

STAKEHOLDER PERCEPTIONS OF IT BUSINESS VALUE IN A PUBLIC SECTOR IT DIGITALISATION PROJECT

Research paper

Peggy Gregory, University of Central Lancashire, Preston, UK, ajgregory@uclan.ac.uk

Diane E. Strode, Whitireia Polytechnic, Wellington, NZ, diane.strode@whitireia.ac.nz

Leonor Barroca, The Open University, Milton Keynes, UK, leonor.barroca@open.ac.uk

Helen Sharp, The Open University, Milton Keynes, UK, helen.sharp@open.ac.uk

Katie Taylor, University of Central Lancashire, Preston, UK, kjtaylor@uclan.ac.uk

Abstract

The IT business value concept is central to information systems. Understanding the range of meanings of IT business value in specific situations would contribute, in part, to a better knowledge of the boundaries of this concept. Current definitions for IT business value are ambiguous and considerations of IT business value tend to disregard stakeholder perceptions and other fundamental aspects of value realisation such as the value context and timeframe, and the nature of the IT artefact generating the value. This paper presents a 4-dimensional model of the sources of IT business value and elaborates the stakeholder perception dimension by analysing IT business value as perceived by stakeholders in a single case study of an IT digitalisation project in a public sector organisation in the UK. We performed stakeholder and stakeholder salience analysis and found the following IT business values emerged: enabling organisational transformation, customer experience, cost saving, digitalisation, social service improvement, and data protection. These six values are composed of 33 sub-values. The contributions of this paper are an initial model of IT business value, a nuanced understanding of stakeholder perceptions of IT business value, and a case for the utility of stakeholder salience in evaluating IT business value.

Keywords: Public sector, Digitalization, IT business value, Stakeholder analysis, Stakeholder salience.

1 Introduction

Information systems (IS) and supporting information technologies (IT) undeniably generate business value for organisations (Alahyari, Svensson, & Gorschek, 2017; Chan, 2000; Chau, Kuan, & Liang, 2007; Hitt & Brynjolfsson, 1996; Kohli & Grover, 2008; Melville, Kraemer, & Gurbaxani, 2004). Schryen (2013, p. 141) defined IS business value as “*the impact of investments in particular IS assets on the multidimensional performance and capabilities of economic entities at various levels, complemented by the ultimate meaning of performance in the economic environment*”. After providing this broad definition, Schryen (2013) established that the concept of IT business value suffers from deficiencies. IT business value is ambiguously defined in the information systems literature focusing primarily at the organisation level and on performance and economic outcomes. Furthermore, IT business value research tends to ignore the nature of the IT artefact and to lack consideration of the context where the IT business value is realised (Kohli & Grover, 2008; Schryen, 2013). In addition, “*the subjective preferences of stakeholders are disregarded*” (Schryen, 2013, p. 150). Understanding the range of perceptions of stakeholders is important to delineate the boundaries of what constitutes IT business value. Another issue in IT business value research is the lack of understanding about the timeframe, that is *when* IT business value is realised, ex-ante (during IT artefact development) or ex-post (after development when the IT artefact is in use) (Kohli & Grover, 2008). A common assumption is that the value

of an IT artefact occurs only when the artefact is in use (Chau et al., 2007). This perspective excludes the perceptions of IT business value of those involved in emergent IT projects. The IT business value of an IT artefact in use might be somewhat different from the IT business value of an IT development project. In addition, perceptions and judgments of the business value of IT are often formed before the information system comes into use. These ex-ante perceptions help to justify a project and motivate project stakeholders to progress a project to completion. This aspect of business value is seldom considered in IS research of company-level value (Kohli & Grover, 2008), whereas, project management calls for value to be a guiding principle of IT project management (Sauer & Reich, 2009).

These issues concerning IT business value, motivated us to explore the subjective preferences of stakeholders as to the business value of a specific IT artefact (an information system), realised during a specific timeframe (during an IT digitalisation project), and in a specific context (in a public sector government entity). Our research question is, *how do stakeholders perceive the business value of an IT digitalisation project in a public sector government entity?* We do not attempt to define IT business value but contribute an initial model of the sources of IT business value that includes perceptions of stakeholders. We took an inclusive view of business value to ensure a broad perspective on this concept.

To address the research question, we carried out a single case study of an IT project in a public sector organisation in the UK. We used stakeholder theory and stakeholder salience theory (Mitchell, Agle, & Wood, 1997; Parmar et al., 2010) to identify and categorise the project stakeholders. We found the following IT business values emerged from an analysis of stakeholders' perceptions: enabling organisational transformation, customer experience, cost saving, digitalisation, social service improvement, and data protection. These six values include 33 sub-values. We also found that IT business values can be influenced by stakeholder salience. The contributions of this paper are an initial model of sources of IT business value, a nuanced understanding of stakeholder perceptions of IT business value, and a case for the utility of stakeholder salience in evaluating IT business value.

The paper is organised as follows. First, we review pertinent literature on IT business value in information systems and related fields, stakeholder theory, and stakeholder salience theory. We describe a conceptual model of IT business value sources. Our case study method is described followed by a stakeholder analysis and findings on the business values identified by the stakeholders. We discuss our findings and the utility of the IT business value model for information systems and conclude with ideas on future directions for IT business value research.

2 Background

2.1 IS/IT Business Value

IT business value research is concerned with understanding how information systems contribute to the betterment of organisations (Chan, 2000; Melville et al., 2004). This topic is of perennial interest in the information systems field (Jeyaraj & Zadeh, 2019), but there are issues with this research (Chan, 2000; Schryen, 2013). After comparing the divergent results of IT business value research, Chan (2000) called for IT business value to be viewed beyond the organisational level, she stated, "*It may be that more concepts in IT value research can usefully be identified at individual and group (i.e., intermediate) levels.*" Schryen (2013) identified three major research gaps after reviewing 200 research papers and 20 literature reviews on IT business value. Firstly, the business value concept is ambiguously defined in the literature and does not consider internal value, context (organisation, industry, and country factors), and the subjective preferences of stakeholders. Because these factors are not usually considered in IT business value research there is limited understanding of the potential range of the IT business value concept. Secondly, IT/IS investments are often treated as an aggregate, that is, the research often fails to describe the specific IT artefact that generates value. Thirdly, IT business value research is primarily concerned with the impact of value on performance and economic outcomes, and tends to ignore considerations of time (i.e. when the value occurs), the process of value creation, and the unexpected consequences of IS. Schryen (2013, p. 150) also states that '*no theory on IS business value exists*'.

Kohli and Grover (2008) focused on when IT business value is realised. They argue that IT business value research must explore '*temporal manifestations of IT-based value*' (Kohli & Grover, 2008, p. 29). The temporal manifestation of IT-based value refers to when the value is realised, which can be ex-ante during IT artefact creation (i.e. during an IT system development project), or ex-post after the IT artefact is created (i.e. when the IT system is in use). These authors also called for research to '*reflect a broader representation of value based on observation of practice*' (Kohli & Grover, 2008, p. 33).

Value-focused research is prevalent in software engineering and IT project management and confirms many of Schryen (2013)'s arguments. In these domains, value-focused research illustrates how value is not just of concern at the organisation level, but also at the project level where the IT artefact is created (Dingsøyr & Lassenius, 2016; Sauer & Reich, 2009). For example, Biffi, Aurum, Boehm, Erdogmus, and Grünbacher (2006) proposed Value-Based Software Engineering and argued that value needs to be considered throughout the software engineering process.

Confirming Schryen (2013)'s argument that different stakeholders perceive value differently, a study of value in agile software development organisations by Alahyari et al. (2017) identified 16 values in interviews of 23 people in 14 organisations in Sweden and found commonly mentioned values were delivery process with-regard-to time, perceived quality, and cost. They also found that people in the defence, telecom, automotive, and consultancy industries held different views on what constitutes value.

Confirming Schryen (2013)'s argument that cost-based (economic) value is not adequate to capture the range of value of an IT product, Khurum, Gorschek, and Wilson (2013) created a software value map for decision making in software product development. The map had 29 values organised into four perspectives: customer, financial, internal business process, and innovation and learning. Their study concluded that the evaluation of software products should move from a cost-based to a value-based perspective and include values such as customer satisfaction.

Value from the customer perspective was studied by Hannay, Benestad, and Strand (2017) who focused on the value a customer derives from a software product and proposed calculating benefit points from requirements (in the form of epics and stories) during software development to complement the more usual calculation of cost per requirement. Another example of the importance of stakeholder value in software-intensive organisations is the development of a VALUE framework by Mendes, Rodriguez, Freitas, Baker, and Atoui (2018). That framework elicits value factors from stakeholders to support and improve decision-making in the context of software-intensive product development.

Much of the research into value is based on theoretical and empirical studies of private sector organisations (Melville et al., 2004) but our study context is a public sector government entity. Van der Wal, De Graaf, and Lasthuizen (2008) showed that both public and private sector organisations value accountability, expertise, reliability, effectiveness, and efficiency. Private organisations value profitability, innovativeness and honesty, whereas public organisations value lawfulness, incorruptibility, and impartiality. Van der Wal et al. (2008) reported those results in a study of values in Dutch organisations based on survey responses from 766 managers of government and 497 managers of business organisations. These results confirm the view of Schryen (2013) that value can depend on context.

2.2 Stakeholder Theory

The purpose of stakeholder theory is to understand who has a stake and for whom value is created in organisations (Parmar et al., 2010). Freeman (1984) first described stakeholder theory and defined a stakeholder as "*any group or individual who can affect or is affected by the achievement of the organization's objectives*" (Freeman, 1984, p. 46). Stakeholder theory assumes that, if organisations attend to the needs of multiple stakeholders rather than just shareholders this will ensure better long-term results.

Stakeholder theory serves various purposes and is widely used (Neville, Bell, & Whitwell, 2011; Parmar et al., 2010). Donaldson and Preston (1995) found stakeholder theory is used normatively, instrumentally, and descriptively, to identify interest groups, to create toolsets and frameworks to help managers and to consider the ethics of consulting different groups. Stakeholder theory is used in information systems and management research involving stakeholders in both public sector (Hovav & Gray, 2014; J. Gouillart, 2014; Smith & Hasnas, 1999) and government organisations (Axelsson, Melin, &

Lindgren, 2013; Flak, Nordheim, & Munkvold, 2008; Flak & Rose, 2005; Sæbø, Flak, & Sein, 2011; Scholl, 2004). One key reason for using stakeholder theory to analyse a situation is because stakeholder perceptions tend to vary, as shown by Alahyari et al. (2017), so identifying the stakeholders in a situation is a first step in exploring their perceptions.

Mitchell et al. (1997) extended stakeholder theory by developing stakeholder salience theory, which argues that salience explains how managers prioritise stakeholder relationships. Stakeholder salience is defined as ‘the degree to which managers give priority to competing stakeholder claims’ (Mitchell et al., 1997, p. 869). Stakeholder salience theory proposes that stakeholders have three important attributes: power, legitimacy, and urgency, which together define those stakeholders to whom managers pay attention. Power is “a relationship among social actors in which one social actor, A, can get another social actor, B, to do something that B would not otherwise have done” (Pfeffer, 1981, p. 3, cited by Mitchell et al., 1997). Legitimacy in this context is defined as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, beliefs, and definitions” (Suchman, 1995, p. 574, cited in Mitchell et al., 1997), whereas urgency occurs when a stakeholder’s claim requires immediate attention and is highly critical to the stakeholder. Mitchell et al. (1997) argue that salience is high when all three attributes are present, moderate when two attributes are present, and low when one attribute is present. We chose stakeholder salience theory to analyse the stakeholders in our case study to show not only who the stakeholders were but also the degree of their engagement, their stake, in the case.

3 Conceptual Framework

The purpose of this study is to explore the perceptions of stakeholders as to IT business value. We expect stakeholder perceptions to vary (Alahyari et al., 2017), and that stakeholder perceptions are influenced by the situation in which the IT business value occurs (Schryen, 2013). Combining the findings of Schryen (2013), Kohli and Grover (2008), and Chan (2000), we propose a model of the sources of IT business value with four dimensions. One dimension is the context or environment where the IT business value is realised: individual, group, organisation, industry, or country according to Schryen (2013) and Chan (2000). Another dimension is the IT artefact, which is included because value perceptions might vary depending on the type of IT artefact generating the business value (Schryen, 2013). A third dimension is timeframe which refers to when the perceptions of IT business value are realised: ex-ante (during an IT project) or ex-post (when the IT artefact is in use) (Kohli & Grover, 2008). The fourth dimension is stakeholder perception, which we consider inclusively, that is, stakeholder perceptions of business value can include economic, social, political, and technical value, and any other forms of value the stakeholder perceives as valuable to them.

Because our research is based on a single case study, the context, timeframe, and the nature of the IT artefact were invariant for the stakeholders in our study. Our case study focused exclusively on the stakeholder perceptions we found in the context of a public sector government entity, during an IT project developing an IT artefact, which was a digitalisation initiative to provide a web-based service to an organisations’ customers. Figure 1 shows the four dimensions and the profile of our case.

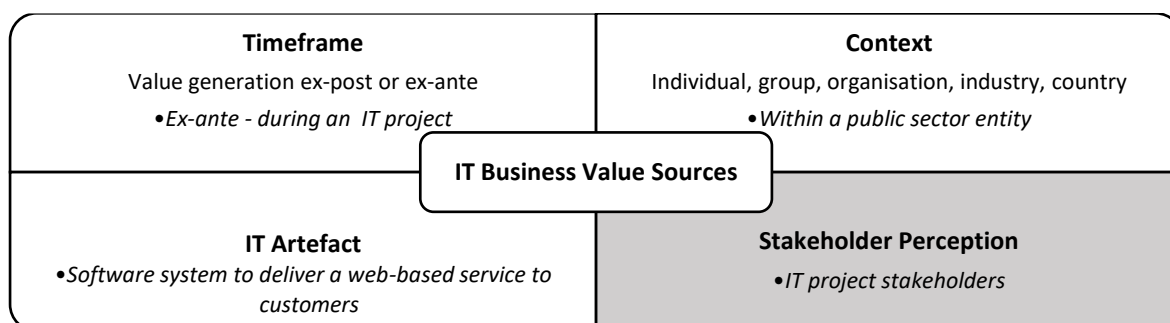


Figure 1. A model of the sources of IT business value with stakeholder perception shaded.

In the remainder of this paper ‘value’ and ‘sub-value’ refer to various IT business values.

4 Method

An exploratory case study approach was used for this study because it is appropriate when exploring phenomena in natural settings where events cannot be controlled and when detail is needed (Eisenhardt, 1989; Yin, 2018). The research team found an organisation who wanted a better understanding of how they delivered IT business value as they transitioned to an agile approach, for which the early and frequent delivery of value is a core principle (Dingsøyr & Lassenius, 2016). This single case provided the opportunity for an in-depth exploration of stakeholder perceptions of business value. The organisation was contracted to a government entity, a city council in the United Kingdom. Within the organisation, the research team identified a single IT project that would reflect the richness and complexity of IT business value as perceived by a variety of project stakeholders. This project was named the ASB project and was the unit of analysis for the case. The research team was invited to study the project by the organisation’s management and ethical permission was received from the researcher’s university to conduct the study. All participants consented to take part after reading an information leaflet.

Data collection consisted of semi-structured interviews, notes taken during observations, and collection of project documents. The research team studied the IT project over the course of a year, visited the project site five times, and monitored progress through emails with the project manager and the team leader. Ten telephone and face-to-face interviews were conducted with two participant groups: executive-level directors (during December 2016) and project team members (during April 2017). Interview questions were tailored slightly for the directors and project team members. Interviews were recorded and transcribed by the lead researcher. Three face-to-face meetings and three Skype project meetings were observed. Field notes were made before and immediately after meetings. In addition, the research team had access to project documents including a project feasibility document, project requirements (as epics), and the strategy document. The lead researcher attended all data collection activities either alone or with another researcher. Data analysis to identify value was carried out using the six-stage inductive thematic analysis technique described by Braun and Clarke (2006). The stages are data familiarisation, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and writing up. The guidance of Saldaña (2016) was followed during qualitative coding.

Although the case took place over 12 months, the interviews and documents discussed in this paper were collected during the first three months and were analysed with a view to identifying IT business value perceptions. The first three stages of thematic analysis, data familiarisation, generating initial value codes, and searching for values were conducted immediately after data collection. Each data set was independently analysed: director interviews, project team member interviews, documents (Feasibility document and epics). After the project ended, further coding and analysis occurred to review and name values. Two researchers undertook the analysis. Each researcher started by reading and coding each individual interview, then grouping the codes into tentative sub-values, and finally grouping the sub-values into values. One researcher performed ongoing analysis throughout the research project; a second researcher did a post-hoc analysis of the interviews and epics. The analyses were compared and a final list of sub-values and values was agreed on among all members of the research team.

A stakeholder analysis was carried based on categories developed by Sæbø et al. (2011) and Flak, Sein, and Sæbø (2007). A stakeholder salience analysis was carried based on Mitchell et al. (1997)’s method.

Our study addressed the four quality criteria for qualitative inquiry namely credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985; Shenton, 2004). We established *credibility* by our varied data collection and data analysis methods and by using triangulation. Our close contact with the participants enabled us to check our findings were believable from their perspective. The *Transferability* of our findings are limited because we used a single case. The *dependability* of our findings is also limited, but we have addressed this by reporting our research method in detail. *Confirmability* we have addressed by triangulation, and by providing evidence from interviews and epics to allow the audience to evaluate if our findings are reflected in our data.

5 Findings

5.1 Research participants and case background

Research Participants: The study had 10 research participants: 2 Council Z directors, 2 HouseServices directors, and 6 project team members. Table 1 shows the interviewees role in the project, their role in the organisation, and the topics addressed in the interviews. The topics addressed were different for the two groups because the directors did not generally get involved in specific IT projects and were not involved in the ASB project but could provide an organisation-level view of IT business value.

Project Role	Organisational Role	Interview Topics
Strategic direction	Council Z: Director of Resources	Role in relation to IT projects
	Council Z: Assistant Director of Digital Technology	High-level business outcomes from IT projects
	HouseServices: Managing Director	IT project metrics or KPIs
	HouseServices: Director of Communications and Finance	Difference between agile and traditional projects Measurement of business value from IT projects
Project Management/ Project team member	HouseServices: Digital Services Project Manager	Role in this project Liaison with other areas of business Business value in this project
Project team member	HouseServices: ASB Manager	Contribution of elements of the system to value
	HouseServices: Team lead/Developer	Measurement of business value
	HouseServices: Business Analyst	Barriers to achieving and assessing business value
	HouseServices: Tester	
	HouseServices: ASB Officer	

Table 1. Interview details.

Prior to data analysis, we wrote a case background describing the situation in which the IT business value occurred. This background includes the project context, stakeholders, and nature of the IT artefact.

Case Background: The case took place within HouseServices (pseudonym), an Arms-Length Management Organisation (ALMO) who manage the housing service for a city council in the UK named Council Z (pseudonym). HouseServices was a separate entity from Council Z but was effectively a public-sector organisation because HouseServices worked entirely for Council Z and in alignment with Council Z's strategic vision. HouseServices had a small in-house IT section whose staff concentrated on application management and working with suppliers. In-house development was rare; the organisation normally purchased solutions either off-the-shelf or through third-party developers. The IT project was the development of a web-based system to enable tenants to report anti-social behaviour (ASB). Most ASB complaints were reported by Council Z customers to Council Z by phone or email and were followed by a home visit and the provision of recording equipment and/or a diary, so complainants could record information about the antisocial behaviour. The existing system was costly (requiring equipment and staff visits), risked data inaccuracy (with the likelihood of data loss or distortion) and gave a poor customer experience (being slow and stressful for complainants). The exception to this largely manual process was a smartphone app enabling Council Z customers to make noise complaints to Council Z.

The ASB project initially followed the DSDM agile process which consists of pre-project, feasibility, foundations, evolutionary development, deployment, and post-project phases (*AgilePM Agile Project Management Handbook V2*, 2014). The project went through a feasibility stage in late 2016. This phase considered the business and technical viability of the project, and potential solutions, costs and timeframes. In January 2017 a half-day, Foundations meeting was held to discuss the project context, timing, and business outcomes. All attendees were internal to HouseServices and included a developer/project lead, a business analyst, an ASB officer, and two ASB managers. The meeting concluded with the production of general requirements in the form of epics. An epic is a written form of business requirement which is typically broken down into more explicit requirements (stories) by developers and

customers during development sprints (iterations) (Cohn, 2004). To create the epics, everyone at the meeting worked individually and then shared their ideas to create a consolidated list of epics. After the meeting, the epics were typed and prioritised by the ASB manager and contributed to a Feasibility report. The go-ahead for the ASB project was given soon after this meeting.

The project team was set up in late January 2017. Project team members included a HouseServices manager (acting as the ASB project business advisor), a HouseServices ASB officer (acting as a business ambassador), and HouseServices IT staff: a business analyst, a team lead/developer, and a tester. The project was managed by the HouseServices Digital Services Project Manager who had oversight of the project but did not take part in team discussions. The project team perceived it was too difficult to involve tenants in the development process because of the stigma of reporting anti-social behaviour. Instead of direct communication with tenants, the project team relied on the knowledge of the ASB officer who was a project team member with regular contact with tenants. Work started in spring 2017 but was delayed due to a technical constraint, the system required data access to the ASB case management software. After consideration, HouseServices decided that a third-party provider familiar with the case management software would build the new system. The provider started development in June and finished in September. During development, the project team at HouseServices communicated detailed requirements and managed progress by holding weekly or fortnightly online meetings with the provider. After development was complete, the project team worked closely with the provider to test and deploy the system. The software went live in October 2017. Reports in December 2017 indicated that the rollout was successful, and the software had become the most common method used for making complaints

5.2 Stakeholder Analysis

To identify the project stakeholders, we performed stakeholder analysis on all people and groups mentioned in the data who were associated with the project. We then carried out a stakeholder salience analysis to evaluate which stakeholders had the most salient stake; those with most power, legitimacy and urgency (see Table 2 and Table 3). For stakeholder analysis, we adapted the categories of Sæbø et al. (2011) and Flak et al. (2007), with *organisational sphere* added to provide a more complete stakeholder profile. Organisational sphere distinguishes internal and external stakeholders. Staff within HouseServices are classified as internal as this organisation worked as an organisational subunit entirely within and for Council Z. External stakeholders were Council Z directors, the police, third-party developers, and the council housing tenants. The final categories in the stakeholder analysis were: organisational sphere, basic entity (government, business, or citizen), stakeholder, and stakeholder description.

Stakeholder	Stakeholder description	Basic entity	Organisational sphere
HouseServices Directors	ALMO Government Administrator: Middle and higher-level salaried employees providing government functions in an ALMO	Government	Internal
HouseServices Managers			
HouseServices IT Staff			
HouseServices ASB Officers	ALMO Government Service Provider: Lower-level salaried employees carrying out day to day jobs in an ALMO, directly or indirectly interacting with citizens		
Council Z Directors	Government Administrator: Middle and higher-level salaried employees executing government policies		External
Police	Government Service: Body of officers empowered by the state to enforce the law and prevent crime		
Third-Party Software Company	Business Vendor: Private company providing systems and consulting services in e-government projects	Business	
Council Housing Tenants	Customer: Users of services offered by the government	Citizen	

Table 2. Stakeholder analysis

The analysis of stakeholder salience followed the method of Mitchell et al. (1997) (see Table 3) with modification to give a more nuanced evaluation of salience. Rather than use Mitchell's (1997) yes/no evaluation scores we evaluated power, legitimacy, and urgency as high, moderately high, moderate, very low or low and then qualitatively combined the evaluations to give a salience level. Initially, one researcher evaluated the salience of each stakeholder listed in Table 2 based on all the data available, then discussed the evaluation with the research team. The analysis showed that the stakeholders with high salience were internal to HouseServices: the IT staff and managers. The two moderately high salience groups are also internal: HouseServices directors and HouseServices ASB officers. Stakeholders with moderate salience were 3rd party developers and Council Z directors, who were external. The stakeholders with the lowest salience were external: Council housing tenants and police. These stakeholders had low and very low power respectively because they were not invited to contribute by HouseServices. Police had lower salience than tenants because they were only potential users.

Stakeholder	Power/Legitimacy/Urgency	Salience
HouseServices Directors	<i>Power:</i> Moderate/High. Set the business strategy, structure and budgets within HouseServices, but didn't initiate this specific project <i>Legitimacy:</i> Yes, as the future owners of the system <i>Urgency:</i> Moderate. Need to deliver change, improve efficiency and service. But, no focus on this project	Moderately high
HouseServices Managers	<i>Power:</i> High. Involved in initiating the project and make go/no-go decisions <i>Legitimacy:</i> Yes, as managers responsible for delivering these services <i>Urgency:</i> High. Need to deliver change, improve efficiency and service	High
HouseServices IT Staff	<i>Power:</i> High. Three staff on the project team, involved in ideation, design and deployment. Also responsible for liaising with the development team. <i>Legitimacy:</i> Yes - IT team responsible for delivering new solutions <i>Urgency:</i> High. Urgency to deliver the project and get on with other work	High
HouseServices ASB Officers	<i>Power:</i> Moderate/High. One ASB officer was part of project team <i>Legitimacy:</i> Yes - jobs affected by new IT system. Will be end-users <i>Urgency:</i> Ambiguous. New system will improve job; may need fewer officers	Moderately high
Council Z Directors	<i>Power:</i> Low. No direct power. Set strategic direction, and budgets, but don't get involved in HouseServices decisions about which projects to initiate <i>Legitimacy:</i> Yes, as they are owners of the housing function outsourced to HouseServices <i>Urgency:</i> Moderate. Need to deliver change, improve efficiency and service. But, no focus on this project	Moderate
Police	<i>Power:</i> Non-existent. Not aware of initiative nor asked to participate <i>Legitimacy:</i> Yes, but only as potential end-users of the product <i>Urgency:</i> Not assessed	Very Low
Third-Party Developers	<i>Power:</i> Moderate. Responsible for delivering implementation, but only made technical decisions. Work is directed by HouseServices project team. <i>Legitimacy:</i> Yes, a contractor for development. Not as a designer or user <i>Urgency:</i> Not assessed	Moderate
Council Housing Tenants	<i>Power:</i> Non-existent. Not asked to participate in the project. <i>Legitimacy:</i> Yes, as end-users and beneficiaries of the system <i>Urgency:</i> Not assessed	Low

Table 3. Stakeholder salience analysis

5.3 IT Business Value Analysis

The analysis of IT business value was based on interviews, documents, and epics. Directors' and team members' perspectives were analysed separately because they had different levels of involvement and were asked different interview questions. The findings from the analysis of interviews with four directors, two at Council Z, and two at HouseServices is shown in Table 4. Four values emerged from these interviews: IT as transformation enabler, customer experience, cost saving and digitalisation. All directors mentioned all four values. Eleven sub-values were identified in the director's interviews.

Value	Sub-value	Exemplar quotes from interviews
IT as Transformation Enabler	IT as enabler	"We see digital as an enabler for saving rather than a saving in its own right" [Council Z Assistant Director Digital IT]
	Deep transformation	"We're trying to move to a stage where we deliver much deeper transformation" [Council Z Assistant Director Digital IT]
	Key deliverables	"We identify key deliverables from the project and then monitor those" [Council Z Director of Resources]
Customer Experience	Customer satisfaction	"It might be customer satisfaction metrics, so if we're currently at 85% we've got a target to get to 90%" [HouseServices Director C&F]
	Service improvement	"Alongside are broad objectives around improving the service offer" [Council Z Assistant Director Digital IT]
	Ease of use	"We're trying to produce easy-to-use digital self-service with staff support as and when required" [Council Z Assist. Director Digital IT]
Cost Saving	Cost reduction	"The primary focus of any transformation program that we're trying to achieve is cost efficiency or reduction in the council's net contribution to a service" [Council Z Director of Resources]
	Staff reduction	"Metrics might be around reduction of staff requirement within a service area" [HouseServices Director C & F]
Digitalisation	Reducing face-to-face	"Conversion from face-to-face to online processes" [Council Z Director of Resources]
	Open data	"Open and shared data ... data supporting the economy and economic development" [Council Z Assist. Director Digital IT]
	Digital access	"Enabling our customers to access our services through digital means" [HouseServices Managing Director]

Table 4. Value analysis of directors' perspectives of the IT business value of IT projects.

The analysis of interviews with project team members (see Table 5 and Case Background), identified

Value	Sub-value	Exemplar quotes from interviews
Customer Experience	Ease of use	"It's going to be a much easier experience for them [the customer]" [Team Lead]
	Improve interaction	"Customers have got more interaction, we have more interaction with them" [Tester]
	Respond to customers	"What customers are telling us they want 'we want you to tell us what's going on, even if nothing's happened'" [ASB Manager]
	Resolve customer problems	"It means we can capture where those issues are, and we can focus on resolving those issues" [ASB Officer]
Cost Saving	Staff efficiency	"[It will] cut down some unnecessary journeys...staff might have to make" [ASB Manager]
	Cost reduction	"Deliver an ASB service for less money" [ASB Officer]
	Reduce paper	"Rather than people working from paper" [Tester]
	Reduce visits	"Rather than ... going to visit people's houses" [Tester]
	Process efficiency	"We have the savings element of business value. So rather than picking up a process as-is and dropping it into a digital service we'd look to lean that process" [Digital Services PM]
Digitalisation	Integrated system	"Everything is joined up and they [the systems] talk to each other" [Business Analyst]
	Automation	"To get it a bit more automated" [Business Analyst]
	Better data capture	"[We will] get the information from the customer to create the case in an efficient way" [ASB Manager]
	Digital information	"So that it can be digitalised" [Tester]
	Reduce data duplication	"There's a lot of duplication in terms of data input" [Business Analyst]
Social Service Improvement	Better service	"The customer will get much better service" [Tester]
	Differentiate service	"Making ourselves a desirable landlord" [ASB Officer]
	Safe neighbourhood	"Keeping the neighbourhood safe" [ASB Officer]

Table 5. Value analysis of project team members' perspectives of IT business value of the case project.

the values: customer experience, cost saving, digitalisation and social service improvement. Seventeen sub-values were identified in the project team member’s interviews. In comparing the values perceived by directors and the project team members, we found three similar values: customer experience, cost saving, and digitalisation. The project team members identified social service improvement as a value. Only directors mentioned IT as transformation enabler.

The analysis of documents included an analysis of the project’s Feasibility document. This document listed four business benefits that corresponded to the four values identified in the project team member interviews. This document analysis provided further evidence to support the values of customer experience, social service improvement, cost saving, and digitalisation. Additional document analysis included the systems functional requirements written as 14 prioritised epics at the Foundations meeting (see Table 6). These epics were for communicating requirements to the third-party developers. This analysis identified a new value, data protection, and six new sub-values that were not found in the interviews of project team members or directors: always available, reduce customer stress, up-to-date, data confidentiality, device-independent, and timely information.

As a ...	I want ... In order ...	Sub-value	Value
Customer	To get updates on my case at a time that suits me ... To reduce stress	Always available Reduce customer stress	Digitalisation Customer experience
ASB officer	The system to store information automatically ... To avoid duplication in the database	Automation Reduce duplication	Digitalisation
ASB staff	To give customers up-to-date information ... To keep customers up-to-date	Up-to-date	Customer experience
Customer	To be reassured my report is confidential ... To feel safe and know the perpetrator won't find out I complained	Maintain confidentiality Reduce stress	Data protection Customer experience
Customer	To use any device ... To report or view my case	Device-independent	Digitalisation Customer experience
ASB manager	Staff to communicate efficiently with customers ... That customers receive timely information	Staff efficiency Timely information	Cost-saving Customer experience
ASB officer	To contact customers digitally ... To be efficient and have easy contact with customers	Digital information Staff efficiency	Digitalisation Cost-saving
Customer	To be notified when my complaint is received ... To know it's been received	Responsive to customers	Customer experience
Customer	To be able to upload files along with my case ... To provide full information	Digital information Better data capture	Digitalisation
ASB manager	Free up my staff's time ... That they can do other tasks	Staff efficiency	Cost-saving
ASB manager	I want cases reported to the Enquiry Centre to follow the same online process ... That they reach the relevant teams	Better data capture Staff efficiency	Digitalisation Cost-saving
ASB officer	I want to see live case data out in the field ... To not have to carry sensitive information on paper	Digital information Maintain confidentiality	Digitalisation Data protection
Police Officer or 3 rd Party	I want to be able to use the same reporting tool ... To know data has come from a confirmed source	Data legitimacy	Data protection
ASB Manager	I want accurate information ... To produce relevant reports	Data accuracy Staff efficiency	Digitalisation Cost-saving
Key As a – the role of the person who wants the functionality; I want – functionality desired; In order to – a statement of the purpose the functionality will provide for the person			

Table 6. Analysis of requirements (epics) identified at the Foundations meeting.

In summary, among all the data sources we found 6 IT business values and 33 sub-values (shown in Table 7). These IT business values and sub-values expand and complete the stakeholder perception dimension of the IT business model for this single case (depicted in Figure 1).

IT Business Value	IT Business Sub-value
Cost Saving Source: Directors, project team members, epics	Staff efficiency; Process efficiency; Reduce visits*; Reduce paper; Reduce costs; Reduce staff
Customer Experience Source: Directors, project team members, epics	Reduce customer stress; Up-to-date information; Timely information; Device-independent*; Ease of use; Improve interaction; Responsive to customers; Resolve customer problems; Customer satisfaction; Service improvement
Digitalisation Source: Directors, project team members, epics	Always available; Automation; Reduce duplication; Device-independ- ent*; Digital information; Better data capture; Data accuracy; Inte- grated system; Reduce face-to-face*; Open data; Digital access
Data Protection Source: Epics	Maintain confidentiality; Data legitimacy
IT as Transformation Enabler Source: Directors	IT as enabler; Deep transformation; Key deliverables
Social Service Improvement Source: Project team mem- bers	Better service; Differentiate service; Safer neighbourhood

Table 7. Stakeholder perceptions of IT business value in an IT project in a government entity.

As shown in Table 7, there is some duplication of stakeholder perceptions among the values and sub-values. Device-independence occurs as a customer experience sub-value and as a digitalisation sub-value. Reduce visits and reduce face-to-face interactions, are similar, and occur under both cost-saving and digitalisation. These duplicates are marked * in Table 7.

6 Discussion

The research question we sought to answer was, *how do stakeholders perceive the business value of an IT digitalisation project in a public sector government entity?* We found 6 IT business values and 33 sub-values in a single IT project. The IT business values were cost saving, customer experience, data protection, digitalisation, IT as a transformation enabler, and social service improvement, which were composed of 33 sub-values. Because the values identified in our analysis are based on our interpretation, we acknowledge there are potentially other ways to group them.

We found similarities and differences in value perceptions between directors and project team members. Both directors and project team members perceived cost saving, customer experience and digitalisation as IT business values. Only directors perceived IT as transformation enabler as a value, possibly due to their more organisation-wide viewpoint, and only the project team members perceived social service improvement as a value. The Feasibility document offered no new insights into value, possibly because project team members created that document. The analysis of epics identified data protection as a value.

We found a wide range of sub-values. Among the four director interviews, we found 11 sub-values and among the six project team member interviews, we found 17 sub-values. Of these 28 sub-values, 5 were similar across the two groups (i.e., ease of use, cost reduction, reduce visits/reduce face-to-face, digital access/automation, customer satisfaction/respond to customers) but 23 were different. Hence, we observe that stakeholder perceptions of IT business value in this IT project were numerous and diverse, underlining that IT business value is complex and can vary widely even in a small group of stakeholders.

The stakeholder salience analysis showed that different stakeholders identify different types of IT business value and their salience influences whether that business value is captured in the project. The salience analysis (see Table 3) showed that the most salient stakeholders were the four stakeholders internal to HouseServices (HouseServices directors, HouseServices managers, HouseServices IT staff,

HouseServices ASB officers) and the least salient were the two external stakeholders (council housing tenants and police). The low salience of these two stakeholders could be due to the difficulty HouseServices and Council Z had in engaging effectively with groups outside the organisational boundary of Council Z. The low salience of the tenants in the IT project could be due to their unequal power relationship with HouseServices, who are their landlords, and a lack of urgency from the tenants. The research team did not interview tenants so it was not possible to investigate this relationship further. Our interviews were restricted to stakeholders who were internal and of high salience, (HouseServices managers, HouseServices IT staff), moderately high salience (HouseServices directors, HouseServices ASB officers) and moderate salience (Council Z directors). Interviews with the external stakeholders who were very low, low, or moderate (police, third-party developers, and council housing tenants) might have provided different findings by increasing the range of values and sub-values of the IT project.

Stakeholder analysis tells us who should be consulted when determining IT business value. Carrying out stakeholder analysis prior to an IT business value evaluation can provide information on possible limits to the range of values in a situation because we know which stakeholders' values were considered and which stakeholders values were excluded from consideration. Stakeholder salience analysis makes visible the relative power, legitimacy, and urgency of the stakeholders. Stakeholder salience analysis, however, is flawed, if it is used just to pay attention to those of highest salience. High salience stakeholders do not necessarily provide perceptions of IT business value that are either wide-ranging or precise enough to give a complete view of IT business value. Our findings support this argument because salience analysis identified stakeholders who were powerless (council housing tenants and police) but who valued data protection. We found this value in the epic evaluation because the HouseServices ASB officer took the role of proxy for the police, third party developers and council housing tenants in the epic development exercise (see Table 6). The value of data protection nearly got lost in the project, possibly because there was no champion for data protection amongst the most salient stakeholders. This finding was unexpected because data protection relates to legal and ethical obligations, and in a public-sector organisation legality and the protection of individual rights are important values (Jorgensen & Bozeman, 2007). This finding supports the utility of looking for perceptions of value among stakeholders at all levels of salience, not just those of high salience. Based on this evidence we conclude that combining stakeholder analysis and salience analysis provides a useful tool to ensure that credence is given to all legitimate stakeholders, not just to those who have the greatest power and urgency, thus ensuring that IT business value is understood broadly as well as in-depth.

Some of our findings are reflected in prior IT business value research. Comparing our findings with Alahyari et al. (2017)'s report on the value in agile software development projects we found no mention of the values of timeliness of delivery, ways of working, or perceived software quality reported in that study, although our studies concur on Cost as a value. There is also some overlap in our findings with Simmons (1996)'s list of IT business values. Simmons (1996) found the top two business outcomes that organisations look for from IT are increased efficiency (i.e. cost avoidance or reduction) and increased effectiveness (i.e. support for non-economic organisational objectives). Increased efficiency relates to our value of cost saving, and increased effectiveness relates to our values: IT as transformation enabler, digitalisation, and customer experience because these values can increase an organisation's ability to meet its objectives. Another comparison with the research of Bunduchi (2017) on IS business value among stakeholders, agrees with our finding that IS value varies across stakeholder groups. Similar values reported by Bunduchi (2017) included reputation, which is similar to our customer service value, and differentiate service sub-value and visibility of information, which is similar to our up-to-date and timely information sub-values.

The theoretical contribution of our research is an initial 4-dimensional model of IT business value sources and we have provided one instantiation of the model. We have clearly defined a set of stakeholder values in the context of a public sector organisation that emerged during the timeframe of an IT digitalisation project and with respect to a specific IT artefact, which was the design and development of a web-based service for the benefit of the organisation and its customers. This model can be used by researchers to further explore IT business value to ensure they reflect upon and report on at least these four dimensions of sources of IT business value when studying this concept.

Our study has limitations. Single case studies suffer from a lack of generalisability, which means that the findings are specific to only our case; however, the organisations we studied are typical in UK local government so organisations with similar contexts, IT artefacts, and time frames (i.e. the IT project) might draw insights from this research. We acknowledge that the proposed 4-dimensional model of IT business value sources could be incomplete and further dimensions would improve the scope of the model (e.g., project or organisational goals might influence IT business value). Furthermore, we may have found more IT business values if a wider range of stakeholders had participated in the study.

7 Conclusion

This research has explored the perceptions of stakeholders as to what constitutes IT business value in a single IT project in a public sector organisation and contributes towards a deeper understanding of IT business value. Based on a single case study, we found IT business values consist of enabling organisational transformation, customer experience, cost saving, digitalisation, social service improvement, and data protection. These values are composed of 33 sub-values. We also found that salience analysis can counteract the problem of including only the highest salience stakeholders' value perceptions, which can restrict the range of perceived IT business values. Future work could include the development of IT business value typology based on further case studies that report IT business values. Cases should include information on, at least, four dimensions of IT business value, namely stakeholder perceptions, the nature of the IT artefact, the context where the value is realised, and the time period when the value is realised. Such a typology would help further delineate the boundaries of the IT business value concept and inform our understanding of the full range of IT business values possible in different situations.

References

- AgilePM Agile Project Management Handbook V2*. (2014). Kent, UK: Agile Business Consortium.
- Alahyari, H., Svensson, R. B., & Gorschek, T. (2017). A study of value in agile software development organizations. *Journal of Systems and Software*, *125*, 271-288.
- Axelsson, K., Melin, U., & Lindgren, I. (2013). Public e-services for agency efficiency and citizen benefit—Findings from a stakeholder centered analysis. *Government Information Quarterly*, *30*(1), 10-22.
- Biffi, S., Aurum, A., Boehm, B., Erdogmus, H., & Grünbacher, P. (2006). *Value-based software engineering*: Springer Science & Business Media.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*, 77-101.
- Bunduchi, R. (2017). *Mapping IS value across stakeholder groups: Process improvement and strategic alignment, reputational effects and radical organisation change*. Paper presented at the UKAIS 2017 Conference 3rd-5th April 2017, Oxford, UK.
- Chan, Y. E. (2000). IT value: The great divide between qualitative and quantitative and individual and organizational measures. *Journal of Management Information Systems*, *16*(4), 225-261.
- Chau, P. Y., Kuan, K. K., & Liang, T.-P. (2007). *Research on IT value: what we have done in Asia and Europe*: Taylor & Francis.
- Cohn, M. (2004). *User stories applied: For agile software development*. Boston, MA: Addison-Wesley Professional.
- Dingsøyr, T., & Lassenius, C. (2016). Emerging themes in agile software development: Introduction to the special section on continuous value delivery. *Information and Software Technology*, *77*, 56-60.
- Donaldson, T., & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review*, *20*(1), 65-91.

- Eisenhardt, K. M. (1989). Building theories from case study research. *The Academy of Management Review*, 14(4), 532-550.
- Flak, L. S., Nordheim, S., & Munkvold, B. E. (2008). Analyzing stakeholder diversity in G2G efforts: Combining descriptive stakeholder theory and dialectic process theory. *E-Service Journal*, 6(2), 3-23.
- Flak, L. S., & Rose, J. (2005). Stakeholder governance: Adapting stakeholder theory to e-government. *Communications of the Association for Information Systems*, 16(1), 31.
- Flak, L. S., Sein, M. K., & Sæbø, Ø. (2007). Towards a cumulative tradition in e-government research: Going beyond the Gs and Cs. In M. Wimmer, H. Scholl, & A. Gronlund (Eds.), *Proceedings of the International Conference on Electronic Government. EGOV 2007, LNCS 4656* (pp. 13-22). Berlin Heidelberg, Germany: Springer-Verlag.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston: Pitman.
- Hannay, J. E., Benestad, H. C., & Strand, K. (2017). Benefit points: the best part of the story. *IEEE Software*, 34(3), 73-85.
- Hitt, L. M., & Brynjolfsson, E. (1996). Productivity, business profitability, and consumer surplus: three different measures of information technology value. *MIS quarterly*, 121-142.
- Hovav, A., & Gray, P. (2014). The Ripple Effect of an Information Security Breach Event: A Stakeholder Analysis. *CAIS*, 34, 50.
- J. Gouillart, F. (2014). The race to implement co-creation of value with stakeholders: five approaches to competitive advantage. *Strategy & Leadership*, 42(1), 2-8.
- Jeyaraj, A., & Zadeh, A. H. (2019). Evolution of information systems research: Insights from topic modeling. *Information & Management*. doi:<https://doi.org/10.1016/j.im.2019.103207>
- Jorgensen, T. B., & Bozeman, B. (2007). Public values and inventory. *Administration and Society*, 39(3).
- Khurum, M., Gorschek, T., & Wilson, M. (2013). The software value map—an exhaustive collection of value aspects for the development of software intensive products. *Journal of software: Evolution and Process*, 25(7), 711-741.
- Kohli, R., & Grover, V. (2008). Business value of IT: An essay on expanding research directions to keep up with the times. *Journal of the association for information systems*, 9(1), 23-39.
- Lincoln, Y., & Guba, E. (1985). *Naturalistic Inquiry*. London, UK: Sage Publications.
- Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Information technology and organizational performance: An integrative model of IT business value. *MIS quarterly*, 28(2), 283-322.
- Mendes, E., Rodriguez, P., Freitas, V., Baker, S., & Atoui, M. A. (2018). Towards improving decision making and estimating the value of decisions in value-based software engineering: the VALUE framework. *Software Quality Journal*, 26(2), 607-656.
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853-886.
- Neville, B. A., Bell, S. J., & Whitwell, G. J. (2011). Stakeholder salience revisited: Refining, redefining, and refueling an underdeveloped conceptual tool. *Journal of Business Ethics*, 102(3), 357-378.
- Parmar, B. L., Freeman, R. E., Harrison, J. S., Wicks, A. C., Purnell, L., & De Colle, S. (2010). Stakeholder theory: The state of the art. *The academy of management annals*, 4(1), 403-445.
- Sæbø, Ø., Flak, L. S., & Sein, M. K. (2011). Understanding the dynamics in e-Participation initiatives: Looking through the genre and stakeholder lenses. *Government Information Quarterly*, 28(3), 416-425.

- Saldaña, J. (2016). *The coding manual for qualitative researchers*. LA: Sage.
- Sauer, C., & Reich, B. H. (2009). Rethinking IT project management: Evidence of a new mindset and its implications. *International journal of project management*, 27(2), 182-193.
- Scholl, H. J. (2004). Involving salient stakeholders: Beyond the technocratic view on change. *Action Research*, 2(3), 277-304.
- Schryen, G. (2013). Revisiting IS business value research: what we already know, what we still need to know, and how we can get there. *European Journal of Information Systems*, 22(2), 139-169.
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for information*, 22(2), 63-75.
- Simmons, P. (1996). Quality outcomes: Determining business value. *IEEE Software*, 13(1), 25-32.
- Smith, H. J., & Hasnas, J. (1999). Ethics and information systems: The corporate domain. *MIS quarterly*, 23(1).
- Van der Wal, Z., De Graaf, G., & Lasthuizen, K. (2008). What's valued most? Similarities and differences between the organizational values of the public and private sector. *Public administration*, 86(2), 465-482.
- Yin, R. K. (2018). *Case study research and applications: Design and Methods* (6 ed.). Thousand Oaks: Sage Publications.