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SOCIALIZING THE VALUE OF TECHNOLOGY – A MULTI-STAKEHOLDER PERSPECTIVE ON VALUING IS

Research in Progress

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Abstract

IS value research focuses on the economic understanding of value as the contribution of IS to the financial performance of the organization. This narrow understanding of value may explain why, despite decades of IS value research, most IS deployments continue to underperform. This paper adopts a valuation lens to study the realization of IS value, examining value as action (valuation). The research plans to compare the valuation actions across two similar IS (course information visualization and selection tools) in two similar organizations (large European universities). The paper presents the tentative results following the analysis of one of the cases. The interim findings suggest that valuation actions are relative to alternatives and stakeholders' needs, and as such vary significantly across different organizational actors. The findings also point to the interaction between evaluation and valorization actions, both anchored in the material features of the technology. Finally, the research unearths the role that interactions across actors play in shaping valuations of IS. The research, while in progress, suggests valuation as a useful lens to understand how IS value emerges through the intersection of material features and the dynamics of human actions.

Keywords: IS value, valuing, socio-material.

1   Introduction

What is the value of IS? This question is at the core of our discipline. IT matters because its application within organizations generate business value. The argument that IS is valuable is often used to legitimize the study of IS as a discipline (see Kohli and Grover, 2008). It comes thus to no surprise that there is a huge body of literature examining IS value. Such research, going back decades, examined what IS value is, how is it realized in organizations. IS value is generally conceptualized as inherent in the IS artifact and representing its economic contribution during deployment to firm's performance (Henderson and Venkatraman, 1993; Kohli and Grover, 2008; Mata et al., 1995; Melville et al., 2004). Mithas and Rust (2016) definition of the business value associated with IS succinctly illustrate this point: "*Firms spend significant sums of money on information technology (IT) resources, yet they are often challenged in developing appropriate strategies to direct these resources to **realize business value** [...] it is clear that there are **three strategic paths from IT to firm performance**: IT can be used to (1) **reduce costs** by improving productivity and efficiency; (2) **increase revenues** by fully exploiting opportunities through existing customers, channels, and products/ services and by finding or creating new customers, channels, and products/services; or (3) **reduce costs and increase revenues simultaneously**"* (pg. 223, emphasis added). IS value realization research has thus mostly examined how the deployment of IS artefacts affects the financial performance of firms. Efforts to measure this economic value involved the development of benefit frameworks differentiating between benefits, whether perceived pre-implementation or realized post-implementation, depending on their tangibility, their effects at different organizational levels, the degree of relatedness to the user organization actions, and the degree of closeness to organizational outcomes (Bunduchi and Smart, 2010; Doherty et al., 2012; Peppard et al., 2007; Shang and Seddon, 2002).

Despite decades of research on IS value, the concept of value, and its realization, is still elusive, as most IS investments continue to disappoint, generating value well below what was originally expected (Doherty et al., 2012). The economic focus on IS value as improvements in financial performance assumes a simple calculation of IS value as possible, and its realization tantalizing close as a matter of applying "*the right IT*" to "*the right processes*" (Melville et al., 2004) to increase revenues and/or lower costs. Nevertheless, empirical findings have demonstrated that the value that organizations derive from IS varies greatly depending on how people use IS (Ashurst, 2015), and the organisational change that accompany IS implementations (Coombs et al., 2013). Value thus is linked to the action of organisational actors as they use the technology and change their organisational practices, so what is "the right IT" can vary considerably depending on individual action, as well as the organisational context in which this action occurs. Moreover, IS has multiple user audiences, which need to be taken into account during implementation (Shang and Seddon, 2002). Such audiences have different interests, power, and status, are engaged differently during IS implementation and might be affected differently by the changes accompanying IS implementation (Tursunbayeva et al., 2016). Thus, their perceptions of IS outcomes, and the value associated with them, might vary considerably (Doherty et al., 2012).

The paper aims to investigate how organisational actors realise IS value. The argument put forward here is that understanding how value is realized requires a fresh perspective that moves beyond the economic understanding of value, and the corresponding expectations that such value can be "realized" objectively through the deployment of IS. Instead of considering value as a property of the IS artifact, such a perspective accounts for the evidence that human action is involved both in realizing this value through the deployment of IS, and in making judgments about the worth associated with the outcomes of IS deployments. Valuation studies, drawing from Dewey's (1939) notion of valuation as an activity, and his conceptualization of value as more than economic pricing, provide such a suitable theoretical lens that emphases the role of human action in assessing and producing value, providing the conceptual toolkit to examine IS value as a social construct (Corvellec and Hultman, 2014).

2 Theoretical background: IS value & valuation studies

Existing research on value realization falls broadly within two categories: variance research that considers value to be realized directly through the deployment of IS in organization, and process research that considers value to be realized indirectly through the organizational changes that accompany IS deployment (Doherty et al., 2012). This research implicitly considers "value" as a property of IS artefact (variance studies), or of the relationship between organisational actors and IS artefact (process studies). **Variance studies** consider that IS value manifests as the use of IS in organizations leads to lower costs, higher revenues or both (e.g. Mithas and Rust, 2016). *Value* is conceptualized here as being *objective*, residing within the IS artefact, and realised by organisational actors through their deployment of IS. In contrast, **process studies** conceptualize value as a consequence of the organizational changes that follow IS deployment (e.g. Coombs et al., 2014). *Value* is conceptualised here as *subjective*, depending on the perceptions of varied organisational actors (Doherty et al., 2012; Shang and Seddon, 2002) as they suffer the effects of organisational change that accompany IS deployment (Coombs et al., 2013). While variance studies generally focus on identifying the factors that contribute to the realization of value from IS investments (e.g. Kim et al., 2011; Mithas et al., 2011, see also the review of Kohli and Grover, 2008); process studies focus on examining how value emerges indirectly through the organizational change following IS implementation and use (e.g. Coombs et al, 2013; Schubert and Williams, 2009). Both studies consider value as an attribute that manifests in relation to IS deployment, and define value in its narrow, economic sense as related to financial performance.

Since the 80s and 90s, social shaping of technology research has highlighted how technology is **socially constructed** by groups of actors with varied interpretations, interests and expectations, who also inscribe their social values onto technology (whether during design or implementation and use) (Pinch and Bijker, 1984). Such research emphasizes the mutual shaping between technology and the social context in which it is embedded, questioning the deterministic view of technologic as having predefined outcomes in organizations (Williams and Edge, 1996). The value of technology, as technology itself, has also been more recently conceptualized as being socially constructed (Helgesson and Muniesa, 2013), and as such (at least partially) a product of the social context in which it occurs. Existing research shows that what is defined as important, meaningful, desirable and worthwhile, i.e. what is perceived as valuable, varies depending in the context in which people live (Graeber, 2005). Such understanding of value of technology as socially constructed parallels developments in economic research to develop a theory of social value, which conceptualizes value as constructed by people, rather than an inherent quality of the artifacts themselves, or as simply reflecting people's perceptions of these artifacts (Dolfsma, 1997). Such an approach emphasizes the role of the social in understanding value, and valuation actions, as people value the same artifacts differently depends on the social environment in which they are both located (Dolfsma, 1997).

Research on **valuation** has emerged as an important effort to develop a social theory of value that moves beyond the dichotomy between objective and subjective value (Dewey, 1939, see also Muniesa, 2011) by conceptualising value as an action (e.g. valuing technology) rather than an attribute (e.g. value of technology). Valuation studies are based on the premise that valuing judgments are not simply rational calculations of economic worth as value and (normative and moral) values are frequently entangled (Stark, 2011). Such valuation activities include pricing (putting a price on a good, that can be calculated both in market and non-market terms), but also prizing (assessing and assigning a value to a good, and rating goods), praising (the capacity of a good to inspire, reflecting the imaginative performance of goods) (Dewey, 1939) and performing (reflecting the concept of valuation as performing) (Stark, 2011). A valuation lens thus shifts the emphasis from value as a property of an artefact, and too often equivalated to its narrow, economic understanding of price (as in the economic impact of IS deployment), to valuing as action, which is socially constructed (Helgesson and Muniesa, 2013), and which denotes the "*social practice where the value or values of something are established, assessed, negotiated, provoked, maintained, constructed and/or contested.*" (Doganova et al., 2014, pg. 87).

The paper follows Vatin (2013) approach to distinguish between two separate valuation actions involved in this social practice: evaluation, denoting actors making judgments about the value to an arte-

fact, and valorization, referring to actors creating the value associated with the artefact. Vatin's approach reflects two distinct yet interrelated sides of the valuation process: assessment of value, and production of value. While evaluation represents a static judgment of existing, valorising has a dynamic meaning involving the increasing in value (Vatin, 2013). As applied to explain IS value, Vatin's approach appears to mirror the distinction between expected and realised benefits: while expected benefits are anticipated prior to IS implementation based on actors' evaluation of the potential of a new IS, realised benefits occur during use, as actors deploy IS to produce value for the organisation for example by applying IS to automate existing processes and reduce costs, or generate the occasion for re-organising the entire work processes. This dichotomy between expected and realised benefits is important as the two benefit concepts serve different purposes. Statements about expected benefits are often aimed at driving the decision to adopt an IS (Roh et al., 2009), rather than at accurately representing its outcomes. As such they are often overstated to get the project through the initial investment appraisal process (Peppard et al., 2007). Senior managers' expectations about the outcomes of IS projects also strongly influence the organizations' commitment to implementing them (Lederer & Mirani, 1995). In contrast, the actual benefits (or disbenefits) arising from IS implementation, are not always immediately apparent and it can sometimes take years after systems go live before they are demonstrated (Shan & Seddon, 2002). It is therefore little wonder that most studies undertaken during the timeframe of a typical implementation project report a failure to achieve intended benefits (Doherty et al., 2012). However, the two set of concepts: realised and expected benefits, valorisation and evaluation, are not identical: actors' assessments of the value of IS do not simply stop with its deployment, but continues during use. For example, Karahanna, et al. (1999) found perceived usefulness (an assessment of the usefulness of IS) as the only attribure that significantly influences organisational actors' intention to adopt IS both before implementation (thus based on expected usefulness) and during use (based on realised usefulness). Similarly, studies of IS implementation have found that often the value of IS comes from changes that accompany the implementation, not necessarily from the realised outcomes during deployment. For example Mangan and Kelly (2009) find that the key benefit following the implementation of a new IS within a hybrid organisation is the organisational change which was inadvertently triggered as the implementation processes unearthed latent tensions between the competing institutional logics which then actors sought to address. Valorisation thus can happen not only during deployment, but also as users negotiate its implementation.

3   Research Design

To examine how organizational actors realise IS value, the valuation theoretical lens is applied to interpret the results of two case studies involving the two similar IS (a new software to support students to choose their courses throughout their university degrees) in two similar organisations (European universities of similar research intensive ethos, age and size, and institutional setting). The case studies are part of a research project examining the role of social context in understanding the development, implementation and deployment of IS. A key project theme concerns the socialisation of IS value. The selection of the cases follows Miles and Hubemran (1994) confirmatory case criteria. While the purpose of the IS is similar in both organisations, the approach to its development and implementation is entirely different, with TRACK (developed in University A) being developed internally, while MyPortal (developed in University B) being outsourced from a third party supplier. The expectation was that actors would have a higher stake in internally developed projects compared with the implementation of third party systems, so that the second case study is used to elaborate the initial analysis on TRACK to confirm whether the valuation dynamics observed holds for externally developed systems.

Data collection involves three sources. Semi structured interviews are conducted with all key stakeholders involved in the development, implementation and use of TRACK & MyPortal including university senior managers, software developers, business analysts and senior managers within IS units (student services and corporate information systems), and academics users (13 for TRACK, 8 for MyPortal). Student surveys organised by the two project teams during the implementation and deployment of their system are used to collect student users' perspective. Project documentation cover-

ing the entire duration of the projects is used to map the project stages and to triangulate the interviews data with contemporaneous documentary sources. Data collection was done in both cases post implementation, within one year of the systems deployment. To address the bias associated with retrospective methods for data collection, Miller et al. (1997) recommendations were followed including using semi structured interviews with multiple respondents to provide opportunities for both triangulation between respondents, and for contextualisation of events recalled, with the questions asking respondents to recall events and actions rather than beliefs. The interview data was triangulated with sources of data contemporaneous to the events being recalled (student survey and project documentation). Finally, confidentiality was assured to reduce interviewees' incentives to withhold negative accounts.

Data analysis started with descriptive coding (Miles and Huberman, 1994), what Strauss and Corbin (1998) call open coding to identify emerging meanings without trying to make the data fit a particular theoretical lens. These open codes where then interpreted against existing concepts and research findings. Finally, the interpretative codes were evaluated against the valuation theoretical lens. Narratives were used through the process to construct stories of what has happened to inform the analysis and validate the findings. The analysis is complete for TRACK, with data collection completed for MyPortal. The interim findings reported in the next section are based only on the TRACK data.

4 TRACK case study – tentative analysis of valuing actions

TRACK followed a unique bottom up development path within university A where most IS are acquired externally, and implemented top down throughout the university units. TRACK project was initiated by two 3rd year students in one of the schools, and received early backing from senior academics and from the student association to develop an early pilot within the school. The success of the pilot, coupled with strong academic support for the project caught the attention of the head of corporate information system (CIS) services department, responsible for all university wide IS development, who funded the two student developers to expand the project to two further schools. The successful uptake of the pilot in the three schools convinced the student service (SS) department, responsible for all student facing IS implementation in the university, to take over the TRACK project and deploy it throughout all the schools within the university.

The analysis explores how actors value IS through examining their valuing actors (see Table 1).

Actors / actions	Users	Developers	Sponsors
Sub-categories of actors	*students* *academics (lecturers & student advisors)* *units (schools)*	*individual developers (students & professionals)* *IS units (CIS & SS)*	*IS units (CIS & SS)* *university*
Evaluation	Relative to fulfilment of **end-user needs** Relative to **functionalities** of the current system Relative to improving student developers' **reputation** (*academic student advisors*)	Relative to fulfilment of **end-user needs** Relative to **functionalities** of the current system Relative to improving student developers' **reputation** Relative to improving university IS units' **reputation**	Relative to fulfilment of **end-user needs** Relative to **functionalities** of the current system Relative to improving student developers' **reputation** Relative to achieving **university strategic objectives** (including improving its market reputation)
Valorisation	Using TRACK to **perform their task better** (by fulfilling their needs better than the current system)	Leverage TRACK's perceived success to **change (improve) corporate work processes**	Open up access to TRACK to all student population to incentivise Schools to **change their practice of updating centrally held information to improve course & degree information**

Table 1.   Valuing actions across categories of actors.

Three categories of actors are identified (see table 1), some playing a dual role, for example students developers were both users and developers, academics are both lecturers and student advisors, and CIS/SS departments are both developers and sponsors.

All actors **evaluate TRACK** by assessing the extent to which its use fulfilled **end-users needs**, and by **benchmarking it with the existing system**. Actors' assessment of end-user needs focus on students, with actors explaining TRACK's worth through describing TRACK as being "fit for purpose" and "filling in a genuine need" in the provision of course information to students. Evaluation often involves benchmarking TRACK with the current course and degree information system. Benchmarking allows actors to match the assessment of value with particular material features of the system, such as the direct search capabilities for specific courses and degrees which increase system's usability, interactive features which allow users to experiment with different course combinations, and easy to read visualisation of course information and modern design of interface which makes the system more user friendly.

This relative assessment of TRACK's value vis-à-vis the current system and users' needs is linked to the **production of value by users, as users describe their use of the system to perform their tasks**. Users found TRACK allows them easy access and clear visualisation of complex information which enhanced their understanding of course options, supporting their ability to complete their task, whether that involved deciding on course options for their degree (students), advising students about course options (academics as student advisors), or seeking student feedback information on courses to improve teaching (academics as lecturers). For example, TRACK makes course information more easily accessible to all users, meaning that lecturers are incentivized to improve their course description information. TRACK also increases the visibility of student feedback on courses, enabling lecturers to respond more promptly to feedback by improving their courses. Many academics also perform the role of student advisor and found TRACK's ease of use to facilitate their ability to guide students' course choices. By speeding up the students' decision process involving option courses, the system allows student advisors to focus on other elements of supports during the advising meetings, rather than on explaining courses information, leading to more efficient use of time. Similarly for students, higher visibility of course information empowers them to make course choice decisions by themselves as they could easily see the consequences of their own choices without relying on their student advisor.

Assessments of value were also made relative to developers' and sponsors' needs, rather than solely to those of the users. For example, both developers and sponsors, and some academic users assessed TRACK value in terms of its perceived contribution to developers' and sponsors' reputation. Some respondents from the IS/SS departments, the university of a whole, and even some of the academic student advisor users considered the system as valuable as it demonstrated the professionalism of the user developers both within and outside the university. CIS & SS senior managers involved in developing the system mentioned that TRACK solidified their reputation with the users, primarily relative to other corporate systems which were negatively received by university users. Senior staff within the university assessed TRACK's value primarily in terms of its ability to fulfil the strategic objectives of the university, one of which focused on maintaining university reputation as student focused.

Production of value by TRACK developers involved their efforts to exploit TRACK's perceived success within the university **to change their corporate work processes**. First, the head of CIS used the approach followed to develop TRACK by giving free reign to developers in the early stages to demonstrate to the university senior management the necessity to change software development process to allow for experimentation and freedom. Second, the student developers who were employed as professional developers leveraged TRACK's success with students to highlight to CIS and SS management the importance to consider design and usability in corporate software development. More broadly, a number of CIS & SS senior managers saw TRACK as an opportunity to develop a corporate wide process to support student engagement for student oriented (software) services development.

At university level, senior management **assessed TRACK value relative to its ability to fulfil university's strategic objectives**, including its focus on improving university reputation in the student market.

This assessment involved considering the effect that TRACK deployment had on satisfying university's stakeholders' needs, in particular its students and the government. The use of TRACK better addressed students' needs for accessing course and degree information, thus enabling Schools to improve their students' satisfaction. More satisfied students were seen to lead to improvements in the position of the university in the national student rankings, which was a key priority for the university. TRACK's widespread use also led to clearer course and degree information within Schools which were better targeted to a student audience, thus allowing the university to respond to changes in government policy that required degree information to be student focused.

University evaluation actions were related to its efforts to valorise TRACK, as well as building upon end users' valorising efforts. The university's assessment of TRACK as valuable is based on its ability to improve student satisfaction within Schools as students use TRACK to choose options by themselves and advisors deliver better support to students during advising meetings. By producing value during their use of TRACK to perform their tasks, users' valorisation where thus creating the conditions for to the university's evaluation of TRACK. Further **value is produced** by the university as it **expands the deployment of TRACK across the entire student population** through its decision to open up TRACK to all student users, regardless of whether their School has formally agreed to deploy TRACK. Being easier to use and comprehend than the current system, TRACK increased the visibility of course information to users, highlighting wide spread mistakes in the current data, thus incentivising Schools to improve their course & degree descriptors, and creating the conditions for all Schools to deliver better information to students, this increasing student satisfaction.

5   Discussions & Conclusions

The paper sought to examine how IS value is realised through the lens of valuation theory. First, the analysis finds that that judgments of value are performed through benchmarking practices (relative to alternative systems), and evaluations against perceived organisational actors' needs (relative to the fulfilment of needs). All actors, as expected, valorize IS through improving existing processes and pursuing strategic alignment. IS use allows actors to perform their task better leading to improvements in existing processes (Melville et al., 2004), such as the selection of courses (by students), the advising of students (by student advisors), teaching (by lecturers), software development (by developers). Opening up access to IS to all users enables strategic alignment (cf. Henderson and Venkatraman, 1993), supporting the university in fulfilling its strategic objectives, such as improvements in student satisfaction. While these productions of value align with the broad categories of benefits of IS identified in existing research (e.g. Shang and Seddon, 2002), the analysis finds that productions of value are made relative to the fulfilment of individual users' needs, rather than around economic forms of worth for the organisation as a whole. As a result, such assessments of worth vary across organisational actors, as each considers their own needs, rather than representing a consensus of what the business value represents for the financial performance of the organisation.

Second, the findings indicate that often evaluations of IS value are deeply entangled with actors' efforts to produce value. For example, one way in which all actors assessed IS value was relative to its ability to fulfil end-users needs, which involves end-users' efforts to produce value through deploying IS to perform their task, whether advisors improving student support during advising meetings, or students making course choices by themselves. Similarly, the efforts of developers to leverage system's success to improve their work practices (producing value through better processes) is based on the evaluation of the system as being valuable (because it allows the achievement of strategic objectives) by the university senior management. Valorisation and evaluation actions are not sequential, but intertwined with valorisation actions embedded in evaluation (cf. Vatin, 2013) and vice versa. Other times however the two categories of actions are disentangled. For example, the assessment of value based on improving developers' reputation has no correspondence in actors valorising actors.

Third, the analysis reveals how both assessments and production of value are anchored in the material features of the system: for example TRACK's evaluation as easy to use due to the visualisation tools and modern design, its production of value by lecturers involves relying on student feedback to im-

prove teaching, by students involves the use of interactive features to experiment with choice options, while the creation of value by advisors involves the deployment of student centric features to support advising meeting. The material features of the technology, its affordances (Robey et al., 2013), thus open up possibilities for evaluation and valorization actions. Value emerges not only as socially constructed through actors valuing actions, but also as "materially constructed" as the material features of the technology enable some such actions while constraining others.

Finally, the tentative findings also point to the role that the interactions between actors, both within and across different groups, play in shaping the valuing process across. For example, the developers use the IS to seek feedback from the users which is then promptly incorporated into the system. This allows users to make better use of IS to make course decisions or advise students (thus increasing their ability to valorise the IS to perform their task) and the developers to provide a service that better addresses the needs of their users (thus increasing their ability to use the IS to empower students as university customers). The large user take up of the system allows sponsors to use the IS as an exemplar of successful student led innovation (thus increasing their ability to use IS to promote the development of a corporate process to engage students in their initiatives and improve their student focused reputation). This promotion enables developers to use the IS to argue for changes in the corporate IS development processes to ailing with TRACK development process (thus increasing their ability to use the IS to support changes in IS processes to provide developers with space for experimentation outside corporate constraints). Finally, the use of IS by students to make course choices (to fulfil their need) reinforces the ability of academic advisors to better use the time during the set advising meetings (to provide better student support). Thus, interactions across actor groups (users and developers, developers and sponsors) as well as within actor groups (student users versus academic users) shape both their evaluation of IS value and their ability to produce this value.

While still in progress, the analysis indicates that by emphasising the links between judgments and production of value, and between the actions of different actors groups in valuing IS, a valuation perspective brings a number of contributions to existing research on IS value. First, adopting a valuing perspective better accounts for the changes in the assessments of IS value observed in existing studies between expected (prior to implementation) and realised (post implementation) benefits (Doherty et al., 2012) by directing attention to the interplay between such evaluations and the production of value by actors as they implement and deploy the technology. Second, a valuing perspective provides an explanation of value of IS akin to the value in use concept in the service dominant logic (Lusch and Vargo, 2006) thus aligning with developments in understanding value creation as a process of co-creation between multiple parties, which has been not yet widely addressed in IS value studies (Kohli and Grover, 2008). Key here this study pinpoints to the need to untangle not only between different actors, but also between distinct types of valuing actions involved in this value co-creation process. Third, conceptualising IS value as a social practice which actors engage in to create value during use provides a more satisfactory framework to study the social contextualisation of IS value which emerges over time through the actions of organisational actors. The analysis also finds that valuation is anchored in the material features of the technology, suggesting technology affordances (Robey et al., 2013) as a useful framework to complement the valuation lens in order to examine the possibility and limits for valuation actions for particular technologies. This perspective accounts better for the difficulty to replicate the value of similar IS in different settings, as different settings might be subject to different configurations of social practices that shape actors' valuing behaviour, where similar IS might have variations in their technology affordances. Although IS value research recognises the need to examine IS value in the context of its embeddedness in IS processes (Kohli and Grover, 2006), and social shaping of technology studies have demonstrated the social constructed nature of technology, there are limited efforts to date to examine the value of IS in the context of its social embeddedness.

For practice, the findings highlight the importance of taking into account different categories of actors involved, beyond users of technology when assessing IS value, to consider the social context in which this assessment takes place, and most critically, to focus on what people do, rather than only on their perception of what the technology may offer.

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