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Testing relationships among variables measuring credit management in small and medium-sized enterprises (SMEs)

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Abstract

Small business failure has been the subject of considerable research effort (Beaver, 1966: Berryman, 1983: Holmes, 1988: Bickerdyke, 2000). Peel and Wilson (1996) found that there was a substantial amount of both theoretical and empirical small business research relating to credit management and its relationship to the failure of small businesses. However, there does not seem to be much research that focuses on sorting out the relationships among the many measures of credit management that have been used by these researchers.

This paper describes an exploratory investigation of the relationships among a set of items used to measure the management of credit in small and medium-sized enterprises (SMEs). The data was obtained from a survey of SMEs located on the Mid North Coast of NSW, conducted in 2000. The relationships among the items were initially examined using correlation analysis and the high number of correlations among the items then led to the testing of latent variable models to see if the items were in fact reflective traits of higher order factors. Future analysis will examine the variables using Confirmatory Factor Analysis (CFA) to validate the identifiable models then examine the relationships among the variables discussed in this paper and other demographic items that were used in the survey. The findings reported in this paper describe only the first part of the analysis planned for this study.

Keywords: credit management, latent trait, latent variable model, SMEs,

Introduction

The management of credit in SMEs is a primary concern for managers and owners of those SMEs as it has a direct impact on the viability of the business. Effective credit management determines the business cash flow and thereby the liquidity of the operation. Failure to effectively manage credit sees SMES experiencing late payments to their creditors and a breakdown in the supply chain which then affects their ability to service their debtors.

Credit management activities must extend to both debtors and creditors. Failure to ensure terms of credit for debtors to maintain cash flow, which in turn enables timely payment of creditors, is a cause of many small business failures. Thus credit management needs to ensure adequate monitoring of cash flow and other liquidity related indicators as well as appropriate procedures for collecting payments from debtors. Essential to this process are procedures to carefully evaluate the customer's capacity to meet the business' credit payment terms.

Therefore, research that examines both measures of credit management and the determination of key structures that underlie these measures sets important foundations for future research – especially that examining the liquidity of SMEs.

Research model

The measures of credit management used for the purposes of this research are shown in the research model in Figure 1. Each of these four measures was developed from previous studies. Each of the measures examines items associated with a distinct aspect of credit management practices in SMEs. The items used in the survey are shown in Appendix 1 – Survey Items.

The development of each of these four constructs and the existing research underlying their development is discussed in the following sections. It is important to note at the outset that the items were developed from existing research but to the best of the authors' knowledge it is the first time they have been examined in a single study.

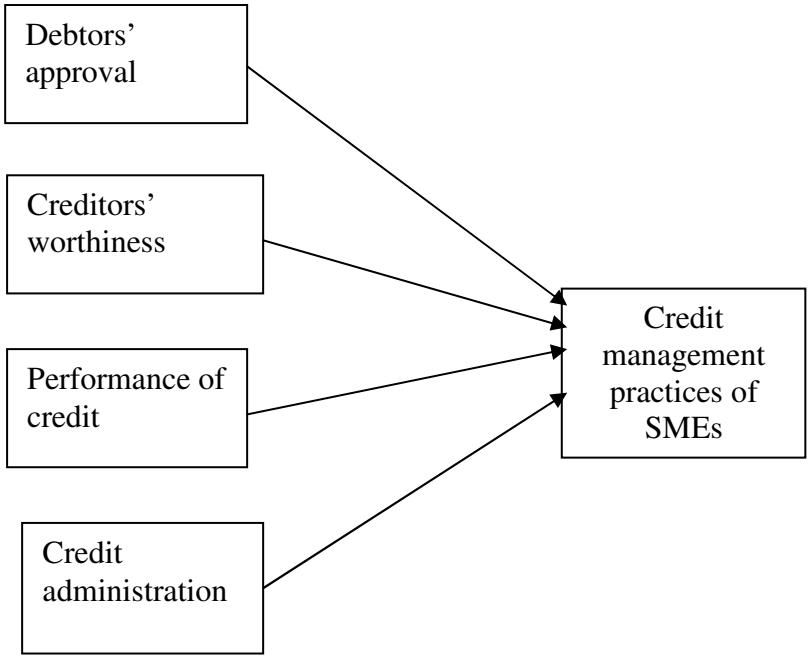

Figure 1: Research model

Debtors' Approval

Debtor's Approval has items used to measure the importance of various types of information in determining whether a customer receives approval to purchase on credit. In his research, Perry (1995) examined the following items that were used by credit managers to determine whether or not customers were granted credit. Questions related to each of these were included in the survey for the current research.

- *Monitoring of excessive past due payments*
- *Repetitive and large bad-debt write-offs*
- *Unusual situations resulting in extended credit*
- *Identification of credit controls*
- *Importance of credit checking and credit information to granting of credit*

As stated previously, payments by debtors is the singular most important factor affecting a firm's liquidity. Non payment or late payment by debtors inhibits cash flows and leaves the firm having their own outstanding debts. This could result in debtors imposing penalties or refusing goods or services which directly inhibits servicing customers (Kljelly, 2004). According to Dun and Bradstreet, less than half of all enterprises perform any form of check on a company before granting credit to them. It was in their 1998 European Business Survey that Grant Thornton noted that smaller owner-managed businesses are less likely to monitor accounts

receivable, stock levels, profit and loss accounts and outstanding orders or new customers (Anon: 1998).

There are many different measures that could be used to assess a debtors capacity to service their account. For example:

- the length of time they have been in business,
- bank or trade references, and
- credit agency checks,

Chittenden et al (1998) identified that most small businesses do not have a written customer credit policy. This tends to highlight the poor credit management practices of small business and their inability to assure adequate cash flow through efficient and effective management of accounts receivable. Generally it was agreed that the longer a debt remains outstanding, the greater the risk of it becoming uncollectible (Amrhein & Katz, 1998, p. 3). This leads to a domino affect as small business not being paid cannot in turn service their account payable (Wilson et al, 1996).

Creditors worthiness

A different set of criteria come to the fore when assessing the suitability of creditors. In many cases it seems unusual to assess the suitability of a creditor, but small business is about creating appropriate and timely supply chains enabling timely and efficient processing o customers. The inability of a creditor to service its own accounts payable has the obvious domino affect of not being able to provide the required goods or services.

As well the firm must also be cognizant of the prices for required services and products in the broader market. Over payment to creditors due to ineffective policies related to the pricing of goods and services reduces cash flow and liquidity. However, a business may find it suitable to charge prices which are higher than usual in order to compensate for the credit taken, or where the prices are generally applicable it may be difficult to obtain suppliers in the future (Howard, 1971).

Supplier reliability is very important. The business needs to operate with suppliers that can deliver when needed. If for same reason the supplier becomes unreliable the business may suffer and ultimately may be unable to meet its current commitments and be brought to a standstill (Howard, 1971). This danger constitutes a risk element which has to be weighed against the profitability of trading on short-term finance (Howard, 1971).

After sales service by the supplier is another factor that should be evaluated when examining creditors/suppliers - particularly when the product or service has a warranty.

Performance of credit management

Chittenden et al (1998) found from their study that credit management in smaller businesses falls behind best practice. That is many SMEs have no idea of how to use credit control techniques like aging receivables, accounts receivable forecasting and collection procedures (Grablowsky, 1976). While having appropriate credit collection and processing controls is place is vital, it is equally important the SMEs monitor the performance of the processes. Failure to regularly monitor any process within a business setting makes it impossible to assess their appropriateness and effectiveness.

Pike et al (1998) identified that small businesses feel that the management of debtor days is the most important measurement of the effectiveness of their credit management processes (82 per cent of participants) followed by their achievement of cash collection targets. Less than half of the participants reported that reducing bad debts and bad debt to sales ratio a being an important measure of credit performance within the firm.

It is interesting to note that a number of countries are implementing or have implemented interest charges on late payments in an attempt to support small business. Generally the interest rates on these late payments is quite high. In Australia the Late Payment Bill was not passed but other government bodies are seeking remedies to the problem.

Credit administration activities

Credit administration activities are a major component of credit management. Bishop et al (1993, 612) found that credit collection policies differed from one SME to another. Procedures that should be followed by the business once credit was extended include:

- the timing of the initial reminder, after a customer's debt was past due;
- the timing of different types of reminders;
- the timing of the engagement of a professional collection agency; and
- the timing of credit refusal

Mian and Smith Jnr (1992) recognised five functions must be performed in the credit-administration process: credit-risk assessment, credit granting, accounts receivable financing, credit collection, and credit-risk bearing. All these items are clearly associated with activities that directly impact on a firm's liquidity.

Chittenden et al (1998) found that the owner-manager or credit officer undertakes the management of accounts receivable. In the UK SMEs show that the breakdown of total time devoted to accounts receivable (debtors) is 84 per cent of time consumed on invoicing and collecting revenues, with 8 per cent on approving credit requests, negotiating and agreeing terms. Quite obviously SMEs worldwide are aware of the importance of credit management procedures and generally seek to implement practices that are generally oriented towards the provision of effective cash flow – the lifeblood of the firm.

Research method

The research was carried out by survey. The survey was sent to 2,000 SMEs identified from the Business Enterprise Register (BER). The BER is a database of over 13,000 businesses on the Mid North Coast region of NSW. The businesses were selected randomly from the manufacturing and service sectors. 60 per cent of the businesses selected were from the manufacturing sector and the other 40 per cent from the service sector. These two industry sectors were chosen specifically to align with the businesses used by Chittenden et al (1998) in their research. Many of the items from the survey instrument used by Chittenden et al (1998) were used in the current study.

Completed questionnaires were returned by 208 SMEs. This is a response rate of just over 10 per cent. The reliability of the questionnaire was determined by means of the Cronbach alpha test which measures internal consistency.

Results and discussion

It is always problematic trying to sort out relations among a set of highly correlated variables, especially when those variables themselves are all cast as indicators of credit management. An alternative approach is to model these four variables as reflective indicators of an underlying credit management practices. Multi-collinearity does not pose the same problems for a latent variable model as it does for a path model.

Of the sets of variables listed above, only 'credit management activities' and 'debtors approval' were suitable for analysis as latent variable models. The variables comprising the remaining two clusters both used continuous data which would result in inadmissible models as the three variables in each would result in r^2 values of 1 in each instance. As there are no attitudinal measures involved in any of the variables from these clusters, they were unsuited to analysis as latent variable models. The variance of the higher order factor explained in each instance by the individual variables would always equal 1 or higher.

As well, the failure to resolve these models could indicate that the data is not normally distributed and these sets of variables may be better suited to confirmatory factor analysis (CFA) as opposed to the testing of latent variable models.

The models were tested using AMOS. To do this requires each observed variable to have a corresponding residual variable to account for the variance that is not explained by the observed variable and its association with the other variables through the higher order factor. These are generally referred to as error terms and are represented on each model as 'e1', 'e2', etc…

Debtors' approval

Figure 2 shows the variables used to determine whether a client is granted approval to be a debtor. The item *credit-history* asked respondents to indicate their knowledge of the debtor's or debtor firm's credit history. The item *credit-owner* asked respondents to indicate their knowledge of the owner(s) of the debtor firm's credit history. These two items shared a high level of variance and conceptually it would seem that knowledge of either item would suffice as evidence of credit history. However, it was decided that knowledge of *credit-history* may also encompass knowledge of the owner(s) and therefore this item was retained in the model. It should be noted that both parameters were tested in the model together and separately and the decision to remove one was justified on the basis of the explained variance being greater than one when both were present. There was a minor improvement in the variance explained when *credit-history* was included but either item could have been included with little impact on model fit.

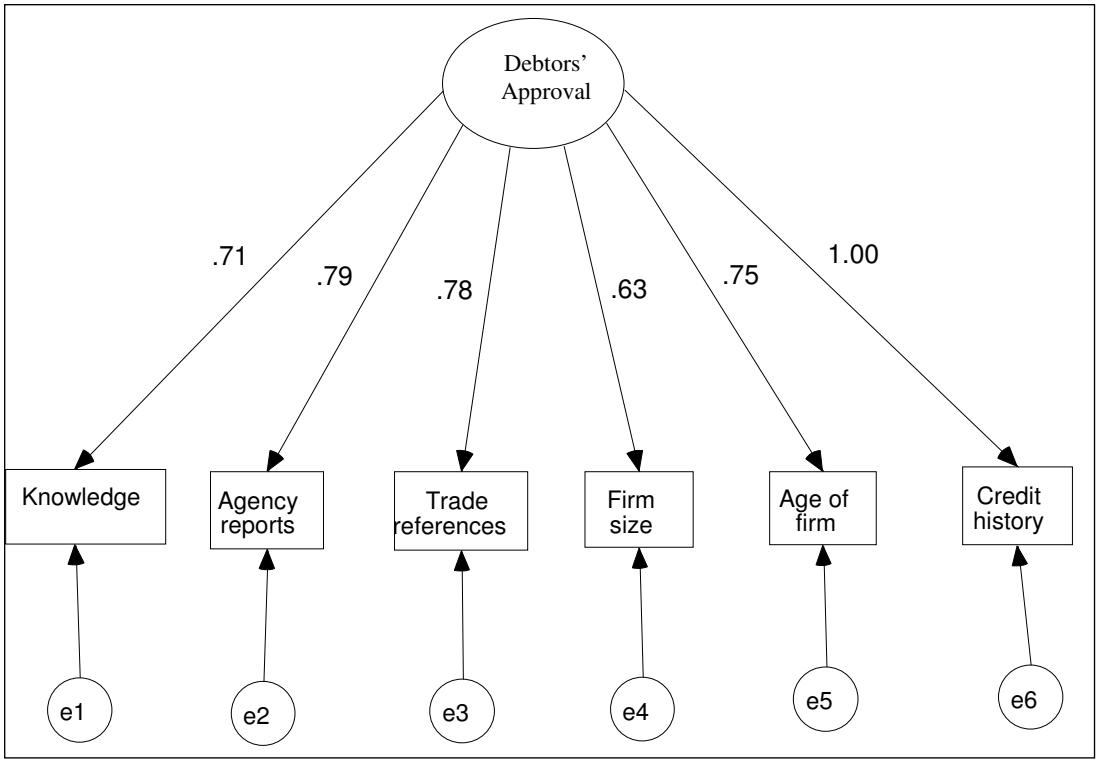

Figure 2: Debtors' approval

The path coefficients for each item are very close which shows that no one criteria stands out as being significantly more important than another. It is interesting to note that *trade references* was not a factor that loaded on credit approval parameters. However, it was still considered important but the set of items included in the model depict the cluster of items that load on the higher order factor. It would be interesting to note the affect of trade references in the absence of other variables such as agency reports and bank references.

Creditors' worthiness

The latent construct in this model was named Creditors' worthiness after close examination of the observed items. There were few of the items that were considered to be directly associated with SME's management of the credit that had been granted by their suppliers. The items generally measured a broad set of supplier characteristics. While the model shown in Figure 3 below does not measure 'credit' per se, it nonetheless shows a clear set of items that could be used to assess creditors' worthiness.

It is interesting to note the importance of key variables in determining firm's attitudes to the supplier. The importance of location tends to highlight that SMEs are not happy having suppliers which are remote to their business operations or cannot be readily accessed. This of

course would be expected to have a direct impact on the speed with which orders can be filled (order-speed). The model shows that order-speed has a higher path coefficient than location which implies it is of greater importance then location although both items are required to measure the latent construct (creditors' worthiness).

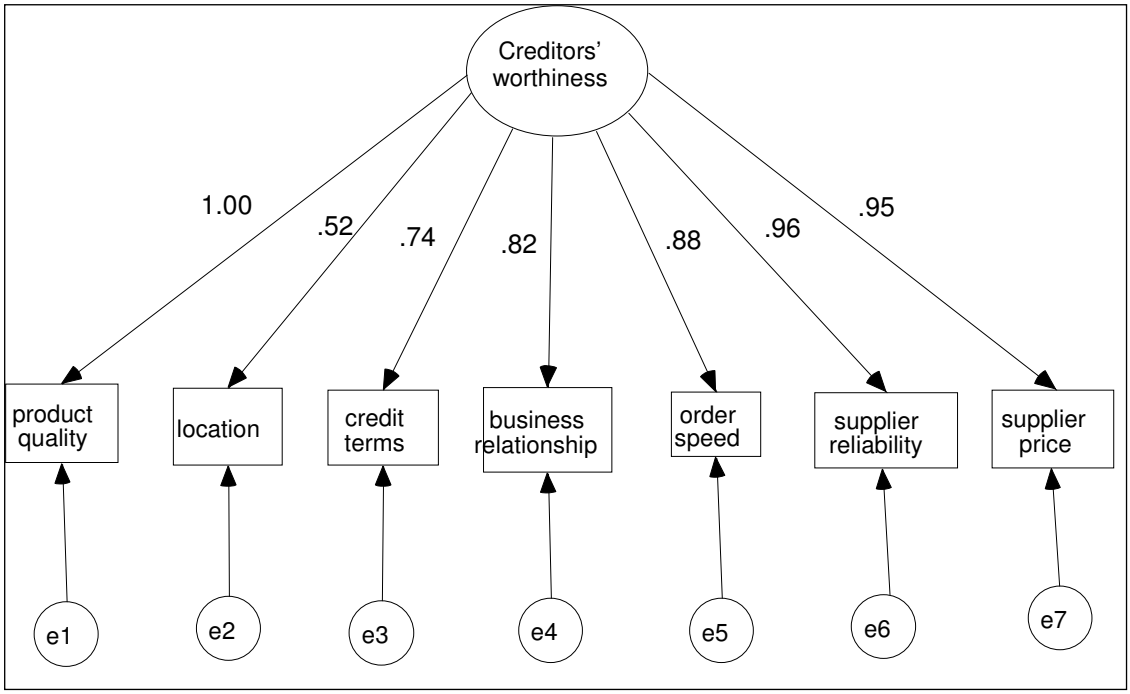

Figure 3: Creditors' worthiness

Performance of credit

The high number of collinear relationships among these items (r > 0.80), and the high level of variance shared among the remaining items meant this group of variables would be problematic in being representing as a latent variable model. The first action take was to examine the collinear relationships between *credit-administration* and *credit errors, credit-administration* and *lost-interest*, and *average-credit-days* and *average debtor days*. C*redit-administration* was retained as this item was felt to encompass the management of *credit-errors* and *lost interest*.

The items included in the model shown in Figure 4 below were those with the highest correlations among the clusters of variables examined in this research. Given the very high correlations it was expected that this would be the most difficult set of parameters to 'fit' to a model. However, significant path coefficients were derived for each of the items indicating that they were measures of a higher order construct – *Performance of credit*. The path coefficients were all very high showing that this set of items explained considerable variance in this model. This shows that further analysis is required to define the set of items to measure this construct or that

any of the items themselves could be used as reasonable measures of processes used to measure the performance of SMEs credit management procedures and policies.

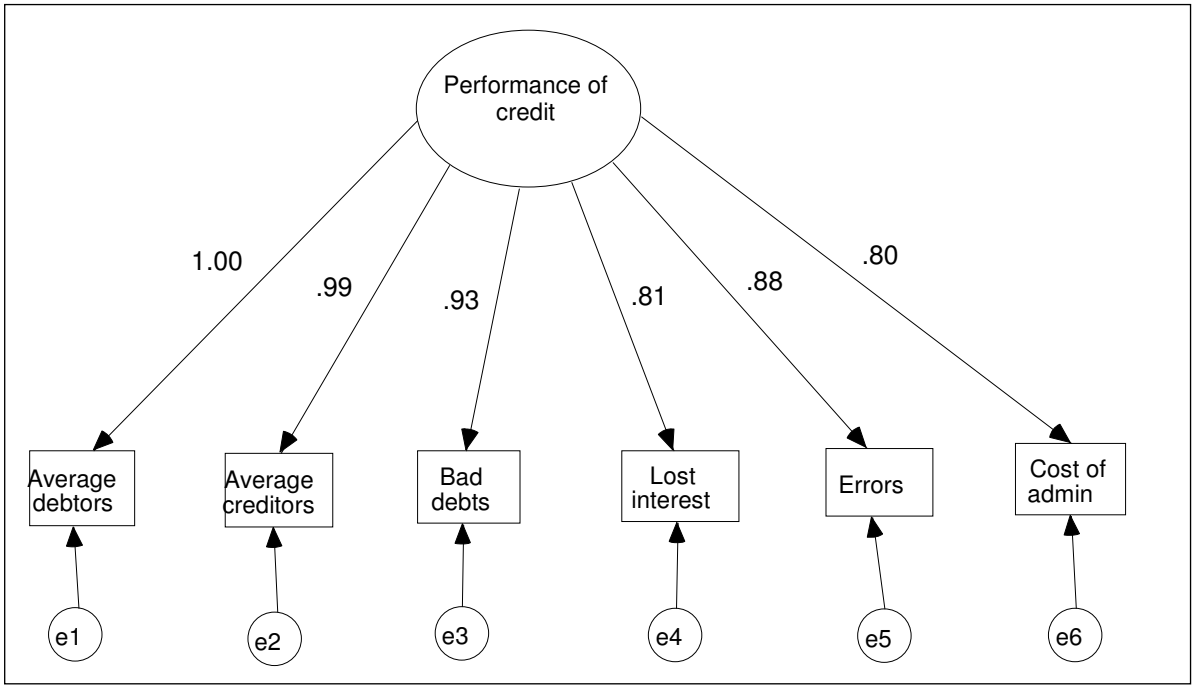

Figure 4: Performance of credit

Credit administration activities

All the weightings (r^2) values show that these items do in fact load on a higher order factor. We have called the factor *credit-management-activities* as the items all seem to interpret activities and processes associated with the management of credit activities. That most of the items recorded levels of shared variance in excess of 90 per cent shows that each of these items is a valid measure of the latent construct. *Credit-limits* shares the least amount of variance but still accounts for a considerable amount of variance in the latent construct when analysed with the other 5 items on the model.

The item *management-overdue* was highly correlated with both management-terms and *management-disputed*. All of these items measure some aspect of the management, processing or policy associated with overdue accounts. However, it was felt that all the items were in fact measuring separate items and were included in the initial model that was tested. The model showed the item *chasing-overdue-payments* with an r^2 value greater than 1, indicating multicollinearity with other items, and was removed. The model resulting from the final test is shown in Figure 5.

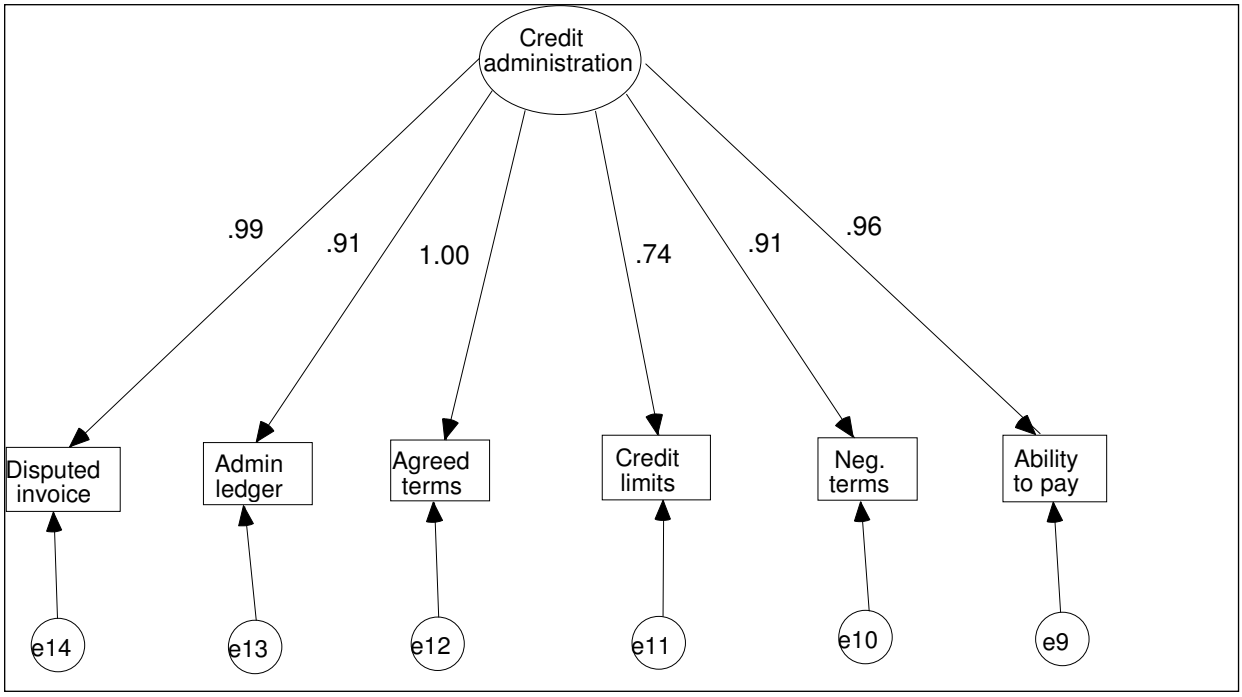

Figure 5: Credit administration

Conclusion

The correlations identified in the preliminary stages of the analysis showed that there were relationships among the variables used in the study to measure aspects of credit management practices of SMEs in New South Wales. The conceptual foundations used to construct the survey are evident in these relationships.

It was hoped that the examination of the relationships would lead to clearly defined latent variable models for researchers to use in the future. While this outcome was not achieved, it has equally importantly identified constructs that require adjustment before being used by other researchers choosing to examine aspects of credit management practices for SMEs.

On reflection, it is felt that an adjustment of the questionnaire items may have resulted in a data set more suited to the analysis of latent variable models. Suggestions to other researchers when constructing their questionnaires would be to include, where possible, attitudinal scales in the place of dichotomous and continuous scale items.

Notwithstanding the limitations of the analysis and the data set, the research has identified and reported on important relationships among key measures of credit management practices and confirmed the validity of a number of scale items. Through the further analyses planned for this study it is hoped to be able to identify a construct or constructs that can be used as a dependent variable for further examination of credit management practices of SMEs.

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