Transaction cost determinants of credit governance structures of commercial banks in Tanzania

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Abstract

This paper explores transaction cost determinants of credit governance structures (CGS) of commercial banks in Tanzania. Descriptive statistics, linear regression model, binary and multinomial logistic regression models were employed for analysis. Findings revealed four modes of credit governance structures that are used by commercial banks to penetrate rural based credit market without fear of high transaction costs. These modes of CGSs might be used to absorb transaction costs in different magnitudes, allow commercial banks credit operations scale up to rural areas and maximize profitability. The most important TC determinants include high illiteracy rate (lack of entrepreneurial and financial management skills), poor infrastructures, unclear political will and commitment towards rural development, culture barrier (poor tradition and customs) and lack of national identification system. It was also revealed that, under commercial banks credit operations in Tanzania, credit contract monitoring and enforcement transaction costs were the highest categories of TCs, which is contrary to what suggested by previous authors.

Key words: Transaction costs, credit governance structures, commercial banks, Tanzan

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1.0 Background information

Transaction cost is an important determinant of choice of the best credit governance structure of commercial banks in Tanzania. In a market where transaction cost is too high, there may not be transaction at all. Such behavior is portrayed by commercial banks in Tanzania where most provide credit services to urban based customers and have ignored rural based customers. According to Finscope survey (2013), only 6.8% of Tanzanians who live in rural areas have access to financial services from banking sector. Information gap between commercial banks and rural based borrowers was a major setback on commercial banks behavior of dealing directly with individual borrowers, resulting in high transaction costs. High transaction costs influenced commercial banks decision not to provide credit services at all to rural based borrowers, in turn negatively affects both commercial banks and rural based population,FSDT (2013). Since liberalization of banking industry of Tanzania in 1991, commercial banks mostly preferred to directly deal with customers as far as credit provision services is concerned, this tendency resulted in limited credit supply from commercial banks to most part of the country, especially rural areas due to inability to manage associated credit transaction costs as reported in AgFiMS (2011). Major challenges in rural finance in Tanzania relate to information gaps which fall into three categories: (i) Knowledge of rural demand and market segmentation by financial institutions; (ii) Financial illiteracy of rural borrowers; (iii) Commercial banks knowledge of best channels/methods for penetration to rural based market at low transaction costs (TCs), FSDT (2013).

Information is a key input that goes into the credit decision of commercial banks. One of the challenges for commercial banks is to acquire information about the credit risk of the borrower, as borrowers have more information than the lender about the projects (Myers & Majluf, 1984). Transaction cost economic theory argues that banks are not interested in offering credit to MSMEs, farmers and poor households because information asymmetries resulting to high screening costs, credit contracts negotiation costs, monitoring, and enforcement costs.

Under asymmetric information conditions commercial banks are uncertain about the future behavior of the borrower in terms of repayments. High transaction costs problems are more likely to occur when commercial banks deal with MSMEs, farmers and poor households especially in developing countries rural areas due to higher opacity (Berger et al.2001; Beck et al.2004; Hyytinen and Pajarinen, 2008; Cole 2004). By opaqueness means, it is difficult to ascertain if borrowers have the capacity to pay (have viable project) and/or willingness to pay (due to moral hazard) (Beck, 2010). Information asymmetry between borrowers and the commercial banks is reflected in inability of the majority of rural based borrowers to provide up to date reliable financial information and realistic business plans, which increases credit transaction costs. Consequently limits the ability of banks to assess the credit-worthiness of the individual borrowers. And therefore commercial banks believed to be better-off with some few known credit worth urban based customers, Kessy and Temu (2010).

The argument of information asymmetry is supported by Olomi (2009) and Kibassa (2012) who emphasized that poorly compiled records and financial accounts coupled with inability of rural based borrowers to properly express their knowledge about business opportunities aggregates the lack of adequate information by commercial banks, thus increases credit transactions costs,

especially when dealing with rural based borrowers in Tanzania. Satta (2003; 2006) amplify this argument by pointing out lack of adequate and reliable collateral, lack of appropriate instrument to manage risk, not being familiar with complicated information about rural based borrowers and perceived risks make Commercial banks in Tanzania become unwilling to provide the much-needed finance particularly to rural based borrowers.

Therefore Commercial banks opt not to provide credits at all or to ration and tighten requirements in order to protect themselves from likely opportunistic behavior of borrowers. With an appropriate choice of a credit governance structure (CGS) as determined by transaction costs, commercial banks will be able to penetrate the rural based market, small and emerging commercial banks will enter into credit supply business. Hence increases competition, credit accessibility and in turn lower borrowing interest rates, (Mkenda and campenhout, 2011), Unfortunately the environment for commercial bank's credit operation is not conducive due to inadequate infrastructure/facilities for smooth banking operations, difficulties in identification/accessibility of information for potential customers/borrowers and nature of customers (who wants many but small sized credits/loans. Bureaucratic procedures and reditapism by village and district councils, lack of collateral or collateral of low market values. These are some of the barriers that make banking operations in URT to be very costly and inefficient, especially for small private commercial banks, BOT (2011).

The liberalization of banking industry in 1991 aimed at allowing many private commercial banks to enter the industry thus increases competition in provision of banking services, i.e credit service, increases accessibility of banking services by many, lowering banks credit interest rates and ultimately eliminating monopoly of three banks CRDB and NBC and NMB within the industry. Thus improves the industry efficiency. Currently still the environment is not conducive to allow efficient operations for most private commercial banks to provide credit services especially in rural areas due to above problems that lead to high transaction costs as suggested in Tanzania banking sector performance report of 2010, BOT (2010). Few large commercial banks that were previously supported by GOT, i,e CRDB,NBC, NMB were able to absorb high transaction costs of providing credits in most part of the country, even in rural areas and yet attain super profits at expense of the borrowers. Since they shift such high costs as an interest element to borrowers. These few big banks to some extent are monopoly in nature when it comes to provision of credit facility in URT. Hence the environment for credit provision and governance structure/channels for credit supply need to be properly assessed, analyzed and designed Ernst&Young (2013). This will allow many commercial banks to provide credits in both rural and urban markets, increases competition, lowering transaction costs and borrowing interest. Ultimately minimizes transaction costs of offering credits by commercial banks in Tanzania and maximizes profitability.

1.1 Statement of the Problem

Despite their ability to incur high transaction costs, only a few commercial banks in Tanzania enjoy high profit levels at the expense of borrowers by shifting the burden of high transaction costs to borrowing interest rates. Such banks could be considered efficient in some ways in terms of observed non transaction cost attributes like volumes of credits given out, profitability, and repayments. Williamson (2000, 2001) suggested that when the cost of carrying out a transaction

is too high, there won't be transaction at all hence where the banks are not operating they are by implication, considered inefficient in transaction cost terms. Coarse (1984, 1992) argued that, firms with ability to absorb high transaction costs, enjoy high profit volumes. In Tanzania few big commercial banks have to some extent, monopolized the market for credit supply due to their ability to absorb transaction costs.

Recent studies in Tanzania on efficiency of commercial banks focused on conventional approaches of measuring efficiency and performance through analyzing banks profitability, repayment rates, accessibility to services, geographical coverage, transformational(operational) costs, interest rates, number of borrowers, productivity and portfolio quality, (Wangwe, 2004; Aikaeli, 2008; Ernst &Y oung, 2010; Serengeti, 2012).

This study focused on transaction cost as determinants of CGSs of commercial banks in Tanzania for credit operations scale-up purpose. Other scholars have done researches on application of transaction costs on Credit Governance structures (CGS). Their focus was mainly on demand for credits and not supply side. (Ngaruko, 2008) focused on how economic reforms of Tanzania influenced diversity characteristics of farmers, their farm investment and ultimately their demand on agro-credits. He made his analysis through application of transaction costs theory. (Mkenda and campenhout, 2011) conducted a research on estimation of transaction costs in Tanzania supply chain. They focused their analysis on commodity exchange of agricultural products.

The current study focus on how transactions cost determine the best CGS of commercial banks in Tanzania. It recognizes the need to assess structures that govern credit supply by commercial banks. Thus to identify and advice on the most suitable CGS given transaction costs. Since the amount of transaction costs incurred by banks in supplying credits influences choice of a CGS. With cost efficient CGS, small commercial banks will enter into credit supply business. Hence increases competition, credit accessibility and in turn lower borrowing interest rates.

1.2 Specific Objectives

The specific objectives of this paper are three fold:

(a) To describe commercial banks credit governance structures (CGSs) and transaction costs categories in credit administration.
(b) To identify significant transaction costs determinants associated with CGSs of commercial banks to current and potential customers
(c) To analyze effects of transaction costs on choice of CGS by commercial banks

2.0 Literature Review

2.1 The economics of organization: Transaction costs approach

The transaction cost approach to the study of economic organization regards the transaction as the basic unit of analysis and holds that understanding of transaction costs economizing is central to the study of organization. Application of this approach require that, transactions be dimensionalized and that alternative governance structures be described. Economizing is accomplished by assigning transactions to governance structure in a discriminating way. The

approach applies both to the determination of efficient boundaries, as between firms and markets, and to the organizational of internal transactions, Williamson, (1981).

Williamson (2000), pointed out that, the proposition that the firm is a production function to which a profit maximization objective has been assigned has been less illuminating for organization theory purposes than for economics. Even within economics, however, there is a growing realization that, the neo-classical theory of the firm is self-limiting. A variety of economic approaches to the study of organization have recently been proposed in which the importance of internal organizations is acknowledged. The one described here emphasizes on transaction costs and efforts to economize there on. Economic approaches to the study of organizations, transaction costs analysis included, generally focus on efficiency. To be sure not every interesting organizational issue can be usefully addressed, except perhaps in a minor way, in efficiency terms. A surprisingly large number can, however, especially if transaction costs aspect are emphasized. This is accomplished by making the transaction rather than the commodities the basic unit of analysis and by assessing governance structures of which firms and markets are the leading alternatives in terms of their capacity to economize on of transaction costs, Williamson (2010).

Efficient Boundaries decided what transactions are to be included in the organization and effectively defines the organizational boundary. If assets are nonspecific, markets enjoy advantages in both production cost and governance cost respects; static scale economies can be more fully exhausted by buying instead of making; markets can also aggregate uncorrelated demands, thereby realizing risk-pooling benefits; and external procurement avoids many of the hazards to which internal procurement is subject. .Some advantages of firms over markets include internal organizations are able to invoke fiat to resolve differences and better access to information. Incentive to shift transactions inside the firm increases with uncertainty.

Williamson argues in *The Mechanisms of Governance* (1996) that Transaction Cost Economics (TCE) differs from neoclassical microeconomics in the following aspects: *Behavioral assumptions*, whereas neoclassical theory assumes rationality and ignores most of the hazards related to opportunism, TCE assumes bounded rationality. *Unit of analysis*, whereas neoclassical theory is concerned with composite goods and services, TCE analyzes the transaction itself. *Governance structure*, whereas neoclassical theory describes the firm as a production function (a technological construction), TCE describes it as a governance structure (an organizational construction). *Problematic property rights and contracts*, whereas neoclassical theory often assumes that property rights are clearly defined and the cost of enforcing those rights by the mean of courts is negligible, TCE treats property rights and contracts as problematic. *Discrete structural analysis*, whereas neoclassical theory uses continuous marginal modes of analysis in order to achieve second-order economizing (adjusting margins), TCE analyzes the basic structures of the firm and its governance in order to achieve first-order economizing (improving the basic governance structure).*Remediable*, whereas neoclassical theory recognizes profit maximization or cost minimization as criteria of efficiency, TCE insists that there is no optimal solution and that all alternatives are flawed, thus bounding "optimal" efficiency to the solution with no superior alternative and whose implementation produces net gains.

2.2 Review of Empirical literature

Banks contribute to economic growth through their financial intermediation role. Banking sector in Tanzania has experienced fundamental changes over the last decade following banks and other financial institutions reforms starting from the early 1990s. However, what is still concealed is the extent to which banks are efficient in Tanzania. Banking industry in Tanzania is open to entry and therefore it is highly contestable. Commercial banks in the country can be subdivided into three major categories: large domestic banks; subsidiaries of the major international banks; and small banks. About 50 percent of the total banks' assets are held in the large domestic banks while subsidiaries of the major international banks account for 40 percent and the small banks hold the remaining 10 percent, BOT (2010).

High transaction costs in provision of credit services to majority of Tanzanians (peasant farmers, small business owners, etc.) has been a major reason for dominance of few big banks in the market, and non-competitiveness nature of credit supply markets. Williamson (2000, 2001) suggested that when the cost of carrying out a transaction is too high, there won't be a transaction at all. This has been the case for most commercial banks that operate in Tanzania. The infrastructures and information available to facilitate provision of credit services are inadequate and not conducive. As a result, commercial banks have to incur so much cost to search information of potential borrowers, to negotiate borrowing contracts and to enforce them in case of default, Olomi (2009). Only few big commercial banks can afford to absorb such costs and still maximize profit. Most banks exit the market or just concentrate in urban areas with some few credit worth customers, FSDT (2013).

Risk vulnerability of the Tanzanian banks which was examined through stress test found that banks were generally resilient to shocks (IMF-World Bank, 2003). This IMF-World Bank study also singles out the high degree of liquidity as one of the outstanding features of banks in Tanzania. Efficiency in banking has been defined and studied in different dimensions including: (i) scale efficiency, which refers to relationship between the level of output and the average cost; (ii) Scope efficiency, which refers to relationship between average cost and production of diversified output varieties; and (iii) Operational efficiency, a wide concept sometimes referred to as x-efficiency, which measures deviation from the cost efficient frontier that represents the maximum attainable output for the given level of inputs. With reference to various definitions, inefficiency is therefore a multifaceted concept with several meanings depending on the perspective in which it is used (Leibenstein, 1966). Scale and scope economies for example, are achieved from the firms' output expansion resulting in an increase in the industry's output. And that reduces costs of production thus leading to the strong technological external economy. Hirshleifer and Glazer (1993) argue that scope economies occur where it is cheaper to produce varieties in a plant than in separate plants, and this is the concept from which banking consolidation stems. The central objective of this study is to assesstransaction cost determinants of credit governance structures of commercial banks in Tanzania.

The positive underlying principle that derives efficiency analysis in economics stems from the urge to create and enhance tangible value. While the normative raison d'etre for efficiency analysis is founded on the challenge to obtain useful policy information. (Debreu, 1959; Varian, 1992; Schenk, 2004), argue that if there is a change which makes at least one individual better

off without making any one else worse off, that change is efficient. The relationship between cost function and production function, which underlines efficiency assessment, was first established by Shephard (1953, 1970) with assumption of theoretically known efficiency. Quantitative methods for measuring total economic efficiency (with assumption of unknown theoretical efficiency) were pioneered by Farrell (1957). In economic theory there are algebraic and geometric characterizations of production plans that can unambiguously be regarded as non-wasteful (efficient). According to Mas-Colell et al. (1995), a production vector y Є Y is efficient if there is no y' Є Y such that y' ≥ y and y' ≠ y. This concept means a production vector y is efficient if there is no other feasible production vector y' that generates as much output as y using no additional inputs. This philosophy is the basis of the illustrative Production Possibility Frontier (PPF).

Looking specifically at banks in the face of financial liberalization in transition economies, the sector experiences an unprecedented consolidation through mergers and acquisitions. Maggi and Rossie (2003) suggest that the only way to lower costs in the banking industry is to improve x-efficiency instead of paying close attention to cross border mergers and acquisitions. According to Jemrić and VujČić (2002), there are questions which continue to dominate financial sector discussions in developing countries, if small banks will manage to exist in the era of globalization and banking market consolidation and the relevance of allowing new banks. A big number of U.S. empirical studies of banks efficiency have used panel data analysis. These studies overall (Berger et al., 1993; Berger and Humphrey, 1997; Mitchell and Onvural , 1996) conclude that the U.S. banks average cost curve is relatively flat when compared to European banks. Most of empirical work on European banks however, has focused on cost functions using data from single bank or country. They find a U-shaped average cost curve, and to some extent, scope economies exist (Parisio, 1992; Berger et al., 1993; Drake and Simper, 2002). It is noticeable from these results that the choice of specific approach to efficiency study as well as the definitions of inputs and outputs in multi-product financial firms model, will most likely affect the estimates.

A case study of commercial banks efficiency in Namibia by Ikhide (2000) used operating ratios and parametric approach to measure efficiency for the 1993–1998 period. Ikhide found substantial existence of economies of scale in Namibian banks but they were not operating at the minimum point of average cost curve. Some other studies of banks efficiency have included measures of non-performing loans in the cost or production function. Berger and De Young (1997), studied problem loans and cost efficiency in U.S. commercial banks and found that low cost efficiency occurred before soaring non-performing loans. In the literature there is an evidence of relationship between a sound intermediation process and efficiency in the banking system as suggested by (Horward and Haynes, 2001; Vittas, 1991; Kenny and Moss, 1998). Lindley et al. (2000), explain the circumstance of low banks' capacity in the context of huge deposits inflow (excess liquidity) that overwhelms the ability of banks to produce income-earning assets. Under certain conditions as explains Baltensperger (1972), reserves adjustment is closely related with the optimal bank production position (efficiency). With reference to scale efficiency, and the presumption of negligible low reserve adjustment cost, he argues that a large bank will be more often profitable to adjust its reserves towards the optimal level, and it will, on average, stay relatively closer to its optimal position than a small bank.

3.0 Methodology

This research to a large extent adopts quantitative paradigm. A paradigm is understood as a way of looking at the social reality or the world that is composed of certain philosophical assumptions that guide and direct thinking and actions (Mertens 1998 in Milliken, 2001). According to Johnston (2014) the approach chosen for a research project is influenced by ontological and epistemological assumptions or stances of the researcher. Morgan and Sklar (2012) cite that, ontology refers to what is reality while epistemology is concerned with how reality can be known. Within social sciences there has been a long standing debate about the most appropriate philosophical positions between positivism and phenomenology from which research methods should be derived, Milliken (2001). Positivists who advocate for natural science, reject subjectivity in research by assuming that an objective world exists independently of the researcher and that one can uncover universal laws of human nature and social reality, Patton and Appelbaum (2003). On the other hand, a phenomenologist's researcher believes that the world and reality are not objective and exterior but that they are socially constructed and given meaning by social actors, Milliken (2001). Current study advocates positivism ideology. The approach adopted in this study (positivism) aims at utilizing hypotheses to test existing theories for generalization purpose in different settings.

3.1 Research Design

Current study used quantitative descriptive design. The study utilized quantitative and statistical aspect of data presentation and analysis through figures, numbers and tables. A survey strategy was opted for the above design. The study was carried out in Dar es Salaam and Zanzibar. A sample of 204 credit officers from all commercial banks that provide credit services to micro, small and medium enterprises and farmers with headquarters in Dar es salaam,were involved in the study and one commercial bank (people's bank of Zanzibar) with headquarters in Zanzibar was also included in the study. Current study was not extended to other regions since the amount and quality of data captured in Dar es salaam and Zanzibar was satisfactory.

3.2 Sampling design

The targeted population was from all commercial banks with headquarters in Dar es salaam and Zanzibar where the targeted sampling unit was commercial bank's credit officers. Due to inability to determine sampling frame for this sample population, a non- probabilistic sampling method was followed; a purposive sampling technique was used. Only respondents with credit administration knowledge and working under credit /loan department of commercial banks were included in the sample of 204 respondents. G power software was used in calculating the sample size since the population was not known with reliability. Input parameter in G power were, α err prob= 0.05, power (1-β err prob) = 0.8, odd ratio = 0.6, two tail test, normal distribution and the output result for the sample size is 204.

3.3 Data Collection Methods

The study employed different methods of data collection, whereby both primary and secondary data were collected. Structured questionnaires for survey were administered to commercial banks credit officers to collect primary data. A questionnaire is a set of systematically structured questions used by a researcher to get needed information from respondents. Questionnaires have been termed differently, including surveys, schedules, indexes/indicators, profiles, studies,

opinionnaires, checklists, scales, inventories, forms, inter alia. They areany written instruments that present respondents with a series of questions or statements to which they are to react either by writing out their answers or selecting from among existing answers,Brown (2001). The questionnaire may be self-administered, posted or presented in an interview format. A questionnaire may include check lists, attitude scales, projective techniques, rating scales and a variety of other research methods. As an important research instrument and a tool for data collection, a questionnaire has its main function as measurement, Oppenheim (1992). It is the main data collection method in surveys and yield to quantitative data. Also, due to provision for open ended, the instrument may be used to generate qualitative and exploratory data, Dornyei (2007). The study also used secondary data. The main sources were documentary review of various official documents and reports (i,e, BOT reports) relevant to the research problem from commercial banks and different libraries.

3.4 Multiple Linear Regression Analysis

The relationship between the dependent variable and explanatory variables is represented by the expression in equation (1):

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_p X_{pi} + \varepsilon_i \quad \text{..... (1)}$$

Predication equation is therefore expressed as in equation (2);

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_p X_{pi} \quad \text{..... (2)}$$

Where $\varepsilon_i = 0$, β_0 is the constant term and β_1 to β_p are the coefficients relating the p explanatory variables of interest. Multiple linear regression analysis was used to identify the relationship between dependent variable (total transaction costs) and a combination of independent variables (costs elements for each transaction costs category). The following general equation of multiple linear regressions was utilized for this study;

$$TTC = \beta_0 + \beta_1 TSC_i + \beta_2 TNC_i + \beta_3 TEC_i + \varepsilon_i \quad \text{.....(3)}$$

Where ε_i usually equated to zero and hence predication equation was;

$$TTC = \beta_0 + \beta_1 TSC_i + \beta_2 TNC_i + \beta_3 TEC_i \quad \text{.....(4)}$$

Where:

TTC= Total Transaction costs
TSC=Information search costs
TNC=Credit contracts negotiation costs
TEC=Credit contracts enforcement costs
$\beta_{1\text{-}3} > 0$

Logistic Regression Analysis

In the case of logistic regression, the X's can be numerical or categorical, but Y's are generally coded as 0 (for those who do not have the event) or 1 (for those who have the event). According to Bryman and Cramer (1990), the logistic model is based on a linear relationship between the natural logarithm (ln) of the odds of an event and a numerical independent variable. The form of this relationship is as expressed in equation 5:

$$L = Ln\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 x + \varepsilon_i \quad \ldots\ldots(5)$$

Where Y is binary and represent the event of interest (response), coded as 0/1 for failure/success,
P is the proportion of successes,
L is the ln (odds of event),
X is the independent variable,
B_0 and B_1 are the Y-intercept and the slope, respectively
ε_i is the random error.

Computations of the estimates of $\beta_0 and \beta_1$ in logistic regression are far more complicated, P is the probability of the event, and then the odds of the event are:

$$Odds = 0 = \frac{P}{1-P} \quad \ldots\ldots(6)$$

We defined L = ln(odds of event Y), sometimes called the "log odds" or logit of Y. We can write L in terms of P, Probability (Y=1), as follows:

$$L = \ln(0) = \ln\left(\frac{P}{1-P}\right) \quad \ldots\ldots(7)$$

The logistic regression model may be written in terms of P, the risk of event Y, assuming that L is a linear function of X as follows:

$$P = \left(\frac{e^{\beta 0+\beta 1x+e}}{1+e^{\beta 0+\beta 1x+e}}\right) \quad \ldots\ldots(8)$$

Current study used logistic regression method for analysis of third specific objective and testing of third hypothesis. Where transaction costs were predictors while CGSs were dependent variables (dichotomous). This tool assessed the likelihood of commercial banks choosing a particular CGS and not others given Transaction Costs. Every CGS (1-4) were equated as a function of transaction costs. This means each TC category was tested against each CGS to determine the likelihood of choosing or not a particular CGS. Thus for each TC tested across four CGS (CGS1-4), the most cost efficient governance structure was revealed and recommended for scaling up. Variables of transaction costs determinants that were used in this study includes but not limited to borrowers distance, expected borrowing frequency(loyalty),

customer reputation, loan amount, trust, collateral market value. The mathematical representation of the above:

$$TC = f(TCD) \qquad (9)$$

Whereby; $TC = (TSC + TNC + TEC)$ ……………………..…………………………………(10)

$$CGS(1-4) = f(TSC, TNC, TEC) \qquad (11)$$

TSC includes but not limited to transport, meetings, village authority fee, reputation, personal relationship, time spent in searching and screening borrower. TNC includes but not limited to cost of lawyers, allowances for meetings, paperwork, personal relationships, transport costs, levies, opportunity cost of time spent in negotiation, reputation and TEC cost includes but not limited to penalties, enforcement campaigns, police and court case costs, time for making follow ups, cost of lawyers, reputation. Binomial logistic regression gave binary outcome. For example 1 meaning success and 0 failures when predicting whether a CGS has been chosen or not based on TSC, TNC, and TEC. The logistic regression model gives the likelihood that, given CGS's TSC, TNC, TEC, that they are chosen (in this example, the higher the probability, the greater the chance for the CGS to be chosen). Again, a number of coefficients were obtained, but this time was used to calculate a LOGIT. As a general formula logit is given in equation 12 as;

$$\text{Logit of CGS}(1-4) = \text{Intercept} + \alpha\text{TSC} + \text{bTNC} + \text{cTEC} + \varepsilon \qquad (12)$$

Usually, ε is equated to 0 since focus is on *TSC* (search costs), *TNC* (negotiation costs) and *TEC* (enforcement costs) as parameters used to predict the likelihood of choosing a particular CGS. Therefore;

$$Logit(p) = \log\left(\frac{p}{1-p}\right) \qquad (13)$$

Thus;

$$p = \frac{1}{1 + e * -(logit)} \qquad 14$$

Equation 12 was fitted and got values for a, b, c and the intercept; logit value was calculated from given data. Thus the probability P was calculated and established chances (likelihood) of choosing a particular CGS.

Multinomial logistic regression was also used to predict choice of an efficient CGS. Where the dependent variable has four different options (CGS1-CGS4) matched against categories of transaction costs, at each time, one option of dependent variable was set as a reference category. Agresti (1990) explainedthat multinomial Logistic Regression is the linear regression analysis

conducted when the dependent variable is nominal with more than two levels. Thus it is an extension of logistic regression, which analyzes dichotomous (binary) dependents. Multinomial logistic regression analysis assumed that, all four credit governance structures (CGS1-CGS4) existed, but at each time analysis was made, one CGS was used as a reference category and determined the CGS more likely to be selected given transaction costs.

4.0 Main Findings

4.1 Alternative modes of governance structure for CB credit supply

Current study revealed four different categories ofCredit governance structure CGS_1 to CGS_4; these may be used by commercial banks to mitigate TCs and distribute credits in the URT. Each CGS has its own associated level of TC, depending on the choice of a CGS for credit distribution to borrowers. The level of TCinfluence the choice ofCGS for credit supply by commercial bank under different circumstances. Therefore TSC, TNC and TEC, were independent input variables that affects choice of CGS. Commercial banks in Tanzania offer MSMEs credits, personal loans/credits, corporate credits to companies and agriculture credits. Any credit transaction carried out under each credit governance structure involves transaction costs that if over looked may result to high costs, inefficiency in operations of commercial banks and hence no transaction at all.

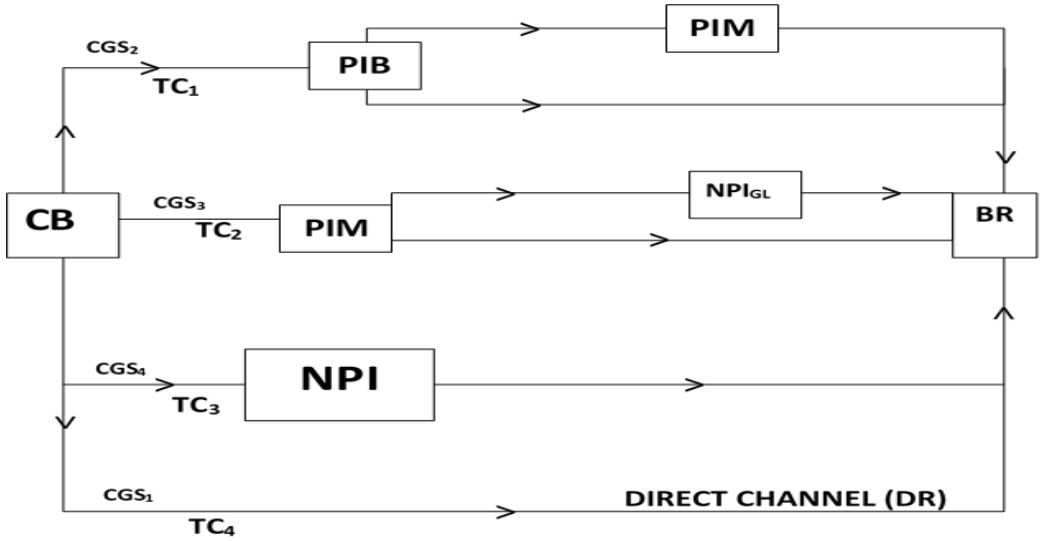

Figure 1: Flow of Credit from Commercial Banks to Borrowers through Different Channels

DR in Figure 1 is Direct Cchannel, CB stands for commercial bank, BR is ultimate borrower (user of credits) ,TC is transaction costs, PIB is profit- Intermediary bank; i.e. Community development banks, PIM is profit Intermediary microfinance Institution i.e. SACCOS, NPI is non-profit intermediary i.e. government institutions that guarantee credits from CB to employees, CGS stands for credit governance structure.

4.2 Preference of CGSs by commercial banks in Tanzania

Table 1shows how 204 respondents from 34 commercial banks in Tanzania prefer distributing credits, using various credit governance structures (CGSs). 66.2% of all respondents from commercial banks in Tanzania prefer distributing credits directly to individuals rather than using

intermediaries. Only 5.9% preferred using profit making intermediary banks, i.e community development banks as channel of distributing credits to borrowers. 16.7% of respondents from commercial banks in the country prefer issuing credits to borrowers through profit making microfinance institutions like SACCOS. The remaining 11.2% mostly prefer servicing credits through non-profit making intermediaries. As findings above shows, only 33.8% of all respondents from commercial banks in the country can service credits through intermediaries. The rest of commercial bank's respondents believe it's costly and inefficient for them to use intermediaries in supplying credits.

Table 1: Preference of CGSs by respondents from commercial banks in Tanzania

CGSs	Frequency	Percentage (%)
CGS1	135	66.2
CGS2	12	5.9
CGS3	34	16.7
CGS4	23	11.2
Total	**204**	**100.0**

As reported from BOT report of 2014, about 50% of commercial banks profits depend on credit business operation. From study findings, current credit business operating environment force most commercial banks to prefer credit governance structure one (CGS1). Preference of CGS1 supports servicing of credits to urban based customers and not rural based customers. Majority of those in need of credit services are located in rural and not urban areas in Tanzania. Given current credit business operating environment, usage of CGS1 to supply credits to rural based customers, results to high transaction costs that most commercial banks cannot afford to absorb, thus renders them inefficient in terms of transaction costs. For the purpose of credit business scale up, efficiency and profit maximization given the current non conducive credit business operating environment, commercial banks should prefer more indirect channels for credit supply (CGS2-4), rather than CGS1.

Findings from this study, showed that 97.6% of respondents from all commercial banks in Tanzania prefer dealing with urban based customers as far as credit business is concerned. Arguments behind their decision is inaccessibility of rural areas due to poor infrastructure and other supportive facilities, difficulties in identifying, locating and accessing information of rural based customers and therefore resulted to further difficulties in monitoring and enforcing credit contracts with most rural based customers. Above reasons, highly contributed to massive rise of credit transaction costs that most commercial banks cannot afford to absorb when using CGS1. Since they prefer dealing directly with borrowers, most opted not to provide credit services at all to rural based customers to avoid high transaction costs and thus dealt more with urban based customer. High preference of urban based customers, supported commercial banks preference of CGS1. Usage of CGS1 by commercial banks on urban based customers assisted them to attain optimality but not efficiency since they minimize transaction costs but failed to scale up their credit operations to rural part of the country where majority of those in serious need of credits live.

Table 2: Total transaction costs for CGS1-4 (Tshs)

N	TC for CGS	Minimum	Maximum	Mean
204	Total costs for CGS1	1590000	16100000	2392600
204	Total costs for CGS2	1640000	16000000	2662500
204	Total costs for CGS3	1230000	7110000	4436400
204	Total costs for CGS4	1650000	20100000	11313000

CGSs were descriptively compared, as seen in table 2 CGS1 carries lowest levels of transaction costs than other CGSs. Thus commercial banks preferred it more than others. In the table below respondents preferences were matched against total transaction costs and the findings complement those appeared in the table above, CGS1 carries lowest transaction costs than other governance structures. Current study findings also revealed that, 97.6% of respondents preferred urban based customers. Therefore, commercial banks incurred minimum transaction costs that they can afford to absorb as long as they deal with urban based customers. According to BOT (2004) reports, more than 50% of commercial banks profits depend on credit operations, also 70.4% of all Tanzanians live in rural areas. Thus for profit maximization purposes, commercial banks needs to penetrate rural based credits markets and CGS1 is not ideal for that purpose. Commercial banks must use CGSs with intermediaries to allow shifting of risks and costs to intermediaries.

Table 3. CGSs and Transaction costs (Tshs)

	CGS1	CGS2	CGS3	CGS4
	Mean	Mean	Mean	Mean
Total transaction costs	15,561,442.77	31,160,506.00	31,043,669.15	31,040,781.87

4.3 Categories of total transaction costs

From transaction cost theory, especially the one stipulated by Williamson (2010) in new institutional economics, transaction costs has been divided into three categories (i) Information search costs (ii) Contract negotiation costs (ii) Contract monitoring and enforcement costs. Findings from current study similarly evidenced the same transaction costs categories, but these costs differ from one another depending on influence of individual transaction costs determinants within each costs category. Some determinants were dominant than others, like cost of time and transport cost in the current study.

Table 4: Transaction costs categories (Tshs)

N		Minimum	Maximum	Mean	Std. Deviation
204	Total search costs	663000	6880000	3535300	2001980
204	Total negotiation costs	852000	4030000	2894300	931803
204	Total enforcement costs	3320000	45500000	14375000	7931510

From table 4, credit contracts monitoring and enforcement costs was very high, more than twice combination of both costs of searching borrowers information and credit contracts negotiation

costs, while TNC was the lowest. This is a clear indication of poor borrowing and repayment behavior of borrowers in Tanzania. Most borrowers do not have tangible reason for borrowing, thus instead of using the money to facilitate growth of income generating activities, the money is being diverted to other uses which resulted to failure of making repayments. Commercial banks are very sensitive to risks of losses, especially those originated from credit business operations since it's one of the major income generating activities of banks in Tanzania. With that in mind, commercial banks invest heavily in debt collection so as to minimize or completely avoid losses from non-repayments of credits by defaulters. Commercial banks in Tanzania invest more in provision of credit facility to few customers in urban areas, that they consider credit worth, in turn considerable number of such customers became defaulters. Due to that fact, commercial banks spent so much costs to monitor and enforce credit contracts, to make sure non repayment is reduced if possible avoided. These findings are contrary to what suggested by Ngaruko (2008), Williamson (2010), Mkenda and Campnhaut (2011), that information search costs was the highest transaction costs category than other categories. This implies, huge investment is made on searching transacting partners, while current study revealed, under commercial banks credit operations, banks invest more in monitoring and enforcement of credit contracts rather than investing in searching new transacting partners (borrowers).

4.4 Predictors of total transaction costs

In Table 5, variables used as determinants for total transaction costs in the current study were matched to test their relationship strength. Only those with weak relation were taken for further analysis, the rest were ignored to avoid jeopardize credibility and reliability of results. From the table 5, there is a strong positive relationship between time variable of transaction cost and the rest of variables, such as transport costs, local authority fees, food and refreshment costs, costs for measuring borrower's business viability, costs for breaching credit contracts, case filing costs, third party costsas well as tips and other charges. Therefore, since they are strongly related and share similar magnitude, only one variable is taken to represent other variables, and for this case, time variable. Therefore, time variable and other variables that,it has weaker relationship with,meeting facilitation costs, and lawyer fees in credit negotiation, were used in regression analysis below. The relationship between time cost and lawyer fees in contract negotiation is positive but weak at r= 0.249. When time variable increases, lawyer fees will also increase at a very low rate. There is also a positive relationship but weak at r= 0.491 between time variable and meeting facilitation costs, therefore lawyer fees and meeting facilitation costs variables do not have high influence on time costs variable. And the relationship between meeting facilitation costs and lawyer fees during credit negotiation is very weak but positive at r= 0.149. The following are worth noting from table 5. ** implies that correlation is significant at the 0.01 level (2-tailed), whereas *implies Correlation is significant at the 0.05 level (2-tailed). PC stands for Pearson Correlation.

Table 5: Correlations of Determinants of Total Transaction Cost

		Transport costs	Cost of time	Local authority fees	Lawyer fees	Food& refreshment costs	business viability	Contracts breaching cost	Case filing costs	Third party costs	Meeting facilitation costs	Tips and other charges
Transport costs	PC	1	.898**	.961**	.352**	.494**	.739**	.883**	.879**	.856**	.406**	.792**
	Sig.		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Cost of time	PC	.898**	1	.799**	.249**	.575**	.771**	.779**	.771**	.782**	.491**	.656**
	Sig.	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Local authority fees	PC	.961**	.799**	1	.337**	.467**	.603**	.894**	.882**	.872**	.259**	.795**
	Sig.	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Lawyer fees	PC	.352**	.249**	.337**	1	.282**	.278**	.419**	.394**	.404**	.149*	.314**
	Sig.	.000	.000	.000		.000	.000	.000	.000	.000	.034	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Food& refreshment costs	PC	.494**	.575**	.467**	.282**	1	.446**	.511**	.438**	.517**	.219**	.151*
	Sig.	.000	.000	.000	.000		.000	.000	.000	.000	.002	.031
	N	204	204	204	204	204	204	204	204	204	204	204
business viability	PC	.739**	.771**	.603**	.278**	.446**	1	.584**	.601**	.585**	.439**	.486**
	Sig.	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Contracts breaching cost	PC	.883**	.779**	.894**	.419**	.511**	.584**	1	.886**	.879**	.292**	.766**
	Sig	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Case filing costs	PC	.879**	.771**	.882**	.394**	.438**	.601**	.886**	1	.979**	.248**	.764**
	Sig.	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Third party costs	PC	.856**	.782**	.872**	.404**	.517**	.585**	.879**	.979**	1	.208**	.693**
	Sig.	.000	.000	.000	.000	.000	.000	.000	.000		.003	.000
	N	204	204	204	204	204	204	204	204	204	204	204
Meeting facilitation costs	PC	.406**	.491**	.259**	.149*	.219**	.439**	.292**	.248**	.208**	1	.330**
	Sig.	.000	.000	.000	.034	.002	.000	.000	.000	.003		.000
	N	204	204	204	204	204	204	204	204	204	204	204
Tips&other charges	PC	.792**	.656**	.795**	.314**	.151*	.486**	.766**	.764**	.693**	.330**	1
	Sig.	.000	.000	.000	.000	.031	.000	.000	.000	.000	.000	
	N	204	204	204	204	204	204	204	204	204	204	204

Further findings shows transport costs and cost of time variables have strong positive correlation at r=0.898, these variables highly influence each other. Only cost of time was included for further analysis. Cost of time and local authority fees shares a strong positive correlation at r=0.799, thus local authority fees was not included in the next stage of analysis. Lawyer fees variable and cost of time variable have positive but weak relationship at r=0.249, they both qualify for further analysis. Several other variables, include food and refreshment variable, business viability, contracts breaching costs, case filing costs, third party costs, tips and other charges have strong positive correlation with cost of time variable at r=0.575, r=0.771, r=0.779, r=0.771 r=0.782, r=0.656 respectively. Since they were highly influencing each other and share similar magnitude, only time cost variable was taken to represent other variables and avoid possibilities of jeopardizing the results. Meetings facilitation costs and cost of time have positive but weak relationship at r=0.491 and were both included in the next stage analysis. Three variables (time, meeting facilitation costs, and lawyer fees in credit negotiation) with weak correlation were taken for further analysis to determine their causality effect on total transaction costs

Table 6: Actual Predictors of Total Transaction Costs

		TTC	Cost of time	Lawyer fees	Meetings costs
PC	TTC	1.000	.859	.413	.318
	Cost of time	.859	1.000	.249	.491
	Lawyer fees	.413	.249	1.000	.149
	Meeting costs	.318	.491	.149	1.000
Sig. (1-tailed)	TTC	.	.000	.000	.000
	Cost of time	.000	.	.000	.000
	Lawyer fees	.000	.000	.	.017
	Meetings costs	.000	.000	.017	.

From table 6, correlation is significant at the 0.01 level (1-tailed test). The findings showed strong positive correlation between time variable and total transaction costs (dependent variable) at r= 0.859. Several variables were left out from this analysis due to the fact that, they had strong correlation with time cost variable and thus using them all togather could have reduced credibility of results. Time costs variable was used, but if any among those variables was used, could have yield almost similar results as time costs variable. While the two other explanatory variables, lawyer fees and meetings facilitation costs portrayed weaker but positive relationship with the total transaction costs at r=.0.413 and r=0.318.

4.5 Transaction Costs and Choice of credit governance structures (CGSs)

Each model of CGS used similar predictors (TSC, TNC and TEC) in determining the likelihood of whether selected or not, while assuming other CGSs were not existing. Each credit governance structure matched against total transaction costs (total information search costs, total credit contracts negotiation costs and total credit contracts monitoring and enforcement costs), to determine the likelihood of such particular CGS to be selected given transaction costs. Binomial logistic regression analysis was opted. The likelihood test that uses significance levels of predictors, odd ratios, Wald and magnitude of coefficients, can be well done through variables in

the equation tables. The table used in the current study has combined coefficient tables of all four CGSs as appeared below.

Table 7:Predictor's coefficients for CGS1-CGS4

CGS1	B	S.E.	Wald	Df	Sig.
TSC	1809400	.000	14.092	1	.000
TNC	-2228200	.000	7.950	1	.005
TEC	21225000	.000	9.261	1	.002
Constant	-2.903	.943	9.475	1	.002
CGS2	B	S.E.	Wald	Df	Sig.
TSC	-13474000	.000	.465	1	.495
TNC	57080000	.000	3.382	1	.066
TEC	-5679000000	.000	.018	1	.894
Constant	-.854	.535	2.546	1	.111
CGS3	B	S.E.	Wald	Df	Sig.
TSC	-181150	.001	28950	1	.986
TNC	-225130	.002	10742	1	.992
TEC	-1841500	.000	24478	1	.988
Constant	202.027	12150	27655	1	.987
CGS4	B	S.E.	Wald	df	Sig.
TSC	-30662000	.000	1.069	1	.301
TNC	-21724000	.000	.398	1	.528
TEC	-18273000	.000	5.800	1	.016
Constant	3.235	.668	23.431	1	.000

Results from the predictors coefficient table 7, clearly indicate the likelihood of an individual variable to influence selection of a credit governance structure. Starting with CGS1, all three predictors(TSC, TNC, and TEC) have significant influence, TSC and TEC are more significantly likely to positively influence selection of CGS1. TNC is negatively likely influencing CGS1. Increase in TSC and TEC increases the likelihood of commercial banks selecting CGS1 since it does not involve transaction costs multiplier effect of using intermediaries. In comparison with CGS2, only TNC is significant and it's very likely to positively influence selection of CGS2. Increase in total negotiation costs also increases likelihood of commercial banks to supply credits through profit making intermediary banks (CGS2). Since they are formal financial institutions and reputable, TNC can be easily mitigated. TSC and TEC likelihood to influence CGS2 is negative, but not significant. The likelihood of TSC, TNC and TEC to influence selection of CGS3 is not significant. Despite the fact all variables are negatively related to selection of CGS3, the likelihood that when they decrease, CGS3 preference could be higher by commercial banks is minimal and not significant. In comparison to CGS4, all predictors negatively relate to selection of CGS4 as it was to variables under CGS3. The main difference is, the likelihood of TEC to significantly influence selection of CGS4 when TEC decreases, is very high, while TSC and TNC have no significant contribution. When cross reference was made between four CGSs from

the results above, variables (predictors) contribution was more significant and highly influence selection of CGS1. The likelihood of commercial banks selecting CGS1 was highly predicted than other CGSs that uses intermediaries (CGS2, CGS3 and CGS4).

4.6 Multiple credit governance structures (CGSs) with reference category

Binary Logistic regression model was applied to prediction selection of a particular credit governance structure while assuming the remaining three CGSs were not existing. Thus the choice was dichotomous. Multinomial logistic regression, used all four CGSs to gather, during the analysis, one governance structure at each time was used as a reference category. The best CGS was determined at each particular time as one credit governance structure kept as a reference category.When CGS1 was selected as a reference category, TSC increased only by 4.7% of the total value decrease of summation of both TNC and TEC, when choice of CGS2 was made. TSC increased only by 5.6% of the value decrease of combination of both TNC and TEC, if choice of CGS3 was made. While TSC increased by 78.1% of the value decrease of summation of both TNC and TEC if choice of CGS4 was made. Therefore, this analysis entails CGS2 to be the best for credit supply by commercial banks in the country since the percentage of TCs increased was minimal compared to CGS3 and CGS4, when CGS1 is a reference category.When CGS2 was used as a reference category, TSC decreased by 4.7% of the value increase of combination ofboth TNC and TEC, if the choice made was CGS1. Given choice of CGS3, TSC decreased only by 1.2% of the total increase of the value of combination of both TNC and TEC. Furthermore TSC decreased by 9.2% of increase in summation value of both TNC and TEC, if choice of CGS4 was made. Given the analysis made, when CGS2 is a reference category, CGS4 was the best for credit supply by commercial banks since its ability to absorb transaction costs was higher compared to remaining credit governance structures.

When CGS3 was selected as a reference category, decrease in TSC was 5.6% of the summation value increase of both TNC and TEC if choice of CGS1 was made. If CGS2 was selected, TSC expected to increase by 1.2% only of the value decreased of summation of both TNC and TEC. If choice of CGS4 was made, TSC would have increased by 90.3% of the total value decrease of summation of both TNC and TEC. Given transaction costs and the analysis made, when CGS3 used as a reference category, CGS2 was the best CGS for commercial banks credit supply due to its ability to absorb high transaction costs compared to CGS1 and CGS4. When CGS4 was a reference category and choice of CGS1 was made, the influencing factor, TSC decreased by 78.2% of the value increased by summation of both TNC and TEC, thus 21.8% of transaction costs value remained unabsorbed. When CGS2 was selected, TSC increased by 9.3% of the total value decrease of summation of TNC and TEC. And when the choice made for CGS3, the influencing factors, TSC decreased by 90% of the increased value of summation of both TNC and TEC. Given transaction costs and the analysis made, CGS2 is the best for credit supply since it has higher ability to absorb transaction costs than CGS1 and CGS3.

Table 8: Multinomial regression results for choice of CGSs

a) CGS1 reference category

Variables		B	Std. Error	Df	Sig.	Exp(B)
CGS2	TSC	1373600	.000	1	.026	1.000
	TNC	-1001500	.000	1	.191	1.000
	TEC	-28226000	.000	1	.016	1.000
CGS3	TSC	17663000	.000	1	.539	1.000
	TNC	-28755000	.000	1	.411	1.000
	TEC	-288830000	.000	1	.638	1.000
CGS4	TSC	69673000	.000	1	.261	1.000
	TNC	-68023000	.000	1	.269	1.000
	TEC	-21231000	.000	1	.122	1.000

b) CGS2 reference category

Variables		B	Std. Error	Df	Sig.	Exp(B)
CGS1	TSC	-1373600	.000	1	.026	1.000
	TNC	1001500	.000	1	.191	1.000
	TEC	28226000	.000	1	.016	1.000
CGS3	TSC	-1196900	.000	1	.056	1.000
	TNC	71391000	.000	1	.360	1.000
	TEC	25338000	.000	1	.036	1.000
CGS4	TSC	-67684000	.000	1	.298	1.000
	TNC	32123000	.000	1	.705	1.000
	TEC	699480000	.000	1	.628	1.000

c) CGS3 Reference Category

	Variables	B	Std. Error	Df	Sig.	Exp(B)
CGS1	TSC	-17663000	.000	1	.539	1.000
	TNC	28755000	.000	1	.411	1.000
	TEC	288830000	.000	1	.638	1.000
CGS2	TSC	1196900	.000	1	.056	1.000
	TNC	-71391000	.000	1	.360	1.000
	TEC	-25338000	.000	1	.036	1.000
CGS4	TSC	52010000	.000	1	.411	1.000
	TNC	-39268000	.000	1	.538	1.000
	TEC	-18343000	.000	1	.191	1.000

d) CGS4 reference category

	Variables	B	Std. Error	Df	Sig.	Exp(B)
CGS1	TSC	-70004000	.000	1	.258	1.000
	TNC	68298000	.000	1	.267	1.000
	TEC	21187000	.000	1	.123	1.000
CGS2	TSC	67711000	.000	1	.298	1.000
	TNC	-32162000	.000	1	.705	1.000
	TEC	-699710000	.000	1	.628	1.000
CGS3	TSC	-51541000	.000	1	.415	1.000
	TNC	38860000	.000	1	.542	1.000
	TEC	18464000	.000	1	.188	1.000

5.0 Conclusion

It has been evidenced from the study findings that, it is not satisfactory to simply consider a commercial bank as efficient in terms of credit transaction costs when using a mode of credit governance structure that is economizes transaction costs. The selected mode of credit governance structure not only has to economize transaction costs but also has to grant an opportunity for commercial banks to scale up their credit operations to both rural and urban areas. According to transaction cost economics theory, a CGS is considered efficient as long as it economize transaction costs, with an assumption that, where there is transaction costs economization, there is also massive flow of transactions. Above facts do not apply to commercial banks credit operations in Tanzania because flow of credit transactions from commercial banks is limited especially in rural areas despite usage of CGS1. Thus commercial banks should use multiple CGSs (especially CGS2 and CGS3) with intermediaries to be able to mitigate high transaction costs and scale up to rural areas for efficiency and profitability purposes and CGS1 for urban based credit customers. Conclusively findings suggest that, commercial banks should engage alternative modes of CGSs at different circumstances. Under binomial logistic analysis, CGS1 likelihood to be selected was highest than other CGSs, but usage of CGS1 to rural based borrowers, tend to multiply transaction costs to the extent that commercial banks fail to absorb, while under multinomial logistic analysis, which is superior to

binary analysis, CGS1,CGS2 and CGS3 were all recommended as highly likely to be used by commercial banks for credit distribution and thus assist to mitigate transaction costs as well as scale up to rural areas.

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