8

Research Article

Daphne Ruth Raban*, Lior Koren

Risk as a Predictor of Online Competitive Information Acquisition

https://doi.org/10.1515/opis-2019-0004 Received July 9, 2018; accepted January 15, 2019

Abstract: This study set out to investigate how personal user traits and behavior and information cues influence the acquisition of online information for actionable decisions. The relationship between personal traits (risk propensity and individual information absorptive capacity), behavioral factors (perceived risk and willingness-to-pay) and informational cues (scenario risk level) was examined by conducting an experiment with 125 mid-level managers. Participants were exposed to high- and low-risk scenarios, given the opportunity to consume free and fee-based competitive information sources, and asked to make a managerial decision. Results of the Willingness-to-Pay (WTP) for information sources indicate: (i) a significant correlation between the perceived risk and the number of competitive intelligence information items bought, (iii) individual absorptive capacity has high internal reliability, and (iv) investment risk propensity and individual information absorptive capacity did not influence WTP or willingness-to-consume competitive intelligence information. Informational cues rather than personal traits impact decision makers' WTP and willingness-to-consume competitive intelligence information. This suggests that best practices should be developed for the use of online information sources in decision-making calibrated to the risk level. Risk level indication may also aid to avoid biases stemming from under- or overuse of information.

Keywords: competitive intelligence, willingness-to-pay (WTP), risk propensity, individual absorptive capacity (IACAP), decision-making, Information Behavior (IB)

1 Introduction

The definition of Competitive Intelligence (CI) has evolved over the years; however, common to most definitions is the intense focus on collecting and handling information with a lesser focus on assessing its actual contribution to decision makers (Markovich, Efrat, & Raban, 2016). Taking a behavioral approach, we aim to start clarifying whether the use of online information for actionable decisions is related to personal traits or to informational cues. Specifically, we examine the relationship between risk propensity and individual information absorptive capacity (personal traits), scenario risk level (informational cues), and perceived risk and willingness-to-pay (behavioral factors). We do so by conducting an experiment with 125 mid-level managers.

CI is the action of gathering, analyzing, and applying information about products, domain constituents, customers, and competitors for the short term and long term planning needs of an organization (Fleisher & Blenkhorn, 2001). Rouach and Santi (2001) defined 'competitive intelligence' as "the art of locating, collecting, processing and storing information to be made available at all levels in the firm, with a view to shaping its future, but also protecting against competitive threat". From an organizational standpoint, CI

^{*}Corresponding author: Daphne Ruth Raban, University of Haifa, Haifa, Israel, E-mail: draban@univ.haifa.ac.il Lior Koren, University of Haifa, Haifa, Israel

is the function responsible for the early identification of risks and opportunities in the market before they become obvious (Comai & Tena, 2007). CI's focus is on external events and trends, with a strong focus on competitors' activities and likely intentions. A key goal is "early warning"—timely alerts that allow decision makers to take preparatory action to maintain competitive advantage.

Generally, prior studies in the domain of CI focus on aspects such as the importance of CI, its contribution to sustainable strategic advantages, CI function position within the organization, CI processes, trends analysis or challenges (Calof, Arcos, & Sewdass, 2017; Maritz & du Toit, 2018). Research has so far largely ignored the factors that affect the perception of CI value by managers (Andreou & Bontis, 2007; Ashton & Stacey, 1995; Azvine, Cui, Nauck, & Majeed, 2006; Desouza & Evaristo, 2006; Dishman & Calof, 2008). Value perception, expressed as willingness-to-pay and items selected, is an indicator of the actual information preferences and behavior (Raban, 2007). In this study, we separate personal traits and inclinations from informational cues in order to examine how each type of variable affects information value perception, and, eventually, decisions taken by managers. Because CI is concerned with early warning detection of external risk signals (Gilad, 2004), we study risk as the main explanatory variable. Risk is divided into two components: risk perception, which depends on informational cues; and risk propensity, which reflects personal attitude toward risk. In addition, as part of the personal traits we develop and examine a new variable which is the individual's ability to absorb and utilize relevant information. We find that decision makers are influenced mostly by informational cues, more so than by personal risk predisposition or individual absorptive capacity.

From a practical decision-making standpoint, a study of CI value perception can contribute to increasing the awareness of managers and organizations about the unexploited potential of CI utilization. From an academic perspective, a study of CI value perception can extend information behavior (IB) research in the domain of CI and by employing behavioral research methods.

The paper is organized as follows. First, we briefly discuss the relevant literature on IB and CI in the context of the perceived value of information displayed by willingness-to-pay. Next, we explain risk propensity, information absorptive capacity, and risk perception. We then develop a set of hypotheses pertaining to how we expect each of these factors to affect different aspects of managers' decision-making in online environments. This is followed by a description of the experiment, sample, tools deployed and variables. The results of the empirical study are reported with respect to our main hypotheses and other significant findings. The paper concludes with a general discussion of the outcomes, their significance and contribution, and also suggestions for further research.

2 Literature review

2.1 Information Behavior and CI

Fisher (2005) defined IB as the manner in which people need, search, manage, obtain and utilize information in different contexts. This definition suggests that IB consists of three main elements: (i) needing information, (ii) seeking information, and (iii) utilizing information. Much IB research focuses on the first two elements and abandons the third element without further examination (Savolainen, 2000), leaving a considerable gap regarding the IB processes taking place once the information is obtained. CI practice allows researchers to study all three elements of IB; however, scant research has studied IB in the specific context of CI to date.

Research on IB suggests three influential dimensions: (i) cognition, (ii) emotion, and (iii) situation (Choo, Detlor, & Turnbull, 2000; Dervin, 2005; Kuhlthau, 1993). Interestingly, although "behavior" is part of the IB concept, a behavioral research approach is not commonly employed. In this study we adopt a behavioral approach to study informational perceptions and choices. We introduce an experiment based on behavioral studies of the perceived value of information.

2.2 Factors Affecting the Perceived Value of Information

To date, empirical IB studies were performed with various groups of professionals. In a study of how CEOs scan their environment for business trends information, Choo (1993) identified several factors that may influence information behavior including; perceived source accessibility, perceived source quality, task complexity, and personal interest and motivation. Perceived source quality was more important than the other factors for the CEOs. Baldwin and Rice (1997) conducted telephone interviews with 100 top-ranked American securities analysts to explore their information seeking behavior. The results showed that individual characteristics (i.e., experience, membership in associations, gender, age, MBA degree) had little influence on their information sources/channels choices and usage. Institutional resources such as staff size, type of firm, location and size of firm had a significant influence on choice of the information sources and communication channels, and, eventually on the outcomes of analysts' activities.

Some studies related aspects of people's interaction with information to what might be loosely called 'personality factors' (Chen, Magoulas, & Dimakopoulos, 2005; Dillingham, Dykes, & Wood, 2012; Ford, Miller, & Moss, 2001; Ford, Wilson, Foster, Ellis, & Spink, 2002; Frias-Martinez, Chen, & Liu, 2007; Heinstrom, 2010; Palmquist & Kim, 2000; Peterson, Rayner, & Armstrong, 2009; Vilar & Žumer, 2008; Wang, Hawk, & Tenopir, 2000; Zhang, 2006). These studies suggest that 'personality factors' affect the information behavior of consumers as reflected in their shopping decisions. The theoretical tension, therefore, is between studies supporting the view of personal characteristics as drivers of IB versus studies finding the opposite.

The current study combines personal characteristics and informational cues in order to determine how each influences decision makers' information source selection and perceived value. The individual variables are: (i) risk propensity and (ii) personal absorptive capacity, which is a new construct offered in this study as an adaptation of the similar construct from the strategy literature. The informational cue that we explore is the level of risk conveyed by text and its perception by the decision makers.

2.3 Individual Risk Propensity and Risk Perception

Research literature usually discusses risk by focusing either on risk perception or on risk propensity (Hanoch, Johnson, & Wilke, 2006; Nicholson, Soane, Fenton-O'Creevy, & Willman, 2005); however, because risk propensity is situational, it is important to understand risk perception and the link between both constructs. In this study we assess both variables and the relations between them.

Risk propensity is the tendency of a decision maker either to take or to avoid risks, e.g., the tendency to choose options with a lower probability of success but greater rewards (Sitkin & Pablo, 1992). This attribute affects the individual's decisions as well as the perceived level of the risk (Forlani, Mullins, & Walker, 2002; Keil et al., 2000). It was found that risk perception partially mediates the effect of propensity to take risk. This suggests that the perceptual framing of a situational context in investors' thought processes reduces the effect of, but does not totally mask, the innate personality traits with respect to the investor's riskseeking or risk-aversion.

Risk consists of two dimensions in a quantitative approach: (i) probability and (ii) result (Fischhoff & Kadvany, 2011). These two dimensions invoke two different behavioral responses for reducing risk level: (i) searching, obtaining and processing information that can increase projected probability of a certain outcome, and (ii) reducing the monetary amount at stake (Cho & Lee, 2006). Perceived risk also reflects the personal attributed importance or meaning of the potential result, which is often associated with negative result (loss situation) as an additional dimension beyond the basic two dimensions mentioned above (Mitchell, 1999). The contribution of this additional dimension to the overall perceived risk is driven by the situational and psychological characteristics of the individual.

Most decisions made by managers take place in uncertain environments; therefore, their judgment involves subjective evaluation of uncertain opportunities and threats that might result from certain actions hence decision-making is associated with taking risk and balancing the monetary outcome with the potential negative result of a certain route of action. In this study we implement two levels of risk by manipulating the monetary risk and the probability of damage to a company in order to learn about risk perception and its effect on information behavior and decision-making.

Information acquisition is followed by reading the information in order to ground a decision. In this context we found it interesting to examine individuals' ability to absorb information and the relationship between this new variable and risk propensity. Absorptive capacity, explained next, has not been studied in relation to IB so far.

2.4 Information Absorptive Capacity at the Individual Level

Information Absorptive Capacity (ACAP) is an important term in the field of organizational research. This term was coined by Cohen and Levinthal (1990) who defined ACAP as the person's ability to identify the value of new external information, to absorb external information and to utilize this information for business purposes. In that study, the researchers indicated that individual employees act as the frontline of the organization and therefore acquiring external knowledge, processing it, assimilating and eventually leveraging this knowledge for achieving business goals becomes their task. This observation suggests that organizational ACAP is fundamentally reliant on the individual employees' ACAP (Volberda, Foss, & Lyles, 2009). In spite of this conclusion, previous studies examined ACAP at the individual's level to a small extent (Lane, Koka, & Pathak, 2006), referring mostly to the levels of the business unit or the entire company (Gupta & Govindarajan, 2000; Pennings & Harianto, 1992; Tsai, 2001). Hence, our motivation is to deepen the understanding of ACAP at the individual level (IACAP) and assess its relevance for decision-making. To this end, we describe in the Method section how we selected a previously validated ACAP scale and adjusted the scale items so they would consistently address individual skills and practices. The results show that this adjustment resulted in high internal reliability.

2.5 Perceived Value and Its Relation to Risk

Willingness-to-pay (WTP) is a known and accepted measure for perceived value assessments (Miller, Hofstetter, Krohmer, & Zhang, 2011). In WTP elicitation, valuators are placed in a position to make a bid for the value of an object (e.g., information product or service). WTP makes it possible to evaluate the monetary value one is ready to forgo to benefit from a reduction in the probability of loss (Jones-Lee, 1974).

Considerable literature has questioned the determinants of the WTP. One important issue is its link to risk aversion. While WTP is a common concept to measure the benefit gained from a reduction in the probability of loss, less is known about how it relates to risk aversion and risk elimination behaviors, and how it is affected by the presence of an exogenous source of risk. Empirical evidence is mixed. Some studies point to a positive relation between WTP and risk aversion (Brouwer, Brander, & Van Beukering, 2008), some say that the relation exists but that it is minor compared to the relation between WTP and loss aversion (Knetsch & Sinden, 1984), and yet other studies find that WTP increases with the reduction of risk (Dachraoui, Dionne, Eeckhoudt, & Godfroid, 2004).

The differing findings may result from differing WTP elicitation methodologies and risk points of reference—whether starting from low or high risk and the extent of change in risk. Alternatively, they may be an indication that the relation between WTP and risk depends on context and reflects both personal risk propensity and risk perceived from context. In the present study we separated the risk points of reference such that we have one scenario referring to high risk and one scenario referring to low risk, as we ascertained by a manipulation check. In addition, we did not present the risk per se by using probabilities. Instead, we presented a managerial snippet which required a funds allocation decision and measured perceived risk. Common to the studies cited above is that risk is positively associated with WTP, hence our first hypothesis is:

It follows that if WTP for information is higher as risk increases, decision makers will want access to more information to reduce the risk in the decision to be made, leading to higher demand for information items. Thus our hypothesis is:

H2: Decision makers will consume more CI items when the situation reflects a higher level of risk compared to a low risk level.

Earlier we explained that risk perception and risk propensity are related such that risk perception moderates innate risk propensity but does not eliminate its effect altogether. Therefore, based on the positive link between risk aversion and WTP we hypothesize:

H3: Decision makers who are risk prone will display lower WTP for CI items.

And, again, because we expect a positive relation between WTP and number of items bought, we hypothesize:

H4: Decision makers who are risk prone will consume fewer CI items.

People with higher IACAP will be able to consume more information items. In order to consume more information items, they will need to adjust their WTP so as to be able to produce a transaction at market price or higher. The IACAP hypotheses are presented in an order parallel to the previous hypotheses:

H5: Decision makers who have high IACAP will have high WTP for CI items.

H6: Decision makers who have high IACAP will consume more CI items.

Figure 1 depicts the relationships suggested in the hypotheses.

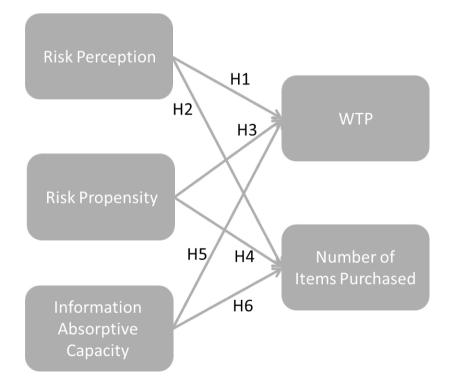


Figure 1: Conceptual model

3 Method

We conducted an online experiment consisting of five parts as shown in Figure 2 and detailed below.

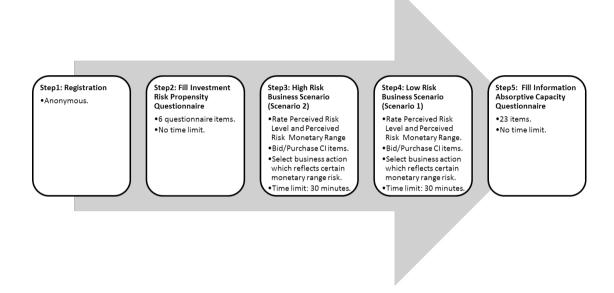


Figure 2: description of the experiment flow

3.1 Participants

A convenience sample of 145 mid-level managers from different industries and sectors in Israel was recruited, out of which 125 participants completed the experiment. The participants were students and graduates of an executive MBA program, currently working in various companies. We assume that the participants' prior experience and exposure to handling tasks similar to the experiment described below was comparable due to homogeneity of the selected participants.

3.2 Tool

The experiment employed a designated online system for experiments in the field of information value elicitation (Raban & Mazor, 2013). This tool allows researchers to build different types of experiments in a modular manner either in Hebrew or English. The system supports features such as: (i) information items store, (ii) knowledge and decision-making games and (iii) bidding mechanism based on various pricing schemes.

For the current study we created an information store which contained specially-prepared CI items such as SWOT analyses, marketing reports, and management profile reports. The information store was available to the participants while they read a business scenario and were asked to respond to a decision task. Information item choice and WTP were recorded together with the decisions and timestamps.

3.3 Procedure

Participants participated in the study online from the location where they usually use the Internet, at work or at home.

In the first part of the experiment, once registered, participants were asked to complete an online risk propensity scale consisting of 6 items (Appendix A). In the second part, participants were presented with two business scenarios that reflected low and high risk levels, respectively. The participants were first asked to rate the perceived risk level and perceived monetary range of the perceived risk for the respective scenarios. In the next stage of the experiment, they were informed that they would later be required to decide on an action for the respective scenarios from a set of options, and that they would be able to purchase different CI information items that might assist them in making these decisions. Following this message, an information store was introduced offering 7 items for each scenario. The items differed by content type, source type, price, etc., as seen in Figure 3. Each participant received a digital wallet with sufficient budget to allow flexible purchasing.



Figure 3: research tool - information store sample screenshot

The results of a pre-test in which five participants took part ensured that the experiment functioned flawlessly from a technical standpoint, spelling and grammar correctness (with minor rephrasing to avoid IB biases), price scheme tuning, information item variety, relevancy of the information items and their content to the scenarios, the decisions required and database updating.

3.4 Variables

The research consisted of the following variables, which, together with the operational definitions, are described in Table 1. The relationship between these variables is described in the conceptual model in Figure 1.

The independent variables measured were:

- Participant's perceived level of risk
- Participant's monetary risk propensity (Appendix A)
- Individual absorptive capacity, IACAP (Appendix B)
- The dependent variables measured were:

- Participant's WTP for information items
- Number of information items bought by the participant

Table 1: Theoretical variables and operational definitions

Theoretical Variable	Operational Definition	Operational Variable				
Perceived Risk Level	Level Subjective risk score on a scale of 1 (low) - 7 (high)					
Monetary Range of Perceived Risk	Subjective monetary risk score on a scale of 1-5: 1 (up to 1 M\$), 2 (2-5 M\$), 3 (5-10 M\$), 4 (10-20 M\$), 7 (over 20 M\$)	Financial Risk				
Risk Score	Average of subjective risk score and subjective monetary risk score	Risk Score				
Investment Risk Propensity	Total score of 6 questionnaire items on a scale of 1 (low) - 7 (high)	Investment Risk Propensity Questionnaire Score				
IACAP	Total score of 23 questionnaire items on a scale of 1 (low) - 7 (high)) Information Absorptive Capacity Questionnaire Score				
WTP	Number of bids placed by the participant	Number of Bids				
	Sum of bids placed by the participant	Sum of Bids				
	Monetary open balance once all desired items are bought Final Balance					
	Max bid by the participant	Max Bid				
	First bid by the participant	First Bid				
Information Consumption	Number of items bought	Number of Items Bought				
Free Information Consumption	Number of free items selected	Number of Free Items Bought				
Decision Risk Level	Monetary risk score of the decision made by the Decision Risk participant on a scale of 1-5: 1 (up to 1 M\$), 2 (2-5 M\$), 3 (5-10 M\$), 4 (10-20 M\$), 7 (over 20 M\$)					

Two-sample t-tests were performed in order to test the hypotheses.

4 Results

In scenario 1, the low risk case, 81% of the participants preferred to purchase CI items before making a decision, 7% used only free items available in our store, 12% played without using any information items, 38% used a combination of free and paid items, and 43% used fee-based items only. In scenario 2, the high risk case, 84% of the participants preferred to purchase CI items before making a decision, 5% used only free items available in our store, 11% played without using any information items, 46% used a combination of free and paid items, and 38% used fee-based items only.

Descriptive statistics of the main research variables are provided in Table 2.

Veriable.	Scenario 1 – low risk			Scenario 2 – high risk		
Variable	N	Mean	Std Dev	N	Mean	Std Dev
Risk Score	125	2.97	1.13	125	3.89	0.74
Individual's Investment Risk Aversion	125	3.59	1.23	125	3.59	1.23
Individual's Absorptive Capacity	125	4.81	1.04	125	4.81	1.04
Number of Bids	125	4.51	3.88	125	4.88	3.81
Sum of Bids	125	2151	2113	125	2446	2013
Number of Items Bought	125	4.45	3.29	125	4.95	3.31
Final Balance	125	3501	425	125	3472	367
Decision Risk	125	2.92	1.36	125	3.18	0.96
Number of Free Items Selected	125	0.74	0.85	125	0.87	0.92

Table 2: Descriptive statistics of the main research variables

4.1 Hypotheses Tests

The experiment results support the two risk perception hypotheses: H1 was confirmed since participants' WTP for information items was significantly higher in the high-risk situation than in the low-risk situation as reflected in higher sum of bids [t(124)=-2.20, p=0.0295]. Furthermore, the test results show a statisticallysignificant difference in the value of the first bid between the high- and low-risk situations (676,24 and 558.14, respectively); H2 was confirmed by a statistically-significant difference in the number of information items bought between the high-risk situation and the low-risk situation [t(124)=-2.27, p=0.0249]. In the highrisk scenario, an average of 4.95 information items were bought compared to 4.45 items for the low-risk scenario. Overall, the risk perception corresponded to the risk described in each scenario: low and high risk were perceived as such and resulted in a significant difference between them [t(124)=-7.79, p<.0001].

The tests results do not support the two risk propensity hypotheses: H3 is rejected since the difference in the sum of WTP bids between the high score risk propensity participants and the low score risk propensity participants was insignificant; H4 is rejected since the difference in the number of items bought between high score risk propensity participants and low score risk propensity participants was insignificant.

The test results also do not support the two IACAP hypotheses: H5 is rejected since the difference in the sum of WTP bids between the high score IACAP participants and the low score IACAP participants was insignificant; H6 is rejected since the difference in the number of items bought between high and low score IACAP questionnaire participants was insignificant.

4.2 Other Results

In addition to testing the hypotheses, several other results are of interest. First, an internal reliability analysis of the IACAP questionnaire (Appendix B) indicates high internal reliability (=0.96). The internal reliability of the risk propensity questionnaire indicates a moderate internal reliability (=0.77).

A variable named Risk Score was calculated by combining the perceived risk and the monetary range of perceived risk. The test results indicate a significant positive relationship between risk score and decision level of risk: In the low-risk scenario: r=0.510, p<.0001; in the high-risk scenario: r=0.382, p<.0001. This indicates that the experimental manipulation worked properly.

We also observed a significant positive relationship between the number of free items used and paid items bought: In the low-risk scenario: r=0.541, p<.0001; In the high-risk scenario: r=0.592, p<.0001.

5 Discussion

In the present research we studied the information behavior of decision makers by examining the relationship between risk perception, risk propensity and IACAP and the participants' WTP and willingness-to-purchase CI information items. Overall, demand for and value assigned to CI items offered in the store were high, as more than 80 percent of the players purchased information before making their decisions. The analysis results indicate that the IB of decision makers is more dependent on the informational cues of the decision situation itself than the personal characteristics of the decision maker. Participants' WTP and number of CI information items purchased were higher in higher risk situation comparison to lower risk situation while no relationship was found between personal risk propensity or IACAP and information consumption patterns in this experiment.

The research hypotheses were partially accepted: The research findings suggest that the IB of decision makers manifested by WTP and willingness to purchase information items facing risky situations is in line with Choo's (1993, 2000) observations mentioned in the literature review. Concerning risk propensity, the findings do not suggest a relationship between this factor and individuals' IB in the domain of CI in contrast to previous observations of high risk propensity limiting the extent of information search (Taylor & Dunnette, 1974).

The findings indicate that there is no relationship between IACAP, which is an individual behavioral characteristic, and the other variables related to IB in the case of CI. This finding stands in contrast to other IACAP theories and concepts (Delmas, Hoffmann, & Kuss, 2011; ter Wal, Criscuolo, & Salter, 2011). However, we should keep in mind that the research in this field is relatively new. The internal reliability of the IACAP questionnaire designed and applied in this study (Appendix B) was high and can serve future studies in this field.

We observed a relationship between the perceived risk level and the chosen decision risk level which suggests that the experiment risk perception manipulation was effective. Beyond the reliability of this manipulation this finding points out that managerial decisions can be influenced by manipulating the prominence of the risk at hand. This leads to increased consumption of and higher bids for information items by managers.

In addition to the research hypotheses, we also examined the IB of participants in the context of free items. The concept of free information received some research attention in the last decade (Regner, Barria, Pitt, & Neville, 2010; Shampanier, Mazar, & Ariely, 2007). It is of interest here since it may reveal IB biases which have practical implications. The present study shows that decision makers use free information items mostly in conjunction with paid CI information items. In a sense, the use of free information items may entice people to use more information in general, even for a fee. Some support may come from previous research that showed how social activity, which is free, enhances economic activity (Raban, 2008). The relation between free and paid information items should be explored in future research. A minority of the participants (5-7%) sufficed with free information only, i.e., they preferred to use information (as opposed to 11-12% who used none), but they did not cross the payment chasm despite having a generous play-money account.

5.1 Contributions to Theory and to Practice

In the literature review we presented a theoretical tension between studies supporting the view of personal characteristics as drivers of IB versus studies finding the opposite. Our findings show that informational cues dominate information consumption preferences. Inherent demand for information seems to be a personal attribute as the percentage of participants who bought information items was fairly constant across the low- and high-risk scenarios, yet the value assigned to information was higher when the scenario risk was high. The number of items bought was also larger for the high-risk scenario.

Overall, we observe that creating a market for information and delivering clear cues in the task lead to adjusted information consumption. Situational factors influence information evaluation and consumption

(information behavior) while personal characteristics do not in the business decision-making scenario used here.

The internal reliability of the IACAP questionnaire designed and utilized in this study was high, yet there is no relationship between IACAP, which is an individual behavioral characteristic, and the other variables related to IB in the case of CI. This provides further support that informational cues dominate over personal dispositions.

From a practical perspective, managerial decisions can be influenced by manipulating the prominence of the risk at hand. Broad implementation could lead to considerable time savings by reducing the consumption of unnecessary information and focusing attention on high-risk decision situations.

5.2 Limitations and Future Research

This research has certain limitations. The fact that we used a non-probabilistic sampling approach and relied on convenience sampling hinders the generalization of the study conclusions over wider populations, especially since the selected participants represent a small demographic group. This study sought to match the scenarios to the population. In future research, it would be interesting to see a similar study that looks at other elements of the population with matching scenarios.

In addition, the current study offered a store with a small number of CI information items. It would be interesting to explore the limits of information consumption and the point at which information overload takes place.

Procedure time may vary among participants and thus serve as a potential limitation. However, the time allowed for the participants to complete the procedure was identical and controlled by setting a time limit in the tool utilized for the procedure including recording the procedure time of each participant.

This research can serve as starting point for further studies of decision makers' economic IB in CI as well as other domains. Variations of this research include: (i) The relationship between the information item source authority and the perceived value of information, (ii) The relationship between situation type (gain vs. loss) and the perceived value of information.

Free information served as enticement for purchasing information, not as a substitute. This provides support for the "freemium" business model for information, which is prevalent in software markets. The "freemium" model requires research and refinements in order to adapt it to content production.

In this paper, we show that situational factors influence information evaluation and consumption while personal characteristics do not. Nevertheless, further examination should be considered in light of the possibility that such personal characteristics might, in fact, act as mediators. The IACAP questionnaire (Appendix B) which was a modification and customization of questionnaires from previous studies to the level of the individual was found to have high internal reliability but with no prediction ability in respect to the participants' information behavior. This is surprising since it stands to reason that searching for and absorbing new knowledge would be related to information evaluation and consumption. This link awaits further conceptualization and empirical work.

In terms of references, many of the studies cited are over 10 years old, however, further literature review did not reveal significant newer studies that relate to the subject, variables or hypotheses of this research. For this study, we developed a unique behavioral experiment online which can host a variety of future studies on the link between information behavior and decision-making.

References

Andreou, A. N., & Bontis, N. (2007). A model for resource allocation using operational knowledge assets. The Learning Organization, 14(4), 345-374.

Ashton, W. B., & Stacey, G. S. (1995). Technical intelligence in business: Understanding technology threats and opportunities. International Journal of Technology Management, 10(1), 79-104.

- Azvine, B., Cui, Z., Nauck, D., & Majeed, B. (2006). Real time business intelligence for the adaptive enterprise. Paper presented at the 8th IEEE International Conference on Enterprise Computing, E-Commerce, and E-Services, San Francisco, CA. 29-39.
- Baldwin, N. S., & Rice, R. E. (1997). Information-seeking behavior of securities analysts: Individual and institutional influences, information sources and channels and outcomes. *Journal of the American Society for Information Science*, 48(8), 674-693.
- Brouwer, R., Brander, L., & Van Beukering, P. (2008). "A convenient truth": Air travel passengers' willingness to pay to offset their CO 2 emissions. *Climatic Change*, 90(3), 299-313.
- Calof, J., Arcos, R., & Sewdass, N. (2017). Competitive intelligence practices of european firms. *Technology Analysis & Strategic Management*, , 1-14.
- Chen, S. Y., Magoulas, G. D., & Dimakopoulos, D. (2005). A flexible interface design for web directories to accommodate different cognitive styles. *Journal of the American Society for Information Science and Technology, 56*(1), 70-83.
- Cho, J., & Lee, J. (2006). An integrated model of risk and risk-reducing strategies. Journal of Business Research, 59(1), 112-120.
- Choo, C. W. (1993). Environmental scanning: Acquisition and use of information by managers. Paper presented at the *In ME Williams (Ed.)*, Annual Review of Information Science and Technology (Vol. 28),
- Choo, C. W., Detlor, B., & Turnbull, D. (2000). Web work: Information seeking and knowledge work on the world wide web. Dordecht, The Netherlands: Kluwer Academic Publishing.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Comai, A., & Tena, J. (2007). Early warning systems for your competitive landscape. *Competitive Intelligence Magazine*, 10(3), 7-11.
- Dachraoui, K., Dionne, G., Eeckhoudt, L., & Godfroid, P. (2004). Comparative mixed risk aversion: Definition and application to self-protection and willingness to pay. *Journal of Risk and Uncertainty, 29*(3), 261-276.
- Delmas, M., Hoffmann, V. H., & Kuss, M. (2011). Under the tip of the iceberg: Absorptive capacity, environmental strategy, and competitive advantage. *Business & Society*, 50(1), 116-154.
- Dervin, B. (2005). What methodology does to theory: Sense-making methodology as exemplar. In K. E. Fisher, S. Erdelez & L. (. F.). McKechnie (Eds.), *Theories of information behavior* (pp. 25-30). Medford, New Jersey: Information Today.
- Desouza, K. C., & Evaristo, J. R. (2006). Project management offices: A case of knowledge-based archetypes. *International Journal of Information Management*, 26(5), 414-423.
- Dillingham, I., Dykes, J., & Wood, J. (2012). Characterising locality descriptions in crowdsourced crisis information. Paper presented at the GIS Research UK 20th Annual Conference, Lancaster University, UK.
- Dishman, P. L., & Calof, J. L. (2008). Competitive intelligence: A multiphasic precedent to marketing strategy. *European Journal of Marketing*, 42(7/8), 766-785.
- Fischhoff, B., & Kadvany, J. (2011). Risk: A very short introduction Oxford University Press.
- Fisher, K. E., & McKechnie, L. (2005). Theories of information behavior. Medford, New Jersey: Information Today, Inc.
- Fleisher, C. S., & Blenkhorn, D. L. (2001). Managing frontiers in competitive intelligence Greenwood Publishing Group.
- Ford, N., Miller, D., & Moss, N. (2001). The role of individual differences in internet searching: An empirical study. *Journal of the American Society for Information Science and Technology, 52*(12), 1049-1066.
- Ford, N., Wilson, T., Foster, A., Ellis, D., & Spink, A. (2002). Information seeking and mediated searching. part 4. cognitive styles in information seeking. *Journal of the American Society for Information Science and Technology, 53*(9), 728-735.
- Forlani, D., Mullins, J. W., & Walker, O. C. (2002). New product decision-making: How chance and size of loss influence what marketing managers see and do. *Psychology & Marketing*, 19(11), 957-981.
- Frias-Martinez, E., Chen, S. Y., & Liu, X. (2007). Automatic cognitive style identification of digital library users for personalization. *Journal of the American Society for Information Science and Technology, 58*(2), 237-251.
- Gilad, B. (2004). Early warning: Using competitive intelligence to anticipate market shifts, control risk, and create powerful strategies. NY: Amacom.
- Gupta, A. K., & Govindarajan, V. (2000). Knowledge flows within multinational corporations. *Strategic Management Journal*, 21(4), 473-496.
- Hanoch, Y., Johnson, J. G., & Wilke, A. (2006). Domain specificity in experimental measures and participant recruitment: An application to risk-taking behavior. *Psychological Science*, *17*(4), 300-304.
- Heinstrom, J. (2010). From fear to flow: Personality and information interaction. Oxford, UK: Chandos Publishing.
- Jones-Lee, M. (1974). The value of changes in the probability of death or injury. *The Journal of Political Economy, 82*(4), 835-849.
- Keil, M., Tan, B. C., Wei, K., Saarinen, T., Tuunainen, V., & Wassenaar, A. (2000). A cross-cultural study on escalation of commitment behavior in software projects. *Mis Quarterly*, 24(2), 299-325.
- Knetsch, J. L., & Sinden, J. A. (1984). Willingness to pay and compensation demanded: Experimental evidence of an unexpected disparity in measures of value. *The Quarterly Journal of Economics*, 99(3), 507-521.
- Kuhlthau, C. C. (1993). A principle of uncertainty for information seeking. Journal of Documentation, 49(4), 339-355.
- Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: A critical review and rejuvenation of the construct. *Academy of Management Review*, 31(4), 833-863.

- Maritz, R., & du Toit, A. (2018). The practice turn within strategy: Competitive intelligence as integrating practice. South African Journal of Economic and Management Sciences, 21(1), 14.
- Markovich, A., Efrat, K., & Raban, D. R. (2016). The impact of perceived quality of web information on information use and company performance: A knowledge-based view. Paper presented at the Euram 2016, Paris.
- Miller, K. M., Hofstetter, R., Krohmer, H., & Zhang, Z. J. (2011). How should consumers' willingness to pay be measured? an empirical comparison of state-of-the-art approaches. Journal of Marketing Research, 48(1), 172-184.
- Mitchell, V. (1999). Consumer perceived risk: Conceptualisations and models. European Journal of Marketing, 33(1/2), 163-195.
- Nicholson, N., Soane, E., Fenton-O'Creevy, M., & Willman, P. (2005). Personality and domain-specific risk taking. Journal of Risk Research, 8(2), 157-176.
- Palmquist, R. A., & Kim, K. (2000). Cognitive style and on-line database search experience as predictors of web search performance. Journal of the American Society for Information Science, 51(6), 558-566.
- Pennings, J. M., & Harianto, F. (1992). The diffusion of technological innovation in the commercial banking industry. Strategic Management Journal, 13(1), 29-46.
- Peterson, E. R., Rayner, S. G., & Armstrong, S. J. (2009). Researching the psychology of cognitive style and learning style: Is there really a future? Learning and Individual Differences, 19(4), 518-523.
- Raban, D. R. (2007). User-centered evaluation of information: A research challenge. *Internet Research*, 17(3), 306-322.
- Raban, D. R. (2008). The incentive structure in an online information market. Journal of the American Society for Information Science and Technology, 59(14), 2284-2295.
- Raban, D. R., & Mazor, M. (2013). The willingness to pay for information in digital marketplaces. Lecture Notes in Business Information Processing, 158, 267-277.
- Regner, T., Barria, J. A., Pitt, J. V., & Neville, B. (2010). Governance of digital content in the era of mass participation. Electronic Commerce Research, 10(1), 99-110.
- Rouach, D., & Santi, P. (2001). Competitive intelligence adds value:: Five intelligence attitudes. European Management Journal, 19(5), 552-559.
- Savolainen, R. (2000). Incorporating small parts and gap-bridging: Two metaphorical approaches to information use. The New Review of Information Behaviour Research, 1(January), 35-50.
- Shampanier, K., Mazar, N., & Ariely, D. (2007). Zero as a special price: The true value of free products. Marketing Science, 26(6), 742.
- Sikkens, A. (2013). The joint influence of personality traits and individual absorptive capacity on innovation activities in SME's. The Netherlands: University of Twente.
- Sitkin, S. B., & Pablo, A. L. (1992). Reconceptualizing the determinants of risk behavior. Academy of Management Review, 17(1), 9-38.
- Taylor, R. N., & Dunnette, M. D. (1974). Influence of dogmatism, risk-taking propensity, and intelligence on decision-making strategies for a sample of industrial managers. Journal of Applied Psychology, 59(4), 420-423.
- ter Wal, A., Criscuolo, P., & Salter, A. (2011). Absorptive capacity at the individual level: An ambidexterity approach to external engagement. Paper presented at the DRUID 2011-INNOVATION, STRATEGY, and STRUCTURE-Organizations, Institutions, Systems and Regions, Copenhagen, Denmark.
- Tsai, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. Academy of Management Journal, 44(5), 996-1004.
- Vilar, P., & Žumer, M. (2008). Perceptions and importance of user friendliness of IR systems according to users' individual characteristics and academic discipline. Journal of the American Society for Information Science and Technology, 59(12), 1995-2007.
- Volberda, H., W., Foss, N. J., & Lyles, M. A. (2009). Absorbing the concept of absorptive capacity: How to realize its potential in the organization field. 21(4), 931-951.
- Wang, P., Hawk, W. B., & Tenopir, C. (2000). Users' interaction with world wide web resources: An exploratory study using a holistic approach. Information Processing & Management, 36(2), 229-251.
- Zhang, L. (2006). Perspectives on the nature of intellectual styles. New York: Springer Publishing Company.

APPENDIX A: Investment risk assessment questionnaire

The following items constituted the risk propensity questionnaire, administered before the business scenarios, and measured on a 1-7 Likert scale (1=completely disagree, 7=completely agree).

- 1. I find it more important to make cautious monetary investments and gain secure profit than taking risk which might yield higher profits.
- 2. I don't invest in stocks because it's too risky
- 3. I'm willing to take a loan for investment that might yield profit.
- 4. I want to be sure that my investments are secure.
- 5. I'm more and more convinced that I should take more financial risk if I wish to improve my financial situation.
- 6. I'm willing to risk a monetary loss if there's a chance that I will profit.

APPENDIX B: IACAP questionnaire based on (Sikkens, 2013; ter Wal et al., 2011)

Item #	Item Description					
1	I often apply newly acquired knowledge to my work					
2	I am always actively looking for new knowledge for my job					
3	I intentionally search for knowledge in many different areas to look 'outside the box'					
4	I communicate newly acquired knowledge that might be of interest for our company					
5	I often sit together with colleagues to come up with good ideas					
6	I exploit new knowledge to create new products, services, or work methods					
7	I attend meetings with people from different departments to come up with new ideas					
8	I develop new insights from knowledge that is available within our firm					
9	I easily identify what new knowledge is most valuable to us					
10	I constantly consider how I can apply new knowledge to improve my work					
11	I can turn existing knowledge into new ideas					
12	I keep track of emerging trends by reading different sources (journals, internet etc.)					
13	I obtain external knowledge through interaction with external partners					
14	I read magazines and newspapers every day to keep up-to-date on our markets					
15	I process external knowledge to get sense of its value and meaning					
16	I critically assess the value of external knowledge against business needs					
17	I comprehend how external knowledge connects to ongoing business activity of my organization					
18	I repackage external knowledge to make sure it gets attentions internally					
19	I diffuse external knowledge to other parts of the organization					
20	I overcome resistance to guarantee the external idea is brought to fruition					
21	I take action to make sure potential of external knowledge taken up by the organization					
22	I make sure external knowledge is implemented even if the idea was not originally mine					
23	I take action to implement external knowledge in my work					