ISSN 1392-1142
ORGANIZACIJŲ VADYBA:
SISTEMINIAI TYRIMAI: 2005.35

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Combating Information Anxiety: A Management Responsibility

The paper analyzes the increase of information in knowledge-based economy that causes information anxiety especially amongst middle managers. The author presents an empirical examination of Canadian Public Service middle managers where information anxiety was relatively low though accessing information appeared a more troubling problem than information overload.

Keywords: knowledge management, information anxiety, middle managers, information overload.

Straipsnyje analizuojamas kiekybinis informacijos duomenų padidėjimas žinių ekonomikoje, kuris sudaro sąlygas atsirasti informacijos netikrumui ypač viduriniojo lygio vadovų lygmenyje. Autorius pristato empirinį tyrimą, kurį atlikto Kanados viešųjų paslaugų sektoriuje ir pateikia išryškėjusius rezulatatus: informacijos netikrumas šiame sektoriuje viduriniojo lygio vadovų lygmenyje buvo mažas, o informacijos prieinamumas buvo nurodytas kaip didesnė problema nei informacijos perteklius.

Raktiniai žodžiai: žinių vadyba, informacijos netikrumas, viduriniojo lygio vadovai, informacijos perteklius.

В статье анализируется количественное увеличение информационных данных в экономике знаний, что создает условия проявлению фактов неточности информации, особенно на уровне среднего руководящего звена. Автор представляет эмпирическое исследование, проведенное в Канаде, на базе сектора общественных услуг и приводит выявленные результаты: неточность информации в данном секторе на уровне среднего руководящего звена невелика, а проблема доступа к информации была указана как более значимая, нежели проблема избытка информации.

Ключевые слова: менеджмент знаний, неточность информации, руководители среднего уровня, избыток информации.

Introduction

The esteemed management guru, Ikujiro Nonaka argues, "In an economy where the only certainty is uncertainty, the only sure source of lasting competitive advantage is knowledge." (1998, p. 22) Other management connoisseurs advocate a myriad of reasons why enterprise leaders would wish to consider the management of organizational knowledge. The depth and breadth of these motives is colossal, including challenges such as globalization (Johne, 2001; Prusak, 2001; Wilson, 2001), deregulation (Wilson, 2001), technology (Wilson, 2001), downsizing (Johne, 2001; Wilson, 2001), and information overload (Johne 2001). The final motivator elucidates why the management of knowledge ought to be an immediate priority, in order to achieve a sustainable organizational advantage, for profit, not for profit, and government organizations.

Today, more than ever, the enterprise entity must be acutely aware of all its inner workings. The recent sensational failure of apparent stalwart corporations reinforces the need for executives to be well informed. No longer is it acceptable for the corporate officers to plead ignorance. In order to gain and maintain the trust, respect and confidence of

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all stakeholders, executives must know all there is to be known of their organization. The stakeholders will hold the leaders of organizations suffering from enterprise dementia responsible for the tragic consequences of events caused by a lack of knowledge.

This paper seeks to examine the components of the organizational ailment entitled information anxiety with a view to determining if some types of middle managers report lower levels than others. To achieve the aim, a survey instrument was administered to a group of Canadian Public Service middle managers. The data analysis determined a number of interesting findings, which were used to determine the rights of middle managers and the responsibilities of the enterprise executives.

Literature Review

Neither information overload nor the study of the subject is new. According to David Bawden, more than 245 academic papers were produced on the subject between 1972 and 2000 (2001). Predictably, despite the vast quantity of research, there is not a single accepted definition for information overload. In fact, there is even debate about the best term to use. Many suggest information overload (Speier, Valacich, Vessey, 1999; Bawden, 2001) whilst others recommend terms such as information anxiety (Wurman, 1989) and cognitive overload (Kirsh, 2000). Despite the variety of labels and characterizations, there are a number of recurring themes.

C. Speier et al. (1999) state, "information overload occurs when the amount of input to a system exceeds its processing capacity" (p. 338). This definition assumes that quantity alone is the concern and therefore does not consider if the quality of information is relevant to the problem. D. Bawden (2001) writes, "information overload is that state in which available, and potentially useful, information is a hindrance rather than a help" (p. 6). D. Bawden widens the scope of the definition by suggesting that relevance may be an important factor.

T. D. Wilson (2001) adds value to the debate by including two additional factors. First, he divides the problem into two parts, a personal problem, and an organizational problem. Second, he introduces the concept of perception to the definition. In other words, the decision if a problem exists or not lies with the affected person or organization. T. D. Wilson defines personal information overload as "a perception on the part of the individual (or observers of that person) that the flow of information associated with work tasks is greater than can be managed effectively" (p. 113). T. D. Wilson adds organizational information overload is "a situation in which the extent of perceived information overload is sufficiently widespread within an organization as to reduce the overall effectiveness of management operations" (p. 113).

Others broaden the scope even further by dealing with issues of infrastructure and the uncertainty surrounding the existence of a particular piece of information. For example, in his book *Information Anxiety*, Richard Wurman defines Information Anxiety as "the black hole between data and knowledge. It happens when information doesn't tell us what we want or need to know" (1989, p. 34). D. Kirsh (2000) opted not to provide an actual definition; instead, he related four causes of cognitive overload, which are too much information supply, too much information demand, the need to deal with multi-tasking and interruption, and the inadequate workplace infrastructure to help reduce metacognition.

R. Wurman introduces a novel notion whilst describing information anxiety by stating, "Information anxiety can afflict us at any level and is as likely to result from too much information as too little information" (1989, p. 44). This concept is fundamental to com-

prehend, as many researchers focus entirely on the idea of information overload and thus infer that the only challenge is too much information. R. Wurman notes that a major cause of information anxiety is the uncertainty surrounding the existence of a particular piece of information.

Based on recent knowledge management studies these wider characterizations appear more appropriate. For example, the authors of Gartner Research's Information Overload Survey concluded there are four information issues affecting competition: siloed information; too much information; unindexed information; and ineffective searching procedures (Linden, Ball, Arevolo & Haley, 2002). In a second report, Linden (2001) suggests there are seven drivers of information overload: quantity; relevance; redundancy; information illiteracy; unqualified information; distraction by the obvious and the glossy; and business models struggling.

The consideration of the wider classification of this information challenge, as suggested by R. Wurman (1989), D. Kirsh (2000), A. Linden (2001), and A. Linden et al. (2002) is more pertinent than a study focused solely on some of the narrow definitions provided. The latter implies a technological solution to reduce the quantity of information, perhaps by eliminating duplicate data. This may ease the size of the problem and may well be a part of the ultimate solution; however, the challenge is more complex and not merely an issue of quantity. R. Wurman, D. Kirsh, and A. Linden underscore other associated concerns, which from a management point of view are equally important. For example, simply reducing the quantity of information will do nothing to assist in R. Wurman and D. Kirsh's concerns of not knowing where to find information.

R. Wurman theorizes there are five broad circumstances, which are liable to initiate information anxiety. Other research supports all five ideas as reported above. The same circumstances were used to gauge information anxiety within the population that was researched. The five components of information anxiety are:

1. Not understanding information;
2. Feeling overwhelmed by the amount of information to be understood;
3. Not knowing if certain information exists;
4. Not knowing where to find information; and
5. Knowing exactly where to find the information, but not having the key to access it (Wurman, 1989).

Hypotheses

The specific research question for this project was *Do some types of middle managers report lower levels of information anxiety as a result of knowledge management?* A large scale Public Service Survey (PSC, 2000) combined other knowledge management related research projects (Giunipero, Dawley, Anthony, 1999; Sveiby, Simons, 2002; Reffell, Waterson, 2001; Allen, Griffeth, 1997) suggest that demographics may play an important role.

Many researchers have examined the relationship between demographics and the level of information overload (a component of information anxiety). The most studied area is almost certainly gender. For example, K. Sveiby and R. Simons reported no significant difference between genders in their study of collaborative climate (2002). D. Allen and R. Griffeth's analysis concluded that female employees experienced less information overload (1997) while J. Reffell and S. Waterson concluded that women reported feeling overloaded more frequently than did men (2001). Though the literature is inconclusive, the research question remains important, specifically is there a relationship between demographics and the level of information anxiety reported. Therefore, the following was hy-

pothesized:

H1: Women report the same level of information anxiety as do men.

H2: More experienced middle managers report the same level of information anxiety as do less experienced middle managers.

H3: University graduates report the same level of information anxiety than do non-graduates.

H4: Managers whose first official language is French report the same level of information anxiety as do managers whose first official language is English.

Research Methodology

Instrument

The instrument for this project was a survey grounded in traditional research methodology and statistical analysis. A series of succinct survey questions were scripted or adopted from other projects questions, based on established valid research. Qualitative questions were incorporated to build on the results of the quantitative responses. The questionnaire was piloted with a test group prior to soliciting responses from a group of Government middle managers. Finally, the outcomes were examined to determine if one could deduce the relationship.

Information Anxiety

R. Wurman's theory of Information Anxiety, which is supported by other research, forms the basis of the malady under study (Linden et al., 2002; Linden, 2001; Kirsh, 2000). R. Wurman's conceptual framework includes five subcomponents that collectively may gauge the level of information anxiety within a population. Therefore, respondents rated each of the five elements of the dependent variable of Information Anxiety (IA). Based on their responses, each respondent was assigned an Information Anxiety score, which was the mathematical sum of the five components. This may be expressed mathematically as *Figure 1*.

Information Anxiety (IA)	=	Understanding Information (UI)	+	Information Overload (IO)	+	Knowing Information Exists (IE)	+	Finding Information (FI)	+	Accessing Information (AI)

where:

Label	Values	Level of Measurement	Measure of Central Tendency	Measure of Dispersion
Understanding information (UI)	Likert 1-5	Interval	Mean	Variance Standard Deviation
Information Overload (IO)	Likert 1-5	Interval	Mean	Variance Standard Deviation
Knowing information exists(IE)	Likert 1-5	Interval	Mean	Variance Standard Deviation
Finding information (FI)	Likert 1-5	Interval	Mean	Variance Standard Deviation
Accessing information (AI)	Likert 1-5	Interval	Mean	Variance Standard Deviation

Fig. 1. **Dependent variable: information anxiety**

How much do you agree/disagree with the following statements [based on the scenario described]?

1. I would not understand information required to complete tasks.
2. I would feel overwhelmed by the amount of information to be understood.
3. I would not know if certain information exists.
4. I would not know where to find information.
5. I would know exactly where to find the information, but I would not have the key to access it.

Fig. 2. **Dependent variable questions**

The instrument for the dependent variable was a survey questionnaire, which included a number of management scenarios. For each scenario, the respondents answered five questions related to information anxiety (see Figure 2) using a five-point Likert scale where the higher score indicates a higher level of information anxiety (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; and 5 = strongly agree). Based on responses to the following statement, each participant was assigned a level of information anxiety *(Figure 2)*.

Validity

This measure had high face validity as each question was scrutinized and modified until the researcher was convinced that it was an accurate measure of the desired outcome. As this notion was supported by considerable research, as described in the literature review, one may assume there is also a high level of content validity. The level of measurement was interval, based on a five-point Likert Scale (Trochim, 2001), which aided in increasing the construct validity.

Demographics

Several other projects have considered the relationship of demographic data with the management of management within organizations; however, no conclusive research was discovered that suggests a clear relationship between the dependant variable and the demographic data. Whilst considering the collaborative climate of organizations, Sveiby and Simons reported no significant difference between genders; however, they did find that older, more experienced, and higher educated employees regard the collaborative climate more favorably (2002).

Sample

At present, the Public Service middle management population is approximately 26,000; this comprises all members of a group re-

Table 1

Demographic descriptive statistics

Label	Values	Level of Measurement	Measure of Central Tendency	Measure of Dispersion
Public Servant Experience	0 – 0-9 1 – 10-19 2 – 20-29 3 – 30 or more	Ordinal	Median	Standard Deviation
Language	0 – French 1 – English	Nominal	Mode	Index of Qualitative Dispersion (IQV)
Gender	0 – Male 1 – Female	Nominal	Mode	Index of Qualitative Dispersion (IQV)
Education	0 – Pre University 1 – Undergraduate 2 – Graduate 3 – Doctoral	Ordinal	Median	Standard Deviation

ferred to as the Executive Succession or Feeder Group. By definition the group includes all Public Servants in the grades of Ex-minus-1, Ex-minus-2 and Ex-equivalent, in other words, the group most likely to become the next generation of Government executives (PSC, 2002).

As the population was expected to be relatively difficult to reach, the snowball sampling technique was used (Trochim, 2001). In order to increase the sample frame and therefore increase the external validity, a wide audience of middle managers was desired. In an effort to ensure the sample was representative of the population, potential respondents from a wide variety of Government departments were targeted. Initial respondents were solicited by contacting members of the Government management forums, in turn it was expected they would "snowball" the survey to their colleagues.

Questionnaire

The questionnaire was hosted on the Internet and therefore available to the entire population. The location was www.kmsurvey.net , a name that is easy to remember and intuitive. An expert panel piloted the survey questions, with a view to reducing confusing or redundant questions and thereby increasing the number of usable responses.

The questionnaire was available in French and English, thus allowing respondents to complete the survey in the official language of their choice. The questions were developed in English, translated in French and then back to English using two separate software translation packages. This reverse translation added integrity by ensuring the questions are accurately translated. Next, to ensure both versions of the survey impact the same meaning, a bilingual expert panel reviewed the final surveys. The task of the panel was to ensure the transliteration of the questions, that is, they were to ensure the sense of the questions was the same, even if this demanded different style or terminology.

Data Collection

The catalyst for the data collection was a bilingual email forwarded to regional Public Service Middle Manager Groups, with the dispatch of 273 emails, of which 39 were undeliverable resulting in 234 delivered requests for participation. The use of an internal Government email address to announce the survey ensured that sophisticated filters did not discard the email as Spam.

Sample Size

Data collection continued until November 27, by which time 222 respondents attempted to complete the online survey instrument, yet just 99 surveys included sufficient detail for use in the data analysis phase. The vast majority of those rejected (123) were incomplete surveys. Anecdotal evidence suggested that a large number of survey respondents were unable to complete the online survey due to technical problems. A detailed data analysis confirmed this proposition with the discovery that technology had thwarted 82 respondents' attempts to complete the survey. This disappointing data loss was the result of connectivity challenges, specifically "time-out" errors or "hanging", the root cause of which was firewalls and other protective measures. Ninety-nine usable responses were sufficient to achieve the desired confidence level of 95% and confidence interval of 10, i.e. the sample had to be at least 96 in order to achieve the accepted generalization criteria, which translates into results that are accurate to ± 10%, 19 times out of 20.

Bias

The sampling technique used for this project should not be considered totally random. In

reality the snowball technique, as was used for this study, relies on motivated volunteers to complete the survey and solicit the support of their colleagues. This does not mean that this sample is not representative of the entire population; however, one must use care in generalizing the results too broadly. Ideally, additional research should be undertaken to corroborate these findings (Trochim, 2001).

In order to mitigate the risk of generalizing the research findings, there was value in considering another proposition. The aim of this proposition was to compare the survey sample to a large randomly selected Government Middle Manager sample, which was representative of the population. The comparison sample was the 2002 Public Service Commission (PSC) online survey of Canadian Government Middle Managers. The PSC Survey administrators randomly selected a sample of 9,266 people from the population of nearly 26,000. From this random group they were able to contact 8,576 possible respondents. The survey yielded 2,650 usable responses, for a 31% response rate, a confidence level of 95%, and a confidence interval of 1.8 (PSC, 2002). Though the confidence levels were the same for both projects, the PSC Survey's confidence interval of 1.8 was significantly lower than this study's confidence interval of 10.

A comparison of the two surveys concluded that much of the demographic data collected was the same. If the demographics of the two samples were statistically the same, one could use this finding to alleviate the risk of generalizing the findings to the population. Clearly, such a finding does not alter the validity of the statistics; however, such a finding may lessen the risk of wide application of the findings. In any case, the comparison was a useful exercise in demonstrating the sample's relationship with the other similar surveys and of course the population overall. Null hypothesis testing was used to determine if there was a significant difference between the samples.

Representative Sample

A series of null hypothesis tests, including gender ($t(2747) = 0.366$, $p = .7143$), education ($t(2747) = 0.659$, $p = .5099$), and language ($t(2747) = 0.565$, $p = .5724$), indicate that this sample is not statistically different from a recent large-scale survey. From this finding, one may conclude that this sample is likely representative of the population. Whilst acknowledging that bias exists in all studies utilizing the snowball sampling technique, the analysis of the demographic data indicates that the sample is not statistically different from the PSC Survey. Such an important conclusion indicates that one should be able to generalize, with confidence, the finding across the population. This conclusion adds value to the findings by permitting their wider application across the Government of Canada.

Analysis

For each of the eight scenarios contained in the survey instrument, respondents answered questions related to the five subcomponents using a five-point Likert scale where the higher score represents tasks that are more common (1 = strongly disagree; 2 = disagree; 3= neutral; 4 = agree; and 5 = strongly agree). Based on these responses, each subcomponent was assigned a numerical value, from which the ultimate value for Information Anxiety was derived. Illustrated in Figure 3 is the sample mean, including the subcomponent means.

Of particular note was the very low level of information anxiety reported. When the means are converted to an equivalent five-point scale, where 1 indicates a very low level and 5 indicated a very high level, the low levels reported become obvious – see Figure 3. For example, a mean of 2.12 indicates the average respondent "disagreed" that the task appreciably contributed to information anxiety.

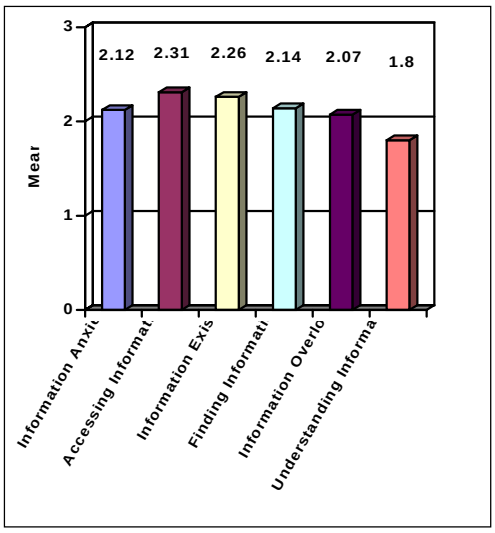

Fig. 3. **Information Anxiety by Component**
(5-point Likert scale)

Understanding Information

The least troubling element of the dependent variable was Understanding Information (defined simply as not understanding information). This was the sole segment of the dependent variable with a mean below 2.0, indicating this component troubled few managers. More than 80% of managers reported that they disagreed or strongly disagreed with the statement *I would not understand the information required to complete this task*. ANOVA testing illustrated that this component is significantly lower than the other four components at the critical alpha = .05 level. Graphically depicted in Figure 4 is the frequency of response for the subcomponent of Understanding Information.

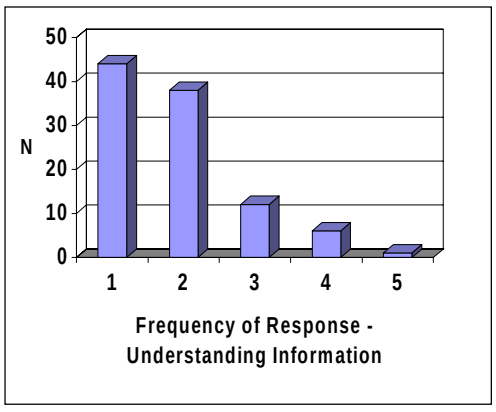

Fig. 4. **Understanding information**

Though not a particularly concerning element, some middle managers commented on the confusion and the lack of consistency that occasionally occurs, for example, "Depending where one looks, we get different results. Consistency in our various databases is lacking. e.g. Numbers from finance are different from numbers from consultant, etc." and a different respondent who wrote ". . . benchmark report for FY 02/03 where data collection was like placing a round peg into a square hole."

Others suggested that understanding information was restricted to small groups and perhaps not well understood by all, for example, "....but I have no confidence that the people to whom I report have any understanding of statistics either." Another said:

> I am one of the few people in my unit with a fair understanding of statistical analysis and use of spreadsheets. I pride myself on being called upon for this kind of task because I get to showcase my abilities (learned in university) and I am thorough and precise in my analyses.

Information Overload

Respondents reported relatively low levels of information overload (defined as feeling overwhelmed by the amount of information to be understood), as more than 70% of respondents disagreed or strongly disagreed that they would feel overwhelmed by the amount of data or information to be understood to complete tasks (see Figure 5).

Many studies focus exclusively on the issue and to a degree, the results of this study corroborate early findings. That is, information overload is a source of anxiety for some

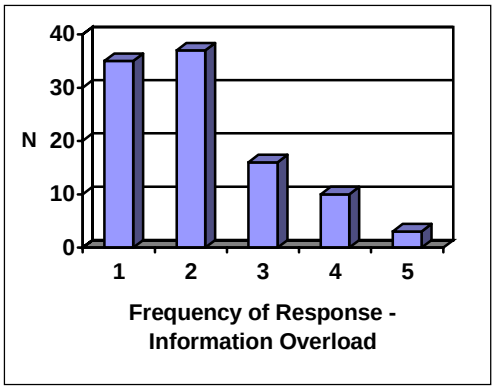

Fig. 5. **Information overload**

middle managers. However, it is interesting that the level of information overload is statistically the same as two other components (Finding Information and Information Exists), statistically higher than Understanding Information but statistically lower than Accessing Information. This determination is especially important as one considers the priorities for future research. Undoubtedly, this highlights the need to consider the entire spectrum of the problem and we must not focus solely on the overload dimension as at least three other issues are of equal concern.

Given the emphasis on overload issues, it is not surprising that several managers opted to comment on this dimension. Almost certainly, the most insightful comment provided to the researcher was:

> I've likened the information overload in the Public Service to standing under a waterfall. It doesn't matter how well you organize, whether paper or paperless, it just keeps raining down on you. The only way to stay sane is to stand to the side and dip your bucket into the waterfall as needed. You can't know everything and you can't be expected to. Information overload = time crisis also. Prioritizing, saying "no" and pushing back on those who overload you with information are important strategies.

The sense of this discourse was that managers must learn to cope with the realities of their environment. Perhaps this fundamental wisdom is how Public Service managers are able to survive in an environment, in which there are often competing priorities. Conceivably these wise words go some way in explaining the low levels of information anxiety reported. A statement such as this begs for a follow-up interview, unfortunately the anonymity associated with this project precludes such an endeavor.

Finding Information

Not knowing where to find information was equally troubling with 70% of respondents stating that they disagreed or strongly disagreed that they would not know where to find data or information necessary for the scenario tasks – see Figure 6. The similarity in the responses to this question and the information overload question may suggest a relationship between information overload and Finding Information. It seems likely that if one is overwhelmed by the amount of information it may be difficult to find what you need – more commonly referred to as *the needle in the haystack* syndrome.

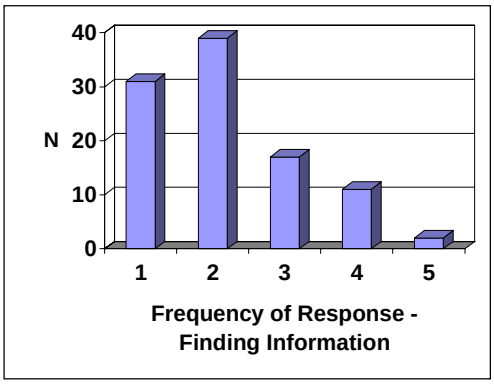

Fig. 6. **Finding information**

One respondent stated, "Usually I am able to ask a specialist or more than one to research this type of information. Sometime however I don't know whether the person can find the information within our systems." A second comment suggested that finding in-

formation (or an expert in this case) is just part of the challenge, "I've never been asked to do more than the most simple analysis... percentages etc. Good thing too because I have no skills for statistical analysis! I would know where to go within my organization to get assistance."

A third respondent, who appears frustrated with the status quo, explained why some respondents indicated this was a problem by stating:

> Management of files, projects, correspondence has been abandoned to clerical level without controls, univerisal [sic] system and data integrity. How can any system work until XXX and other depts make system wide decisions that enable universal access to accurate, complete data – too many systems, not enough thought — too many decisions based on ego, not logic — eg. for me — as manager of minister's correspondence unit — we needed to find documents in XXX, subject specialists — hard to do in vacuum.

Information Exists

Shown in Figure 7 is the frequency of response for the Information Exists component, which was defined as not knowing if certain information exists. Responding to the statement, *I would not know if certain data or information necessary for the scenario tasks exists*, 64% of the sample disagreed or strongly disagreed. Few respondents commented on the component and those who did respond were rather positive, which goes some way in explaining the relatively low rates reported. One manager explained that things had not always been so positive, "We have set up a data capturing program that assists us in answering most questions from the public and those higher up. These questions used to catch us unprepared, but are now answerable within hours"

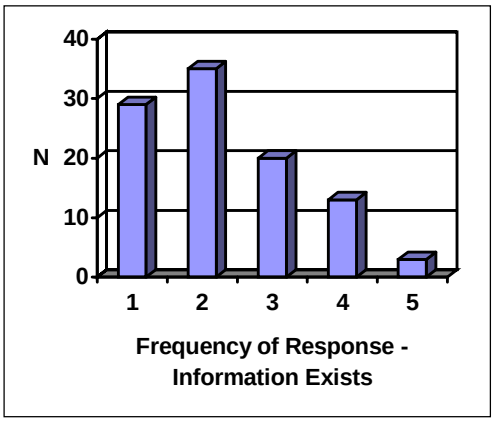

Fig. 7. **Information exists**

Perhaps the eternal optimist penned the following words of wisdom, "The more difficult the location of the data, or the harder the key, the greater the challenge to do the job right. Keeps things interesting." Another suggested:

> We have gone through a major reorganization of the department and have been provided with regular updates and in turn have briefed my staff. The information exchange has been clear and easy to pass on. There are unknowns however myself and my staff are comfortable that the amount of detail to clarify the unknowns is being worked on. We are included in the discussions on a regular basis.

Assessing Information

Respondents reported Accessing Information (defined as knowing exactly where to find the information, but not having the key to access it) as the most troubling component of the Dependent Variable, though it was still relatively low with a mean response of just 2.31. The reported levels for this component were statistically higher than either Understanding Information or Information Overload. Once again this highlights the fact that Information Overload is not necessarily the most concerning ailment for middle managers.

One respondent supposed, "Data is available however most times needs to be manually extracted and is very labour intensive." Another respondent stated:

> We have a funded projects electronic database, so the information should be readily accessible. However, I do not have authority to run the reports myself. When the reports came back, it was clear from my knowledge of some of the programs that the information was incomplete.

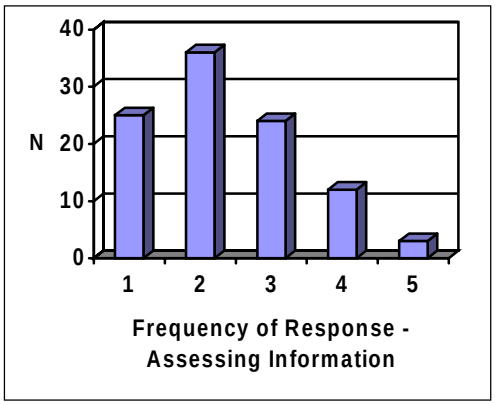

Fig. 8. **Assessing information**

Research Results

Four demographic components were analyzed with a view to determining if a relationship existed between the gender, experience, education, or language and the level of information anxiety reported. As noted earlier, the literature is ambiguous about what one should expect and therefore this research is exploratory in nature. The first analysis was based on gender and as noted earlier the literature is divided on what should be expected. A two-sample t-test between the groups was performed to determine whether there was a significant difference between the samples with respect to the level of information anxiety reported. The t-statistic was not significant at the .05 critical alpha level, $t(88) = 1.441$, $p = .153$ (two-tailed).Therefore, we fail to reject the null hypothesis and conclude that the difference between genders was not significant.

The aim of Hypothesis 2 was to test if experience influenced the level of information anxiety reported. Giunipero et al. reported no significant differences in the use of tacit knowledge associated with work experience with the current employer (1999). Building on this finding, H2 sought to determine if the level of work experience is related to the level of information anxiety reported. A one-factor ANOVA between experience levels was performed to determine whether there was a significant difference between their means. The F-statistic was not significant at the .05 critical alpha level, $F(3,85) = 0.986$, $p = .319$. Therefore, we reject the null hypothesis and conclude that the difference in information anxiety was not significant.

Different groupings of managers also proved interesting. For example, when the managers were divided into two groups, with one group being those managers reporting less than 10 years experience and the second group being those managers reporting 10 or more years experience. The results are intriguing, though not significant at the .05 critical alpha level, $t(87) = 1.572$, $p = .120$ (two-tailed), with the more experienced respondents reporting a higher level of information anxiety.

Level of education reported is the basis of the penultimate analysis. Sveiby and Simons reported that higher educated employees regard the collaborative climate more favorably (2002), though they did not explicitly consider this issue of information anxiety. This hypothesis sought to test if the level of education is related to the level of information anxiety reported. A two-sample t-test between groups was performed to determine whether there was a significant difference between the samples with respect to the level of information anxiety reported. The t-statistic was not significant at the .05 critical alpha level, $t(87) = 0.851$, $p = .397$ (two-tailed). Therefore, we fail to reject the null hypothesis and conclude that the difference in information anxiety was not significant.

Unique to this sample, when compared to many other studies, including the Giunipero et al and Sveiby and Simons' studies, was the issue of language. This sample contained managers whose first official language was either French or English. This hypothesis sought to test if language is related to the level

of information anxiety reported. There was no significant difference, based on the t-testing: $t(87) = 0.100$, $p = .921$ (two-tailed). Such a low t statistic indicates the groups are virtually the same – the conclusion from this sample is clear, language does not play a significant part in creating information anxiety. That said it would be interesting to examine bilingual middle managers operating in an environment other than their FOL. For example, do English-speaking managers report different levels of information anxiety when operating in a French environment or vice versa? Such a study might offer a better insight into any cultural differences between the two groups.

Implications

The dependent variable of information anxiety was composed of five subcomponents: Accessing Information, Information Exists, Finding Information, Information Overload, and Understanding Information. In the past, most academic research in this domain has focused exclusively on the overload issue and although the overload problem warrants research, this project has proven conclusively that a broader research agenda is essential. Had this project focused solely on the relationship between overload and the independent variables some of the most important findings would have been lost. Clearly, the time is right to disprove the fallacious myth that one should view all information related challenges through an information overload lens.

Overall, the respondents reported low levels of the dependent variable of information anxiety. As this was the first project to use the information anxiety instrument, one must not draw many conclusions from the raw values. Rather, one should consider the relative and significant order of the five components. Using information overload as the baseline, this project gauged how the other components compared to the well-understood phenomenon of information overload. Over time, it would be useful to refine the instrument and to perform a comparison between these data sets and others; however, at present, the central issue is the ordinal relationship of the elements.

By far the most important finding of this project was the uncovering that Public Service middle managers reported Accessing Information to be a significantly more troubling problem than Information Overload. Accessing Information – defined as knowing exactly where to find data or information, but not having the key to access it – was the number one concern of the sample. In practical terms, this condition appears for many reasons. Some examples of this problem are simply unfortunate oversights, perhaps a manager knows that a document exists in a locked filing cabinet but he or she does not have the combination to open the cabinet because nobody ever expected the manager to need access. However, the situation also occurs when executives forbid middle managers to have access for a variety of reasons.

The notion of oversight is an acceptable consequence of normal business and is easily solved as once it, the problem, is identified the manager will be given the combination. Alternatively, many deliberate barriers seem to exist, which is much more serious and often very difficult to change. The organizational and management impact of such a possibility should be colossal, as that would be a management failure of the highest magnitude and therefore such an idea should serve as a wake-up call to Government leaders. Public Service middle managers must have immediate and unobstructed access to the information they require to perform their duty to the citizenry.

The destruction of the senseless barriers to accessing this goldmine of information is within the gift of management. There are few, if any, technological, legal, or organizational reasons to permit the barriers to exist. Tragi-

cally, anecdotal evidence suggests that virtually all of the barriers stem from a culture of mistrust. If Government executives would only trust their middle managers, who are the guardians of this national treasure, the problem would undoubtedly evaporate. Even though a stroke of a pen will solve this policy issue, there seems to be reluctance on the part of executives to rectify the problem.

Though the issue of destructive barriers should be paramount, other findings are worthy of note. Almost as important as the barrier issue was the discovery that two other components are of equal significance to overload, those being Information Exists (defined as *not knowing* if information exists) and Finding Information (defined as *not knowing* where to find information). This discovery is important for two reasons. First, it highlights that two more issues are worthy of the executive attention and resources currently bestowed upon information overload. Only once executives acknowledge the breadth and depth of the problem may we expect to see a strategy to improve the situation.

Perhaps more important is the realization that this duo share a common origin, that is, they are both about managers not knowing something they need to know to perform their tasks. In the first case, the managers do not know if information exists whilst in the second case they do not know where to find the information. This is the essence of knowledge management, making sure those who need to know something, do in fact know what they need to know. The good news is that it is not too late to defeat these menaces; however, leaders must develop and implement a knowledge strategy to overcome these challenges. Though such an undertaking may require some resources, it pales in comparison with the consequences of doing nothing.

Limitations of the Study

The major limitation of this study was the sampling technique. The use of a convenience sample calls into question how one may generalize the findings. In this case, the demographics of the sample were compared to the demographics of the population with a view to enhancing confidence in the data. Though this may alleviate some concern, it is simply unwise to suggest that the sample is anything other than a convenience sample and therefore one should exercise care when generalizing to the population. That said these findings would hopefully stimulate additional research with a truly random sample.

Conclusions

The relationship between knowledge and anxiety is complex at best. Sir Francis Bacon, a pioneer in the quest to explain the relationship, looked to King Solomon's biblical writings for wisdom. There Sir Francis discovered these wise words, "That in spacious knowledge there is much contristation, and that he that increaseth knowledge increaseth anxiety" (1605/1915, p. 4). Though it is true that Sir Francis replicated these words in his seminal work, he did not believe that such a relationship could exist. In fact, he countered King Solomon's council by stating "And for the second [referring to King Solomon's prose], certain it is, there is no vexation or anxiety of mind which resulteth from knowledge otherwise than merely by accident" (1605/1915, p. 6). Some four centuries after Sir Francis challenged the ancient philosophy of King Solomon we appear closer to explaining this phenomenon; however, more research is necessary to understand fully this multi-millennium mystery.

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The paper submitted: May 14, 2005
Prepared for publication: August 15, 2005

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INFORMACIJOS NETIKRUMAS: VADOVŲ ATSAKOMYBĖ

Santrauka

Staigus kiekybinis duomenų, informacijos ir žinių didėjimas linijinę struktūrą turinčiose organizacijose sukelia netikrumo jausmą dėl gaunamos ir perduodamos informacijos, ypač viduriniųjų vadovų lygmenyje. Tokios netinkamos situacijos įrodymai egzistuoja tiek privačiajame, tiek viešajame sektoriuje. Daugelis ekspertų spėja, kad žinių vadyba galėtų būti vienas iš būdų, kovojant su šia organizacija silpninančia "liga".

Daugelis atliktų žinių vadybos tyrimų dažniausiai buvo žvalgomieji, nors kai kurie mokslininkai aiškiai išskyrė pagrindines žinių vadybos teorijas, kurios galėtų būti pagrindu detalesniems tyrimams. Šis projektas yra ankstesniųjų tyrimų tęsinys, kurio tikslas išsiaiškinti, ar viešųjų paslaugų sektoriuje kai kurie viduriniojo lygio vadovai patiria mažesnį informacijos netikrumo jausmą.

Atliekant tyrimą, remiamasi Richard Wurman informacijos paieškos apibrėžimu: "Informacijos paieška yra juodoji skylė tarp pirminių duomenų ir žinių. Tai vyksta, kai informacija mums nesuteikia to, ko norima ar reikia sužinoti". R. Wurman siūlo informacijos netikrumą suskirstyti į 5 dalis: informacijos nesupratimas; reikalingos suprasti informacijos perteklius; nežinojimas, ar tam tikra informacija egzistuoja; nežinojimas, kur rasti reikalingą informaciją; tikslus žinojimas, kur rasti informaciją, bet neturėjimas galimybių jos gauti.

Kanados viešųjų paslaugų sektoriuje atliktas vidu-

riniųjų vadovų empirinis tyrimas parodė žemą informacijos netikrumo lygį. Svarbiausias šio projekto atradimas buvo tas, kad viešųjų paslaugų sektoriuje vidurinieji vadovai teigė, jog priėjimas prie informacijos yra daug didesnė problema nei informacijos perteklius. Išskirsta pagrindinė apklaustųjų problema - priėjimas prie informacijos- apibrėžiama kaip žinojimas tiksliai, kur rasti duomenis ar informaciją, bet neturėjimas galimybių jos gauti. Užduotys, kurias atliko respondentai, nebuvo pagrindinis veiksnys, sąlygojantis rezultatus, tačiau buvo pastebėtas stiprus neigiamas ryšys tarp užduočių dažnumo ir informacijos netikrumo. Silpnas teigiamas ryšys tarp numanomų žinių naudojimo ir informacijos netikrumo suteikia pagrindo būsimiems tyrimams. Papildomų tyrimų svarbą rodo ir silpnas ryšys tarp lyties, išsilavinimo ir patirties.

Ryšys tarp žinių ir netikrumo yra kompleksinis. Francis Bacon - pirmasis mokslininkas, ieškojęs įrodymų aiškinant minėtą ryšį - išminties ieškojo Biblijoje. Joje F. Bacon atrado šiuos išmintingus žodžius: "Žinių gausybėje yra daug liūdesio, ir tas, kuris gilina žinias, didina abejonę". Keturi šimtmečiai praėjo po to, kai F. Bacon tyrinėjo senąją karaliaus Saliamono filosofiją, todėl šiandien galima šiek tiek plačiau aiškinti informacijos netikrumo fenomeną, tačiau reikia daugiau tyrimų, norint pilnai išaiškinti šią tūkstantmečių paslaptį.

Джон П. ЖИРАРД

ОТВЕТСТВЕННОСТЬ РУКОВОДИТЕЛЕЙ: ДИСКУССИЯ ПО ВОПРОСУ НЕТОЧНОСТИ ИНФОРМАЦИИ

Р е з ю м е

Внезапный подъем знаний, увеличение объема информации и количественных данных в организациях, имеющих линейную структуру управления, вызывает чувство неуверенности по вопросам приема и передачи информации, особенно на среднем руководящем уровне. Доказательства присутствия такой неблагоприятной ситуации существуют и в общественном, и в частном секторе. Большинство экспертов предполагают, что одним из методов борьбы с «болезнью», ослабляющей организацию, может быть менеджмент знаний.

Большинство исследований в области менеджмента знаний имели разведочный характер, хотя некоторые ученые четко выделили основные теории менеджмента знаний, которые могли бы послужить основой для проведения более детальных исследований. Этот проект является продолжением более ранних исследований, целью которых было выяснить, испытывают ли некоторые руководители среднего уровня, в сфере общественных услуг, чувство неточности информации в меньшей степени.

Проводя исследование, автор ссылается на определение поиска информации по Richard Wurman: " Писк информации это черная дыра между первоначальными данными и знаниями. Это происходит тогда, когда информация не дает нам того, что мы желаем узнать, или то, что нам надо узнать". Richard Wurman предлагает неточность информации распределить на 5 частей: непонимание информации; избыток информации, которую надо понять; незнание, существует ли определенная информация; незнание, где можно найти нужную информацию; точное знание, где можно найти информацию, но не имение возможности ее получить.

Эмпирическое исследование руководителей среднего уровня, проведенное в Канаде, в секторе общественных услуг, показало низкий уровень неточности информации. Основное открытые данного проекта было в том, что руководители среднего уровня сектора общественных услуг утверждают, что доступ к информации является более значительной проблемой, нежели избыток информации. Выделенная опрашиваемыми основная проблема – доступ к информации – определяется как точное знание, где можно найти данные или информацию, но неимение возможности получит нужную информацию. Задания, выполняемые респондентами, не были основными факторами, обуславливающими результаты, но была замечена тесная негативная связь между частотой получаемых заданий и неточностью информации. Слабая положительная связь между неточностью информации и применением предполагаемых знаний дает основание для проведения дальнейших исследований. Слабая связь между полом, образованием и опытом указывают на важность дополнительных исследований.

Связь между знаниями и неточностью информации является комплексной. Francis Bacon – первый ученый, искавший доказательств объяснению выше названной связи, мудрости искал в Библии. В ней F.

Bacon нашел эти мудрые слова: «В обилии знаний есть много печали, и тот, кто углубляет знания, увеличивает сомнение». Прошло четыре столетия с тех пор, как F. Bacon исследовал древнюю философию царя Саламона, поэтому сегодня можно чуть шире объяснять феномен неточности информации. Желая исчерпывающе объяснить эту тысячелетнюю тайну, необходимы более объемные исследования.