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THE USE OF MARKETING RESEARCH INFORMATION IN THE NEW PRODUCT DEVELOPMENT PROCESS: AN AUSTRALIAN PERSPECTIVE

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and

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Services Marketing Research Group
Department of Management
University of Wollongong
Wollongong NSW
Australia

ABSTRACT
Many colourful terms have been used to describe the significance of the New Product Development Process (NPDP) to firms, including: “lifeline of the organisation”, “critical to survival” and “provides sustainable competitive advantage”. Indeed, the NPDP’s importance to firms long term growth and prosperity is undisputed, with many firms finding that the majority of their current sales are from products introduced within the past three years. However, despite the attention afforded the NPDP the new product failure rate has remained alarmingly high. While past research has clearly identified the key causes of new product failure, many of these causes concern the inappropriate use of marketing information, i.e., formal market research and general marketing information in the NPDP. However to date, no one has specifically examined the extent and frequency of usage of types of specific research information, nor at what point in the new product development process they are utilised. For example, at what point is formal market research used? When are various forms of more general marketing intelligence used? Or indeed, at what stage do firms rely on sales representatives for feedback? The purpose of this study was therefore to address these issues. The reported findings have implications for both marketing research suppliers as well as marketing managers.

INTRODUCTION
New products are the lifeline of many organisations in the 1990’s. As product lifecycles continue to shorten, the new product development process (NPDP) is considered critical to many companies maintaining a sustainable competitive advantage, and indeed their very survival. It is therefore of a concern that the new product failure rate is running at an unacceptably high rate of around 40%. This failure rate has not changed significantly from that reported in the 1960’s, 70’s and 80’s. It seems that the past three decades of refinement and growth of marketing knowledge has had little impact on the failure rate (Page 1993). In fact, where it is expected that greater use of this advanced knowledge would occur, the opposite seems to have happened. In the USA, there is evidence of declining sales in the market research industry, where it is reported that marketing executives are becoming increasingly sceptical about research and are bewildered by techniques such as scanner technology, computer simulation models, multivariate techniques and the ever increasing proliferation of consumer surveys (Mahajan & Wind 1992). As new product development research is one of the major reasons that market research is commissioned, this “growing scepticism” by users is an obvious concern for both the research industry and new product failure rate. It is therefore imperative that the market research industry better understands the needs and perceptions of its users and the role research information plays in the NPDP.
Since, little published data has been reported on the role, frequency and usage of market research information in Australia, it is difficult to know if the trends in this country parallel those in the United States. In particular there has been no reported work on the specific role that marketing information, in general, plays in the NPDP among Australian private sector firms. Therefore, the primary purpose of this paper is to report the results of an empirical study into the role that this marketing information, i.e., both formal market research and general marketing intelligence, plays in the New Product Development Process.

The paper is organised as follows. Firstly, a brief review of the NPD process will be described, with particular attention given to the role of marketing information. Next the methodology employed in this study will be outlined. Then the empirical results and a discussion of the managerial implications are given.

BACKGROUND

New products are now an integral facet of many firms' competitive strategies. The quickening pace of technological change, heightened competition from home and abroad, and increasingly dynamic markets all drive the quest for successful new products. However product innovation is fraught with difficulties: High failure rates, and high attrition rates continue to plague many firms new product efforts (Cooper & Kleinschmidt 1988). Furthermore:

"the route from new product idea to national launch is subject to a series of information-gathering exercises, the purpose of which is to improve the quality of the decisions made in the process" (Goulding 1978, p12).

This seems as relevant in 1996 as it was then. Basically, the role of these "information gathering exercises", be they formal market research, or everyday marketing intelligence, must be to assist in better decision making by management thus increasing the probability of a successful new product launch.

WHAT CONSTITUTES A NEW PRODUCT?

The term "new" in the new product development process needs to be clearly defined. Booz, Allen & Hamilton (1982), identified various categories of new products in terms of their newness to the company and to the marketplace:

New-to-the-world products: new products that create an entirely new market
New product lines: new products that, for the first time, allow a company to enter an established market.

FIGURE 1: Booz, Allen & Hamilton's New Product Development Process

<table>
<thead>
<tr>
<th>Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Product Strategy Development</td>
</tr>
<tr>
<td>Idea Generation</td>
</tr>
<tr>
<td>Screening &amp; Evaluation</td>
</tr>
<tr>
<td>Concept Testing</td>
</tr>
<tr>
<td>Business Analysis</td>
</tr>
<tr>
<td>Development</td>
</tr>
<tr>
<td>Testing</td>
</tr>
<tr>
<td>Commercialisation</td>
</tr>
</tbody>
</table>
Additions to existing product lines: new products that supplement a company's established product lines. Improvements in revisions to existing products: new products that provide improved performance or greater perceived value, and replace existing products.

Having defined what new product development is, the NPDP model used in this study is illustrated in Figure 1. This is an adapted version of the Booz, Allen & Hamilton model which practitioners suggested required modification with the introduction of a "Concept Testing" stage between "Screening" and "Business Analysis" (Kotler 1991, Feldman & Page 1984, Cooper 1984).

The stages outlined in Figure 1 form the basis of our study. Each stage in the NPDP is examined in terms of the type and extent of research information utilised. The next section outlines the research methodology employed in this study.

RESEARCH METHOD

A self-administered questionnaire was sent to 1,000 private sector firms in total, 650 in N.S.W and 350 in Victoria. Our sampling frame comprised the New South Wales and Victorian membership of the Australian Marketing Institute (AMI). The questionnaire was directed to a key marketing executive who had participated in the new product development process within the previous three years. The initial mailing resulted in only 133 usable questionnaires being returned. Five weeks after the initial mailing, a follow-up mailing was conducted. As a result, a further 68 usable responses were received. Some fifty-nine questionnaires were returned because the firm had not been involved in a new product launch in the past 3 years or due to a wrong address. In all, 201 usable questionnaires were received, representing a net response rate of 26%.

NON-RESPONSE BIAS

An examination of respondents job titles revealed that most were in senior marketing positions and hence their time would be a scarce resource. Another reason for non-response was found to be confidentiality. In particular, numerous executives employed by large food manufacturing companies refused to participate quoting company policy as the reason. Enquiries such as ours were treated with suspicion even when confidentiality was assured, and company policy prevailed.

ANALYSIS OF EARLY - LATE RESPONSES

As there was a reasonable response to the second-wave mailing (an additional 68 valid responses) it was decided to examine whether there were any significant variations between late and early responses. This was achieved by a comparison of mean scores across a number of key questions (Armstrong and Overton 1977). No statistically significant variation was found indicating that non-response bias may not be a major issue.

PROFILE OF RESPONDENTS

Tables 1 and 2 provide a profile of the 201 firms in the sample. Table 1 indicates a relatively good representation among firms from each of the three main industry categories - industrial, consumer and service. Table 2 indicates a bi-polar distribution with 24.6% of respondent firms being regarded as "small" (i.e., less than $10 million annual turnover) and 24.6% being "large" (i.e., greater than $300 million annual turnover). Nonetheless, while it may only be considered as a non-probability convenience sample, a broad spectrum of Australian organisations appear to be represented in our sample.
TABLE 1: NATURE OF THE FIRMS MARKETING EMPHASIS

<table>
<thead>
<tr>
<th></th>
<th>Freq</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>87</td>
<td>43.2</td>
</tr>
<tr>
<td>Consumer</td>
<td>57</td>
<td>28.4</td>
</tr>
<tr>
<td>Services</td>
<td>57</td>
<td>28.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>201</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

TABLE 2: ANNUAL SALES TURNOVER

<table>
<thead>
<tr>
<th></th>
<th>Freq</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $10 mill</td>
<td>48</td>
<td>24.6</td>
<td>24.6</td>
</tr>
<tr>
<td>$10-50 mill</td>
<td>48</td>
<td>24.6</td>
<td>49.2</td>
</tr>
<tr>
<td>$51-100 mill</td>
<td>21</td>
<td>10.8</td>
<td>60.0</td>
</tr>
<tr>
<td>$101-150 mill</td>
<td>14</td>
<td>7.2</td>
<td>67.2</td>
</tr>
<tr>
<td>$151-200 mill</td>
<td>5</td>
<td>2.6</td>
<td>69.7</td>
</tr>
<tr>
<td>$201-300 mill</td>
<td>11</td>
<td>5.6</td>
<td>75.4</td>
</tr>
<tr>
<td>$300+ mill</td>
<td>48</td>
<td>24.6</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>195</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 3: STAGES CARRIED OUT IN THE NPDP BY INDUSTRY TYPE

<table>
<thead>
<tr>
<th>Rank</th>
<th>Stages of NPDP</th>
<th>% of All Resp</th>
<th>% of I</th>
<th>% ofC</th>
<th>% ofS</th>
<th>χ²Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>New Prod Strategy</td>
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<td>88.3</td>
<td>81.8</td>
<td>83.6</td>
<td>.52</td>
</tr>
<tr>
<td>4</td>
<td>Idea Generation</td>
<td>84.5</td>
<td>89.2</td>
<td>94.5</td>
<td>87.0</td>
<td>.34</td>
</tr>
<tr>
<td>5</td>
<td>Screening &amp; Eval</td>
<td>82.7</td>
<td>81.6</td>
<td>82.1</td>
<td>89.1</td>
<td>.43</td>
</tr>
<tr>
<td>6</td>
<td>Concept Testing</td>
<td>75.0</td>
<td>80.3</td>
<td>78.2</td>
<td>63.6</td>
<td>.05</td>
</tr>
<tr>
<td>1</td>
<td>Business Analysis</td>
<td>92.2</td>
<td>92.9</td>
<td>89.3</td>
<td>87.3</td>
<td>.53</td>
</tr>
<tr>
<td>2</td>
<td>Development</td>
<td>89.0</td>
<td>92.9</td>
<td>91.1</td>
<td>92.6</td>
<td>.91</td>
</tr>
<tr>
<td>7</td>
<td>Test Marketing</td>
<td>70.0</td>
<td>71.8</td>
<td>66.7</td>
<td>64.2</td>
<td>.61</td>
</tr>
</tbody>
</table>

**LEGEND**
I = Industrial firms
C = Consumer firms
S = Services firms
All Resp. = All Respondents

THE RESULTS

Analysis of the NPDP Stages

Table 3 shows that most respondent firms are fairly sophisticated to the extent that they proceed through all of the formal new product development stages. For example 92% of industrial firms, 89% of consumer firms and 87% of service firms conduct a formal business analysis stage. Interestingly though, the data reveals that two critical stages, specifically concept testing and test marketing, are less frequently employed than the other stages.

To illustrate, only 75% of all firms in the sample used a formal concept testing stage, while only 70% utilised formal test marketing. Link (1987) in examining the type of market research techniques used in the NPDP among Australian firms also reported a low incidence of formal concept testing. The other thing to note from Table 3 is that for concept testing, statistically significant differences were found across categories of firms. In particular, only 63.6% of service firms used this stage prior to new service launch compared with 78% and 80% of consumer and industrial products launched,
respectively (Chi-square test shows differences to be statistically significant at p<.05). This is an interesting finding since the intangible, experiential nature of services would seem to suggest that concept testing prior to launch should take on even more importance than it does for physical, tangible products. For all other stages however, we found no significant differences in the usage rates across the three industry types.

THE TYPES OF MARKETING INFORMATION USED AT VARIOUS STAGES OF THE NEW PRODUCT DEVELOPMENT PROCESS

Table 4a and 4b show at which individual stages of the NPDP each type of information was used. The results as they relate to each of these stages will now be discussed in turn.

(1) New Product Strategy Development Stage

During this stage, Competitor analysis was clearly the most frequently used information from either the formal market research or the more general marketing intelligence sources with 69% of firms using it. At face value a 69% usage rate might appear high. What is surprising however, is that not all firms make use of intelligence about direct and indirect competition at this early stage in the NPDP. If a serious and rigorous assessment is not made of competitive product/service offerings at this key stage, how can a “positioning” platform and a unique selling proposition be developed?

Marketing intelligence from the Salesforce at 51% was the second most used source, possibly providing management with direct feedback from customers concerning unmet needs and problems with existing suppliers offerings. Customer visits (40%) came third, again indicating the importance of direct customer feedback.

TABLE 4: THE USE OF MARKETING INFORMATION AT VARIOUS STAGES OF NPDP

<table>
<thead>
<tr>
<th>Percentage of all respondents using each information source</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAGES</td>
</tr>
<tr>
<td>OF NPDP</td>
</tr>
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4a: FORMAL MARKET RESEARCH

<table>
<thead>
<tr>
<th>Stage</th>
<th>NPS</th>
<th>IG</th>
<th>S&amp;E</th>
<th>CT</th>
<th>BA</th>
<th>DEV</th>
<th>MT</th>
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<tbody>
<tr>
<td>Consumer</td>
<td>22</td>
<td>16</td>
<td>19</td>
<td>29</td>
<td>7</td>
<td>7</td>
<td>24</td>
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<tr>
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<td>7</td>
<td>10</td>
<td>15</td>
<td>6</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Telephone Surveys</td>
<td>14</td>
<td>7</td>
<td>6</td>
<td>12</td>
<td>4</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Mail</td>
<td>15</td>
<td>11</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>6</td>
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<td>7</td>
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<td>6</td>
<td>9</td>
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<tr>
<td>Syndicated</td>
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<td>16</td>
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<td>10</td>
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<td>33</td>
<td>7</td>
<td>9</td>
<td>27</td>
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<tr>
<td>Interviews</td>
<td>24</td>
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<td>9</td>
<td>9</td>
<td>7</td>
<td>8</td>
<td>4</td>
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<td>Focus Groups</td>
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<td>21</td>
<td>33</td>
<td>7</td>
<td>9</td>
<td>27</td>
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<tr>
<td>Foreign</td>
<td>24</td>
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<td>9</td>
<td>9</td>
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<td>21</td>
<td>33</td>
<td>7</td>
<td>9</td>
<td>27</td>
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</table>

4b: INFORMAL SOURCES

<table>
<thead>
<tr>
<th>Stage</th>
<th>NPS</th>
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<th>S&amp;E</th>
<th>CT</th>
<th>BA</th>
<th>DEV</th>
<th>MT</th>
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</thead>
<tbody>
<tr>
<td>Consumer</td>
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<td>37</td>
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<td>7</td>
<td>7</td>
<td>22</td>
<td>15</td>
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<tr>
<td>Complaints</td>
<td>69</td>
<td>53</td>
<td>27</td>
<td>10</td>
<td>26</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>Competitor Analysis</td>
<td>23</td>
<td>24</td>
<td>12</td>
<td>12</td>
<td>15</td>
<td>25</td>
<td>9</td>
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<td>29</td>
<td>37</td>
<td>17</td>
<td>26</td>
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<tr>
<td>Customer Visits</td>
<td>36</td>
<td>33</td>
<td>33</td>
<td>21</td>
<td>32</td>
<td>36</td>
<td>13</td>
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<tr>
<td>Expert Advice</td>
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<td>38</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Trade Journals</td>
<td>19</td>
<td>31</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>6</td>
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<td>3</td>
</tr>
<tr>
<td>Trade Association</td>
<td>38</td>
<td>30</td>
<td>14</td>
<td>11</td>
<td>16</td>
<td>25</td>
<td>7</td>
</tr>
</tbody>
</table>

LEGEND

NPS - New Product Strategy
S&E - Screening & Evaluation
CT - Concept Testing
BA - Business Analysis
DEV - Development
MT - Market Testing

(2) Idea Generation Stage

The most frequently used information source was the Salesforce with 66%, second is Competitor Analysis with 53%,
third are Customer Visits (46%). Again, these results suggest that both competitors and customers are key sources of marketing information at this stage. Interestingly, consumer complaints, with 34% and 37% respectively, are a prime source of intelligence at both stages 1 and 2 of the NPDP. It would appear that Australian firms take more cognisance of their customer complaints when designing and testing new products than the popular press suggests (Horin 1995).

(3) Screening and Evaluation Stage
Here the Salesforce is again the most used source with 37%, second is Expert Advice 33%, third are Customer Visits with 29%, fourth is Competitor Analysis (27%), while Focus Groups are used by 21% of firms at this critical stage. As a GO/NO decision is often addressed as a result of this stage, it is of interest that Expert Advice is prominent at this important assessment stage. In the three stages so far, it should be noted that informal sources of marketing information rather than formal market research have featured prominently. These informal sources usually provide more qualitative data and a "feel" for a particular circumstance. The Salesforce, in particular is heavily relied upon as a source of information.

(4) Concept Testing Stage
Table 4 indicates that Customer Visits are the most frequently used information type with 37%, second is the Salesforce (36%), third are Focus Group Interviews with 33%. As the emphasis at this stage is almost entirely on customer reaction to a new product offering, the Salesforce and Customer Visits are again utilised in an attempt to acquire customer feedback on proposed new products/services. The information sources most used are still of an informal nature, however more formal sources, i.e., Focus groups, Consumer panels, are now more prominent as a means of more accurately assessing the reactions of potential customers to new product ideas/prototypes. What is surprising however is that only 33% and 29% of firms respectively, use these sources. Having gained a "feel" for the product/service via informal sources in NPD stages 1-3, the emphasis is beginning to turn to more substantive market research. This finding will be examined in detail later.

(5) Business Analysis Stage
Here again Expert Advice figures prominently (32%), second is the Salesforce (30%), and third is Competitor Analysis (26%). It seems the the Salesforce is once again used to provide their insights into demand predictions and the competitive situation to enable a qualitative assessment of key variables such as the price elasticity, price point barriers, demand levels and comparison with competitive offerings.

(6) Development Stage
Expert Advice is the most used information type with 36%, second is the Salesforce with 29%, third are Customer Visits with 26%. In developing the product/service, refinements are necessary along the way. Therefore it is not surprising that this technical stage still requires input from the main sources of information used so far.

(7) Market Testing Stage
Customer Visits are the most frequently used with 36%, followed closely by the Salesforce with 35%. Equal third are formal market research techniques - Personal Interviews and Focus Groups (27%). The point to note is the increased use of formal market research techniques when the product/service concept has been formalised and "hard" data rather than "feel/soft" data is required to quantify possible consumer responses and market demand. Again an interesting point to ponder is why more formal market research
is not undertaken by more firms at this stage prior to launch? Refining the marketing mix elements is critical at this point in the NPDP, as a test market by its very nature can assess customers actual behaviour rather than measure intentions, attitudes and perceptions which can be notoriously misleading.

In summary, the most frequently used information types in the NPDP are the Salesforce, in-company Competitor Analysis and Customer Visits. These are generally informal, qualitative kinds of marketing information which tend to provide insight and greater understanding and "feel" other than other, more formal quantitative techniques. The Salesforce apparently act as a great source of "feel" for many organisations until it is necessary to gauge as accurately as possible consumer sentiment (demand quantification) with the addition of more formal market research techniques. A point to note is that Competitor Analysis features highly as a key information source throughout, but especially in the early stages of the NPDP. This is consistent with Dwyer and Mellor's (1989) study which found that many firms were more inclined to focus upon competitors circumstances rather than on customer needs. This could be a telling observation in understanding the role that marketing information plays in the NPDP. It appears formal market research tends to be used later in the NPDP rather than earlier to quantify consumer attitudes and behaviour.

IMPLICATIONS AND DISCUSSION OF THESE FINDINGS

Our results appear to throw some light on four established, key reasons for new product failures:

(1) Lack of management commitment and support, leading to insufficient market analysis (Cooper 1988, Cooper & Kleinschmidt 1986, Link 1987). The level of support offered by management during many key stages of the NPDP (particularly pre-development activities) is a critical factor in determining the success or failure of any new product.

By understanding the information use practices of managers it will enable the identification of areas where this lack of resource commitment, which manifests itself in insufficient market analysis, is the most damaging. What is clearly evident from our results is that a greater proportion of informal marketing information compared to formal market research, is used in these critical pre-development stages. This is possibly because it is more readily accessible than formal market research, does not involve an incremental financial commitment, and does not require justification for use of company resources to senior management or the financial controllers. The problem though, is this reliance on "soft data" can jeopardise the entire NPDP as it is often at these pre-development stages that fatal mistakes are made in design, selection of product attributes and positioning strategy.

(2) Not introducing a "superior" differentiated product onto the marketplace (Cooper & Kleinschmidt 1987). This cause can also be traced to an insufficient market analysis at critical, early points in the NPDP. Table 5 for example indicates that of the total marketing budgets for firms, the portion allocated for market research is fairly low with 81.4% of respondent firms allocating less than 10% of their total marketing budget to research. The question must be asked, are firms allocating sufficient resources to research early enough in the NPDP, or is there an over reliance on relatively inexpensive and available forms of other market intelligence (such as sales force feedback, informal discussions with customers)? Cooper & Kleinschmidt (1988) examined this issue in relation to over 200 new industrial products and concluded that the successful ones expended significantly more resources (dollars spent and man-hours) at these critical early pre-development stages, than
did products that fail. There might seem to be a lesson here for Australian product and marketing managers.

(3) Not following a formal new development process explicitly due to a lack of pertinent and timely information (Cooper 1988; Feldman & Page 1984). The results in Table 3 indicate that two key stages of the NPDP, concept testing and test marketing, are neglected in comparison to the other steps in the NPDP. Concept testing is a critical pre-development step, where the customer reaction to the concept/prototype, and intentions to purchase are assessed. Furthermore, and most importantly, perceptions need to be sought regarding the positioning of the product vis-a-vis competitors offerings. With a multitude of formal market research techniques available at this stage (e.g., conjoint analysis, multi-dimensional scaling), why are they not being used? Is it a case of the user of marketing information not being aware or not comprehending the advantages of such techniques, or as previously suggested are they not willing to commit resources to market research at these early stages?

(4) Lack of acceptance of the Marketing Concept - (Ginter & Talarzyk 1978). Many new products fail because the consumer is ignored. This is evident from the results in Table 4, where the emphasis, especially in the early phases, is on competitor analysis rather than on gaining an understanding of customer needs, preferences and perceptions.

CONCLUSION

Firstly, as indicated in the preceding section, our results both confirm and throw additional light on four key causes of new product failure. Furthermore, our results indicate that Australian firms be they industrial, consumer or service providers, tend to make more use of informal information sources rather than the more formal marketing research at all stages in the NPDP. In particular, competitor analysis and feedback from the salesforce are prominent throughout the NPDP, but especially at the critical, early stages of new product strategy development and idea generation. Formal market research tends to be used for "demand quantification" rather than assisting in the early strategy and concept development stages. Could the use of formal market research techniques earlier in the NPDP improve the success rate? Our discussion in the preceding section would suggest so. The onus therefore is, to some extent, on research suppliers to educate and enlighten their customers of the benefits of more formal research information earlier in the NPDP, or as Link (1987, p40) stated:

"there is a significant opportunity, indeed a responsibility, for market researchers, to assist Australian industry in quickening its pace of R&D spending, innovation and new product introduction."

**TABLE 5: MARKET RESEARCH BUDGET AS A PERCENTAGE OF OVERALL MARKETING BUDGET**

<table>
<thead>
<tr>
<th>% of Budget</th>
<th>Freq</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 5</td>
<td>92</td>
<td>55.1</td>
<td>55.1</td>
</tr>
<tr>
<td>6 - 10</td>
<td>44</td>
<td>26.3</td>
<td>81.4</td>
</tr>
<tr>
<td>11 - 20</td>
<td>16</td>
<td>9.6</td>
<td>91.0</td>
</tr>
<tr>
<td>21 - 30</td>
<td>8</td>
<td>4.8</td>
<td>95.8</td>
</tr>
<tr>
<td>31 - 40</td>
<td>2</td>
<td>1.2</td>
<td>97.0</td>
</tr>
<tr>
<td>40+</td>
<td>5</td>
<td>3.0</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>167</td>
<td><strong>100.0</strong></td>
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</table>
REFERENCES


INTRODUCTION

The development of new products can be rewarding and in many cases is necessary to maintain a healthy organisation. The marketing graveyard is, however, largely populated by new products which failed in the marketplace. To decrease the uncertainty of new product launches and to maximize the payoff of successful innovations marketing managers have turned to market research and modelling to better understand consumer acceptance of their new products. This research has primarily been of two types: choice modelling and diffusion theory.

Choice modelling is a statistical technique for examining the determinants of a product’s purchase by consumers. It is done either by exposing respondents to hypothetical concept brands with different levels of attributes or by asking them about existing products on the market and the perceived level of attributes that they contain. By then eliciting probability of choice it is possible to infer how important each attribute or product feature is in driving choice. Choice modelling has been increasingly used over the last decade to reduce the risk of failure by refining predictions of market response to a range of product mix and price configurations. The design of a new product can be modified based on this consumer feedback to improve its success in a competitive market at a profitable price.

In contrast to choice modelling which concentrates on how consumers compare products across attributes at a given point in time (generally assuming that one brand will be chosen), diffusion theory focuses on how sales of a product will change over time. Because of an emphasis on the change of sales from one period to another, rather than on which product will be chosen during a given period, it is more appropriate for forecasting the sales of a total new product category, rather than the brand share within it.

USING THE DIAGNOSTICS OF DYNAMIC CHOICE MODELS TO MANAGE OR DEFEND AGAINST NEW PRODUCT LAUNCHES

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ABSTRACT

The paper unites the two major paradigms used to forecast consumer acceptance of new products: attribute-based choice models and diffusion models. Combining the positioning and brand choice benefits of choice models with the dynamics of diffusion models enables us to determine not only initial acceptance of a new product, but also its ultimate equilibrium share and the sales trajectory to that share. By identifying the determinants of this dynamic view of the market using multiattribute models the marketing strategist of the new entrant can optimize her share over time, while incumbent brand managers can test which strategies best blunt the inroads made by the new product.

An application of the model to the defence against a new entrant demonstrates how the model may be implemented in practice and its parameters calibrated. It also demonstrates the managerial implications that stem from using the model.
Thus, choice models form a natural complement to diffusion models. Static, attribute-based choice models are good at explaining product positioning and also brand choice, but have nothing to say about dynamics nor purchase timing. On the other hand, diffusion models attempt to explain when the category will be purchased and how that will change over time, but are silent about which brand will be chosen and how that will be affected by different brands' positionings. Clearly, all four of these issues are important to the new product development manager. Roberts and Urban (1988) developed a model which began to unite the dynamics of diffusion models with the product positioning benefits of discrete choice models. That work has subsequently been extended by Erdem and Keane (1994). Roberts and Urban applied their model to consumer durables, while Erdem and Keane applied the Roberts and Urban model, together with their extensions, to the packaged goods industry. The bringing together of these two rich and popular research traditions has been accelerated by increasing turbulence within many marketplaces, meaning that the static picture provided by discrete choice models is becoming increasingly unrealistic. It is not enough to understand the ultimate appeal of a new product. The ultimate appeal in the economist's ideal equilibrium, is unlikely to ever occur because the marketplace will have changed before it is reached. Incorporating the dynamics of changing sales enables us to look at the market at any point in time and also to study the determinants of its trajectory. Hence we can work out how to influence it and how to moderate that influence over time.

This paper proceeds by a brief review of discrete choice models and diffusion theory followed by an examination of the different forms of dynamic choice models which unite the two. After a review of the new product literature under these three headings, the paper discusses the methodological issues of conducting market research to calibrate the sales trajectory of new products prior to their launch. That concludes the first half of the paper. The second half of the paper examines the managerial issues involved in new product development and then describes an application in which new products were used as a way of market defence against a new entrant in an established industry. The paper concludes with a discussion of the application of these models.

REVIEW OF FORECASTING METHODOLOGIES

The major forecasting methodologies that have been adopted to understand new product acceptance by consumers are static brand choice models, diffusion models of sales over time, and dynamic brand choice models which unite the two. Each of these three modelling approaches is discussed before we look at how to calibrate them in practice.

ATTRIBUTE-BASED CHOICE MODELS

Originally, models which examined how consumers make trade-offs between attributes were calibrated on preference. This can be done in two ways. With preference regression, consumers are asked to evaluate a number of products already on the market in terms of their level of preference or utility for them (either by ranking them from most preferred to least preferred or by rating them in terms of their preference). The second method of evaluating consumers' preference for attributes in new products involves conjoint analysis. With this approach consumers are asked to evaluate a number of different hypothetical product concepts which possess different stated attribute levels. Given a knowledge of the attribute levels in the concepts, the researcher can
infer how consumers trade off between these attributes based on their ranking of the different concepts. A good review of preference regression is contained in Urban and Hauser (1980), while a review of the issues involved in conjoint analysis is contained in Green and Srinivasan (1978, 1990). This examination of the utility or preference for products in terms of the product features or perceived attributes which constitute them has its grounding in both psychology with the early work of Fishbein (1967) and also in economics with the work of Lancaster (1966).

Conjoint analysis has been described as the single most used quantitative market research technique internationally. Wittink and Cattin (1989) give details of the applications of conjoint analysis, including the relative frequency of use of different methods of consumer measurement. Despite its obvious appeal, conjoint analysis has tended to give way over the last five years to discrete choice analysis. Conjoint analysis is useful because it helps new product designers work out how consumers trade off different attributes and price in terms of preference for new products. However, it is silent about whether a consumer will actually choose a product or not, since we cannot assume that respondents will purchase their product of highest preference or utility.

To account for the uncertainty in consumer choice, discrete choice analysis was developed. McFadden (1974) developed a theory which translated how a customer’s perceptions and level of preference could be translated into his probability of choice. The simplest discrete choice model to apply is the logit model. If certain assumptions are made about the error between what consumers say they would prefer in market research and what they would go out and purchase, it is possible to derive a functional form for the probability of choice.

In algebraic terms we may write conjoint analysis as expressing the utility or preference for brand \( j \), \( U_j \), in terms of the level of underlying attribute \( k \) that \( j \) possesses, \( y_{jk} \), and the importance of attribute \( k \), \( w_k \):

\[
U_j = \sum_k w_k y_{jk}
\]

Conjoint analysis says that the consumer’s preference for a product is the sum of the attributes they perceive that product to contain, weighted by how important those attributes are to the consumer.

Discrete choice analysis takes this process one step further. It models the probability that the consumer will purchase brand \( j \), \( P_j \). Under the logit model we may write \( P_j \) in the following form:

\[
P_j = \frac{e^{U_j}}{\sum_i e^{U_i}} = \frac{e^{\sum w_k y_{jk}}}{\sum e^{\sum w_k y_{ik}}}
\]

Since the introduction of discrete choice models in marketing by Gensch and Recker (1979), they have become extremely popular to analyse choice data, particularly data from packaged goods scanner panels (e.g., Guadagni and Little 1983). Much new product design is now predicated on the results of customer acceptance as calibrated by discrete choice models.

**DIFFUSION MODELS**

In contrast to discrete choice and conjoint models, which normally concentrate on understanding each individual’s level of adoption, diffusion models have tended to try to estimate how sales to the population as a whole will progress over time. While conjoint models tend to be calibrated either at the individual level or for specific segments, diffusion models tend to be calibrated for the marketplace. Diffusion models are based
on the concept in epidemiology that new products, like diseases, will spread through the population by some contagion process. That is, when very few people have adopted the new product innovation there will be little word of mouth and awareness of the product, and diffusion will be slow. As more consumers adopt the product awareness will grow, acceptability of ownership will increase as will social pressure to own it, and a contagion effect will occur. This will lead to increasing sales until the population tends to become saturated and most people own the product. As saturation effects kick in, sales will begin to slow down because there is not the unpenetrated market to sustain such high sales levels. This will lead to an S-shaped curve of cumulative sales, or product penetration in the population. These S-shaped curves are usually modelled using a Gompertz or logistic function. The Bass model (1969) which has been the most popular diffusion model in marketing is an S-shaped logistic curve of the form:

$$ Y_t = \frac{a}{b + e^{ct}} $$

where $Y_t$ is the level of cumulative sales and $a$, $b$ and $c$, are parameters to be estimated and $t$ is the time since launch. An alternative way of writing this equation is

$$ \Delta Y_t = (p + q \frac{Y_t}{m})(m - Y_t) $$

where $p$, $q$, and $m$ are parameters. Many variations of the Bass model have been published including extensions to include the effect of price, advertising, and competitive activity. Also more flexible functional forms of the S-curve which are not symmetric about the point of inflection have been introduced. Mahajan, Muller and Bass (1990) give an extensive review of recent advances in the area of diffusion modelling in marketing.

One limitation of diffusion models is that they are extremely hard to calibrate prior to launch. Even after launch, these models are very unstable prior to the point of inflection, that is prior to the point when sales start decreasing. It may be argued that this latter period is the least interesting period to the new product development manager. While various pre-launch calibration systems have been suggested (e.g., Hauser 1978), the methodology has not been extensively adopted for pre-launch forecasting.

Roberts and Urban (1988), looking at the launch of a new automobile in the United States in the early 1980s, united the product positioning benefits which come from the conjoint analysis and discrete choice theory approach with the dynamics of diffusion models. By incorporating uncertainty into the logit choice model, described above, and then seeing how uncertainty and perceptions of product attributes changed at the individual level as the innovation diffuses, they were able to model how the probability of a consumer choosing the product changes over time. Because their model was calibrated at the individual level, Roberts and Urban were able to use market research to estimate its parameters and thus produce accurate forecasts prior to the launch of the innovation, a problem which had largely eluded previous diffusion researchers. This work has subsequently been extended to the packaged goods area by Erdem and Keane (1994). Clearly, this uniting of the two major streams of research is going to be an extremely effective approach since product positioning and dynamics of adoption are both key phenomena in new product management. It comes at some cost: the number of parameters which have to be estimated increases and it is necessary to collect more data from respondents. However, it produces forecasts at different periods of time which means that resources can be allocated appropriately in a dynamic sense, as well as allowing adaptive monitoring of progress relative to forecasts.

The dynamic brand choice framework also enables the dynamic effects of
competition to be incorporated (Lyons 1984), category growth to be modelled (Urban, Hauser and Roberts 1990), and the effect of network structures on salesforce effectiveness to be estimated (Midgley, Morrison and Roberts 1992).

CALIBRATING DYNAMIC PRELAUNCH FORECASTING MODELS

While the above theoretical foundation has given us the modelling tools to explain the phenomena we see happening in the marketplace, we are left with the measurement challenge as to how we calibrate them. Marketing models are calibrated by determining consumer perceptions of future new products and, by knowing the attributes consumers value, translating those beliefs into preferences and purchase intentions (probability of choice). To achieve this we need two elements: stimuli which represent the new product and measures which may be used to gauge how the respondent feels about the stimulus so we can calibrate our models.

Stimuli

There are two challenges which face the market researcher in trying to measure consumer reactions to a new product in dynamic brand choice models. Firstly, the static model must be calibrated. That is, at any point in time the researcher must understand what the level of demand will be, given the competitive environment and the marketing mix being employed by the company at the time. To some extent this is well trodden ground. Conjoint analysis has been doing this for many years, although it is very important to understand which point of time it is that we are actually calibrating. In other words, when we calibrate a conjoint model we must understand whether the stimulus we are giving the respondent corresponds to the information they will have when the product is totally diffused, whether it corresponds to the amount of information they will have immediately after launch, or whether it corresponds to some point in between.

The second challenge in calibrating these models is to understand the dynamics as to how the product’s sales will change over time. This is more difficult to achieve. There have been a number of approaches adopted to measure diffusion effects and product dynamics. Lawton and Lawton (1979) suggest dynamics can be forecast using analogy to previous similar innovations. A more systematic method of doing this has been proposed by Sultan, Farley and Lehmann (1990) using meta-analysis. In contrast, Urban, Hauser and Roberts (1990) and Roberts and Urban (1988) have suggested that sequential information exposure is a more effective method. Under sequential information exposure, the respondent is first asked to evaluate the innovation by being exposed to a storyboard about it. This corresponds to a very low level of information in the marketplace. The static model may be calibrated based on the consumer's perceptions, level of uncertainty, preference, and probability of purchase, given this low level of information. The respondent is then sequentially exposed to more information, including advertising copy, trial usage, consumer reports, and simulated word of mouth by “owners” discussing the new product. The static model may be calibrated at each level of information exposure. Information exposure may be provided in different sequences to different subsamples. From these sequential information exposures we can determine how the consumer’s evaluation and thus probability of purchase will evolve over time. If there is some uncertainty about the nature of the word-of-mouth which will circulate about the product or its physical performance in the marketplace, it is possible to expose different subsamples of respondents to both positive and negative information and thus
test the effect of negative word of mouth or breakdown in product performance. Having developed this series of static models at different information levels, all that remains is to use the updating model to link them together in a diffusion process.

The third and most recent method of calibrating these models involves a process being developed at the Massachusetts Institute of Technology by Glen Urban and his colleagues called information acceleration. Under information acceleration rather than the respondent reacting passively to increasing levels of information, the respondent is actually trained ("brought up to speed") about how the new product will operate. She can thus give a more informed view of the ultimate appeal of the product.

**Measures**

Calibrating the static model at any point in time involves very much the same traditional measures that are used for preference regression and perceptual mapping. That is, attribute perceptions are measured using any of the standard scales; Likert scales, semantic differentials, etc. (See Green, Tull and Albaum 1988 for a discussion.) Similarly, preference may be measured on any standard scale, be it a thermometer scale, constant sum paired comparison, etc. Finally, probability of purchase may either be measured on a 5 point intention scale, or preferably on a Juster 11 point probability of purchase scale. Once each of these constructs has been measured then the relationship between them can be established. We can determine how different attribute levels are drivers of different levels of preference, which in turn affect an individual's probability of purchase.

Measuring the updating mechanism involves somewhat more innovative market research. To calibrate the level of updating as the product diffuses it is necessary to get some correspondence between the information updating that occurs in the laboratory, and the level of learning which will occur in the marketplace. There are a number of ways in which this correspondence may be established. The most popular is to apply the model on a control sample of some currently available innovation and calibrate its dynamics in the laboratory, comparing it to the known sales trajectory of the existing product. This approach has been found to work fairly well (e.g., see Roberts and Urban 1988). Alternative methods involve management judgment, analogy, or relation to some third variable (e.g., advertising flighting and weights). One specific analogy for establishing the rate at which the trajectory will be realised is to use overseas experience. For markets which are not at the leading edge of technology, this can be an extremely promising approach. Research from the local market still drives the ultimate penetration level, the shape of the sales trajectory, and the initial levels of sales. The only thing that management judgment, international sales, and sales of analogues are used for is to work out how quickly the known shape between minimum sales at launch and ultimate sales at saturation will be reached.

**FORECASTING NEW PRODUCT SALES: THE MANAGEMENT PROBLEM**

**The Management Problem**

The most fundamental reason why forecasts of a new product’s sales are required is for the G0/NO GO decision which management must make about whether to launch. However, once a GO decision has been made, there is a large number of subsidiary questions which need to be answered, all predicated on the sales of the new product and how that will change over time. In the automobile industry, for example, new product development forecasts will determine run lengths, production planning, features which are incorporated in the new product,
advertising copy and media selection, as well as product positioning, portfolio analysis, how other company brand sales will be affected, financial planning, and early sales monitoring. While the most obvious application for these models is for a company to forecast and monitor the progress of their own new product launches, the methodology has also been successfully applied to track competitive product launches as well.

The 1990s has seen a large amount of product entry at a corporate level in Australasia. Ansett Airlines has entered the international airline business, Telecom New Zealand has faced competition from Clear Telecommunications, NRMA has entered interstate markets from its NSW insurance base, Dainmaru has entered the retailing market in competition to David Jones and Myer in Melbourne, and Optus has challenged Telecom in the Australian telecommunications market. The deregulation of the banking sector has led to a number of new banks together with a range of new services, while Australia Post has been attacked in a number of its markets by couriers and bulk mail deliverers. In all of these cases new entrants are not expecting to enter the market and seize a financially viable share immediately. Rather, they aim to establish a beachhead and build up a viable position from that. Therefore in these applications it becomes essential that, given the size of the beachhead and the ultimate appeal of the product measured by market research, we are able (either in the role as an incumbent defending its position, or as the entrant attempting to gain a viable equilibrium share) to measure the ultimate equilibrium position that the entrant will attain and also the trajectory which it will follow in getting there.

Understanding the uses to which these forecasts will be put lets the market researcher to focus his or her attention on the key phenomena and ensure that output is provided in a way which will be immediately accessible for management action. For example, in most of the applications with which the authors have been associated, scenario analysis has been one of the major management requirements. Managers need the ability to test different advertising strategies, service levels, and pricing packages. User-friendly software which enables the manager to look at market outcomes given different marketing mixes by both the company and their competitors is essential. Also essential is that all of the key phenomena which influence consumer behaviour including management decision variables, are incorporated into the model. If this modelling software contains financial data, production data, and marketing data, it can act as a way of coordinating corporate strategies and using common planning assumptions across the organization.

APPLICATION: DEFENCE IN THE RETAIL DEPARTMENT STORE MARKET

The application described in this paper, is typical of a number of applications. It is described as being in the department store market in Shellcombe, a mythical city in South Eastern Australia. The major department store in Shellcombe, Favoured Sloanes or FS Stores, is facing entry from a major international Japanese chain, called Jambaroo. It is particularly determined to defend its customers that hold an FS Stores credit card. This group tends to be large spenders and reasonably loyal to their primary department store. In particular, at the time of this research 60% of all Favoured Sloanes’ sales were to their credit card holders. While the situation has been disguised and the data have been transformed for reasons of commercial confidentiality, the application, relationships and managerial implications are all very real; being taken from a live example in another industry.

A new entrant into the market brings with it a series of new product
developments, differentiated by new features and innovative pricing structures. From the perspective of the new entrant there is the problem of how to gain competitive advantage either by adding value (new features) or decreasing price (cheaper products). From the perspective of the incumbent, the challenge is to defend against these strategies and ensure the continuing price competitiveness of the company’s offering, including leveraging off brand loyalty of existing customers and exploiting inertia of customers to stay with their current supplier. Underpinning both players’ strategies is the factor of segmentation: different customers have different needs, value different attributes, and have different levels of price sensitivity. Thus, the new entrant may decide to target customers who are particularly easy to win and who have a very high net present value (the valuable vulnerables). The incumbent will try to have a product line which guarantees maximum level of market coverage leaving as few niches exposed to the entrant as possible. It will particularly protect those segments which generate high margins. In protecting the valuable vulnerables against the entrant, one problem the incumbent faces is that it does not migrate customers from high margin products to low margin products to a greater degree than is necessary. This is possible by ensuring that high levels of value-added are given to high margin products.

From a market research and modelling perspective, these strategic imperatives translate into the need to understand the consumer’s decision process, drivers of choice, and price sensitivity at any point in time. They also require an understanding of the dynamics of switching suppliers depending on different product ranges and service offerings. The consumer decision processes underlying these behaviours will vary from consumer to consumer, and thus segmentation also becomes a critical issue. We tackled these issues by developing a static model of consumer choice which determined how consumers went about selecting a supplier. The static model showed the likely behaviour of a given customer at any given point in time. The next step in model building was to determine how this would change over time. Having discovered the dynamics of individuals’ consumer decision processes, we had to understand how this varied consumer by consumer. A segmentation scheme was developed to estimate the ultimate appeal of the new supplier and the sales trajectory towards that ultimate appeal under different pricing and service scenarios. The methodology enabled the incumbent’s strategy to be tested and contingency plans made to counter marketing initiatives by the new entrant.

METHODOLOGY

Market research was an integral part of the client’s planning process. From planning came a list of issues which needed to be addressed by the research. After measurement and modelling in the marketplace a customized software interface provided a tool to give accessible feedback information to the planning process. This is illustrated in Figure 1. Qualitative market research was used to refine the consumer behaviour model and to generate a questionnaire to calibrate it. The qualitative research described in this paper refers to the consumer retail market where 17 focus groups were held. However, the model has also been applied to business markets. Based on the qualitative research 801 respondents were interviewed to determine their values, attitudes, and intended behaviour. This data collection and the analysis built on it enabled forecasts to be generated under a variety of scenarios. These forecasts were incorporated into a marketing strategy evaluation model enabling the client to test alternative strategies both for them and also for the new entrant. The field work in
this particular application was undertaken by Worthington Di Marzio.

MODEL
A tiered model was used to calibrate the effects of different perceptions through value sets on intended behaviour. The overall modelling framework was a macro flow model developed by Glen Urban in his Sprinter model (Urban 1970). See Urban and Hauser (1980) for an excellent review. This is illustrated in Figure 2. The population is divided up into segments depending on which state of the consumer decision process they are. The arrows in the diagram represent consumers flowing from one state to another. For the sake of simplicity, the effect of other department stores is not included in this paper.

The stages which consumers will pass through before becoming loyal Jambaroo customers (to the extent that they pass through any of these stages) is that they will move from not considering Jambaroo, to considering Jambaroo, to a trial shop in Jambaroo, to taking out a Jambaroo card. At any point in time it is possible to measure the proportion of people in each of these stages. It is also possible to measure the flow between stages, including a flow-back due to forgetting and rejection. Originally the model contained an awareness stage, but it soon became apparent that awareness of Jambaroo was going to be very close.

![Diagram](image-url)
to 100% very quickly and therefore "Unaware" was redundant in the model. Underpinning each of the boxes in Figure 2 was a detailed model of transition between
each stage. Thus the flow from non-
consideration into consideration contained
an awareness stage (which was degenerate)
and then a consideration stage which had
two components: firstly Jambaroo must be
acceptable to prospective users and
secondly must pass some utility threshold
in terms of offering superior value for
money over FS Stores (following the
consideration set framework of Roberts
1989). This model is illustrated in Figure 3.

Given consideration, a number of
people considering Jambaroo will actually
move to shopping in the store. Classical
Fishbein or Lancasterian utility models,
combined with discrete choice theory, tell
us how the perceived attributes of the two
stores will influence the level of trial
through attitudes or utility. A preference
regression model may be used to relate the
relative preference of the two stores to
their relative perceptions. A discrete
choice model or logit model will then
determine consumers’ relative probability
of choice. However, a preference for
Jambaroo will not necessarily be translated
into purchase of it, due to inertia (related
to perceived risk and uncertainty), and also
lack of availability (locality and range of
goods). These are factors whose dynamics
will change markedly over time. The
flows into and from these decision states
represented by the arrows in Figure 2 will
involve a large proportion of the
population, at least initially. This submodel
is illustrated in Figure 4.

Trialists of Jambaroo are faced with
the decision as to whether to reuse the
store, and eventually whether to get a
Jambaroo store card (by opening a credit
account). They may discontinue shopping
at Jambaroo, become Jambaroo brand
loyals, or alternatively continue to repeat
on occasion by casually shopping there. (A
model to work out whether customers
would surrender their FS Store card was
also calibrated on the data.) The repeat
decision is basically a customer satisfaction
model which determines whether Jambaroo
met the levels of expectations that it
generated amongst customers. Thus, the
repeat model was basically a gap model of
customer satisfaction (Roberts and Lilien
1994), mediated by salience. Even if
customers are satisfied with the
performance of Jambaroo, they will not
keep on shopping there unless it stays
salient or memorable in their minds. The
repeat behaviour submodel, including
application for a Jambaroo card, is
illustrated in Figure 5.

SEGMENTATION

Levels of consideration were measured
across the sample, as were forecast levels
of trial and repeat and the determinants of
each variable. What is more, the
determinants of the flows between these
states was also calibrated. Because levels
of each of these variables and also their
determinants varies from customer to
customer, a segmentation scheme was
introduced. The primary segmentation
variable which is obviously critical to FS
Stores is the size of the account since this
is a good surrogate for the profitability and
thus desirability of a customer. Originally
it was proposed to undertake a secondary
segmentation based solely on a battery of
perceptual statements. However, on
examining the data it was found useful to
segment not only on perceptions of FS
Stores and Jambaroo, but also on whether
respondents were open to trying Jambaroo
(Consideration). There were different
determinants and different groupings within
the population for consideration
_behaviour) relative to those of attitude
( perceptions).

EXPERIMENTAL STIMULI

Having developed a model of how FS
Store consumers choose their store after
the entry of a new player, it was necessary
to develop stimuli which could be used to
gauge consumers’ reactions to different
strategies which the new entrant may
adopt. Initially respondents were asked their reaction to FS Stores on an attitude battery which related to service levels, price perceptions, and a variety of other issues. They were also asked their level of knowledge of Jambaroo and how much more knowledge they would require prior to making a decision about shopping there. Since this calibration was prior to launch of Jambaroo, clearly a lot of learning would take place. This makes current attitudes to Jambaroo not necessarily a good predictor of future perceptions of Jambaroo and choice of it. Therefore, respondents were taken through a learning process by which they were brought up to speed of what the new competition would entail in practice. Respondents were asked to reevaluate Jambaroo after being shown a number of pieces of advertising and store layouts similar to those which it was expected to use. Also Jambaroo's levels of choice under different hypothetical performance standards were gauged and different hypothetical pricing practices. A conjoint analysis enabled different pricing scenarios of the two department stores to be evaluated. The experimental design of the conjoint analysis allowed us to test whether the market reaction to a pricing policy from Jambaroo was symmetric to the market reaction to the same pricing policy from FS Stores.

**MODEL CALIBRATION**

In fitting dynamic choice models, we need to estimate three parameters: the initial trial rate of an innovation, the ultimate acceptance that innovation will obtain, and the rate at which it will move from one to the other. Initial levels of consideration and trial were available as direct answers questions concerning consideration and trial, mediated by those people who felt they needed to know more about Jambaroo before trial could occur. Ultimate levels of penetration were obtained from the reaction of respondents after having been exposed to a series of pieces of information about Jambaroo, including likely stocking policy, types of advertising material, price bands, and levels of service. Different levels of service of Jambaroo and different price points of Jambaroo and FS Stores were manipulated in the conjoint design, allowing different scenarios to be generated according to the actual performance of the new entrant in the marketplace and the actual price levels which it charged. The rate at which diffusion was expected to take place from original consideration and trial to equilibrium was determined partially by management judgement, partially by the answers to questions such as "I need to know a lot more about Jambaroo before I could feel comfortable with them", and partially by reference to overseas experience. The loss of share of a number of American stores after the entry of a new competitor was used to compare Australian loss rates to international standards, following the approach recommended by Lawton and Lawton (1979).

Consideration was modelled as a discrete choice model (see Figure 3). That is, whether respondents continued to only shop at FS Stores (a positive predisposition), were prepared to consider both stores (uncommitted), or would only consider Jambaroo (negative disposition to FS Stores) was modelled as a logit model with attitudes to FS Store range and service levels as independent indicators. One thing which became clear was that different age groups had different determinants of Jambaroo consideration. Therefore, separate models were fitted to each age group. A hypothetical example of such a relationship is

$$P_{\text{pos}} = \frac{1}{1+\exp \left( \alpha + \beta X_1 \right)}$$

where

$P_{\text{pos}}$ is the probability of a positive disposition.
$X_1$ is level of agreement with “I can expect to be able to find what I want in FS Stores”, and
$\alpha$ and $\beta$ are parameters.

The advantages of these simple consideration models were not only did they fit the data well, they also enabled FS Stores to very simply screen those customers who were likely to consider only Jambaroo, those who were definitely FS Stores, and those who were “up for grabs” during their telemarketing campaigns.

The trial model was also a discrete choice model (see Figure 4). Respondents were segmented on the basis of their attitudes to FS Stores: whether they were satisfied, dissatisfied, or ambivalent. The choice model was not only applied to those people who would consider both stores since there could be some trial without prior consideration. The primary determinant of trial was the perceived difference in price which was included as a quadratic function. However, optional discount plans were also included. A separate conjoint analysis enabled different pricing formats to be evaluated. Many different pricing formats had very little appeal, and there were very few pricing formats which were not regarded with some degree of cynicism. However, some pricing formats were seen to be readily accepted by respondents and to offer them considerable utility.

A typical hypothetical model of the relationship between equilibrium levels of trial and relative price is as follows:

$$P_T = \frac{1}{1 + \exp(\beta_0 + \beta_1 \times B - \beta_2 \times B^2 + \beta_3 \times JPP + \beta_4 \times FPP)}$$

where $P_T$ = Probability of Jambaroo trial,
$RP$ = Relative price of FS Stores and Jambaroo overall,
$FPP, JPP$ = Existence of FS and Jambaroo price plans (discounts to card holders who join the plans), and
$\beta_0$, $\beta_1$, $\beta_2$, $\beta_3$ and $\beta_4$ are parameters.

From these models Jambaroo trial under different pricing regimes was able to be calibrated. Obviously these shares would take some while to eventuate.

Repeat rates were also determined using logit models based on perceived price and service performance. By multiplying trial $\times$ repeat after full diffusion effects have been felt, equilibrium market shares may be estimated (as long as respondents are weighted according to their amount of department shopping).

The rate of diffusion from consumers’ initially stated intentions to try Jambaroo to their educated equilibrium estimates based on the conjoint analysis were determined by looking at the amount of time respondents said they would need before making a decision, and also compared to overseas data. The use of international experience provided strong convergent validity to these estimates.

RESULTS
The model described above was calibrated with the measurements taken from the sample of 801 respondents. The results were used to analyse likely trends in consumer behaviour and how FS Stores could influence that behaviour. Results are presented under the following headings: perceptions of department stores, consideration levels, trial levels and determinants of repeat, and updating the model.

Perceptions of department stores
The first step in calibrating the model was to understand the drivers of utility for the
consideration set model in Figure 3 and also for the trial model in Figure 4. A battery of attitudes towards both FS Stores and Jambaroo was generated on the basis of the 17 focus groups. The results of attitudes to both department stores on a 20 item scale were cluster analysed to find out whether there were any distinct segments of consumers with respect to their attitude towards firstly FS Stores, and secondly the new entrant. Not surprisingly, three segments emerged from the K-means cluster analysis. The composition of these segments is given in Table 1. The segments may be described as “satisfied” (57% of FS Stores cardholders), “ambivalent” (26%), and “dissatisfied” (17%). Notice that a lot of the dissatisfaction about FS Stores stems not only from its service levels, but also from its apparent lack of service recovery. Notice also, that Jambaroo has generated extremely high service level expectations with its prelaunch advertising. Table 1 gives a good indication of who is vulnerable to Jambaroo advertising, the reasons why these customers are vulnerable, and the promises from Jambaroo which are likely to be successful in inducing them to trial.

Figure 4: Store Trial Behaviour Submodel

Figure 5: Jambaroo Account Submodel
Determinants of consideration

48% of FS Store cardholders felt that they would not consider Jambaroo, even after they were given full information about it (these people were labelled “positively disposed”). 44% of respondents felt that they would like to try Jambaroo, although this would not be to the exclusion of FS Stores (the “uncommitted” behavioural segment). Finally, 8% of the population intended to use the entry of Jambaroo into the market as a way of totally ridding themselves of what they perceived as a dependence on FS Stores (“negatively disposed”). Table 2 shows that there is a strong, but not perfect, relationship between what people believe about the two stores (the perceptual segments) and how they intend to behave (the behavioural segments). Note that this relationship is not perfect. Most dissatisfied customers still intend to continue using FS Stores, although they will consider Jambaroo. There is a highly contestable part of the market, which is the ambivalent, uncommitted segment. While only one fifth of the population falls in this category, about half of the population currently intends to consider Jambaroo. While perceptions of FS Stores (and to a lesser extent Jambaroo) are the major drivers of consideration of Jambaroo, they are not the only drivers. Inertia means that some dissatisfied customers will continue to try only FS Stores. Similarly, variety seeking will make even the most satisfied of FS Stores’ customers have a look at Jambaroo’s collections.

As described under model calibration, different consideration models were fitted for each age group, and these were not done on the basis of perceptual segment, but rather on answers to individual items from the attitude battery. Thus, the model for 21-29 year olds was as follows:

\[ P_{(pos)} = \frac{1}{1 + \exp (0.402 - 0.428 X_1)} \]

where \( X_1 \) is level of agreement with “FS has an excellent range” (5 point scale).

One advantage of using single items from the attitudinal batteries in modelling consideration membership, is that for telemarketing it is possible to allocate customers to segments based only on a knowledge of their age and a question about their attitudes towards the key drivers of consideration set membership. Age is already known from company records. The more comprehensive segmentation of Table 1 is not as actionable in the telemarketing centre.

TRIAL AND REPEAT

The logit models of trial and repeat, described under model calibration were fitted to stated intentions and stated mix of shopping behaviours (level of repeat). We see from Table 3 that, given the significance of the quadratic term, once perceived price differences become large they begin to dominate all other variables. Note also that there is even some continued trial of FS Stores amongst the negatively disposed, and some initial trial of Jambaroo by the positively disposed. Neither party can totally insulate its brand loyals against the marketing efforts of its major competitor. It is also worth noting from Table 3 that pricing plans from Jambaroo are more effective than pricing plans from FS Stores. Since FS Stores is trying to hold on to its card accounts, while Jambaroo is trying to entice trial, this result is not entirely unexpected. However, the management implications are interesting: any price war or specialising war is going to hurt FS Stores more than it is going to hurt Jambaroo in terms of raw market share. The trial and shopping allocation models enabled FS Stores to see its likely loss of market share at different levels of perceived price premiums. It appeared from the early advertising of Jambaroo that the new entrant would be positioning on
the basis of allowing its card members to make substantial savings. Figure 6 illustrates the cost of this strategy to FS Stores in terms of share, depending on the perceived discount that Jambaroo is able to successfully communicate. To counter this pricing offensive, FS Stores tested a number of different pricing packages in the conjoint analysis embedded in the survey. By including these pricing scenarios, we were able to test the effectiveness of different defensive moves by FS in blunting the Jambaroo pricing initiatives. Figure 7 shows consumers’ relative preferences for different pricing strategies.

The dynamics of market penetration of the new entrant may be estimated by a combination of market research, management judgment, and overseas analogy. The Bass model was described earlier by its three parameters: m (the ultimate market size), p (the coefficient of innovation which describes consumers coming into the market independent of current shoppers using Jambaroo), and q (the coefficient of imitation describing shoppers who follow others into the store, due to word of mouth).

<table>
<thead>
<tr>
<th>Attitudes towards FS Stores</th>
<th>Percentage Agree Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have a good relationship with FS Stores</td>
<td>Disatisfied</td>
</tr>
<tr>
<td>FS’s attitude to customers lets them down</td>
<td>60</td>
</tr>
<tr>
<td>FS has an excellent range</td>
<td>45</td>
</tr>
<tr>
<td>FS has improved their customer service recently</td>
<td>50</td>
</tr>
<tr>
<td>FS’s billing has never caused me a major problem</td>
<td>23</td>
</tr>
<tr>
<td>FS is a friendly organisation</td>
<td>43</td>
</tr>
<tr>
<td>FS offers good value for money for all my needs</td>
<td>59</td>
</tr>
<tr>
<td>If I have a problem, FS will solve it</td>
<td>17</td>
</tr>
<tr>
<td>Many people have a complaint about FS Stores</td>
<td>87</td>
</tr>
<tr>
<td>I have never had a major problem with FS Service</td>
<td>26</td>
</tr>
<tr>
<td>FS is not responsive to my needs</td>
<td>31</td>
</tr>
<tr>
<td>FS has good store locations</td>
<td>88</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitudes towards Jambaroo</th>
<th>Percentage Agree Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would like to try Jambaroo to see if it’s better</td>
<td>39</td>
</tr>
<tr>
<td>Shellcombe doesn’t need another department store</td>
<td>33</td>
</tr>
<tr>
<td>I would like to see a Jambaroo store before buying</td>
<td>60</td>
</tr>
<tr>
<td>I expect Jambaroo to be at least as good as FS</td>
<td>91</td>
</tr>
<tr>
<td>I don’t know enough about Jambaroo</td>
<td>90</td>
</tr>
<tr>
<td>Saving money would be the only reason I would change to Jambaroo</td>
<td>73</td>
</tr>
<tr>
<td>Jambaroo will not have the same guarantees as FS</td>
<td>37</td>
</tr>
<tr>
<td>Jambaroo won’t be offering a full range of departments and products for some time</td>
<td>43</td>
</tr>
</tbody>
</table>

Table 1: Cluster Analysis of FS Store Card Holders’ Perceptions of FS Stores and Jambaroo
Table 2: Relation of Perceptual Segments and Behavioural Segments

<table>
<thead>
<tr>
<th>Behavioural Segment:</th>
<th>Perceptual Segment</th>
<th>Dissatisfied</th>
<th>Ambivalent</th>
<th>Satisfied</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negatively Disposed</td>
<td></td>
<td>6%</td>
<td>2%</td>
<td>-</td>
<td>8%</td>
</tr>
<tr>
<td>Uncommitted</td>
<td></td>
<td>10%</td>
<td>20%</td>
<td>14%</td>
<td>44%</td>
</tr>
<tr>
<td>Positively Disposed</td>
<td></td>
<td>1%</td>
<td>4%</td>
<td>43%</td>
<td>48%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>17%</td>
<td>26%</td>
<td>57%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 3: Determinants of Jambaroo Trial and Shopping Allocation Amongst Dual Trialists

The ultimate market penetration, m, can be estimated from the appeal of Jambaroo under the different pricing scenarios after respondents had been exposed to full information. Similarly, pm corresponds in the Bass model to the first period’s sales. We can infer these from the level of proposed trial at low levels of information, adjusted for those who require further information about a new entrant. q, the parameter which primarily determines the rate at which diffusion takes place was estimated using management judgment, according to the decision calculus method proposed by Little (1970). Not only were the equilibrium levels of demand for Jambaroo highest amongst the negatively disposed segment, diffusion towards that equilibrium level was estimated to be the fastest. Diffusion was also faster at higher levels of price discount. Figure 8 illustrates the diffusion pattern which
calibration of the model suggests. 50% of the ultimate penetration is expected to be reached within 12 months. Note that the S-shaped curve is degenerate: there is no slow learning process as a result of the strong level of interests at low levels of information amongst FS Store card users. That is, there is no point of inflection, decreases in growth rates start immediately.

**Updating**

After launch of Jambaroo, FS Stores kept a careful tally on FS credit card returns (together with reasons for return) usage levels of cards, and obtained competitive intelligence about Jambaroo's level of activity. This post launch monitoring enabled adaptive calibration of the model. Continuing calibration had the dual benefit of reducing measurement error and also adjusting parameters for the changing conditions in the marketplace. The incorporation of sales data was combined with a brand monitor in which all FS Stores card members, present and lapsed, were surveyed to determine their perceptions, preferences, and intended future behaviour. By continually collecting this data, the model was able to be updated and kept current. More importantly, it provided opportunities for management to continue to test new pricing, ranging, and service initiatives to maintain its leadership position in the laboratory rather than in the market.

**Beyond the model**

The model acts as a basis for our understanding of the market. It enables us to more finely plan our resource allocation to fit the evolution of the competitive retailing scene. It also allows us to adaptively adjust our strategy to influence that evolution to meet the firm's objectives. We can move from being market driven to being market driving.

![Graph](image)

**Figure 6: Predicting Jambaroo Long Term Trial with no Pricing Plans**
There is, however, an additional role for these models. They are the formalisation of our understanding of the marketplace. As such, they provide a platform from which we can refine how we see the market as operating and learn
about marketing effects in more detail. Two examples illustrate this point.

First, we assumed that price affected trial in a quadratic form through the logistic function. However, if we look at the empirical results of trial at different levels of perceived price differences, we can obtain a more detailed and finer understanding of the effects of price. Price is not quadratic. In fact there is a flat spot in the price function and other abnormalities exist. Moreover, there is another response category to the perceived price question not included in Figure 6. It is called "don’t know". The trial rate amongst "don’t knows" is quite low, suggesting that FS Stores should be trying to position itself as the store that is price competitive, being cheaper on some items and not necessarily as cheap on others. For FS Stores, the answer is not that they are the cheaper store, but rather "it depends". More detailed work for the client on whether it was absolute price, perceptions of price, relative price, etc. that mattered were able to help the client with her communication strategies considerably, as well as the development of the most cost effective pricing plans. Naturally, all of these pricing strategies were undertaken in conjunction with a strong ranging and service strategies as well.

The second example of how these models form a platform for a deeper understanding of the effects of management actions on the marketplace stems from the fact that we have examined only store choice in this application to date. It is also possible to move from store choice to look at the effects of all this marketing activity on the size of the department store industry. The effects of the offensive marketing activity of Jumberoo, and in defence of its position, of FS Stores, greatly expanded the market of department stores in that area of Shelecombe. By using a nested logit model the framework could estimate the extent of growth in the category that would come from this joint marketing activity.

Thus, these models not only provide a way of getting a deeper and deeper understanding of what is happening in the marketplace, they can also form the basis of a broader and richer understanding.

CONCLUSIONS

In this paper we have advanced a dynamic choice model to understand the effect of new products in the marketplace. We have shown the management implications of this model in terms of understanding consumer choice and the determinants of that consumer choice, in designing defensive products to insulate the company against a new entrant, in developing defensive pricing strategies to minimize the effect of competition from below, and in designing defensive targetting strategies to ensure that the valuable vulnerables are not the most likely customers to be lost.

These modelling tools are driven by the need to answer management questions and in turn feed information into the decisions that managers make. Their role is to ensure that customers' reactions to management decisions are adequately calibrated so that when marketing initiatives are undertaken the results in the marketplace come as no surprise. The imperative of including dynamics in these strategic planning models has been stressed in this paper. The day of static marketing models must come to a close, and it must come to a close quickly.

The combination of dynamics with segmentation is a particularly powerful one. While we are used to considering different consumer behaviour by different segments, we are less used to looking at how segment behaviour will change over time. The authors' experience in applying dynamic choice models suggests a pattern particularly when an entrant launches with a strong customer service promise. There
is a tension between high expectations of the entrant and high inertia in favour of the incumbent. How this plays out by behavioural segment is illustrated in Table 4 below:

<table>
<thead>
<tr>
<th>Disposition To Incumbent</th>
<th>Consideration</th>
<th>Inertia</th>
<th>Trial</th>
<th>Depth of Repeat</th>
<th>Loss of Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Uncommitted</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Negative</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

Table 4: Leverage Points in the Consumer Decision Process of Different Behavioural Segments

REFERENCES


GROUP SUPPORT SYSTEMS: AN ALTERNATIVE TO FOCUS GROUPS

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INTRODUCTION

Many marketing problems depend for their solution on customers’ views, opinions, and conceptions. Production, administration, sales, promotion and even distribution problems have a customer somewhere in the chain of the organisation’s process design. Since customers are “receivers” they may or may not think in the same way about a particular product, process or service as do “providers”, such as managers or marketing researchers. Marketing requires an understanding of the conceptions and perceptions of customers that would seem to have an essentially qualitative as well as quantitative dimension and it is essential that marketing researchers take this into account when developing research designs (Kreuger, 1988; Morgan, 1993).

Accordingly, marketers have long realised that gathering ‘live’ perceptions is as relevant to decision making as is the counting of ‘facts’. It is not surprising therefore that marketers have seen focus groups as an excellent device for gathering this type of informal and qualitative information (eg Gronroos, 1990; Heskett, 1986) and that focus groups are probably the most widely used qualitative tool in commercial marketing research (Calder, 1977; Kreuger, 1988; Morgan, 1993). However, recent developments in research methodologies and information technology have provided opportunities for marketing researchers to obtain qualitative data more easily and effectively.

Two alternatives to traditional focus groups are the nominal group technique (NGT) and Group Support Systems (GSS), one of a group of electronic meeting support systems technologies (EMS). A recent study undertaken to examine students’ views about student and teacher interactions provided an opportunity to outline the way GSS can be used within the marketing research area and the types of information that it can provide. The present paper discusses the types of information obtained within a GSS approach. However, before discussing the particular study, it is worthwhile to outline the three types of qualitative approaches so that the advantages of the GSS methodology can be made clear.

ALTERNATIVE QUALITATIVE APPROACHES

The Focus Group Interview Approach

A focus group is a special type of group interview. It is a way to “get in tune with the customer” or, more accurately, in tune with customers’ perceived realities (Kreuger, 1988; Morgan, 1993; Stewart, 1990). Focus groups are usually led by a facilitator and, as Marshall (1994), has noted, such groups are dependent for their success on the skills and abilities of the
"moderator". In focus group interviews (FGI's) the emphasis is on group interactions as:

The group rather than the individual is interviewed. The group may provide a safe atmosphere and a context in which synergy can generate more than the sum of individual inputs. Interactions take place among the interviewees themselves as well as between group members and the interviewer. (Lederman 1990: 199)

Focus group are a popular way to involve customers who may have diverse viewpoints, yet are interested in the same products, processes or services. A group of people is assembled to discuss one or more aspect of a chosen topic (eg a potential new product or service or the perceptions of various organisations). There is no "ideal" group size, but it is generally accepted that eight to twelve is an effective number of people to have in a focus group (Fern, 1982; Merton, Merton, & Kendall, 1956). Group members do not usually meet before the session but, although they are typically strangers, they share experiences with, or have, an interest in the topic being investigated.

Typically, several focus groups are held around a single product or issue. Within each group, a facilitator or moderator leads a free flowing discussion or evaluation, using an open-ended approach in a non-directive environment evaluation. Boundaries and cues for categories of meaning are not set by the facilitator as these are generated by group members. The idea within a focus group is to nurture perceptions and to help members comment, explain, share experiences and form attitudes together. There is some vidence that a focus group approach enables participants to release emotional energy in a way that does not happen in other forms of data gathering (Carey, 1994).

In qualitative research, care must be taken to ensure the approach does not lead to data being collected to suit pre-conceived ideas as to what should constitute answers to the research question. Instead, emerging "theory" should be grounded in the data itself (Glaser, 1967; Strauss, & Corbin, 1990). Focus groups allow this grounding. However, if there is a chance of psychosocial problems in a group (Carey, 1994), the Nominal Group Technique described below, may be a better option (Van de Ven, & Delbecq, 1971).

The Nominal Group Technique

The Nominal Group Technique (NGT), outlined by Van de Ven and Delbecq (1971), is a structured group meeting conducted by a group leader or facilitator. Five to nine individuals sit round a table in full view of each other but, initially, no talking takes place. Each individual has a sheet of paper with the "nominal question" at the top. Members are asked to, independently and silently, write down as many answers to the question as possible. After five to ten minutes of controlled and intense work effort, each member, in turn, presents one idea from their list. The responses receive a sequential number and the leader writes them on a large flip chart for all members to see. No discussion takes place during this recording session other than to clarify ideas that are presented. The leader encourages the 'hitch-hiking' of ideas, but group members do not evaluate suggestions. Following structured discussion, during which anyone can clarify and discuss any idea, members revert to individual 'balloting'(either ranking or rating) and group preferences are estimated and displayed for further discussion.

The NGT is useful in that it is rigorous and objective (as it is not based on the
researchers' constructs) but it may not be as efficient as the Group Support System (GSS) approach. Unavoidable in the NGT process is 'dead time' while individual ideas are scribed. Evaluating and prioritising manually also takes time and, in some circumstances, the calculation exercise can almost replace the "nominal question" if participants disagree about the results.

Even though members write down as many ideas as possible, the manual nature of the recording and calculating means that relatively few ideas can be processed in a meeting. Most importantly, there may be a loss of spontaneity and rhythm, one of the valued hallmarks of the focus group. The GSS method, outlined below, seems to provide the best aspects of the focus group and the NGT approaches and would seem to be a useful alternative for researchers attempting to undertake group research.

The Group Support Systems Technology (GSS) Approach

Group Support Systems (GSS) technology has several features that can significantly improve group interactions. A typical GSS meeting arrangement is shown in figure 1. Up to ten people arrange themselves around a table. As with other group approaches, a GSS session is run by a facilitator. As can be seen in figure 1, a notebook computer is placed in front of each group member. Neither keyboard skills nor computing skills are necessary, however. In the centre of the horseshoe arrangement is a data show and overhead projector aimed at a screen that displays the content of the meeting as it is happening. At the side is a "chauffeur" who keys-in contributions as they are made within the group interview.

As in the NGT, there is a nominal question and participants are asked to type answers to this question into the computer in front of them. The facilitator may ask participants to input as many ideas or answers as they like or they may ask each person to put in the same number of ideas (three ideas is a good springboard in a meeting). By this method, distributive justice is visible as all participants have the same opportunities for input. Contributions are processed in parallel within the computer system so that everyone can "talk" at once without having to get to

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**Figure 1: A typical GSS Meeting Room**
know others at the beginning of the meeting. Ideas and opinions are anonymous and only connected to the originators of the ideas should they desire this.

At important stages during the meeting, notes can be printed for further stimulus and discussion. Lists of ideas can be displayed at various levels so that participants can see connections, strengths or weaknesses or connect main to sub-ideas. Talk can be free flowing with no time constraints or, using a timeserver, it can be tightly controlled. The facilitator is free to give full attention to group dynamics without having to control a queue of speakers, write ideas or take down notes. There are many tools that can be built into available GSS software, such as cross-impact analysis and multi-criteria decision making that can improve group output. Four useful tools are the brainstorm, discuss and organise, rate and comment techniques (Lewis, 1987). Each of these will be described in connection with issues raised by focus group writers.

THE BRAINSTORM PHASE

In the brainstorm phase, participants are given the research topic or question, which can be broad or narrow, and are asked to type their ideas into the notebook computer. The facilitator can specify an equal number of items per person or a free flowing list. Within about two seconds of the last person's input, the ideas are displayed on the public screen and are printed as data for the next stage. The ideas are 'scrambled' or reorganised as they are processed and it is not possible to connect a person with the idea unless the person chooses to make the connection.

There is no consensus as to whether individuals or groups generate richer or better quality ideas (Fern, 1982). GSS combines two devices to make sure that individual thought and group opportunities for synergy are possible. Brainstorming (or idea generation) allows individuals to deliver their ideas to the computer. The facilitator can allow as many or as few ideas as suit the research or business purpose, and his or her ability to deal with them. Following the brainstorming phase more ideas are "allowed in", providing the benefits from a group's synergy and spontaneity.

Taking advantage of the distributive justice or equal input facility can incur a cost. This method yields a set number of ideas that may concern those who have a 'long list' preference. However, a problem with a long list is that it is difficult to categorise in the manual situation and there is a danger that items at the bottom of the list are not discussed. Should the facilitator specifically want to generate a long list the GSS technology makes this easy.

Using GSS it is possible to generate, record and print thirty ideas within a short time so that participants can see on the screen and on paper the issues they will be discussing. It has been noticed that, when participants see their ideas are equal with other people's ideas and when they have concrete data to discuss, behaviours, such as timidity, domination or impatience, that are often reported as problems in focus groups are overcome.

THE DISCUSS AND ORGANISE PHASE

Individual computers are turned off during the discuss and organise phase. The meeting resembles a manual focus group, except perhaps for the absence of newsprint containing participants' ideas. Instead, the list of generated ideas is displayed on a screen. Each idea is put to four tests within the group. Participants are asked if the idea is clear, unique, singular and appropriate for the topic or question under discussion. It is at this stage that social constructions are developed (Schwandt, 1994).

At first, ideas may be accepted without renegotiation. However, as the session continues and more information and more
practice in discussion is gained, interpretations tend to be revisited and often reworked, discarded or replaced. The time for discussion of each idea is agreed beforehand and the facilitator judges whether to let free-flowing discussion continue. This may sound to be against the values of focus groups but group members seem to like the idea of putting brakes on discussion times for individual items. The benefit of efficiency in getting through the list has been found to be a preferred benefit to participants in a number of studies. Each idea is taken and discussed. An 'outliner' is used to make sense of the discussion, as can be seen in table 1. In this example, obtained when examining communication in a recent study, a group produced ideas at different levels that made the construct more understandable to members.

Within the Discuss/Organise phase, participants may be asked by other group members to explain their reasons for organising the issue in the ways they propose. The discussion may yield disagreements and these can be categorised as the session is continuing so that advocates for competing constructions can be heard. The GSS Discuss and Organise activity resembles the same activity done manually except that the facilitator does not have to scribe as well as facilitate. Also the technology can provide instant outlines and generally be used to bring up desired aspects of the data. Anonymity, distributive justice, and facilitator freedom from "clerical" chores are major benefits of the GSS Discuss/Organise phase. In particular, participants' interactions become the focus and group dynamics can be observed more keenly.

THE RATE PHASE

In some cases it is important to gain an understanding of the value of the ideas raised within the group. The Rate phase enables this to be done. Participants see the major ideas they have produced and are asked to place a value on them. Sometimes they are asked to do so in order to prioritise actions (as in strategic planning). At other times, they are simply asked to provide a value to show their "advocacy" for an idea. After this has been done individually through the computer, a bank of data is shown that gives the mean importance scores and the spread of consensus or support for an idea through a bar graph showing variability. Usually seeing the rated list brings a sense of reality to participants. A second wave of discussion (often excitable) is nearly always stimulated by this display. The Comment tool, discussed next, is excellent for gathering "second wave" ideas, opinions, attitudes and disagreements at this stage of the meeting.

Table 1: An Extract from an Outliner List

<table>
<thead>
<tr>
<th>1.0 COMMUNICATE [means]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Active listening</td>
</tr>
<tr>
<td>1.1.1 summarising</td>
</tr>
<tr>
<td>1.1.2 nodding in understanding</td>
</tr>
<tr>
<td>1.1.3 clarifying</td>
</tr>
<tr>
<td>1.1.4 asking for an example</td>
</tr>
<tr>
<td>1.2 Not &quot;gatekeeping&quot; information</td>
</tr>
<tr>
<td>1.3 Allowing team briefings as soon as possible and on a regular basis</td>
</tr>
</tbody>
</table>
THE COMMENT PHASE

In the Comment phase, participants do just that. They are either given data, say the rated list, or asked to generate a set of comments on the process and thoughts that have been stimulated. There are many ways the Comment tool can be used. These include collecting comments on ideas that people seem to disagree with, see differently, or see as strengths or weaknesses. A major benefit is where explanations are sought. The following are some examples of how facilitators would use Comment. Questions that could be asked include:

(i) Why did you support an idea?
(ii) Why did the group see this as a threat or an opportunity?
(iii) Comment on the feasibility of this idea, given that the group rated it poorly.
(iv) Comment on the group’s preferred choices.

THE ANALYSIS OF GSS DATA

There is a fundamental difference between the analysis of manual and GSS focus groups. This is an area of growth and development for those who use the GSS method. There are many issues involved in the analysis of GSS collected data, such as the task of eliciting rich descriptive data with a technology that is best placed to ‘thin it out’, the effects of technology on the focus group and the relative importance of the various tools (e.g., Callan, 1993; Lewis, 1993; Whiteley and Garcia, 1996). There seems to be considerable benefit from the GSS analysis ‘as it happens’. As already discussed, participants’ unaltered material is collected at stages during the session. Periodically it is used as data for the next stage of the meeting. At the end of the session the participants can leave with a report of the session’s activities as they were experienced.

There are also opportunities, once the facilitator has become experienced in conducting GSS’s to add mood and contextual items to the ideas collected from the participants. For example, the comment phase can be used not only for participants’ comments but also to record observations and other group dynamic issues that emerge. A key activity in the GSS focus group is the post-group debriefing, in which the facilitator and the chauffeur share impressions and ideas with the data in front of them. They do not only discuss contexts and group dynamics but take a developmental approach to the emerging roles each plays in the focus group (Whiteley and Garcia, 1995).

Having outlined the GSS approach, it is apparent that there are advantages and disadvantages for marketing researchers. These are discussed in subsequent sections.

The Advantages of GSS

Feedback from a number of GSS groups suggests that the volume of work that can be covered in a GSS session is considerably greater than can be covered in manual sessions. This is partly due to the discipline placed on the meeting by the structure of the GSS technology and partly due to the speed of computerised operations at the evaluative stages of the process.

Further, GSS group dynamics allow for anonymity, followed by discussion, followed by anonymous voting where required. The anonymity can be a benefit, especially if group participants have not invested time in building open relationships. This routine has been found to help avoid ‘Socratic debate’ at inappropriate times, while allowing and even encouraging spontaneous cross-conversation, which is the life-blood of qualitative groups.

The immediacy of reporting in a GSS group is also an advantage. As the meeting progresses relevant items or pieces of information can be printed, helping
members to consider and reconsider their contributions.

The Disadvantages of GSS

The group can be disturbed by the intervention of the technology, especially if people are unsure of how the technology can be used or its purpose. However, as electronic communication becomes more accepted, this will be less of a disadvantage. Further, the need for trained facilitators and chauffeuring means GSS can be less responsive to impromptu group meetings. The cost of technology is, at first glance, a disadvantage. However, many organizations are networked and the required notebook computers can be basic, although software is an additional expense.

THE PRESENT STUDY

Having outlined the way a GSS approach can be used in a “focus group” situation, as well as its advantages and disadvantages, a specific study should provide insights into the way GSS can be used. The present study, provided as an example, examined a question that is of great interest to marketing educators, namely “what makes a good teacher-student interaction in a business course?” However, the general topic as to what constitutes a good service provider-customer interaction should also be of great interest to marketing managers and researchers. In the present case, a number of GSS sessions were used to examine different student groups’ views. Specifically, sessions were held with undergraduate, specialist graduate, Master of Business Administration (MBA), Australian and Overseas business students. In the present paper only the MBA group outcomes are reported. The 22 ideas shown in table 1 were generated during the brainstorming stage by a group of ten MBA’s to answer the question “what makes for a good student-teacher interaction?” As can be seen from table 2, there were a variety of issues raised, as is common in NGT and GSS groups.

Table 2: MBA Brainstorm responses to “What makes for a good student/teacher interaction?”

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ability to generate enthusiasm</td>
</tr>
<tr>
<td>2</td>
<td>Acts as a facilitator of ideas rather than provider</td>
</tr>
<tr>
<td>3</td>
<td>Approachable</td>
</tr>
<tr>
<td>4</td>
<td>Convey enthusiasm and confidence in students' ability</td>
</tr>
<tr>
<td>5</td>
<td>Create a supportive and positive learning environment</td>
</tr>
<tr>
<td>6</td>
<td>Friendly</td>
</tr>
<tr>
<td>7</td>
<td>Good learning facilities: texts, seating arrangements, etc.</td>
</tr>
<tr>
<td>8</td>
<td>Invites feedback and interaction from students</td>
</tr>
<tr>
<td>9</td>
<td>Knowledge</td>
</tr>
<tr>
<td>10</td>
<td>Make subject interesting</td>
</tr>
<tr>
<td>11</td>
<td>Make the tasks and the learning objectives clear</td>
</tr>
<tr>
<td>12</td>
<td>Obtain interaction and reaction</td>
</tr>
<tr>
<td>13</td>
<td>One on one teaching</td>
</tr>
<tr>
<td>14</td>
<td>Provide information in an interesting way</td>
</tr>
<tr>
<td>15</td>
<td>Share their knowledge base</td>
</tr>
<tr>
<td>16</td>
<td>Student respect</td>
</tr>
<tr>
<td>17</td>
<td>Student understanding of the teaching objectives</td>
</tr>
<tr>
<td>18</td>
<td>Students arrive with a fresh mind, not on other ideas</td>
</tr>
<tr>
<td>19</td>
<td>Students with basic prerequisite skills</td>
</tr>
<tr>
<td>20</td>
<td>Teacher understanding on student knowledge levels</td>
</tr>
<tr>
<td>21</td>
<td>Understanding</td>
</tr>
<tr>
<td>22</td>
<td>Understanding of the student perspective</td>
</tr>
</tbody>
</table>
The Discuss/Organise phase was then used to provide structure to the initial ideas. During this phase participants reviewed the various categories implicit in the initial list, listened to other participants’ points of view and began to think about how important, or valuable, each factor might be. As a result of these activities, there was some re-organisation of ideas and an underlying structure was obtained, as shown in Table 3. The initial ideas were re-organised into the “teacher knowledge” and four major “teacher personality” dimensions that created good interactions; namely, the ability of the teacher to generate enthusiasm, to act as a facilitator rather than as a provider, to convey confidence in students’ abilities, and to create a supportive learning environment.

As can be seen from Table 3, the Discuss/Organise phase is much more than reiteration of the brainstorming (Generate) phase. New ideas and substructures can be created to add “flesh” to the initial brainstorming “bones.” This is most obvious in the “facilitator dimension”, in which one brainstorming idea was transformed into twenty-two subdimensions some of which were expanded up to four levels. The extended outline hierarchy provided a unique opportunity to understand what being a “good facilitator” meant to students and gave insights into how such facilitation might be improved.

During this phase participants have worked with the “data” so that, internally, decisions have been made about which are the more important dimensions in developing good interactions. This may be something in the learning environment itself or it may be something in the teacher. The Discuss/Organise phase provides an opportunity for this to be envisioned and evaluated by each participant before the advocacy or argument step that is an essential part of a GSS group. During this phase individuals can gauge reactions of other group members and sense the flow and ebb of the debate. As in any focus group, however, quality is dependent on the facilitator, who, being assisted by the Chauffeur and the technology, can spend more time on the group than on recording chores.

Following the Discuss/Organise phase, participants were asked to assign values or importances to the constructed dimensions. If the social interactions are fruitful, this tends to be a simple task: However, if it proves not to be, the facilitator can revisit some aspects of the obtained structure to ensure agreement has been reached. The Rate tool provides an approach to obtaining importance, although more complex tools, such as weighted factors or multi-criteria choice theory, can be used (Lewis, 1987).

Table 4: The Final Ratings of Items for the MBA Group

<table>
<thead>
<tr>
<th>Rated</th>
<th>Item</th>
<th>Rating</th>
<th>Variability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Depth and quality of knowledge</td>
<td>7.38</td>
<td>3.20</td>
</tr>
<tr>
<td>2nd</td>
<td>Create a supportive and positive learning environment</td>
<td>7.38</td>
<td>2.92</td>
</tr>
<tr>
<td>3rd</td>
<td>Ability to generate enthusiasm</td>
<td>6.50</td>
<td>3.12</td>
</tr>
<tr>
<td>4th</td>
<td>Acts as a facilitator of ideas rather than provider</td>
<td>6.50</td>
<td>3.16</td>
</tr>
<tr>
<td>5th</td>
<td>Convey confidence in students ability</td>
<td>4.75</td>
<td>1.38</td>
</tr>
<tr>
<td>1.</td>
<td>2.</td>
<td>3.</td>
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<td>26.</td>
<td>27.</td>
<td></td>
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<tr>
<td>28.</td>
<td>29.</td>
<td>30.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Aids Decreasing Organisational Resistance to "What makes for a good student-teacher interaction?"
In the present case a simple rating scale, ranging from 1 (unimportant) to 10 (extremely important), was used to obtain mean scores and variability. The results for the five derived dimensions are shown in Table 4.

The results indicate a clear ordering. MBA students value knowledge. They want teachers who understand the areas in which they teach. But they also want teachers who create a supportive learning environment. They are less concerned with the other dimensions and least concerned about whether a teacher gives them confidence in themselves; perhaps because MBA students are already confident of their ability. What is interesting is that the "knowledge" factor had the greatest variability, suggesting that participants were less uniform in the importance they attached to this dimension than to some of the others. Participants, however, were very much in agreement about the lower importance attached to the "ability" factor, as can be seen in its relatively low variability. Such qualitative information is valuable in itself. However, GSS may also provide dimensions for follow-up quantitative studies and, because the Discuss/Organise phase provides hierarchies of related ideas, GSS is extremely useful in devising multiple item scales to measure complex phenomena, something that has long been recognised as appropriate in marketing research (e.g., Churchill, 1979; Nunally, 1978; Peter, 1981).

CONCLUSIONS

Marketing researchers have been at the forefront in developing and using new consumer research methods. Focus groups have been a popular choice for a variety of reasons and have often been seen as the "staple" offering of market researchers. In recent times, focus groups have also been of interest to social science researchers and information technologists. The recently developed GSS approach provides an alternative way to undertake group research and should be seen as an additional tool that can enhance a focus group and provide the type of information organisations expect when they are investigating aspects of consumers' "realities".

The "GSS focus group" method helps in this task as it allows respondents to freely input their own ideas and comments. Further, it provides an additional layer by enabling interactions between participants, particularly in the discuss and organise phase. In the past focus groups have had problems in capturing all the information being obtained and ensuring all respondents have a chance to have a say. The GSS approach overcomes both problems and has a technology that makes findings immediately available to the group's members so that clarification, correction and calculation can take place. Additionally, the GSS approach separates the idea or issue from the person so that everyone can treat the object of discussion as an "object" rather than a "personal idea."

GSS should enable focus groups to be undertaken more effectively as they can be treated more rigorously but, as importantly, once the technology is in place, they can be used to yield high quality data at relatively low cost. GSS focus groups can also serve as a stimulus for subsequent quantitative research. Constructs can begin to be formulated and, using past experience as well as focus group outcomes, sensible approaches to research and questionnaire design can be determined. It is clear that market researchers should look at the new technology and use it when appropriate.

REFERENCES


Stewart, D. W., and Shamdasani, P.N. (1990) *Focus Groups: Theory and

