

**SME use of competitive intelligence in Australia 1996 - 2006; implications for impediments to SME international success**

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Competitive, or business intelligence focuses on how managers acquire relevant, reliable, timely information to support informed decisions which are aimed at maintaining or improving their competitiveness. This paper relates to surveys undertaken in 1996 and 2006 of competitive intelligence use in Australian firms. This period has been characterised by increased competitive forces from globalisation. SMEs now face both increased competitive opportunities and threats. Internet resources (visible and invisible web) have exploded over the decade to 2006. This should have assisted SMEs to compete, and internationalise, by providing them with a cornucopia of easily accessed information.

However, contrary to what might be expected, the paper shows that small firms remain at a cost disadvantage relative to large firms; SMEs pay around ten times more per dollar of turnover for competitive intelligence. The paper also shows that, relative to large firms, SMEs tend to be more complacent about the threat from present and future competitors, and make less intensive use of most intelligence sources, and less use of good CI processes. Government sources are the least used of all sources and used less by SMEs than by large firms.

These findings have important implications for SME managers and for policy makers. It has been long recognised by OECD and SME working groups that SMEs need access to information if they are to successfully compete in an increasingly global world. This paper shows that it is not so much the lack of access to information that is the impediment. Rather, it is the problems SMEs have in making intelligent use of information sources and intelligence practices to get to highly relevant targeted information that is the challenge.

**Keywords:** SME, competitive intelligence, internationalisation

## 1. Introduction, literature and hypotheses

"In the information age, it is hard to overestimate the strategic importance of information as a critical resource. Repeatedly, it has been shown that adequate information and a sound information system can bring about important competitive advantages" (Evans and Voller 2001). Competitive, or business intelligence focuses on how managers acquire relevant, reliable, timely information to support decisions which are aimed at maintaining or improving their competitiveness. Good managers have always had an intuitive approach to competitive intelligence; they monitor the news, speak to customers to friends and to staff, keep an ear open for rumours, and so on. The challenge is that this rather unsophisticated approach is no longer sufficient. There are better and more effective techniques now available to assist managers to manage the targeting, collection, processing, storing, retrieving, and communicating of information. Information itself is not intelligence; it is easy for a manager to be overwhelmed with unintelligent information. The problem facing managers generally, and SME managers in particular, has changed dramatically in the last decade, in two ways.

First, the amount of information available to managers has exploded, and more decision makers have easier access to that information. In 1998, internet access penetration was only 20% of firms with less than 20 employees in Australia. By 2004 this had climbed to around 86% (ABS 8129.0). In large firms, this penetration has grown from about 87% in 1998 to 100% in 2004. The size of the web is difficult to estimate. In 1996 there were only about 1 billion pages on the visible web, many of them not indexed, and about 9 billion or more on the deep or invisible web. By 2006 there were about 8 billion pages indexed by the main search engines such as Google on the visible web, and a further 100 billion or more on the invisible web. The invisible web is made up of resources and databases which are not readily accessible to web search crawlers because they require a password for example.

Second, the level of globalisation means that there are more international competitors, more threats, and more opportunities for the well-informed to expand abroad. Financial markets are particularly globalised and this sets a drum beat, affecting the opportunity costs of capital for all other businesses. The rapid emergence of business in China and India have a big impact on the shape of competition, simply because of their relative size; China has created about 30 million SMEs in the last ten or so years, while Australia has about 1.2 million.

Most empirical studies of CI have tended to focus on the activities of large firms, and on best practice exemplars in large firms (Taylor (1992), Jaworski and Wee (1993), Stanat (1993), Prescott, Herring and Panfely P. (1998), Subramanian and Ishak (1998), Vedder 1999, Vedder and Guynes (2001)). These studies confirm that the need for CI is recognised by senior managers, and that more sophisticated CI practices have been increasingly adopted by leading firms over the last three decades. The only empirical studies of CI to cover a representative sample of firms, including both large and small firms, have been carried out in Australia and New Zealand (Hall and Bensoussan 1996a, 1996b, 1997, Hall 2001, Trengrove and Vryenhoek (1997), Hawkins (2005)). These suggest that the level of awareness and use of CI practices is fairly primitive, but that SMEs tend to be as good or slightly better than larger firms in adopting CI techniques. Small firms tend to see themselves as less exposed to risk and competition than larger firms. The Hall and Bensoussan 1996 study also showed that the cost of CI is a function of size of firm, with small firms facing a significant cost disadvantage so that their cost of CI as a percentage of sales was about nine times that of large firms.

Some empirical studies pertain only to SME use of CI or environmental scanning (Lang, Calatone, and Gudmundson (1997), Beal 2000, Raymond, Julien, Ramangalaby (2001), Salles (2006)). These generally show that SMEs recognise the need to monitor their environment for threats and opportunities, and those which do scan the environment are more competitive, although this has to be qualified by other factors such as industry life cycle. The approach adopted in scanning tends to focus on news, customers and sometimes competitors. The relationship between scanning and actual strategic success is not a direct one. As Raymond et al op cit observe, there is no one best way to engage in environmental scanning for an SME, it depends on the firms objectives, and its environment. Scanning produces information, and that is not necessarily intelligence; there is no value-adding to the information until it is analysed, and communicated to decision makers in a form they can use. Groom (2001) shows that smaller firms tend to be more likely to have less formal CI systems, and comments that while many SMEs recognise the need for better CI, "certain forces may prevent them from realising the benefits" (Groom op cit p 16). Palubiak 1996, Brandau and Young 2000) explore ways that small and start up firms might make more effective use of CI, but provide no empirical evidence.

Based on the forgoing, a priori I hypothesise that over the decade from 1996 to 2006:

H1 There should be increases in the perceived level of present and future competition, for both SMEs and large firms;

H2 Both large firms and SMEs should have increases in the needs for better information with which to compete in the future;

H3 The effect of increasing internet access should lead to a reduction in the cost disadvantages of SMEs gathering CI;

H4 The effect of increased competitive pressures and access to the internet should lead to absolute and relative increases in SME intensity of source usage when compared to larger firms; and

H5 The effect of increased competitive pressures and access to the internet should lead to absolute and relative increases in SME utilisation of CI techniques when compared to larger firms

## **2. The surveys**

The two surveys were undertaken in 1996 and 2006. They used self reporting, based on a senior manager filling out a questionnaire on behalf of the organisation. In each case over 500 firms were contacted, on the basis of stratified random sampling, and in each case a response rate of over 25% was achieved. The questionnaires covered some 65 questions, many of which allowed some comparison between the 1996 and 2006 surveys. The surveys were primarily designed to give an accurate assessment of the prevailing level of CI activity in Australian firms, and were not specifically designed to address the issues facing SMEs. The responses can be stratified in a number of ways, including by size of firm. For the purpose of this paper SMEs are defined as having less than 100 employees, small firms as having less than 20 employees, and medium firms having 21 to 100 employees. The profile of the samples were such that at least 30% of the respondents were SMEs. A small number (less than 5%) SMEs were affiliated with either an Australian group or a Multinational (MNC) group. Of the large respondents, about half were very large (employing over 1000 people) and more than half were affiliated with, or part of an MNC group.

## **3. The findings**

There are seven main findings from the studies.

First, It is a feature of both surveys that 80% to 90% of respondents see themselves as in markets which are already very, or extremely competitive. Size of firm has no effect on this, so there is general recognition of the pressures of competition.

Second, when asked what the level of competition is likely to be in the next five years, in 2006, small firms are more than twice as likely as medium and large firms to see no change. Even so, over 60% of small firms and 80% of medium and large firms see the level of competition increasing "more" or "much more".

Third, SMEs are slightly more likely to rate their own competitiveness as above average than large firms, but are also more likely to rate as below average their ability to monitor their own competitive position, or that of their competitors.

Fourth, SMEs generally have lower perceived needs for information to help them maintain or increase their competitiveness, but in most cases the differences are not statistically significant. Table 1 gives the average score for SMEs relative to large firms, based on the five point Lickert scale used in the questionnaire. It also gives the change in the score from 1996 to 2006, and the difference between the large firm and SME scores in 2006. Where the 2006 scores are significantly different at a 0.05 confidence level, it is indicated by #.

Of the eight needs canvassed, SMEs have higher needs than large firms only when it comes to needing to know about generic new technologies (such as e-commerce, nanotechnology etc) and technology that is specific to their own markets. SMEs are significantly different to large firms in the need to

monitor information about existing competitors, and regulatory change. SMEs are only about half as likely to see a major need to monitor their existing competitors as larger firms.

In a global world it is interesting to see that the need for information on "threats and opportunities abroad" is rated as low as it is by both SMEs and large firms, but that it has also increased hugely since 1996. SMEs rate new technology and new products as very high needs, and also existing and new competitors, but presumably many of these will come from abroad. Similarly, information on socio demographic change is rated lowest by SMEs, despite the huge changes brought about in the last five or so years by i-pods, the web, texting and so on. It seems that SMEs see these more as technological issues than socio demographic ones.

**Table 1 Comparison of needs for information required to compete, SMEs vs large firms, 1996 and 2006, score out of 5.**

	SME 2006	large 2006	large - SME 2006	SME 2006 - 1996	large 2006 - 1996
generic new technology	3.60	3.45	-0.15	-0.26	-1.19
specific new technology	4.27	4.11	-0.16	0.16	-0.32
socio demographic	3.33	3.84	0.50	na	na
regulatory change #	3.43	4.40	0.96	na	na
existing competitors #	4.30	4.66	0.36	0.02	0.39
new products services	4.37	4.38	0.02	0.51	-0.26
new potential competitors	4.27	4.52	0.25	0.06	0.56
threats opportunities abroad	3.63	3.78	0.15	1.02	1.21

# indicates significantly different in 2006 at .05 two tailed test.

na - was not covered in 1996

Fifth, small firms have much higher costs for running a CI system than is faced by a larger firm. The figures in table 2 show that small firms have costs in cents per dollar of turnover which are in the order of a factor of ten times that of medium sized and larger firms. This is a much bigger order of magnitude difference than is the case in, for example, R&D spend. US data from 1999 to 2001 for R&D as a percentage of sales shows a factor of about three times; firms with less than 25 employees spent about five times more than very large firms (those with 25,000 or more employees), but only three times more than firms with more than 100 employees (National Science Foundation 2001 table A-19).

**Table 2 Expenditure on competitive intelligence percent of sales turnover**

	2006	1996
small ( <20 employees)	1.1	0.9
medium (21 -99 employees)	0.1	0.1
large (<100 employees)	0.1	0.1

The estimates of the relationship between firm size and expenditure per dollar of turnover are reasonably robust, with an  $R^2 = 0.496$ , and the relationship in 2006 between expenditure on CI per dollar of turnover is of the form:

$$CI_{exp} \$turnover = POWER(employ, -0.8112) * 4.7613$$

Based on this relationship it is estimated that in 2006, for every halving of size in employee numbers there is a seventy five percent increase in cost of CI per dollar of sales, but only a 13% reduction in total CI budget. Put conversely, for every doubling of firm size, the CI budget only increases by 14%, but the cost per dollar of turnover drops by 43%. The cost of CI as a percentage of sales turnover rises quickly as size falls into the small size category. At 10 employees the cost is about 1% of sales, but at 5 employees it rises to 2.5% and at one person it is about 5% of sales. Given that some 70% of SMEs in Australia have less than 5 employees, and that a 5 person SME is quite capable of competing internationally, this is a significant cost disadvantage relative to a 100 person competitor who might only incur a CI cost of 0.1% of sales, or a 1000 person MNC with a CI cost of less than 0.1% of sales.

Sixth, SMEs make less use of sources of information than do large firms. Table 3, shows SMEs make slightly more use of suppliers, conferences/trade shows, customers and industry associations, but the differences are not significant. SMEs make significantly less intensive use than do large firms of data aggregators (such as Dialog, Lexis Nexis, Factiva etc), external consultants and market research, web search engines, and data mining SMEs. This may be partly because of the cost differences; aggregator subscriptions can be quite expensive, as can be data bases and data mining, and clearly consultants and market research is beyond the financial reach of many small firms. The use of the web has exploded over the decade, with over 70% of all respondents now making regular or frequent use of web search engines (table 4). However, it is puzzling that SMEs use web search significantly less than large firms.

**Table 3 Comparison of use of sources, SMEs vs large firms, 1996 and 2006, score out of 5.**

	SME 2006	large 2006	large - SME 2006	SME 2006 - 1996	large 2006 - 1996
trade literature	3.8	3.4	-0.3	1.08	0.95
general newspapers and magazines	3.4	3.8	0.4	0.70	1.05
external news services, data aggregators #	2.3	3.3	1.1	0.49	1.48
internal staff	2.9	3.4	0.4	0.37	0.92
sales personnel and front line staff	3.2	3.5	0.3	0.36	0.51
consultants, outside market researchers #	1.9	2.6	0.7	0.39	0.73
in house market research	2.3	2.7	0.4	0.34	0.88
suppliers	2.3	2.1	-0.3	0.26	0.20
distributors	1.7	2.0	0.3	-0.28	0.22
conferences, trade shows, expos	2.8	2.4	-0.4	0.68	0.62
customers	3.3	3.0	-0.4	0.51	0.32
industry associations	3.1	2.7	-0.4	0.96	0.65
web search engines #	3.0	3.6	0.6	na	na
internal datawarehouse, data mining #	1.8	2.6	0.8	na	na
government (eg Austrade)	1.7	1.9	0.2	0.50	0.58

# indicates significantly different in 2006 at .05 two tailed test.

na - was not covered in 1996

Table 3 and 4 show that there has been an increase in intensity of source use by SMEs for all sources, except distributors, over the decade. However, large firm usage also increased for all sources, and on average by more than that of SMEs. The level of regular and more than regular use of internal staff (as distinct from sales and marketing and front line staff) has increased by 169%, the use of external consultants has almost doubled, in house market research has increased by 80%, as has the use of conferences, trade shows and expos. Government sources were the least used source for large firms and SMEs in 1996, so any increase is off a low base, but the increase is nearly 200%. Government sources remain one of the least used of all sources in 2006.

**Table 4 Comparison of use of sources, percent making "regular" use and more than regular use, all respondents (SMEs and large), 2006 and 1996**

	2006	1996	change from 1996 to 2006
trade literature	79.8	55.4	44.1
general newspapers and magazines	82.0	63.3	29.5
external news services and data aggregators	60.4	na	na
internal staff	65.8	24.5	168.9
sales personnel and front line staff	72.5	72.7	-0.3
consultants, outside market researchers	42.7	22.3	91.6
in house market research	54.1	30.2	78.9
suppliers	29.6	28.8	3.0
distributors	22.4	27.3	-18.0
conferences, trade shows, expos	45.5	26.6	70.8
customers	69.7	59.0	18.2
industry associations	58.2	37.4	55.5

web search engines	72.7	na	na
internal datawarehouse, data mining	39.6	24.5	62.0
government (eg Austrade)	23.4	7.9	195.2

na - was not covered in 1996

Seventh, SMEs make much less use of some of the standard CI processes for collecting analysing and communicating CI. Table 5 shows that SMEs have a lower score than large firms on all items and are significantly lower on eight of the eleven items in 2006. Some of this can be explained by the higher cost associated with the techniques (such as market research), or by some techniques possibly being less relevant to a small firm (such as portfolio analysis) but it is difficult to understand why SWOT or wargames are used less. SME use of techniques has declined for all categories since 1996, while large firm use increased. Some techniques were not covered in the survey in 1996.

**Table 5 Comparison of use of CI techniques, SMEs vs large firms, 1996 and 2006, score out of 5.**

	SME 2006	large 2006	large - SME 2006	SME 2006 - 1996	large 2006 - 1996
rumours, personal contacts	4.80	4.92	0.12	-0.18	0.04
competitor audits #	2.63	3.73	1.09	-0.63	0.23
market research #	3.57	4.90	1.34	-0.35	0.66
benchmarking #	3.07	4.15	1.08	-0.78	0.36
strategic reviews #	3.90	4.64	0.74	-0.64	0.12
wargames #	1.87	2.68	0.82	na	na
data mining #	3.03	4.01	0.98	na	na
SWOT #	3.33	4.18	0.84	na	na
portfolio analysis #	3.23	4.18	0.94	na	na
reverse engineering	2.50	2.63	0.13	na	na
executive profiling	2.50	2.92	0.42	na	na

# indicates significantly different in 2006 at .05 two tailed test.

na - was not covered in 1996

Table 6 summaries the findings relative to the hypotheses proposed in section 1, showing that three of the five are supported. It would appear that SMEs are slipping behind larger firms in important aspects of implementation of CI techniques and systems.

**Table 6 Summary of findings in relation to hypotheses**

hypothesis	findings
H1 There should be increases in the perceived level of present and future competition, for both SMEs and large firms;	supported.
H2 Both large firms and SMEs should have increases in the perceived needs for better information with which to compete in the future;	supported, although SMEs are less likely than large firms to see an increase in the level of competition.
H3 The effect of increasing internet access should lead to a reduction in the cost disadvantages of SMEs gathering CI;	not supported, SMEs face an even greater relative cost disadvantage.
H4 The effect of increased competitive pressures and access to the internet should lead to absolute and relative increases in SME intensity of source usage when compared to larger firms;	supported in that SMEs have made more use of sources, but in most cases have not increased use as much as larger firms.
H5 The effect of increased competitive pressures and access to the internet should lead to absolute and relative increases in SME utilisation of CI techniques relative to larger firms.	not supported, SMEs have reduced technique usage, while larger firms have increased it.

#### 4. Discussion and implications

In a globalising, fast changing, knowledge based economy, the ability to access to information and transform it into intelligence and knowledge is likely to be an increasingly important determinant of

potential competitive success. In a world where information access is ubiquitous, SMEs should be able to compete and to compete globally in ways they could not a decade ago. However the findings point rather to the contrary. There are three issues to explore.

First it is not immediately clear why SMEs, especially small firms employing less than 20 people, are at a significant cost disadvantage relative to larger firms in running a CI system. Some of this can be explained by a minimum fixed cost effect, but not all of it. Better internet access would imply the cost disadvantages should be being reduced, however there is other research that suggests the opposite. For example Riquelme (2002) in a study of e commerce use in SMEs and large firms in China, observes that "Contrary to the expectation that it will be small companies that will take more advantage of the web and internet in particular, the results indicate it is the large companies that have achieved a larger number of benefits". The expansion of the internet has not necessarily allowed SMEs to gain a relative competitive advantage to large firms. In order for managers to not be overwhelmed by irrelevant information, they need better and more focussed intelligence. Some of the cost disadvantage effect may be because information is not free, especially better quality, value added information. Even though the web has made massive amounts of information available, the fixed and sunk costs of acquiring relevant information can be quite high. There is a significant finding that smaller firms are less likely to use more expensive sources (market research, data aggregators etc) now than larger firms. Why the cost disadvantage arises, and why it seems to be getting larger, needs further research.

Second it is also not clear if the cost disadvantage has any significant impact on the behaviour of SMEs in carrying out CI. However, if smaller SMEs find it more expensive to access information and transform it to actionable intelligence, then this could be a major impediment to competitive success. The impediment is probably not that significant for the vast bulk of SMEs, most of which do not seek growth and face only fairly local competitive forces which are easy for them to monitor using primitive techniques. A local neighbourhood coffee shop for example does not usually need a sophisticated CI system, until perhaps a Starbucks arrives in town. However for the relatively small proportion of growth oriented SMEs, and especially those seeking to expand internationally, this could be a serious issue. There are many impediments facing a small firm in an international environment, but many impediments can be overcome or avoided if the management can access useful focussed intelligence. Interestingly, there is a considerable amount of research that suggests that smaller firms, particularly those with less than 20 employees, have more difficulty and are less represented in the ranks of the internationally successful. Dean, Mengüç and Myers (2000) Mittelstaedt (2003) for example show evidence that after controlling for other factors (such as productivity, labour or capital intensity, or product characteristics) smaller exporters tend to be less successful, especially if they have less than 20 employees. The share of European medium-sized enterprises engaged in exporting is more than twice that of micro-enterprises (EIM, 2002). Firms that had at least 20 employees were found to be the most successful exporters (US Department of Commerce, 1999, 2001). Most impediments to internationalisation are not absolute and what is an impediment to one SME might be of assistance to another. Corruption and local knowledge are often cited as impediments for internationalising SMEs (UNCTAD 1998), but for an SME manager with good CI, the problems can be avoided or sometimes turned to advantage. Few studies of SME exporting and impediments have attempted to isolate the CI effect, despite this having the potential to explain much. None have explored the cost disadvantage effect facing smaller SMEs.

Third, there is the effect of the "intelligent puzzle"; "it is hard to see how managers can sustain the belief that they are above average competitiveness in the absence of CI systems which provide them with timely, reliable information. Managers seem to display a generic schizophrenia, or blindspot; they assess their competitiveness as above average relative to the market, but acknowledge that they lack the CI capability to really compete effectively relative to their needs." (Hall 2001). SMEs recognise that they are in very competitive markets already, and a majority see that level of competition increasing in the next five years. SMEs acknowledge they need more and better information to maintain or improve their competitive position over the next five years. However, SMEs have slipped further behind large firms in source usage during the decade. Despite the pressure of competition and the acknowledged need for better information to support competitive decisions, SMEs make less use of sources than do large firms, especially in areas where the source tends to be high cost. Further, SMEs make significantly less use now of common CI practices than do large firms. SME use on almost all techniques has actually declined over the decade while at the same time, large firm level of use of techniques has increased, so SMEs have slipped behind in relative and absolute terms. In short, if managers say the level of competition is high and increasing, and if they see a need to monitor threats

and opportunities, and if they make more use of sources, why don't they go the small extra effort and use techniques and systems to transform the information into intelligence they can use to support competitive decisions?

The main implication of the findings is that SMEs are slipping behind in the race for competitive knowledge. That in turn has implications for small firm competitiveness, and that in turn has implications for job creation and economic growth.

## 5. Conclusion

This paper reports on a comparison of the pattern of use of competitive intelligence by SMEs relative to large firms in the decade from 1996 to 2006, a decade when dramatic changes in access to information have occurred, in parallel with increasing competitive pressures from globalisation. The studies show that contrary to expectations, SMEs face a distinct relative cost disadvantage in CI, and that their use of CI techniques appears to have declined. However, as expected, SMEs recognise that the level of competition is high and will continue to increase. SMEs have responded by making increased use of sources, though not as much as large firms, and SMEs recognise that they need access to information to deal with these challenges and opportunities.

It has been long recognised by policy makers (eg the OECD and APEC SME working groups) that SMEs need access to information if they are to successfully compete in an increasingly global world. The findings here suggest that it is not so much the lack of access to information that is the impediment. The internet has made massive amounts of information available to SME managers, more conveniently and often at lower cost than was possible a decade ago. Rather, it is the problems SMEs have in making intelligent use of information sources and intelligence practices to get to highly relevant targeted information that is the challenge.

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