to know what has been done with their input when they are asked to provide it within participation procedures. Aside from information about provided input, stakeholders want to be kept updated to not be surprised about decisions made, but also to ensure the government does not make decisions behind their backs without knowing;
- Factor 3: possibilities during meetings to provide input equally, falls under the criteria equality. Providing access and enough possibilities is needed to have equal

TABLE 2 Factors and consisting indicators (evaluation criteria)^a

Factors	Indicators
1. Discussing the interests, expectation, concerns, ideas and arguments and taking them seriously.	<ul style="list-style-type: none"> • Taking interests, concerns, expectations ideas and arguments seriously. • Discussing expectations.
2. Receiving understandable information about progress made, conceptual documents, input stakeholders, etc.	<ul style="list-style-type: none"> • Discussing and receiving information about conceptual dike variants. • Receiving information in understandable language. • Receiving information about what has been done with the provided input of stakeholders. • Periodically receiving information about progress made (updates). • The speed of the process.
3. Possibilities during meeting to provide input.	<ul style="list-style-type: none"> • Possibilities to provide input for the conceptual dike variants. • Possibilities during meetings to provide input. • Equal opportunities to provide input.
Indicators spread among other factors.	<ul style="list-style-type: none"> • Number of meetings. • Focus on the substance of the conceptual dike variants. • Discussing interests and concerns. • Provide input early in the process (i.e., problem definition and solution exploration phase).

^aIndicators refer to the conceptualization of the criteria of interactive governance, which are used to formulate specific survey questions to gather empirical data. The factor analysis uses these indicators to establish which ones measure the same concept (i.e., criteria of interactive governance) to establish factors.

possibilities among stakeholder to provide input and let their voices be heard.

6 | IMPACT OF INTERACTIVE GOVERNANCE ON PROCEDURAL SATISFACTION

The assumption of interactive governance literature is that adopting the four criteria in a stakeholder process results in procedural satisfaction. A regression analyses

TABLE 3 Multiple regression analysis results (dependent variable: procedural satisfaction)

	B	Beta	Sig.	Pearson	Sig.
(Constant)	6.617		.000		
Factor 1	0.486	.404	.000	0.835	.000
Factor 2	0.312	.260	.000	0.708	.000
Factor 3	0.492	.410	.000	0.836	.000

can determine if there is a positive correlation between the evaluation criteria based on interactive governance and the procedural satisfaction of stakeholders. When a correlation is found, the evaluation criteria can be used to evaluate and improve stakeholder processes.

The results of the regression analysis are shown in Table 3. Examining the Pearson coefficients reveals a significant correlation for all three factors with a reliability of 99% (Sig. < .01). The strength of the correlations varies minimally between .708 and .836. Examining the Beta coefficients reveals the correlations being positive and that all three factors (independent variables) predict the procedural satisfaction of stakeholders (dependent variable), also with a reliability of 99%.

The R-square is observed to determine the extent the evaluation criteria explain the procedural satisfaction of stakeholders. The R-square reveals that 86.4% of the procedural satisfaction is explained through the evaluation criteria. The relatively high explained variance means that most of the procedural satisfaction is determined through the evaluation criteria. At the same time, 13.6% of the procedural satisfaction is explained through criteria or factors that are unknown.

7 | EVALUATING THE STAKEHOLDER PROCESS THROUGH INTERACTIVE GOVERNANCE

Aside from finding a correlation between the evaluation criteria and the procedural satisfaction of stakeholders, the methodology of this research was also used to evaluate the stakeholder process of the *Flood Protection Programme Limburg*. The purpose of the evaluation is to determine which parts of the process stakeholders are satisfied and less satisfied about. By getting a picture of the satisfaction of stakeholders for specific parts of the process and therefore parts that need attention, improvements can be made to increase the effectiveness of the process.

Stakeholders involved in the *Flood Protection Programme Limburg* give the process an average final grade

of 6.58 out of 10 (Table 4). All aspects of the process deviate an average of 0.7 from the final average. Not a single aspect got an average grade of lower than a 6, meaning that stakeholders are on average satisfied about the process. As mentioned before, the cut-off point between satisfied and dissatisfied is a 5.5, which was also mentioned in the survey. When examining the individual aspects of the process the following results are established:

- The possibilities and equal opportunities to provide input scores an average grade between a 6.9 and 7.3. Stakeholders are most satisfied about possibilities to let their voices be heard.
- The possibilities during stakeholder meetings to discuss interests, concerns, expectations, ideas and arguments scores an average grade between a 6.4 and 6.9. Stakeholders are most satisfied with the possibilities to discuss such topics during meetings.
- The possibilities to provide (early) input in the research phase for possible dike variants score an average grade between a 6.5 and 6.9. Stakeholders are most satisfied with the possibilities to provide input in the preliminary phase of the project in which possible variants for the dike were researched.
- Periodically receiving information about the progress being made in the research of possible dike variants scores an average grade of 6.3. There are two reasons for the relative low score. First, stakeholders have communicated that the information they receive of the possible dike variants are too technical, making it difficult to understand.⁴ Second, because approximately 38% of the stakeholders think the speed of design process is too slow.⁵ This results in stakeholders not receiving

new information fast enough in their view about the final dike variants.

- The speed of the process scored an average of 6.2. Approximately 38% of the stakeholders think that the process is too slow, 11% thinks the process is going too fast and 51% is satisfied with the speed of the process. The average grade for the 49% however is a 5.3. Some stakeholders view the preliminary research phase of the *Flood Protection Programme* from a different reality than the professionals working on the programme. As the researcher experienced during stakeholder meetings, stakeholders stated that: “*the designers just had to draw a line on a map and be done with it.*” Some stakeholders added: “*How hard could that be?*” The team working on the programme however has difficulty actually realising the 14 dike sections in 2020.
- Periodically receiving information about how the provided input of stakeholders has been used in the conceptual dike variants scores an average grade of 6.1. During stakeholder meetings the waterboard always communicates that the input of stakeholders will be documented and used in the determining the variants for the possible dikes. Stakeholders expect, when they are asked to provide input, that their input is actually being used. Only telling stakeholders is not enough, proof also needs to be provided. That is not being done at this time within the programme.

When comparing the different groups of stakeholders and the different participation procedures, a noticeable difference is observed. There is a relative high difference in satisfaction between governments and citizens, small

TABLE 4 Procedural satisfaction of stakeholders based on 255 surveys

Indicators interactive governance	Average	Indicators interactive governance	Average
Possibilities to provide input	7.31	Providing input for possible dike variants early	6.57
Equal opportunities to provide input	7.16	Discussing expectations	6.55
Discussing concerns	6.88	Discussing concept dike variants	6.54
Possibilities to provide input for possible dike variants	6.87	Taking ideas and arguments seriously	6.54
Number of stakeholder meetings	6.86	Taking expectations seriously	6.43
Discussing interests	6.82	Receiving information periodically about possible dike variants	6.31
Receiving information in understandable language	6.79	Receiving information about input provided by others	6.24
Taking concerns seriously	6.65	Speed of the process	6.19
Focus on the possible dike variants	6.64	Receiving information about what has been done with provided input	6.13
Taking interests seriously	6.60	Final grade	6.58

business owners, NGO and interest groups. The aspects that all groups of stakeholders are most and least satisfied about are the same. However, differences in average grades per aspect of the process and the final grade can lead up to a point or more. These results need to be taken somewhat lightly, because they are based on 20 filled in surveys by governments. The largest part of the population consists of citizens.

8 | CONCLUSION

This article explored the assumption that there is a positive statistical correlation between the evaluation criteria and the procedural satisfaction of stakeholders. The evaluation criteria are based on the four criteria of interactive governance, namely equality, reasonable debate, influence and transparency. It explored the assumption by using the evaluation criteria as independent variables and the procedural satisfaction of stakeholders as the dependent variable within a regression analysis.

The results have shown a positive correlation between the evaluation criteria based on the four criteria of interactive governance and the procedural satisfaction of stakeholders in the Flood Protection Programme Limburg. With that, the quantitative method used in this research provided insight into the role interactive governance plays in the procedural satisfaction of stakeholders.

The method used is both suitable for scientific purposes as for planning practitioners. As shown in this article, the four criteria of interactive governance can be used as variables for quantitative statistical research. The survey method through which data is gathered is easily replicable. The same applies for the statistical analyses applied, namely factor- and regression analyses. The standardised procedures make the method highly replicable and suitable for comparative research, which contributes in tackling a lack of external validity within interactive governance literature by facilitating the search for general patterns.

The method introduced in this article is also suitable for planning practitioners by measuring procedural satisfaction among stakeholders through the criteria of interactive governance. Through a regression analysis, planners can determine how much and how strongly the evaluation criteria statistically play a role in the procedural satisfaction of stakeholders. This provides insights into the effectiveness of a stakeholder process and its management in achieving support and consensus. It also shows planners which aspects of the process need to be improved to reach higher satisfaction among stakeholders over time.

9 | DISCUSSION

Most governance literature consist of qualitative case study research resulting Ianniello et al. (2018) to recommend more quantitative evaluative research with the aim to provide evidence for the benefits of stakeholder involvement. This research contributes in closing the knowledge gap like a limited number of other empirical studies, which this section will reflect on.

There are a number of quantitative studies with a large N that used a regressions analysis to determine a statistical correlation between certain independent variables with stakeholder satisfaction as the dependent variable. Each study used different independent variables, for example: equality, openness and influence (Boedeltje, 2009); trust (Klijn, Edelenbos, & Steijn, 2010); network or process management (Klijn, Steijn, & Edelenbos, 2010); stakeholder involvement (Edelenbos et al., 2010); equality, influence, reasonable debate and transparency (Nouzari et al., 2019); participation process characteristics like facilitation and participation format (Ernst, 2019). Some of these studies used procedural satisfaction as the dependent variable like Nouzari et al. (2019) and Boedeltje (2009), while in the research of Klijn, Edelenbos, and Steijn (2010), Klijn, Steijn, and Edelenbos (2010), Edelenbos et al. (2010) and Ernst (2019) stakeholder satisfaction was an item of the independent variable (for example perceived process outcome or normative process factors).

Even though quantitative research on governance provides proof that stakeholder involvement leads to stakeholder satisfaction, achieving this benefit of interactive governance does not happen automatically by giving voice. Voice through stakeholder involvement provides the opportunity to reach greater satisfaction, but can also lead to great dissatisfaction depending on the perception of stakeholders. As such, voice through stakeholder involvement is a double-edged sword. Empirical research has shown that satisfaction is considerably higher when stakeholders perceive their voice mattered compared to those that felt their input was ignored (Hibbing & Theiss-Morse, 2008). Process management is needed in stakeholder processes to achieve desirable results, like stakeholder satisfaction (Edelenbos & Klijn, 2006). The method introduced in this article is a management instrument as it provides insight into process aspects that stakeholders are least satisfied about and need to be improved. As a result, increasing the effectiveness of the stakeholder process to reach satisfaction.

There are however certain aspects of the method and the results that need to be reflected upon. First, this research showed that interactive governance does lead to procedural satisfaction, which is a benefit often taken for granted in academic literature. However, one Dutch case

regarding a flood risk management project was used in this research within a specific point in time. As such, the results might differ for other types of projects in other countries, within a different political, environmental and cultural context. Nouzari et al. (2019) used the same method introduced in this article to determine a correlation between interactive governance and the procedural satisfaction of stakeholders in a Dutch policy process. Even though a correlation was found in both researches with comparable correlation values, replication in different cases is needed for comparative case study research to determine the general applicability of the findings. The standardised procedures of the method used are highly replicable and therefore suitable for comparative research. Second, this research provided evaluation criteria for a standardised quantitative research as recommended by Ianniello et al. (2018). However, the introduced method only determines a correlation between interactive governance and the procedural satisfaction of stakeholders. Other independent variables are not included in the method, because this was outside the scope of this research. As observed, 86.4% of the procedural satisfaction within our case is explained through the criteria of interactive governance. However, 13.6% is unexplained, which can be explained by including independent variables related to contextual factors. Exploring the unexplained variance of the procedural satisfaction by adding context related variables is recommended for future research to gain more insight into the relationship between interactive governance and stakeholder satisfaction.

ENDNOTES

- ¹ Other concepts related to stakeholder satisfaction like legitimacy and accountability are important, but are not discussed in this article. The focus of this article is on finding a statistical relationship between stakeholder satisfaction and interactive governance.
- ² The scales used can be changed to whatever scale the researcher or planning practitioner finds most suitable. It can for example be changed to a Likert scale if that is more intuitive for stakeholders within that country resulting in a more effective measurement. Even when the scale to measure the satisfaction of stakeholders is changed the data can still be used in a regression analysis.
- ³ The total percentage of all stakeholder groups combined is above 100%, because some stakeholders identify with multiple types. For example, a citizen that is also a small business owner in the area.
- ⁴ Stakeholders stated this reason through the last question of the survey in which they could give any message they wanted. There have also been stakeholders before the research that complained about the technicality of the information they received.
- ⁵ One of the questions within the survey was “How satisfied are you about the speed of the process?” Stakeholders had three options to choose from: too slow, good and too fast.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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How to cite this article: Nouzari E, Hartmann T, Spit T. Interactive governance for satisfaction measurements: Stakeholder involvement in design processes for flood risk management. *J Flood Risk Management*. 2020;e12650. <https://doi.org/10.1111/jfr3.12650>

APPENDIX

Survey (literal translation from Dutch)

This anonymous questionnaire is about the stakeholder process of the dike reinforcement programme Limburg you are involved in. We would like to know how you experienced different participation methods like the information evenings, chance sessions and environmental groups. To answer the questions, you only have to give a grade or mark a box, therefore the questionnaire takes a maximum of 5 min to complete. IMPORTANT: please provide an answer to all questions!

On a scale from 1 least satisfied to 10 very satisfied (below a 5.5 is unsatisfactory), how satisfied are you with ...

- ... the possibilities to provide input during meetings?
- ... equal opportunities to provide input compared to other stakeholders?
- ... the number of meetings to provide input?
- ... the focus on the content of the conceptual dike reinforcement variants during meetings?
- ... discussing concerns and interests you have as a stakeholder during meetings?
- ... taken my concerns and interest seriously by the waterboard?
- ... the possibilities to provide input for the conceptual dike reinforcement variants during meetings?

... providing input for the dike reinforcement variants early in the process?

... continuously getting informed during the process about the progress of the dike reinforcement variants?

... the understandable language within information received (i.e., newsletters, brochures, e-mails, presentations, etc.)?

... getting informed about the progress of meetings and conversations with stakeholders in other parts of the process?

... the information about how the provided input of stakeholders have been implemented or taken into account?

... discussing conceptual dike reinforcement variants during meetings?

... taken my ideas and arguments seriously by the waterboard?

... the speed of the process to develop the dike variants and the conversations with stakeholders?

--- Follow up question: The speed of the process was ... too slow/good/too fast (one option).

How satisfied are you with the participation process as a whole (1 to 10, below 5.5 unsatisfactory)?

Optional: What do you want to convey to the Waterboard Limburg?

Factorloadings Oblimin rotation with Kaiser's criterion

Pattern matrix ^a	Component		
	1	2	3
4. The possibilities to provide input during meetings.	0.068	0.896	−0.025
5. Equal possibilities to provide input during meetings.	−0.037	0.861	0.097
6. The number of meetings to provide input.	0.108	0.313	0.437
7. The focus on the content of the conceptual dike reinforcement variants during meetings.	0.421	0.271	0.200
8. Discussing concerns you have as a stakeholder during meetings.	0.562	0.469	−0.054
9. Taking my concerns seriously by the waterboard.	0.984	0.067	−0.121
10. The possibilities to provide input for the conceptual dike reinforcement variants during meetings.	0.157	0.510	0.326
11. Providing input for the dike reinforcement variants early in the process.	0.385	0.099	0.363
12. Discussing interests you have as a stakeholder during meetings.	0.406	0.377	0.238
13. Taking my interests seriously by the waterboard.	0.886	0.015	0.049
14. Discussing conceptual dike reinforcement variants during meetings.	0.168	0.193	0.615
15. Continuously getting informed during the process about the progress of the dike reinforcement variants.	−0.110	0.092	0.937
16. The understandable language within information received (i.e., newsletters, brochures, e-mails, presentations, etc.).	−0.071	0.192	0.774
17. The information about how the provided input of stakeholders have been implemented or taken into account.	0.151	−0.025	0.752
18. Getting informed about the progress of meetings and conversations with stakeholders in other parts of the process.	0.025	−0.122	0.905
19. Taking my ideas and arguments seriously by the waterboard.	0.928	−0.103	0.102
20. Discussing expectations you have as a stakeholder during meetings.	0.818	0.018	0.101
21. Taking my expectations seriously by the waterboard.	0.879	−0.007	0.069
22. The speed of the process to develop the dike variants and the conversations with stakeholders.	0.271	−0.096	0.622

Note: Extraction method: Principal component analysis. Rotation Method: Oblimin with Kaiser normalisation.

^a Rotation converged in 13 iterations.

Results Cronbach's alpha for the three factors

Reliability statistics factor 1		
Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
.871	.876	3
Reliability statistics factor 2		
Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
.919	.919	6
Reliability statistics factor 3		
Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
.968	.968	5

Note: The Cronbach's alpha (reliability) for all three factors is above .8. This means that the items measuring the criteria of interactive governance (factors) form a single scale.

Results regression analysis

Model summary ^b										
Model	R	R square	Adjusted R square	Std. error of the estimate	Change statistics					
					R square change	F change	df1	df2	Sig. F change	Durbin-Watson
1	.930 ^a	.864	.862	.4459	.864	418.195	3	197	.000	2.047

^a Predictors: (Constant), REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1.

^b Dependent variable: 24.Welk EINDCIJFER geeft u aan het proces (1 t/m 10, onder de 5,5 onvoldoende)?

Coefficients ^a								
Model		Unstandardized coefficients		Standardised coefficients			Collinearity statistics	
		B	SE	Beta	t	Sig.	Tolerance	VIF
1	(constant)	6.617	.031		210.395	.000		
	Factor 1	0.486	.046	.404	10.531	.000	0.467	2.140
	Factor 2	0.312	.039	.260	7.947	.000	0.644	1.554
	Factor 3	0.492	.046	.410	10.699	.000	0.470	2.127

Note: Multicollinearity is checked by observing the correlation matrix of the individual survey items. The rule of thumb is that the correlations should not above be .9, which is not the case for this research. Another method to detect multicollinearity is through the VIF. The rule of thumb is that a value of above 10 or below 0.2 means that multicollinearity is present. Ideal conditions are when the values are between 1 and 5. All the VIF values are below 3 when observing the regression model which means that there are no concerns regarding multicollinearity.

^a Dependent variable: 24.Welk EINDCIJFER geeft u aan het proces (1 t/m 10, onder de 5,5 onvoldoende)?

Descriptive statistics

	Mean	SD	N
24.Procedural satisfaction	6.617	1.2012	201
Factor 1	0.000000	1.0000000	201
Factor 2	0.000000	1.0000000	201
Factor 3	0.000000	1.0000000	201