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# Determinants of Trade Credit Use by Private Traders in Ethiopia: Case of Mekelle City, Tigray Regional State

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**Abstract**
This study aims to investigate the determinants of trade credit use by taking 198 samples of private traders in Mekelle city, Tigray regional state of Ethiopia. Semi-structured questionnaire and interview were used to collect data and binary logistic regression model was used to examine significant factors determining trade credit use. The result highlighted that trade credit was widely practiced among private traders in Mekelle city. It has been found that about 58 percent of sample traders that are found in Mekelle city were trade credit users and about 42 percent of them were non-users. The result of binary logistic regression model shows that from owner factors, gender and education of traders significantly determined trade credit use. Similarly, business specific factors such as age of the business, length of trade relation, frequency and volume of purchase were found significant variables in determining trade credit use. Therefore, private traders and concerned government offices that are concerned with the promotion of trade and private sector development need to take these factors into consideration in order to enhance trade credit use by private traders.
**Key Words**: Binary Logistic Regression, Determinants, Ethiopia, Private Traders, Trade Credit

## 1. Introduction

The importance of financial sector development, where banks play a special role in providing enterprises with necessary external financing is widely recognized. However, the question of creditworthiness for small business remains unanswered in getting access to bank loan. As an alternative for such enterprises, trade credit financing is becoming a common phenomenon in developing countries as well as in developed economies (Cheng & Pike, 2003; Gustafson, 2004; Van Horen, 2007). The use of trade credit improves investment incentives because supplier lends the products which are less easily diverted than cash i.e., enterprises have less diversion opportunity for unintended purposes. Trade credit amounts to 15-20% of GDP in Canada, USA, Great Britain, and 55-60% in Japan (Shaffer, 2000). Moreover, recent evidence from developing countries suggests that trade credit is the major sources of finance for small and informal enterprises (Huyghebaert, 2006) because emerging economies are characterized by undeveloped financial system and high proportion of enterprises in these countries are financially constrained.

In Ethiopia also, a survey made by EDRI (2003) indicated that trade credit from suppliers was singled out as the most important source of short term finance for private businesses representing 17% of their working capital finance. It was also rated higher than borrowing from other informal and formal sources. Moreover, Gebrehiwot and Wolday (2006) showed that more than half of sampled MSEs were used trade credit for their business finance. However, many of potential enterprises (i.e., many of the credit hungry customers) were unable to have an access to trade credit due to many factors among which are familiarity between supplier and customer on the grounds of relatives, religion, and friendship (Fatoki & Odeyemi, 2010).

Several studies have investigated the reasons for the use of trade credit, focusing on either the supply or demand side. Interestingly, however, there is no consensus among prior studies about the determinants of trade credit supply and demand. For example, contrasting results were reported with respect to the effect of access to external finance and transaction cost considerations on trade credit supply and demand (Chant & Walker, 1988; Cheng & Pike, 2003; Fisman, 2003; Fisman & Raturi, 2004; McMillan & Woodruff, 1999; Petersen & Rajan, 1997). Some of these contradictory results may be explained by differences between countries (Fisman & Raturi, 2004) and/or markets (Giannetti, Burkart, & Ellingsen, 2008). Despite the potential importance of trade credit, limited attention has been paid to its role and use, especially in developing countries in general and none in the case of Ethiopia. Hence, identifying the determinant factors affecting private traders' use of trade credit in financially underdeveloped countries is essential given that these factors are dynamic based on disparities in countries context. Therefore, this study aimed to investigate the determinant factors of private traders' trade credit use in Mekelle city, Tigray regional state of Ethiopia by taking owner and business characteristics into consideration.

## 2. Theories of Trade Credit

Trade credit from customer point of view is defined as a loan a customer receives from its supplier in conjunction with purchase. For the buyer, it is a source of *finance* through accounts payable, while for the seller,

 

trade credit is an *investment* in accounts receivable. It is usually extended for an intermediate period of thirty to sixty days at which point payment is due. As pointed out by Fafchamps (1997), trade credit has an attractive feature of not being guaranteed by mortgageable assets (collateral), which is advantageous for enterprises lacking collateralizable assets.

*2.1 Theories of Trade Credit*

Many reasons have been put forwarded to explain why firms may offer or accept trade credit. Here below are the main arguments of trade credit theories.

*Financing Theory*

The financing theory suggests that firms that do not have access to bank loans will have a higher demand for trade credit, since it may be an important source of short-term finance (Giannetti et al., 2008; Huyghebaert, 2006; Nielsen, 2002; Petersen & Rajan, 1997). The argument here is that bank loans and trade credit is considered as substitute sources of finance. Opposing views to the financing theory argued that firms may still demand more trade credit even if they have access to bank loans (Chant & Walker, 1988; McMillan & Woodruff, 1999). They considered trade credit and bank loan as complementary source of finance. Their argument was that a firm may take more trade credit even if it has access to bank credit may be that the firm use bank credit for financing business expansion such as buying assets and trade credit to finance the purchase of goods.

*Transaction Cost Advantage Theory*

Larger quantity purchase encourages demand for trade credit due to the financial constraints customers may face with (Elliehausen & Wolken, 1993). According to this theory, the firm has two choices. Either to accumulate costly inventories (which may or may not be sold in later periods) or offer trade credit to its customers who may be finance constrained. There clearly exists a trade-off between carrying inventories and offering trade credit. Therefore, the idea of this theory is that purchasing large quantities will result in economies of scale and reduced fixed costs (e.g., transport costs). Moreover, buying larger quantities encourages the demand for trade credit due to the financial constraints buyers may experience (Elliehausen & Wolken, 1993), thus, the demand for trade credit grows with increases in the volume of purchases.

*Marketing Theory*

In an environment with many suppliers, customers may switch easily if there are no incentives to retain customer of a supplier (Fisman & Raturi, 2004). Providing trade credit may be one instrument to retain customers. Supporting argument by Pike and Cheng (2003) related to the marketing theory states the importance of competitive pressure in the market as a reason for offering trade credit.

*Liquidity Theory*

This theory, first suggested by Emery (1984) proposes that credit rationed firms use more trade credit than those with normal access to financial institutions. The central point of this idea is that when a firm is financially constrained the offer of trade credit can make up for the reduction of the credit offer from financial institutions.

## 3. Materials and Methods

For the purpose of investigating the determinants of trade credit use, this study draws on empirical evidence from the 2013 survey covering 198 randomly selected private traders from Mekelle city, Tigray regional state of Ethiopia. Semi- structured questionnaires were distributed for those randomly chosen traders from the sampling frame. Moreover, interview was conducted with some selected respondents while collecting questionnaire. The data collected in this way was classified, summarized and presented using text and table, and analyzed using the descriptive and inferential statistics. In addition, the econometric analysis tool which is binary choice logistic regression model was used to test the literature driven hypothesis and to draw conclusions.

*3.1 The Econometric Model*

To know the status of trade credit use by private traders, traders were asked whether they have been used trade credit or not in the form of *Yes* or *No* response question. Thus, dependent variable in this study is limited (discrete) for which the outcome can take only two values designated by "1" for private trader using trade credit and "0" if not. The binary logistic regression used assumes the probability to use trade credit or not. In this study the realization of dichotomous used is defined as;

$Y_i = \beta_0 + \sum_{j=i}^{k} \beta_j X_{ij} + U_j$, where $Y_i$ is directly observable as a dummy variable defined as $Y_i = \begin{cases} 1 \text{ if private trader using trade credit} \\ 0 \text{ other wise} \end{cases}$

Therefore, to estimate a logit function in which the dependent variable is the probability of using trade credit is represented by

 

The logit $_{i=}$ ln $\left(\frac{p_i}{1-P_i}\right)$

Finally, the empirical model of trade credit use studied in this paper is given by the following equation:

$$P(tcu) = \ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 gen + \beta_2 edu + \beta_3 mrst + \beta_4 szbss + \beta_5 agebss + \beta_6 acsblo +$$
$$\beta_7 trship + \beta_8 \log volu + \beta_9 fpur + u_i$$

Where, P (tcu) = the probability that $i^{th}$ private trader uses trade credit given explanatory variables ; $\beta_0$ is Constant (intercept); $\beta_1 - \beta_9$ is slope Coefficients and ln $\left(\frac{P_i}{1-P_i}\right)$ is the natural logarithm of the odds ratio (logit model) and $U_i$ is the error term (absorbs all unobserved factors)

*3.2 Formulation of Hypotheses*

*3.2.1 Gender of owner versus trade credit use*

Previous literature show that gender of the borrower is an important factor for participation in the informal finance. There are some evidences that women generally use informal finance than external formal credit as compared to men counterparts (Marlow & Patton, 2005; Pham, 2006; Zimmerman, Treichel, & Scott, 2006). In the same way Coleman (2000) found that women-owned firms are less likely to use formal external financing. Given these argument the next hypothesis was made.

**H1**: Female retailers are more likely to use trade credit as compared to men counterparts.

*3.2.2 Education versus trade credit use*

The success of a business will depend on the owner's ability to obtain the necessary financial capital, which in turn is measured by educational level (Adrich & Zimmer, 1985). On the other hand, there is also evidence that more educated and experienced entrepreneurs seek for other sources of finances than trade credit (Cole, 2010; Kimuyu & Omiti, 2000). Thus, the following hypothesis is made.

**H2**: The more the private trader is educated, the higher the probability of using trade credit.

*3.2.3 Marital status versus trade credit use*

According to some studies, married couples have better access to bank loans and reduce the need for trade credit (Avery, Calem, & Canner, 2004; Pham, 2006), and are also capable of generating more income as compared to unmarried traders. Similarly, the following hypothesis is formulated.

**H3**: Married traders are less likely to demand trade credit as compared to other marital status

*3.2.4 Size versus trade credit use*

In previous studies firm size as measured by number of employees or log of total assets, found conflicting result. For instance, Atanasova (2007) found an inverse relation between the use of trade credit and firm size. On the other hand, Fafchamps, Pender, and Robinson (1995), Biggs, Raturi, and Srivastavac (1996) and Isaksson (2002) for developing countries in Sub-Saharan Africa have shown that the use of trade credit increases with the size of the firm. In the context of this study also, the next hypothesis was derived.

**H4**: The larger the size of the business, the higher the chance of using trade credit.

*3.2.5 Age vs. trade credit use*

Younger firms need capital to finance growth and are also tend to be less creditworthy, less profitable, and less diversified than older firms, so they have higher probabilities of financial distress (Fatoki & Odeyemi, 2010) and hence, new firms are found to be an applicant of trade credit. Similarly suppliers are more concern for new firms with greater potential to grow. Petersen and Rajan (1997) found that trade credit was more used at business start-up than when they become able to generate sizable profit. In this regard the following hypothesis is formulated.

**H5**: The younger the business, the higher the probability of using trade credit as compared relatively to older business

*3.2.6 Access to bank loan versus trade credit use*

Financing theory suggests that if bank and trade credit are substitutable, access to bank loan is positively related to trade credit (the more difficult the access to bank credit, the more firms will rely on trade credit to

 

compensate), supported by empirical evidences of Huyghebaert (2006), Giannetti et al (2008), Nielsen (2002) and Petersen and Rajan (1997). In such away the following hypothesis is formulated.

**H6**: The more the business has access to bank loan, the lesser the likelihood to use trade credit

*3.2.7 Length of business relationship with supplier versus trade credit use*

Summers and Wilson (2002) note that suppliers offer trade credit to customers with whom they have long history of trade relationship because they assume that it is relatively less risky as compared to new customers. From this point of view the following hypothesis is drawn.

**H7**: The higher the duration of trade relationship with its supplier, the more likelihood of using trade credit by private traders.

*3.2.8 Volume of purchase versus trade credit use*

Trade credit demand for an individual firm will increase as the volume of purchases increases (Summers & Wilson, 2002). The transaction cost theory suggests that suppliers have an incentive to offer trade credit to customers buying large quantities, because it reduces storage costs. If trade credit is offered, the customer may be stimulated to increase the quantity they purchase per transaction (Chung & Liao, 2006). This reduces the need for large storage space and storage costs for the supplier (Petersen & Rajan, 1997). Therefore average volume of purchase order determines customer's use of trade credit. From the above evidence the following hypothesis is simulated.

**H8**: Relatively the larger volume of purchase, the greater the probability of using trade credit

*3.2.9 Frequency of purchase versus trade credit use*

Suppliers consider infrequent buyers as risky customers who need to be paid special attention when they ask for credit (Hermes et al., 2010). Customers who buy frequently indicate how good their businesses are doing and what the chances of repaying. Thus, suppliers give trade credit to those customers because they are confident that they will get their money back.

***H9****: The more the frequent purchase, the higher the likelihood of using trade credit.*

## 4. Results and Discussion

To know the status of trade credit use by private traders, traders were asked whether they have been used trade credit or not. Such an objective response and direct measure of the binary dependent variable (i.e., trade credit use equal to '1' if firm uses trade credit and '0' otherwise) was used to determine the practice of trade credit use in the study area. Accordingly, as shown by **Table 1**, more than 58 percent of private traders in Mekelle city were found to be trade credit user while about 42 percent were non-users. This result confirms with the previous studies undertaken in developed countries, which found that more than half of small businesses used financial support from their supplier in terms of trade credit (Fafchamps, 1996; Gebrehiwot & Wolday ,2006; Teruel & Solano, 2008).

*4.1 Determinants of Trade Credit Use by Binary Logit Model*

As per the logistic regression output presented in **Table 2**, the interpretation of estimation results of significant explanatory variables are presented below followed by tests of research hypotheses.

*4.1.1 Gender (gen)*

Gender of the traders has negative but significant effect on trade credit use. Contrary to the expectation, the result shows the probability of trade credit use is 0.25 times higher for male owned businesses than female owned businesses. The marginal effect of this variable is -0.3256 indicating the probability of trade credit use for female owned businesses decreases by 32.56 percent as compared to male owned businesses, ceteris paribus. Therefore, the first research hypothesis which says *"female owned traders are more likely to use trade credit as compared to men counterparts"* is rejected. The result is inconsistent with Coleman (2000) and Fafchamps (1999). In this study it can be justified, first, that women have dual role, i.e., domestic and reproductive responsibility, hence, are less participant in business activities than men. Secondly, women might be risk averse even in using trade credit than men to maintain their welfare and survival of the household. These could be true and evident reason in this study.

*4.1.2 Education (edu)*

The level of education has also negative effect on trade credit use. The marginal effect of -0.3606 indicate that keeping other factors constant, the probability of trade credit use decreases by 36.06 as educational level increases by one unit. Hence, the research hypothesis which says "*the more the private trader is educated, the higher the probability of using trade credit"* is rejected. It is contrary to the findings by Kaniki (2006), Robb and Wolken (2002) in which managers with post secondary education were found more users of trade credit. This may be due to the fact that, the more the trader is educated, the more s/he might have better know how about the relative costs of alternative financing sources. Since trade credit is considered as an expensive source

 

of finance as compared to bank credit (Cole, 2010), more educated traders might seek loan from formal financial institutions than using supplier credit.

*4.1.3 Age of the Business (agebss)*

Similar to prior expectation, this variable has negative and significant effect. The result of this study exhibits that the odds ratio of 0.482 for age of the business indicate the probability of trade credit use decreases by 0.482 times for one year increase in the age of the business. Similarly, the marginal effect shows that the probability of trade credit use decreases by 17.73 percent as age of the business increases by one year, ceteris paribus. Therefore, the research hypothesis which says "*the younger the business the higher the probability of using trade credit relatively as compared to older business"* is accepted. The result confirmed with the views in literature that younger firms have less access to bank credit since they lacks reputation and experience in business and, hence, uses trade credit which in turn confirms the substitution hypothesis that argues trade credit and bank credit as substitutable source of finance.

*4.1.4 Length of Trade Relation with Supplier (ltrship)*

The result indicates that the length of trade relationship has a positive effect on the probability of using trade credit. Similarly, the odds ratio shows that the probability using trade credit increase by 2.22 times as length of trade relationship increases by one year, other things kept constant. The marginal effect of this variable (0.194) implies that, ceteris paribus, the probability of trade credit use increases by 19.4 percent as length of trade relationship increases by one year. As a result, the research hypothesis which states "*relatively the higher the duration of trade relationship with its supplier, the higher the chance of using trade credit*" is accepted. This is due to the fact that trade credit has been taken place without any written documentation, which means the business familiarity (length of trade relation) between the trader and supplier may be very important in using trade credit.

*4.1.5 Volume of Purchase (logvolu)*

Volume of transaction has positive and significant effect on the probability of trade credit use. The result shows that assuming all other factors remain constant, the probability of trade credit use increases by 30.2 percent as a volume of purchase increases by one unit. Based on this, the research hypothesis which states "*relatively the larger volume of purchase, the greater probability of using trade credit"* is accepted. It is consistent with the transaction cost advantage theory and the empirical evidences of Chung and Liao (2006) and Summers and Wilson (2002). This may be due to the fact that supplier wants to offload some of their excess inventories on to clients via allowing for later payments and to gain competitive advantage. On the other hand, most traders are financially constrained and that they cannot afford to pay in cash for large purchases.

*4.1.6 Frequency of Purchase (fpur)*

The results of the study indicates, holding other factors constant, the probability of trade credit use decreases by 4.079 times as a frequency of purchase increases by one times of order per month. Similarly, the marginal effect (-0.3415) shows that the probability of trade credit use decreases by 34.15 percent as frequency of purchase increase by one times of order per month, all other factors kept constant. Thus, the research hypothesis which says "*the more the frequent purchase, the better the chance of using trade credit"* is rejected. This finding is in contrary with financing advantage theory which argues that repeated ordering allows suppliers to collect more information on customers' credit worthiness. This might be due to the fact that infrequent purchase may show poor business operation with less profit, in liquidity problem, and thus, seek for trade credit. In addition, in our context infrequent purchase may show low inventory turnover and such business lacks cash to order new products and fashion, since their money is already tied up in the existing inventory, thus, they go for trade credit use.

## 5. Conclusion and Policy Implication

The study covered determinants of trade credit use by considering both business owner characteristics and firm specific factors. It has been found that about 58 percent of traders that were found in Mekelle city were trade credit users and about 42 percent of them were non-users. It also showed that trade credit is highly based on business relation only, while familiarities between traders and suppliers on the grounds of ethnicity and religion were not important in trade credit use. The study revealed that female traders are lagged behind in trade credit use. It might imply that women have dual role as compared to men. It is found that trade credit use decreases with increase in educational status. The result showed that there is a negative relationship between age of the firm and the probability of trade credit use whereas there is positive relation between trade credit use and length of trade relationship with supplier. Frequency of purchase influences trade credit use negatively whereas volume of purchase has positive effect on trade credit use. Finally, the result showed that the effect of marital status, firm size and access to bank loan were found to be insignificant.

The results of this study offer several insights and policy implications. Accordingly, the importance of trade credit use in the short term financing, in the purchase of goods by private traders, reflects that these enterprises are capital rationed on one hand, and difficulties they faced in having access to credit from formal financial

 

institutions on the other hand. It suggests that banks are not willing to channel formal credit to petty traders that could not satisfy their collateral requirement. So, as an alternative, trade credit should be fostered and made efficient by establishing policies that protect suppliers and enable all traders equally benefit.

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**Annex:**

Table 1: Status of Trade Credit Use by Private Traders

| Trade credit | Number of traders | Percent |
|---|---|---|
| Users | 115 | 58.08 |
| Non-users | 83 | 41.92 |
| Total | 198 | 100 |

**Source**: Result from survey data (2013)

Table 2: Logistic Regression Estimation Result

| ***Variables*** | ***Odds ratio*** | ***p>\|z\|*** | ***Marginal effect (dy/dx)*** |
|---|---|---|---|
| **Owner Characteristics:** | | | |
| Gender of private trader | 0.2514 | 0.008* | -0.3256 |
| Education of trader | 0.1967 | 0.017** | -0.3606 |
| Marital status (Dummy variable - reference to married) | | | |
| Single | 0.5038 | 0.262 | -0.1674 |
| Divorced | 1.795 | 0.401 | 0.1335 |
| **Business Characteristics:** | | | |
| Age of business | 0.482 | 0.000* | -0.1773 |
| Size of business (log) | 0.658 | 0.412 | -0.1015 |
| Access to bank loan | 0.542 | 0.439 | -0.1474 |
| Length of trade relationship | 2.222 | 0.000* | 0.1940 |
| Frequency of purchase | 4.079 | 0.000* | -0.3415 |
| Volume of purchase (log) | 3.302 | 0.028** | 0.2902 |
| ***Statistics:*** | | | |
| Number of observations = 198 | | Prob > $chi^2$ = 0.0000 | |
| Wald $chi^2(10)$ = 40.71 | | Pseudo $R^2$ = 0.6758 | |

**Source**: Result from survey data (2013)

** and ** indicate level of significance at 1 percent and 5 percent respectively*