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**ANALYSIS OF LATENT AND MANIFEST
VARIABLES IN A STUDY OF SMALL
BUSINESS STRATEGY**

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ABSTRACT

The relative virtues of quantitative and qualitative research have been vigorously debated. Several researchers recommend combining methods but there is little evidence in the literature to suggest how different research methods might be integrated (Bryman, 1988). The current study addresses this deficiency in the research by examining the use of latent variables in quantitative and qualitative research as a means of blending the two approaches. A study of small business strategy, where quantitative and qualitative data were available illustrates the methodological issues. Analysis of quantitative data was conducted using LISREL (7.20) and qualitative data were categorised using NUD.IST (Non-numerical Unstructured Data Indexing Searching and Theorising computer software). The methods described are examined in detail and compared with other approaches to content analysis.

ANALYSIS OF LATENT AND MANIFEST VARIABLES IN A STUDY OF SMALL BUSINESS STRATEGY

INTRODUCTION

The relative virtues of quantitative and qualitative research have been vigorously debated. There is a tendency among some writers to refer to quantitative and qualitative research as divergent paradigms (for example, Filstead, 1979; Guba and Lincoln, 1982) which has led to an exaggeration of the differences between the two traditions. Berg (1995:3) states that quantitative research 'refers to counts and measures of things,' while Tesch (1990:56) defines qualitative research as 'predominantly or exclusively using words as data.' Quantitative research is based on the gathering of facts using valid and reliable measurement procedures, and adopts the principles of scientific method by emphasising the importance of the generalisation and replication of results (Bryman, 1988). Qualitative research adopts a naturalistic approach which aims to retain fidelity to the real world. Thus, the major contrast between the two approaches is evident in the differing views concerning how social reality should be studied. However, a more useful approach which minimises the distinction between quantitative and qualitative research relies on the selection of techniques according to their suitability in tackling particular research questions (Bryman, 1988). Such a view emphasises the strengths of various approaches.

Several researchers have recommended combining methodologies in the study of the same phenomena to achieve triangulation and to improve the study design (Bryman, Stephens, and à Campo, 1996; Denzin, 1978; Fielding and Fielding, 1986; Patton, 1990). In this context, quantitative and qualitative research may be viewed as different ways of examining the same research problem. The use of multiple methods strengthens the researcher's claims for the validity of the conclusions drawn where mutual confirmation of results can be demonstrated (Bryman 1988). Further, Patton (1990) suggests that where significant patterns of responses emerge through quantitative methods, it is often helpful to fill out the meaning of those patterns through in-depth study using qualitative methods to give substance to the areas of focus. Although different research methods are often combined in tandem, there is little evidence in the literature to suggest how different research methods might be integrated (Bryman, 1988). The current study addresses this deficiency in the literature by examining the use of latent variables in quantitative and qualitative research as a means of integrating the two approaches.

A number of different approaches to qualitative analysis are evident in the literature. The notion that 'many words of text can be classified into much fewer content categories' (Weber, 1985:7) is a central idea in qualitative data analysis. Previous qualitative research has focused on examining the manifest content, the elements that are physically present and countable. 'Manifest content is comparable to the surface structure present in a message' (Berg, 1995:176). Using this process, theory emerges from a systematic examination of the data and is based on or 'grounded' in the data (Tesch, 1990). Thus, in a grounded theory approach, the process of open coding allows the discovery of categories, their properties, and their dimensions, and category labels are derived from the words and phrases used by the informants themselves (Glaser and Strauss, 1967). This process is a 'bottom-up' approach to the development of inductive categories.

Another method of content analysis identifies key words or phrases which are extracted from qualitative data to form descriptive units or 'propositions' (Chen and Meindl, 1991:532). These propositional descriptions are grouped into more superordinate theme categories. Several studies have developed the classification of propositions into custom dictionaries, systems of category definitions to aid data analysis for particular projects (Insch, Moore, and Murphy, 1997; Meindl, Ehrlich, and Dukerich, 1985; Tesch, 1990).

Another approach to content analysis uses both qualitative and quantitative operations on text by including the calculation of frequencies and percentage frequencies of comments coded in each category (Weber, 1985). However, this quasi-statistical approach to content analysis does not necessarily reflect the importance or the nature of the data. Therefore, an alternative approach is required which examines the

latent content, 'the deep structural meaning conveyed by messages' (Berg, 1995:176). This approach is consistent with the identification of latent variables in quantitative analysis where a latent variable is a 'hypothesised and unobserved concept that can only be approximated by observable or measured variables' (Hair, Anderson, Tatham, and Black, 1995:623). In quantitative analysis, latent variables are statistically developed from clusters of items, while in qualitative analysis, latent variables are developed from the inferences derived from the messages (Holsti, 1969). The current study utilises quantitative latent variables as a conceptual framework to analyse qualitative data, in this case interview comments. The method is similar to the method of qualitative analysis conducted in a study by Bradley and Ashkanasy (1997), where a theoretical model provided a research framework for categorisation of qualitative data.

METHOD

Both quantitative and qualitative data were gathered to illustrate the methodological issues under consideration, and thus, the substantive findings of the study have been omitted in this paper. Only a brief outline of the quantitative analyses is provided to enable comparisons to be made between the quantitative and qualitative findings.

The broader study focuses on the relationship between small business strategy and business success for a sample of previously unemployed respondents who became self-employed. Small business strategy has been defined as the 'methods, practices, and decision-making styles managers use to act entrepreneurially' (Lumpkin and Dess, 1996:136).

A self-administered questionnaire was distributed to small business owners in metropolitan and rural Victoria resulting in 255 useable responses representing a 45 per cent response rate. The questionnaire included The Small Business Strategy Typology, a new instrument developed in the current study and adapted from the Miles and Snow Typology (1978). The instrument assesses small business strategy where respondents were required to indicate on a five-point Likert scale the likelihood of using the described business strategies. All items in the 12-item scale were scored so that 0 indicated infrequent use of the strategy and 4 indicated frequent use. Statements concerning products/service strategies were presented first, followed by customer strategies and finally, strategies relating to competitors. Statements reflecting each typology were presented in random order to minimise order bias.

Quantitative Analysis

Exploratory factor analysis was undertaken to examine the relationships among the items in the Small Business Strategy Typology. Initial analysis suggested a four-factor model would be appropriate. Confirmatory factor analyses of the items loading on the four factors were conducted using the generally weighted least squares method of LISREL (7.20). Factor loadings, theta deltas, squared multiple correlations, and standardised residuals were examined. The analysis suggested that several items should be excluded resulting in a respecified model which indicated satisfactory weighted least square loadings for two factors.

Confirmatory factor analysis was conducted of the nine items loading on the two factors. Model fit was assessed by using the Goodness-of-Fit Index and the ratio of chi-square to degrees of freedom as suggested by Conger and Kanungo (1994:447). The results produced a Goodness-of-Fit Index of .956 (Adjusted Goodness-of-Fit of .924), a Root Mean Square Residual of .086, and a chi-square of 67.27 (d.f.=26), resulting in a chi-square/degrees of freedom ratio of 2.59. No standardised residuals were listed. The Total Coefficient of Determination for X variables, a measure of the strength of several linear relationships was calculated to assess how well the observed variables served as measurement instruments for the latent variables. The model had a Total Coefficient of Determination of .956. Coefficient values which approximate one are associated with good models (Jöreskog and Sörbom, 1989{ XE "Jöreskog and Sörbom, (1989)" }). Further, since the Goodness-of-Fit Index was above .90 (Jöreskog and Sörbom, 1984), and the chi-square to degrees of freedom ratio was less than five (Bentler and Bonnett, 1980; Wheaton, 1987), the model provided an adequate fit of the data and indicated overall construct validity.

Factor one included items such as *Try to be first to offer new products/services*, and *Strive to stay ahead of competitors* which previously had been labelled either *Prospector* or *Defender* according to the Miles and Snow (1978) Typology and subsequently was labelled *Proactive* Small Business Strategy. The label was selected based on the nature of the items in the cluster and with reference to the literature including the description of a *proactive* entrepreneur as someone who 'takes the initiative [to] ensure the firm's long-term health' (Gore, Murray, and Richardson, 1992:122). Further, Ansoff (1988:228-229) describes *proactive* strategy as 'forward looking and imaginative.' Factor two included items such as *Watch competitors, analyse and learn from their mistakes* and *Try to keep pace with competitors* which previously had been labelled either *Analysers* or *Reactors* according to the Miles and Snow (1978) Typology and subsequently was labelled *Reactive* Small Business Strategy in the current study. The factor label was selected based on the characteristics described in the items for factor two, and with reference to the statement that where 'decisions are based on a response to problems as they arise: they are merely *reactive*' (Gore et al. 1992:122). Theory suggests that reactive strategies emphasise risk avoidance and involve little innovation (Karagozoglu and Brown, 1988). Such strategies have been characterised by reactions to events and competitors rather than by initiative-taking (Steiner, Miner and Edmund, 1986). Table 1 presents the details of the confirmatory factor analysis using the generally weighted least squares method of LISREL. Figure 1 provides a graphic representation of the measurement model described in Table 1.

Construct reliability measures were calculated based on LISREL confirmatory factor analyses, (sum of standardised loadings)²/(the sum of standardised loadings)² + sum of indicator measurement error where *standardised loadings* were the weighted least squares and *measurement error* was the theta delta scores. The construct reliabilities for *Proactive* (.73), and for *Reactive* (.62) were satisfactory given the developmental nature of the instrument and the comments by Hair, Anderson, Tatham and Black (1992:450) that 'the indicator reliabilities should exceed .50, which roughly corresponds to a standardised loading of .70.'

Table 1
Confirmatory Factor Analysis for the Two-Factor Small Business Strategy Typology
(N = 255)

Item No.	Factor Items	X	λ_x	δ	SE
<i>Proactive</i>					
1	Try to be first to offer new products/services	X ₁	.467	.102	.050
5	Strive to be market leader regardless of the competition	X ₂	.557	.112	.049
6	Stress better quality, service & prices compared to competitors	X ₃	.580	.114	.053
9	Operate in a focused market to protect it from competitors	X ₄	.372	.103	.050
11	Strive to stay ahead of competitors	X ₅	.938	.142	.061
<i>Reactive</i>					
7	Develop market strategies according to what other operators are doing	X ₆	.519	.106	.058
8	Find that you are seldom the market leader but you carefully analyze trends	X ₇	.642	.101	.055
10	Watch competitors, analyze and learn from their mistakes	X ₈	.570	.160	.080
12	Try to keep pace with competitors	X ₉	.400	.108	.057

X = Manifest Variable, λ_x = lambda, R² = Squared Multiple Correlation, δ = Residual (error term), SE = Standard Error.

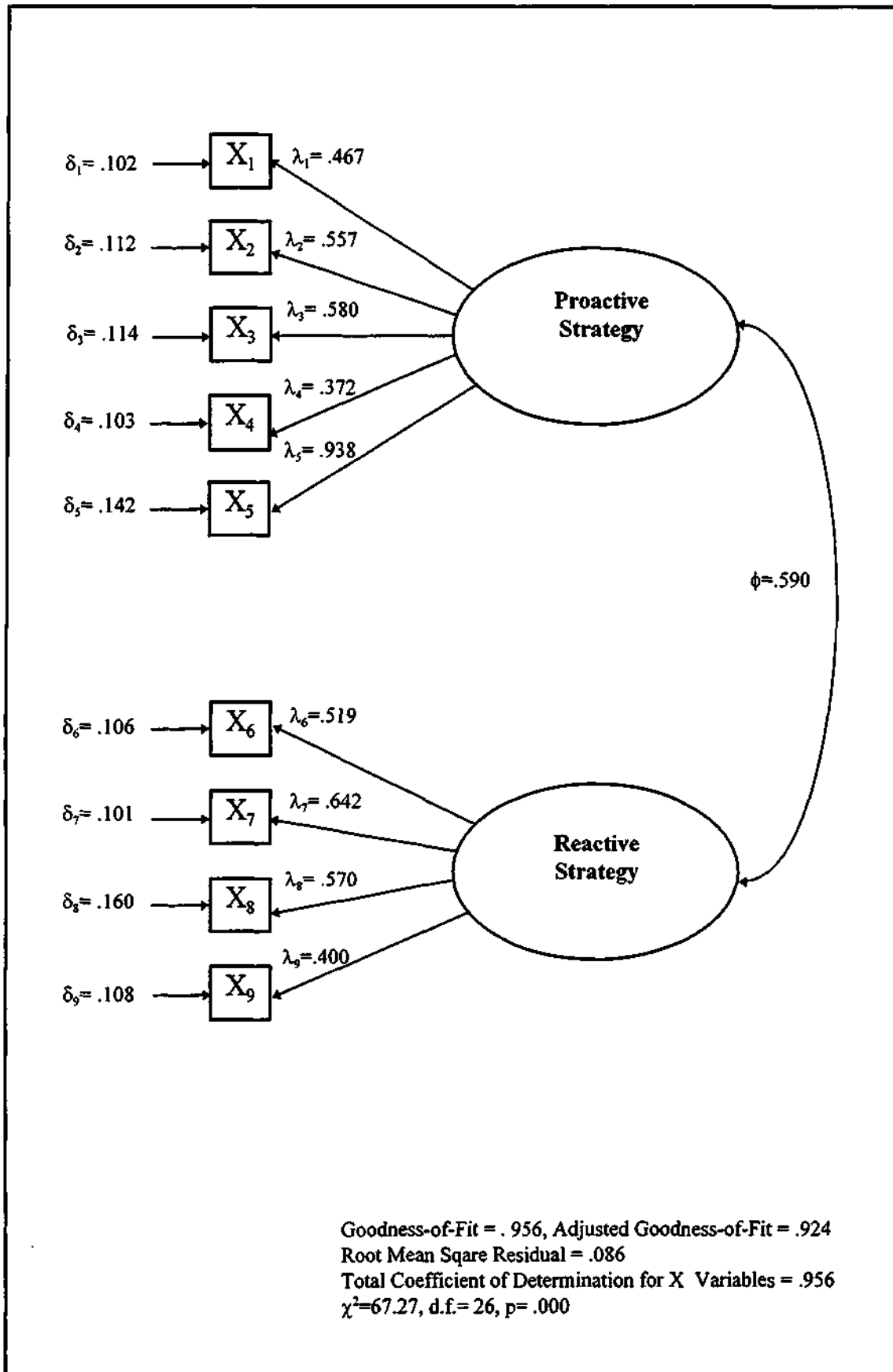
Total Coefficient of Determination for X Variables = .939

$\chi^2 = 67.27$, df=26, p=.000

Goodness-of-Fit Index =.956. Adjusted Goodness-of-Fit Index =.924

Root Mean Square Residual =.086

Figure 1: Confirmatory Factor Analysis for Small Business Strategy Typology



Qualitative Analysis

Around ten per cent (n=25) of the total number of respondents to the questionnaire were interviewed using in-depth, semi-structured interviews. The following questions were included during interviews to elicit comments which could be analysed to reveal the latent content concerning small business strategy:

How would you describe your business strategies;

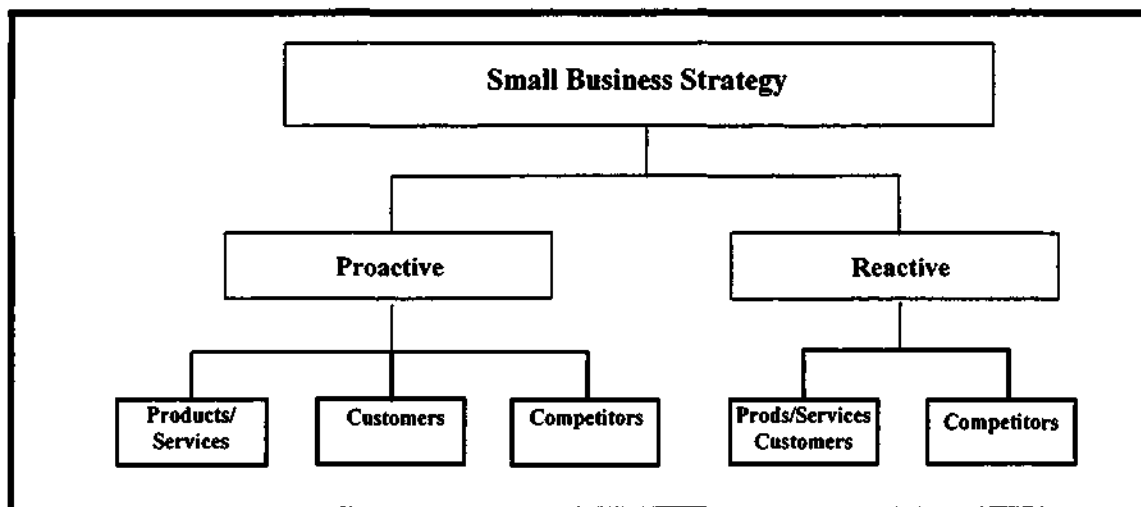
What is your relationship with your competitors;

What has made your business a success; and

What plans do you have for the future?

The process of data analysis was commenced by using the indexing and retrieval system in NUD.IST (Non-numerical Unstructured Data Indexing Searching and Theorising computer software) which allows constant inspection and review of categories and their content (Richards and Richards, 1994). All data documents were subdivided into single-line text units, the smallest segment of text the program could index or retrieve. Concurrently, an index system was devised which involved developing analytical categories based on the latent variables examined in the quantitative study. Broad categories were refined and subdivided as part of the analytical process producing multi-levels of classification. Holsti (1969:14) states that 'only the manifest attributes of text may be coded [from which] inferences about latent meanings of messages are permitted.' Thus, aspects concerning small business strategy were inferred from an examination of the manifest interview data. Figure 2 illustrates the classification framework used to categorise the qualitative data for the latent construct, Small Business Strategy. The comments were categorised at the second level into *Proactive* and *Reactive* strategy. *Proactive* comments were categorised at the third level into *Products/Services*, *Customer*, and *Competitor* strategies. *Reactive* comments were categorised at the third level into two sub-categories: *Products /Services/Customer*, and *Competitor* strategies.

Figure 2: Categorisation Framework for Small Business Strategy Data



The face validity of qualitative data relies on the fit between the data and the concepts developed (Dey, 1993). To demonstrate how the concepts identified in the current study were grounded in the data, comments to exemplify the meaning of concepts and themes were provided from the transcripts of interviews. Providing detailed excerpts served to document the researcher's interpretations. Berg (1995) recommends the inclusion of at least three independent examples for each interpretation particularly when using latent variables. This suggestion is consistent with the recommendation for the quantitative technique

of factor analysis, where 'every factor must have effects on three or more indicators of that factor' (Bentler and Chou, 1987:93).

Interrater Reliability

In the current study, interrater comparisons were used to assess face validity and to check that the comments assigned to categories reflected the designated concept. The data were re-coded independently and statistical coefficients of agreement were calculated. The interrater reliability estimate was calculated based on the formula suggested by Goodwin and Goodwin (1985:7), 'number of coding agreements/number of coding agreements plus number of coding disagreements.' *Agreement* meant that raters concurred on the classification of a comment. The mean interrater reliability of .81 was adequate given the suggestion that 70 per cent intercoder reliability is considered satisfactory (Miles and Huberman, 1984). Table 2 provides details of the frequency distribution, percentage frequency distribution, and the interrater reliabilities for each sub-theme in the qualitative data analysis of the latent variable, Small Business Strategy.

Table 2: Analysis of Interview Data: Latent Variable Small Business Strategy

Theme	f	% ^a	IR. ^b
Proactive Small Business Strategy			
Products/Services	7	23	.71
Customers	7	23	.71
Competitors	7	23	.86
Reactive Small Business Strategy			
Products/Services/Customers	4	14	1.00
Competitors	5	17	.80
Theme total	30	100	

^a Percentages have been rounded ^b Interrater Reliability

Proactive Small Business Strategy

Proactive small business strategy has been characterised as shaping the environment by introducing new products, technologies, or administrative techniques rather than merely reacting (Miller and Friesen, 1978). According to Plunkett and Hale (1982:60), *Proactive* strategies require managers to 'continually take actions to improve situations, establish new directions, raise standards, and prevent problems that could threaten current plans.' Comments in this category were classified further in terms of *Proactive* strategies in relation to products/services, customers, and competitors.

Proactive Product/Service Strategy

Interrater reliability: .71

Proactive strategies in relation to products/services are concerned with how firms relate to market opportunities in the process of new entry (Lumpkin and Dess, 1996). *Proactive* product/service strategies refer to the introduction of new products or services which anticipate potential opportunities and customer/client needs (Plunkett and Hale, 1982). A total of seven comments reflected a *Proactive* strategy in relation to the products/services offered including:

Certainly there are plenty of people offering secretarial services but I believe I set the standards in terms of presentation, reliability and punctuality (Female, 42 years old, secretarial service commenced January 1993, four casual employees).

We always either visit or ring clients to check that they are completely happy with the job (Female, 41 years old, service business commenced December 1992, employs sub-contractors).

One idea we are working on at the moment is to train one of our drivers who does the computer deliveries to be able to set the computer up for the customer. By doing this we believe that this will make it an extra attractive service for both the end customer and the computer sales company as well (Male, 42 years old, courier service commenced April 1993, six employees).

The manifest content in the comments above, for example: *I set the standards in terms of presentation, reliability, and punctuality, and train one of our drivers to set computers up* reflects an underlying theme of respondents taking action to provide products/services which are innovative and anticipate customer needs. Therefore, by definition, the manifest content provides evidence of the latent variable, *Proactive* small business strategy.

Proactive Customer Strategy

Interrater reliability: .71

Proactive customer strategies are evident where owner/managers take action to direct future events to secure customers and to anticipate customer needs (Fischer and Reuber, 1995; Plunkett and Hale, 1982). A total of seven comments reflected *Proactive* customer strategies including:

We always try to give value for money - no one goes away hungry - there's always plenty and we make sure it looks generous - that really impresses people (Male, 33 years old, catering business commenced September 1993 and partner).

Customers are everything. We do everything we can to handle complaints immediately and to ring people straight away, even at weekends (Male, 53 years old, property services business commenced January 1993, one employee).

Our business relies on providing excellent customer service to generate repeat business which is our bread and butter (Male, 42 years old, courier service commenced April 1993, six employees).

Comments such as *[giving] value for money, handling complaints immediately, and providing excellent customer service to generate repeat business* describe action taken to retain customers. In other words, the manifest content provides evidence for the latent variable *Proactive* customer strategies where business owners are acting opportunistically to maintain and expand the customer base.

Proactive Competitor Strategy

Interrater reliability: .86

Proactive competitor strategies involve business owners taking the initiative to combat competition (Chen and Hambrick, 1995) by focusing on their own strengths rather than constantly making comparisons with the competition. A total of seven comments reflected a *Proactive* strategy towards competitors including:

When we meet with others in the industry, we often find we set the trends or standards in practice (Male, 53 years old, with partner, property services business commenced January 1993, one employee).

We want to be the pace setters (Male, 35 years old, corporate/party decorating business commenced December 1992, five employees and 16 casual staff).

I don't have time to care what the competition is up to - I just go for it (Female, 30 years old, retail business commenced August 1993, no employees).

Comments such as *we set the trends, [we are] the pace setters*, and *I just go for it* indicate that interviewees are taking a forward-thinking approach by either ignoring the competition or attempting to stay ahead of the competition. The manifest content reflects the latent variable *Proactive* competitor strategies where owners focus their efforts and attention on their own businesses.

Reactive Small Business Strategy

Reactive business strategies are characterised by responding to problems as they arise (Gore, Murray and Richardson, 1992). The OECD (cited in the *Second Annual Report, Small Business in Australia*, 1992:5) describes *Reactive* strategic behaviour as taking a 'wait and see approach which may be detrimental to growth.' According to Ansoff (1988:228-229), *reactive* strategic management is characterised by 'trial and error reaction to unsatisfactory performance . . . [and typically] minimises strategic changes.' Comments in this category were classified further in terms of *Reactive* strategies into two categories: *Reactive* products/service/customer strategies, and *Reactive* competitor strategies.

Reactive Product/Service/Customer Strategy

Interrater reliability: 1.00

Reactive strategies in relation to products/services were combined with customer strategies in one category as the comments could not be separated further into two categories.. A total of four comments reflected *Reactive* strategies in relation to products/services/customers including:

I just wait and see how much interest there is but I think that it is an idea that will become more popular (Male, 49 years old, repair business, commenced August 1993, no employees).

We just go along with what we are doing and what we know works (Female, 44 years old, food business commenced June 1993, three employees).

It's been tempting to take on more than one job at a time but with only the two of us, it can be a nightmare trying to run two functions. So we have to be very strict with ourselves (Male, 33 years old, and partner, catering business commenced September 1993 no employees).

The interviewees mentioned *wait and see* and *just go along with what we are doing* and therefore the comments reflect a cautious approach in contrast to taking the initiative in anticipating and pursuing new opportunities. Thus, in this category, the manifest content provides evidence for *Reactive* strategies in relation to meeting customer demand and the provision of new products and services.

Reactive Competitor Strategy

Interrater reliability: .80

According to Lumpkin and Dess (1996:147), 'reactiveness suggests a response to competitors [and] involves being adaptive to competitors' challenges.' A total of five comments reflected *Reactive* strategies towards competitors including:

I stay in touch with other services so I always know what they charge and what other equipment people are using and the services others are providing (Female, 42 years old, secretarial service commenced January 1993, four casual employees).

It is a very competitive industry . . . so I keep track of prices charged (Male, 42 years old, courier service commenced April 1993, six employees).

We started off just running the business as is until we found out feet. We checked out the competition to see what they were offering (Male, 56 years old, with partner, accommodation business commenced June 1992, no employees).

Comments such as *I know what they [the competition] charge, I keep track of prices charged and we checked out the competition* reflect an approach where the competitors' strategies are constantly observed and scrutinised before adapting to the challenges presented. Therefore, the manifest content reflects the latent variable of *Reactive* competitor strategies where strategies are taken in response to the competition.

DISCUSSION

The comments, the qualitative manifest data were examined in relation to items in the Small Business Strategy Typology, the quantitative manifest data. This involved analysing the interview responses in relation to the items loading on each of the factors in the Small Business Strategy Typology (see Table 1). Several comments were consistent with items in the Typology. For example the comment: *[we plan] to train one of our drivers . . . to set up the computer for the customer* was consistent with item 1: *Try to be first to offer new products/services*. Similarly, the comments: *I set the standards in terms of presentation, reliability and punctuality*, and *we often find we set the trends or standards in practice* are congruent with item 5: *Strive to be market leader regardless of competition*. Again, the comment: *I stay in touch with other services so I always know what they charge and what other equipment people are using* is consistent with item 10: *Watch competitors, analyse and learn from their mistakes*, and item 12: *Try to keep pace with competitors*. Therefore, comparisons between the manifest qualitative and quantitative data reveal the respondents' personal experiences as they relate to the items in the Typology and validate the instrument.

Analysis of the manifest qualitative data provided evidence of the underlying themes or qualitative latent variables which could be classified according to the categories derived from the quantitative latent variables of *Proactive* and *Reactive* small business strategy. Most interviewees made comments that were consistently either *Proactive* or *Reactive* in relation to all dimensions examined. However, the comments by several interviewees indicated that individuals may use various strategies depending on the circumstances. For example, some comments suggested that business owners may use *Proactive* customer and product/service strategies but *Reactive* competitor strategies. In other words, the comments provided evidence for business owners using a range of strategies depending on the situation, or using different strategies in relation to customers compared to competitors. Previous research on small business strategy has assumed that business owners utilise the same strategic approach for all activities (Ibrahim, 1993; Olson and Currie, 1992; Williams and Tse, 1995). Further, the results contradict the findings of a recent study of small business strategy in Australia which suggested that proactive and reactive strategies are on a continuum (Kotey and Meredith, 1997). Therefore, the quantitative and qualitative data in the current study suggest that small business strategy should be regarded as a multi-dimensional construct where the categories are not mutually exclusive. This finding validates the use of two separate sub-scales, namely *Proactive* and *Reactive* small business strategy in the quantitative analysis.

Utilising a consistent approach across methods to integrate quantitative and qualitative research provided a further benefit. The respondents' comments (the qualitative manifest data) supplied additional information to inform the quantitative research process which should provide the basis for the development of more robust items in the Small Business Strategy Typology.

The qualitative method used in the current study raises issues concerning how theories are developed. The current study used a conceptual framework derived from theory to classify comments. Thus the qualitative analysis tested assumptions based on theory. In contrast, traditional content analysis (e.g., ground theory) relies on themes emerging from the data for the development of theory. The process is based on the false assumption that 'themes are waiting to be freed and [the researcher] will recognize an emerging theme' (Richards and Richards, 1991:246). Further, traditional methods of content analysis fail to recognise the fact that researchers have personal frames of reference which determine the questions posed and impact on

selection of categories for data analysis. Therefore, traditional content analysis would appear to be a less rigorous means of theory development than the method proposed in the current study.

CONCLUSION

The purpose of the study has been to illustrate the value of combining quantitative and qualitative analysis. The qualitative analysis of manifest and latent variables revealed details which would not be evident from quantitative analysis alone. Further, the study went beyond the quasi-statistical approach to content analysis suggested by Weber (1985) by focusing not only on the frequency of comments in categories, but also on the richness of the data. The procedures included in the study provided a means of accessing unquantifiable aspects of the research (Berg, 1995), and captured respondents' personal experiences and perspectives (Patton, 1990). Further, the use of quantitative latent variables as a framework for qualitative data analysis facilitated the testing of construct validity and provided a more rigorous basis for theory development. In conclusion, latent variable analysis provides a unifying framework across techniques which enables the integration of quantitative and qualitative methods and provides a means whereby the boundaries between the two traditions may become even less distinct.

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