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OPERATIONS, INFORMATION & TECHNOLOGY | RESEARCH ARTICLE

Credibility assessment for sustainable consumption: A laboratory study

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Abstract: Sustainable consumption has the potential to hold firms accountable for the negative externalities they impose on society and the environment, but consumers are often unsure whether to believe that the products and companies promoted as being sustainable are truly sustainable. This research investigates novices' credibility assessments of online sustainability ratings reports using a laboratory experiment and a dual-process theoretical lens. It identifies and operationalizes two new heuristic cues that theory suggests should be influential in this process: the For-profit status of the company that produced the expert reports, and its Strategic Ties. Each participant looked up companies' sustainability ratings on two databases, one of which was perceived to be significantly easier to use and more credible than the other. Database Credibility and the For-profit status of the company producing the database both significantly affected perceptions of content usefulness. The impact of the Strategic Ties heuristic was inconclusive and merits further research. We are beginning to accumulate significant research on the effects of explicit labels and standards on consumer behavior. This research points to the need to understand the effects of available implicit heuristics as well, and offers many potential avenues for future research.

ABOUT THE AUTHOR

Stephanie Watts is an associate professor of Information Systems at the Questrom School of Business at Boston University. Her research lies at the intersection of the fields of Information Systems and Sustainability. She has taught Corporate Social Responsibility at the Kilachand Honors College at Boston University for a number of years. In 2016, she was named the inaugural Research Fellow at the Susilo Institute for Ethics in the Global Economy at the Questrom School. Google Scholar attributes over 2,600 citations to her research.

PUBLIC INTEREST STATEMENT

This paper presents research on how students in the United States interpret sustainability reports. Business school students are trained to interpret financial reports, but are often not exposed to corporate sustainability reports. It is not clear that these reports are credible to those that are unfamiliar to them, and if we are to move forward with socially responsible investing, it is important that they be taken seriously. Thus, this exploratory research investigates what might make these reports more or less credible; both characteristics of the database that generates these reports, and *aspects of the company that produces them*. Here, these students found these reports to be more useful when they believed that the company that produced them is a Not-For-profit company. In the US, new corporate legal forms such as B-corporations are increasingly gaining traction—this research provides an additional reason why companies may choose to incorporate as Not-For-profits or B-corporations.

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Subjects: Psychological Science; Economic Psychology; Organizational Communication; Information Technology

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1. Introduction
Widespread sustainable consumption offers the possibility of a market mechanism that holds firms accountable for the negative externalities they impose on society and the environment. But sustainable consumption has yet to reach its potential. Faced with the well-resourced efforts of mass marketers, consumers have become cynical and unsure whether to believe that the products and companies promoted as being sustainable are truly sustainable. Consumers often do not know whether to believe sustainability information they read online and may not have confidence in their ability to assess its validity (Chen & Chang, 2012). Further, the vast quantity of information available on the Internet makes it difficult to critically evaluate it, while the burden of credibility assessment has shifted from professional gatekeepers to individual information seekers. Consumers now have online access to corporate social responsibility reports and ratings—access that was previously available only to business professionals. For example, CSR Hub ratings are now available to consumers who use the Mobile Technology-mediated Ethical Consumption (MTEC) tool (Watts & Wyner, 2011) *Ethical Barcode*. While this information is available to help consumers in their quest to make ethical purchases, most consumers lack the capability to assess the credibility of online information (Meola, 2004; Metzger, Flanagin, & Medders, 2010).

This research investigates novices' credibility assessments of sustainability ratings reports that are available online. Using a laboratory experiment, we studied the perceived usefulness of sustainability analyst reports of public companies. For those producing sustainability reports, it can be a challenge to make them credible, particularly to lay people, for the reasons discussed above. Therefore, this research asks: in the current environment of deep-pocket marketing efforts and even greenwashing, how can producers of sustainability reports increase the likelihood that the content they release in these reports will be believed by those accessing them? As a society, if laypeople cannot assess the credibility of sustainability ratings reports, how can the sustainable consumption movement move forward? To this end, this work identifies and operationalizes two new heuristic cues that theory suggests should be influential in this process but that have not been studied previously: the For-profit status of the company that produced the expert reports, and its Strategic Ties.

2. Introduction to sustainable consumption information online
This work investigates the use of online information to inform consumers' perceptions of companies that produce consumer products. It is a subset of the rapidly growing body of research on ethical consumer behavior—see Papaoikonomou, Ryan, and Valverde (2011) for a review of this research. Here, we focus on the plethora of information that is now available to consumers with which to assess the environmental, social, and governance (ESG) sustainability of companies. For example, CSRHub.com aggregates information from 495 CSR/ESG data sources and makes it available to consumers. Other websites focus on specific issues, such as the ClimateCounts.org scorecard on carbon emissions, or the Human Rights Campaign (HRC.org) ratings of workplace equality for the LGBT community. Whether aggregated or focused, consumers now have information available to them online which was previously available only to those with specialized knowledge and training in CSR/ESG analysis. The widespread availability of this information to consumers is a new phenomenon, one that is a by-product of the success of the Socially Responsible Investing (SRI) movement, since this new online CSR/ESG information was originally produced for use by sustainability analysts to assess the ESG sustainability of firms. The SRI movement has now succeeded to the extent that companies with poor ESG ratings are excluded from SRI financial products and have fewer investors, resulting in a higher cost of capital to them (Chava, 2014). It remains to be seen whether consumers can and will utilize this newly available information to make ethical consumption choices. This research compares two sustainability ratings databases (SRDs), both of which provide CSR/ESG ratings of companies, called ESG Manager and GMI Analytics, respectively. In response to a user's search on the name

of a firm, the two databases investigated here serve up an alphanumerical or numerical rating of that company, along with an additional report of some depth.

3. Theoretical background and hypotheses

There is a burgeoning body of research that looks at trust and credibility as it pertains to online content in the form of reputation signals to consumers (Jøsang, Ismail, & Boyd, 2007). This phenomenon is an individual-level cognitive one. Research in this area applied the term knowledge adoption to attitudes formed in response to exposure to online information (Sussman & Siegal, 2003). More recent work has investigated adoption of content from online community repositories (Zhang & Watts, 2008), adoption of online review information (Cheung, Lee, & Rabjohn, 2008), the influence of website governance mechanisms individuals' use of content from that website (Kayhan, 2015). These studies applied the dual-process paradigm of individual information processing, which we do here, positing effects as predicted by the Heuristic Systematic Model (HSM) (Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989). This model applies to validity-seeking contexts such as this one, and like the Elaboration Likelihood Model, posits that individuals form immediate attitudinal responses to new information through two different mechanisms—one primarily analytical, and the other primarily intuitive through application of heuristic cues that enables them to form attitudes very quickly; most people form a first impression of another in about 40 ms (Bar, Neta, & Linz, 2006). According to the HSM, people are continuously informed by both rational arguments and simple cues, and these two types of cognitive processes play off each other in complex ways. When faced with new information, people apply the least amount of cognitive capacity necessary for ascertaining the validity of received information. Because heuristics are simple rules that conserve cognitive capacity, they are utilized early in the information assessment process (Chaiken et al., 1989). According to the HSM but not the ELM, heuristic and systematic processing modes can and do occur concurrently. Potential interactions include additivity, bias, and attenuation.

3.1. Main effects: For-profit status and strategicties

This research manipulated the For-profit status of the companies that produced two of the databases studied, to see if this heuristic cue affects users' perceptions of the database content delivered. This cue has not previously been studied in validity-assessment, but is potentially important as it represents a transfer of perceptions about the company that produced the database to perceptions about the content produced by that company. Clearly the companies producing these databases would like to know if their customers' assessments of their product were being affected by their form of governance. This cue impacts validity assessment of content by indicating whether the content producer has a profit-making agenda in addition to an information-provision one. If so, users may view the content delivered via the database as marketing materials, which may weaken its validity and hence its usefulness. Evidence for this comes from marketing research; search engine users have been found to prefer to click on links that they believe are algorithmic results rather than advertisements (Jansen, Brown, & Resnick, 2007). Non-corporate sources are generally perceived as more credible than corporate sources because they are considered unbiased (Du & Vieira, 2012). On the other hand, users may view For-profit companies as being generally more efficient and effective than Not-For-profit ones, which would make the content they produce more rather than less useful. Hence, there is potential for this cue to engender both positive and negative valence formations, underscoring the need to investigate it in this context. Based on the findings of the marketing research above:

> *H1*: The information provided by For-profit database companies will be perceived as less useful than the information provided by not-for-profit database companies.

Another heuristic that we hypothesize may affect users' perceptions of SRD content is the reputation of the company that produced it. Reputation is what is generally said or believed about a person's or thing's character or standing (Jøsang et al., 2007). A company's reputation can moderate consumers' suspicion about advertising (Skard & Thorbjørnsen, 2014). Reputation derives from the credibility and respect that a broad set of constituents have about the company (Ettenson & Knowles, 2008).

Having a broad set of constituents is manifested in having a number of reputable organizations within ones' strategic network, reflecting multiple strategic ties. Strategic alliances serve as signals that convey organizational reputation (Stuart, 2000), since organizations are not likely to enter into disreputable alliances, which would put their own reputation at risk. As with the For-profit heuristic discussed above, this cue has not previously been studied in validity-assessment, and also represents a transfer of perceptions about the company that produced the database to perceptions about the content produced by that company. To the extent that both the For-profit and the Strategic Ties heuristics affect perceptions of the content delivered by these companies via their SRDs, these characteristics are important design parameters that should to be addressed in addition to the need to create great content:

> *H2*: The information provided by databases companies with strong Strategic Ties will be perceived as more useful than the information provided by database companies without strong strategic ties.

3.2. Main-effects: Source credibility and ease-of-use

We now turn to a heuristic that is well established in the literature, that of source credibility. Source credibility refers to an information recipient's perception of the credibility of the information's source, reflecting nothing about the information itself (Chaiken, 1980). In this research, source credibility refers to that of the database itself, not the content that it makes available. Early laboratory experiments on the role of credibility in informational influence found significantly more opinion change when the material was attributed to a high-credibility source (Hovland, 1951). Source credibility is an important predictor of attitude change in general, and is generally conceptualized as a heuristic cue that can bias message processing. But it has also been found to serve as an additional argument in favor of an advocated position (Chaiken & Maheswaran, 1994). In the online context, perceptions of source credibility underlie such issues as whether to trust the privacy and security of all kinds of content platforms (Angst & Agarwal, 2009; Kim & Benbasat, 2009), recommendation agents (Koh & Sundar, 2010), and online reviews (Cheung et al., 2008). There is an emergent consensus that credibility perceptions can be transferred from source (e.g. system, developer or teacher) to content, and that these perceptions are most important for routine tasks, with some exceptions. The construct of source credibility is now widely accepted as a heuristic cue that informs perceptions of online content validity (Metzger, 2007). This research contributes to this stream by investigating the credibility heuristic as it applies to the validity-seeking context of SRDs:

> *H3*: The information provided by databases with high Credibility will be perceived as more useful than the information provided by databases with low credibility.

Next, we turn to the issue of system ease-of-use as it affects perceptions of the usefulness of the content delivered by the system. We know that the ease-of-use of an information technology is a strong predictor of the adoption of that technology. Ease-of-use, as a sub-dimension of system quality, also affects user trust in mobile commerce technologies (Yoon, Gürhan-Canli, & Schwarz, 2006) and online vendors (Kim, Xu, & Koh, 2004). From a dual-process perspective, there is evidence that system quality affects perceptions of trust in a mobile banking application, such that low self-efficacy users are influenced by it as a peripheral cue (Zhou, 2012). Perceived ease-of-use has been associated with increased trust in a website and increased intention to use that website in the future (Gefen, Karahanna, & Straub, 2003). Castañeda, Muñoz-Leiva, and Luque (2007) investigated ease-of-use as a peripheral cue and found it to be significantly associated with perceived website usefulness. It has also long been studied in the information retrieval literature, where it has been found to positively contribute to assessment of these databases (Pajić, 2014). However, in all these studies, ease-of-use of the application being used served to affect perceptions of that application, primarily websites. Here, we are concerned with how a holistic perception of database ease-of-use *as a heuristic* affects perceptions of the content it delivers. We suggest that ease-of-use—as a heuristic—has a property that distinguishes it from other, more informational heuristics: Poor ease-of-use is associated with frustration in the user (de Guinea, Titah, & Léger, 2014). Frustration is a depletion of the

ego—when we are frustrated, we feel powerless to effect the change we desire, such as effectively searching a database in this case. The feeling of powerlessness is a manifestation of ego depletion. And ego depletion increases risk-taking and heuristic processing (Fischer, Kastenmüller, & Asal, 2012). Presumably a frustrating user experience will engender some cognitive exhaustion, making that user more likely to utilize heuristic processing and hence this cue. For these reasons, we need a better understanding of the role that the ease-of-use of a database plays in the assessment of the content it delivers.

> *H4*: The information provided by databases with high Ease-of-use will be perceived as more useful than the information provided by databases with low ease-of-use.

3.3. Additional hypotheses

According to the ELM, heuristic cues such as the ones investigated here are utilized less at higher levels of expertise, because experts tend to engage in systematic processes and rely less on heuristic cues. Therefore, experts are less likely to utilize heuristic cues at all. But according to the HSM, heuristic cues are utilized first in the validity assessment process, regardless of expertise level, and when they are sufficiently conclusive they can suppress consequent systematic processing, even for experts. Because heuristics function quickly and often sub-consciously, and systematic processing is effortful and takes time, anything that alters the cognitive capacity or effort of the person receiving the new information may alter the balance of the two processing modes and so tends to moderate the relationship between content, cues, and information assessment outcomes—usefulness in this case. Hence, a frequently studied moderator in dual-process studies is the expertise of the person assessing the new information: According to the ELM, the higher the expertise of the user, the less likely they are to be influenced by heuristic cues. However, according to the HSM, high expertise users have the cognitive capacity to process the heuristic cues systematically, as additional argument factors (Chaiken et al., 1989). Thus, while the ELM predicts influential interaction effects between user expertise and the four heuristic cues investigated here, the HSM identifies no simple interaction effects. According to the HSM, we expect to see main effects only, regardless of expertise level. Since we cannot validate null effects, we investigate the positive interaction effects predicted by the ELM:

> *H1a*: The effect of the For-Profit heuristic will be less pronounced for users with high expertise.

> *H2a*: The effect of the Strategic Ties heuristic will be less pronounced for users with high expertise.

> *H3a*: The effect of the Credibility heuristic will be less pronounced for users with high expertise.

> *H4a*: The effect of the Ease-of-use heuristic will be less pronounced for users with high expertise.

Finally, in the case of database searches, the content that is to be systematically analyzed is not available to the user until after the user interacts with the user interface to do a search for it. Thus, the information that is to be systematically processed appears only after the user has been exposed to the heuristic cues associated with the user interface—ease-of-use and credibility in this case. Because of this temporal effect, heuristic cues here are in a cognitively privileged position, such that these cues will have stronger effects than cues associated with the content delivered. Thus, we would expect that cues available on the interface may bias subsequent content processing, and so will be more influential on perceptions of content usefulness than those cues associated only with the content. Hence:

> *H5*: The influence of perceived database Ease-of-use and Credibility will be stronger than the influence of company For-profit Status and Strategic Ties.

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Figure 1. Theoretical model.
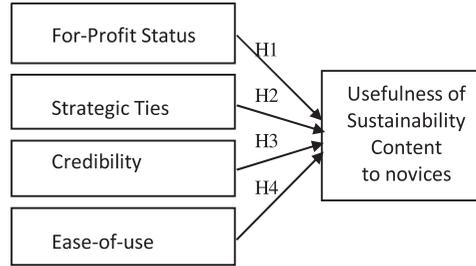
The preceding discussion is summarized in the theoretical model in Figure 1, with the exception of H5.

4. Research methods and analysis

A laboratory experiment was conducted to investigate the theoretical hypotheses developed above, on two different SRDs. All analyses were conducted separately on the databases, with the goal being to investigate the model on both, rather than comparing the two.

4.1. Experimental sample and procedures

The experimental protocol was administered to 239 undergraduate university students in a computer laboratory. Participants read the instructions and then completed the survey instrument on paper, which simplified the process since using an online survey would have required them to continuously switch back and forth between browser windows and introduced many more available heuristics. The instructions introduced them to the concept of CSR ratings databases and then asked them to record their demographics. Next, they were asked to open one of two CSR Ratings databases, either ESG Manager (by MSCI) or GMI analytics. Both provide sustainability ratings of companies on their CSR performance, albeit in slightly different flavors. ESG's ratings of most public corporations range from A (best) to F (worst), and produces reports around 23 pages long. GMI ratings range from AAA (best) to C (Worst), with reports about 10 pages long. ESG and GMI were competing research companies at the time of the study, both producing analysis of the three traditional sustainability categories of environmental, social and governance factors. Note that GMI has recently been acquired by MSCI, and the two databases have been merged, but this was not the case at the time that the research was conducted. For information on the merged database, see the website msci.com/products/esg/manager/. Participants then used the search function of the database to look up ratings of three well-known companies, one at a time—Campbell's, Kraft, and Tyson. After each company lookup, they answered questions about their perceptions of that company and the rating provided. They were then asked to repeat the process using the other database. The order of the databases was randomized.

Four versions of the survey were created to manipulate the theoretical constructs of For-profit versus Not-For-profit, and strong Strategic Ties versus weak Strategic Ties. Before they opened each database, participants read a description of it that identified it as either For-profit or not, and strongly tied or not. After answering questions about the companies they looked up, participants also answered questions about each of the two databases. Included in these questions were manipulation checks.

4.2. Measures

The For-profit status of the company that produced each database, and its strategic ties, were manipulated in the description of that database and the manipulation check was used in the analyses. Regarding the perceptual measures, since the two databases were analyzed separately, reliability analyses were also calculated separately, but all measures were identical across the two databases. The dependent measure of perceived information usefulness is from Bailey and Pearson (1983). Cronbach Alpha's for these are .973 for ESG and .964 for GMI. Following Yoon et al. (2006), we measured Ease-of-use by asking participants three questions about their perceptions of how clear and

understandable, and easy to use, each database was, and how much mental effort was required. Reliabilities of Ease-of-use are .914 for ESG and .861 for GMI. A principal components factor analysis of credibility, ease-of-use, and usefulness resulted in extraction of three components, verifying discriminant validity between the non-manipulated model constructs.

Perceived Database Credibility was assessed at two points, first, immediately following the description of the database, and then again after they had used it for the company lookups. The second of these was used for the analysis. A number of authors have studied the underlying structure of source credibility (see Newell, 1994 for a review). Two sub-dimensions have consistently emerged—competence and trustworthiness (Wiener & Mowen, 1986) and we utilized this sub-dimensional structure here. Following Sussman and Siegal (2003), the trustworthiness sub-dimension included a question each on trustworthiness and reliability. Two items pertaining to each lookup were used to measure the competence sub-dimension: data accuracy and data appropriateness. We then combined the sub-dimensions, achieving reliabilities of .914 for ESG and .918 for GMI. To investigate effects of Expertise, measures were adapted from Stamm and Dube (1994) to this context. Participants were asked how informed they are on the company whose rating they just looked up, and to what extent they are an expert on it. Cronbach alphas for these scales were .930 for ESG database and .919 for GMI.

4.3. Analysis and results

Two surveys completed by the participants were unusable due to data omissions, leaving a sample size of 237. Of these, 118 used the ESG database first and the GMI database second; 120 participants used GMI first. The mean age of participants was 19.6. Female participants comprised 56.3% of the sample. 78.6% were sophomores, 10.5% were freshmen, 8.4% were juniors, and 2.5% were seniors. 91.6% were in the School of Management, with the rest distributed across other disciplines. In answer to the seven-point question "To what extent are you interested in Corporate Social Responsibility," the mean response was 4.6 (SD = 1.53). Perceived Credibility and Ease-of-use were correlated at .30**, but exhibited sufficient discriminant validity.

Results indicated clear differences between the two databases. Both databases served up CSR/ESG ratings documents in response to participants' company searches. These documents were relatively similar: both were primarily text but included charts and graphs, which were in color. The mean Ease-of-use of ESG was 4.79, significantly higher (t = 5.71, df = .47, sig. = 000) than the mean of 3.96 for GMI. This was validated in response to a later bimodal question asking which they found easier: 67.5% replied ESG, while 32.1% replied GMI. ESG was also rated significantly higher for Usefulness (t = 3.21, df = 471, sig. = .001), and Credibility (t = 4.93, df = 471, sig. = .000). Thus, ESG was perceived to be significantly easier, useful, and more credible, despite requiring an extra download step. Next, the hypotheses were analyzed separately for the two databases, first using full-factorial MANCOVA. Following this, split sample (at the median) analyses were conducted in order to make visible the direction of the proposed moderation effects.

Analyses of ESG using MANCOVA are significant, with an adjusted R^2 of .34. Only the main effects of Credibility (P3, F = 1.69*) and Ease-of-use (P4, F = 1.59*) are significant; hypotheses H1 and H2 are not supported. Thus, Credibility and Ease-of-use are associated with perceived information Usefulness for this database. The only significant interaction effect is between Credibility and Expertise (H3a, F = 1.72*), thus H1a, H2a and H4a are not supported for this database. Figure 2 below presents the split-sample analyses of the proposed moderation effects for the ESG database by median Expertise. All regressions are onto perceived Information Usefulness.

The level of self-reported Expertise is quite low, but even below the median of 2.5 the model explains over 18% of the variance in perceived Usefulness of the content delivered by ESG. However, for those reporting expertise levels above 2.5, the model explains significantly more variance in information Usefulness; 33%. The significant interaction effect between Credibility and Expertise

Figure 2. Split-sample analyses of ESG manager.

ESG Manager; low expertise

For above-median expertise (>2.5): F=15.07***, Adjusted R^2 = .334 (3, 109)			
		.579	.564 n/s
H1a	For-Profit	-.392	.696 n/s
H2a	Strategic Ties	-.078	.938 n/s
H3a	Credibility	3.911	.000***
H4a	Ease-of-Use	5.682	.000***

ESG Manager; high expertise

For below-median expertise (<2.5): F=7.42***, Adjusted R^2 = .183 (3, 113)			
		3.664	.000***
H1a	For-Profit	-.973	.33 n/s
H2a	Strategic Ties	-.792	.43 n/s
H3a	Credibility	3.123	.002**
H4a	Ease-of-Use	3.451	.001**

found in the MANCOVA is illustrated here by the higher significance of credibility under higher levels of expertise, as hypothesized (H3a). It seems that in this easier-to-use database, experts make greater use of the Credibility cue as an additional argument factor than novices do. H5 was supported by the fact that the two heuristics describing the database—Ease of use and Credibility—had significant main effects on content usefulness, but those describing the database producer—For-profit and Strategic Ties—did not.

The same analyses as above were repeated for the GMI database. Recall that participants viewed this database as significantly harder to use than ESG: results of a full-factorial MANCOVA are also significant, with an adjusted R^2 of .37. This time only the main effects of Ease-of-use (H4, F = 2.01**) and For-profit status (H1, F = 4.61**) were significant. Further analyses explored the surprising non-significant credibility finding. In a MANCOVA including only main effects, the model was significant with an adjusted R^2 of .28, and in it, only Credibility (F = 2.26***) and For-profit status (F = 3.443*) were significant. Splitting the sample at the median of Expertise revealed that more participants believed themselves to be of low expertise (125) than high expertise (109), and low-expertise users relied more heavily on the Ease-of-use heuristic (F = 2.61**) than the Credibility one (F = 1.79*). Conversely, high-expertise users utilized the Credibility cue (F = 2.12**) but not the Ease-of-use one (although the For-profit cue was significant regardless of expertise level). Thus, while it appears from the overall model that Credibility did not influence Usefulness, it in fact did, but only for the high-expertise users who were fewer in number. Thus, Ease-of-use, Credibility, and For-profit status are associated with perceived information Usefulness for this database, but Experts utilized the Credibility cue, while the non-experts were primarily influenced by the Ease-of-use one. Two significant interaction effects were found: first, between Ease-of-use and Expertise (H4a, F = 1.78*), and second, between For-profit status and Expertise (H1, F = 2.93*). The Strategic-ties cue was not significant alone or in interaction with expertise, thus H2 and H2a are not supported for this database. Figure 3 presents the split-sample analyses of the proposed moderation effects for GMI by median Expertise. We see that experts are not influenced by the Ease-of-use heuristic for this difficult-to-use database.

The split-sample analysis shows that more of the variance in Usefulness is explained under higher levels of expertise, from 26 to 35%, although reported expertise levels are low. Thus, those above the median in expertise are more influenced by these heuristics than those below the median of expertise due to experts' increased reliance on both For-profit status and Credibility, which appear to be functioning as an additional argument factor as proposed. Note that the For-profit cue is negative as hypothesized—being produced by a For-profit company makes the content in this database less useful, at least to experts. Ease-of-use is functioning as a standard heuristic, influencing non-experts

Figure 3. Split-sample analyses of GMI analytics.

GMI Analytics; low expertise

Under below-median expertise (<2.167): F=10.87***, Adjusted R^2 = .264 (3, 122)			
		2.212	.029*
H1a	For-Profit	.179	.859 n/s
H2a	Strategic Ties	.880	.381 n/s
H3a	Credibility	3.755	.000***
H4a	Ease-of-Use	3.549	.001***

GMI Analytics; high expertise

Under above-median expertise (>2.167): F=15.73***, Adjusted r^2 = .351 (3, 106)			
		3.281	.001***
H1a	For-Profit	-3.695	.000***
H2a	Strategic Ties	-.824	.412 n/s
H3a	Credibility	6.669	.000***
H4a	Ease-of-Use	-.036	.971 n/s

more than experts. For this difficult-to-use database, non-experts that perceive it to be difficult to use find the content in it to be less useful than those perceiving it to be easier to use. For experts, how easy it is to use has no bearing on the usefulness of the content it delivers. Thus, the Ease-of-use of the system is more influential to novices—experts don't utilize it as a peripheral cue.

5. Discussion

This research makes a number of contributions to theory. First, it is one of a handful of studies that have investigated validity-seeking in terms of how the design and features of information systems artifacts affect perceptions of the content they deliver. And it is the first to examine the emergent phenomenon of SRDs in this regard. It explores potentially significant heuristic cues that have not yet been studied: For-profit status and the Strategic Tie strength of the organizations that produced these databases. Results of this effort were mixed, since the For-profit status manipulation was successful for GMI but not for ESG. In GMI, it significantly and negatively influenced users against content usefulness, particularly for experts. This confirmed the hypothesized main effect (H1) and interaction effect with expertise (H1a), and is consistent with the use of this cue as an additional argument factor. It is not clear why For-profit status was not influential in ESG. Certainly, the fact that ESG was perceived to be significantly higher in credibility, ease-of-use, and usefulness played a role in this. Perhaps the higher credibility of ESG satisfied users' sufficiency thresholds, making the additional information of the For-profit status cue unnecessary; further research should shed light on this issue.

The second manipulation—Strategic tie strength of the organization producing the database—was non-significant. This was an exploratory operationalization of this construct, although the theory underlying it is quite developed. Further efforts should be made to operationalize this construct more effectively and to assess why the theory supporting a role for this construct was not born out in the data. In sum, the For-profit status of the company producing the database can play a role in validity assessment of database content, and managers of these companies should consider this as they deploy new CSR/ESG information products, perhaps registering as Benefit Corporations.

5.1. Managerial implications

For companies producing SRDs, these results have important implications: given the expense of creating the content for these databases, one would not expect that a simple heuristic cue such as the company's For-profit status would engender significant differences in perceptions of content. This suggests that effort should be put into testing different interfaces regarding heuristic cues displayed, despite the fact that the content is the product. Ease-of-use of the interface is less important for experts. This indicates that when the target audience is lay people, managers should include training with this product, not just on the nature and format of the reports served by the database, but on how to use the search interface. This puts responsibility on database designers to incorporate easy-to-use features so as not to negatively affect the usefulness of the information content.

In general, producers of SRDs need to ensure that they are designed in ways that intentionally account for the heuristics available on the interface. Results suggest that content produced by For-profit companies may be negatively impacted by this choice of governance structure. If companies choose to register as a Not-For-profit or Benefit Corporation, this information should be clearly displayed on the database interface.

5.2. Limitations and future research

First, this model has only been applied to SRDs, so we know nothing about its generalizability to other validity-seeking contexts. However, we know of no theoretical reason to believe that the model would not apply to other such contexts. Findings need to be interpreted in light of the fact that participants were primarily American business school undergraduates (although 30% were International students). Future research should investigate this model as it applies to other demographic groups and types of databases.

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This research investigates how characteristics of a database can affect the extent that its content is useful. Managers of companies that produce this type of content may assume that only experts will use these types of databases, such that using the search interface is trivial. But increasingly consumers are using these databases for investigating the sustainability of products they buy, which represents a potentially valuable new information market. Fundamentally, very different effects were observed during use of the database deemed significantly harder-to-use than the easier one. The researchers did not anticipate this result, and further research is needed to understand the reason for this.

The model offers many potential avenues for extension and future research. For example, to what extent does the For-profit heuristic apply to other database topics, such as medical ones? Why weren't Strategic Ties utilized as a heuristic cue in this context when theory suggests it should be? Could a better operationalization of Strategic Ties manifest their usefulness, or are they not as applicable to this domain as theory suggests? How well does the model apply to the design of MTEC systems (Watts & Wyner, 2011) that are the mobile equivalent of SRDs? There are many directions that future research on this phenomenon can take. Since online content continues to be produced in vast quantities, and is often ambiguous in its validity, it is important to explore and examine the online validity-seeking process in the context of SRDs, particularly since they are increasingly being utilized by lay people.

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