

## **Surveys: Some tips and tricks for writing and analysis.**

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### **Abstract**

As we approach the new millennium, we are surrounded and bombarded by goods and service providers who want to know what we think and feel. As institutions we are in the same boat, as we also drive towards providing a better product in the competitive marketplace.

With the growing urgency to gain this understanding, a market has developed with new software, even newer techniques and a wide range of analysis methodologies to help us get out information & intelligence faster and cleaner than ever before.

Survey techniques and questionnaire design, combined with the analysis of such instruments has been growing, and the traditional limitations of statistical calculators, multi dimensional analysis are disappearing as these old tedious techniques are updated into a more dynamic approach.

This session is designed to show some of the newer techniques, and how methodologies and software combine to give us an ever widening perspective on our customers.

### **Introduction**

Happy satisfied customers, are they a dream come true or a logistical nightmare? If the customer is always right, then just how much effort is reasonable to keep the dream alive?

With the ever increasing need for fast and clean information, and the current freedom of customers to shop around for the best products and services. Trying to understand what the impressions of customers are can be an important weapon to use in the competitive marketplace and product logistics. However the time and energy involved in, first of all, gathering their views and opinions, and then the processes involved with gaining an understanding of their viewpoint, has been most often difficult and resource intensive. It has basically been the function performed by the bigger organisations.

In recognition of the need by any organisation to conduct feedback activities from their customers and staff, people are searching for techniques to gain a more perceptive understanding. However, much of the trouble hasn't been in the collection of the data, but more in the analysis of the responses, as well as the reporting of the findings, with the added bonus of speed and understandability. Most often managers don't have the time to sort through data or findings, unless they are in a briefing paper.

When trying to develop the best survey instrument, there are many different considerations like:

- Qualitative or quantitative questions or a combination of both,
- Number of questions to ask,
- What type of questions,
- How many demographic questions,
- What incentives do we offer,
- Single-answer or multi-answer questions,
- What issues do we need to cover,
- Who are our survey customers,
- Who are our survey clients,

- What format do we provide the reports in,
- What software do we need to analyse the data,
- How can we confirm the findings,
- How many surveys make a good pilot?

Appendix 1 provides a sample of an all-round survey we have designed for the purpose of examining a gap in the customers' expectations and in their experiences. The example survey uses a combination of qualitative and quantitative questions, as well as demographics.

For this paper, I am going to mostly concentrate on COGNOS software. One of the beauties of the PowerPlay product is the ease in which a fast and clean cut of the data can be gained in a very small time period, and the ability to investigate a particular tract or theme. This allows for a rather unique series of reports to be generated in a fast and concise manner. The beauty of PowerPlay is the manipulation of the end result data, however just like any data mining exercise, there also needs to be a cleaning up of the data to facilitate an accurate picture of the data. At this stage it is also possible to include a few extra variables, which adds a new dimension of clarity to the process.

PowerPlay is well suited for the Information / Intelligence Analyst who wishes to explore the data and investigate the various golden nuggets of knowledge that can be derived from a good customer survey. However, when the data is in a multiple response for a question, it then becomes a lot harder to analyse. The trick in analysing this type of question is to be able to break down the responses into suitable notation, which will allow you to group results with a code that represents a unique combination.

By using certain sequences, each question can have a set of unique codes, which can be used to identify any group. In the data entry phase, it is important to make sure that you add an extra variable for each question, which are the grouping identifier, as well as the actual category of the tick box.

The trick behind this way of grouping of multi response questions is to code each response with an individual number, as well as inserting a total column for that variable. As can be seen in the following table, if you use the binary based counting system, you can arrive with a unique number for any combination. Then by sorting and filtering you can group or cluster the results.

	Response. A	Response. B	Response. C	Response. D
1	X			
2		X		
3	X	X		
4			X	
5	X		X	
6		X	X	
7	X	X	X	
8				X
9	X			X
10		X		X
11	X	X		X
12			X	X

This allows you to examine any specific answer to a question, as well as the grouped result. As can be seen in the table below, different unique codes are given to different combinations, where the extra variable is added into the data matrix.

Hear	Hear 1 Paper	Hear 2 Radio	Hear 3 Tv	Hear Web	Hear Person
A		Radio	TV		

B	Paper	Radio	TV	WWW	
C				WWW	Person
D		Radio	TV	WWW	Person
E	News Paper				
F	Paper	Radio	TV		
G	Paper				Person

There are many different types of surveys and questionnaires and everybody is a critic and has their own favourite survey type. This type of survey is nothing new, but it combines three different survey methods in a workable method. Here is a useful one for the manager to have in his box of tricks.

This survey method combines gap analysis, quantitative and qualitative methods. First of all, you need to get your basic demographic questions. Then you need to set out your question. Each question deals with an issue. Every issue has three parts to it. The first is how important is the issue to your user. The second part is how well your product or service fills the users needs. The third part is getting the user to explain why they feel the way they do.

One of the advantages of using a product like PowerPlay, rather than using MS\_Access for his type of analysis is the degree of filtering that can be applied, in the investigation processes. There are also a few tricks that you can use in the data entry phase, if you require the matrix to be the 5 by 5, then you can enter in some false data in the rows, however you need to set the numerical value for these rows to zero. They you get the groupings, without it effecting the numerical outputs.

## Gap Analysis

Gap analysis is a tool for quantifying the difference between a customer's expectations and experiences with regard to a product or service. This also demonstrates to what extent the product / service is important to the customer.

People answer 2 sub-questions to each question:

- **What were your expectations of the product / service?**  
[Very Low] [Low] [Medium] [High] [Very High]
- **What were your experiences of the product / service?**  
[Very Low] [Low] [Medium] [High] [Very High]

This provides the information for the gap, then they answer the third part of the question.

- **Please write a few words to help explain your answer.**
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This technique combines the areas of qualitative and quantitative together, to give the researcher a strong instrument for analysing the gap. When you combine all three techniques together, you get a powerful tool. The gap analysis shows us where we are undersatisfying, satisfying or oversatisfying our clients. The quantitative analysis allows you to compare between different issues, and the qualitative analysis allows the researcher to be able to understand why the user responded as they did. Once this has been achieved, it is then possible to explore the results for patterns, and to follow up on other useful information.

An example of a gap analysis would be:

There are a total of 138 responses in this example.

- 65 persons / 47% of respondents had a positive outlook towards your product / service.
- 24 persons / 17% of respondents had a satisfied outlook towards your product / service
- 49 persons / 35% of respondents had a negative outlook towards your product / service

In the light grey area is a group of customers who believe that the product / service has been of greater benefit than their expectations. Thus 30 people / 21.7% of the respondents have a level of low satisfaction.

<b>VH Expect</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>1</b>
<b>H Expect</b>	<b>12</b>	<b>12</b>	<b>6</b>	<b>2</b>	<b>8</b>
<b>M Expect</b>	<b>0</b>	<b>23</b>	<b>5</b>	<b>8</b>	<b>4</b>
<b>L Expect</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>5</b>	<b>7</b>
<b>VL Expect</b>	<b>13</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>0</b>
	<b>VL Find</b>	<b>L Find</b>	<b>M Find</b>	<b>H Find</b>	<b>VH Find</b>

In the following pages, a series of worked examples will demonstrate the various type of investigations that can be drawn from the data. This process is just one type of analysis, which is designed to interplay with other data to give a fuller profile of market penetration.

### A Working Example

For this example, we are looking at a pilot survey about people who have purchased a microwave oven, with a set of extras such as a browning tray, dishes and special cleaning fluid. A sample of some of the survey questions is in Appendix 1. The following snap shot of an MS\_Access input form that follows on the next page

The screenshot shows a Microsoft Access input form with the following fields and values:

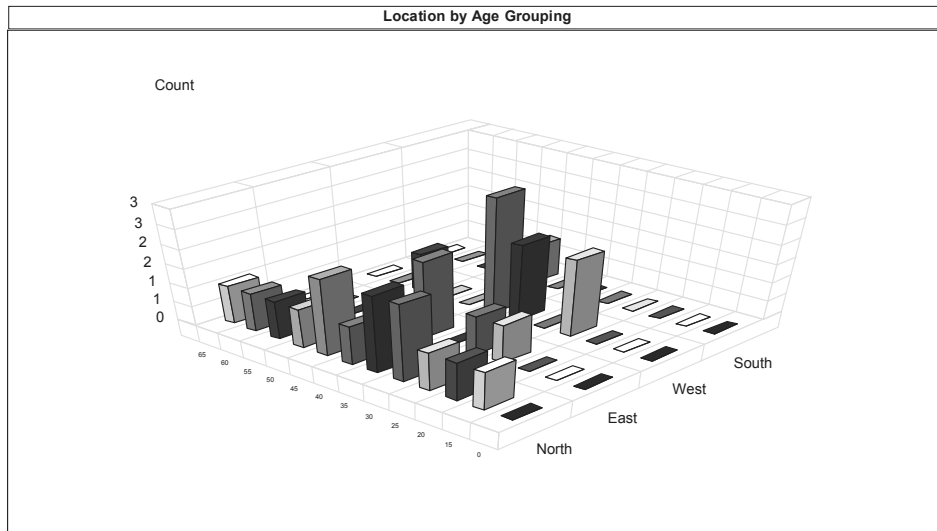
Survey		Pro A F	4	Why B Quality	Quality
Post Code	North	Why A	BW	Why B Price	
Age	35	Why A Quality	Quality	Why B Design	
Sex	Male	Why A Price		Why B Purpos	Purpose
Hear	J	Why A Design	Design	Why B Faulty	
Hear 1 Paper	News Paper	Why A Purpo:		Why B Other	
Hear 2 Radio		Why A Faulty			
Hear 3 Tv	TV	Why A Other			
Hear Web		Pro B E	2		
Hear Person	Person	Pro B F	4		
Income	\$34,000.00	Why B	AU		
Pro A E	3				

The fields in the pilot survey are;

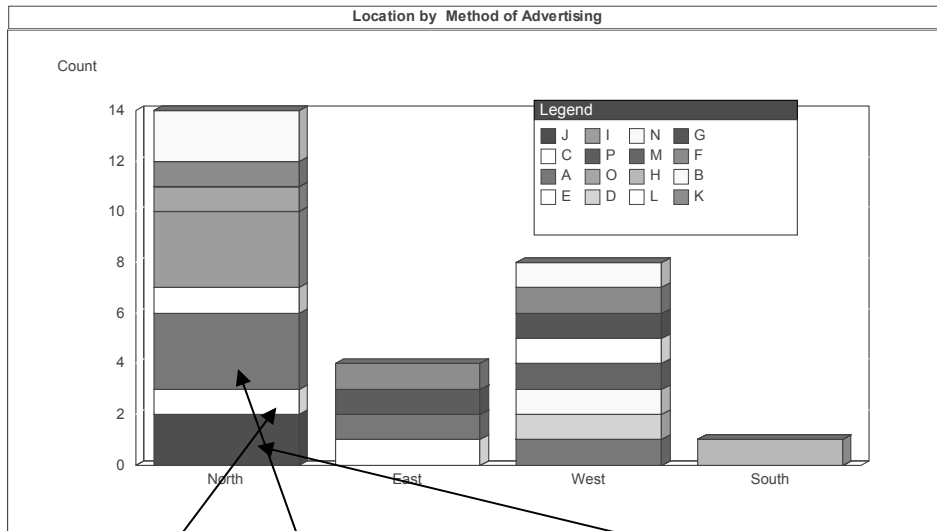
- Home location of the person who made the purchase of the product.
- The age & sex of the person who made the purchase of the product.

- How did the person who purchased the product hear about the product. By Local Newspaper, Radio Station, Television, World Wide Web, Friend / Relative or Sales Person.
- What were the purchasers expectations and what is their experiences.
- Why did they answer the way they did. (This question is usually an open-ended question, which is later coded into predefined concepts, through grounded theory).

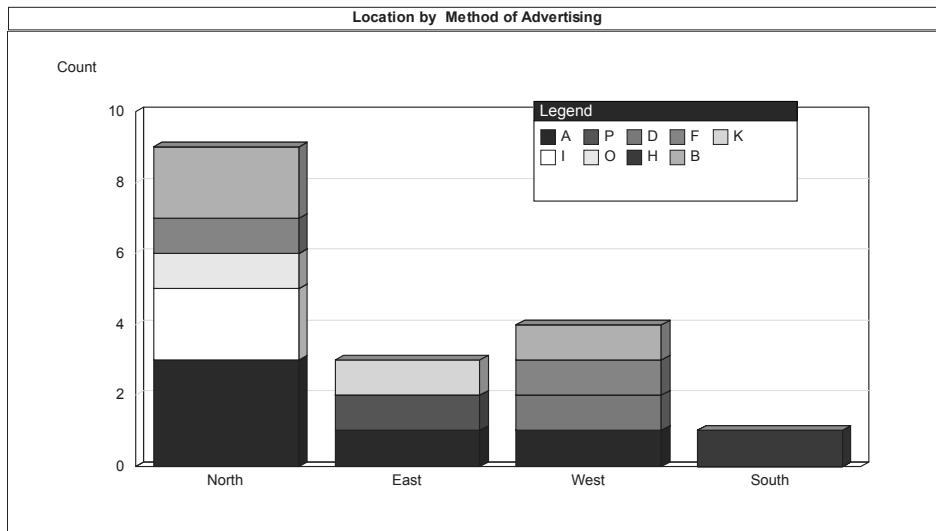
The desired outcome of this pilot survey was to design a two-page survey to gain a better understanding of the likelihood of customer loyalty, as well as to examine the expectations of the various customers to the original product. The idea that a good satisfied customer is a happy one, and therefore a spokesperson for your product is not a new idea, and it is also a very appealing idea for personal endorsement of a product can often influence a new purchaser.



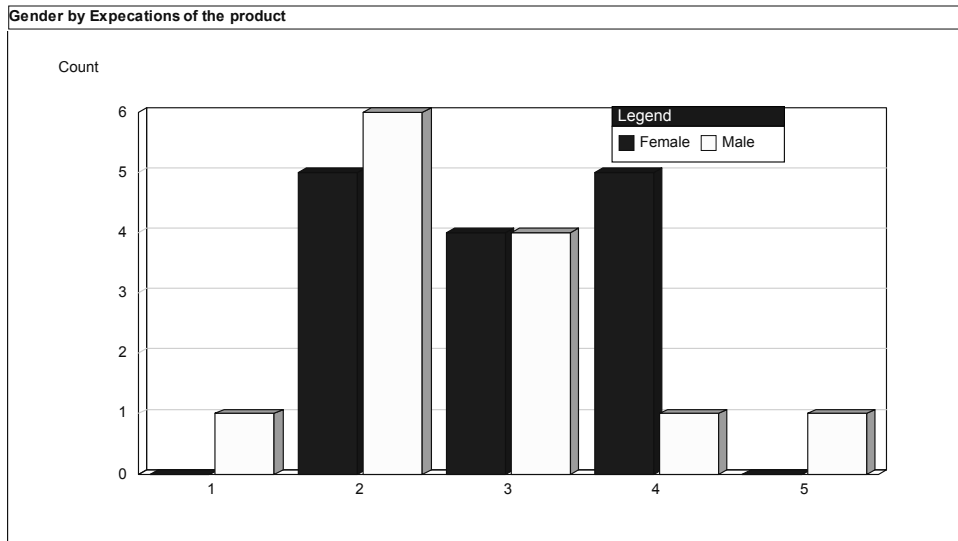
This 3D bar graph is an example, of the different locations of the urban areas surrounding the store location and the number of responses by age of the people who purchased the product and an set of extra's. This shows that the majority of people come from the north, but the biggest single age group comes from the west. This gives us some idea of the degree of market penetration into various age groups within the geographic characteristics.



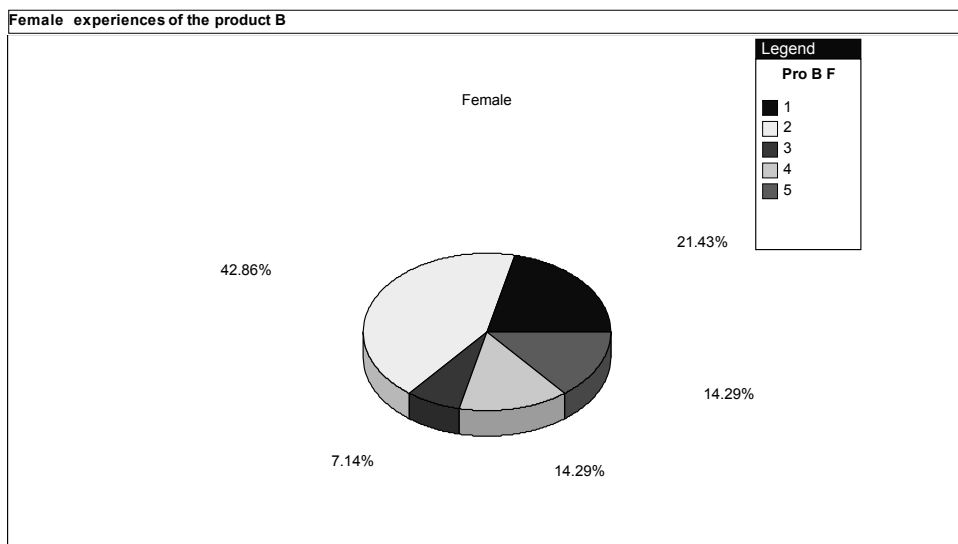
Each combination of choices chosen in the survey can be examined in a set. So the Dark Blue (Newspaper, TV & Radio) can be examined, and then sub divided if appropriate. As we can see in this example, other colours like Yellow (Person and Web) & Red (Radio & TV) also tell some stories on the best advertising methods to reach the current set of customers. This type of analysis also gives us an indication of the best type of vehicle to use in market reach activities. As can be observed in this example, people who purchased this product had different ways of hearing about the product. This information can be linked with external data to give a profile of the media habits by location.



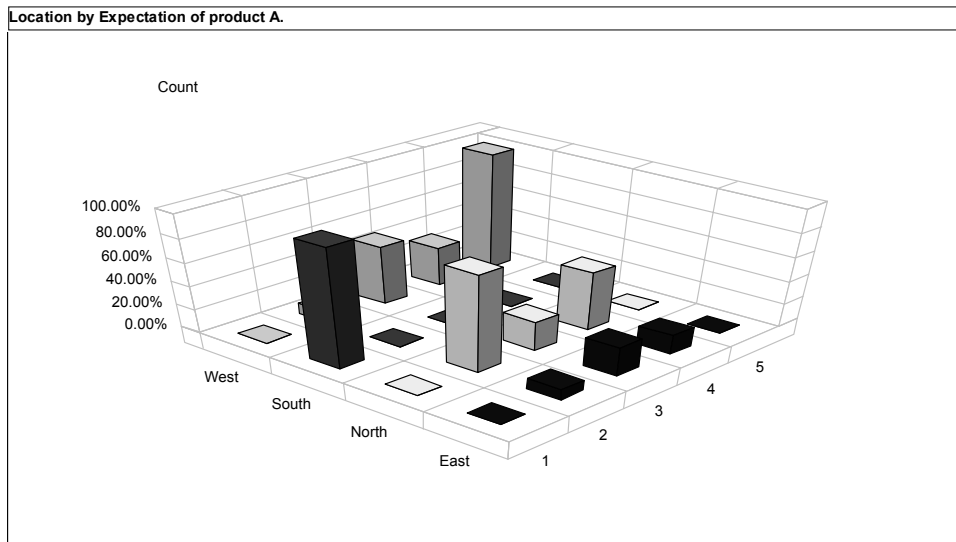
This graph is the same data constructs as the previous one, but because of the way the data can be encoded with the extra variable (mentioned above) it is possible to look at only the combinations that include a specific characteristic of a variable. For instance, the example graph is filtered by the characteristic of RADIO on the variable of 'How did you hear of the product'. Hence the grouped data shown above only shows the relevant notation which the characteristic of RADIO has been included. This allows us to see if the use of RADIO advertising has a significant impact on the purchase of the product. It would appear from the sample, that the people in the North have been impacted by the radio advertising activities than other locations.



As can be seen in this graph, the respondents had a middle range expectation of the product. However in the high expectation (4) area, female purchasers seems to have a higher expectation than male. Even though this is a very small sample set, the ratio of 5:1 would need to be explored further.



As can be seen in this example, 42% of woman in the sample found an low experience of the set of attachments, where as 30% of males (not shown) had the same experience.



This final graphic example shows location by respondent's expectation of product A. This graph gives an indication of the degree of expectation by location, which can then be intermixed with external data to give a better profile. As can be seen in this graph, the south has a lower expectation, whereas the west has a highest expectation.

The following table is a gap analysis of the respondents concerning how well they liked the microwave oven performance. As can be seen in the table below, just over 47% of the respondents stated that the microwave oven performance was better than they expected. 12% of the people believe that the microwave oven performance was average, and 41% believe that it underperformed. 18% of the respondents stated that they had a mid-range negative impression about the product. This could then be broken down further by age, income or another variable.

VH	5.88%	0.00%	0.00%	0.00%	0.00%
H	17.65%	11.76%	5.88%	11.76%	5.88%
M	5.88%	0.00%	0.00%	5.88%	5.88%
L	0.00%	0.00%	0.00%	11.76%	5.88%
VL	0.00%	0.00%	5.88%	0.00%	0.00%
	VL	L	M	H	VH

The following table is a gap analysis of the respondents concerning how well they liked the set of extras. As can be seen in the table below, just over 52% of the respondents stated that the set of extras was better than they expected. 29% of the people believe that the set of extras was average, and 17% believe that it underperformed.

VH	0.00%	11.76%	0.00%	0.00%	0.00%
H	0.00%	23.53%	5.88%	5.88%	0.00%
M	5.88%	5.88%	11.76%	0.00%	5.88%
L	0.00%	0.00%	0.00%	0.00%	5.88%
VL	11.76%	0.00%	0.00%	0.00%	5.88%
	VL	L	M	H	VH



It is also possible to examine customer expectations between different product lines or services. For instance, when you compare the table below, you can see where people had different expectations with regard to quality between the microwave oven and set of extras.

VH	0.00%	0.00%	5.88%	0.00%	0.00%
H	11.76%	23.53%	11.76%	0.00%	5.88%
M	0.00%	5.88%	5.88%	5.88%	0.00%
L	0.00%	5.88%	0.00%	0.00%	11.76%
VL	0.00%	0.00%	5.88%	0.00%	0.00%
	VL	L	M	H	VH

## Reporting

Another part of the survey process is the reporting part, and how to give the results in a format that people can understand, and not be offended or discouraged. If the report is a management report, then reports can be structured towards different person preferences on data reporting, etc. Some people prefer graphs while others prefer numbers or words.

On a note of interest about how people mentally deal with information, we now know that there are 8 different intelligences. When working in a team environment, or providing information / intelligence to a user, it may be a good idea to have a better understanding of their intelligence's profile. Please note that people can have a combination of these intelligence's, in different magnitudes.

- **Word Smart.** People who think in words, love to read, write and discuss. They are good communicators and write clearly, and have a good vocabulary and spelling skills.
- **Logic / Math Smart.** People who think in numbers, patterns, algorithms and are good in maths. They love to think clearly and analytically, often use symbols, solve problems and puzzles
- **Body Smart.** These people are highly coordinated and use lots of gestures and body language. They love to fix things, or take them apart to see how they work. They love hands on activities and play sports.
- **Nature Smart** People who love nature, love sorting and classifying, keen observation skills, and a love for animals.
- **Art / Space Smart** People who think in images, use many lots of visuals, love to draw, have a good eye for detail and are very good at spatial relationships.
- **Music Smart** People who have a good sense of rhythm, love to sing and really enjoy listening to music.
- **People Smart** People who make friends easily, is a leader and resolve conflicts. Loves to work with others, and has great respect for others.
- **Self Smart** Often needs time to make decisions and loves to explore their own thinking. They are often introspective, and prefer their time alone.

Multiple Intelligences :the 8 intelligence's at a glance from Kagan Cooperative learning (USA 1997).

In conclusion, through using this type of customer satisfaction survey, it becomes possible to examine the hidden reasons for the reasons why the consumer after making their decision to purchase, then they become one of the best message sender to advertises your product or service.

The advantages of using the Cognos range of products with this technique is the faster response and data analysis that can be derived from the data. Through using the extra grouping codes and by filtering on them as an individual characteristic of a variable, or on a grouped result, it becomes possible to see the flexibility of respondents, where the usual single response to questions that isn't suitable.

PowerPlay is becoming more of an intelligence-based tool, with the quick hit analysis in more than just the traditional business intelligence area. By using the gap analysis methodology, it is possible to be used in criminal profiling, safety audits, weather forecasting, and other customer investigations.

In closing I hope you have found some of the ideas interesting, and if you would like to know more about the use of Cognos products with Gap Analysis, please feel free to contact me.

### **Reading List**

Gap Analysis - AMA Handbook for customer satisfaction by Alan Dutka. Published by the NTC Business books in 1992.

Grounded Theory - Basics of Qualitative Research: grounded theory procedures and techniques. By Anselm Strauss & Juliet Corbin. Published by sage publications in 1990.

Problem Solving - Solving reshelving backlogs in a university library: a case study in interactive problem solving techniques with TQM applications. In Australian Library Journal Feb 1995, (44,1)

**Appendix 1.**

**Post Code** \_\_\_\_\_ **Age in Years** \_\_\_\_\_ **Sex** Male / Female **Income \$** \_\_\_\_\_

**How did you hear about the Product / Service.**

Newspaper / Magazine  Radio  Television  Internet  Person

**What were your expectations of Product A?**

[Very Low] [Low] [Medium] [High] [Very High]

**What were your experiences of Product A?**

[Very Low] [Low] [Medium] [High] [Very High]

**Please write a few words to help explain your answer.**

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**What were your expectations of Product B?**

[Very Low] [Low] [Medium] [High] [Very High]

**What were your experiences of Product B?**

[Very Low] [Low] [Medium] [High] [Very High]

**Please write a few words to help explain your answer.**

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**What were your expectations of Product C?**

[Very Low] [Low] [Medium] [High] [Very High]

**What were your expectations of Product C?**

[Very Low] [Low] [Medium] [High] [Very High]

**Please write a few words to help explain your answer.**

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## Appendix 2

This is a further diagrammatical explanation of what the Gap Analysis table demonstrates.

### Equal – Where every thing is balanced.

VH	Extreme	High	Medium	Low	Equal
H	High	Medium	Low	Equal	Low
M	Medium	Low	Equal	Low	Medium
L	Low	Equal	Low	Medium	High
VL	Equal	Low	Medium	High	Extreme
	VL	L	M	H	VH

Satisfaction	Dissatisfaction
This is where the customer's satisfaction & dissatisfaction are balanced, as well as their expectations & experiences. This is to say that the customers are contented with the product / service.	

### Low – Feelings are slight.

VH	Extreme	High	Medium	Low	Equal
H	High	Medium	Low	Equal	Low
M	Medium	Low	Equal	Low	Medium
L	Low	Equal	Low	Medium	High
VL	Equal	Low	Medium	High	Extreme
	VL	L	M	H	VH

Low Satisfaction	Low Dissatisfaction
Low satisfaction is where the customer thinks that the product / service is just above where they expected it to be.  Their opinion may be easily be shattered and drop down in their satisfaction level, if they find a change they didn't expect and disagree with.	Low dissatisfaction is where the customer thinks that the product / service is just below where they expected it to be.  However, their slightly negative perception may well be because of a misguided or poor understanding of the product / service, and it may be possible to move these people up a few levels, with little resource impacts.

**Medium – where customers have some decided opinions.**

<b>VH</b>	<b>Extreme</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>
<b>H</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>
<b>M</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>
<b>L</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>VL</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>Extreme</b>
	<b>VL</b>	<b>L</b>	<b>M</b>	<b>H</b>	<b>VH</b>

<b>Medium Satisfaction</b>	<b>Medium Dissatisfaction</b>
<p>Medium satisfaction is where the customer thinks that the product / service is above where they expected it to be.</p> <p>These customers are more comfortable with the product / service and are more likely to ride out any discomfort that may arise.</p>	<p>Medium dissatisfaction is where the customer thinks that the product / service is below where they expected it to be.</p> <p>These customers have a greater discomfort with the product / service and would need more resources to move them up the satisfaction scale.</p>

**High – their mind is made up, but they still could listen.**

<b>VH</b>	<b>Extreme</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>
<b>H</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>
<b>M</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>
<b>L</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>VL</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>Extreme</b>
	<b>VL</b>	<b>L</b>	<b>M</b>	<b>H</b>	<b>VH</b>

<b>High Satisfaction</b>	<b>High Dissatisfaction</b>
<p>High satisfaction is where the customer thinks that the product / service is well above where they expected it to be.</p> <p>These customers are more comfortable with the product / service and are more likely to ride out any discomfort that may arise</p>	<p>High dissatisfaction is where the customer thinks that the product / service is well below where they expected it to be.</p> <p>These customers have a great discomfort with the product / service and would need extra resources to move them up the satisfaction scale.</p>

Extreme – these people’s views are set in stone.

<b>VH</b>	<b>Extreme</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>
<b>H</b>	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>
<b>M</b>	<b>Medium</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>
<b>L</b>	<b>Low</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>
<b>VL</b>	<b>Equal</b>	<b>Low</b>	<b>Medium</b>	<b>High</b>	<b>Extreme</b>
	<b>VL</b>	<b>L</b>	<b>M</b>	<b>H</b>	<b>VH</b>

<b>Extreme Satisfaction</b>	<b>Extreme Dissatisfaction</b>
<p>These customers are well and truly over satisfied with your product / service, and regard it in the highest esteem.</p> <p>It would be near impossible to lose them as customers.</p>	<p>These customers are so dissatisfied with your product or service, they might actually hate it.</p> <p>It isn't worth the resources to try and move them on purpose.</p>