
LENDING LIMIT FIXATION OF CONSUMER CREDIT IN AKSUM TOWN BY CORRELATION ANALYSIS

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Abstract

“Consumer credit” the word brought drastic changes in money lending world. Financial institutions were enticed people with attractive policies and offers. The covetousness of financial institutions for high interest rates could not consider the exact lending limit in consumer credit. Finally, consumers were failed to repay their unlimited borrowed money. Only individual’s income level, wealth conditions, mortgaged values, and loan repayment capacities are fully not sufficient to provide credit to consumers. We should consider saving potentiality of the particular society either town or city and also recognize income generating opportunities of the people in the society, saving feasibilities of the people and saving culture etc. are important for deciding the credit limit to consumer. Financial institutions week strategies and estimations witnessed in the past decade by showing huge financial crises. “Speed thrills but kills” this caption also apt to the financial institutions because all over the world had bitter taste by issuing unlimited consumer loans to the people. In case of consumer credit, the fervent problem of financial institutions how to fix the lending limit and how much amount lends exactly to the individuals. In this paper researcher basic objective, fix the lending limit by correlation coefficient with the help of normal curve and considered primary components, income levels and saving potentiality of the people in the Aksum town. To achieve this objective, researcher collected primary information from 160 respondents by choosing stratified technique in qualitative data method. And secondary information collected through books, magazines, articles and internet sources.

Key words: Consumer credit, financial institutions, saving potentiality, Correlation, Axum town

1. INTRODUCTION:

Consumer credit is the driving force behind the economies of most of the leading industrial countries in twenty-first century. Without it, the phenomenal growth in home ownership and stuff lining the shelves in retail malls would not have occurred. Unsecured lending really started in the 1920s when Henry Ford and A. P. Sloan recognized that in order to sell cars to a mass market one had also to find ways of allowing consumers to finance their purchase, and so developed finance houses. With the introduction of the credit card in the 1950s and 1960s, consumers had a product that allowed them to use credit for almost all their purchases from snack food bites to airline flights.

Consumer credit is basically the amount of credit used by consumers to purchase non-investment goods or services that are consumed and whose value depreciates quickly. This includes Car, Auto, Two-wheeler, Television and other house hold furniture including personal money loans for education, medical etc. In other side of consumer credit, lenders are providing mortgaged/secured loans for real

estate, house purchases etc., called as consumer debt. This debt creates minimum guarantee for repayment on lending amount. Financial institutions permit the loan amount maximum 60% of mortgaged value. If consumer fails to repay the loan, financial institutions have right to sell mortgaged asset in the open market for recover their loan amount. So consumer debt or mortgaged credit is not an issue to the financial institutions. Unsecured consumer credit, which is necessary to the middle class households and lower income level people creates real headache to the financial institutions. Before lend the amount to consumers, all money lenders are considers some common factors of consumer viz., monthly income source of the individual, other loans history, re-payment capacity, third person guarantee, other financial sources of consumer and personnel character but these are not fully sufficient to lend the amount. These all are one side of the coin, another side lenders should fix the credit limit to the consumers by the accurate information of saving potentiality of the people in the society and income generating opportunities of the people in the society, saving feasibilities of the people, saving culture and suitable environment for savings etc.,. Exact limit fixation of consumer credit (unsecured credit) is an important thing for every lender or Financial institutions.

Setting credit limit is an art. Credit managers/analysts always work hard to fix exact limit of credit. It's an important part in credit management. Most of the financial institutions take the calculate risk for fix the credit limit. Some lenders are providing consumer credit to consumers based on repayment percentage on their monthly income. Example: Mr. X earning 5000 ETB (Ethiopian Birr) per month, then lenders will decide X's repayment capacity maximum 20% on his monthly income i.e. 1000 ETB, then lenders compute how much total credit have to sanction to the consumer by installments. In this aspect, maintaining standard credit limit/margin is not possible by the lenders because more income people get more credit and less income people are less. Sometimes, the variation of credit allocation based on income level creates difficulty in repayment. If one person who earns highest income per month and took highest credit failed to repay the loan, it shows huge impact on entire credit system. Financial institutions decides the credit limit through trade references, bank references, credit reports and financial statements but all reports support to income level of consumer. Without knowing saving potentiality of the individual in the society exact limit fixation is not possible. If lenders are not considering saving potentiality of the people, consumer credit may be face financial crises in future even though some consumers have good character, and more repayment potentiality and well financial background.

Financial institutions or lenders must recognize people living standards in various areas before lend the amount. If society is well developed, like town or city people gives priority to take more loans for purchase the luxurious items to show their status even though their saving potentiality is not effective compare with small town and village consumer savings. We can see huge variation of savings between town and villages because of their cost of living. In past decade, financial institutions provided more credit to consumers those who were in towns and cities with high income parameter. Later on they understood consumer week potentiality in repayment by lack of savings. In some areas, income levels of the people maximum located on limited segment like purely agricultural or purely industrial. If any drought or material scarcity happens suddenly, immediate impact occurs on repayment potentiality of the consumers. By observing these all situations one thing is clear where people have more saving habit and potentiality there repayment conditions are healthy and where people suffering with lack of saving there lenders be beware to give credit even though individual incomes are high. Now, the

main problem of lenders how to get exact information of savings by fixing credit limit? Which method has to follow? How to fix the lower and upper margins of credit limit? For solving these difficulties, researcher examined saving potentiality in the Aksum town based on people income levels and tried to fix lending limit by correlation coefficient.

1.1. Scope of the study

This study has wide range. It is useful entire Ethiopia as well as Aksum town. All financial institutions and lenders can access consumer credit in healthy environment by fixing the lending limit on consumer credit. Consumers also estimate their saving potentiality by knowing the lending limit. This study collected information in the Aksum town on the basis of sample survey.

1.2. Limitations of the study

1. The study is geographically restricted to Aksum Town Ethiopia only. Findings are based on sample survey through questionnaire method.
2. In this study, researcher did not consider individuals those who are earning less than 2000 ETB per month and considered maximum income per month 6000 ETB.
3. Data contained information based on employment but not age of the population.
4. Agricultural and seasonal business incomes are also not considered by the researcher.

1.3. Statement of the problem

In the Aksum town, people never enjoyed the sweetness of consumer credit. The use of consumer credit is related to the eagerness of consumers to sacrifice future consumption in order to obtain greater satisfaction from current consumption. Low-income people wants to live in a society lavish with houses, cars, bikes, furniture and stuff lining the shelves in retail malls. The problem is money. Most low-wage workers and employees do not have enough to buy what they need, much less what their heart desires. The facility of Consumer credit brings glaring change in middle class life. Until now, financial institutions have not prepared any guidelines to implement consumer credit anywhere in Ethiopia. But they have wide chances to introduce consumer credit in coming days because people income levels drastically changed in past ten years. Comprehensive developments are appearing in saving potentiality of the people. Now, the real problem facing by the financial institutions, if consumer credit introduce to the people, how much amount has to lend? What parameters have to consider for fix the margins in consumer credit? How can estimate repayment capacity? These are hectic issues to the financial institutions. Typical mathematical procedures, assessing individual characters and financial conditions of the people take huge time to implement consumer credit by the financial institutions. The present study provides flexibility to take decision for lending limit. Lending limit fixation through correlation coefficient with the help of saving potentiality of the people in the Aksum town provides basic idea to the lenders.

1.4. Objectives of the study

The basic objective of the study, fix the lending limit for consumer credit on the basis of saving potentiality of the people in Aksum town. Specific objectives are as follows.

1. Estimate the income standards and saving potentiality of the people in Aksum town.
2. Fix the lending limit margins by correlation coefficient.
3. Analyze the difficulties of lending limit in positive and negative correlation conditions.

4. Explain the importance of normal distribution curve for lending limit fixation through correlation coefficient.
5. Finalize the suitable remedial to introduce the consumer credit in Aksum town.
6. Offer suggestions based on the findings of the study

2. REVIEW OF LITERATURE

In the bull market up to 2008, all over the world financial institutions were aggressive in unsecured lending, only to learn that it is probably the riskiest part of the business. Lenders were curtailed lending to consumer credit. Parlay Mondal, retail head, YES bank India said "After the 2008 crisis, Many banks had withdrawn from the personal loans and credit card market"

After a clean-up and providing from the profit and loss account, financial institutions are now back in this business. Banks are starting on a clean slate and lending to customers. They have stopped surrogate lending and are relying heavily on the credit bureau, which will avert a 2008-like crisis." The industry is a lot more cautious this time. Although the loans under the unsecured category are accelerating, they may not grow at a break-neck speed. Yet present another difference financial institutions are collecting accurate information of consumers and armed sufficient data from the credit information bureaus. Now, they understood only individual performances are not sufficient to provide unsecured loans some other limitations also essential for consumer credit.

Now, financial institutions, lenders are more concentrating to fit exactly lending limit for consumer credit because the limit provides basic security to lenders but the question is what is credit limit? How to fix it?

A **credit limit** is the maximum amount of credit that a financial institution or other lender will extend to a debtor for a particular line of credit (sometimes called a credit line, line of credit, or a trade line). For example, it is the most that a credit card company will allow a card holder to take out at once on a credit card.

First time United Kingdom government increase in the limits for financial protection from £2,000 to £5,000 (due to the drop in value of money), and stronger protection for hirers under hire-purchase agreements – Consumer credit act -1974.

In the above case, United Kingdom increased credit limit for the comfort of higher purchasers, this type of encouragements finally destroyed the entire consumer credit system in the span of 50 years. After 2007 crises, lenders are searching new factors for consumer credit.

Consumer limit is based on a variety of factors ranging from an individual's ability to make interest payments, an organization's cash flow and/or ability to repay the credit card debt and is an obligation of the consumer to pay just like all other parts of the balance.—Wikipedia

According to Bethy Hardeman, article "How your credit limit is determined" (Dec. 5, 2013), the number that tells you how much you can charge on your credit card is known as your credit limit. It's a dollar amount that's set by your lender when you get approved for a new line of credit. But just how do lenders

set these limits? For the most part, there are two primary factors that most lenders look at in order to set your initial credit limit: your credit score and income level.

Gerri Detweiler mentioned in his article "How Do They Decide What My Credit Card Limit Should Be?" May 3, 2015, Most providers of consumer credit are likely to look closely at your spending power, as this allows them to determine how much you can afford to borrow.

Jenna Heron said by his article "How issuers determine credit card limits"- "How much (or little) a credit card issuer allows you to charge can feel like a character judgment. A low limit shows little trust in your ability to spend and pay, while a high limit means a lender believes you can handle your borrowing.

So many others, financial analysts expressed their views about consumer credit limit. But no one considered the factor of saving potentiality of the people in the particular society. In this paper researcher tried to fix consumer limit based on income levels and saving potentiality of the people. Researcher has strongly believing this paper may be helpful to the lenders when they are lending their amount to consumers.

3. RESEARCH METHODOLOGY

3.1. Sources of data

The main sources of data that used for the study comprises of primary as well as secondary data. The primary data were collected from the sample population of the 160 employees in Aksum town. Data collected through the instrument of questionnaires, interviews, focus group discussions and extended personal observations. Government, Non-Government employees, Business People and university employees responded properly for basic source of information. Regarding the secondary data it was collected from different banks and governmental offices in Axum town like culture and tourism office, municipality of the town, Axum administration offices, related books, journals, previous studies and websites.

3.2. Sampling Unit:

Data contained employees in Aksum town viz., government, Non-Government, and some special sectors like bank, Academic (Aksum University Employees) those how are earning more than 2,000 ETB per month.

3.3. Sampling size and sampling technique:

In this survey researcher arbitrarily applied probable sampling method by stratifying data in four sectors viz. government, Non-government, banking, and Academic. Again researcher adopted convenient sampling from 160 individuals for the purpose of study.

3.4. Area of the study

Axum is situated in central administrative zone of Tigray. Geographically Axum is located west of Adwa, East of WukroMaray, North of EdagaSelus and south of Roma at 1041 Km distance from Addis Ababa. Axum is where Ethiopia and Eritrea's culture, history, civilization and spirituality originate from. The Capital City of the Queen of Sheba, the origin of the Solomonic Imperial Dynasty, the home of the Ark of the Covenant, the origin of Ethiopian Orthodox Christianity, the birth place of Ge'ez (Africa's only written

language) and many of the culture and custom that shaped present day Ethiopia and Eritrea trace their roots to Axum. It is one of the best holy places which have been attracting more tourists from national and international.

According to Central Statistical Agency of Ethiopia (CSA), as of July 2012 (est.) the town of Axum's population was 56,576. The census indicated that 30,293 of the population were females and 26,283 were males. The largest ethnic group reported was the Tigrayan (98.54%) and Tigrinya was spoken as a first language by 98.68%. The majority of the population practiced Ethiopian Orthodox Christianity with 85.08% reported as embracing that religion, while 14.81% were Muslim. According to Axum city administration office of plan and finance development plan process (2010) In the Axum town, 2181 households were doing various types of businesses like restaurants, bars, merchants, grocery and art gallery etc. almost 4282 Households were doing non business activities like government, non government employees, farmers, priests and daily workers etc. and Ethiopian Commercial Bank, Wegagen Bank, Abyssinia bank, Anbesa Bank and Dedebit credit and saving institutions are giving better service to the people with more than 200 employees. Additionally, the Axum University was established in 2006, at present almost 2000 employees are working in the university with various designations. The source of livelihood and backbone of Axum's economy are Agriculture, Tourism and trade respectively. The tourism sector ranked in second position, remaining businesses also have been showing greater performance to improve their incomes by attracting the tourists and local customers.

4. CORRELATION ANALYSIS ON LENDING LIMIT BY NORMAL CURVE

4.1. What is Correlation?

The Pearson product-moment correlation coefficient, often shortened to Pearson correlation or Pearson's correlation, is a measure of the strength and direction of association that exists between two continuous variables. Example: Sales and advertisement, Demand and Supply, Age and Blood pressure and Income levels and Savings as per our research Etc. The Pearson correlation generates a coefficient called the Pearson correlation coefficient, denoted as r . A Pearson's correlation attempts to draw a line of best fit through the data of two variables, and the Pearson correlation coefficient, r , indicates how far away all these data points are to this line of best fit (i.e., how well the data points fit this new model/line of best fit). Its value can range from -1 to +1. We can interpret correlation is as follows.

Positive Correlation		Negative Correlation	
+0.75 to +1	Perfect positive Correlation	-0.75 to -1	Perfect negative Correlation
+0.50 to +0.74	Strong Positive Correlation	-0.50 to -0.74	Strong negative Correlation
+0.25 to +0.49	Moderate positive "r"	-0.25 to -0.49	Moderate negative "r"
0 to +0.24	Weak positive "r"	0 to -0.24	Weak negative "r"
0	No relation	0	No relation

4.2. What is Normal distribution Curve?

A normal distribution is a continuous probability distribution for a random variable x . The graph of a normal distribution is called the normal curve Normal distributions can be used to model many sets of

measurements in nature, industry, and business. For instance, the systolic blood pressure of humans, the lifetime of television sets, and even housing costs are all normally distributed random variables. A normal distribution has the following properties.

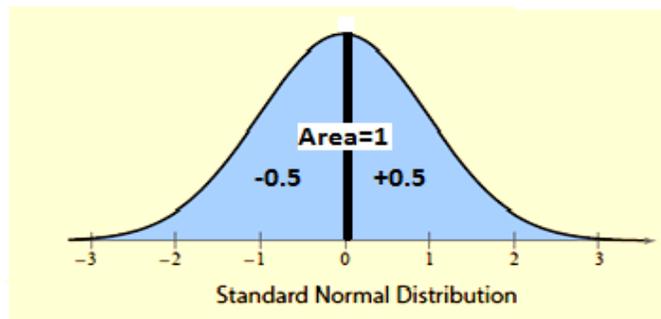
1. The mean, median, and mode are equal.
2. The normal curve is bell shaped and is symmetric about the mean.
3. The total area under the normal curve is equal to one. Right side area is +0.5 and left side area -0.5.
4. The normal curve approaches, but never touches, the x-axis as it extends farther and farther away from the mean.
5. Between $\mu-\delta$ and $\mu+\delta$ (in the center of the curve) the graph curves downward.

The graph curves upward to the left of $\mu-\delta$ and to the right of $\mu+\delta$ the points at which the curve changes from curving upward to curving downward are called inflection points.

There are infinitely many normal distributions, each with its own mean and standard deviation. The normal distribution with a mean of 0 and a standard deviation of 1 is called the standard normal distribution. The horizontal scale of the graph of the standard normal distribution corresponds to z-scores.

$$Z = \frac{\text{Value} - \text{Mean}}{\text{Standard Deviation}} = \frac{x - \mu}{\sigma}$$

The standard Normal Distribution is a normal distribution with a mean of 0 and standard deviation of 1



If each data value of a normally distributed random variable is transformed into a z-score, the result will be the standard normal distribution. When this transformation takes place, the area that falls in the interval under the non standard normal curve is the same as that under the standard normal curve within the corresponding boundaries.

We can use the Empirical Rule to approximate areas under a normal curve when the values of the random variable corresponded to -3,-2,-1, 0, 1, 2, or 3 standard deviations from the mean. Now, you will learn to calculate areas corresponding to other x- values. After you use the formula given above to transform an x-value to a z-score and you have to standard normal table. The table lists the cumulative area under the standard normal curve to the left of for scores from -3 to +3.

Why is the normal distribution useful?

- Many things actually are normally distributed, or very close to it. For example, height and intelligence are approximately normally distributed; measurement errors also often have a normal distribution
- The normal distribution is easy to work with mathematically. In many practical cases, the methods developed using normal theory work quite well even when the distribution is not normal.
- There is a very strong connection between the size of a sample N and the extent to which a sampling distribution approaches the normal form. Many sampling distributions based on large N can be approximated by the normal distribution even though the population distribution itself is definitely not normal.

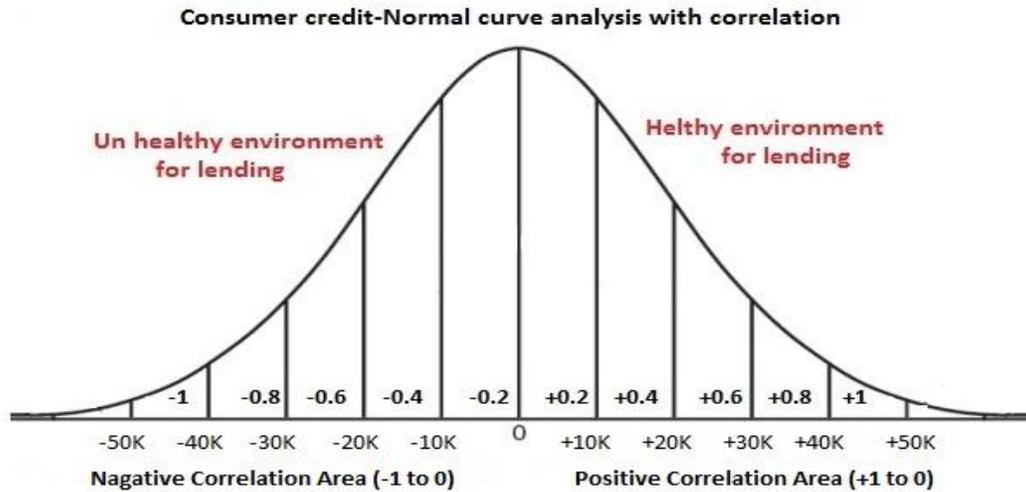
4.3. Correlation analysis on lending limit through normal curve

Lending limit fixation through saving potentiality of the people in particular society gives great relaxation of the lenders. In earlier, financial institutions faced so many problems by providing credit based on individual income levels. A single unit performance never describes the group strength. But lenders were gave more priority to income of consumers. When financial crises arose in various countries lenders have realized and started to search new boundaries of lending limits on consumer credit. If a person earning hundred thousand ETB (Ethiopian Birr) per month, providing loan almost one million to him and at the same time providing credit only 10,000 ETB those who earns 3,000 ETB per month is not a proper decision to the financial institutions. Lenders should fix the credit limit as per saving potentiality of the people in the particular society. If that society either town or city its Average saving potentiality 2,000 ETB per month, then 2,000 ETB x 25 monthly installments equals to 50 thousand. So the maximum credit limit of the particular society is 50 thousand. Here we fixed maximum installments and maximum limit of the credit, now the town or city people are not eligible to take more than 50 thousand ETB as consumer credit. Here lenders will get common doubt why exactly 25 months why not more or less? But researcher generally thought more than 25 months installment creates insecurity to the lenders. 30, 40 installments are not that much suitable to unsecured loan. If lenders provide less than 25 months may be consumers will not feel happy because high installment amount shows some impact on their regular expenditure. After fixation of maximum limit, we have to check the possibilities in credit environment to provide consumer credit with maximum sufficient or minimum sufficient by correlation between saving and income levels of the people.

Correlation determines the relations between two variables i.e. X and Y . Here researcher considered income levels of the people denote as (X) , saving potentiality of the people (Y) and correlation coefficient " r ". The relation between X and Y locates in a particular point from $+1$ to -1 . Based on result of correlation, we can estimate the relations between two variables. We can understand more by thorough analysis in coming paragraphs.

The bell shaped normal distribution curve explains the positive and negative area relations based on average value. We can measure the high and low value combinations in a particular data through normal curve. Here centered average area in normal curve denotes as " μ ". And positive or negative average area value Named as " X ". The risk between two areas called as " δ ". Simply we said above "The normal

distribution with a mean of 0 and a standard deviation of 1 is called the standard normal distribution". The following normal curve diagram explains more about lending limit.



In the above normal curve we can understand the overall correlation area from -1 to +1. Left side area from -1 to 0 explains about negative correlations and right side area from 0 to +1 indicates positive correlations. The centered "0" [as per normal curve " μ "] value area represents no correlation between two variables. Every column in the above curve contains 0.2 correlation area either positive or negative and also contains every 0.2 area 10,000 ETB (10K) of lending limit. Researcher has taken maximum lending limit to consumer credit 50,000 ETB (50K). If correlation is positive, that means "r" indicates any value between 0 to +1 describes healthy environment to provide consumer credit. As usual if it is 0 to -1 treats as un-healthy environment of consumer credit. Finally -50K to +50K represents healthy and un-healthy lending limits of consumers. Now, researcher trying to give explanation of lenders questions by his analysis. Lender questions are as follows.

1. Through savings, how much credit has to sanction to the consumer?
2. What is the safe zone to the financial institutes for providing consumer credit?
3. If correlation shows negative, how lenders will react?
4. How exact lending limit fixation possible through correlation? Etc...

4.4. Right side correlation area:

The above normal curve explains, 0 to +1 area is positive correlation area and indicates healthy environment to consumer loan. Now, correlation analysis we can interpret is as follows...

- A. Correlation Between 0 to +0.24:** This area represents weak positive correlation between savings and income level of the people in the society. In the above normal curve, we have +0.2 area column which is located between 0 to +0.24 correlations and the same +0.2 area considering 10,000 ETB limit for consumer credit. Now lenders should understand, providing credit up to 12,000 ETB (here, $0.2 = 10,000\text{ETB}$ then, $0.24 = 12,000\text{ETB}$) in the particular society never creates any problem to the lenders. Lenders can easily recover their credit from consumers. The

correlation area from 0 to +0.24 fixing the exact boundary to the particular society. The remaining positive area of the right side in the normal curve which shows remaining part of +0.2 column indicates healthy environment to financial institutes to provide consumer credit up to 50,000 ETB. It is safe zone to provide consumer credit but based on the lenders risk. It describes the positive conditions to recover the loan but not exact. Lenders can provide credit to consumers based on consumer's high income level or Third party guarantee etc. It should be applicable for few people on special conditions and guarantees.

- B. **Correlation Between +0.25 to +0.74:** here, the correlation area indicating moderate and strong correlations of income and savings. In this condition, lenders safe zone increased up to 37,000 ETB (If 0.2 = 10,000ETB then, 0.74 = 37,000 ETB). Now, the lending limit in the particular society is 37,000ETB. Financial institutions happily sanction unsecured credit up to 37,000 ETB, more than this creates small risk to the financial institutions. Researcher intention is not to give suggestion for sanction the consumer loan to all in the society, in the particular society financial institutions have a limit to sanction loan up to 37,000 ETB. In this limit, lenders can sanction loan from 1000 to 37,000 based on repayment capacity and saving potentiality of the consumer. Again the remaining positive area more than +0.74 shows healthy environment to lend the money based on some special conditions and believability of the lenders.
- C. **Correlation from +0.75 to +1:** this is perfect positive correlation. Without any hesitation, lenders can provide loan up to 50,000 ETB to the consumers in the particular society. The saving potentiality of the people in the society exhibits the perfect correlation. It indicates most of the consumers enable to repay 50,000 ETB in decided installment period. When financial institutions have perfect correlation confidently they can sanction less than 50,000 ETB loan to the consumers because in this society people have so many opportunities to earn more money and more saving potentiality. This society contains very least percentage of consumers those who will fail to repay the credit, rest of people never fails to repay the credit. It is most secured zone to the financial institutions for providing consumer credit up to 50,000ETB, when correlation is +0.75 to +1. If lenders want to increase limit above 50 thousand credits, again they have to check new stuff of the saving potentiality and correlation between savings and income level of the people.

4.5. Left side correlation Area:

Here also 0 to-1 is negative correlation area and indicates unhealthy environment to consumer loan. Most of the people understand, left side normal curve area explains about negative result. In real case, left side normal curve has so many columns and every column represents particular area in the left side part. If our correlation result located in the particular area of column in left side normal curve, no need to think about remaining negative area in the normal curve. Example: as per above, we decided consumer credit limit in the particular society 50,000 ETB and total left side curve area contains 50,000 ETB lending limit. The first -0.2 (negative correlation) column or area describes, 10,000 ETB which is representing -0.2 consumer credit becomes negative in the maximum limit of 50,000 ETB. So here, -0.2 area strictly mentions 10,000 ETB is negative remaining 40,000ETB consumer credit is not purely negative. That means, lenders should beware to sanction consumer credit up to 50,000ETB and they must have to

reduce their credit limit from 50,000ETB to 40,000ETB [50,000 ETB – 10,000ETB which represents -0.2 area]. Now the maximum limit of consumer credit is 40,000 only in the particular society. If correlation is -0.4 lenders should control their limit up to 30,000ETB. Finally, the correlation is perfect negative “-1” credit limit becomes ZERO, in this condition lending consumer credit even One ETB also not good to the lenders.

Let us we observe the interpretation of negative correlation. If correlation of two variables gave result between 0 to -0.24, this is week negative correlation. That means it is not opposing completely to sanction consumer credit up to 50,000 ETB. Only some top end part of credit limit opposing by week correlation. Example: total credit limits 50,000 ETB we decided earlier. If we make it four parts each part contains 12,500 ETB. Now week correlation part starts from 37,500 to 50,000 ETB because its normal curves area only 0 to -0.24. -0.25 to -0.49 area called as moderate negative correlation area, represents above part of 25,000 ETB. If you get -1 exactly indicates perfect negative correlation and 0 to 50,000 ETB areas will effect by negative correlation. These are resulting to lenders, in the week negative correlation conditions lenders strictly maintain limit up to 37,500 ETB, more than this providing one ETB also not good to the lenders. If the correlation shows result in moderate area, providing consumer credit more than 25,000 ETB is strictly restricted. Lenders should reduce their limit from 37,500 to 25,000 ETB. Strong negative correlation restricts lenders to not allow more than 12,500 ETB credit. Finally perfect negative correlation conforms the society is unfit to take consumer credit by the people.

5. DATA ANALYSIS IN AKSUM TOWN:

The researcher has interviewed the different gender group of employees those who are earning more than 2000 ETB per month. In this researcher paper, Researcher did not considered agricultural and small business people and also not considered age and education qualifications. The following table shows the classification of respondents.

Table-1 Demographic profile:

Gender	No. of Respondents	Percentage
Male	144	90
Female	16	10
Total	160	100

(Source: Primary data)

Inference: The demographic profile of the respondents was presented in table-1, male employees almost 90% of respondents responded and a few percentage of female employees were actively responded in research because female participation is not effective to earn more than 2000 ETB in Aksum town. Most of the females are house wives and remaining was earning less than 2,000 ETB.

**Table-2 Income Levels of the Respondents in Axum town
(1 Ethiopian Birr equal to \$ 0.0476)**

Income level in ETB	Respondents in different organizations				Total Respondents	%
	University	Bank	Private	Government		
2,001-3,000	13	14	18	12	57	35.625
3,001-4,000	10	12	16	12	50	31.25
4,001-5,000	9	10	4	10	33	20.265
5,001-6,000	8	4	2	6	20	12.5
Total	40	40	40	40	160	100

(Source: Primary data)

Inference: researcher collected primary information about people income in Aksum town from four organizations. University, Bank, Private and government employees those are working in different positions are responded for this research. 35.625% respondents are earning between 2,000 to 3,000 ETB per month and almost in same proportion of respondents earning between 3,000 to 4,000 ETB per month, remaining 32.76% are getting more than 4,000 ETB per month. Out of 160 respondents, 34 respondents are earning less than 4,000 ETB per month those who are working in private sector.

**Table-3 Income Level and saving potentiality of the people in Aksum town:
(One Ethiopian birr equal to 0.0476 \$)**

Income Levels in ETB	Respondents Saving potentiality per month in ETB						Total Respondents
	0-200	201-400	401-600	601-800	801-1000	1,000 - 1,200	
2,001-3,000	30	18	6	3	Nil	Nil	57
3,001-4,000	15	16	13	4	2	Nil	50
4,001-5,000	4	9	13	5	1	1	33
5,001-6,000	2	3	7	3	3	2	20
Total Resp...	51	46	39	15	6	3	160
% Percentage	31.875	28.75	24.375	9.375	3.75	1.875	100

(Source: primary data)

Inference: Researcher tried to classify saving potentiality of the employees with the help of above table because it is crucial to set the consumer credit lending limit in the Aksum town. The above table gives the information, 31.875% respondents are saving less than 200 ETB per month. These people have not efficiency to take huge credit from the lenders but this percentage is not a basic index to decide lending limit in the Aksum town. Researcher basic objective decide the lending limit by the overall saving performance of the people in Aksum town. Almost 62% of the employees are saving between 400 to 800 ETB. This area is really suitable to provide consumer credit in the Aksum town between 10,000 to 15,000 ETB because consumers are able to clear this loan by 25 installments, if they pay 500 ETB every month. But it is not a proper calculation to fix lending limit. Only 5% respondents are saving more than 800 ETB per month.

Correlation Co-efficient:

As per table-3, we have all sources to compute correlation coefficient between income levels and saving potentiality of Aksum town. The following formula explains the variable status for the computation of correlation.

Here, r = Correlation between two variables income and saving potentiality
 X = Income level of Aksum employees, Y = saving potentiality of the employees
 N = Total number of samples in data = 160 or Total frequency (F)
 fdx = Multiplied income deviation values by $F = 336$
 fdx^2 = multiplied values of $fdx * dx = 874$
 fdy = Multiplied saving potentiality values by $F = 368$
 fdy^2 = Multiplied values of $fdy * dy = 1084$
 $fdxfy$ = X and Y Multiplied deviation values by $F = 868$
Formula:
$$\frac{N(\sum fdxdy) - (\sum fdx)(\sum fdy)}{\sqrt{[N(\sum fdx^2) - (\sum fdx)^2]} * \sqrt{[N(\sum fdy^2) - (\sum fdy)^2]}}$$
Answer = $r = 0.4759$
Note: The above values obtained by the process of “ r ” computation

The above computed result is not contrasting 50,000 ETB limit of consumer credit in Aksum town, and it shows a positive way to fix the ambit of consumer credit. Correlation of income and saving potentiality of Aksum town is **0.4759**. It is very near to strong positive correlation and maximum of moderate correlation and also located in positive side of normal curve which is indicating as healthy environment to provide consumer loan. As per this, we can decide lending limit in the Aksum town up to 25,000ETB (approximately) because total amount we have taken 50,000ETB for consumer credit. If correlation is perfect positive, we can provide 50,000 ETB as consumer credit in Aksum town without any fear. But correlation resulted almost half in the perfect correlation. Therefore, providing more than 25,000 ETB is not much efficient to the lenders but they are in the safe zone. Lenders can start to lend amount from 1,000 to 25,000 ETB based on income levels of the people in the Aksum town. The result 0.4759 shows the real borrowing strength of the people in Aksum town. And it is proving employees are eligible for consumer credit up to 25,000 ETB only. Some consumers are eligible to take more than 25,000ETB credit in the Aksum town, on the basis of third person guarantee and personnel belief of the lenders can provide more than 25,000 ETB credit to consumers.

Summery and Findings:

- 35.625% respondents are earning between 2,000 to 3,000 ETB in Axum town and the remaining 64.375% of respondents monthly incomes in between 3,000 to 6,000 ETB.
- The highest % of private employees, 21.25% (18+16 / 160) of respondents are earning monthly income less than 4,000 ETB.
- Almost 60% (31.875+28.75) of the respondents saving potentiality under 400 ETB per month, remaining are located between 400 to 1,200 ETB savings margin.

- Aksum town correlation between income and saving potentiality of the people determined as 0.4759 which has maximum moderate relation.
- Consumer credit limit fixed as 25,000 ETB (approximately)
- Determined different stages of consumer credit lending limits through normal curve.
- Identified positive and negative correlation impacts on lending limit.
- Most of the people are belongs to middle class and employment oriented in Aksum town.

Suggestions:

- Providing consumer credit on the basis of individual earnings always not beneficial to the lenders.
- “Consumer credit” lending limit fixation through saving potentiality of the particular society creates healthy financial environment to the lenders.
- Applying Correlation, Normal distribution and some mathematical techniques are essential for deciding the exact lending limit of consumer credit.
- Maximum 25 installments are sufficient for consumer credit because it is unsecured loan. Lengthy installment time creates some prepayment difficulties.
- As per correlation, lending limit up to 25,000 ETB is sufficient to Aksum town. Lenders should beware to lend consumer credit more than this.
- Lenders or Financial institutions can start to provide consumer credit from 1,000 to 25,000 ETB based on income levels of the people.
- Now, Aksum town eligible to adopt the consumer credit through financial institutions, without hesitation lenders can introduce consumer credit.

CONCLUSION

In the globalization, banking sector every day updating it by introducing so many policies, schemes, loans and facilities to the customers. In that process, financial institutions were introduced one of the most important facility to customers named as “consumers credit”. Some developing countries and under developed countries still stepping back to introduce consumer credit to the people. May be financial problems, legal procedures, economic conditions and people saving potentialities are causing for this. In some countries, they have good financial environment but they are facing systematical problems for introduce the consumer credit. In this paper, researcher tried to solve lending limitation problems through correlation. Confidently lenders can lend their amount by using correlation technique. Lending limit fixation solves the major difficulty to provide credit to consumers. As per this paper, researcher succeeded to estimate saving potentiality of the Aksum town and estimated approximate lending limit of Aksum town. We are hoping as soon as financial institutions will bring moon light in the middle class life by introducing consumer credit in Aksum town.

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