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Organizing support through interactive governance within flood risk management

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ABSTRACT

Flood risk management nowadays affects landowners behind dikes, broadening the group of stakeholders. Interactive governance provides an approach to negotiate and balance the diverging interests of stakeholders involved. One of the benefits of interactive governance is creating satisfaction through involvement, making stakeholders less prone to taking legal action against implementation. This paper tests this assumption through standardized quantitative longitudinal research, demonstrating a statistically positive correlation between interactive governance and stakeholder satisfaction.

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Stakeholder involvement; interactive governance; consensus; satisfaction; process management; flood risk management

Introduction

The use of stakeholder involvement in a flood risk management project by the Waterboard Limburg falls within a general trend not only seen in the Netherlands, but also internationally (i.e., House, 1999; Leach, 2006; Leach & Pelkey, 2001; Sabatier et al., 2005; Thaler & Levin-Keitel, 2015; van Buuren et al., 2019). The rising popularity of governance in water management has led to different collaborative and deliberative approaches (Akhmouch & Clavreul, 2016; Margerum & Robinson, 2015; Von Korff et al., 2012) in which a government (agency) involves different types of stakeholders to create support for decision-making (Edelenbos et al., 2017; van Buuren et al., 2019). However, involving stakeholders in water management has frequently not (immediately) resulted in success (Tseng & Penning-Rowsell, 2012). Flood risk management is generally a strongly expert- and technocratically dominated domain. Civil engineers often find that stakeholder involvement can threaten decisive plans needed to realize safety measures against crises (Warner, 2006). Consequently, much attention within water governance has been invested into finding the best ways for involving stakeholders in policy making and implementation (Newig & Fritsch, 2009; Reed, 2008).

One way to involve stakeholders is through the use of interactive governance. Governments in Western countries commonly use interactive governance as a strategy for policymaking and the construction of infrastructure within spatial planning (Edelenbos & Klijn, 2006; Edelenbos & van Meerkerk, 2016; van Kerkhof, 2006; Mok et al., 2015). Interactive governance is used, partially out of necessity, to deal with the complexity of contemporary network society, which undermines traditional ways of

steering to achieve common goals (Sørensen & Torfing, 2007; Torfing et al., 2012). The contemporary network society is characterized by interdependent relationships, because resources such as money and knowledge are spread among different stakeholders, making the government one amongst many. Governments do not have the means anymore to fully command and control stakeholders to develop but also implement policy from a top-down position. As a result, governments are deliberately forced to involve stakeholders granting them influence on decision-making, showing the necessity for negotiation and deliberation to achieve common goals (Edelenbos, 2005; Edelenbos et al., 2010; Kooiman, 1993).

Interactive governance, compared with traditional ways of planning, is still focused on steering society, not by enforcing a top-down approach, but through the bottom-up involvement of stakeholders (Torfing et al., 2012). It is assumed in governance literature that stakeholder involvement through the use of interactive governance leads to certain benefits (Beierle & Crayford, 2002; Edelenbos & Klijn, 2016; Irvin & Stansbury, 2004; Jager et al., 2020; Newig et al., 2018; Scott & Thomas, 2017). One of the first main benefits is strengthening the quality of decisions and plans, by gathering local or lay knowledge relevant to understanding a problem and formulating solutions (Beierle & Crayford, 2002; Edelenbos, 2000; Fazey et al., 2013; Sirianni, 2009). In turn, stakeholders are able to identify with policy set by the government, creating a more direct form of democracy, lessening the gap between politics and society (Edelenbos & Klijn, 2006; Klijn & Koppenjan, 2000). The last often-discussed benefit of stakeholder involvement is support for decisions through the realignment of resources (Koppenjan & Klijn, 2004; van de Kerkhof, 2006). As a result, stakeholders are discouraged to stop implementation though the use of legal action (Edelenbos & Klijn, 2006; Irvin & Stansbury, 2004). Stakeholder satisfaction and resulting support is often the most important goal of interactive governance, especially in the United States, but also in the Netherlands (van Buuren et al., 2019; van de Kerkhof, 2006), because even if the public value of policy is high, policy remains ineffective and symbolic if no implementation takes place (Newig et al., 2018; Scott et al., 2019; Ulibarri, 2015). However, the benefit of creating satisfaction and support is sometimes contradicted in the literature. Involving stakeholders with different interests, perspectives and values can threaten the effectiveness of planning processes instead of enhancing it. Discussions between the stakeholders can lead to quarrels and conflicts that (in the long term) result in deadlocks and impasses (Emerson & Nabatchi, 2015; Klijn & Koppenjan, 2016; Koppenjan & Klijn, 2004; Schlager & Blomquist, 2008). This raises the question: Does the use of interactive governance lead to stakeholder satisfaction for implementation without protest?

Based on empirical studies, it should be possible to answer this question and determine the validity of assumptions regarding the benefits of interactive governance (Douglas et al., 2020; Mayer et al., 2005). Even though governance is a popular topic within academic literature (Scott & Thomas, 2017; Torfing et al., 2012), empirical data that demonstrates increased efficiency and effectiveness of decision-making through the use of interactive governance is small (Ianniello et al., 2018). Ianniello et al. (2018) add that quantitative methods for data collection and analysis are rarely used, for example, to provide empirical evidence for the benefits interactive governance provides, such as satisfaction and support for decisions. Evaluation criteria to measure effectiveness of interactive governance and standardized qualitative methods are largely absent,

hindering generalization (Rowe et al., 2008) and the systematic comparisons of results (Eisenhardt, 1991; Hoon, 2013). Schulz (2019) concluded the same through a literature review that governance-related values are relevant to understanding what makes good water governance. Research on such values could identify which (normative) governance criteria stakeholders prefer. The problem is a lack of systematic quantitative empirical research that uses statistical analyses on values that characterize a good or successful water governance process from an analytical viewpoint.

Even though quantitative empirical studies on the benefits are scarce, some academic contributions have tested the assumption that interactive governance influences the satisfaction and support of stakeholders (e.g., Boedeltje, 2009; Edelenbos et al., 2010; Ernst, 2019; Jager et al., 2020; Klijn et al., 2010a, 2010b; Robertson & Choi, 2012). One of those contributions was made by Nouzari et al. (2019), who constructed evaluation criteria to determine a correlation between the use of interactive governance and the involvement of stakeholders within a policy process regarding underground planning. A correlation was found within their study, which led to follow-up research to explore if a similar correlation could be found within a different case and context, namely a flood risk management project (Nouzari et al., 2020). Nouzari et al. (2020) concluded through a regression analysis that there was a statistical positive correlation between interactive governance and the satisfaction of stakeholders using the same evaluation criteria and research method.

This paper functions as a continuation of the study conducted by Nouzari et al. (2020), namely to explore if a similar correlation can be found within the same case, but over a time period of a year, using the same evaluation criteria and research method. As a result, the research question of this paper is as follows: To what extent does the statistically positive correlation found between interactive governance and the procedural satisfaction of stakeholder by Nouzari et al. (2020) hold up over time (a year) within the same case?

Interactive governance for stakeholder support

To establish a correlation solely between the satisfaction of stakeholders and the use of interactive governance, the scope of this research needs to be clearly limited. Therefore, it is important to begin with a general definition of interactive governance as a starting point for further conceptualization to devise evaluation criteria for empirical research.

According to Torfing et al. (2012), interactive governance is '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' (pp. 2–3). This definition shows what is governed and how, namely society through the involvement of stakeholders (Ansell & Torfing, 2016). This definition is not sufficient for conceptualizing evaluation criteria for the purpose of this research, but it provides a starting point from which the scope can be further limited by determining the form and use of interactive governance this research focuses on.

Government-induced interactive governance is a form of interactive governance that falls within the definition of Torfing et al. (2012). This top-down form of collaboration is characterized by a government deciding who among stakeholders get involved, but also how and when in the process such involvement occurs (Edelenbos et al., 2017, 2018; van Meerkerk, 2019). At certain points within the decision-making process, stakeholders are given opportunities through participation procedures to provide input (Edelenbos & van Meerkerk, 2006; Van Meerkerk, 2019). Governments mainly use this form of interactive governance to solve (spatial) problems efficiently by involving stakeholders, creating support and discouraging the use of legal action to stop implementation (Edelenbos & Klijn, 2006; Irvin & Stansbury, 2004; Mayer et al., 2005). Government-led interactive governance has become a popular strategy in Western countries for spatial policy processes and infrastructure projects (Edelenbos & Klijn, 2006; Edelenbos & van Meerkerk, 2016; Scott & Thomas, 2017; van Kerkhof, 2006; van Meerkerk, 2019).

The last step in operationalizing interactive governance and limiting the scope of our research is to define evaluation criteria. The four criteria of interactive governance formulated by Edelenbos (2000), namely reasonable debate, influence, transparency and equality, are used in combination with the democratic innovation criteria by Smith (2009). The criteria by Smith (2009) are combined with outdated criteria originating with Edelenbos (2000) as both sets of criteria show theoretical similarities:¹

- Equality focuses on minimizing inequalities between stakeholders. First is the focus on *presence*, which is about equal access and opportunities for stakeholders to be involved. Aspects such as interest, power and background should not decide stakeholders' opportunities to be involved. Second is *voice*, which is about stakeholders' equal opportunity to be heard and therefore wield influence through their input. The intent is to minimize inequality, because total equality is impossible to achieve.
- Influence focuses on the stakeholders' level of power over the process they are involved in and the content that is produced. The input (ideas, concerns, views, etc.) provided by the stakeholders must be taken into account during decision-making to become influential. Without such influence, stakeholder involvement through interactive governance becomes a meaningless exercise.
- Reasonable debate focuses on space within the process to have conversations and thereby generate understanding between stakeholders and their respective perceptions and perspectives. Stakeholders explore solutions and problem definitions through their receptivity. During discussions and conversations, stakeholders convince each other not through their positions of power, but through fairness and reason.
- Transparency focuses on having an open attitude by sharing expectations and information. Sharing information and expectations is important for multiple reasons. First, stakeholders need information regarding the background of a project and the process in order to be able to define problems and search for solutions.

¹For a more detailed description of the four criteria of interactive governance, see Nouzari et al. (2019) to avoid repetition in this paper.

Second, sharing expectations is important, because expectations often become high when stakeholder are involved. Low support can result in disappointment when those expectations are not met.

Interactive governance assumes that the four criteria described above correlate positively with the satisfaction of stakeholders. Just like interactive governance and its criteria, stakeholder satisfaction also needs to be defined to be able to answer our research question. There are two types of satisfaction, namely content-based satisfaction and procedural satisfaction. Content outcome refers to the substance resulting from an interactive process, such as policy documents. Procedural outcome concerns the manner in which stakeholders become involved (Edelenbos et al., 2010; Klijn et al., 2010a, 2010b; Skelcher et al., 2005). It is important to note that satisfaction is not the same as support. Satisfaction is an attitude based on evaluations of a particular object (Eagly & Chaiken, 2007; Fishbein & Ajzen, 1975), which in the case of this research is content or process. In turn, this favourable (satisfaction) or unfavourable (dissatisfaction) evaluation leads to certain behaviour (Ajzen & Fishbein, 2000; Fishbein & Ajzen, 1975) such as stakeholder support. Thus, support is the amalgamation of content-based and procedural satisfaction. Satisfaction produces the benefit of stakeholder support.

It is the satisfaction about the manner of stakeholder involvement that this research focuses on, because government-induced interactive governance is used instrumentally as a mediation tool to discourage stakeholders from using legal action to stop implementation (Edelenbos & Klijn, 2006; Edelenbos & van Meerkerk, 2016; Irvin & Stansbury, 2004). As such, procedural satisfaction is the dependent variable and is defined as the satisfaction of stakeholders for the process they participate in (de Graaf, 2007).

The Flood Protection Programme of the Dutch province of Limburg

This paper focuses on finding a correlation between the use of interactive governance and the procedural satisfaction of stakeholders over time. Consequently, the same case used by Nouzari et al. (2020) forms the basis for this paper, namely the *Hoogwaterbeschermingsprogramma Limburg* (Flood Protection Programme). In 2020, the programme consisted of 15 dike sections that had to be reinforced in conformity with the new water safety standards adopted on 1 January in the Dutch law called the *Waterwet* (Rijkswaterstaat, 2020a, 2020b; Waterschap Limburg, 2019). The Flood Protection Programme Limburg is initiated by the Waterboard Limburg. Waterboards are governmental agencies in the Netherlands tasked with the water management of regional areas. Ensuring water safety is one of the waterboards' primary tasks (Rijksoverheid, 2020).

For the Flood Protection Programme, the Waterboard Limburg made designs per dike section through a stakeholder process. The programme started in 2016, and the Waterboard Limburg aspired to have the programme finished in 2020. Citizens, business owners, non-governmental organizations (NGOs), municipalities and governmental organizations were involved through one-on-one meetings, citizens panels, design workshops and expert meetings, but also got informed

through various media channels such as Facebook or newsletters. The Waterboard Limburg realized that possible (legal) protest resulting from a lack of support might jeopardize the implementation of the dike reinforcement (Waterschap Limburg, 2017).

Longitudinal case study: survey data for multiple regression analysis

This research explores if a similar correlation between interactive governance and the procedural satisfaction of stakeholders can be found within the same case over a period of time. The only way to establish if certain research results, in our case the results of Nouzari et al. (2020), change over time is to conduct longitudinal research. A period of a year was chosen between the first (2017) and second (2018) measurements because enough time needs to pass for stakeholders to form a new opinion about the process. However, too much time would result in satisfaction not being comparable with the previous measurement, because stakeholders might not know how they experienced the process prior. In short, stakeholders need to experience the process after it has been through changes, such as a new phase in the policy implementation process. Policy implementation processes in the Netherlands know roughly three phases, namely reconnaissance (researching possible dike variants), planning (making the dike design) and realization (implementing the design). A shift in policy implementation phase might result in a change in satisfaction, because stakeholder opinion about the process will be based on new experiences as a year of involvement has passed compared with the previous measurement.

As a prerequisite for longitudinal research, the same survey method developed by Nouzari et al. (2020) was used in this study. In the survey, stakeholders were asked to provide a grade for each of the operationalized evaluation criteria based on interactive governance. The grade was given on a scale from 1 to 10, with a 5.5 representing the difference between satisfaction and dissatisfaction. A 10-point scale was used, because it is the most commonly used method for grading in the Netherlands, making it intuitive for stakeholders and maximizing the reliability of research results.

Another prerequisite for longitudinal research is that the same case is used and data are gathered among the same population. Thus, the survey was spread among stakeholders attending the same participation procedures as done by Nouzari et al. (2020), namely citizen panels and expert meetings. Stakeholders within these participation procedures were also involved through one-on-one meetings and design workshops.

Establishing a correlation between interactive governance and the procedural satisfaction of stakeholders was also done with the help of the same analyses conducted by Nouzari et al. (2020). A regression analysis was used to determine a significant positive correlation between the evaluation criteria of interactive governance (independent variables) and the procedural satisfaction of stakeholders (dependent variable).

Table 1. Operationalized interactive governance criteria into evaluation criteria.

Interactive governance criteria	Operationalized 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, solution exploration and design) ● Taking ideas, arguments and interests seriously
Reasonable debate	<ul style="list-style-type: none"> ● Possibilities to provide input for conceptual dike variants or dike designs ● Focus on the substance of problems, solutions and conceptual documents during meetings (e.g., 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 stakeholder interests during meetings

Operationalizing interactive governance into evaluation criteria for survey question

A common misconception is that interactive governance, and therefore stakeholder involvement, automatically leads to support even though extensive process management is needed for success (Edelenbos & Klijn, 2006; Klijn et al., 2010b; Sørensen & Torfing, 2009) It is the manner in which stakeholders are involved and the process is managed that participants can be questioned about. As such, interactive governance is operationalized into process management criteria to measure procedural satisfaction.

As mentioned above, the quantitative method of Nouzari et al. (2020) was used for the purpose of this longitudinal research. This also means that the same operationalized criteria (Table 1) are used for survey. A detailed explanation of the operationalization can be found in Nouzari et al. (2020).

One aspect was added that is unrelated to interactive governance, namely the speed of the process. During the first measurement in 2017, it was observed that the most important desire of stakeholders was concrete and detailed information about how the reinforcement per dike section would impact their properties. Not knowing the impact of the upcoming dike designs resulted in uncertainty among citizens about the future of their homes along the dikes. One of the possibilities communicated by the waterboard that some people would have to live somewhere else, because of the possible design combinations that were thought of. In consideration of that, stakeholders in this study are also asked to convey their satisfaction about the speed of the design and stakeholder process.

Survey (non)response

Data were gathered between November 2018 and February 2019. This is approximately one year after the last measurement in 2017 in which data were gathered between June and December 2017. The survey was spread through the same channels as by Nouzari et al. (2020), namely through the distribution of hard copies during meetings and online through email using the same mailing list as the year before. An agreement between the

researchers and the waterboard was made for data collection during citizen panel meetings. The waterboard spread hard copy surveys during meetings, but did not do so resolutely enough, resulting in only 12 completed surveys compared with the 120 hard copy surveys in 2017, because the people tasked with distribution were afraid of bothering stakeholders during the meetings. At first glance, this might jeopardize the survey being spread among the same population as the previous measurement. However, an online survey was also spread using the same email list as used by Nouzari et al., which consisted not only of stakeholders involved in expert meetings, but also the same stakeholders who were present during the citizens panels in 2017 during the first measurement. Compared with 2017, which resulted in 135 filled-in online surveys, the online survey in 2018 yielded 243 survey responses. The response per stakeholder group is as follows (2017 compared with 2018): citizens (82%–84%), business owners (19%–19%), interest groups (14%–23%), NGOs (8%–6%) and governments (8%–5%).

Evaluation of the stakeholder process for the Flood Protection Programme Limburg

Comparing the measurement results between 2017 and 2018 shows how the satisfaction of stakeholders has developed through the course of the design process. This provides process managers with valuable insights regarding the aspects stakeholders are dissatisfied with and thus require attention. Managers can improve specific aspects of the process based on that knowledge and in turn increase the effectiveness of the process to realize satisfaction.

In 2018, the process for the Flood Protection Programme Limburg scored an average of 5.92 out of 10, which is 0.66 points lower when compared with the measurement done in 2017 (Table 2). The process in 2018 also scored lower compared with 2017 on every aspect, in some cases a full point on average. While no process aspect in 2017 scored lower than the cut-off point between satisfied and dissatisfied of a 5.5, certain aspects fell below the 5.5 cut-off point. This means that, compared with 2017 stakeholders, in 2018 stakeholders were dissatisfied about certain aspects of the process. Examining the individual aspects shows the following results

Table 2. Satisfaction of stakeholders in 2017 ($N = 255$) and 2018 ($N = 255$).

Indicators interactive governance	2017	2018	Difference
Possibilities to provide input during meetings	7.31	7.04	-0.27
Equal opportunities to provide input	7.16	6.74	-0.42
Number of stakeholder meetings	6.86	6.57	-0.29
Focus on the possible dike variants during meetings	6.64	6.07	-0.57
Possibilities to provide input for possible dike variants	6.87	6.17	-0.70
Providing input for possible dike variants early	6.57	6.04	-0.53
Discussing interests	6.82	6.18	-0.64
Taking interests seriously	6.60	5.79	-0.81
Receiving information periodically about possible dike variants	6.31	5.99	-0.32
Receiving information in understandable language	6.79	6.75	-0.04
Receiving information about what has been done with provided input	6.13	5.33	-0.80
Receiving information about input provided by others	6.24	5.89	-0.35
Taking ideas and arguments seriously	6.54	5.57	-0.97
Speed of the process	6.19	5.36	-0.83
Final grade	6.58	5.92	-0.66

- Stakeholders were most satisfied regarding the possibilities to let their voices be heard in 2018, just like in 2017. The process scored highest in terms of the number of meetings and the (equal) opportunities to provide input during meetings. The difference from 2017, however, is that these aspects scored an average of 0.3–0.4 points lower.
- Stakeholders were also most satisfied regarding the subjects they provided input for during meetings in 2018, which is similar to 2017 – most notably, the possible dike designs, interests, arguments and ideas. Compared with 2017, these aspects scored 0.6–0.7 points lower on average.
- Receiving information in understandable language was also one of the process aspects about which stakeholders expressed satisfaction. Difference in satisfaction between 2017 and 2018 is the smallest out of all the process aspects.
- Stakeholders in 2018, such as in 2017, are most dissatisfied about the speed of the process. However, an important difference is the average between both measurements, namely a 6.19 in 2017 and a 5.36 in 2018. Keeping in mind the cut-off point of a 5.5, this means that stakeholders were satisfied in 2017 and dissatisfied in 2018. Another important difference is the percentage of stakeholders finding the process to slow, namely 38% in 2017 and 53% in 2018.
- Another similarity is seen in satisfaction regarding the receipt of information about what has been done with the provided input of stakeholders. In both years, stakeholders are most dissatisfied about this process aspect. The difference is that, in 2018 this aspect scored an average of 5.39 (below the cut-off point) compared with 2017 in which this aspect scored a 6.13.
- The only aspects that scored highest in 2017 but scored lowest in 2018 are taking the interests, arguments and ideas seriously by the waterboard. In 2017 these aspects scored an average of 6.60 and 6.54, respectively, compared with 2018, in which these aspects scored a 5.79 and 5.57. This is a difference of approximately 0.8 to a full point on average, which is the highest recorded difference in process aspects between both years.

A fully empirically proven explanation for why the stakeholder process in 2018 scores lower on every aspect compared with 2017 cannot be given. The focus of the survey was on measuring stakeholder satisfaction and determining a correlation with interactive governance, not on finding explanations for why stakeholders are (dis)satisfied. However, there are a few empirical facts that provide possible explanations for the differences:

- The future dike design and therefore the space needed determines the possibilities of stakeholders to keep living along the dike. Getting clarity about the design as soon as possible was most important for stakeholders, because of the uncertainty regarding their homes and possible impact on the quality of life. The waterboard promised stakeholders to provide clear information at the end of 2017. Thus, the waterboard created an expectation about their most desired information, which was not met. This has impacted the satisfaction of stakeholders negatively after the first measurement in 2017, because their uncertainty was not taken away as promised. The desire for clear information to take

the uncertainty away is represented in the increased percentage of stakeholders finding the speed of the process too slow compared with the first measurement in 2017, namely 38% in 2017 compared with 53% in 2018.

- The level of stakeholder involvement within the process is limited to informing and consultation, which means that forms of involvement that allow for a greater degree of influence on the outcome are absent. Co-production took place once, namely at the beginning of the process at the end of 2016 and beginning of 2017. Meetings were organized in which stakeholders (including citizens) were asked to provide desirable features of the project location that in turn were translated into building blocks, which were eventually used in the dike design process. As such, stakeholders influenced the dike designs made by the waterboard through the building blocks. However, after these meetings, design sessions took place involving professional stakeholders, excluding external stakeholders such as citizens and business owners. In short, after the end of 2016, external stakeholders were not given any further opportunities to directly influence the design process. Stakeholders only had influence on the design process if the waterboard used the provided input, which was rare. This is one of the problems of government-induced interactive governance. Involving stakeholders and asking for their contribution creates expectations that the provided input (interests, worries, ideas, etc.) is taken into account in decision-making. Not meeting this expectation decreases satisfaction and trust (Edelenbos & van Meerkerk, 2016; Irvin & Stansbury, 2004). The impact of this on stakeholder satisfaction is demonstrated in two aspects, namely (1) receiving information about what has been done with the provided input of stakeholders; and (2) the waterboard taking the interests, ideas and arguments of stakeholders seriously. There is a difference of approximately 0.8 to a full 1 point between the averages of the measurement of 2017 compared with 2018.

Factors analysis: correlations between the evaluation criteria of interactive governance

A factor analysis is conducted before the regression analysis to explore if comparable correlations are found between the measurements of 2017 and 2018. The reasoning behind this is an expected theoretical correlation between the four criteria of interactive governance. This is best illustrated with the help of a few examples. Stakeholders are unable to influence decision-making when they are not granted access to the process to let their voices be heard. A follow-up example, when stakeholders are granted opportunities to participate through meetings, but the goal is only to inform the public, there will not be any reasonable debates. Another example, when stakeholders are invited to brainstorm about the best possible design options through (reasonable) discussion, but input is not taken seriously by the government (agency), resulting in a lack of influence on decision-making. As mentioned above, one of the characteristics of government-induced interactive governance is that the government decides if and when stakeholders are able to participate, but also if provided input is taken into account during decision-making. As such, a theoretical correlation is expected between the evaluation criteria derived from interactive governance.

Based on an oblique rotation, namely direct oblimin, three factors are distinguished for the measurements of 2017 and 2018 (Table 3):

- The first factor for 2017 refers to the types of input provided by stakeholders and it being taken seriously by the government. Discussing ideas and arguments (reasonable debate) during conversations, while also sharing interests and concerns (transparency) and having the input taken seriously (influence) correlate with each other. Within government-induced interactive governance, stakeholders expect the government to take the input seriously and using it in the design process of decision-making. The first factor for 2018 also consists of aspects related to receiving information about the progress made in design and process (transparency).
- The second factor for 2017 and 2018 refers to the (equal) possibilities afforded to stakeholders to provide input regarding the possible dike variants and designs. This factor falls under the criterion of equality. To have influence on the process, stakeholders need to be able to provide input.
- The last factor for 2017 is about receiving understandable information regarding what has been done with the provided input, the input other stakeholders have provided and the progress of the design process (transparency). Stakeholders not only want to know what has been done with their input, but also want to be consistently updated to make sure decisions are not made unknowingly. The third factor for 2018 concerns the possibilities for stakeholders to provide input about the possible dike variants and designs.

Table 3. Extracted factors for the measurements of 2017 and 2018.

	Factors 2017	Factors 2018
1	<ul style="list-style-type: none"> • Focus on the possible dike variants during meetings • Providing input for possible dike variants early • Discussing interests • Taking interests seriously • Taking ideas and arguments seriously • Speed of the process 	<ul style="list-style-type: none"> • Receiving information periodically about possible dike variants • Receiving information about what has been done with provided input • Receiving information about input provided by others • Discussing interests • Taking interests seriously • Taking ideas and arguments seriously • Speed of the process
2	<ul style="list-style-type: none"> • Possibilities to provide input during meetings • Equal opportunities to provide input • Possibilities to provide input for possible dike variants 	<ul style="list-style-type: none"> • Possibilities to provide input during meetings • Equal opportunities to provide input • Number of stakeholder meetings • Receiving information in understandable language
3	<ul style="list-style-type: none"> • Receiving information periodically about possible dike variants • Receiving information in understandable language • Receiving information about what has been done with provided input • Receiving information about input provided by others 	<ul style="list-style-type: none"> • Possibilities to provide input for possible dike variants • Providing input for possible dike variants early

As mentioned above, the factor analysis is used to correct for the expected (theoretical) correlations between the criteria of interactive governance. Although the factors between both measurements differ somewhat, the differences are relatively small and do not have much impact on the results of the regression analysis, because the three factors still consist of all the conceptualized process aspects based on the criteria of interactive governance.

Regression analysis: correlations between interactive governance and satisfaction

Interactive governance literature assumes a correlation between the use of stakeholder involvement and the procedural satisfaction of stakeholders. A regression analysis is used to explore a positive correlation for the measurements of 2017 and 2018 for the Flood Protection Programme Limburg. For the purpose of this research, the correlation statistics are compared between both years to establish the extent to which the correlations are similar or different from each other. This is done in three steps:

- To examine the Pearson coefficients, because they show if a correlation between the factors of interactive governance (consisting of the criteria equality, influence, reasonable debate and transparency) and the procedural satisfaction of stakeholders exists (Table 4). For both 2017 and 2018 a correlation is established with a reliability percentage of 99% (significance < 0.01) for all factors. However, simply determining if a correlation exists is not enough. To legitimize the normative assumptions in the literature, the use of interactive governance needs to have meaningful impact on the satisfaction of stakeholder for support. Consequently, the correlations need to have reasonable strength, which they have, because they are moderately strong (0.5–0.7) and strong (above 0.7) respectively.
- To determine if there is a positive or negative correlation between the factors of interactive governance (independent variables) and the procedural satisfaction of stakeholders (dependent variable). Governance literature does not only assume correlations with reasonable strength, but it further assumed that they are positive. The Beta coefficients are examined for this purpose. Both 2017 and 2018 show a positive correlation with a 99% reliability (significance < 0.01) for all factors, with the exception of factor 3 from the 2018 measurement. This factor is about the stakeholder's opportunities to provide input for the possible dike variants and designs. Surprisingly, the process aspects that constitute this factor show a positive correlation in 2017. A possible explanation for this is stakeholders' desire to obtain a definitive answer if they can keep living along the dike, which impacts their quality of life. The waterboard also promised to provide the information that stakeholders most desired at the end of 2017 but was only able to do that for

Table 4. Correlation and regression statistics for the measurements of 2017 and 2018.

	Pearson	Significance	Pearson	Significance	Beta	Significance	Beta	Significance
Year	2017	2017	2018	2018	2017	2017	2018	2018
Factor 1	0.872	0.000	0.878	0.000	0.538	0.000	0.752	0.000
Factor 2	0.677	0.000	0.659	0.000	0.239	0.000	0.161	0.000
Factor 3	0.789	0.000	-0.316	0.000	0.278	0.000	-0.097	0.001

a handful of dike sections at the end of 2018 (almost a year later). Stakeholders explained to the process managers of the project that meetings did not provide any new information about their situation, thus every extra meeting was seen as something negative instead of something positive. Also, the correlation for this factor is rather weak and the Beta is small, meaning that the factor has a relatively small negative impact on the satisfaction of stakeholders. Overall, the results confirm the assumption that there is a positive correlation between the use of interactive governance and the procedural satisfaction of stakeholders within our case between both years.

- To determine the extent to which interactive governance explains the procedural satisfaction of stakeholders, which is important for establishing the usefulness of the concept to achieve stakeholder support. For this purpose, the R^2 is examined to establish the percentage of the procedural satisfaction explained through the factors of interactive governance. When the explained variance has a relatively high percentage, procedural satisfaction of stakeholders is mostly determined by the use of interactive governance instead of other unrelated factors. The R^2 in 2017 is 85.1% and in 2018 is 79.7%, meaning that for both years, approximately 80–85% of the procedural satisfaction of stakeholders is explained by the use of interactive governance.

Conclusions

This paper explored if a comparable positive statistical relationship found by Nouzari et al. (2020) between interactive governance and procedural stakeholder satisfaction can be found in the same flood risk management case over a period of time (one year between two measurements). The assumption found in the literature that interactive governance (independent variables) leads to stakeholder satisfaction (dependent variable) for support was tested for the Flood Protection Programme Limburg in 2017 and 2018 through a regression analysis. The same survey method, statistical analyses and case were used as Nouzari et al. (2020) for longitudinal research. This is in line with the recommendations of Ianniello et al. (2018) and Schulz (2019) for more quantitative research using statistical analyses within (water) governance literature. The purpose of these recommendations is to generate empirical proof for assumptions made in the literature about the benefits of interactive governance and which governance criteria or values stakeholders find most important.

The empirical results have shown moderate to strong correlations between the criteria of interactive governance and the procedural satisfaction for the measurements of 2017 and 2018. In addition, both measurements show a similar explained variance around 80–85%, meaning that most of the procedural satisfaction of stakeholders is explained through the criteria of interactive governance. The only difference found is the negative correlation of factor 3 for the measurement of 2018, which relates to stakeholders' opportunities to provide input for the dike designs. However, the correlation of this factor is weak and has a relatively small impact on the satisfaction of stakeholders.

This study has also shown that the survey method used has a scientific and a practical purpose. The empirical method based on the criteria of interactive governance is easily replicable (survey with standardized questions) and contains highly standardized statistical analysis procedures (regression and factor analysis). The replicability and standardized procedures make the method suitable for longitudinal research as datasets generated through the survey are easily comparable. As such, contributing to quantitative research aiming for empirical results supporting assumptions made in governance literature.

The method is also useful for planning practitioners who manage a stakeholder process. Applying the survey in a policy process or project establishes the procedural aspects that stakeholders are (dis)satisfied with. Combining the satisfaction scores with the correlation results of the regression analysis helps practitioners to determine the effectiveness of the process. Practitioners are able to reach higher levels of satisfaction by improving the aspects stakeholders are dissatisfied with and show a (strong) correlation based on the data and results generated.

Discussion

In line with the recommendations of Ianniello et al. (2018) and Schulz (2019), but also as a continuation of the study done by Nouzari et al. (2020), this quantitative research focused on firstly finding a statistical correlation between interactive governance and the procedural satisfaction of stakeholders. Thus, it was paramount to provide empirical proof for the assumption that stakeholder involvement through interactive governance leads to support and thereby discourages them from taking legal action to stop implementation of projects or policy. Second, it was an objective to establish the effect that time has on the correlations found between interactive governance and stakeholder satisfaction. This section reflects on governance literature in light of the results of this study.

This study established a statistical correlation such as a number of other quantitative studies using regression analysis to determine a statistical relationship between interactive governance and stakeholder satisfaction among other things (e.g., Boedeltje, 2009; Edelenbos et al., 2010; Ernst, 2019; Jager et al., 2020; Klijn et al., 2010a, 2010b; Nouzari et al., 2019, 2020; Robertson & Choi, 2012). However, the longitudinal aspect of this research shows that stakeholder involvement does not automatically lead to success as extensive process management is needed to capitalize on the potential benefits of interactive governance (Edelenbos & Klijn, 2006). This is illustrated by factor 3 for the measurement of 2018, which showed a negative correlation with the satisfaction of stakeholders, even though this factor showed a positive correlation in 2017. A possible explanation is the expectation set by the waterboard, namely providing information if stakeholders could keep living along the dike at the end of 2017. This information is highly desired by stakeholders, as one of the potential scenarios was that stakeholders could not continue to live along the dike, impacting their quality of life and resulting in prolonged periods of uncertainty. The waterboard was only able to provide stakeholders with the information a year later than promised, and only for a handful of dike sections. Stakeholders conveyed to the project's process managers that meetings in 2018 did not provide any new information on this subject, which increasingly led stakeholders to think that the design process took too long and to negative evaluations.

Not meeting expectations within stakeholder processes and its impact on stakeholder support is a known issue within governance (Irvin & Stansbury, 2004; Mayer et al., 2005; Teisman et al., 2001; van Meerkerk, 2019).

Even though the correlations between the measurements of 2017 and 2018 are comparable, a few questions are raised for future research. First, both years showed an explained variance of 80–85%, meaning that most of the procedural satisfaction of stakeholders is explained through the criteria of interactive governance. However, it also means that 15–20% of procedural stakeholder satisfaction is explained by aspects unrelated to interactive governance. Examples are contextual factors related to spatial planning, such as stakeholder personalities, emotional attachment to an environment and quality of life. These aspects have not been included in this research but can further explain which aspects impact the procedural satisfaction of stakeholders. Second, this research only focused on procedural satisfaction and not on content-based satisfaction. In literature, a distinction is made between process and content outcome. Process outcome relates to procedural results such as stakeholder support, while content outcome refers to the substance resulting from a process, such as policy or a dike design (Edelenbos et al., 2010; Klijn et al., 2010a, 2010b; Skelcher et al., 2005). Satisfaction regarding content also matters in the behaviour of stakeholders to support plans or protest against implementation. Stakeholders' perspectives, their interests, the underlying spatial problem and the subject it relates to (flood risk management, underground planning, etc.) are all examples of contextual factors that most likely play a role in stakeholders' content satisfaction. Qualitative research needs to be conducted to gain an understanding of how these aspects play a role in stakeholders' content satisfaction and why. While quantitative research mostly focuses on finding relationships, qualitative research helps in explaining those established relationships.

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