

INVESTIGATING THE IMPACT
OF TRUST ON INFLUENCING
STAKEHOLDER RELATIONSHIPS
IN THE COLLABORATIVE
INNOVATION PROCESS WITHIN
THE WATER INDUSTRY

FINAL REPORT – INVESTIGATING THE IMPACT OF TRUST ON INFLUENCING STAKEHOLDER RELATIONSHIPS IN THE COLLABORATIVE INNOVATION PROCESS WITHIN THE WATER INDUSTRY



The
University
Of
Sheffield.



September 2019

REPORT TO TWENTY65
CONSORTIUM

INSTITUTE OF WORK
PSYCHOLOGY,
SHEFFIELD UNIVERSITY
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INVESTIGATING THE IMPACT OF TRUST ON INFLUENCING STAKEHOLDER RELATIONSHIPS IN THE COLLABORATIVE INNOVATION PROCESS WITHIN THE WATER INDUSTRY

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1 EXECUTIVE SUMMARY

1.1 OVERVIEW

Previous literature has demonstrated the numerous benefits to facilitating collaborative innovation within the water sector (Margerum & Robinson, 2015; Schot & Steinmueller, 2018). However, research suggests that this does not appear to be occurring as effectively between the key stakeholders involved; water companies, academics, suppliers, consultants and advisory body organisations (Speight, 2015). Barriers to working collaboratively appear to be both practical and emotional. Due to the highly political nature of the water industry, it follows that trust plays a significant part in the collaborative innovation process with research showing that high levels of trust can facilitate innovative performance (Selnes & Sallis, 2003).

However, there appears to be very little research into the impact of trust on collaborative innovation relationships between stakeholders specifically in the water sector. Therefore, this research project aimed to investigate the influence that trust may have on the success or failure of a collaborative innovation relationships between stakeholders.

A widely used framework of trust by Schoorman, Mayer and Davis (2007) was chosen to examine this as it was deemed to provide the most comprehensive overall explanation for the factors involved in building and maintaining trust. The project aimed to test Schoorman, Mayer and Davis' (2007) trust framework to examine how it was comparable to trust relationships between stakeholders in the water industry. Specifically, the project investigated the factors involved in building trust and maintaining trust between stakeholder groups. In addition, the project aimed to examine any other barriers or facilitators perceived by stakeholders as influential in the collaborative innovation process.

1.2 PROJECT IMPLEMENTATION

17 semi-structured telephone interviews were conducted with individuals representing water company, academic, supply chain, advisory body and consultant stakeholder groups. Interview transcripts were then analysed using thematic template analysis (King, 2012), to examine the main themes emerging from stakeholder interviews.

1.3 MAIN FINDINGS

Findings supported specific components of Schoorman, Mayer and Davis' (2007) trust framework including the factors influential in building trust between stakeholders such as an individual's capacity to trust, perceived integrity and benevolence, in addition to the positive and negative outcome feedback loop. However, little evidence was found for the factor of ability within this framework. Additional factors observed by stakeholders as important for building trust included time involved in building a trusting relationship and the demeanour of an individual. The main barriers to collaborative innovation were noted as regulatory procedures, financial constraints, perceptions towards trialling, overemphasis on localised issues and incompatible timescales/ lack of planning. The main perceived facilitator/driver for collaborative innovation was the potential financial gain from the outcome of a collaborative project.

1.4 RECOMMENDATIONS

From these findings a series of recommendations were put forward as advice for ensuring future successful collaborative innovations between stakeholders:

- Continual documentation of project activities (including any lessons learned) throughout the innovation process to ensure a more effective record keeping and handover procedure if it is required..
- Ensuring (where possible) that individuals who are key representatives of their stakeholder group are present from the beginning of a collaborative innovation project and throughout the project lifecycle.
- More advanced project forecasting (where possible) to accommodate the longer project timeframes involved in the academic sector.
- Develop an independent terms of reference document outlining the overall aims of the collaborative exercise, which organisations are required to commit to. This may help to unite stakeholders in their shared values and help to maintain trust amongst them.
- Effective collaboration with stakeholders focussing on shared water problems (e.g. pollution) as opposed to individualised local issues.
- Centralising collaborative innovation activities to unify the collaborative projects currently being undertaken by different organisations in isolation.

2 PROJECT IMPLEMENTATION

This section outlines the project aims, methods and procedures.

2.1 PROJECT AIMS

The overall aims of the project were to examine the impact of trust on the relationships between stakeholders when they were involved in the collaborative innovation process. Specifically, the project aimed to investigate:

- What does ‘trust’ mean to the different key stakeholders in the context of collaborative innovation and how do they define the concept of trust? Does this differ between stakeholder groups?
- Does this map onto existing theoretical definitions proposed in the literature?
- What are the factors involved with building trust throughout the innovation cycle within the water sector?
- Do these factors align with the three main factors of building trust (ability, benevolence and integrity) identified by Schoorman, Mayer and Davis (2007) during the creative idea generation and implementation phases of the innovation cycle?
- Can additional sub-factors be identified from Schoorman, Mayer and Davis’ (2007) framework to be incorporated into an updated framework?
- Are there any additional important factors in building and maintaining trust identified?
- How may trust be maintained or potentially broken?
- What other influences are perceived by stakeholders as barriers and drivers for collaborative innovation at the initial idea generation and implementation phases of the innovation cycle within the water sector?

2.2 SETTING THE CONTEXT

Global environmental issues are continuing to become more challenging with problems continuing to be presented by issues such as climate change and pollution (European Commission, 2012). As a result the advocacy for more stakeholders to be included in environmental decision-making processes has become increasingly apparent (Speight, 2015) This is demonstrating to be particularly impactful on the water sector which is being challenged to ensure continued access to clean water supplies despite unsustainable water infrastructures and environmental issues (Kiparsky, Sedlak, Thompson & Truffer, 2013).

In order to ensure preventative action against the inaccessibility of clean water and the potential rising expense of using water services, experts maintain that innovation (as defined by Sørensen and Torfing (2011) as the process involving the creation and implementation of novel and inventive ideas directed at effecting a qualitative change within a particular context) is required to develop more sustainable and cost-effective solutions (Matheson, 2013). Research has argued that working more innovatively could bring benefits such as utilising both pre-established and new water sources more efficiently, ensuring optimised

usage for water consumers and efficient governmental investment into research and development (Moore, von der Portern, Plummer, Brandes & Baird, 2014).

However, as the water sector is predominantly responsible for providing clean, inexpensive and safe water, it has demonstrated some resistance to innovative thinking, for example mandatory legal compliance requirements means that there is a restriction of the type of innovative technologies which can be developed and implemented (Compagnucci & Spigarelli, 2018). Water regulatory bodies such as OFWAT in the UK water sector require water companies to adhere to strict governance procedures and guidelines to safeguard against the safety of water provision to the public (OFWAT, 2019a).

As a result, water companies tend to favour less risky strategies in addressing these ongoing sustainability issues. For instance, the potential risk involving the utilisation of novel untested water treatment technologies means that rigorously tested pre-existing technologies tend to be employed instead (Speight, 2015). Moreover, the logically complex nature of ageing water infrastructure systems means that repairing them may be easier than a complete systemic overhaul (Dobbie, Brown & Farrelly, 2016). Therefore, as water companies have increasingly reduced their own internal research and development activities, they have been exploring the potential for collaborating with external organisations, in order to aid in developing innovative solutions to help address these issues (Margerum & Robinson, 2015; Schot & Steinmueller, 2018).

There is evidence from academic literature indicating that trust may play a significant role in the success or failure of collaborative innovation partnerships and may be a significant factor in inter-organisational stakeholder relationships (Van Wijk, Jansen and Lyles, 2008; Sernes & Sallis, 2003; Wang, Yeung & Zhang, 2011; Charterina, Landeta and Basterretxea, 2017). Therefore, the overall aim of this study was to examine the impact of trust on influencing stakeholder relationships in the collaborative innovation process within the water industry.

A commonly used framework of trust by Schoorman, Mayer and Davis (2007) was chosen to examine this aim as it provided the most comprehensive overall explanation for the factors involved in building and maintaining trust. Schoorman, Mayer and Davis' (2007) framework explained that it was important that there was an element of risk taking and therefore potential vulnerability in a trustor (the individual considering whether or not to trust another) and trustee's (the individual to be trusted) relationship and that the perception of another individual's trustworthiness (the "trustee") was dependent on the assessment of three specific factors by the "trustor": ability, benevolence and integrity. The authors maintained that the "ability" factor referred to the trustor's beliefs about the trustee's skills and expertise. The "benevolence" factor described the trustor's perception of the trustee's capacity for empathy and loyalty. Thirdly, the factor of "integrity" related to the trustor's perception of the trustee's adherence to a set of principles and values deemed acceptable such as keeping promises or shared moral values. The framework also involved another factor, the propensity to trust (the willingness of an individual to trust), which will also influence the likelihood of a trusting relationship being formed. The authors suggested that the factors of considered trustworthiness (ability, benevolence, and integrity) together with the propensity to trust, would result in the trustor's decision to trust the trustee and engage in risk taking behaviour and its associated outcomes. Schoorman, Mayer and Davis (2007) argued that based on these outcomes the trusting relationship between the trustor and trustee would either be strengthened (from positive outcome) or weakened/broken (from a negative outcome) and this "feedback loop" may subsequently positively or negatively impact any future collaborations between the individuals.

The study aimed to test Schoorman, Mayer and Davis' (2007) trust framework to examine how it was comparable to trust relationships between stakeholders in the water sector. Specifically, the study examined the factors involved in building trust and maintaining trust between stakeholders. In addition, the study aimed to examine any other barriers or facilitators perceived by stakeholders as influential in the collaborative innovation process.

2.3 METHOD AND PROCEDURE

The research project employed a semi- structured interview design (see Appendix B for the interview schedule), with a structured series of questions that could be asked with the flexibility of being able to ask follow up questions or re-order questions according to the appropriateness of the interview.

Interviewees were senior managers/heads of service within the stakeholder groups (water companies, academia, supply chain, advisory bodies and consultants) who had prior experience of the collaborative innovation process within the water sector. 17 participants representing stakeholder groups were interviewed in total; seven water companies, three academics, two suppliers, three consultants and two advisory bodies (regulatory and trade body organisations). They were interviewed via telephone using a combination of questions derived from semi-structured interview questions (see Appendix B). The interviews were conducted over a 30-45-minute time period and were audio recorded and transcribed.

The interview data was manually transcribed and analysed using template analysis (thematic analysis), a technique used to identify the key themes which emerged from the interview transcript data. This analysis was conducted in accordance with King's (2012) guidance on conducting template analysis according to the following stages:

1. The themes expected to emerge based on previous research such as ability, benevolence, integrity and propensity to trust were noted before the analysis.
2. The interview transcripts were analysed, and any emergent themes were highlighted and identified.
3. These themes were then categorised and arranged hierarchically according to major and minor themes observed.
4. An initial template of themes was then developed (see Appendix C)
5. The interview transcripts were then re-analysed, and the initial template was re-examined and modified as required (adding any new themes discovered during the second analysis or removing any themes which were not deemed significant).
6. A final template was produced (hierarchical categorisation of themes identified from the interview data) (see page 6-7).
7. This template was then used to analyse/interpret the data.

3 FINDINGS

From the 17 interview transcripts with stakeholder participants (water companies, academics, suppliers, consultants, advisory organisations) overall themes were categorised in accordance with the research questions posed (see page 3) relating to perceived definitions of trust, factors involved in building, maintaining or breaking trust and additional perceived barriers and drivers/ facilitators to collaborative innovation.

The most noteworthy themes are shown in table 1 below:

| Research question | Major themes and sub-themes of stakeholders |
|--------------------------------------|--|
| Perceived barriers and drivers | <p>Regulatory processes</p> <ul style="list-style-type: none">• Incentive schemes causing competition between water companies• Mandatory water regulations <p>Financial constraints</p> <ul style="list-style-type: none">• Lack of funding for trials• Lack of funding for solution implementation <p>Perceptions towards trialling</p> <ul style="list-style-type: none">• Past negative experiences with trialling• Second hand accounts of negative experiences <p>Overemphasis on localised issues</p> <p>Mismatch of timescales and planning</p> <ul style="list-style-type: none">• Perception of slower academic timescales• Perceived fast paced private sector timescales• Lack of internal planning from water companies |
| Perceived drivers | Potential financial gain from innovative solution |
| Definitions and perceptions of trust | <ul style="list-style-type: none">• Involves relationships between individuals• Involves deception (breaking trust)• Involves the sharing of knowledge and ideas• Involves vulnerability and risk taking• Important in ensuring successful collaborative relationships• More important in the early stages of the innovation cycle than the later phases |

| | |
|--|--|
| Factors related to building trust with trustee | <p>Trustor's capacity to trust</p> <p>Integrity</p> <ul style="list-style-type: none"> • previous demonstration from trustee of successful collaborations • trustee not adopting the demeanour of a "salesperson" <p>Benevolence</p> <ul style="list-style-type: none"> • trustee displaying behaviours related to honesty • trustee having ethical values which match trustor <p>Time taken to build trusting relationship between trustor and trustee</p> <p>Demeanour (how trustee comes across to trustor)</p> <ul style="list-style-type: none"> • behaviours of the trustee • trustee's politeness • trustee's professionalism |
| Factors involved with the maintenance of trust | Consistent communication |
| Factors involved with a breakdown in trust | <p>Deceiving the other individual</p> <ul style="list-style-type: none"> • reporting incorrect data • focus on company self-interest • sharing data without consent from other parties <p>Lack of commitment to project</p> <p>Organisational change and staff turnover</p> <p>Perception that trust can be repaired if trustee apologises and provides an acceptable rationale for their behaviour.</p> |

Table 1: Major and minor stakeholder themes identified

3.1 PERCEIVED BARRIERS TO COLLABORATIVE INNOVATION DURING THE INNOVATION CYCLE

Regulatory Processes

It was observed across all stakeholders that the regulatory processes governing the water industry were perceived to be a barrier to collaborative innovation processes. For instance, it was observed by participants that the regulatory water supply price review (OFWAT, 2014) may be encouraging competition between water companies.

"...it makes them think "we are not going to share any good ideas with our competitor water companies". Water Company C and Water Company D have been named in the regulator consultation document, so if you are these companies you're thinking "we've got some ticks in the boxes there and they probably have."

Water Company, P2.

The stringent regulatory processes were also observed to influence the perceptibly conservative attitude that the water companies were noted to possess.

Financial Constraints

Unsurprisingly, the lack of funding for technological trials and commercialisation of an innovative solution was frequently referred to as a barrier to innovation across the stakeholder groups. One academic noted that the financial constraints were resulting in external consultancy organisations working on these innovative projects in their spare time as they were motivated by their own environmental values.

Perceptions towards trialling

It was specifically noted that water companies did not appear to have much confidence in the trialling process of an innovative technology due to previous negative experiences they had experienced themselves or that they had heard from others' negative past experiences. As a result, participants perceived water companies to place a greater emphasis on repeated trialling before the consideration of wider implementing of an innovative product.

Focus on localisation

There were several examples given by water companies and academics in which they believed the water industry placed too narrow a focus on localised issues and as a result were more resistant to collaborating with other stakeholders. For example, an interviewee from the water company stakeholder group believed that water companies were addressing water safety issues too late on in the water cycle when they become a problem for a specific geographical region and suggested that water companies should be focussing on working together to address issues, such as pollution, at their source:

"The best example I can illustrate is controlling at source, at the moment we have few controls over what comes into the sewage system or what comes into a river upstream from an obstruction point. Most of the water industry costs are associated with dealing with various pollutants. If we could take control at source of those pollutants it would be more efficient for the environment and customers rather than after where they are diluted in the river or sewage system."

Water Company, P 4.

However, two participants from the water company stakeholder group perceived that there were too many collaborative groups and an over-emphasis on mass collaboration.

"There are too many innovation and so-called collaboration centres, if you are an SME you cannot afford to go to each centre do that eight times. My own view is there should be a national innovation centre and water companies for their own reasons should fund some independent innovation, it should be contributed into the national one."

Water Company, P 2.

Moreover, one participant felt very strongly about the perceived notion that the water industry was not collaborating effectively and argued that water companies do collaborate with each other, however this may paradoxically be contributing to a stifling of innovation due to the number of individuals involved in decision making.

"The water industry is seen as very anti-collaborative inward looking and very insular. That couldn't be further from the truth and its usually the words "you need to be more collaborative" is used to express and cover a multitude of sins and both sides of the divide... both the client side and the supply chain... the reality is we collaborate day in day out... with many multitudes of partners...the consortium of individuals which we play a role as a business is " we need to be collaborative, we need to get everybody in a room" absolutely not. Collaboration on a mass scale, 20 people round a table that say "now we are going to collaborate" is just absolute folly. It has to be focused and there has to be a vested interest of everybody who has contributed to be able to collaborate effectively and that is more effectively done in small groups."

Water Company, P 16.

Mismatch of timescales and planning

It was observed in interviews with consultant, water company and academic stakeholder groups that there appeared to be a difference in the operational timescales of collaborative innovation projects. Furthermore, all three academic stakeholders highlighted that the timeframes that universities operate on are more long-term than the water companies and this could cause tensions between academics and water companies:

"... I think companies work on a faster timescale than Uni's. I try and manage expectations at the start and say "if you need something done in two to six months, I'm not the person to do that for you" because my time is spread across different projects and I cannot just pull things out of the bag last minute. So, if they are interested in something more strategic over one to five years... we can help with that."

Academic, P 12.

Reciprocally water companies also noted that their own lack of planning may result in problems later in the innovation process, one participant described how a lack of forward planning has inhibited the implementation of a solution in the past:

"...it is part of the project to unblock those additional things that we have felt for decades .. mostly are own goals. A principle engineer prevents the implementation of something last minute because he has concerns

over a process safety issue, well if we address that right the way back into the beginning of the project if wouldn't become an issue at implementation stage."

Water Company, P 16.

Additionally, one participant from the consultant stakeholder group gave an example of their perceptions of the differing timescales between public and private sector companies and the perceived barriers this may present to collaborating innovatively.

"... they seem to spend an awful lot of time checking on one another under the guise of progress meetings or calls which distract from the actual time available for implementation. So that for me is one of the things that gets in the way ... it can be intrusive and stop people actually getting to the task at hand... that sort of slightly archaic public sector way of working... In the private sector... we are very much "if we don't need to keep tabs on you and we do trust you we will just let you get on with it" and well dip in far less frequently."

Consultant, P 15.

3.2 PERCEIVED DRIVERS/ FACILITATORS OF COLLABORATIVE INNOVATION

Surprisingly, participants did not appear to discuss many examples of influences which they believed helped to drive collaborative innovation within the water sector. The main driver noted by most participants was the potential financial gain of the innovation solution, which was expected due to the perceived corporate competitiveness stakeholders had previously described.

3.3 STAKEHOLDER PERCEPTIONS AND DEFINITIONS OF 'TRUST' IN THE CONTEXT OF COLLABORATIVE INNOVATION

It was observed across all stakeholder groups with that definitions of trust were related to the involvement of two or more individual relationships, specifically in a trustor-trustee dynamic and that trustworthiness involved not deceiving the trustor. All stakeholders agreed that specifically within the context of the water sector, trust involved knowledge and idea sharing including an element of vulnerability and risk, as other parties could potentially exploit any organisational data that may be shared with them.

"There are various aspects of trust, you have to work with people so there might be trust in terms of ideas, if you are sharing ideas that that other party doesn't go off and develop the idea without you. You want people in the water industry to follow that agreement. The water company might share data with us and okay we have a research agreement but there's nothing physically stopping you taking that data and sharing it with somebody else."

Academic, P 12.

3.4 PERCEIVED IMPORTANCE OF TRUST IN COLLABORATIVE INNOVATION WITHIN THE WATER SECTOR

All stakeholders perceived trust to be an important factor in the collaborative innovation process, specifically indicating that trust was important for them to establish and maintain collaborative relationships.

"Yeah I can't see how collaboration can work without trust because collaboration is involved more than transactional activity so if you are looking to develop a relationship that goes beyond the transactional and a collaborative relationship goes beyond transactional... I don't see how it can happen without trust."

Consultant, P 6.

3.5 MAPPING STAKEHOLDER "TRUST" DEFINITIONS TO PREVIOUS LITERATURE

Observations from all stakeholder groups' perceptions and definitions of trust were similar to the definition proposed by Schoorman, Mayer and Davis (2007) as it involves elements of a trustor-trustee dynamic and is associated with the trustor exposing themselves to vulnerability (having their trust broken) by engaging in a risk taking process (in this instance, sharing information and knowledge) with the trustee.

3.6 FACTORS INVOLVED WITH BUILDING AND MAINTAINING TRUST BETWEEN STAKEHOLDERS THROUGHOUT THE INNOVATION CYCLE AND ALIGNMENT TO PREVIOUS LITERATURE

Willingness to trust

Another congruent observation across academics, water companies and advisory body stakeholders was the perception that in order for trust to be established, the trustor was required to be willing to trust the trustee:

"This may sound really silly... trust is built by trusting... if you give trust its normally corresponded with trust so sometimes somebody has to be the big guy and be the one who shares first. I think that's quite powerful... to be the first one – the one that starts the giving."

Water Company, P1.

This finding supports Schoorman, Mayer and Davis' (2007) "propensity to trust" component of their trust framework with stakeholders indicating that the capacity to be willing to trust another individual was an important factor in developing a trusting relationship.

Perception of ability

Based on Schoorman, Mayer and Davis' (2007) framework and the research the framework was developed from, it was anticipated that the factor of ability (assessing the trustee's competence to carry out tasks) to

would be seen as a more important factor by participants to building trust. However, only two interviewees (one water company representative and one academic) noted this in their interviews:

"Absolutely, technical ability you have to be able to trust what people are saying, data they have created, information they are sharing. So... integrity and technical ability would be a highly prized thing."

Water Company, P 11.

Perception of integrity

Almost all stakeholders agreed that one of the factors of building trust within a collaborative innovation setting was an assessment of the trustee's integrity (whether they actually follow up on agreed actions). This was described in interviews in two main ways; demonstration of previous successful results from collaborations with other stakeholders and not coming across as a "salesperson":

"...demonstration that they can do this and that they have done it before so that you could believe and envisage a positive outcome for whatever you were looking at...Also, the technical integrity and substance behind what they are saying, that they are not a salesperson or a flake ... that is there genuinely some scientific reasoning and evidence behind what they are saying."

Water Company, P11.

"...integrity that's their choice to do that so the first thing... is that a hard sell immediately straight in your face is not going to endear trust. Whereas open questioning kind of questions as opposed to hard sell closed end of statement kind of things build that kind of trust "I can relax in front of these guys, they are not trying to sell me something"."

Water Company, P 16.

However, the academic stakeholder group did not specifically mention integrity as a factor when asked about building trust. Aside from the academic stakeholder group, these findings support Schoorman, Mayer and Davis' (2007) "integrity" component of their framework. These results also suggest that the factor of "integrity" can be split into sub-factors of demonstration of previous successful results from collaborations with other stakeholders and not coming across as a "salesperson".

Perception of benevolence

It was observed across the stakeholder groups of suppliers, water companies, consultants and academics that building trust also involved assessing the trustee's benevolence (their underlying values and honesty) . Examples from consultants, suppliers, water companies and academics below show the perceived importance of innovative solutions being environmentally ethical and beneficial for society as a whole and how trust was developed as a result of identifying with the common values with other stakeholders:

"As well as the ethical behaviours within our organisation and the individual within it, they do advise on taking on ethical clients and that very much challenges my personal attitude that there are some clients who I would really like to work with for a number of reasons so those reasons might be an observed commitment to the environment ..."

Consultant, P 15.

"For the supplier the driving force for us is the potential to really make a difference, we see the products we are providing and how environmentally sound they are and the difference that they could make in terms of carbon foot print, improving how a site works so that they don't have the issues with manpower... I know internally a lot of the people we deal with as individuals in these big companies feel the same way as well. I think a lot of what keeps people going in the innovation process is this final outcome of what a big difference it could make"

Supplier, P 10.

"It was one of the signs of not having enough trust to academic research and what water research can bring to the water sector and society."

Academic, P 13.

"...If you don't have a common purpose, like sustainability being at the heart of your thinking there a chain that goes from that that makes the trust in those working relationships quite difficult."

Water Company, P 4.

Moreover, examples from both supplier interviewees demonstrated their perception of the importance of honesty in building a trusting relationship:

"It's being honest and forthright so that what you communicate strengthens the confidence that you can demonstrate, continues to strengthen the credibility that you have with the party and that you care about the outcomes of it."

Supplier, P 8.

"Yeah it think definitely the communication and honest feedback because sometimes I think people are a bit adverse to saying "oh sorry we did want to do that, it went quite well but actually we're not interested in because of x, y and z" that's perfectly normal and fine and that's good feedback because the company can do something with it rather than sort of being ignored."

Supplier, P 10.

These observations again offer support for the "benevolence" component of Schoorman, Mayer and Davis' (2007) framework. These results also suggest that the factor of benevolence could be split into two sub-factors of honesty and shared values.

The factor of time

A common observation across most stakeholder groups was the notion that trust was built between individuals over a period of time and could not be established instantaneously. In the example below, a water company stakeholder describes the significance of time in helping to build collaborative partnerships with academic institutions:

"So trust is something which is very hard earned but very easily lost... This is where I believe we have to work and create time to build those relationships and build trust. It isn't just earned overnight or by a number of papers or by a piece of exemplar work from a water company for example."

Water Company, P 16.

The interviewee above also appears to suggest that building trust over time is dependent on the effort made between stakeholders in strengthening this relationship.

Interviewees from the academic stakeholder group indicated that they believed trust could be established through collaborating on low risk projects such as studentships, with the successful outcomes of the projects leading to potential opportunities to work on higher risk projects.

"I also think in terms of building trust, I started little projects when collaborating with water industries, so they don't have to invest lots of time or money. Being honest about what they can expect from us, the students aren't staff and are paying for an education, so they don't sign NDAs."

Academic, P12.

These findings provide support for the involvement of time as an additional factor in the development of trust, therefore suggesting that this could be incorporated into an updated version of Schoorman, Mayer and Davis' (2007) framework.

Demeanour

An unexpected finding in this research was the interviewee's belief in the importance of demeanour (how an individual comes across) in establishing trust. This was described by advisory body, water company, supplier and consultant stakeholders as being observed in how an individual behaves, their etiquette and communication skills during face to face meetings and throughout contact via email/ telephone exchanges.

"... when you are having a conversation with somebody and detect they are listening to you and they ask open provocative questions and you are able to make... certainly in my experience that is a significant contributor to building trust in what the other person is saying and talking about."

Supplier, P 8.

"The methods of interacting and the way the communication is done, I don't know if this is a British thing but some of the general courtesy and politeness and the way that somebody establishes a relationship with you will build that level of trust and give you an element of confidence to work with them or their organisation... The reputation of the individual representing the organisation itself is very important.."

Water Company, P 6.

"How the individual acts and conducts themselves is important. So are they timely? Do they respond to emails? pick up phone calls..."

Water Company, P 11.

These results provide evidence which suggests the significant involvement of demeanour as an additional factor of building trust, therefore again suggesting that this could be incorporated into an updated development of Schoorman, Mayer and Davis' (2007) framework.

3.7 FACTORS INVOLVED IN THE MAINTENANCE OF TRUST

Consistent Communication

There was a strong observation across all stakeholders that consistent communication was important to ensure that trust was maintained throughout the collaborative innovation process, with many interviewees believing that consistent communication between stakeholders meant that they were transparent and honest and could raise any issues which may be encountered during the process.

"Transparency is incredibly important, people being open and honest in their communications and everybody having access to the information, so everybody feels up to speed and knows where they are."

Water Company, P 11.

3.8 FACTORS INVOLVED IN THE BREAKDOWN OF TRUST

Deception

It was observed across all stakeholder groups that the ways in which the trustee may deceive the trustor and effectively break the trust between the two parties included; reporting incorrect data, a focus on company self-interest (including using information or a company's reputation without approval) and sharing data without consent.

Interviewees from the water company stakeholder group were able to provide several examples of situations where trust had been broken, including sharing information/ knowledge without consent or in the example below using other organisations' data (without approval) for commercial gain:

"We were working on a project with a number of water companies, a couple of organisations and couple of businesses. One of those businesses had a particular vested interest in the outcome of this project so data was being shared centrally, we all put it into the same pot... one particular organisation took pieces of that data, twisted to their own benefit and published separate reports without requesting or asking to use that data. It wasn't their data to use and they were trying to get a commercial benefit from that data and that led to a complete breakdown of that particular collaboration and none of the water companies would be prepared to work with that organisation on such a project again. We now establish rules at an early stage around what can be shared, what permissions are required even if it is just out of mutual respect for that partner."

Water Company, P 6.

In the example above, this particular participant was observed to discuss this violation of trust with a degree of anger and the example above also suggests that this breach of trust had wider implications for the water company as evidenced by the safeguarding protocol now put in place at the initial stages of a collaborative project.

Further, an interviewee from the advisory body stakeholder group perceived that water companies trying to deceive a water regulator by distorting reporting data or deliberately attempting to exploit financial

incentive schemes would result in a breakdown of trust between the water company and the water regulator:

"I think it does fall though at times, e.g. the recent Water Company F case as far as I understand they have been deliberately reporting their sewage treatment wrong so that has created a pollution incident, they reported it wrong and essentially were just lying to the regulator...there is this level of distrust where its "are these companies trying to game the regulator in some way...?" or are they pretending it's a lot harder than it will be to win more efficient gains throughout the year so they can beat the price review?"

Advisory Body, P 5.

Lack of commitment

It was also found specifically amongst the supplier and water company stakeholder groups that a lack of commitment to a pre-established agreement could contribute to a breakdown in trust. The excerpt below appears to suggest that the exploitation of the agreement between the supplier and the water company may have been the factor which influenced a breakdown of trust between the two organisations.

"I also think what happens quite often is a company will promise lots of things to a small company like ours so they will say "if you can do this trial for us for 50% of the price, we'll make sure we've got six or ten sites for you to do after this trial completes..." and then might complete the trial and all of a sudden people don't want to do anything else with it and they will say "oh no, we only wanted it for this one site" so they will reverse their incentive then because they've got the trial that they wanted.. they've got some data."

Supplier, P.10.

Organisational change and turnover

Suppliers, water companies and academics particularly discussed the impact of an individual from a partner organisation leaving and another individual replacing them on trust:

"Say somebody who was working on something was taken off that project and you put in someone new. You would have to re-loop again a little bit in order to build up those relationships for the project to still move forward smoothly."

Water Company, P 16.

"There are simple things like structural changes in organisations where people change job and you get new people coming into a particular project who haven't been party to the project historically and consequently trust needs to be built with those individuals and that isn't always possible."

Water Company, P4.

Participants explained that having pre-established a trusting relationship with a representative individual from a particular stakeholder group and then having that individual leave the organisation resulted in them having to re-form that trusting relationship with another individual.

Repairing broken trust

Although ten interviewees across all stakeholder groups indicated that they believed once trust had been broken, it could not be repaired between two individuals. There were a few examples indicating that some interviewees believed that trust could be regained if the trustee was able to explain why they had behaved in a particular way:

"Going even further, once trust is broken- I think it is very hard to get back...Not impossible, sometimes people act, or say or do things in a certain time or context that once you understand what that was about, you can move past."

Water Company, P11.

Importance of trust at different phases of the innovation cycle

15 interviewees reported that they believed trust was more important during the initial idea generation phase of the collaborative innovation process and less important during the implementation phase, as it has already been established.

"In the early days, it is a bit more difficult than that but I guess it is still important because it is those relationships that keep the security but it's just you don't tend to feel as vulnerable as you do in the beginning once you've got your idea established."

Supplier, P10.

4 CONCLUSION AND RECOMMENDATIONS

4.1 PERCEIVED BARRIERS TO COLLABORATIVE INNOVATION DURING THE INNOVATION CYCLE

The perceived barriers to collaborative innovation observed across stakeholders were both practical (regulatory adherence, financial constraints, timescales and planning) and related to attitudes (hesitancy to trial innovative technology, overemphasis on localized problems).

Regulatory procedures

The perception across all stakeholders of water regulatory procedures inhibiting the progress of collaborative innovation due to the stringent standards that water companies must comply with in order to ensure they are safeguarding their water supply, is an unsurprising finding. Stakeholder observations suggesting that the incentivisation of targets related to consumer water costs and water sanitation may be influencing the competition between the water companies, appear to be congruent with previous research citing the observed conservatism of the water sector (Speight, 2015).

During a recent consultation workshop in September 2019 with a wider range of supply chain, water company and regulatory representative stakeholders from the water industry, the supply chain and water company stakeholder groups supported these observations, noting that industry regulation was a barrier creating artificial competition between water companies and causing the stifling of innovation.

Financial Constraints

It was not an unexpected finding that a perceived lack of funding was seen as a practical barrier to collaborative innovation amongst stakeholders. Academic stakeholders noted that reduced budgets of collaborative organisations such as water companies and suppliers meant it was difficult to fund technological trials, whilst water company and consultant stakeholder groups reported that a lack of funding could inhibit the implementation and commercialisation of innovative solutions.

Perceptions towards trialing

Another common theme observed across stakeholders, particularly the water company and supplier stakeholder groups, was the perceived resistance to trialing new innovative technologies due to previous negative experiences of unsuccessful trials either from personal experience or as hearsay from other organisations.

Focus on localisation

Water companies and academics reported that they perceived the water industry to be too focused on their own localised issues, for example water companies concentrating specifically on flooding affecting the water supply in particular region or not treating a pollutant at its water source before it intensifies and potentially causes pollution at different sites.

One academic shared their example of their proposed water transfer project being rejected by a funding body because of their belief that they should only be focused on localised water issues. These examples indicate that there may be a lack of trust (also suggested by the interviewee themselves) between organisations in these different geographical regions and as a consequence a lack of collaboration.

However, this notion was challenged by two interviewees from the water company stakeholder group who argued that an over-emphasis on collaboration meant that there were too many collaborative partnership

networks and that this may be suppressing innovation with too many individuals being part of the decision making process (Bedenk & Mieg, 2018). It appears that UK water regulator OFWAT is also aware of these issues, as evidenced by their recent consultation proposal of a centralised collaborative innovation hub (OFWAT, 2019b).

Insights from water company and supply chain stakeholder groups at the recent consultation workshop supported these findings with stakeholders reporting that they believed there was a lack of coordinated vision across the water sector which was resulting in fragmentation (working on innovative projects in isolation). It was suggested by these stakeholders that a “centre of excellence” hub in which organisations openly share data and testing outcomes of innovative trials would help to ensure a more centralised approach to collaborative innovation. It is suggested that this may help to encourage a more open and trusting environment amongst stakeholders, leading to more knowledge sharing and successful collaborative innovations.

Mismatch of timescales and planning

Both the water company and academic stakeholder groups reported examples of the tensions caused by their conflicting project timescales. All three academic stakeholder interviewees indicated that university timeframes were slower than water company timescales and as a result they felt frustrated when requested to work on innovative projects at short notice. One participant from the water company stakeholder group noted that a lack of internal foresight regarding a practical safety concern has also been a factor in inhibiting the implementation of an innovative solution.

4.2 PERCEIVED DRIVERS/ FACILITATORS OF COLLABORATIVE INNOVATION

It was an unexpected finding to discover that there appeared to be only one main driver reported as influencing the collaborative innovation process. It was unsurprising however, that participants reported that this driver was financial gain, given the industry that the organisations are involved in has strong links with the commercialisation of products and ideas.

4.3 MAPPING STAKEHOLDER “TRUST” DEFINITIONS TO PREVIOUS LITERATURE

It was important in this study to examine whether stakeholders had different definitions of trust due to the wide range of definitions suggested in previous literature and as part of investigating the influence of trust on collaborative innovation between stakeholder groups. The observation that all stakeholders shared similar definitions of trust; that is involves a two-way trustor-trustee relationship, a component of risk taking and vulnerability and idea/knowledge sharing supports Schoorman, Mayer and Davis' (2007) definition of trust. As this definition was chosen by the researcher due to its appropriateness for the specific stakeholders and processes involved within the water sector (the risk taking involved in sharing data with other organisations) these findings were expected.

4.4 FACTORS INVOLVED WITH BUILDING AND MAINTAINING TRUST BETWEEN STAKEHOLDERS THROUGHOUT THE INNOVATION CYCLE AND ALIGNMENT TO PREVIOUS LITERATURE

Willingness to trust

Academics, water companies and advisory body interviewees provided observations supporting the “propensity to trust” component of Schoorman, Mayer and Davis’ (2007) trust framework with perceptions that a willingness to trust another individual is important in establishing a trusting relationship with them.

Ability

Given the significance of the “ability” factor in Schoorman, Mayer and Davis’ (2007) framework, it was surprising to find that few interviewees mentioned it during their interviews. It is suggested that this may have been due to the highly specialised expertise (engineering or environmental science skills) already required to be involved in collaborative innovation within the water sector. Therefore, the ability of another individual would not be seen as such an important factor in whether a trustor may decide to trust a trustee. This challenges Schoorman, Mayer and Davis’ (2007) trust framework in its application within the context of the water industry. As a development to an updated framework for this context, it is suggested that the “ability” element could be removed due to its evident lack of significance.

Integrity

Almost all stakeholders, apart from the academic stakeholder group, reported that the consideration of an individual’s integrity was an important factor in determining whether to trust them. Therefore, these results support Schoorman, Mayer and Davis’ (2007) trust framework. The descriptions of integrity being described as not imposing a “sales agenda” and evidence of previous successful collaborative efforts, suggest that there may be at least two sub-factors of this factor.

Benevolence

Suppliers, water companies, consultants and academics all referred to the importance of benevolence in developing trust with another individual, this provides further support for Schoorman, Mayer and Davis’ (2007) trust framework. The observations of benevolence involving both honesty and shared values, again provide support for at least two sub-factors within this factor.

The factor of time

The findings reported across most stakeholder groups suggest that time may be an important factor in the development of trust, thus suggesting that this could be incorporated into an updated version of Schoorman, Mayer and Davis’ (2007) trust framework as a significant factor of trust development.

Demeanour

An unexpected finding in this research was the perceived importance of demeanour (how an individual comes across) as an important factor in developing trust across interviewees in the advisory body, water company, supplier and consultant stakeholder groups. This therefore suggests that demeanour could be included as a factor of trust development within an updated framework based on Schoorman, Mayer and Davis’ (2007) framework.

4.5 FACTORS INVOLVED IN THE MAINTENANCE OF TRUST

Consistent Communication

Consistent communication was observed across all stakeholder interviewees in the study to be an important aspect of maintaining trust between individuals throughout the collaborative innovation process, with explanations for this including that it encourages transparency and honesty. This links to the factors of benevolence (being honest throughout the collaborative process) and integrity (being open about any issues experienced during the process) and therefore suggests that these factors may also be important throughout the entirety of the innovation cycle.

4.6 FACTORS INVOLVED IN THE BREAKDOWN OF TRUST

The main ways interviewees reported that trust could be broken in the collaborative innovation process were; the other party or individual deceiving them (sharing data without consent, reporting incorrect data or a focus on company self-interest) or a lack of follow through on a pre-established agreement with many examples given of real life situations where this had occurred. This adds further support to the “negative feedback” component of Schoorman, Mayer and Davis’ (2007) framework as it demonstrates that if a negative outcome (a breakdown in trust due to a breach of confidence for example) results from a trusting collaboration, the trust will be weakened (or broken) for any potential future collaborations.

Organisational change and staff turnover

Suppliers, water companies and academics reported that if an individual which they already have formed a trusting relationship with leaves their role during a collaborative project, this would constitute a break of trust in that partnership and result in them having to re-build that trust with any individual replacing that role. It was therefore expected that interviewees believed that this may as a consequence, have a negative influence on the overall success of the collaborative innovation.

Reparation of trust

Although the majority of the interviewees across all stakeholder groups reported that a breach of trust could not be repaired between two individuals, two interviewees reported that they believed trust could potentially be recovered if the individual who broke the trust was able to provide a reasonable rationale for their behaviour. As previously argued, the notion of trust being able to be rebuilt after negative outcomes (for example an incident causing a breakdown in trust) have resulted from a trusting relationship, challenges the “negative feedback loop” component of Schoorman, Mayer and Davis’ (2007) trust framework which suggests that trust once it is broken, it cannot be repaired. The present study results present some limited support for this argument, with two interviewees reporting that a break of trust was not unrepairable.

Importance of trust at different phases of the innovation cycle

15 participants across all stakeholder groups, apart from the advisory body stakeholder group, reported that trust was more important during the idea generation phase of the collaborative innovation process than the implementation phase, this suggested that they believed that the success of the collaborative innovation process was heavily dependent on trusting relationships being built early on in the innovation cycle.

4.7 RECOMMENDATIONS

Based on the findings of this study, a number of practical recommendations are put forward for consideration by organisations to collaborate more effectively for the purposes of developing innovative solutions.

- It is recommended that individuals continue to document their activities (including any lessons learned) throughout the innovation process to ensure a more effective handover procedure in the event that they leave their position during the innovative project, this would help to ensure more effective organisational knowledge transfer internally and inter-organisationally.
- As proposed by one of the participants in the study, another recommendation would be for organisations to ensure (where possible) that individuals who are key representatives of their stakeholder group are present from the inception of an innovative project and throughout the project lifecycle, this may help to maintain trust.
- Due to the mismatch in timescales observed between academic institutions and water companies/suppliers in developing and implementing an innovative solution, it is recommended that this is built into future collaborative project plans with more advanced forecasting (where possible) to accommodate the longer project timeframes involved in the academic sector.
- As suggested by an interviewee, it is recommended that organisations involved in collaborative innovations devise a separate “terms of reference” document outlining the overall aims of the collaboration, which organisations are required to commit to. It is envisaged that this would help to unite stakeholders in their shared values (particularly noted as environmentalism in the supplier, consultant and academic groups) and help to maintain trust amongst them.
- Organisations are recommended to consider less focus on localised issues and to consider treating water issues (such as pollution) at source, as recommended by one interviewee.
- Based on the observations from stakeholders that the large number of collaborative innovation networks may be paradoxically stifling innovation within the water sector, it is recommended that a centralised innovation platform is developed to unify the collaborative projects currently being undertaken. It is noted that the recent OFWAT consultation document (OFWAT, 2019b) is proposing a centralised innovation hub for the UK and this author supports the notion.

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6 APPENDICES

APPENDIX A- PARTICIPANT INFORMATION SHEET

Exploring the influence of trust on stakeholder relationships in the collaborative innovation process within the water industry

You are being invited to take part in a research project. Before deciding whether or not you would like to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the below information carefully. If there is anything that is not clear or you would like more information, please don't hesitate to ask me. Thank you in advance for reading this.

1. What is the project's purpose?

The purpose of the project is to examine how trust is viewed by the stakeholders and how trust may influence the collaborative innovation process within the water industry. Stakeholders within the water industry include suppliers, water companies, academics, policy makers and users. It is envisaged that the information obtained from this study may help to inform future training workshops on collaborative innovation. This project is being conducted as part of my Master's degree qualification in Occupational Psychology.

2. Why have I been chosen?

You have been selected to take part in this study as a representative of one of the identified stakeholder groups within the water industry involved with collaborative innovation, as part of the TWENTY65 collaborative network (<https://twenty65.ac.uk/>).

3. Do I have to take part?

It is your decision whether or not to take part in this research project. If you do decide to take part, you will be asked to sign a consent form and have been given this information sheet for reference. You may withdraw from the study at any time* without any negative consequences and do not have to provide a reason for withdrawing. Please note that after 22nd July 2019 your data will have been anonymised and included within a wider set of results data, therefore it cannot be removed from the research project at this point. If you wish to withdraw from the study, please contact:

Daniel Oliver, Lead Researcher, email: pcp08dko@sheffield.ac.uk.

4. What will happen to me if I take part? What do I have to do?

You will be taking part in one face to face interview or telephone/video call with myself, whereby I will be asking you questions about your experiences of working with other stakeholder groups as part of the collaborative innovation process. Questions will be asked in an open-ended way to ensure that you can discuss these experiences in a detailed way in order to understand any insights you may be able to provide. The interview is expected to be 30- 45 minutes long. The interview may be either be conducted in a private room at one of the University of Sheffield's buildings, on site in a private room at your workplace or over the telephone/via the video conferencing application Skype.

5. Will I be recorded, and how will the recorded media be used?

The audio recordings of your interview made during this research project will be used only for analysis purposes. No other use will be made of them without your written permission, and no one outside the project will be allowed access to the original recordings.

6. What are the possible disadvantages and risks of taking part?

There is a possibility that taking part in the interview may bring about discomfort due to any potential negative experiences discussed. However, you are free to request to end the interview at any time/

withdraw from the research project, if you feel you are experiencing high levels of distress as result of engaging in the interview.

7. What are the possible benefits of taking part?

Whilst there are no immediate benefits for those people participating in this project, it is hoped that this research will help us to understand more about how different stakeholders view trust and the role that it may play in the collaborative innovation process. These insights may help to inform future training workshops in collaborative innovation.

8. Will my taking part in this project be kept confidential?

All the information which is collected about you during this research project will be kept strictly confidential and will only be accessible to members of the research team. You will not be identified in any publications, reports, web pages, and other research outputs. If you agree to us sharing the information you provide with other researchers (e.g. by making it available in a data archive) then your personal details will not be included unless you explicitly request this.

9. What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for the performance of a task carried out in the public interest' (Article 6(1)(e)). Further information can be found in the University's Privacy Notice <https://www.sheffield.ac.uk/govern/data-protection/privacy/general>.

10. What will happen to the data collected, and the results of the research project?

The data collected from the interviews will be typed up from the audio recordings obtained and analysed to examine the key themes emerging from the data. The results from this analysis will be compiled into a written report, in which any personal data will be anonymised. I will have access to these audio recordings which will be stored on my password protected work laptop, which will be kept in a locked cupboard when not in use. Any identifiable personal data will be destroyed as soon as possible after the completion of the project in September 2019. Interview data transcripts will be stored for one year and then destroyed in September 2020. The results will be published in the form of presentations, publications, organisational reports, web pages, and

other research outputs. If you would like to receive a copy of these, please email me at pcp08dko@sheffield.ac.uk after 1st October 2019 when the project has been completed.

Due to the nature of this research project, it is highly likely that other researchers may find the data collected to be useful in answering future research questions. We will ask for your explicit consent for your data to be shared in this way, in the consent form issued to you.

11. Who is organising and funding the research?

This research is being conducted through the TWENTY65 collaborative network (<https://twenty65.ac.uk/>). TWENTY65 are a network of organisations working in partnership across the water sector (academia, suppliers, water companies, policy makers and users) with the overall aim of tailoring water systems so that they positively impact health, society, the environment and the economy through a number of innovative strategies. This research is being funded by the Engineering and Physical Sciences Research Council (EPSRC), a leading institute in Europe for comparative research on public policy.

12. Who is the Data Controller?

The University of Sheffield will act as the Data Controller for this study. This means that the University of Sheffield is responsible for looking after your information and using it properly.

13. Who has ethically reviewed the project?

This research project has been ethically approved via the University of Sheffield's Ethics Review Procedure, as administered by the Sheffield University Management School.

14. What if something goes wrong and I wish to complain about the research?

If you wish to raise a complaint about the research, please contact Dr. Kamal Birdi, Supervisor via email: k.birdi@sheffield.ac.uk who will assist you with processing the complaint. If you feel your complaint has not been handled to your satisfaction by the supervisor of this research project, please contact the MSc Occupational Psychology Programme Director, Laura Dean via email: l.dean@sheffield.ac.uk who will then escalate the complaint through the appropriate channels. Please note that if the complaint relates to how your personal data has been handled, information about how to raise a complaint can be found in the University's Privacy Notice: <https://www.sheffield.ac.uk/govern/data-protection/privacy/general>.

15. Contact for further information

For any further information please contact:

Daniel Oliver, Lead Researcher, Email: pcp08dko@sheffield.ac.uk, Telephone: 07815 436464.

Dr. Kamal Birdi, Supervisor, Email: k.birdi@sheffield.ac.uk, Telephone: 01142 22 3288.

Dr. Jeanette Garwood, Supervisor, Email: j.e.garwood@sheffield.ac.uk, Telephone: 01142 223222.

Thank you for taking part in this research project.

APPENDIX B- INTERVIEW SCHEDULE

Notes

The concept of collaborative innovation (working together to create, develop and implement meaningful outcomes) will be explained to participant (using the visual aid graphic of the innovation process cycle). It will be explained to the participant that they will be asked questions relating to their experiences of collaborative innovation with water companies.

Questions

1. Please can you tell me a bit about your current role in your organisation?

Prompts: How would this fit into the collaborative innovation cycle? (This will be explained with a graphic of the innovation process shown below). Please can you provide an example of this?

2. There may be a number of factors involved with the collaborative innovation process, one particular factor I am exploring is trust.

Please could you explain to me what trust means to you in the context of collaborative innovation within the water industry?

Prompts: Please can you define it? Could you describe what it might involve? Please could you give me an example of it?

3. Please could you explain to me whether you believe there are any factors which you believe may be important for collaborating with other stakeholders?

Prompt: Please could you provide an example from your own experience of this?

Please could you explain if you think trust is an important factor when collaborating with other stakeholders?

Prompts: If so/ not, Why/why not?

If we were to put those factors in order of importance- where would trust sit amongst those?

4. Please describe 3 things that you believe may help to develop and/ or break trust between collaborators?

Prompts: Do you have any examples of where this may have happened/any other relevant experiences which you think may demonstrate this?

5. Please can you imagine yourself in the following situation: You are working with other stakeholders to generate new ideas for a new technology (e.g. pipe robots etc) at the early stage of the innovation cycle.

What would be your initial thoughts in this situation? How would you begin to establish relationships with individuals? Would you have any concerns about your relationships with collaborators? If so what would they be?

What other factors do you believe would be important in this process?

Prompts: If so, what are they?

How does trust play in role in this process?

Prompts: How is trust developed in this process? Are there any ways trust could be broken in this initial part of the process?

If we were to put those factors in order of importance- where would trust sit amongst those?

6. Please can you imagine yourself in the following situation: You have collaboratively developed this new technology (e.g. pipe robots).

What would be the next steps involved in implementing this solution? What relationships would be key to ensuring this implementation is realised? Would there be any obstacles practical or otherwise which may hinder the implementation of this solution? Are there any factors which would drive the implementation of this solution?

Prompts: What other factors do you believe would be important in this process? If so, what are they?

How does trust play a part in this process?

Prompts: How is trust maintained in this process? Are there any ways trust could be broken in this later part of the innovation cycle?

If we were to put those factors in order of importance- where would trust sit amongst those?

7. If we were to use the information gathered in this research to inform future learning or training activities. **What 3 recommendations could you make to ensure that trust is built and maintained throughout the innovation cycle?**

APPENDIX C- TABLE 2: INITIAL TEMPLATE OF STAKEHOLDER THEMES AND SUB-THEMES

| Research question | Major themes and sub-themes of stakeholders |
|--|---|
| Perceived barriers and drivers | <p>Regulatory processes</p> <ul style="list-style-type: none"> • Incentive schemes causing competition • Mandatory water regulations <p>Financial constraints</p> <ul style="list-style-type: none"> • Lack of funding for trials • Lack of funding for solution implementation <p>Perceptions towards trialling</p> <ul style="list-style-type: none"> • Personal negative experiences • Second hand accounts of negative experiences <p>Focus on localised issues</p> <p>Excessive collaboration</p> <p>Mismatch of timescales and planning</p> <ul style="list-style-type: none"> • Perception of slower academic timescales • Perceived fast paced private sector timescales • Lack of planning internally (water company) |
| Perceived drivers | Potential financial gain from innovative solution |
| Definitions and perceptions of trust | <ul style="list-style-type: none"> • Focus on the individual • Involves deception • Knowledge and idea sharing component • Involves vulnerability and risk taking • Perception of importance for successful collaborative relationships • More important in the early stages of the innovation cycle |
| Factors related to building trust with trustee | <p>Propensity to trust</p> <p>Ability</p> <p>Integrity</p> <ul style="list-style-type: none"> • previous demonstration of successful collaborations • not adopting the demeanour of a |

| | |
|--|--|
| | <p>“salesperson”</p> <p>Benevolence</p> <ul style="list-style-type: none"> • honesty • ethicality <p>Time</p> <p>Demeanour</p> <ul style="list-style-type: none"> • personal conduct • politeness • professionalism |
| Factors involved with the maintenance of trust | Consistent communication |
| Factors involved with the breakdown of trust | <p>Deception</p> <ul style="list-style-type: none"> • reporting incorrect data • focus on company self-interest • sharing data without consent <p>Lack of commitment</p> <p>Organisational change and staff turnover</p> <p>Perception of reparation of trust</p> |

Table 2: Initial template of stakeholder themes and sub-themes