An Evaluation Framework for Outcome and Impact Measures

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ABSTRACT
Competitive intelligence (CI) measurement practices within organizations remain fragmentary and elusive, although prescriptive CI performance and impact measures have been proposed in the literature. This study responds to calls for research into CI measurement in order to examine why organizations fail to measure CI, and to develop an evaluation framework for prescriptive measures that would support the evolution of best practices in measurement. A qualitative study (the ‘users study’) consisting of interviews and shared negotiated texts with 12 users of CI was conducted. Study participants were senior managers and executives who use CI in the course of their work responsibilities at their respective individual organizations. Participants indicated that measurement cost, confused conceptualizations of CI measurement, and skepticism regarding the informativeness of measurement were obstacles to the implementation of CI measurement within their organizations. Although few participants conduct measurement activities, participants were all able to describe the ideal characteristics of CI outcome and impact measures. That list is here combined with the findings of an earlier study (the ‘experts study’) conducted by the authors (Gainor & Bouthillier, 2014), in order to develop the evaluation framework provided here. This study provides a rare account of CI user perspectives on the rationale behind the lack of CI measurement within organizations, and a unique tool, the evaluation framework, which may be used to support both research and training within the field of CI.

Keywords
Competitive intelligence, measurement, outcomes, users

INTRODUCTION
A knowledge-based view of the firm (Grant, 1996) suggests that the information capabilities of organizations determine performance. ‘Performance’ is a complex concept, which for this study denotes the quantity and quality of desired beneficial results accruing due to purposeful organizational activities against yardstick standards (internal or external) of productivity and profitability.

Competitive intelligence (CI) is a type of information service used by organizations: it is a process of collecting and analyzing data and information about the competitive environment, and the outputs or deliverables resulting from that process (Blenkhorn & Fleisher, 2001), with close historic and practical ties to covert intelligence, military intelligence, business intelligence, and market intelligence (Buchda, 2007; Juhari & Stephens, 2006). Various definitions of CI have been provided (Choo, 2001; Bergeron & Hiller, 2002; Bouthillier & Shearer, 2003) but it is generally presented as the collection, analysis and dissemination of publicly available, ethically and legally obtained relevant information as a means of producing actionable knowledge. Actionable knowledge is then a basis for the improvement of corporate decision making and action. In this definition of CI, as in others, it is both the process (the analysis, transmission, etc.) and the product (the information packaged as a report, profile, etc.).

Background
The true value of CI has been defined mostly in relation to decision making (e.g., Hughes, 2005; Teo & Choo, 2001). CI is used to monitor the competitive environment in the belief that competitor activities may be responded to or even anticipated for competitive advantage (Bose 2008; Yap & Rashid, 2011). Managers of organizations have indicated when surveyed that the primary benefit they expect to receive from CI is improved decision-making (Marin & Poulter, 2004), resulting in savings of time and money from improvements to internal business processes (Herring, 2006), improvements in customer service (Qingjiu & Prescott, 2000), and improved ability to anticipate threats and opportunities in the marketplace (Hannula & Pirittimaki, 2003), among others. Most expected organizational outcomes can be loosely grouped under financial outputs, improved client relationships, and innovation in products and services, yet “performance” is rarely assessed by organizations for their CI activities, while those measures in use have been found by CI
practitioners to be of questionable validity (Blenkhorn & Fleisher, 2007; Marin & Poulter, 2004). CI practitioners, when surveyed, have indicated that CI measurement requires further development (Qingjiu & Prescott, 2000).

One recent and significant call for CI measurement has been for measures that take into account the role of CI within decision-making, rather than relying on process measures to represent performance, such as production rates of CI deliverables (Lönnqvist & Pirttimäki 2006; Marin & Poulter, 2004). Measurement would therefore need to capture both CI usage and the outputs and outcomes subsequent to the decision. Any attempt to identify and quantify the role of CI within decision-making, however, presents significant methodological challenges.

One implication of valuating CI in relation to decision-making is that subjective data must be collected from CI users. Kujansivu and Lönnqvist (2009) note that “subjective assessment may be the only practical approach to capturing information about outcomes” (p. 478). Highly subjective satisfaction measures have historically been used as a surrogate measure of outcomes and impact, or performance, in CI and for other information services (Ganesh, Miree, & Prescott, 2004; Poll & Payne, 2006). However, user satisfaction is insufficient as a standalone indicator of performance, since performance is a complex construct (Youthas & Young, 1998). Poll and Payne (2006) in their work on impact measures for libraries have termed user satisfaction “a facile outcome” that does not necessarily speak to the mission of the institution (p. 552). Questions that identify use, application, and perceived benefit must augment questions of user satisfaction in order to generate valid forms of CI measurement.

These challenges for measurement, shared with other information services, are frequently cited in the library and information studies (LIS) measurement literature (e.g., Tenopir, 2012; Town, 2011; Poll & Payne, 2006) and are related to intangible results, secondary effects, and the occasional time lag for results to appear (see for example Kujansivu & Lönnqvist, 2009). Methodological challenges are further complicated in that if the purpose of CI is to improve decision-making, any research into CI value as it affects decision-making must necessarily attempt to quantify cognitive effects.

Several researchers have responded with prescriptive models of measurement to a call made by Prescott and Bharwaj (1995) for metrics to be developed that better enable CI units to assess their role and impact within their organizations, but these have not been evaluated (e.g., Cohen, 2009; Herring, 1996). Comparative discussion regarding conceptual models of measurement is elusive, despite calls for scholarly research and consensus to replace singular reports of practice and conceptualizations unique to the researcher (Blenkhorn & Fleischer, 2007).

In an attempt to respond to calls to develop consensus, calls for more research to develop CI measurement (Wright & Calof, 2006), and to complement existing literature which has traditionally drawn heavily upon CI practitioner perspectives (Ganesh, Miree, & Prescott, 2004), a research study was developed to ask users of CI who are also senior managers and executives within their organizations to discuss the challenges for outcome and impact measurement, and to provide criteria by which prescriptive measurement models might be assessed.

This study builds upon findings in a previous study reported in Gainor and Bouthillier (2014), in which experts in various fields of intelligence with a research or teaching interest in intelligence measurement were interviewed. The two studies, the first “experts study” previously published, and the “users study” reported here, are brought together in the findings and discussion in order to develop a comparative framework, a tool by which prescriptive models of outcome and impact measurement may be comparatively assessed in order to move forward the evolution of best practices.

These two studies were designed to answer the research question, “In light of organizational constraints, which measurement methods identified in the literature are most appropriate for use in determining CI outcome and impact?” by developing an evaluation framework which might then be applied to the measurement methods currently extant in the literature.

**METHODOLOGY**

A qualitative research study was developed in order to interview users of CI. This study was designed to complement an earlier ‘experts’ study conducted in 2012, in which a variety of intelligence measurement experts from various intelligence fields were interviewed regarding their measurement practices and conceptualizations (Gainor & Bouthillier, 2014).

Twelve senior managers and executives from twelve organizations in a variety of industries who use CI to fulfill their job responsibilities participated in the study. Guest, Bunce, and Johnson (2006) found in their analysis of research interviews that for well-designed qualitative research, 12 participants generally provide saturation. In this study, by the tenth interview, saturation was becoming apparent, as a typology of CI sourcing practices began to emerge from the data. Therefore at twelve participants the researcher concluded recruitment for the study, in the belief that a representative range of practices had been obtained for analysis.

Individual open-ended interviews were conducted in-person and over the phone with study participants in the fall of 2013, after which shared negotiated texts were developed between each participant and the researcher, in order to obtain as accurate a description as possible of the participants’ experiences and views.

Yin (1994) has recommended that researchers have participants in qualitative studies check the researcher’s
accuracy and comprehension of the subjective descriptions they provide. Shared negotiated texts are a way whereby the interviewer and interviewee can reach a greater shared understanding. This technique, a process of sharing and editing texts between parties in order to achieve consensus, is relied upon in negotiation and collaborative decision-making (e.g., Raiffa, Richardson, & Metcalfe, 2002) but is adapted here for use in qualitative research, recognizing the interview itself is a negotiation for meaning (Fontana & Frey, 2000).

Participants in the users study were asked to describe their current measurement practices, beliefs in the value or role of measurement for CI, and to provide criteria for ideal CI measurement. Narratives around the value of CI and CI processes were also solicited from participants, to provide context for measurement activities.

Participants in both the experts study and the users study were asked to provide criteria which would ideally be met by models of CI measurement. Findings related to these criteria, in combination with discussions by participants of the users study as to their organizational constraints in regard to measurement, are developed here into an evaluation framework for prescriptive models of CI measurement.

Analysis of the experts study is described in Gainor and Bouthillier (2014). Data analysis for the users study was conducted with comparison tables built in Excel in order to look for patterns in responses. Data was then aggregated to determine overall agreement/disagreement of the participants with researcher statements about CI use. Criteria for measurement and measurement method recommendations were extracted from the shared negotiated texts, compiled, and condensed by removing duplicate responses. Transcription analysis of participant statements regarding CI use, value, and measurement was then completed to examine these statements for key terms and concepts volunteered by participants.

FINDINGS
Findings of the study presented here fall under two headings: organizational constraints, and criteria for measures. In participant discussions of CI use and measurement, elements were identified that inhibit measurement activities, and are presented here to contextualize the measurement criteria. In both studies, participants were asked to describe characteristics of good (useful, acceptable) CI measurement. The criteria they gave are presented here.

Organizational Constraints Described in the Users Study
Participants of the users study reported that their organizations typically do not conduct CI performance measurement of any kind, confirming the findings of other researchers (Hannula & Pirttimaki, 2003; Marin & Poulter, 2004). Those who do have measures in place utilize process measures and user satisfaction measures as a surrogate for assessing the outcomes and organizational impact of CI.

Participants, who were senior managers and executives within their organizations, presented three distinct challenges to CI measurement which may help explain the lack of CI measurement within organizations: conceptualizations, costs, and perceptions of measurement value.

When asked to discuss measurement practices and ideal measurement, participants did not have clear conceptualizations of measurement, and often expressed uncertainty or ignorance regarding potential measures for use, or how to go about discovering suitable measurement tools. Participant comments often failed to distinguish between measurement elements such as methods, tools, the item to be measured, and hoped-for benefits of measurement. Even when discussing the same element, disagreements persisted. For example, participants variously identified beneficial outcomes of CI to be measured as user satisfaction, cognitive effects, decision or activity outcomes, and quality of the CI deliverables.

Participants frequently expressed concern about the costs of measurement, reporting that they were wary of the potential expense of implementing and conducting outcome and impact measurement. Pierre, a participant of the study, stated “... you're never against something that will improve, or make you improve, but it will depend on the cost of it. That's the important question, how much it will cost to implement something, so the return on investment is the big question”. Some believed the expense of CI to be so low within the context of their organizational budget that the costs of measurement would be disproportionately high, leading to poor return on any measurement activity. For many of these organizations, CI activities may be so infrequent or small that the costs of measurement in time and money cannot be justified.

Concerns about the cost-benefit relationship of measurement activities were closely linked to perceptions about the value of measurement itself. While a few participants expressed a belief in the value of performance measurement as a general principle of management, others expressed disbelief that formal measurement activities could tell them anything they didn’t already know. One participant, Brian, stated that he cannot visualize a likely or useful performance measure. Instead, he goes by his instinct as to whether the data is used, useful, and beneficial to the organization as a whole, describing his performance measure as “just my gut feeling on it. That it’s [CI is] useful and effective.....it’s not scientific by any means”. For him, this is the only ‘measure’ he requires. Several participants expressed similar sentiments, commenting that the only ‘real’ measure of value would be “does it provide insight?” or, “did it work?” For these participants, as executives and senior managers within the organization, they considered
their own perception of value to be an adequate standalone measure of CI performance.

It should be noted that participants of this study were employed at organizations whose CI practices ranged in cost from negligible amounts to hundreds of millions of dollars. Yet, curiously, this dismissive attitude toward the value of CI performance measurement did not appear to be related to the size or expense of the CI activities within their organizations.

Additional concerns were expressed as to the feasibility of capturing decision outcomes. For this research CI value was constructed as being its dynamic use in organizational decision-making. Time must be allowed to lapse in order for the results of decisions to occur so that the role of CI in improving decision-making may be assessed. However, this lapse of time means that decision outcomes may become diffuse, with more factors and other decisions diluting or altering any given outcomes. To try and trace the effects or causal relationships of CI in the decision-making process over time was considered by participants to be prohibitively difficult, with little prospective value.

**Criteria for Measures**

As reported in Gainor and Bouthillier (2014) the participants in their experts study provided the following list of criteria for intelligence measurement:

- **Reliable**: not only meaning that the measurement tool be consistent, but that more than one measurement tool is used in a composite or multi-measurement method approach
- **Valid**: the audience and purpose of the measurement activity are addressed and made explicit by the choice of measurement tool(s) and approach(es)
- **Causal**: the measure relates intelligence to beneficial effects (traces causal relationships)
- **Credible**: results obtained are supported by evidence of value, either quantitative or qualitative, positive or negative. The data captured is non-politicized and objectively fair
- **Usable**: the measure is not only easy and simple to use but also to understand, fostering communication between measurer and audience

In addition, two participants of that study suggested that there might exist an ‘acceptable inaccuracy’, recognizing that organizations will be willing to trade a highly accurate but expensive form of measurement for one more cost-effective but less accurate.

Participants of the users study generated the list of criteria below:

- Simple and quick
- Empirical and objective

The lists of criteria from the two studies were combined, and were compressed by eliminating duplicates. Measurement criteria were isolated from issues related to purpose or effect, and from recommendations of method, resulting in the following two lists.

The distilled measurement criteria for use in evaluating prescriptive metrics and measurement tools are:

1. Simple
2. Quick
3. Empirical
4. Inexpensive
5. Reliable
6. Valid
7. Causal
8. Credible (also objective, using acceptable scales)
9. Provides evidence of organizational value
10. Margin of error (partial representation) identified and accepted

Recommendations for measurement methods are:

1. Identify purpose, audience, and phenomena of interest prior to measurement
2. Use indicators to indirectly capture intangibles
3. Incorporate anecdotal evidence
4. Include a financial measure
5. Examine product in quality and use, accounting for quick depreciation of CI
6. Examine the insight provided to the user
7. Provide evidence of behavioural change (e.g., willing to seek out CI in response to need)
8. Identify the role of intelligence in decision making
9. Capture organizational usage in a way that identifies inter-departmental use and varying stakeholder perspectives
10. Use aggregate or multi-method approach
11. Foster communication between measurer and audience using agreed-upon language, etc.
The distilled list of measurement criteria and the measurement method recommendations are provided here as an evaluation tool with which the prescriptive measurement models in the literature may be critically evaluated.

**DISCUSSION**

Researchers who have developed the concepts of measurement, sometimes referred to as “measurement theory” (see Sarle, 1997), have established certain criteria which measures must meet in order to achieve meaningful measurement. Intriguingly, the evaluation criteria supplied by study participants, as represented in the distilled evaluation lists, closely parallel the requirements of measurement theory. These include reliability, validity, and a known margin of error or inaccuracy (Gorad, 2010). Multiple measures that can capture the phenomenon of interest are necessary to ensure that the finding is not an artifact of the measurement tool itself (Churchill, 1974). There is additional need to carefully conceptualize the item to be measured and its indicators, to ensure not only that the indicators are actually related to the item in a cause-and-effect relationship, as indicated by the original list developed in the experts study, but also to ensure that the language and other needs of the audience are met (Carton & Hofer, 2006; Churchman, 1959). In all instances the purpose of the measurement activity needs to be identified as a preliminary step in order to support the validity of the findings (Viswanathan, 2010), supporting the conceptualizations of the measurer.

Aggregate measures, or multi-method measures, are part of the construct of good measurement, and are all the more important in consideration of the fact that immediate short-term measures may be providing the only partial evidence of performance possible of the longer-term performance of CI. An example of such multi-method recommendations was made by Lönnqvist and Pirttimäki (2006) in their case study of a Finnish telecommunications company. They recommended that performance measures should contain direct and objective, direct and subjective, indirect and objective, and indirect and subjective measures. In order to capture, even partially, the role of CI in organizational decision-making, such a multi-pronged approach is necessary in order to capture the multi-faceted aspects of this dynamic relationship.

As discussed in the introduction, previous research has indicated that many organizations fail to implement performance measures for their CI units, but discussion as to why performance measurement, which is standard for so many other business processes and services, is not implemented for CI, has been elusive. By default discussions in the literature regarding the methodological challenges of CI measurement appear to supply the rationale for this lack, such as concerns about quantifying nebulous outcomes (Marshall & de la Harpe, 2009), subjective reporting of decision-makers (Buchda, 2007), obtaining access to decision-makers (Cappel & Boone, 1995), and allowing for sometimes significant time delay for results to be manifested (Kujansivu & Lönnqvist, 2009).

This study however provides empirical data from senior managers and executives who use CI as to other reasons for a resistance to measurement, beyond uncertainty as how to implement it: confused conceptualizations of measurement; concerns regarding disproportionate costs in relation to CI expenses; and a disbelief that formal measurement activities can provide more useful information than “gut instinct” as to whether the CI is adequate to the organization’s needs, or not.

Within the literature may be found prescriptive models of measurement for CI from both scholars and practitioners such as McGongale and Vella (2002), Davison (2000), and Cohen (2009). The two lists of criteria for evaluating measurement, supplied in this paper, provide a tool by which these prescriptive models may be assessed and compared. Comparative testing of these models is one way in which best practices of measurement may evolve. Emerging standardization of simple and cost-effective measures may in turn address many of the concerns about measurement expressed by study participants.

There are some instances when measurement is not necessary. For example, some of the objections regarding costs and return on measurement justify not measuring CI in small organizations or organizations which conduct few CI activities. The attitude of participants who believe that their individual and subjective experience with CI is an adequate assessment of CI performance is however more problematic.

If the object of measurement is simply to confirm whether organizational management is comfortable with what is being done, and that the status quo should be maintained, this kind of “gut instinct” is a perfectly adequate tool. However, CI practitioners are aware of the need for reliable and valid measurement, and have called for its development to advance practices in their field (Qingjiu & Prescott, 2000). If the purpose of measurement is to not just monitor, but improve services and justify investment (Lönnqvist & Pirttimäki, 2006), more formal and valid measurement is necessary, justifying the development of measurement for CI, and its implementation within organizations.

This paper presents a framework for evaluating prescriptive models of CI measurement. The two lists of criteria presented above are tools that need to be framed within the specific constraints that organizations face. The confused conceptualizations of study participants indicate that ideally CI measurement should provide tools that support the measurer in building more careful conceptualizations prior to undertaking the measurement activity. The dismissive attitude toward CI measurement of some senior management suggests that CI practitioners who are anxious to implement measurement and more effectively integrate their services with organizational business processes may
need to use measures which not only take into account the potentially reluctant participation of CI users in measurement activities, but which also help build narratives of value within the organization, taking into account various stakeholder perspectives regarding the value of CI.

Fleisher and Blenkhorn (2001) state that the starting point for measuring CI is the “effectiveness question”, namely, “is CI doing the right job?” (p. 114). Matthews (2011), a practitioner who specializes in library performance measurement, relates outcomes to effectiveness measurement, and the key to answering the question, “Are we doing the right things?” (p. 87). ‘Good’ measurement, then, must take into account the effectiveness of CI in meeting the individual organization’s definition of “the right things”. Determining those right things is a task that must be undertaken in collaboration with multiple groups of stakeholders for the CI services.

CONCLUSION
In responding to calls for CI measurement research which moves the field beyond unique accounts of practice to more scholarly and rigorous examination of measurement (Blenkhorn & Fleisher 2007), the purpose of this research has been twofold. The first was to understand the challenges facing the implementation of CI measurement in organizations. The second was to establish a critical framework that can be used as a starting point for comparative discussions that support an evolution from prescriptive measures to best practices in CI measurement.

The evaluation framework presented here is a unique tool with opportunity to expand comparative discussion amongst researchers regarding measurement. For CI practitioners, the evaluation framework provides a training tool and support for a critical evaluation of the prescriptive CI measurement models available to them.

This study is exploratory and qualitative. One limitation of this study is that the findings are drawn from the described experiences and opinions of the individual participants. As a result, the findings may entail potential inaccuracies, biases, and the fragmentary representation inherent to this study design may affect the interpretation of the findings.

The evaluation framework presented here to assess prescriptive CI measurement is only a starting point. More work is needed to test and refine this framework, and to apply this framework to prescriptive measurement models in the literature. More research is also required to investigate the value of CI, including the role of CI in improving decision-making, in order to understand the potential benefits related to CI use, so that they may be identified for measurement.

It is the hope that this study may prompt conversations between researchers, students, and practitioners in the field of CI measurement that may lead toward consensus of conceptualization and formulation of best practice through systematic testing of measurement models and recommendations in the literature. As previously indicated, much more work remains to be done to establish standards for CI measurement.

ACKNOWLEDGMENTS
Rhiannon Gainor would like to acknowledge that this research was made possible by generous grants and fellowships from the J.W. McConnell Foundation, McGill University, and Fonds de recherche sur la société et la culture (FRQSC). Both authors would like to thank the study participants, who were generously willing to give of their time to this research study.

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