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## Economics and Commerce

Micro-Finance Activates

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Highlights

Growth Regression Revisited

Factors Influencing Consumers

Discovering Thoughts, Inventing Future

VOLUME 15 ISSUE 6 VERSION 1.0

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Economics and Commerce

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# Remittances, Exchange Rate and Monetary Policy in Nigeria

By Augustine C. Osigwe & Chekwube V. Madichie
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*Keywords: remittance inflows, exchange rate, and monetary policy.*

*GJMBR - B Classification : JEL Code: B22, C22, E4*

REMITTANCESEXCHANGERATEANDMONETARYPOLICYINNIGERIA

*Strictly as per the compliance and regulations of:*

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Augustine C. Osigwe [α] & Chekwube V. Madichie [σ]

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## I. Introduction

Remittance is a transfer of money by a foreign worker to an individual in his or her home country. According to the Nigerian Tribune of 8th September, 2014, the second biggest source of foreign exchange earnings for Nigeria is remittances sent home by Nigerians living abroad, coming next to petrodollars. It further reported that in 2014, 17.5 million Nigerians lived in foreign countries, with the UK and the USA having more than 2 million Nigerians each. From a macroeconomic perspective, remittances inflow has the potential to enhance aggregate demand and thus Gross Domestic Product (GDP) as well as induce economic growth. However, some studies have reported mixes effects of remittances on the real exchange rate. For instance, Sultonov (2011) discovered that huge remittances led to appreciation of Tajikistan's real exchange rate whereas Barrett (2014) on the contrary found that remittances depreciate the Jamaica's real exchange rate.

Interest in examining the role of remittances in economic growth has remained obvious in the recent times. It has been acknowledged that remittances serve as a vital source of development finance in most developing countries. In the face of deteriorating official development aid, precariously internally generated revenue and scanty private capital inflows, remittances complement scarce domestic resources. Remittances have the potential to enhance socio-economic prospects of countries. It serve as a source of development finance through direct investment in the money and capital markets of beneficiary countries. Further, it has been documented that remittances, in a range of ways can spur exports, and therefore improve the Balance of Payments (BoP) and international reserves of the beneficiary country.

Consequently, the key research questions answered in this study are: Is there any long-run relationship between remittances inflow, exchange rate and monetary policy variables? What monetary policy variables explain the inflow of remittances in Nigeria? Does remittances cause monetary policy and vice versa? Based on the foregoing, this paper, explored the effects and causality that exist among remittance in flows, exchange rate, and monetary policy in Nigeria. The remainder of this paper is structured as follows. Section 2 focuses on review of related literature whereas Section 3 briefly describes the theoretical framework and Methodology adopted in the study. Section 4 presents and discusses the empirical results while section 5 concludes the study.

## II. Review of Related Literature

The literature linking remittances, exchange rate, and monetary policy remains inconclusive and is still expanding. The empirical findings emanating from the existing studies seem not to go in the same direction as they are replete with divergent views. For instance, within the context of the Ghanaian macro economy, Adenutsi and Ahortor (2008) explored the monetary factors underlying the changing levels of remittance inflows, and the implications of remittance inflows for monetary aggregates, interest rate, exchange rate, and the domestic price level. The theoretical framework of the study was based on a modified variable-price Mundell-Fleming model. They estimated a five variable Vector Autoregressive (VAR) Model using quarterly data between 1983(4) and 2005(4). The estimated static long-run model revealed that monetary aggregates, exchange rate, and interest rate positively impact on remittance inflows while domestic price level negatively impact on remittance inflows. Monetary aggregates,

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exchange rate, interest rate and domestic price level impact on one another while remittances positively drive itself, monetary aggregates, exchange rate and interest rate. The impulse response functions of the study showed that remittance inflows respond to its own shocks but not to shocks emanating from monetary aggregates, exchange rate, interest rate, and the price level. Variance decompositions indicated that, during the first quarter, remittances are self-driven. They recommended that prudent monetary and exchange rate policies should be specially formulated and selectively conducted to attract international remittances into Ghana.

In a bid to provide empirical answer to the research question of "can monetary policy enhance remittances for economic growth in Africa?", Mbutor (2010) evaluated the role of monetary policy in enhancing remittances for economic growth, using Nigeria as a case study. The vector autoregressive methodology was applied with two stage deductions. The findings of the study revealed that the monetary policy rate first impacts intervening variables - exchange rate, interest rate, inflation - which in turn impact remittance flows. The data set were tested for temporal properties, including unit roots and co-integration. Preliminary evidence showed that domestic economic prosperity increases remittances to Nigeria; while exchange rate depreciation depresses remittances. In his view, the latter outcome reflects remitters' perception that a stronger Naira is a sign of things-getting-better-back-home.

Using data for the Philippines, Mandelman (2011) developed and estimated a heterogeneous agent model to analyze the role of monetary policy in a small open economy subject to sizable remittance fluctuations. He tested whether remittances are countercyclical and serve as an insurance mechanism against macroeconomic shocks. When evaluating the welfare implications of alternative monetary rules, he considered both an anticipated large secular increase in the trend growth of remittances and random cyclical fluctuations around this trend. According to him, in a purely deterministic framework, a nominal fixed exchange rate regime avoids a rapid real appreciation and performs better for recipient households facing an increasing trend for remittances. He concluded that a flexible floating regime is preferred when unanticipated shocks driving the business cycle are also part of the picture.

Ball et al. (2012) examined the dynamic and desirable properties of monetary regimes in a remittances recipient economy, with an emphasis on the effect on sectoral output and nontradable inflation dynamics. Their findings indicated that under a fixed exchange rate regime, an increase in remittances creates increased demand for nontradable goods, and hence a rise in nontradable inflation as well as expansion in output of nontradables. Under a nontradable inflation targeting regime, however, they found that a decrease in nontradable inflation, and an expansion in tradable goods production following an increase in remittances.

This paper, therefore, provides an essential contribution to the literature by exploring the relationship and causality that exist between remittance inflows, exchange rate and monetary aggregates - interest rate and the domestic price level in Nigeria.

## III. Theoretical Framework and Methodology

### a) *Theoretical framework*

In line with Adenutsi and Ahortor (2008) reviewed earlier, this study follows with modifications the Mundell-Fleming Model (Mundell, 1963; Fleming, 1962) which aptly answers the question of how macroeconomic policies are conducted in the presence of capital flows. Essentially, a Mundell-Fleming Model is an extended IS-LM model in an open-economy setting. The Model is riddled with some drawbacks; i) it is static and do not consider the dynamic effects of capital and asset accumulations, hence, connections between flows and stocks are ignored, ii) it is mainly concerned with once-and-for-all adjustments in key variables and iii) itis deficient in analysing long-run dynamic effects. In order to overcome these challenges we followed the model of Adenutsi and Ahortor (2008) in formulating the open-economy model of this study. The reason for that is that the model is capable of predicting the impact of domestic and external shocks as well as the co-movement of macroeconomic variables at home and abroad. Given that the model considers the economy from the general equilibrium perspective, it establishes interdependencies among the system variables, thus addressing the well-known inadequacies of the traditional Mundell-Fleming models. We therefore operationalize a deterministic and dynamic model in this study.

### b) *Methodology*

Co-integration and causality test were used in this study to examine the relationship between remittances, exchange rate, and monetary policy in Nigeria. We adopted the Johansen co-integration and the Granger causality techniques to check if there is long run and causal relationship between the selected macroeconomic variables - remittance inflows (REM), exchange rate (EXR), and monetary policy variables (money supply (M2) and interest rate (INT)). Leaning on the work of Adenutsi and Ahortor (2008), inflation rate (INF) was added to capture the effect of price increase. The study used time series annual data that spans 1970 to 2013 to provide answers to the already set out research questions. The data pertaining to the chosen variables were obtained from WDI (2013).

i. *Unit Root Test*

It is widely known that co-integration analysis based on Johansen approach requires that variables of interest be integrated of the same order, basically order one. Therefore, it is customary that the first stage of co-integration analysis following the Johansen approach is to determine the order of integration of the chosen time series variables. The various methods used to test variables for unit root include the Augmented Dickey-Fuller (ADF) unit root test, Dickey-Fuller (DF) unit root test, Philip-Perron (PP) unit root test, Ng-Perron modified unit root test, among others. This study used the ADF unit root test. However, it is widely acknowledged that ADF may produce bias results in the face of structural breaks and that it is sensitive to the number of observations. Due to these shortcomings, we complemented the ADF unit root test with the Philip-Perron (PP) unit root test. It is imperative to note that while the ADF approach accounts for the autocorrelation of the first differences of a series in a parametric fashion by estimating additional nuisance parameter, the PP deals with the phenomenon in a non-parametric way. In other words, the PP unit root test makes use of non-parametric statistical methods without adding lagged difference term (Gujarati and Porter, 2009). Our ADF test consists of estimating the following equation:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t \qquad (1)$$

Where $\varepsilon_t$ is a pure white noise error term; t is time trend; $Y_t$ is the variable of interest; $\beta_1$, $\beta_2$, $\delta$ and $\alpha_i$ are parameters to be estimated; and $\Delta$ is the difference operator. In ADF approach, we test whether $\delta = 0$. The Philips-Perron test is based on the following statistic:

$$\tilde{t}_\alpha = t_\alpha \left(\frac{\gamma_0}{f_0}\right)^{1/2} - \frac{T(f_0-\gamma_0)(se(\hat{\alpha}))}{2f_0^{1/2}s} \qquad (2)$$

Where $\hat{\alpha}$ is the estimate; $\tilde{t}_\alpha$ is the t-ratio of $\alpha$; se ($\hat{\alpha}$) is the coefficient standard error and s is the standard error of the regression. Also, $\gamma_0$ is a consistent estimate of the error variance in the standard Dickey-Fuller test equation (calculated as $(T-k)s^2/T$, where k is the number of regressors). The term $f_0$ is the estimator of the residual spectrum at zero frequency.

ii. *Co-integration Test*

Co-integration basically refers to the long run relationship between variables under study. In this study, we adopted the Johansen co-integration approach to determine if long run relationship exists among the variables of interest. Unlike other studies, this test is treated as both a diagnostic test and an analysis methodology. The Johansen co-integration test is based on estimating the following vector autoregressive (VAR) model:

$$\Delta Z_t = A_1 Z_{t-1} + \ldots\ldots + A_p Z_{t-p} + \beta Y_t + \mu_t \qquad (3)$$

Where: $Z_t$ is a k-vector of non-stationary variables; $Y_t$ is a d-vector of deterministic variables; and $\mu_t$ is a vector of innovations. This can be rewritten as:

$$\Delta Z_t = \pi Z_{t-1} + \sum_{i=1}^{p=1} \Gamma_t \Delta Z_{t-i} + \beta Y_t + \mu_t \qquad (4)$$

Where

$$\pi = \sum_{i=1}^{p} A_i - I, \quad \Gamma_i = -\sum_{j=i+1}^{p} A_j \qquad (5)$$

In the Granger's representation theorem, if the coefficient matrix $\pi$ has reduced rank r < k, then there exist k x r matrices $\alpha$ and $\beta$ each with rank r such that $\pi = \alpha\beta'$ and $\beta' Z_t$ is I(0); r is the number of co-integrating relations (i.e the rank) and each column of $\beta$ is the co-integrating vector and the elements of $\alpha$ are the adjustment parameters in the vector error correction model. In general, the Johansen's approach is to estimate the $\pi$ matrix from an unrestricted VAR and to test whether we can reject the restrictions implied by the reduced rank of $\pi$.

iii. *Granger Causality Test*

It is widely known that the existence of long run relationship (co-integration) between two variables entails that causality runs in at least one direction. It is one of the major thrust of this study to determine not only the long run relationship between remittances, exchange rate, and monetary policy in Nigeria but also to determine the causal relationship (if any) among them. Thus, the Pairwise Granger causality test was employed. The test is a statistical test of hypothesis for determining whether a time series is useful in forecasting another time series. When a time series X Granger causes another time series Y, it follows that the pattern in X is approximately repeated in Y after some time lags. Put succinctly, a time series X is said to Granger cause a time series Y if and only if it can be clearly shown through series of t-tests and F-tests on the lagged values of X (with lagged values of Y inclusive) that all the lagged X values provide statistically significant information about the future values of Y. The null hypothesis underlying the Granger causality test is that the variable under study (say X) does not Granger-cause the other (say Y). Originally, the Granger causality test is based on estimating a pair of regression models in the following generic fashion:

$$Y_t = \sum_{i=1}^{n} \alpha_i Y_{t-1} + \sum_{j-1}^{n} \beta_i X_{t-j} + v_{1t} \qquad (6)$$

$$X_t = \sum_{i=1}^{n} \delta_i Y_{t-1} + \sum_{j-1}^{n} \lambda_i X_{t-j} + v_{2t} \qquad (7)$$

Where, it is assumed that $v_{1t}$ and $v_{2t}$ are uncorrelated. In the above specification, according to Granger (1969), X is said to Granger-cause Y if $\beta_i$ is not equal to zero and Y will also Granger-cause X if $\lambda_i$ is not equal to zero. If these two situations simultaneously exist, then there is bi-directional causality. The first two scenarios represent unidirectional causality and if none of them prevails, then we conclude that there is independence between the two variables X and Y. This situation represents the simplest form of Granger causality specification which involves only two variables (X and Y), dealing with bilateral causality. However, in this study, the situation is more complex, involving five macroeconomic variables which can be extended to multivariable causality through the technique of vector auto regression (VAR). Thus, our Granger causality test is based on estimating the following VAR model:

$$LREM_t = \sum_{i=1}^{n} \alpha_i LREM_{t-i} + \sum_{j=1}^{n} \beta_j LM2_{t-j} + \sum_{k=1}^{n} \delta_k LEXR_{t-k} + \sum_{l=1}^{n} \lambda_l INF_{t-l} + \sum_{p=1}^{n} \Psi_p INT_{t-p} + \mu_{1t} \qquad (8)$$

$$LM2_t = \sum_{i=1}^{n} \gamma_i LREM_{t-i} + \sum_{j=1}^{n} \theta_j LM2_{t-j} + \sum_{k=1}^{n} \eta_k LEXR_{t-k} + \sum_{l=1}^{n} \chi_l INF_{t-l} + \sum_{p=1}^{n} \Omega_p INT_{t-p} + \mu_{2t} \qquad (9)$$

$$LEXR_t = \sum_{i=1}^{n} a_i LREM_{t-i} + \sum_{j=1}^{n} b_j LM2_{t-j} + \sum_{k=1}^{n} c_k LEXR_{t-k} + \sum_{l=1}^{n} d_l INF_{t-l} + \sum_{p=1}^{n} e_p INT_{t-p} + \mu_{3t} \qquad (10)$$

$$INF_t = \sum_{i=1}^{n} g_i LREM_{t-i} + \sum_{j=1}^{n} h_j LM2_{t-j} + \sum_{k=1}^{n} r_k LEXR_{t-k} + \sum_{l=1}^{n} s_l INF_{t-l} + \sum_{p=1}^{n} v_p INT_{t-p} + \mu_{4t} \qquad (11)$$

$$INT_t = \sum_{i=1}^{n} x_i LREM_{t-i} + \sum_{j=1}^{n} y_j LM2_{t-j} + \sum_{k=1}^{n} z_k LEXR_{t-k} + \sum_{l=1}^{n} m_l INF_{t-l} + \sum_{p=1}^{n} o_p INT_{t-p} + \mu_{5t} \qquad (12)$$

Where it is assumed that $\mu_{1t}$, $\mu_{2t}$, $\mu_{3t}$, $\mu_{4t}$, and $\mu_{5t}$ are uncorrelated. The hypothesis of no causality between variables of interest is rejected if the F-statistic for the restricted and unrestricted residual sum of squares is significant at the conventional 1% or 5% level of significance. Since our interest is in testing for causality, one need not present the estimated coefficients of the above VAR model explicitly, just the results of the F-test (Gujarati and Porter, 2009).

## IV. Discussion of Results

*a) Unit Root Test*

As stated earlier in the previous section, the use of Johansen approach to co-integration requires that variables of interest are integrated of the same order, basically order one. Therefore, it is customary to begin our analysis with diagnostic test for unit root on our chosen variables thereby determining their orders of integration. In this paper, we employed both the ADF and the PP unit root tests. The tests were carried out on levels and differences of the chosen variables and were performed assuming intercept and no trend in both ADF and PP unit root specifications. The results show that within the framework of both ADF and PP unit root tests, all our variables are non-stationary at levels, but become stationary after first differences. In other words, all the chosen variables are integrated of the same order, that is order one, I(1). This is evidence of the possibilities of the existence of long run relationship between LREM, LM2, LEXR, INF and INT following the Johansen co-integration approach. The results are reported in Table 1.

*Table 1 :* ADF and PP Unit Root Results

| Variable | ADF Stat. | Order of integration | PP Stat. | Order of integration |
|---|---|---|---|---|
| LREM | -3.673202*** | I(1) | -7.482295*** | I(1) |
| LM2 | -2.824172* | I(1) | -3.553401** | I(1) |
| LEXR | -5.689606*** | I(1) | -5.689606*** | I(1) |
| INF | -3.232944** | I(1) | -3.450288** | I(1) |
| INT | -7.162448*** | I(1) | -7.162448*** | I(1) |

*NB: ***, **, & * imply significant at 1%, 5%, & 10% levels of significance.*

*Source: Authors' Computation using Eviews.*

*b) Co-integration Test Result*

The fact that the variables are integrated of the same order is itself a pointer to the existence co-integration among them. To verify this, we proceeded to test for co-integration using the Johansen methodology. Determining the optimal lag length to be used in such analysis is always a practical problem. However, according to Brook (2003), the choice of information criterion used is the author's since there is no information criterion superior to the other. The information criteria used in this study are the Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC). It is assumed that the lag length with the smallest value of AIC or SIC is the optimal lag length. We found that the optimal lag length for our analysis is five. Although, the SIC is preferred when using small samples, the disagreement between AIC and SIC is resolved using the Final Prediction Error (FPE) which in our case is five.

Table 2 presents the Johansen co-integration test. The null hypothesis underlying this test is that r = 0, against the general alternatives that r > 0, 1, 2, 3, and 4. From the results, the null hypothesis of no co-integration among the variables of interest is rejected at 5% level of significance since the values of both the trace statistic and the max-eigen statistic cannot reject the hypothesis that at most five co-integrating equations exist. This implies that there is long run relationship among remittances (LREM), exchange rate (LEXR), money supply (LM2), interest rate (INT), and inflation rate (INF) in Nigeria over the periods covered. Thus, using co-integration approach, we can safely conclude that there exist long run relationship between remittances, exchange rate, and monetary policy in Nigeria over these periods. Evidence of co-integration is suggestive of causality at least one direction. To probe the case of causality in details, we applied the Ganger causality test.

*Table 2 :* Johansen Co-integration Results

| $H_0$ | $H_1$ | Trace Stat. | 5% Critical value | Max-Eigen Stat. | 5% Critical value |
|---|---|---|---|---|---|
| r = 0 | r > 0 | 259.7752* | 69.81889 | 94.86054* | 33.87687 |
| r ≤ 1 | r > 1 | 166.9147* | 47.85613 | 72.68026* | 27.58434 |
| r ≤ 2 | r > 2 | 94.23443* | 29.79707 | 60.74146* | 21.13162 |
| r ≤ 3 | r > 3 | 33.49297* | 15.49471 | 20.99586* | 14.26460 |
| r ≤ 4 | r > 4 | 12.49711* | 3.841466 | 12.49711* | 3.841466 |

*NB: * denotes rejection of the null hypothesis at the 0.05 level. Both trace test and max-eigen value test indicate 5 co-integrating equations at the 0.05 level.*

*Source: Authors' Computation using Eviews.*

*c) Ganger Causality Results*

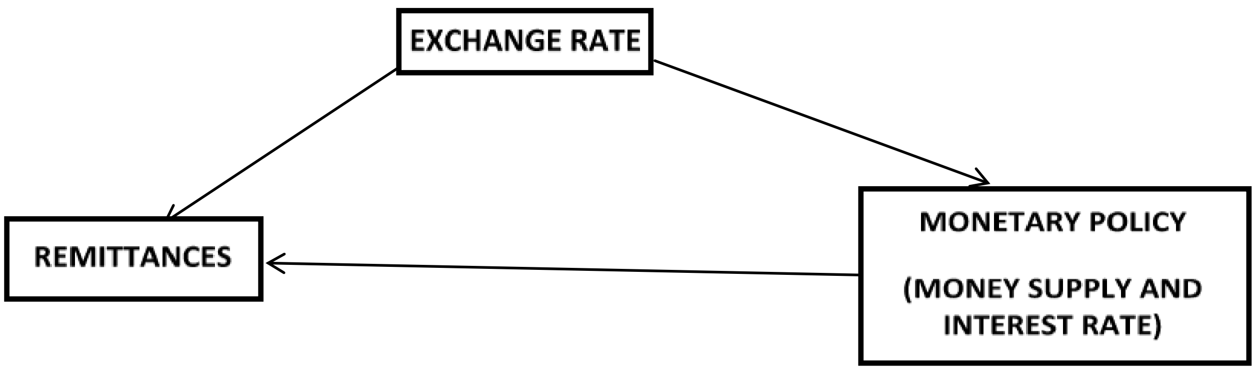
The results from lag selection revealed the optimal lag length to be five for AIC and one for the SIC. However, it should be noted that the Granger causality is sensitive to lags. Therefore, our research findings are guided by these optimal lags as we present the Granger causality results to cover from lag 1 to 5. The results of the Granger causality test from lag 1 to 5indicate that unidirectional causality runs from money supply (LM2) to remittances (LREM) only at lag one and not in the reverse. For the other lags, there was no evidence of causality between them (LM2and LREM). The results also showed that, consistently from lag one to lag five, causality run from exchange rate (LEXR) to remittances (LREM) and not in reverse direction. This could be interpreted to mean that exchange rate is one of the major factors that determines inflows of remittances. We found evidence of unidirectional causality running from interest rate (INT) to remittances, occurring from lag one to lag four. However, there is no evidence of causality in any direction between inflation rate (INF) and remittances (LREM) within these lags. We also found that causality run from exchange rate (LEXR) to money supply (LM2) only at lags one and four and there is no vice versa.

Further, there is evidence of unidirectional causality running from interest rate (INT) to money supply (LM2) only at lag one and there is no reverse causality between them. There is no causality between inflation rate (INF) and money supply (LM2) at any lag. Causality also run from exchange rate (LEXR) to interest rate (INT) starting from lag two to lag five and there is no vice versa. We as well found that causality run from exchange rate to inflation only at lag three and there is no vice versa. There is no causality between INF and INT, at lag one, but at lag two causality run from INF to INT and from INT to INF at lag three while causality run from INF to INT at lags four and five. The null hypothesis of no causality was therefore rejected at either 1% or 5%.

## V. Conclusions and Policy Recommendation

This paper examined the relationship and causality that exist between remittance inflows and monetary aggregates, interest rate, exchange rate, and the domestic price level in Nigeria. The Johansen co-integration test indicated that there is long run relationship among the aforementioned variables. The Granger causality test results revealeda unidirectional causality running from money supply (LM2) to remittances (LREM) only at lag one and not in the reverse. For other lags, there is no evidence of causality between them (LM2and LREM). The results also showed that, consistently from lag one to lag five, causality run from exchange rate (LEXR) to remittances (LREM) and not in reverse direction. This could be interpreted to mean that exchange rate is one of the major factors that determines inflows of remittances. We found evidence of unidirectional causality running from interest rate (INT) to remittances, occurring from lag one to lag four. This result shows that to attract remittances inflows, INT appears to be one of the monetary policy variable to be tinkered with. However, there is no evidence of causality in any direction between inflation rate (INF) and remittances (LREM) within these lags. The independence between inflation and remittances in a way suggest that the government should treat them independently and not as related variables. We also found that causality run from exchange rate (LEXR) to money supply (LM2) only at lags one and four and there is no vice versa.

In general, it can be deduced that within the five period-lags studied, exchange rate causes both remittances and monetary policy (money supply and interest rate) and there is no vice versa; monetary policy causes remittances and the reverse does not hold. This summary is aptly captured Figure 1.




*Source: Authors' Initiative from Table 3.*
*Note: Arrowsindicate direction of causality.*

*Figure 1 :* Flow Chart Summarizing the Granger Causality Test Result

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# Assessment of Cause for Women's Participations in Micro-Finance Activates Case of Jimma Town, Oromia, Ethiopia

By Eyerusalem Daniel Yadessa, Workineh Bayisa Jima & Geremew Muleta Akessa

*Rift Valley University, Ethiopia*

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The study had employed cross sectional study design. The data of this study were both primary and secondary data are collected. The sample were selected by using purposive sampling method. Data was collected through questioners. Descriptive analysis were employed.

It was found that the micro-financing schemes have contributed positively to the development of small-scale enterprise and a sense of entrepreneurship attitude.

*Keywords: women's participations, micro-finance activates.*

*GJMBR - B Classification : JEL Code: G00*

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*Strictly as per the compliance and regulations of:*

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## I. Introduction

The incidence of poverty in Ethiopia is very high. According to CSA 1995/96, 50% of the population of Ethiopia afford to spend enough to consume the minimum food requirement. Poverty is higher in rural areas than urban areas. In the same survey of CSA, 52% of populations living in rural areas are unable to acquire the minimum food requirement while only 36% of the populations in urban area are unable to acquire this minimum. The intervention of micro-finance will have a significant effect in reducing poverty at the macro and micro levels. In Ethiopia government issued a micro-finance law in 1996, which has emphasized the importance of micro-finance service. Following these provision 23% micro-finance institutions has been established. (CSA, 1994).

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The earlier intervention of government in rural credit (i.e. provision of credit with cheap interest rate and limited savings and deposit facilities) was not successful in financial terms (Humale, 1996). Considering the entrepreneurial environment, women's activates are very interesting as they offer great source of knowledge and innovations, for instance type of female micro-entrepreneur they differ in social back ground, educational level, experience and age. Another interesting factor is their strong communication channel at all levels (International Journal, 1998).

The ability of women owned enterprises to flourish is greatly affected by the access to credit others factors that challenges are decision making by women entrepreneurs which is not centered on the welfare of the business, but it is on the welfare of the family due to commonly demand or lack of managerial expertise, Others are lack of information's flow, and lack of technical stock management regarding limited access to financial services women depend largely on their own limited cash resource or in some cases, loans from extended family members for investment capital. Smaller amount of investment capital effectively limit women to a narrow range of low – return activities which require minimal capital outlays, few tools and equipment and rely on farm produce or inexpensive row material in general women need access to small loans (especially for working capital innovative forms of collateral).

In the Increase of poverty part, particularly in women has been identified as the one the most significant development challenges facing in the fewer developing countries like in Ethiopia. Thus, these studies will by to investigate the major determinants of women's participation in micro-finance credit and it impact on changing their life. More over; the study will give answers to the following basic questions.

What are the major institutional and socio-economic barriers to women's to access micro-finance services? Does the financial regulation and credit methodological fit to the needs of women? And what are the effect and impact of micro finance services on women welfare?

The main purpose of this study were to identify major cause for women's participations in micro-finance activates and how the participations in micro-finance affects the life of the poor women with particular reference in Jimma town.

*a) Specifically*

To identify the major institutional and socio-economic factors that affect participation of women's in MF.

To identify financial measures which support women's participation in micro-finance.

To identify the benefits of micro-finance service's to women.

## II. Literature Review

*a) Women's Role in the Economy*

All over the world, the significant women entry into the work force over three decades has produced profound transformation in the organization of families, society, the economy and urban life.

Women have always actively participated in their local economies. In Africa, for instance, women produce 80% of the food and in Latin America 40% as well as in Asia 60% of them produce food. In many cases, women not only produce the food but market it as well, which gives them a well developed knowledge off local market and customers.

Women, especially poor mothers, must divide their time between work productive rule and family reproductive rule and balancing all the demands. Inspire of the remarkable importance of women's participation, their jobs have been considered as an extra incomes to survival or simply to improve family living conditions.

Moreover, micro enterprises owned by women have been considered as a way to meet primary needs instead of profitable source of income.

Unfortunately, lab our markets have followed this perception and have offered less favorable conditions to women. Women workers consistently earn less than male partner do. That is the case Cameroon woman who works, for example, unto 10 hours per a day, but at the end of the month, their income is for below the Cameroon monthly minimum wage of 29000CFA francs.

Women have had to fight against an adverse environment. As a consequence of this reality, in some cases, women are just satisfied with the non–financial benefits, such the psychological satisfaction of social contact (www.globent.org/horizon-local).

*b) Women and Micro-finance*

Although men, as well as women, face difficulties in establishing additional enterprises women have many barriers to overcome. Among them are negative socio-cultural attitudes, legal barriers, practical external barriers, lack of education, and personal difficulties.

In spite of these, for women and especially for poor women, micro-enterprise ownership has emerged as strategy for economic survival. One of the most essential factors contributing to success in micro-entrepreneurship is access to capital and financial services. Regarding limited access to financial services, women depend largely on their own limited cash resources or in some cases, loans from extended family members for investment capital.

Smaller amount of investment capital effectively limit women to a narrow range of low return activities which require minimal capital outlays. Few tools and equipment and rely on farm produce or in expensive row material. In general, women need access to small loans (especially for working capital), innovative forms of collateral frequent repayment schedule more appropriate to the cash flows of their enterprises, simpler application produces and improved access to saving accounts (Dig nard and Jose, 1995).

*c) Micro-finance And Poverty Reduction*

If poverty is understood as a low level of annual income per household, reducing poverty is all about raising average income levels. Moreover, attention to annual income can observe fluctuation in that income during any given year.

Defining poverty in terms of power relations implies that assessment of the impact of micro-finance interventions should focus on their influences on social relation and the circumstances which reproduce them (women and men, landed and landless, particular or ethnic groups) are able to benefit from financial services or are excluded from doing so (Berhanue,1999 ).

*d) Credit and Micro-enterprises*

While there are methodological difficulties involved in measuring increases in incomes brought about by provision of credit, studies have demonstrated that the availability of credit for micro-enterprise can have positive effect.

A recent survey, collected data from government, NGOS and bank involved in providing financial services for poor people, revealed that household which had not demonstrated that credit provision enabled household income to rise. (Johnson and Rogaly, 1997).

However, taking the analysis further, Hulme and Mosley demonstrated that the better off the borrower the greater the increase in income from a micro-enterprise loan. Borrowers who already have assets and skills are able to make better use of credit. (Osmani, 1989)

*e) Development of Micro-Finance in Ethiopia*

In Ethiopia, though saving and credit program were operated for a number of years, by NGO, micro-finance operation in regulated form is a relatively new phenomenon. The idea of micro-credit was first introduced by the world Banks market lawn program.

This program was implemented jointly with development bank of Ethiopia. And the bureaus of trade and industry in what were called "16 market Towns "in stage owned and then spread to all the major towns of the country. (Welday, 2000).

The performance of MFIS is mainly evaluated in terms of sustainability of MFIS is measured on the basis of their capacity to generate enough revenue (excluding subsidies) to cover the cost of all factors of production and loan able funds.

Outreach is measured in terms of number of clients, loan size, percentage of loan to client, below poverty line, percentage of female clients range, of financial and non-financial services offered to the poor, the level of transaction costs levied on the poor, and the extent of client satisfaction with respect of financial services. (Wolday, 2001).

## III. Research Methodology

*a) Study Area and Design*

Jimma town is located at a distance of 365KM from the Capital city of Ethiopia. The study period is from (Jan-Jun, 2010).

This study was conducted to describe and analyze the women participation in micro-finance in Jimma Town of micro enterprises. All information were collected by using structured self-administered questionnaires and some secondary data.

*b) Target population*

The total number of population in our study particularly, the case of Jimma Town which composed of two micro-finances:-Harbu and Eshet micro-finances are 3679.

Out of these number of population only 80 samples was used for our study by using the selected sampling techniques.

*c) Sampling technique and Sample Size*

In this study the researcher was use purposive sampling technique that is one part of non-probability sampling. The researcher use prior knowledge to choose respondents to describe questioners were consider sample size 40 using the above method.

*d) Data analysis procedure*

The collected data checked for its completeness and coded on SPSS Version 16. Descriptive analysis was used. Frequency table, mean standard deviation was used to describe the data. In the analysis of qualitative data, the researcher begins with the description of informant's responses and analyzing of open ended questionnaires.

## IV. Reuslt and Discussion

This study defines the participation of women in micro-finance in Jimma town by means of different variables that can measure and set results of women participation in MF. To effectively understand how women participation affected by different variables, one must understand the environment in which MF and women interact, so that the MFI can take action to provide, promote and give service (credit and debit) that satisfy women expectations and on the other hand the results obtained from study is very helpful in providing a foundation information for future research in emerging foundation information for future research in an emerging area of women participation for the credit and debit in general.

This chapter deals with the results that are obtained from the respondents of the questionnaire that the women participation in MFI, these are factors that affect them to participate and not to participate such as age, religion, sex, literacy status, income and profit.

Hence in order to bring about effective concept and understanding of the subject matter, discussing all the result is deemed to be necessary.

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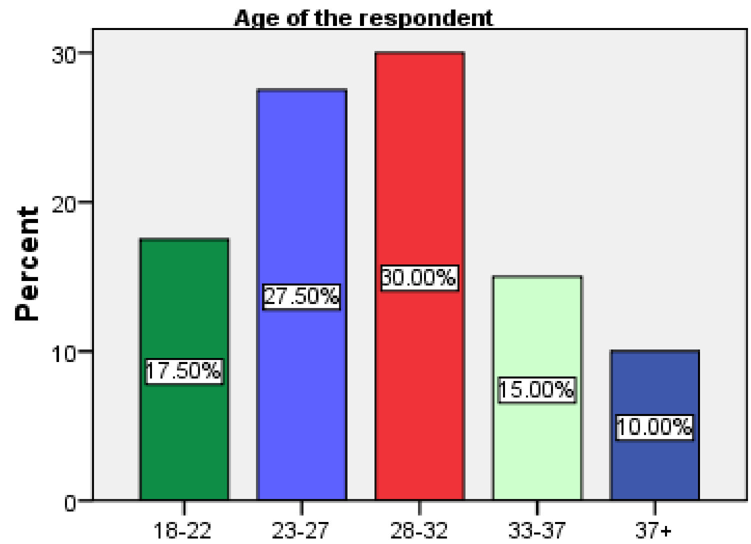


*Figure 4.1 :* Age category of respondent

As it can been seen from the above bar graph the age of the respondents (participant) which lies between 28 and 32 is the leading age group. Then 23-27, 18-22, 33-37, and above 37 age group follows. These age groups accounts for 30.0%, 27.5%, 17.5%, 15.0% and 10.0% respectively. From this we saw that major of the respondents are between 28-32 age group. Because the Micro Finance encourages the youth population of those who are not employed.

We grouped each client's age starting from 18 and above that. Because the person who takes a loan should have to be independent of any other body. In addition to this they must be responsible for all action they performs regarding with each micro-finance institutions.

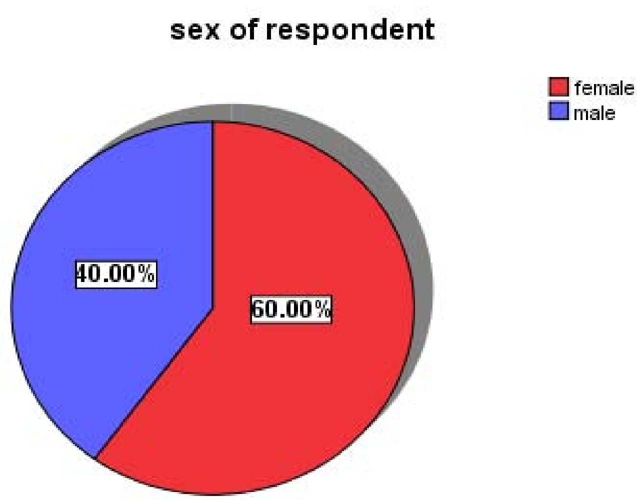


*Figure 4.2 :* Pie chart plot of sex of respondent

From the above pie chart plot of sex of respondent we observe that the majority of respondents are female. A male respondent takes the second place. When expressed in percent about 60.0% of respondents are female and male consists of 40.0%. The reason why woman's stands first is that MFIS initiates mainly women to participate.

*Table 4.1 :* Frequency table of religion of respondent

| | | Frequency | Percent | Cumulative Percent |
|---|---|---|---|---|
| religion of respondent | orthodox | 14 | 35.0 | 35.0 |
| | protestant | 13 | 32.5 | 67.5 |
| | catholic | 3 | 7.5 | 75.0 |
| | Muslim | 10 | 25.0 | 100.0 |
| | Total | 40 | 100.0 | |

As shown in the above frequency table most of respondents in MFIS are orthodox 14(35.0%).

Following this, protestant, Muslim and catholic are 13(32.5%), 10(25.0%) and 3(7.5%) respectively. Even though orthodox is the dominant, the MFIS give equal opportunity to all religion.

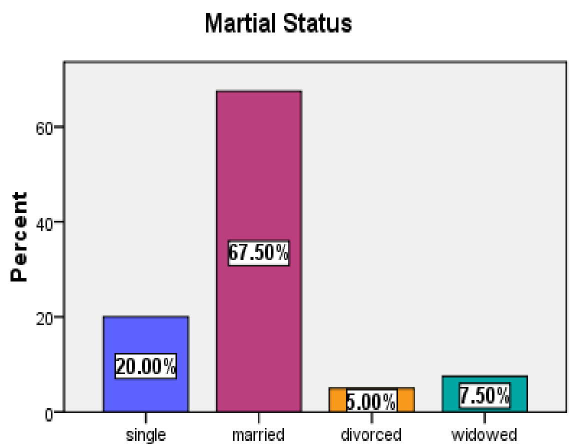


*Figure 4.3 :* Bar chart of marital status of participant

The bar graph shows the marital status of respondents. According to this graph the married has the highest percent (67.5%), and then Single, Widowed and Divorced are follows (20.0%), 7.5% and (5.0%) respectively. Here the number of married participants is high since their family size is larger as compared to the other. This refers that they need additional support as well as much capital in order to improve their living standard.

*Table 4.2 :* Literacy status of the respondents

| | | Frequency | Percent |
|---|---|---|---|
| literacy status | Illiterate | 2 | 5.0 |
| | Read and write only | 5 | 12.5 |
| | 1-6grade | 3 | 7.5 |
| | 7-12grade | 10 | 25.0 |
| | Collage certificate | 17 | 42.5 |
| | bachelor's degree and above | 3 | 7.5 |
| | Total | 40 | 100.0 |

From the above Table collage certificate respondents occupied the first rank (42.5%), about (25.0%) of respondents are 7-12 grade, (7.5%) are bachelor degree and above and (7.5%) are those who are 1-6 grade and the least are (5.0%) participants are illiterate. From this we can conclude that the persons who are illiterate have no confidence to take loan from MFIS.

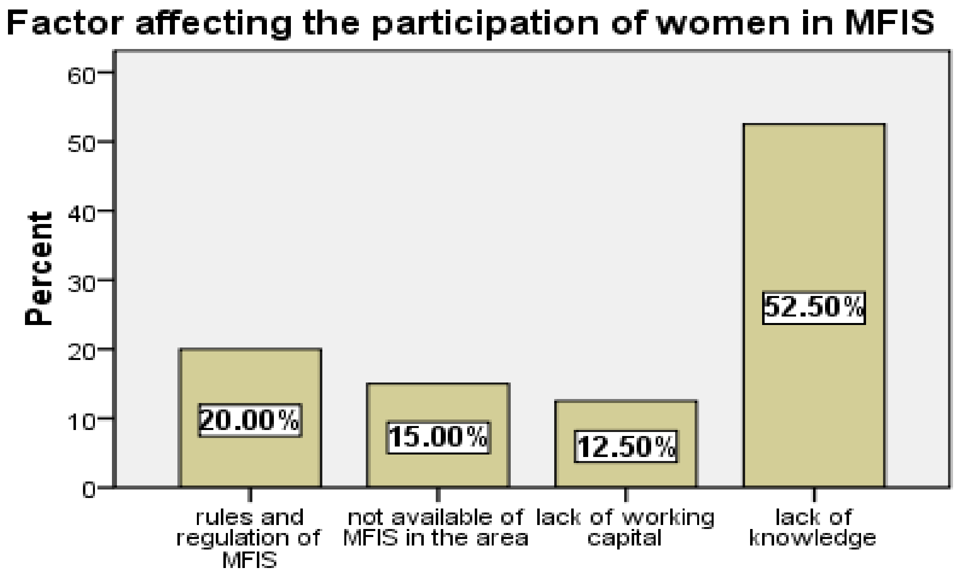


*Figure 4.5 :* Factors affecting the women participation in MFIs

From the above bar-chart of factors affecting women participation in MFIS, 20.0% are rule and regulation of MFIS, 15.0% are not available of MFIS in the area, 12.5% are lack of working capital, 52.5% are lack of knowledge.

Hence the most percentage indicates the lack of knowledge because managing many needs a good knowledge.

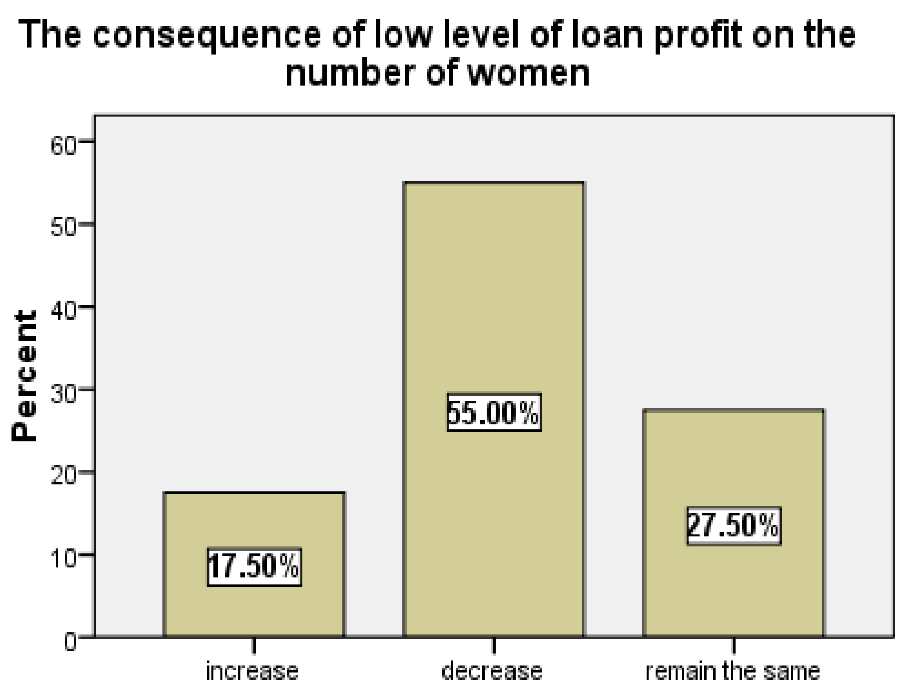


*Figure 4.6 :* The consequence of low level of loan profit on the number of women

From the above bar chart we observe that as amount loan provided decrease, the number of women participant decreases more. To specify this about 55.0% of them are those who are decreases in number and 27.5% of the others are remain the same. Even though this is the case, about 17.5% of participants are increases.

*Table 4.2 :* The way of increasing the women participation in MFIS

| | | Frequency | Percent |
|---|---|---|---|
| women participation | Educating women about the usefulness of MFIS | 21 | 52.5 |
| | increasing the number of MFIS in the area | 10 | 25.0 |
| | preparing the conformable working place for them | 9 | 22.5 |
| | Total | 40 | 100.0 |

As you notice from the above table, the best and the appropriate method to increase women participation is,. Educating women about the usefulness of MFIS And about 52.5% respondents support this method. And then increasing the number of MFIS in the area is the second most important method of increasing the women participation which is 25.0%. Preparing comfortable work place for women is the last alternative means of increasing the women participations that is about 22.5% of the respondents.

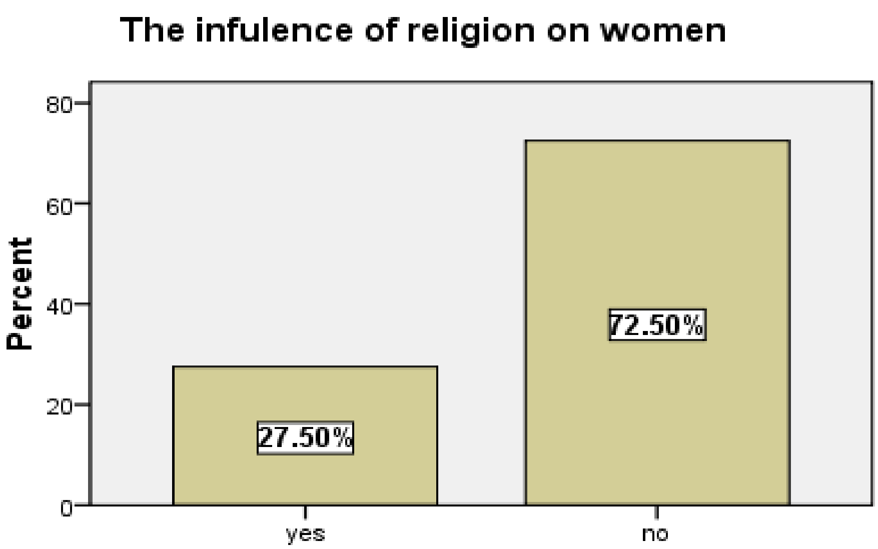


*Figure 4.7 :* The influence of religion on women

From the above bar charts about 72.5% of participants' responds that there is no religion influence on women to take part in the institutions and the rest for 27.5% of the participant replies that there is an influence of religion on women participation. Hence most participants are not influenced by religion to take part in the institutions.

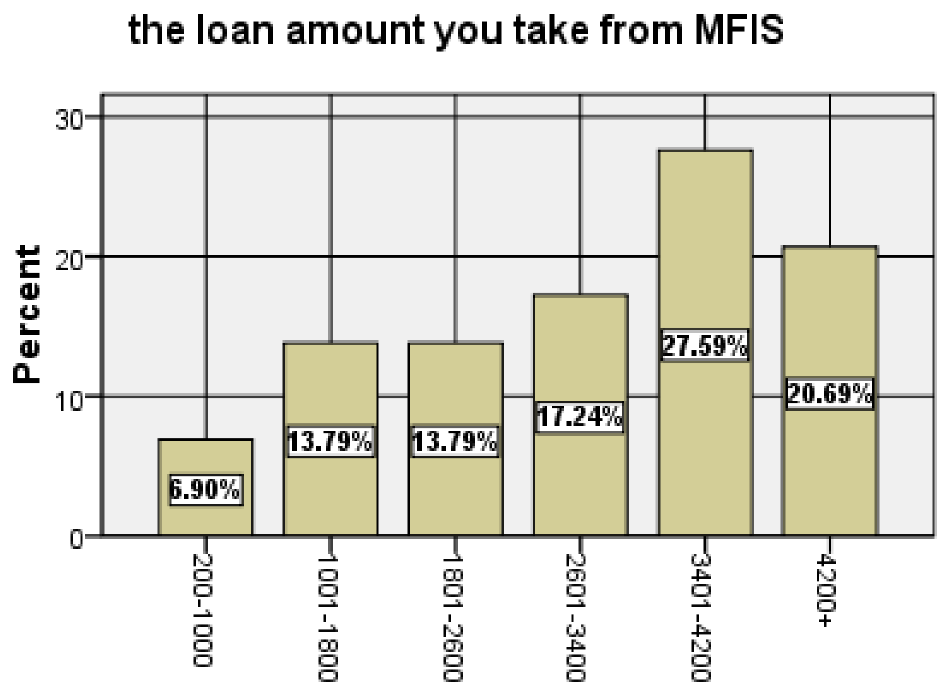


*Figure 4.8 :* The loan amount each participant (client) takes from MFIS

As it can be seen from the figure 4.8, 13.79% of the participants take 1801-2600 birr loan amount from MFIS, where as 17.24%of those who take 2601-3400birr loan amount. On the other hand 27.59% of participants take 3401-4200birr, about 13.79% of the participants are those who take1001-1800birr loan from MFIS. In addition to this, about 6.9%, 20.69% of the participants are those who take loan between 200-1000and above 4200 birr loan amount from MFIS, respectively.

Generally, the above result shows that the majority of participants take loan amount between 3401-4200 birr from MFIS and the least of them are those who take loan amount 200-1000. Here the amount loan is restricted because, as the name indicates, MFIS are those institutions who encourage the participants (clients) who have lower level of income with respect to their capital. This is because those MFIS have lower capital at maximum of 5000 birr with regarding our research and it is not possible to give loan for investment purpose and other which are beyond their capital.

*Table 4.3 :* Frequency table of the purpose of loan you take from MFIS

| | | Frequency | Percent |
|---|---|---|---|
| purpose of loan | to open shop | 10 | 25.0 |
| | for home consumption | 6 | 15.0 |
| | for bakery purpose | 3 | 7.5 |
| | to open restaurant | 8 | 20.0 |
| | to open bar | 2 | 5.0 |
| | Total | 29 | 72.5 |
| Missing | System | 11 | 27.5 |
| Total | | 40 | 100.0 |

As it can be observed from the above frequency table 10(25%) of the participant taking the loan for the purpose of opening shop and 3(7.5%), 2(5.0%),8 (20.0%)and 6(15.0%) take a loan from MFIS for the purpose of bakery, open bar, open restaurant and for home consumption respectively.

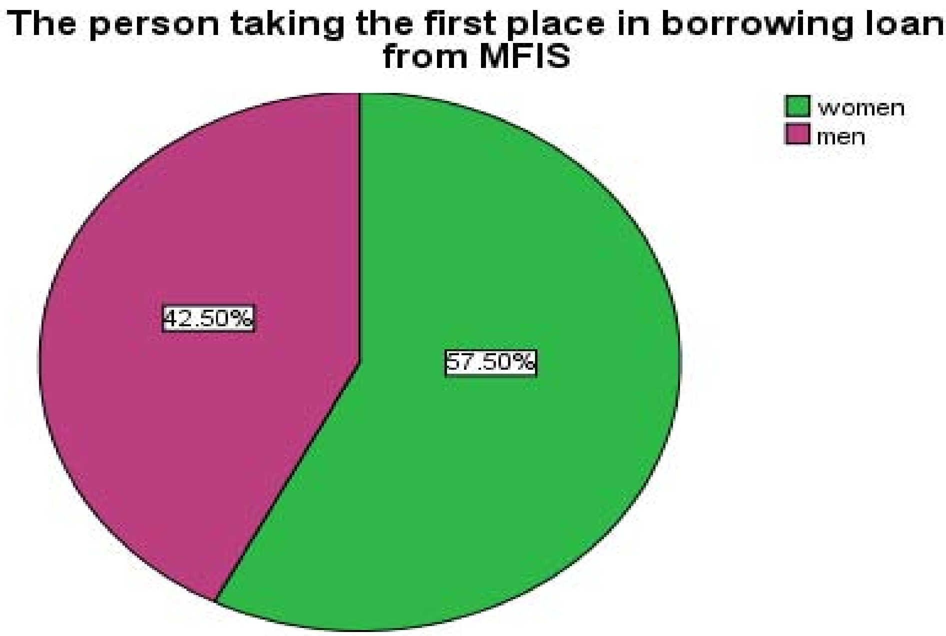


*Figure 4.9 :* Gender taking the first place in borrowing loan from MFIS

From the above pie chart that shows gender that take the first place in borrowing loan from MFIS, it is women who occupied the first rank in borrowing loan from MFIS. They consist of (57.5%) of total participant. And male participants take the second place (42.5%).

Hence, MFIS initiate women to participate a greater number.

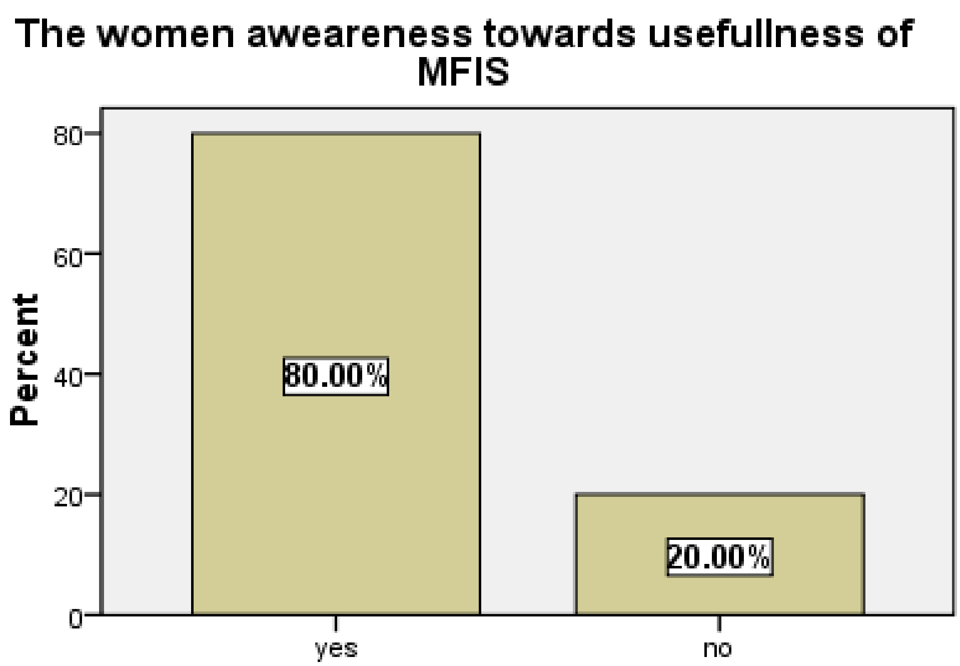


*Figure 4.10 :* Women awareness towards usefulness of MFIS

We observe from the bar chart that the majority of women recognized the importance of the MFIS.

They accounts for *(80.0%)* but a fewer women haven't yet known the usefulness of the institutions (20.0%).

Since, most number of women have awareness, this in turn results in a greater number of women to participate in the MFIS.

*Table 4.4 :* the cross tabulation table of sex of respondent and sex discrimination

| | | Sex discrimination by MFIS | | Total |
|---|---|---|---|---|
| | | yes | no | |
| sex of respondent | female | 4 | 14 | 18 |
| | male | 13 | 7 | 20 |
| Total | | 17 | 21 | 38 |

The above table shows that the cross tabulation between sex and sex discrimination hence, from Female: about 23.5% respond there is sex discrimination, and about 66.7% said there is no sex discrimination by MFI. Male: 76.5% stated sex discrimination is highly practiced, 33.3% respond there is no sex discrimination at all.

As the total percent within sex of respondent indicates, 44.7% replied that MFI discriminate sex and about 55.3% of the respondent replied that the MFIS do not discriminate their participant based on the sex. Hence, we conclude that more males stated that there is sex discrimination by MF than females.

This refers that, even though there is no sex discrimination in the micro finance institutions, the micro-finance encourage women's most of the time.

*Table 4.5 :* the cross tabulation between literacy status and loan taking from MFI.

| | | Taking loan from MFIS | | Total |
|---|---|---|---|---|
| | | yes | no | |
| Literacy status of the respondent | illitrate | 2 | 0 | 2 |
| | Read and Write only | 4 | 1 | 5 |
| | 1-6grade | 4 | 0 | 4 |
| | 7-12grade | 9 | 1 | 10 |
| | collage certificate | 10 | 6 | 16 |
| | bachelor's degree and above | 0 | 3 | 3 |
| Total | | 29 | 11 | 40 |

As we observe from the above table, 31.0% of the respondents who take loan from MFIS are those whose educational levels are 7-12grade but about 9.1% responded as they do not take loan from MFS. The respondent who have Collage certificate take loan from MFS accounts for 34.5%, but 54.5% responded as they do not take loan from MFS. The rest of respondents are mention in the table

## V. Conclusion

Poverty and food in security are the main challenges and trend mental issues of economic development in Ethiopia. It is evident that in all developing countries the vision is to have aware developed economy in the long run. However, this is impossible without having aware developed industrial sector which absorbs more labor force there by reducing the level of unemployment. Apparently, reduction of unemployment and food insecurity, the federal government of Ethiopia has implementing different development program.

To this end a new approach was designed and successfully tried in many developing countries to expand women's empowerment and self-employment opportunities to the poor and jobless people through the provision of MF that promotes the growth of small-scale enterprises.

Depending up on this study we conclude the following points:

- ✓ The analysis shows that there is a strong association between literacy status and women's awareness towards the usefulness of MFIS.
- ✓ The loan disbursement of the two MFIS shows there is incredible increment from year to year so as to help poor women and unemployed through provision of loan.
- ✓ It was found that the micro-financing schemes have contributed positively to the development of small-

scale enterprise and a sense of entrepreneurship attitude.

- ✓ Most of the participants (clients) have taken a loan from each MFIS for the purpose of opening shop since they are provided with inadequate amount of capital.
- ✓ To overcome the small number of women participation problem in each MFIS, increasing the number of MFIS in the area is the best way among the other methods.

## VI. Recommendations

Since there are some operational problems of clients after the loan, so corrective measures should be taken by MFIS such as; giving training, increase the initial loan diversifying the economic activities in collaborations with government and decline of bureaucracy in giving the loan.

The MFIS should have to create awareness about the usefulness of the institutions for the participants (clients). The institutions should provide optional loan life; provide sufficient amount of supervision, encourage saving further and keeping records as well as training and counseling to the women so as to enhance the living standard of the poor. There should not be discrimination based on the grounds of religion, sex, literacy status.

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# Pareto-improving Risk Selection in Social Health Insurance

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*Keywords: risk selection, social health insurance, Pareto improvement.*

*GJMBR - B Classification : JEL Code: D82, I38, L51*

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# Pareto-improving Risk Selection in Social Health Insurance

Peter Zweifel [α] & Michael Breuer [σ]

*Abstract-* Social health insurance traditionally imposes mandatory membership in a single pool in the aim of improving the welfare of high risks. However, this creates two problems, inefficiency of a monopolistic scheme and insufficient adaptation to individual preferences. Competition combined with a risk adjustment scheme can be used to improve efficiency. In the presence of preference heterogeneity, risk selection may improve adaptation to individual preferences, resulting in Pareto improvement over the pooling contract. This is shown to be possible both under perfect and imperfect risk adjustment.

*Keywords: risk selection, social health insurance, Pareto improvement.*

## I. Introduction

Social health insurance has two main justifications. One, widely accepted by economists, is the possibility of market failure. The other is equity, calling for redistribution in favor of high risks. Usually, this is interpreted as a requirement to have identical contributions from low and high risks. However, this condition creates incentives for competing health insurers to eschew high risks while attracting low risks (Newhouse, 1996). To avert market failure while securing redistribution, most governments impose mandatory membership in a single pool comprising risks of all types. Such a monopolistic scheme has the advantage of providing coverage at low cost due to the absence of a loading for acquisition expenses (Mitchell and Zeldes, 1995). However, it also has its disadvantages. First, not being subject to the pressure of competition, it does not guarantee the efficient use of resources (in the sense of least-cost production of insurance). Second, heterogeneous preferences of consumers regarding the extent and structure of insurance coverage are not likely to be respected [for empirical evidence suggesting heterogeneity of preferences with regard to health insurance see e.g. Zweifel and Leukert-Becker (2014)]. Lacking the exit option available in a competitive insurance market, consumers have to fall back on the (political) voice option, which is less effective by far for expressing preferences (Hirschman, 1970).

In an attempt to create incentives for the efficient provision of social health insurance, several countries (in particular Germany, The Netherlands, and Switzerland) have introduced competition to this branch of social insurance (Van de Ven et al., 2007). However, as long as contributions do not reflect differences in risk and hence expected cost, competing social health insurers have an incentive to attract consumers with low expected future healthcare expenditure (HCE) while eschewing those with high expected HCE. This 'risk skimming' is generally viewed as undesirable, calling for a risk adjustment (RA) scheme to complement premium regulation (Van de Ven and Ellis, 2000; Glazer and McGuire, 2014). However, payments into the RA scheme ultimately fall on the low risks in the guise of increased premiums, while high risks benefit from RA. Therefore, RA needs to neutralize risk-selection incentives both on the part of insurers and on the part of consumers (Zweifel, 2013a).

On the other hand, total absence of risk selection amounts to a situation where the insured have neither an incentive nor the possibility to express their preferences regarding type and amount of coverage. Therefore, this paper addresses the question of whether risk selection in social health insurance could be efficiency-enhancing, resulting in Pareto improvement. It will be shown that both under perfect and imperfect RA, risk selection can make some risks better off without worsening the situation of the others. The condition is that they pay for the coverage of their choice according to a contribution function that keeps the amount of transfer in favor of the high risks constant. When it comes to reducing coverage, the terms of this contribution function are less favorable than those of the pooling contract imposed by social health insurance; in return, the low risks are released from purchasing the concomitant amount of coverage, which is excessive for them.

This paper starts with the case of perfect RA (Section I). After a short introduction to RA (Section II), it will be shown that risk selection can be Pareto-improving over the pooling contract usually imposed by social health insurance. These results then are extended to the case of imperfect risk RA (Section III). Section 4 concludes.

## II. Social Health Insurance under Perfect Risk Adjustment

The benchmark model is one of a competitive insurance market without any redistribution. Individuals

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are characterized by a von Neumann-Morgenstern utility function $U(Y)$ with $U'(Y)>0$ and $U''(Y)<0$, indicating risk aversion with regard to wealth $Y$. High risks (index H) have a higher probability of loss $\pi_H > \pi_L$, than low risks (index L), i.e.

Contrary to popular assumptions, in this paper insurers are viewed as capable of distinguishing between the two types (otherwise, there would not be too much point in engaging in risk-selection activities and in attempting to counteract them through RA). The many ways insurers can acquire information for categorizing risks are described e.g. in Crocker and Snow (2014). They also show the potential of Pareto improvement by risk classification, without however taking into account RA, which has been prominent in health insurance.

With the amount of loss ($L$) the same for the two types for simplicity, expected utility of the low risks is given by

$$EU_L = \pi_L U\left(Y-P_L-L+q_L L\right)+\left(1-\pi_L\right)U\left(Y-P_L\right), \quad (1)$$

and for the high risks,

$$EU_H = \pi_H U\left(Y-P_H-L+q_H L\right)+\left(1-\pi_H\right)U\left(Y-P_H\right). \quad (2)$$

Initial wealth Y is exogenous. In the no-loss state, individuals pay premiums ($P_L$, $P_H$); in the loss state, they receive payment equal to the shares ($q_L$, $q_H$) of the loss.

Let there be two competitive insurance plans, one insuring the high, the other the low risks. They must satisfy the break-even condition,

$$P_i = \varphi \pi_i q_i L, \quad i = L, H. \quad (3)$$

Premiums cover not only expected cost but also contain a loading factor $(\varphi > 1)$ for administrative expense that is assumed to be the same for both risks [see Zweifel (2013b) for the case where the loading factor for high risks exceeds that for the low ones and hence the potential of partial coverage imposed by mandatory social insurance to result in Pareto improvement]. Substituting (3) into (1), differentiating (1) w.r.t. $q_L$, and rear-ranging terms gives an implicit condition for the optimal rate of coverage (if positive),

$$\frac{U'_{Loss}}{U'_{No\ Loss}} = \frac{(1-\ \ _i)}{1-\varphi\pi_i} > 1, \qquad i = L, H; \quad (4)$$

[see e.g. Doherty (1976)]. Since the marginal utility of wealth must be higher in the loss than in the no-loss state, condition (4) implies less than complete coverage $(q_i < 1)$. A private health insurance market would therefore lead to an equilibrium with low risks buying partial insurance coverage, thus attaining expected utility $EU_L^o$. High risks, on the other hand, would (given the single crossing property assumption) prefer a higher degree of (still partial) insurance coverage, yielding expected utility $EU_H^o$, with $EU_H^o < EU_L^o$.

Although this equilibrium would be sustainable and Pareto-efficient, it may not be acceptable in social health insurance for distributional reasons. Let, acceptable' mean having high and low risks pay the same premium $\bar{P}$ for the same coverage $\bar{q}$, in keeping with the solidarity philosophy of social health insurance. If g denotes the proportion of low risks in the insured population, this uniform premium would have to be set at

$$\bar{P} = g\cdot\varphi\bar{q}\pi_L L + \left(1-g\right)\cdot\varphi\bar{q}\pi_L L$$

$$= \left[g\pi_L + \left(1-g\right)\pi_H\right]\varphi\bar{q}L = \varphi\bar{\pi}\bar{q}L, \quad (5)$$

with $\bar{\pi} = g\pi_L + \left(1-g\right)\pi_H$. Therefore, $\bar{\pi}$ denotes the average probability of loss in the entire population. Throughout, it is assumed for simplicity that the two risk types call for the same loading factor $\varphi$, regardless of the way insurance is organized. Obviously, $P_H \geq \bar{P} \geq P_L$. However, this implies $\bar{P} < \varphi\bar{q}\pi_H L$, causing the plan enrolling high risks to become insolvent (given lack of observability of risk type). In order to prevent this from happening, a RA scheme is needed that compensates a plan for enrolling high risks and sanctions a plan for enrolling low risks (Van de Ven and Ellis, 2000; Glazer and McGuire, 2014). By implementing (perfect) RA, a social insurance scheme can permit competition between regulated health insurers, as e.g. in The Netherlands.

In this section, RA is assumed to be perfect.[1] In a perfect RA scheme, the high-risk insurer is fully compensated for its excess expenses caused by its unfavorable insurance population. It therefore receives a transfer given by

$$T_p = \left(1-g\right)\left(\varphi\bar{q}\pi_H L - \varphi\bar{q}\bar{\pi}L\right), \quad (6)$$

with $T_p$ denoting the RA transfer in case of a perfect RA scheme. This implies that the after-transfer premium paid by the high risks after transfer is given by

$$P_H^t = P_H - \frac{T_p}{1-g}$$

$$= \varphi\bar{q}\pi_H L - \frac{\left(1-g\right)\left(\varphi\bar{q}\pi_H L - \varphi\bar{q}\bar{\pi}L\right)}{\left(1-g\right)}$$

$$= \varphi\bar{q}\bar{\pi}L = \bar{P} \quad (7)$$

[1] For the case of imperfect risk adjustment, see Section III.

By analogy, using (3) and (6), the premium to be paid by the low risks including the transfer can be shown to equal $\overline{P}$,

$$P_L^t = P_L \frac{T_p}{g} = \overline{P}. \qquad (8)$$

With perfect RA, every insurer can calculate its premium as though its members constituted a sample having exactly the same risk characteristics as the population at large. This also means that the expected losses incurred by the high-risk plan amount to the expected gains accruing to the low-risk plan, resulting in budget balance of the RA scheme,

$$g \cdot \left(\overline{P} - \varphi \overline{q} \pi_L L\right) = \left(1-g\right)\left(\varphi \overline{q} \pi_H L - \overline{P}\right) = T_p \qquad (9)$$

in view of (6). Solving the first equation of (9) for   yields condition (5), which proves that perfect RA implies budget balance.

In terms of figure 1 below, any pooling of low and high risks calls for a premium that is represented by a straight line lying between $AB_L$ and $AB_H$. Let $AD_P$ represent the pool that comprises the population at large. With perfect RA, every plan can offer insurance coverage at that price as long as all members get identical coverage $\overline{q}$, which has to be prescribed by the government. Government-mandated coverage must be ample enough to make sure that high risks enjoy a higher expected utility in social insurance ($EU_H^S$) than they could achieve in a competitive insurance market without any redistribution ($EU_H^o$). Formally, this condition reads,

$$\begin{aligned} EU_H^S &= \pi_H U\left(Y - \overline{P} - L + \overline{q}L\right) \\ &\quad + \left(1-\pi_H\right)U\left(Y - \overline{P}\right) \geq \\ EU_H^0 &= \max_{q_H} EU_H = \pi_H U\left(Y - P_H - L + q_H L\right) \\ &\quad + \left(1-\pi_H\right)U\left(Y - P_H\right). \end{aligned} \qquad (10)$$

The existence of a uniform contract $\left(\overline{P}, \overline{q}\right)$ that satisfies condition (10) can be demonstrated as follows. For $\overline{q} = q_H$, one has $EU_H^S > EU_H^0$ because by assumption, the high risks opted for some coverage at a premium $P_H$ that was higher than $\overline{P}$. Conversely, for $\overline{q} = 0$, their expected utility must be less than $EU_H^0$. Therefore, there exists a $0 < \overline{q} \leq q_H$ which permits the high risks to attain an expected utility level $EU_H^S$ at least as high as $EU_H^0$.

However, the government might want to fix a minimum level of insurance coverage not only in the interest of high risks but of all individuals in an attempt to prevent them from relying on public welfare in case of loss, acting as free riders. To avoid free riding, low risks too may be obliged to buy minimum coverage in this case, which causes the scope of Pareto improvement through risk selection to be reduced (see Section 2.3). In practice, compulsory coverage in social health insurance is likely to be politically determined, as analyzed e.g. in a median voter model (Breyer, 1995). For present purposes, it can be set arbitrarily, subject only to the restriction (10).

The effect of perfect RA in combination with social health insurance can be shown as follows. Let government-mandated coverage be AF in figure 1, with rate of coverage $\overline{q}$. Given budget balance for the RA scheme, a movement away from A along AF reflects a higher amount paid into and subsidies received from the RA scheme. This can be seen from differentiating (6) w.r.t. to $\overline{q}$, yielding

$$\frac{\partial T_p}{\partial \overline{q}} = \left(1-g\right)\left(\varphi \pi_H L - \varphi \overline{\pi} L\right) > 0. \qquad (11)$$

Compared to the equilibrium that prevails in the insurance market without any governmental regulation, at point F high risks enjoy a higher expected utility, as shown in the text below eq. (10). However, low risks may suffer a loss compared to the situation without any government regulation. They would have selected point C on the insurance line ABL (recall that premiums contain a proportional loading) given the assumption that insurers are able to categorize risks.

Since according to eq. (8) the transfer has to be financed by the low risks, eq. (11) implies that an increase of $\overline{q}$ at the uniform premium imposed by social insurance serves to reduce the expected utility of low risks. Note that this statement needs to be qualified in the presence of supplementary private health insurance (Dahlby, 1981). In that case, the low risks have to trade off their higher average contribution against the relaxation of the rationing constraint imposed on them by the separating contracts written by private insurers. Dahlby's analysis has been extended to include moral hazard effects (Boadway et al., 2006), insurance regulation (Neudeck and Podczek, 1996), and combined with taxation (Crocker and Snow, 1985). However, private supplementary insurance is neglected for simplicity and because the possibility of Pareto improvement through risk selection within social health insurance is emphasized here.

In sum, low risks gain if permitted to curtail coverage imposed by social health insurance, *ceteris paribus.* However, such a reduction would fail to be Pareto-improving since it would amount to a reduction of the transfers received by the high risks, causing them to suffer a welfare loss. Pareto improvement requires that low risks pay a unit price for their insurance coverage according to a specific contribution function, to be derived in the next section.

*The contribution function for low risks*

In social health insurance, the subsidies for the high risks are financed by the low risks, who are forced to be in the common insurance pool. Since mandated coverage $\overline{q}$ is fixed in the interest of the high rather than the low risks [see condition (10)], low risks presumably gain if permitted to choose their own degree of coverage $q_L$. The condition for this to be true will be derived in Section III; the objective at this point is merely to derive the contribution function for low risks, specifying the conditions on which low risks can deviate from $\overline{q}$ without affecting the size of the transfer T (and hence the welfare of high risks). Intuitively, low risks might be permitted to buy less insurance coverage but at a higher price per unit (or more insurance coverage at a lower price per unit, respectively).

For formally obtaining the contribution function, the budget balance condition (9) for the RA scheme is modified to read,

$$g\left(P_L - \varphi q_L \pi_L L\right) = \left(1-g\right)\left(\varphi \overline{q} \pi_H L - \varphi \overline{q} \overline{\pi} L\right). \quad (12)$$

This reflects the fact that low risks may now opt for their own rate of coverage $q_L$ at premium $P_L$. From eq. (12), the contribution function $P_L^t$ of a low risk can be written as,

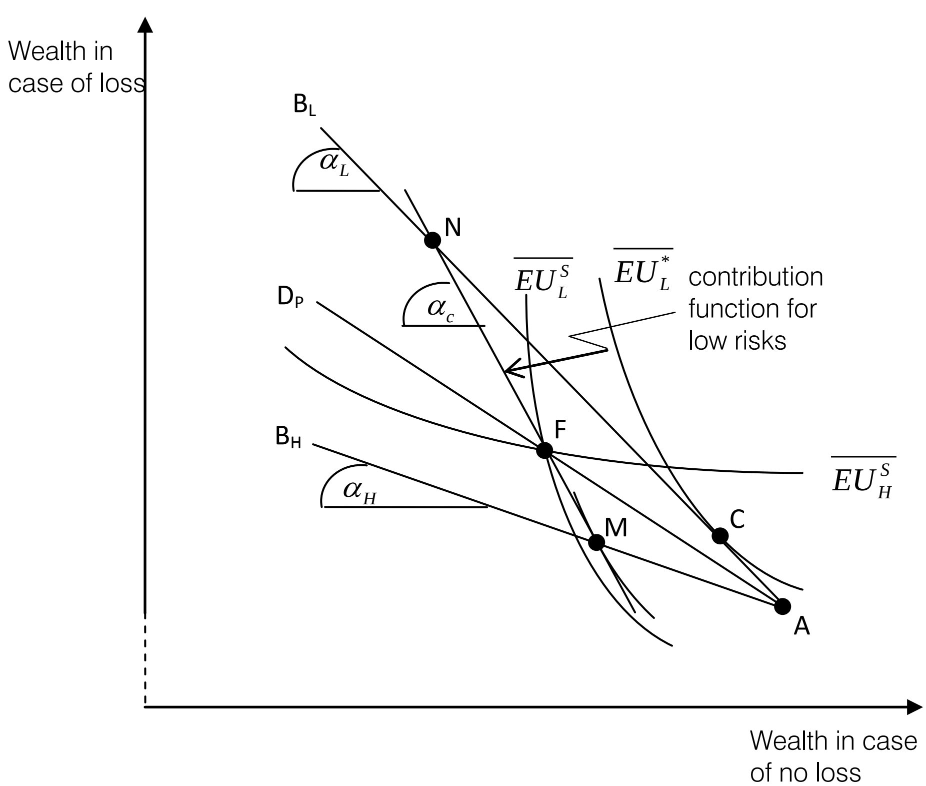


*Figure 1 :* The contribution function for low risks

$$P_L^t = \frac{1-g}{g}\left(\varphi\bar{q}\pi_H L - \varphi\bar{q}\bar{\pi}L\right) + \varphi q_L \pi_L L$$

$$= \frac{T_p}{g} + \varphi q_L \pi_L L \,, \qquad (13)$$

with $T_p$ defined in eq. (6). The first term after the second equality is the transfer going to the high risks per low-risk individual. The second term shows the sum needed to cover the expected loss of the low risks them selves.

The contribution function is illustrated in figure 1. The indifference curves $\overline{EU}_H^S$ and $\overline{EU}_L^S$ indicate expected utilities of the high and low risks, respectively, associated with government-mandated coverage AF.

The contribution function for low risks may be described as follows. One of its elements is represented by point N in figure 1 on the straight line $AB_L$, showing a situation where the low risks would be obliged to buy health insurance coverage in excess of $\bar{q}$ if they were to benefit from a unit price of coverage below $\bar{P}$. In return, at N they would not contribute to the RA scheme. Thus, N is an extreme point used for construction of the contribution function. Conversely, point M on NFM indicates the optimum of a low risk (with indifference curve just outlined). Thus, low risks can choose to buy less coverage than $\bar{q}$ provided they pay a higher price per unit of insurance coverage. Points M, F, and N represent the contribution function as given by eq. (13) which is associated with different amounts of coverage bought by low risks; they lie on a straight line because eq. (13) shows $P_L^t$ to be linear in $q_L$.

In figure 1, the rates at which wealth can be transferred from the no-loss state to the loss state are represented by the angles $\alpha_L$ (for the low risks) and $\alpha_H$ (for the high risks), respectively. The corresponding rate pertaining to the contribution function is indicated by $\alpha_C$. It is given by

$$\alpha_C = \frac{q_L L - P_L^t}{P_L^t}. \qquad (14)$$

This angle amounts to the benefit paid net of the premium, relative to the premium (transfers included). Substituting (13) into (14) gives $\alpha_C$ for the low risks as a function of their insurance coverage, with transfers to the high risks $T_p$ held constant[2],

$$\alpha_C = \frac{q_L L - \varphi q_L \pi_L L - \frac{T_p}{g}}{\varphi q_L \pi_L L + \frac{T_p}{g}}. \qquad (15)$$

Differentiation of eq. (15) with respect to $q_L$ yields the decrease of $\alpha_C$ that low risks have to accept when they want to reduce their rate of coverage in social health insurance,

$$\frac{\partial \alpha_C}{\partial q_L} = \frac{gLT_p}{\left(g\varphi q_L \pi_L L + T_p\right)^2} > 0 \text{, i.e.}$$

$$\frac{\partial\left(1/\alpha_C\right)}{\partial q_L} < 0. \qquad (16)$$

Therefore, low risks face more favorable insurance terms when they buy more coverage -- albeit at a decreasing rate, with the decrease the more marked, the higher the share of favorable risks $g$ and the higher the loading factor $\varphi$, with the effects of the two reinforcing each other [see the denominator of eq. (16)]. Conversely, the price per unit insurance coverage $(1/\alpha_C)$ paid by the low risks unambiguously increases in response to a decrease in $q_L$, and progressively so with increasing values of $g$ and $\varphi$, reflecting the need to ensure constancy of the transfer in favor of high risks.

Figure 2 illustrates the dependence of $(1/\alpha_C)$ on $q_L$ and $\bar{q}$.[3] First, a reduction in the degree of coverage opted for by the low risks $q_L$ corresponds to a movement from left to right on the $q_L$ -axis. The contribution function exhibits a progressively increasing slope, indicating that low risks who reduce their coverage are confronted with increasingly unfavorable terms. Since membership in social health insurance is not voluntary, $\alpha_C < 1$ may occur, resulting in a marginal price of (decreased) coverage $(1/\alpha_C) > 1$. Second, $(1/\alpha_C)$ also increases progressively with $\bar{q}$, the degree of coverage mandated by social health insurance $\bar{q}$, reflecting the ever higher amount of cross-subsidization in favor of the high risks that needs to be financed through the contribution function.

[2] Clearly $\alpha_C > 1$ under normal circumstances because otherwise the insured would have to give up a unit of his income in terms of premiums with probability of one while receiving less than a unit in the event of loss, which occurs with probability less than one (but see the remark at the end of this subsection). Thus they could do better by simply saving. However, the straight line $AD_P$ in figure 1 is drawn with a flat slope to make the figure more easily readable.

[3] In figure 2, the values for the other variables are as follows: $L$ = 40, $\varphi$ = 1.1, g = 0.5, $\pi_H$ = 0.5, and $\pi_L$ = 0.25. For a meaningful interpretation of eqs. (9) to (16) and figure 2, note that of course $\bar{P}$ must not exceed the expected loss (including the loading factor) of the high risks, because otherwise the high risks would subsidize the low risks. Conversely, for a given $\bar{P}$, it does not make sense to let $\bar{q}$ become too small.

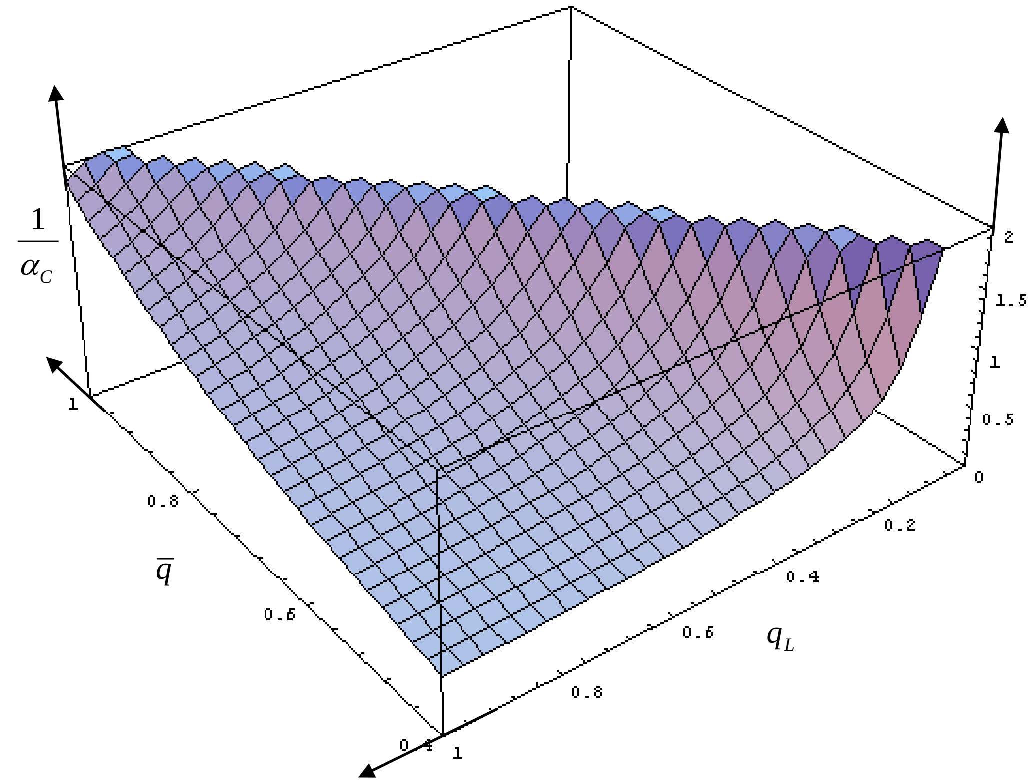


*Figure 2 :* Price per unit of coverage $1/\alpha_C$ as a function of degrees of coverage $q_L$ and $\bar{q}$, respectively

*Conclusion 1:* Under perfect risk adjustment, a contribution function for the low risks can be determined such that they can freely choose their degree of coverage, provided their amount of transfer to the high risks remains constant. For a reduction of coverage, this function calls for a progressively increasing price per unit coverage.

## III. Pareto Improvement in Social Heath Insurance

### a) *Perfect Risk Adjustment*

In this section, a RA scheme is introduced. In a fist step, it is assumed to be perfect for a benchmark, although this can be shown to be an impossibility (see Section III below). Pareto improvement requires that when permitted to move away from the combination $\bar{P},\bar{q}$ initially prescribed by social insurance, the low risks enjoy an increase in expected utility over the pooling contract without causing that of the high risks to decrease,

$$\max_{q_L} EU_L^t > EU_L^S\left[\bar{P},\bar{q}\right] \tag{17}$$

s.t. $EU_H^S\left[\bar{P},\bar{q}\right] = \text{constant}$, with

$$EU_L^t = \pi_L U\left(Y - P_L^t - L + q_L L\right) + \left(1-\pi_L\right) U\left(Y - P_L^t\right),$$

$EU_L^S$ and $EU_H^S$ denoting expected utilities associated with mandated coverage (see point F of Figure 1), and $P_L^t$ given by eq. (13). Thus, the constraint is satisfied if the high risks continue to be able to attain $\left(\bar{P},\bar{q}\right)$. This means that the low risks pay the contribution $P_L^t$. Using eq. (13), the problem (17 can thus be rewritten as

$$\max EU_L^t > EU_L^S\left[\bar{P},\bar{q}\right] \tag{18}$$

s.t. $P_L^t = \frac{T_p}{g} + \varphi q_L \pi_L L$.

Next, one needs to show that by choosing $q_L < \bar{q}$, low risks indeed attain higher expected utility. First, note that the optimality condition (4) causes that the contribution function (13) does not modify the marginal cost of coverage. Indeed, differentiating (13) with respect to $q_L$ yields

$$\frac{\partial P_L^t}{\partial q_L} = \varphi \pi_L L, \tag{19}$$

which corresponds to differentiating eq. (3) for *i* = *L*. Condition (4) thus needs to be satisfied again for *i* = *L*. Given that ($\bar{P},\bar{q}$) entails partial coverage, condition (4) is satisfied at that point. However, if low risks move away from ($\bar{P},\bar{q}$), the reason must be that they can attain higher expected utility. With the constraint in (18) satisfied, this proves Pareto improvement.

The geometry is shown in figure 3, which repeats elements (points A and F as well as straight lines $AB_L$ and $AD_P$ and the indifference curves) of figure 1. The contribution function GBL' runs parallel to $AB_L$, in keeping with eq. (19). Movement away from A along AG reflects the reduction in wealth suffered by the low risks as they have to bear an increasing transfer in favor of the high risks. This transfer equals $T_p/g$ [see eq. (13)]; since it is independent of insurance coverage, it amounts to a tax that diminishes wealth irrespective of the occurrence of loss.

Competing social health insurers can offer coverage along GBL' without harming high risks as long as RA is perfect. The low risk depicted in figure 3 opts for decreased coverage (optimum at point E, indifference curve just outlined), which is the normal case. Depending on preferences, a low risk might also choose to do without any insurance coverage and just pay the social health insurance tax (optimum at point G). Finally, if initially prescribed coverage were as low as GD, even the low risk depicted would opt for an extension of coverage (optimum at point E). All of these adjustments result in Pareto improvement.

However, to make sure that low risks pay the transfers in full irrespective of their choice of insurance plan, RA must have a particular property. Indeed, transfer payment needs to be fixed at $(\bar{P},\bar{q})$ before the low risks get a chance to reduce their health insurance coverage. Otherwise, the appropriate contribution level cannot be determined. In terms of figure 3, both risk types must be at point F initially.

*Conclusion 2:* Under perfect risk adjustment and the concomitant contribution function for low risks, risk selection results in Pareto improvement over the pooling contract usually imposed by social health insurance.

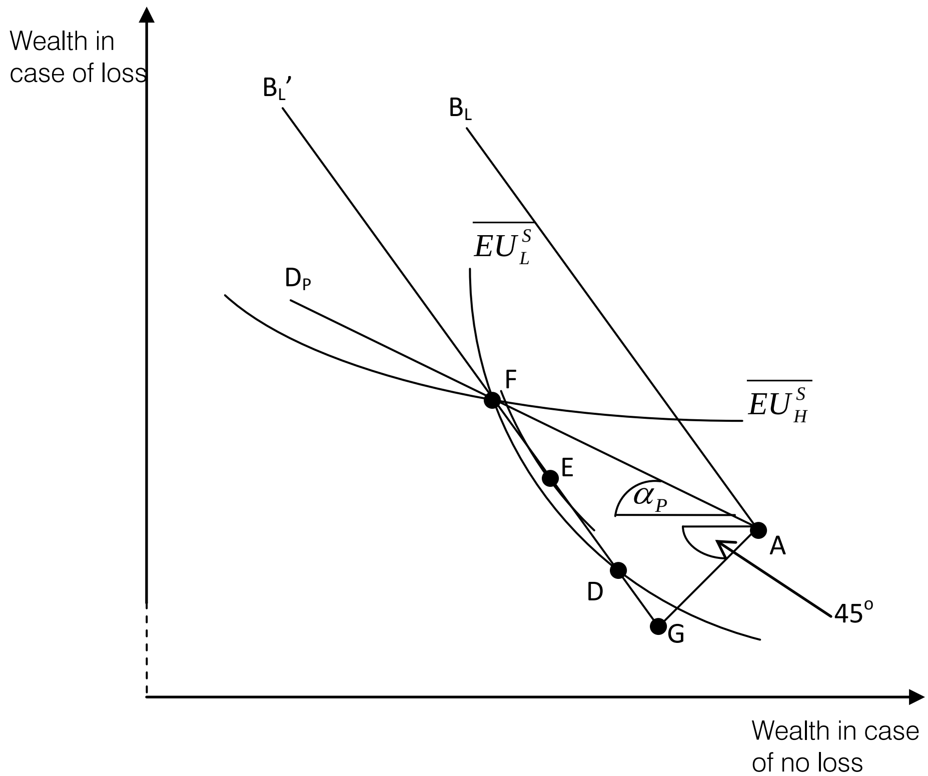


*Figure 3 :* Pareto-improving choice of insurance by low risks

*b) Imperfect risk adjustment*

In this section, the assumption of perfect risk adjustment (RA) is dropped. Imperfections of RA arise due to the fact that differences in loss probabilities do not constitute public information. A RA scheme in health insurance must rely on publicly observable indicators such as age and sex. However, observable indicators explain only a small share of the variance of HCE (for details regarding imperfections in RA schemes, see Van Vliet, 2000). Moreover, for reasons cited at the end of Section III, these imperfections are certain to prevail in the future, motivating an extension of the analysis to include imperfect RA. The aim of this section is therefore to show that Pareto improvement through risk selection is still possible, even though the amount of transfer from low to high risks is reduced.

With imperfect RA, the transfer does not fully compensate the insurer enrolling the high risks for its excess expenses anymore. Therefore, eq. (6) is modified to read,

$$T_{imp} = (1-r)(1-g)\varphi\bar{q}\pi_H L - \varphi\bar{q}\bar{\pi}L\,, \qquad (20)$$

with $0 \le r \le 1$ indicating the degree of imperfection of RA. With $T_{imp} < T_p$, equalities (7) and (8) indicate that the low-risk insurer can now charge a lower premium than the high-risk insurer for the prescribed rate of coverage $\bar{q}$. However, this does not imply that it becomes insolvent. Recall that by assumption, insurers are able to recognize risk types, enabling them to engage in risk selection. The common endowment point $(\bar{P},\bar{q})$ simply has to be replaced by two, $(P_L,\bar{q})$ and $(P_H,\bar{q})$, respectively. Both $P_L$ and $P_H$ satisfy the zero expected profit condition.

In analogy to (17) and (18), a Pareto improvement relative to these endowment points obtains if

$$\max_{q_L} EU_L^t > EU_L^S\left[\bar{P},\bar{q}\right] \qquad (21)$$

$$\text{s.t.} \quad EU_H^S\left[P_H,\bar{q}\right] = \text{constant},$$

or equivalently,

$$\max_{q_L} EU_L^t > EU_L^S\left[\bar{P},\bar{q}\right]$$

$$\text{s.t.} \quad P_L^t = \frac{T_{imp}}{g} + \varphi q_L \pi_L L\,. \qquad (22)$$

Evidently, all that needs to be done is to replace the transfer $T_p$ as defined in eq. (6) by $T_{imp}$ as defined in eq. (20). Since $T_{imp}$ differs from $T_p$ only by a factor (1 – r), the contribution function for low risks retains the properties laid down in eqs. (14) to (16).

Figure 4 illustrates. Insurers do not write the uniform pooling contract $AD_P$ anymore; rather, the low-risk insurer offers coverage along $AB_{L,1}$ (which is not quite as favorable as $AB_{L,0}$ prior to RA but more favorable than $AD_P$), while the high-risk insurer offers coverage along $AB_{H,1}$ (which is more favorable than $AB_{H,0}$ for high risks but less favorable than $AD_P$). Evidently, the greater the angle between $AB_{L,1}$ and $AB_{H,1}$, the less perfect is the RA scheme.

Endowment points are given by K for the low and E for the high risks such that their relative distances from the security line are equal, reflecting the uniform rate of coverage $\overline{q}$ (AK/AY = AE/AZ = AF/AX).

Clearly, compared to a separating equilibrium without any governmental intervention, high risks still profit even from imperfect RA; without any RA, they would opt for D (recall that policies always contain a loading). How-ever, compared to the situation with perfect RA, where they could reach F, high risks lose. Low risks in turn are better off with imperfect RA than with a perfect one since their transfer to the high risks is lower $(T_{imp} < T_p)$. Consumers of all risk types would prefer K, of course; yet with insurers able to recognize risk types, K is unavailable to the high risks.

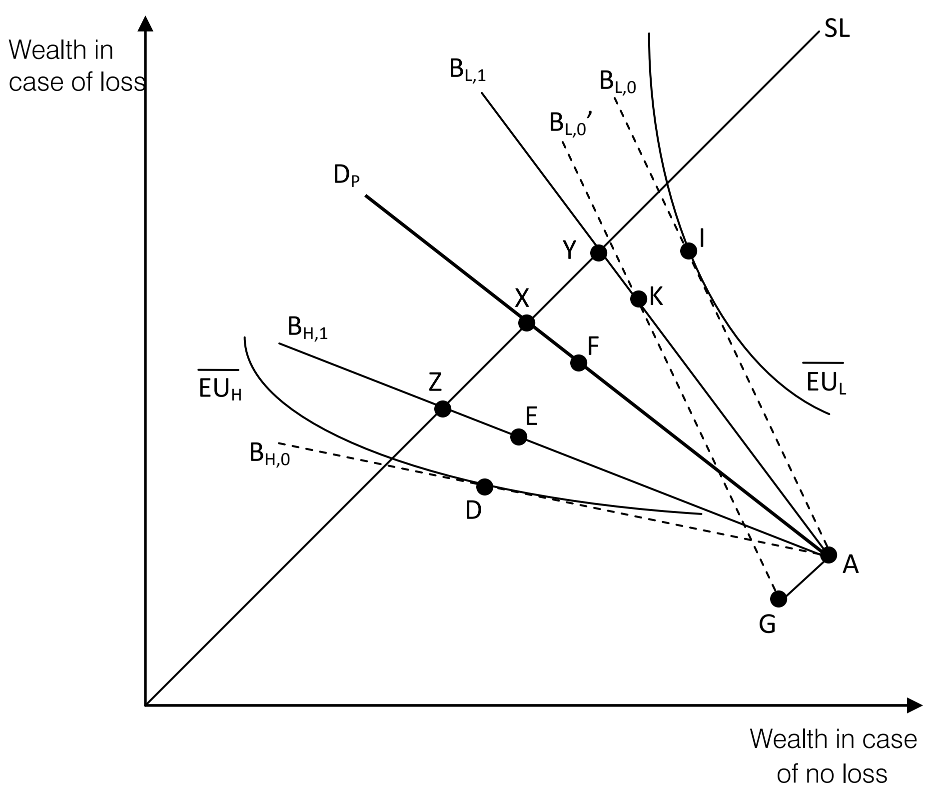


*Figure 4 :* Imperfect pooling of risks through mandatory social insurance

The crucial point, however, is that Pareto improvement continues to be possible in the presence of imperfect RA, at least relative to the modified endowment points E and K associated with it. Indeed, (20) determines the modified contribution function $GB_{L,0'}$ along which the transfer $T_{imp}$ to the high risks remains the same while permitting the low risks to reach a point that is higher-valued than K. Using the same line of argument as the one leading to Conclusion 2, one has

*Conclusion 3:* Pareto improvement over the pooling contract is also possible if there initially is an arbitrary degree of imperfection in risk adjustment; the contribution function for the low risks needs to be modified accordingly.

Critics might argue that the relevant benchmark is one of perfect RA, which is undermined by letting the low risks choose their degree of coverage, resulting in a transition from perfect to imperfect RA. However, this argument amounts to a Nirwana approach. As already shown by Zweifel and Breuer (2006), RA cannot be perfect as soon as health insurers are expected to act as prudent purchasers of healthcare services. In their negotiations with providers, their rate of time preference must remain private information for them to be successful; however, time preference determines the present value of costs and benefits associated with risk selection efforts (which constitute an investment). A second reason, emphasized by Zweifel (2013a), is that RA has one instrument only (payments into and out of the RA scheme), while it needs to neutralize the incentives both of low risks (who prefer an insurer offering them a low amount of RA surcharge) and the high risks (who seek out an insurer offering a great deal of cross-subsidization). In view of Tinbergen's (1952) rule stating that the number of instruments must be at least be equal the number of targets to be attained, this is a rather profound reason. Therefore, considering a transition from perfect to imperfect RA is a moot point.

## IV. Summary and Conclusions

With continuing premium regulation in the guise of community rating, the introduction of competition between insurers in social health insurance has caused insurers to step up their risk selection efforts. Since contributions fail to reflect true risk, the incentive to "exploit unpriced risk heterogeneity and break pooling arrangements" (Newhouse, 1996) is strong, leading to undesired outcomes in social health insurance.

However, absent competition, different types of problems have surfaced particularly in health insurance. First, there is inefficiency in providing insurance services, and second, the amount of coverage does not conform to consumer preferences. In particular, low risks are predicted to prefer a lower degree of coverage than mandated as part of a pooling contract imposed by uniform social health insurance. As a precondition for Pareto improvement, this contribution develops a contribution function for the low risks that keeps the amount of transfer in favor of the high risks constant. Reductions in coverage require an increasing price per unit coverage (Conclusion 1). Under perfect RA, risk selection is then shown to result in Pareto improvement over the pooling contract with uniform coverage (Conclusion 2). This finding proves to be robust, as a contribution function for the low risks can be shown to exist that preserves Pareto improvement also in the case of imperfect RA (Conclusion 3).

This analysis can be extended in several ways. First, the case for Pareto improvement can be strengthened by noting that the partial coverage opted for by the low risks implies cost sharing, which serves to rein in moral hazard effects. After controlling for risk selection effects in Swiss social health insurance, Trottmann et al. (2011) find substantial reductions in HCE among individuals having policies with deductibles in excess of the legal minimum. This evidence is consistent with the view that consumers who opt for partial coverage use this option as a commitment device designed to control their moral hazard. In this way, they contribute to the overall efficiency of health insurance and hence Pareto improvement.

Second, private health insurance coverage is frequently available to supplement social insurance (Dahlby, 1981). Assuming that private insurers need to impose separating contracts to counteract adverse selection, mandatory partial social insurance can be Pareto-improving because it gives high risks a better deal, while the low risks have to trade off a higher average premium against the relaxation of their rationing constraint. However, the present analysis need not be modified as long as deviations from prescribed coverage occur according to the contribution function for low risks designed to ensure Pareto improvement.

Third, social health insurance often pools not only high and low risks but earners of high and low incomes, as e.g. in Germany. With a suitably modified contribution function for the risks that seek to adjust their coverage, Pareto improvement is again possible. Finally, new forms of RA such as mandatory risk pooling for the highest risks as suggested by Van Barneveld et al. (1988) may reduce the degree of RA imperfection. However, as shown here, risk selection combined with a suitable contribution function can be Pareto-improving for an arbitrary degree of imperfection.

In conclusion, risk selection has its place in social health insurance. It permits a closer matching of contracts available and consumer preferences, which is a major benefit of competition. For ensuring Pareto improvement, all it takes is a suitably defined contribution function for the low risks designed to keep the amount of transfer in favor of the high risks constant. However, Pareto improvement which entails unchanged welfare for some but an increase in welfare for others presupposes an envy-free society, a condition unlikely to be satisfied everywhere [see e.g Fehr and Schmidt (1999) for a theoretical analysis].

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# Developing Effective Public Policy on Consumer Welfare in Nigeria

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*Abstract-* Consumers in the society, as well as the sustenance of business depends on the consumer. The quest for the formulation and enactment of public policies and laws respectively concerning consumer welfare throughout the world are necessitated by dissatisfactions of consumers in their purchase or consumption experiences which often result from the business sector who indulges in many unscrupulous acts at the expense of consumers. This paper examines the enactment of some laws and/or formulation of public policies, which are intended to protect the welfare of consumers, and attempts an evaluation of their levels of effectiveness especially in Nigeria. Data were collected from secondary sources. It was revealed that most consumer welfare laws and policies in Nigeria are relatively ineffective except those formulated sequel to militant actions of certain consumers. At the end, the paper recommends some measures government, business and individual consumers should adopt to ensure the effectiveness of laws and policies on consumer's welfare in Nigeria.

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*Strictly as per the compliance and regulations of:*

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## I. Introduction

Everybody in the society is a consumer. This includes the individual consumer, business and government. The individual consumer consumes the products and services produced by both business and government, whereas both government and business also consume the services of the individual consumer in the production of those goods and services.

The essence of any business organisation in Nigeria and indeed any economy is to provide products and/or services for the consumer, who in turn pays for those products and/or services. In doing so, the consumer expects some level of satisfaction in his consumption of these products and services.

Satisfaction may lead to repeat purchase behavior while dissatisfaction may be repulsive to the consumer. Normally, there ought to exist a symbiotic relationship between the individual consumer and the business as well as government, but most often, there exist persistent gross imbalances between the individual consumer and business, so the government sometimes intervenes to sanitize these imbalances. The individual consumer as a member of the consuming public is always faced with many impediments arising from the profit maximization goal of business firms in both the short-run and the long-run. It is thus the responsibility of government to formulate appropriate laws and policies in order to ameliorate the plight of the consumer in his consumption experiences in the market place.

Public policies are statements (or programmes) of government setup as guides to the implementation of certain operational objectives. In some cases, these public policies are formulated as a result of reactions from consumers in a form of protests or otherwise, while in other cases, the government just acts on its own impulse, taking the welfare of the consumers into consideration.

Unlike the developed economies where the welfare of consumers is somehow protected by laws and policies, the Nigerian consumer is always at a disadvantaged position with the business sector.

Researchers have shown that the adoption of the selling concept by many firms in Nigeria has influenced the attempt by business firms to manipulate consumers in buying shoddy and unneeded merchandise which results into widespread abuses in the market place. (Schiffman and Kanuk, 1987).

The efforts of consumerism (consumer movement) have contributed to the various consumer welfare laws and policies in most countries of the world, like the US. Great Britain, Germany, and many others. Consumerism is a social movement that seeks to increase the rights and powers of consumers (McCarthy and Perrault 1988).

This movement emerged in the late 1960s with the aim of correcting the imbalances that had developed between sellers and buyers. Consumers complained of shoddy and hazardous products and some unethical practices of sellers to sell their product to them. In response to those complaints, several major pieces of legislations were enacted to protect consumers (Schiffman and Kanuk, 1987).

Efforts to protect the consumers in Nigeria have emanated from government, journalists, organisations, associations, firms, and consumers themselves.

Government protections came in the forms of regulations designed to preserve the competitive system, providing special form of assistance to certain groups and establishment of control and/or regulating unfair competitive practices. Journalists, organisations and associated groups got engaged in consumer education and information, while firms install suggestion boxes in their premises to get consumers feedback and

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provide adequate instructions on product usage for consumers benefits.

On the other hand, consumers protect themselves by boycotting dissatisfactory products and/or producers or refuse flatly from shopping in certain outlets (Ifezue, 1990).

Despite these efforts stated above, the importance of the consumer in Nigeria is neglected by both government and business policy-makers, hence public policies concerning consumers welfare are ineffective in the country. It therefore behooves public policy makers in Nigeria to be responsive to the plight of consumers by formulating and enacting as well as ensuring the effectiveness of these policies and laws if consumers would indeed be protected.

*a) Objectives of the Paper*

- To examine existing consumer welfare laws and policies in Nigeria and other countries.
- To evaluate the effectiveness of these laws and policies in Nigeria.
- To proffer meaningful suggestions towards ensuring the effectiveness of consumer laws and policies in Nigeria.

*b) Significance*

To contribute to consumerism and equip consumers with the necessary apparatus to protect themselves since everyone is a consumer.

## II. Consumer Protection Laws and the Reasons for their Enactments

The efforts of consumerism have enhanced the enactment of several laws to protect the welfare of consumers throughout the world. Some consumer protections are built into the English and United States common law systems.

What we have today as the Charter of Consumer Rights is attributed to the immense contributions of three American presidents - John F. Kennedy, Richard Nixon and Gerald Ford. The character has the following rights for the consumer namely:-

a) The right to protection of health and safety.
b) The right to protection of economic interests.
c) The right to seek redress
d) The right to information and education, and
e) The right to representation (Uko, 1993).

In the United States, some consumer protection laws are as follows:-

- Pure Food and Drugs Acts of 1906, enacted because of unsanitary meat packaging practices in the Chicago stockyard.
- Consumer Product Safety Acts of 1972, established to protect consumers by controlling product safety.

The act set up the Consumer Product Safety Commission having the power to set safety standards and impose penalties for Failure to meet these standards (McCarthy and Perreault, 1988).

Several government agencies are also constituted in the United States to formulate policies. They are the Federal Trade Commission (FTC) and the Food and Drugs Administration (FDA). These agencies are concerned with regulating advertising, an area in which consumer abuse has frequently been charged. (Schiffman and Kanuk, 1988).

In the Great Britain, the following laws were also enacted to protect consumer' welfare.

- The Sale of Goods Act of 1899 and amended in 1979 established with the main purpose of giving protection to buyers by implying certain conditions and warranties in contracts for sale of goods.
- The Food and Drugs Act of 1955, was to protect consumers against dissatisfactions concerning food and drugs purchases and consumptions.
- The Consumer Protection Act of 1961, provides for the regulations with respect to dangers to the public from sales of consumer goods. Other acts which protect consumers are the Trade Stamps Act, 1964, and the Hire Purchase Act, 1965.
- The Misrepresentation Act of 1967, provides consumers who suffer from misleading descriptions to seek a legal action for damages, or avoid the contract completely if a false statement led him to enter the contract.
- The Trade Description Act of 1968, was to protect buyers against false and misleading statements relating to both goods and services, whether written or made orally.
- The Fair Trading Act of 1973, an act established to control undesirable trade practices affecting consumers.
- The Consumer Protection Credit Act of 1974, a statute providing protection to those consumers making use of credit services, covering the whole field of credits and hire agreements including licensing, advertisements reference and enforcement.

Some of these legislations and Acts are applicable in Nigeria today (Osuala, 1988:371–375).

- The National Agency for Food and Drugs Administration and Control Decree of 1993, promulgated to regulate and control the importation and exportation, manufacture, advertisement, distribution, sale and use of foods, drugs, cosmetics, medical devices, bottled water and chemicals.

## III. Evaluating Existing Laws on Consumer Welfare in Nigeria

Most of the consumer protection laws and policies in Nigeria presently are less effective than they seem to be at first glance. Even in the United States, both FTC and FDA have the power to halt any advertising they consider to be deceptive, yet over the years, no single definition of what constitutes deceptive advertising has evolved (Schiffman and Kanuk, 1987).

In Nigeria, amongst the numerous laws on consumer welfare earlier enumerated, only a few are somehow effective such as the Pilgrims' Welfare Board Decree, 1979, Federal Road Safety Commission Decree, 1988 and the Petroleum Production and Distribution (anti-sabotage) Act, 1975.

Their relative effectiveness can be attributed to the vested interest of government and its functionaries. For instance, the Pilgrims' Welfare Board is effective because many government officials prefer performing this religious function while in office. To enhance pilgrims participation, the government in 1995 spent about 195 million dollars to subsidize pilgrimages. Also, the Petroleum law is relatively effective because it is the major economic activity in the country.

Production and Distribution (anti-sabotage) Decree of 1975, because this law protects the interest (revenue) of the nation. There have been reported cases of petroleum products hoarding, adulteration and price hikes by petroleum marketers, and the government has done less to eradicate these unwholesome acts. But, when Petroleum & Natural Gas Senior Staff Association of Nigeria (PENGASSAN), National Union of Petroleum & Gas Workers (NUPENG) and Nigeria Labour Congress (NLC) went on strike in 1994 which disrupted the distribution of petroleum products in some parts of the country, the government quickly evoked this law, dissolved the national executives of these unions and jailed some of their leaders for sabotage. This was because government suffered great losses of revenue during the strike periods.

To some extent, the Federal Road Safety Commission Decree, 1988, was effective due to government support. Road accidents and obstructions on our highways were tremendously reduced as motorists and drivers were compelled to obey road traffic laws including speed limits.

## IV. Consumer Protection Laws in Nigeria

Some of the consumer protection laws in Nigeria are as follows:-

- Pharmacists Act, 1965, established to eliminate untrained medicine sellers in the drugs market.
- Federal Environmental Protection Agency Decree (1992) promulgated to maintain good environmental quality in the areas of related pollutants in Nigeria, such as hazardous substance, air and water quality, atmospheric protection and noise.
- Petroleum Product and Distribution (anti-sabotage) Act, 1975, established to address offences of sabotage in respect of production and distribution of petroleum products.
- Price Control Act, 1977, established to prescribe stiffer penalties and to make better provisions for the implementation of the price control scheme. Section 4,5,6, and 7 stipulate provision for the imposition of price control, fixing of controlled prices, prohibition of sales above controlled prices and hoarding of goods whose prices have been fixed or controlled respectively, such goods include - petroleum products, milk, bicycle and spare parts, etc.
- The Pilgrims' Welfare Board Law, 1979, was established to protect and safeguard the interests and welfare of certain pilgrims making journeys to and from any place of pilgrimage approved by the Federal Government.
- The Standard Organisations of Nigeria Law, 1984 enacted to protect consumers through standardized practices and productions by producers and manufacturers.
- Rent Control and Recovery of Premises Act, 1985, establishing rent tribunals in all the states of the federation to protect consumers (tenants) from exploitative attitudes of some landlords.
- Federal Road Safety Commission Act, 1988, enacted to prevent and minimize road accidents on highways, and for educating drivers, motorists and other members of the public, generally on the proper use of highways and to provide for other matters connected there with.
- Federal Urban Mass Transit Agency Decree, 1993 promulgated to improve the commuting difficulties of workers in major urban centres in Nigeria.

Apart from these laws all others on consumer welfare earlier discussed are ineffective or inadequate in Nigeria. For instance the Pharmacists Act, 1965, prohibits the sale of drugs and medicines by untrained persons, yet we see untrained persons selling these items everywhere and nothing concrete has been done to deter offenders.

The National Agency for Food and Drug Administration Control has however in recent time done much to regulate importation manufacturer and but where redress is sought by tenants on hostile landlords, the law to some extent attends to help deter others from such hostile acts.

The Federal Urban Mass Transit Programme is fairy effective as difficulties of urban commuters before its establishment have been reduced to a bearable level as many buses now ply inter and intra — state routes, whereas fares are reduced due to competition.

The Price Control A;:t, 1977, itself is also less effective as prices of controlled items such as petroleum products are sold above controlled prices and even hoarded by sellers without meaningful responses from government.

But, in some Universities, this law is effective due to students' protest to the authority, of some charges.

The effectiveness of this law is because the authority and the operators of these services on campus know that violation may spark-off students' unrest. It is quite unfortunate that many laws meant for the protection of consumers welfare in Nigeria are often neglected or discouraged to succeed even by the government that established them, and the business sector thinking that protecting consumers welfare may reduce its level of profit maximization.

## V. Government and Business Responses to Consumer Welfare Policies in Nigeria

*a) Government*

Apart from laws and policies that would benefit both the government and the consumer in Nigeria, the government does not encourage the success of consumers welfare policies. This-assertion is based on the fact that like following reasons in the 1994 Federal Budget, the government reduced or removed completely Customs and Excise duties respectively for a number of items to provide appropriate effective rates of protection for local industries and agricultural products as well as stabilize prices of these items paid by consumers.

- These measures benefited the business sector as its taxes were reduced, but prices of these goods and services never went down. Rather, we experienced daily price increases, and the government did nothing to correct this imbalance in the policy measure,
- Also, in the same budget, consumer relief plans were made in the areas of public transportation, access to affordable and qualitative education, health services, provision of water and adequate food supply at reasonable prices. But, at the end of the 1994 fiscal year, nothing meaningful was done in these areas to improve the consumers state.
- In the 1995 Federal Budget, the government planned to establish the Consumer Protection Council, in order to ensure the success of consumers welfare programmes stated in the budget, and to protect consumers from the exploitation and excessive trade practices of middlemen. The council, if established would be empowered to cause offenders replace hazardous products with safer and more appropriate alternatives and reduce the unscrupulous acts of middlemen aimed at reducing prices of consumer goods, as well as provide redress to obnoxious practices of firms and sellers.

This council was never set up by the government after the budget broadcast. This failure on the part of government may not be unconnected with its reliance on the business sector as stated in the 1995 budget - "the private sector should be the engine of economic development and provide the lead, while the government plays the role of a catalyst by providing the enabling environment in terms of policy formulation,, physical and financial support", For instance, government policy may be to reduce prices of goods and services, but business will rather increase prices without any positive government response, showing that the government is hypocritical in its protection of the consumer.

*b) Business*

The business sector in Nigeria is not well-developed to adopt the marketing concept which-emphasizes the satisfaction of the consumer as a prerequisite for organizational existence and survival. Hence it has continued to ensure that consumer welfare policies are sabotaged or discouraged from succeeding.

For example, the Ernest Shonekon's interim administration (August 1993 - Nov. 1993) headed by a business executive reduced and/or removed completely the Customs and Excise duties paid by business to stable prices. Unfortunately, prices of these goods and services never reduced instead we experienced galloping inflation. Products hoarding, adulteration, sale of expired and fake drugs, contaminated foods and many unethical practices are perpetuated by the business sector in its quest for quick profits, despite all the efforts of National Agency for Food & Drugs Administration Control (NAFDAC).

Another reason for poor business response to consumer welfare is due to shortages and limited choices of goods and services in the market place and the weak redress mechanism for dissatisfied consumers in Nigeria (Uko, 1993).

## VI. Conclusion

Although, many consumers welfare legislations and policies have been established and formulated in Nigeria, majority of them are ineffective because public policy makers are themselves not really interested in the welfare of consumers which these laws are meant to protect. The only effective ones are those arising from militant actions or protests by consumers such as the

Aba Women's Riot of 1929, the labour Unions' Actions in the 1920s and UNICAL students' action earlier discussed, consumers welfare are not protected.

Other effective laws are those beneficial to the government and its functionaries such as the Pilgrims' Welfare Board and Petroleum Production and Distribution (Anti-sabotage) Acts, etc.

Observations over the years have shown that government always intervenes on private airlines fare hikes, but nothing is done when prices of consumer goods and services are arbitrarily increased by sellers. This hypocritical attitude of government towards consumer's welfare in Nigeria is indeed not encouraging.

Thus, it could be concluded that no meaningful public policy on consumer's welfare in Nigeria would be effective without the government, its functionaries and the business sector benefiting from such policies or positive militant responses from consumers themselves.

## VII. Recommendations

In view of the level of ineffectiveness of public policies on consumers welfare in Nigeria, the following recommendations are hereby suggested.

- The government and other authorities should be alive lo their responsibilities of effective protection of the consumer, who is greatly disadvantaged in the market place by ensuring that their policies are implemented us formulated.
- The business sector, the perpetuator of consumer dissatisfactions and Complaints should learn to adopt the marketing philosophy, by trying to satisfy the needs and wants of consumers rather than exploring avenues of exploitation.
- Consumers should seek to be properly informed about the happenings at the market place themselves, and where necessary take responsive actions that could compel the government and public policy makers to act responsively, since they cannot be adequately represented on policy decisions affecting then.

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# Factors Influencing Consumer's Intention to Buy Counterfeit Products

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*Abstract-* There are several factors which influence consumers to buy counterfeit products. Today, any product in any nation is vulnerable to this malady. Counterfeits are packaged and labeled to resemble the original brand-name and generic products. Therefore, fake products often illusion the consumers to thinking that they are buying authentic goods. Counterfeits are a real and looming threat to all manufacturers. Counterfeit policing measures are yet to mature and become omnipresent. With this background information, it is noteworthy to observe how the Theory of Reasoned Action (TRA) could help identify the factors responsible for influencing behavioral intentions of a consumer towards purchasing counterfeit products. The present study reviews existing literature on counterfeit products, identifies potential improvements, and provides further insight into consumer motives behind the purchase of counterfeits. Six primary factors that influence counterfeit purchase have been identified and the TRA has been applied to investigate the impact of these factors on consumer behavioral patterns. The factors are (1) social motivation, (2) personal gratification, (3) perception, (4) value, (5) brand loyalty, and (6) ethics. The 'influence of society' and 'value for money' have been identified as the top two reasons that motivate consumers to buy fake products based on a survey conducted. A mathematical 'covariate interactions' analysis as well as a Chi-square regression analysis corroborated the same finding- identifying the top two factors that most strongly influence a customer's 'Intent to purchase'. A logistic regression analysis was run on the survey results that yielded a mathematical expression which can predict how likely a customer is to buy a counterfeit [p(Y)]. The proposed correlation matches the obtained survey data very well.

*Keywords: counterfeit, reasoned action, attitude, purchase intention, consumer behavior, brand product.*

*GJMBR - B Classification : JEL Code: D11*

FACTORSINFLUENCINGCONSUMERSINTENTIONTOBUYCOUNTERFEITPRODUCTS

*Strictly as per the compliance and regulations of:*

# Factors Influencing Consumer's Intention to Buy Counterfeit Products

Mathumita Mukherjee Basu [α], Sumit Basu [σ] & Jung Kook Lee [ρ]

*Abstract-* There are several factors which influence consumers to buy counterfeit products. Today, any product in any nation is vulnerable to this malady. Counterfeits are packaged and labeled to resemble the original brand-name and generic products. Therefore, fake products often illusion the consumers to thinking that they are buying authentic goods. Counterfeits are a real and looming threat to all manufacturers. Counterfeit policing measures are yet to mature and become omnipresent. With this background information, it is noteworthy to observe how the Theory of Reasoned Action (TRA) could help identify the factors responsible for influencing behavioral intentions of a consumer towards purchasing counterfeit products. The present study reviews existing literature on counterfeit products, identifies potential improvements, and provides further insight into consumer motives behind the purchase of counterfeits. Six primary factors that influence counterfeit purchase have been identified and the TRA has been applied to investigate the impact of these factors on consumer behavioral patterns. The factors are (1) social motivation, (2) personal gratification, (3) perception, (4) value, (5) brand loyalty, and (6) ethics. The 'influence of society' and 'value for money' have been identified as the top two reasons that motivate consumers to buy fake products based on a survey conducted. A mathematical 'covariate interactions' analysis as well as a Chi-square regression analysis corroborated the same finding- identifying the top two factors that most strongly influence a customer's 'Intent to purchase'. A logistic regression analysis was run on the survey results that yielded a mathematical expression which can predict how likely a customer is to buy a counterfeit [p(Y)]. The proposed correlation matches the obtained survey data very well.

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## I. Introduction

Counterfeit products cause significant amount of damage to the free market economy. There are several factors that influence consumers who buy counterfeit products. A meticulous scrutiny of these factors is essential. The federal authorities in U.S have seized 150 websites that used to traffic counterfeit brand merchandises in 2011. In today's tight economy, consumers have no choice but to look for ways to save money. Often in this pursuit to save, they end up opting for counterfeits. Consumers possibly believe that low priced products and discount stores can meet their status needs (Eastman and Eastman, 2011). Starting from the packaging to its labeling, a counterfeit product resembles its original counterpart almost in every aspect. Counterfeit goods look authentic. The factors that contribute to the purchase of counterfeits are economic advantages, perceptions of personal or hedonic benefits, and past purchase experiences (Nia and Zaichkowsky, 2000; Gentry et al., 2000; Ha and Lennon, 2006). Respondents to a particular study indicated that they found luxury goods to be fun and worth the price paid for, regardless of whether they were an originals or counterfeits. Value, customer satisfaction, and the status of original luxury brand names did not decrease due to the widespread availability of counterfeits (Nia and Zaichkowsky, 2000). The very existence of the brands and the promises made by them are the cause of counterfeits (Bloch, 1993; Cordel et al., 1996). Counterfeits are considered value for money for the reason that they have a fairly small price and are of inferior quality (Bloch et al. 1993; Lichtenstein et al. 1990; Ang et al. 2001; Wang et al. 2005). Purchasing counterfeits means getting the prestige of branded products without paying for them (Cordell et al. 1996; Grossman and Shapiro, 1988) while, compromising on quality. Counterfeit products increasingly penetrate the supply chain and pose a threat to the manufacturers. The presence of counterfeits is a fret for nearly every product, company, supply chain, government and industry; and the problem is aggravating. Potential investments in research and development are at stake from the unfair competition generated by counterfeits (Maldonado and Hume, 2005). Social needs, comprising social recognition and social status, are primarily responsible for the consumption of counterfeits. Counterfeit products have had a widespread impact and become a global phenomenon over the past few years. By 2015, the International Chamber of commerce expects the value of counterfeit goods globally to exceed $1.7 trillion (Hargreaves, 2012). That's over 2% of the world's total current economic output.

Cost is the most frequently cited motivation for buying counterfeits. Brand success breeds counterfeits (Green and Smith, 2002). The findings were derived from a limited survey conducted among 46 students in

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the North Eastern University. The Theory of Planned Behavior (TPB) was used to explain the intention for purchasing counterfeits (Penz and Stöttinger, 2005). A $\chi 2$-analysis yielded the top three factors that influence one's intention to buy fake products to be (i) perceived behavioral control, (ii) a smart shopper attitude, and (iii) subjective norm. The authors suggest that their method be applied on different product categories to test its validity.

A potential gap in the reported literature is that every research group mentioned above has proposed a different set of primary factors influencing the purchase of counterfeits. Also, a unified quantitative approach to determine and rank the factors influencing counterfeit purchase intention is yet to be developed. An expression depicting the relationship between the consumer purchase intention *(Y)* and the factors *(X's)* affecting is within the purview of improvement in this field of study. Lastly, the findings of every study depend on the market dynamics where the study was conducted on money influx, social and cultural settings prevalent there. In order to reach a meaningful conclusion, one should simultaneously study and analyze the dynamics of markets that are widely different in characteristic and geographic location. We propose six factors (see Fig. 1) that significantly influence the consumer's intention to buy a fake product. They are (1) social motivation, (2) personal gratification, (3) perception, (4) value, (5) brand loyalty, and (6) ethics. These factors have been critically examined using a standard reasoning theory described below.

The TRA, which is different from the TPB, is a useful tool for understanding consumer misbehavior. In the past Fishbein and Azjen's TRA has proved effective for understanding the intentions behind using contraceptive methods (Doll and Orth, 1993), predicting gambling behavior (Moore and Ohtsuka, 1999), designing persuasive public information campaigns, and studying condom use for HIV prevention (Fishbein et al. 1992). With this background information, it is noteworthy how the TRA could help uncover the behavioral intentions of consumers towards procurement of counterfeit products. The TRA illustrates the motives behind volitional acts such as the purchase of counterfeits. It suggests that an individual's behavioral intention is determined collectively by his/her attitude towards the subjective norms-others' perception of whether he/she should engage in a particular behavior or not (Ajzen and Fishbein, 1973; Fishbein, 1980). In the study presented below, the TRA has been applied on the six factors mentioned above to understand a consumer's attitude and behavioral intention towards counterfeits.

A survey was designed to elicit responses from target audiences, in the Indian and USA markets, on how critically they perceive each of the six identified factors. The respondents were chosen from the working class and their age groups varied between 23 to 63 years. The fact that the respondents were chosen from two different nations helps us understand the differences in market dynamics due to differences in economic prosperity/status, geographic location, culture and availability of counterfeits in the local markets. The survey responses included rankings that the respondents assigned to each of the six factors *(X's)*. Using an interactions plot and a Chi-square regression analysis, the six *X's* were then reduced to only the top two *X's* that had the strongest influence on the $Y$ variable. Note that *Y* is a consumer's intent to purchase a fake product. A logistic regression analysis was then performed to formulate an empirical correlation between the *Y* and the top two $X$'s i.e. $p(Y) = f(x1, x2)$. It should be highlighted that the mathematical expression for $p(Y)$ that has been developed is a novel and unique way of solving this puzzle. Henceforth, one does not need to gather responses on each of the six *X's* from a consumer. Instead, the consumer's ranking of the *'societal influence'* and *'value for money',* on a scale of 100, would be sufficient for the model to predict whether he/she would buy a counterfeit or not. Summarizing, the specific objectives of the present work were to:

- Identify six important factors that influence a consumer to purchase a counterfeit, and analyze how these factors affect a consumer's decision using the TRA.
- Design a survey that leads us to the predominant variables among the six factors *(X's)* and that gives us some insight on how people from different backgrounds and geographic locations perceive counterfeit goods.
- Develop a mathematical correlation between the probability *(Y)* that a consumer will buy a counterfeit product and the primary influencing factors *(X's).*

## II. Conceptual Outline

The TRA helps determine a relationship between the consumers' purchasing patterns and the popularity of counterfeits. Six primary factors have been identified that are anticipated to affect a consumer's decision to buy a counterfeit product. Using the TRA, the relationship between a consumer's buying pattern and counterfeits is illustrated in each of the following six propositions. The factors are listed below in Fig.1 and discussed in ensuing paragraphs.

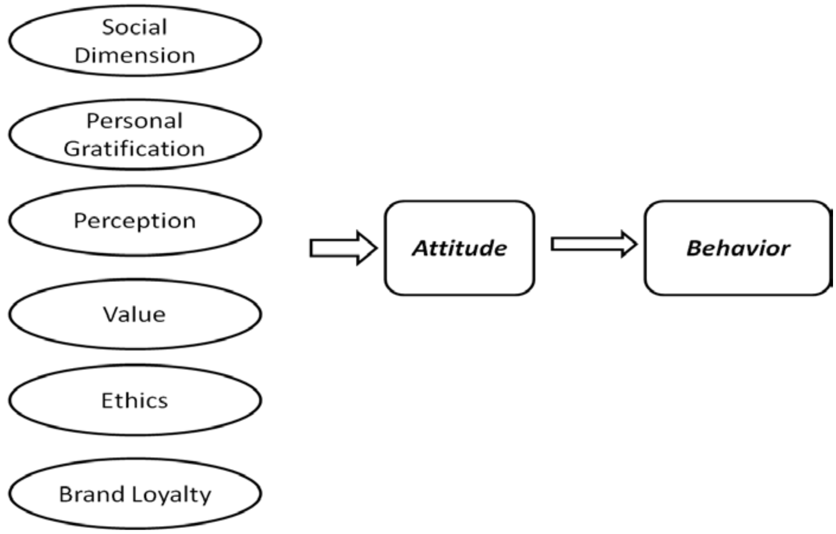


*Figure 1 :* Six variables affecting consumer attitude towards counterfeits

*a) Social Motivation*

The term 'social motivation' implies the effect that people have on consumer behavior. The need 'to belong to' is the principal motivation for humans. According to the TRA, a person's voluntary behavior is predicted by his attitude towards that action and how he thinks other people would perceive him if he performed that action. Hence, a need for social recognition (action) is more responsible for driving the purchase of counterfeit products than social influence. One buys branded products to get noticed, to be admired, and to enhance one's social standing. In other words, it is the influence that one's beliefs, regarding a particular product, have on another's behavior leading the other to follow him/her so as to become part of the same league (Haque et al. 2009). The TRA also suggests that a person's intention is a function of two basic determinants- his personal nature and social influence. The consumer's social class determines this pattern of behavior. In cases where both social significance and prominence are important to a consumer and he cannot afford the exorbitant prices of the original product, he is likely to turn to counterfeits as an alternative (Teah and Phau, 2009). The norms followed by a social group and the pressure arising from the instinct to emulate that reference group, can induce a consumer's decision to use original or counterfeits of luxury brands. Consumers are more likely to purchase counterfeits under the influence of their peers (Bearden et al, 1989). One buys branded products to get noticed, to be admired, and to enhance one's social standing. An individual's aspirations to create his/her identity, matching him/her to the standards of others and make an impression on others are one of the fundamental causes of counterfeit consumption (Bloch et al. 1993; Ho and Lennon, 2003; Penz and Stöttinger, 2005). If a consumer feels that a product could be his medium of self-expression then, he is motivated to consume a counterfeit as it would aid his self-presentation. (Snyder and DeBono, 1985).

Consumption of luxury brands is a social adjustive (self-expression) and value expressive function (self-presentation) or both (Shavitt, 1989). If status is the motivation for a consumer, then he is likely to be less priced and value-conscious than other consumers (Eastman et al. 2011). The reaction of peers to the affluence exhibited from the conspicuous consumption of luxury goods, rather than the worth of the actual product, gives the consumer satisfaction from others' reactions to the wealth displayed rather than from the value of the product itself (Mason, 2001). A reference group's approval also plays a major role in influencing a consumer's attitude towards the purchase of counterfeits (Lee and Yoo 2009). Consumer purchases counterfeits if his friends and relatives act as either inhibitors or contributors and approve of his behavior. Consumers who are motivated by status are more brand-conscious.

Social affluence can be either norm-based (when individuals conform to the expectations of a referent group) or information-based (when individuals accept information from a referent group as evidence of reality). The desire to own luxury branded products to acquire admiration possibly is the reason for motivating individuals to purchase imitations of original products.

*Therefore, customer's social dimension with the brand product has a positive effect on the attitude toward counterfeit product brand.*

*b) Personal Gratification*

Behavioral beliefs (motivating a person's attitude toward the behavior) influence a person's attitude. The TRA's most conspicuous element is that behavioral intent is the best predictor of actual behavior. If a person believes that buying a merchandise is a means of personal gratification, self-representation and status, then he is likely to hold an unfavorable attitude toward the behavior of buying a counterfeit. Personal gratification is linked to the need for a sense of accomplishment, appreciation, and a craving to enjoy the finer things in life. The consumers who do not buy counterfeits have been observed to be more confident, more successful, and having a higher perceived status (Bloch et al. 1993). These characteristics are often associated with individuals who seek accomplishment, and a higher standard of living. The term 'status' refers to the relative rank and lifestyle that an individual holds and the lifestyle in a hierarchy. This hierarchy is based on honor, respect, prestige and envy from others and represents the goals of a culture. The term 'status consumption' refers to ostentatious individuals who seek self-satisfaction and simultaneously exhibit their prestige and status to others through tangible evidence (Eastman et al. 1997). The social benefits that a product offers estimate the utility of the product, as there are considerable levels of status consumption in all societies in the world (Eastman et al. 1997).

*Hence, personal gratification and pursuit of status has a negative effect on attitude and intention towards the purchase of counterfeit products.*

*c) Perception*

Subjective norm in the TRA gives weight age to perceived expectations of people who are important to a person and whether or not he/she should act in accordance with their expectations. A consumer's perception about counterfeit depends on various factors like social norms, risk, product involvement, price, ethics, brand image, etc. The consumer's perceptions are influenced by the society which, in turn, affects his/her personality and beliefs (Haque et al. 2009). A few studies suggest that purchasing decisions are based on perception (Bian and Moutinho, 2011). A strong intention to purchase counterfeits has a strong correlation with the perceived behavioral control of purchasing counterfeits (Penz and Stöttinger, 2005). An individual's ability, the easy availability of counterfeits and his awareness on counterfeits positively influence the intention to purchase duplicate products (Ajzen 1985, 1991). An individual's perception of social norms decides if he/she should execute the behavior in question (Ajzen and Fishbein, 1975). A recent research proposed that product involvement and product knowledge guide the relationship between the consumer's perception and purchase intention of counterfeit branded products (Hanzaee and Ghafelehbashi, 2012). If the consumer cannot distinguish easily between a counterfeit and branded product due to low product involvement with the branded one, it leads to more favorable perceptions towards counterfeits. However, when people perceive a monetary risk in the consumption of counterfeit products, they are likely to assess these products lowly (Maldonado and Hume, 2005). Consumers who belong to high income brackets also perceive fake products as substandard (Nia and Zaichkowsky, 2000). A brand's image has a definite impact on the customers' perceptions of product and service quality while, a recognized company has a wide effect on consumer perceptions of value and fidelity (Cretu and Brodie, 2005). Consumer perceptions of a brand name, with reference to brand risk and brand differences, are the principal reasons for influencing purchase of new brands among consumers. Prominence, exclusivity, pleasure seeking feature and repute are identified as vital elements in a valued brand (Vigneron and Johnson, 2004) but the existence of counterfeits pull down the perceived value of a luxury brand (Hieke, 2010).

*Therefore, it can be inferred that customer's perception toward brand product itself has a positive effect on the attitude toward counterfeit product brand.*

*d) Value*

Value of a brand product to a person could mean the degree of monetary or material utility he derives from it, in comparison with other products. As per the TRA, a person may participate in a particular behavior if the outcome seems beneficial to him. Therefore, he may engage in buying a counterfeit as it will give him the same value for money as an original product. Value is a lasting belief that rises above definite intentions and circumstances and thus, affects attitude and behavior (Rokeach, 1973). Paying lower prices, while maintaining some constraints in quality, refers to value consciousness (Lichtenstein et al. 1990). Although, buying counterfeits purports compromise in quality but, the fact is that counterfeits provide large cost savings and hence, consumers have high value consciousness for them. Furthermore, studies have shown that a conspicuous price advantage of a counterfeit product over the authentic one motivates consumers to decide on the counterfeit (Bloch et al. 1993; Phau and Dix, 2009). Ang et al. (2001) in their study establish that the more value-conscious a consumer was, the more favorable one's attitude towards piracy was. People with integrity, graciousness and conscientiousness tend to have a negative attitude towards counterfeit purchase (De Matos et al. 2007; Phau and Teah, 2009). But at times, few consumers are willing to trade off their protected values against cheaper prices (Baron, 1999). In sociology, value implies putting together some approaches of behavior in our society (Bronowski, 1959). Regardless of the exceptional quality, consumers are unwilling to pay for the exorbitant prices as counterfeits offer the same utility as the original.

*Consequently, customer's value towards the brand product has a positive effect on the attitude toward counterfeit product brand.*

*e) Ethics*

Ethics are a system of moral principles which forbids people from performing immoral actions. The TRA purports that one's attitude towards a behavior depends on his beliefs and hence, a group of people who have strong ethical values will restrain themselves from performing any action which is against their principles. The consumers' conceptions of truth and moral values are not absolute but relative to the persons or groups holding them, positively affecting ethical judgments regarding purchase of counterfeit products. The more idealistic a consumer is, the more is he bound to be ethical and therefore, have a negative attitude toward counterfeits. According to Muncy and Vitelle (1992), four factors influencing the consumer ethics are: 1) deriving benefits from illegal activity actively, 2) deriving passive benefits, 3) deriving active benefits from questionable actions, and 4) not engaging in harm or foul (Maldonado and Hume, 2005). Law-abiding consumers have a negative approach to counterfeits (Cordell et al. 1996). A consumer with a higher moral character is independent of others' opinions and has a strong self-identity. Hence, he would regard purchase of counterfeits ethically wrong (Penz and Stöttinger, 2005). If a consumer values integrity, he is unlikely to support counterfeits (Ang et al. 2001; Wang et al. 2005). Guilt has a significant negative influence on the purchase intent of counterfeits and a positive influence on the moral judgment for all product types.

*As a result, consumer ethics is a decision maker on the attitude towards purchase of counterfeits and ethical judgment will have negative effect toward counterfeit brand product and behavior.*

*f) Brand Loyalty*

Brand loyalty can be defined as an action of repeat purchase and deep commitment towards a product by the consumers. Regardless of price or convenience, a consumer with brand loyalty will repurchase the brand products. Hence, as the TRA suggests that one's attitude toward a behavior can lead to an intention to act, brand loyalty is a result of consumer behavior and is affected by a person's preferences. The vital factors influencing brand loyalty are (a) the value that the consumer associates with the brand, (b) his faith in the brand, (c) customer satisfaction, (d) continued purchase of the brand product, and (e) commitment toward the brand. A wide variety of products to choose from- price advantage, positive image of store and brand; the consumer's trust and loyalty determine his attitude towards a brand (Liu and Wang, 2008). According to Sophie Hieke (2010), a brand's value diminishes if the consumer is revealed to a range of counterfeits. Moreover, brand replicas erode the abstract images of the original brand in the consumer's mind and their presence reduces the brand's perceived level of luxury. Brand loyalty or the purchase of genuine brands reduces the overall consumer perceived risk. The consumer's brand loyalty and his act of purchasing the genuine product is a tool in preventing monetary loss resulting from the purchase of counterfeits (Roselius, 1971).

*Therefore, consumer's brand loyalty moderates the relationship between attitudes toward counterfeit brand product and behavior.*

## III. Limitations

The study includes a review of existing literature and aims to investigate the six variables namely, social motivation, personal gratification, perception, value, brand loyalty and ethics. A rigorous statistical data analysis was performed on the gathered survey data. However, this study and the reported literature that it refers to are subjective, because they comprise opinions of people. These opinions are influenced by demographical preferences, geographic locations, and environmental conditions that vary across different regions and countries. The conclusion of study is limited to type-of-product studies. The present work is an 'Analysis-led-Concept' study and there prevails immense scope for future research in the area of counterfeits spanning a wide gamut of products.

## IV. Results and Discussion

This paper offers an insight of the primary factors that propel consumers to buy counterfeits. The current study extends the growing body of literature, related to counterfeits, by examining the TRA which is explicitly concerned with consumer behavior. The TRA dictates that attitudes and social norms dictate consumer behavioral intent. The present study demonstrates that a consumer's desire for counterfeit luxury brands hinges on the social motivations (i.e. to express themselves and to fit-in) underlying their brand preferences. The more a person believes that a commodity is a means of self-representation and status, the more is he likely not to buy a counterfeit. The TRA indicates that an individual's perception of social norms establishes if he/she should engage in a specific behavior. Consumers who assume that there is monetary risk involved, those who belong to higher income strata, and those who fear being penalized perceive counterfeits as substandard products. Value-conscious consumers are more likely to purchase counterfeits as it will give them the same value-for-money as the real one. The higher the ideology and integrity quotient in a person, the lesser will he be prone to buy a counterfeit. Consequently, ethics have a negative effect on attitude and behavioral intention towards counterfeits.

*a) Qualitative Assessment of Survey Responses*

A survey was conducted among 100 respondents split between the US and Indian markets. 54 respondents were residents of the USA and belonged to the age group of 25-63 years. Forty six

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respondents reside in India and belong to the age group of 23-62 years. The respondents were asked to rank the 6 factors *(X's)* on a scale of 1 to 6, and asked several objective questions that were framed to derive a relationship between the intent to purchase counterfeit *(Y)* and the 6 *X's*. From the survey rankings and responses, the following information was derived:

- Many consumers buy branded products not because they are brand loyal but, because branded products signify genuine 'quality'.
- Those who are status conscious are less likely to buy counterfeits.
- Older people (avg. age > 45) feel less guilty while buying counterfeits. In other words, older people are less brand-conscious.
- Most people are price conscious rather than being brand-conscious.
- Everyone wants value for the money they spend.
- 36% of the respondents said that they would consider buying a counterfeit if the price of the fake product is lower by >40% when compared to the original product price.
- Specific to the Indian markets, people do not feel guilty while buying pirated software. However, they are loyal to brands when it comes to other product categories such as apparel, electronic goods, watches and fashion accessories.
- Some consumers buy counterfeits if the original branded product is not easily available in the local market.
- People whose annual earnings are low (<$25000 per annum) resort to counterfeits more often than others.
- Respondents who said that they were more 'brand conscious' rather than 'price conscious' were not open to buying counterfeits.
- Those who value 'Ethics' and 'Brand loyalty' do not buy counterfeits.

*b) Interactions Analysis of X-Covariates*

Based on the survey ranking response data, a 'main effects' study of the six factors *(X's)* on the purchase intent (Y) was done using a statistical software package called, Minitab. The 'main effects' method analyses the interaction of the *Y* variable with the individual *X's*. The six panels in Fig. 2 show the interaction of each factor with the *Y* variable independently. The steeper the traces of the *X's* in the panels are, the stronger their impact on the *'Y'* variable. A trace that is mostly parallel to the horizontal half-line (y=0.5) or remains on any one side of the half-line (i.e. not intersecting it) has hardly any effect on the *Y* variable. The six discrete levels (0, 20, 40, 60, 80, 100) on the x-axis of Fig. 2 are the scores that we attributed to each *X* based on the rankings that the respondents imparted to it- (6, 5, 4, 3, 2, 1). Figure 2 indicates that the factors 'influence of society $(X_1)$', 'value for money $(X_4)$' and 'status consciousness $(X_2)$' seem to have the strongest impact on the purchase intent of counterfeits or branded products, as they have the sharpest slopes and are evenly spaced across the half-line. The factors 'perception towards fake products $(X_3)$', 'ethics $(X_5)$' and 'loyalty to brand $(X_6)$' do not seem to have a strong statistical effect on the *Y* variable as the their traces are (i) parallel to the half-line in some portions implying a weak correlation with the *Y* variable, (ii) clustering on any one side of the zero line in some portions, and (iii) saw-toothing near the zero line in some portions yielding a mild slope for the overall trace. The positive slopes of the traces for $X_1$ and $X_4$ imply that these two factors influence the *Y* variable positively. In other words, an increasing 'societal influence or desire to belonging to an elite society and owning luxury goods' or an increasing sense of getting 'value for money (price consciousness)' will strengthen the consumer's intent to buy a counterfeit product. The negative slope of $X_2$ implies that the 'status consciousness' factor impacts the *Y* variable negatively. The more status conscious a person is, the less likely he/she is to buy a counterfeit. Also, if the person has ranked 'status consciousness' as one of the top 4 factors that he/she considers while deciding whether to purchase a counterfeit or not, he/she is not likely to buy a fake product as the trace lies below the half-line for $\chi \geq 40$ (see encircled part in second panel of Fig.2). Similar conclusions could be drawn for the other X's as well. For example, if a person has ranked 'societal influence' as one of the top two factors that drive him/her while shopping, he/she is certain to buy a counterfeit product (see encircled part in first panel of Fig.2). The traces of $X_5$ and $X_6$, on the other hand, remain mostly below the half-line and indicate that people who value 'ethics' and are 'brand loyal' are less likely to buy counterfeits. The gradual slope of the trace for 'perception towards counterfeits $(X_3)$' and the fact that it mostly remains below the half-line indicate that this factor does not influence a consumer's decision to buy counterfeit appreciably.

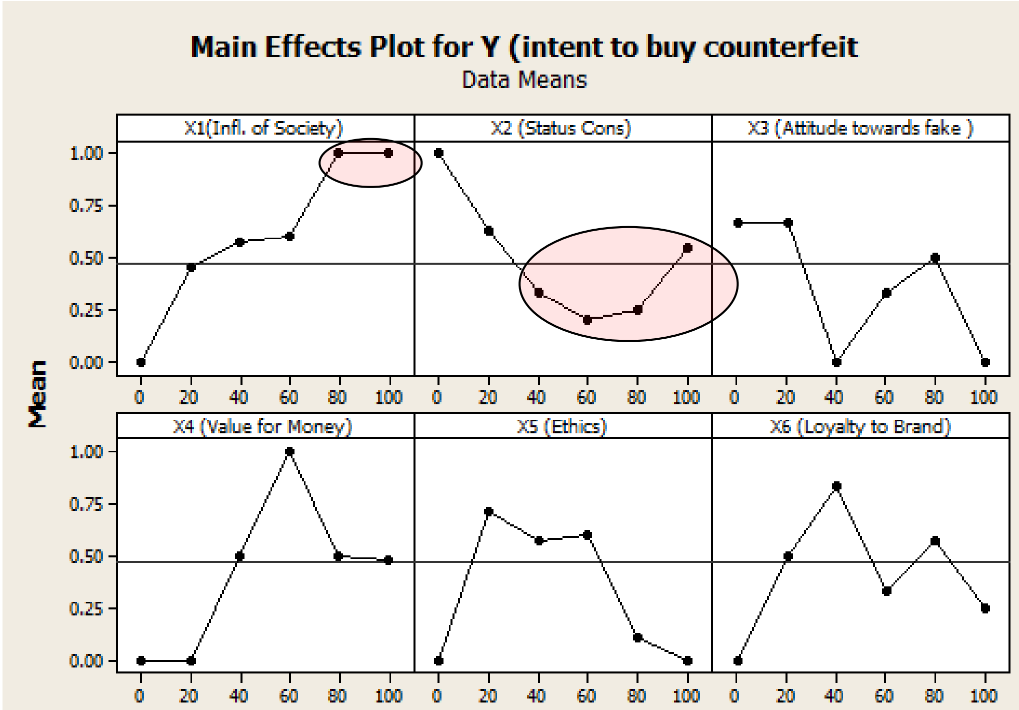


*Fig. 2 :* Effect of Xs on the purchase intent of counterfeits *(Y)*

*c) Trends observed in the Survey Responses*

The raw responses to the survey questions are presented in Figs. 3(a)-3(f) and in Fig.4. In the survey, 38% of the respondents said that they are led to buying branded products under the influence of society and media (see Fig.3a). This is a sizeable fraction implying that 'Social Motivation ($X_1$)' could be one of the factors that appreciably impacts the intent to buy a counterfeit (Y). The trace in the first panel of Fig.2 corroborates this fact.

48% of the respondents (see Fig. 3c) said that they would be keen to consider buying counterfeits- 'Perception *($X_3$)'*. Typically based on this large fraction, one would assume that $X_3$ should have a strong impact on the intent to buy counterfeits *(Y)*. However, please note that there existed an equivalent fraction of respondents (52%) who were not open to buying counterfeits. Since, adequate separation does not exist between the 'Yes' and 'No' responses in Fig. 3c, $X_3$ does not impact the consumer's decision to buy a counterfeit in any one direction and therefore, $X_3$ does not influence *Y* significantly. In other words, if we find the 'Yes' and 'No' histogram bars in any figure to be of approximately similar height, then that parameter (X) will not have a strong influence on the *Y*. Furthermore, the 'Yes' histogram bar has to be taller than the 'No' counterpart in order to have an appreciable impact on the Y variable. By that logic, we could conclude that 'Perception towards counterfeits *($X_3$)'*, 'Ethics *($X_5$)'* and 'Brand Loyalty *($X_6$)'* do not have a determining influence on the intent to purchasing a fake product *(Y)* as shown in Figs. 3c, 3e and 3f.

Among the duo of 'Social motivation *($X_1$)'* and 'Status consciousness *($X_2$)'*, it is difficult to decide which one has a greater impact on the Y variable as both show similar trends and magnitudes in Figs. 3a and 3b. However, when comparing the slopes of the traces in the first two panels of Fig. 2, it is easy to identify that $X_1$ has a greater effect on the *Y* variable than $X_2$. Therefore, for data analysis purposes, the influence of $X_2$ on the *Y* variable has been neglected.

A whopping 84% of the respondents said that they were 'price conscious' and not 'brand conscious' (see Fig. 3d) implying that they want value for their spent money *($X_4$)*. Those who said that they were 'brand conscious' were not inclined to buying counterfeits. Some of the 'price conscious' people, on the other hand, were open to buying counterfeits while, some were not. In either case, $X_4$ has a dominant influence on the intent to purchase a fake product *(Y)* as is also shown in Fig. 2.

68% of the respondents have said that they were not brand loyal (Fig. 3f). This implies that 'brand loyalty' does not play a major role in influencing a consumer's decision to buy a counterfeit product.

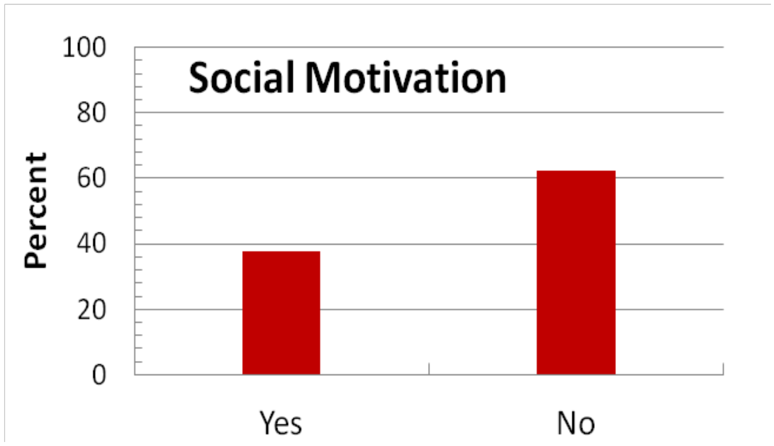


*Fig. 3a :* 38% of the respondents buy branded products because of societal influence

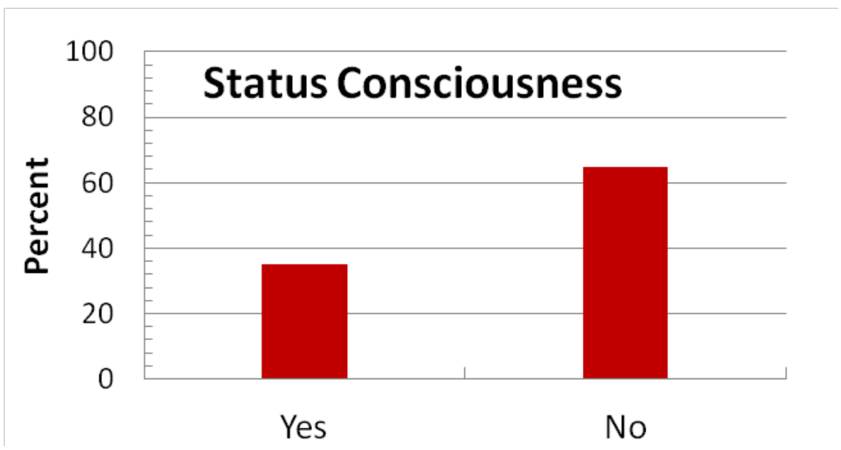


*Fig. 3b :* Only 35% of the respondents said that the branded products define their public image (i.e. status consciousness)

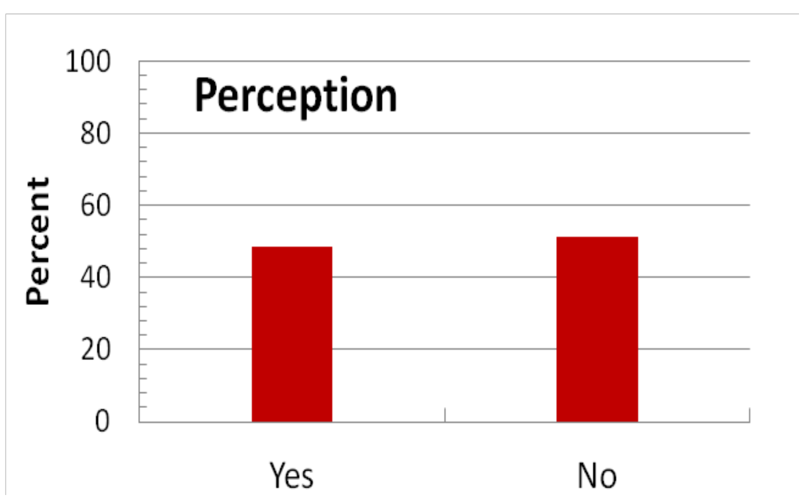


*Fig. 3c :* 48% of the respondents said that they are open to buying counterfeits- 'Perception'

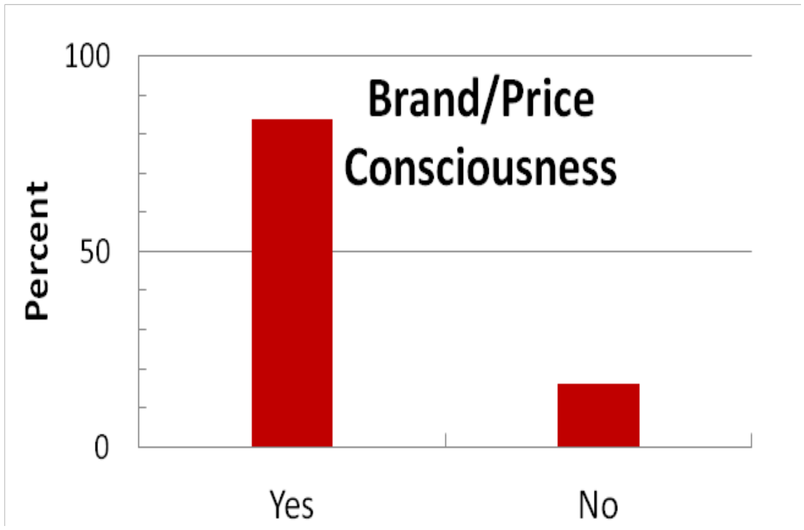


*Fig. 3d :* 84% of the respondents said that they were price conscious (i.e. Value for money)

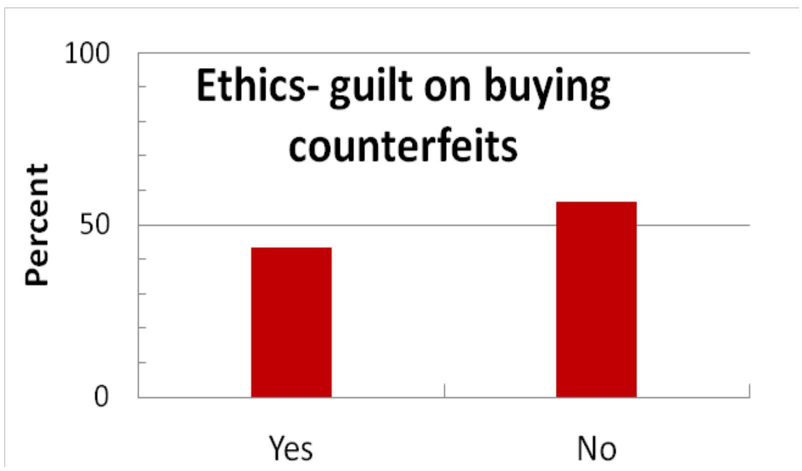


*Fig. 3e :* 43% of the respondents said that they feel guilty upon buying a counterfeit

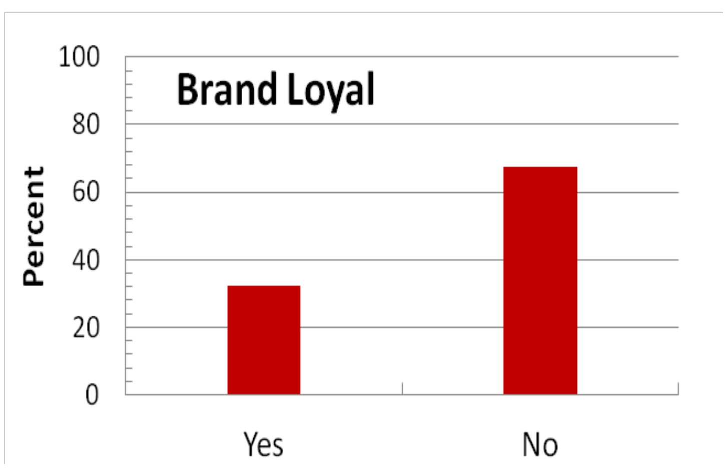


*Fig. 3f :* Only 32% of the respondents said that they were brand loyal

Figure 4 shows histograms of the raw survey data for all the 6 independent factors *(X's)*. The survey responses were also classified according to the geographical location of the respondents. The green-colored bars in Fig.4 represent voices from the Indian market while, the red-colored bars represent voices from the American market. The blue-colored bars represent the gross or combined voices of both markets. The x-axis of the plot represents net scores obtained by the six factors *(X's)* based on the rankings attributed to them by the respondents. The following facts can be derived from this plot:

- 'Value for money' is a clear winner and strongly influences the consumer's intent to buy a branded/counterfeit product. Those who want good returns on their invested money and are price-conscious typically tend to buy counterfeits. Respondents from India were more price-conscious than those from USA implying that there is greater likelihood that consumers will buy counterfeits in India than in the USA.
- The above fact is corroborated by the difference in heights of the green and red bars corresponding to the 'Attitude towards fake products' category. A much greater fraction of Indian voices, when comparing to American market voices, said that they were open to purchasing counterfeits if the price of the counterfeit product was significantly lower (>40%) than the original branded product.

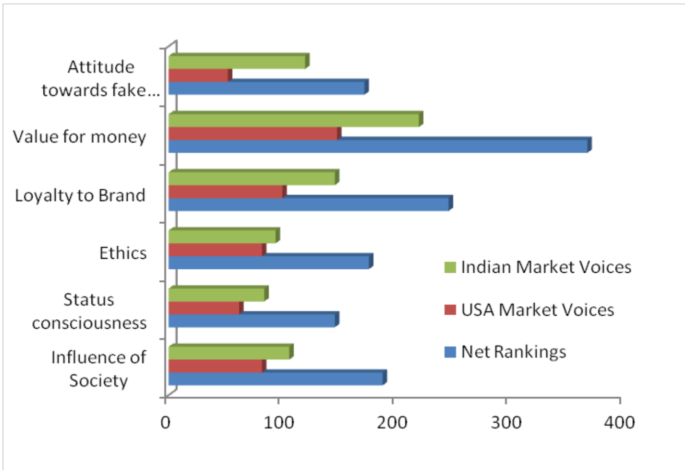


*Fig. 4 :* Gross rankings of the six factors by the respondents. A batch-to-batch variation between the USA and Indian markets has also been shown

d) *Chi-Square Regression Analysis to identify the two most-impactful X's*

A Chi-square regression test was performed, using Minitab, in parallel to identify which of the 6 factors *(X's)* have a strong influence on the *Y* variable. A Chi-square is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis. In other words, the test is any statistical hypothesis test in which the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true, or any in which this is *asymptotically* true, meaning that the sampling distribution (if the null hypothesis is true) can be made to approximate a chi-squared distribution as closely as desired by making the sample size large enough. In other words, chi-square is a non-normal distribution and a sum of squared normal variables. A typical $\chi 2$ random variable with '$n$' degrees of freedom is defined as follows:

$$f(x) = \frac{x^{\frac{n}{2}-1} e^{-\frac{x}{2}}}{2^{\frac{n}{2}} \Gamma(\frac{n}{2})}, \quad x > 0, n > 0 \qquad (1)$$

A chi-square distribution approaches symmetry and resembles a normal distribution only for relatively large degrees of freedom ($n \geq 30$). The null hypothesis ($H_0$) for chi-square states that there exists no relation between X and Y. IF the p-value turns out to be less than 0.05, the hypothesis is rejected implying that there does exist a relation between *X* and *Y*. The following results were obtained from the chi-square 'goodness of fit' test for the *Y* variable versus the individual *X's*:

*Table 1 :* Minitab results for Chi-Square 'goodness of fit' for the survey ranking data

| **Influencing Factor** | ***p-value*** | ***Chi-Sq*** | ***Deg. of Freedom*** |
|---|---|---|---|
| *Influence of Society* ($X_1$) | 0.022 | 13.16 | 5 |
| Status consciousness ($X_2$) | 0.151 | 8.1 | 5 |
| Attitude towards fake products ($X_3$) | 0.004 | 17.26 | 5 |
| *Value for money* ($X_4$) | 0 | 82.6 | 5 |
| Ethics ($X_5$) | 0.003 | 18.21 | 5 |
| Loyalty to Brand ($X_6$) | 0.21 | 7.16 | 5 |

It can be seen that the p-value was less than 5% for $X_1$, $X_3$, $X_4$ and $X_5$ implying that the null hypothesis is not true for these factors and there 'does' exist a relationship between *Y* and these *X's*. However, based on results of the 'main effects' plot, we found that the influence of $X_3$ and $X_5$ on *Y* is weak when compared to the influence of $X_1$ and $X_4$. Therefore, if we had to identify two primary *X's* that impact *Y* the most for simplification sake, they would be $X_1$ and $X_4$ and we would leave out $X_3$ and $X_5$.

*e) Mathematical expression to predict consumer's intent to buy counterfeits using ($X_1$, $X_4$) rankings*

Finally, we have attempted to model the consumer attitude towards counterfeits *(Y)* using the importance/ranking that the consumer attributes to the influencing factors *(X's)* in his/her mind. In this modeling endeavor of predicting the probability *(p(Y))* that a consumer would purchase a counterfeit or not, we have used the survey response data- *p(Y)* and only the two primary *X's* that impact the consumer behavior most strongly, viz. $X_1$ and $X_4$, as identified in the discussion above. In summary, our pursuit was for a mathematical function that correlates *p(Y)*, $X_1$ and $X_4$ as described in Eqn. (2) below.

$$p(Y) = f(X_1, X_4) \tag{2}$$

A *'binary logistic regression analysis'* is typically employed in cases where the output *(Y)* is a discrete variable and the inputs *(X's)* are continuous or discrete with 2 or more levels. The null hypothesis for the analysis was that there existed no relationship between the *X's* and *Y*. The binary logistic regression tries to fit the probability of *Y's* occurrence based on Eq. (1) where, $\beta_i$ are empirically fitted constants.

$$p(Y) = \frac{1}{1 + \exp(\beta_0 + \beta_1 . X_1 + \beta_2 . X_4)} \tag{3}$$

The two primary *X's* that influence the *Y* variable, as deciphered through the 'Main Effects' plot and the Chi-square analyses were identified as the 'Value for Money' and 'Influence of Society'. The intention to buy a counterfeit was determined from the responses to the survey. The objective of this model was to propose an empirical correlation that predicts if a consumer would buy a counterfeit or not based on the rank (on a scale of 1 to 100) that the consumer assigns to 'Price consciousness' and 'Societal influence/motivation'. The values for *p(Y)*, $X_1$ and $X_4$ were derived from the survey responses. The logistic regression analysis then determined the most appropriate values of the constants $\beta_0$, $\beta_1$ and $\beta_2$ that minimized the error between the (i) survey response values of *p(Y)* and (ii) model-fitted values of *p(Y)* according to Eqn. (3).

The logistic regression fit on the survey responses, performed using Minitab, yielded the following values for the constants $\beta_0$, $\beta_1$ and $\beta_2$ : -2.614, 0.044 and 0.0106 respectively. The results of the analysis are shown below in Fig. 5. Note that the *p*-value of 0.007 from the analysis is less than 0.05 implying that the null hypothesis of no relation existing between the *Y* and ($X_1$, $X_4$) should be rejected. Instead, the *p*-value suggests that there 'does exist' a relation between the *Y* and *X's*. The model match to the survey data of *p(Y)* is shown in Fig.6a. On a first glance, there does not seem to be a good match between the 'hollow diamonds' (actual survey response data for *p(Y)*) and the red dots (regression model results for *p(Y)* using the above-mentioned values of $\beta_i$). However, upon rounding off the model-predicted values for *p(Y)* according to Eqn. (4), the model results matched to the survey data very well as shown in Fig. 6b.

The empirically fitted constants, $\beta_i$, were also obtained via another route using the global optimization toolbox of Matlab. The 'Optimtool' command on the command prompt pulls up the optimizer toolbox in Matlab. The unconstrained 'fminsearch' function was used to fit the $\beta_i$ constants to Eqn.(3). The matlab optimizer yielded the following values for $\beta_0$, $\beta_1$ and $\beta_2$: 42.45, -2.493 and 0.831 respectively. The model results fitted very well to the survey data as shown in Fig.7. One could use either set of $\beta_i$'s, determined using Minitab or Matlab, and Eqn.(3) to predict the consumer's intent to buy a counterfeit.

Logistic Regression Table

| Predictor | Coef | SE Coef | Z | P | Odds Ratio | 95% CI Lower | 95% CI Upper |
|---|---|---|---|---|---|---|---|
| Constant | -2.61462 | 1.49850 | -1.74 | 0.081 | | | |
| X1(Infl. of Society) | 0.0440633 | 0.0162914 | 2.70 | 0.007 | 1.05 | 1.01 | 1.08 |
| X4 (Value for Money) | 0.0106426 | 0.0150440 | 0.71 | 0.479 | 1.01 | 0.98 | 1.04 |

Log-Likelihood = -21.267
Test that all slopes are zero: G = 10.040, DF = 2, P-Value = 0.007

*Fig. 5 :* Minitab results of the binary logistic regression fit. Note that 'degrees of freedom' =2 and p-value < 5%

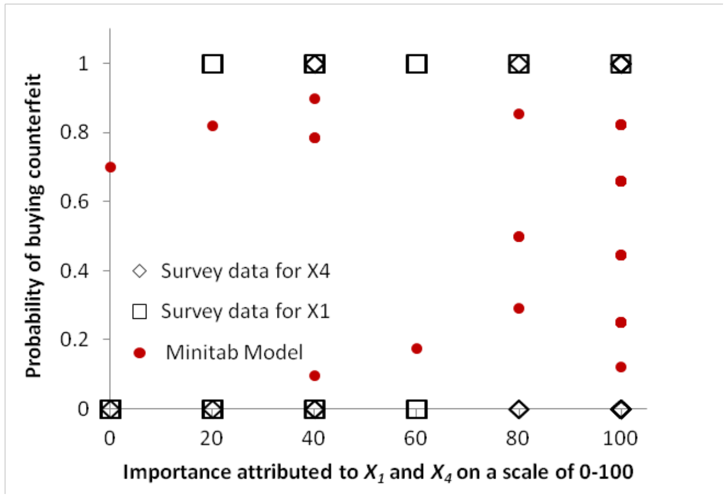


*Fig. 6a :* Minitab results of the logistic regression fit. On a first glance, there does not seem to be an exact match

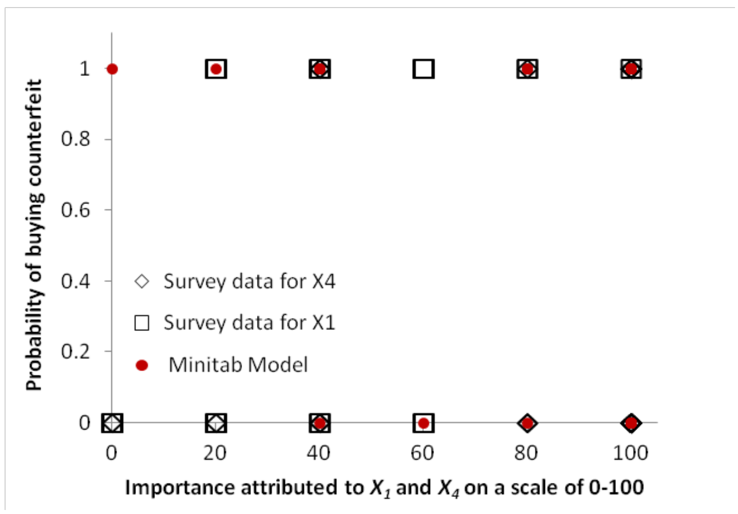


*Fig. 6b :* Minitab results of the logistic regression fit after rounding off the model-predicted *p(Y)*

$$p(Y) = \begin{cases} 1, & \text{if } p(Y) \geq 0.5 \\ 0, & \text{if } p(Y) < 0.5 \end{cases} \tag{4}$$

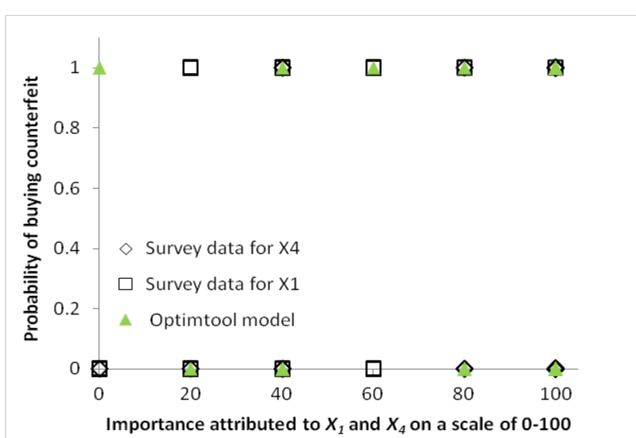


*Fig. 7 :* Empirical fit results of the same logistic regression using the Matlab global optimizer toolbox

## V. Summary and Conclusions

Six factors that define a consumer's intention to purchase counterfeits have been discussed, based on the TRA, in the present work.

a) A survey was conducted among consumers to determine which of the six factors predominantly motivate people to buy counterfeits.
b) Many consumers said that they buy branded products not because they are brand loyal but, because branded products signify genuine 'quality'.
c) The survey respondents were evenly distributed between the Indian and American markets. Based on the results we had, it was found that respondents from India were more price-conscious and more open to purchasing counterfeits.
d) The 'influence of society *($X_1$)*' and 'Value for money *($X_4$)*' were identified as the two primary factors that influence a consumer's decision to buy counterfeits.
e) A logistic regression modeling approach has been used to develop a mathematical correlation that predicts the probability of a consumer buying a counterfeit or not based on the rank he/she assigns to $X_1$ and $X_4$ on a scale of 1 to 100.

This investigation contributes to existing literature by studying the impact of each of the six important factors on consumer behavior which has been tested through a survey. The theory of reasoned action, which is a well-established model, has been used as a skeleton/framework to analyze the consumer's behavioral intention towards counterfeit products. The study attempts to throw insight into the significant indicators of consumer attitude towards fake products. Brand preferences and purchase of duplicate products vary from market-to-market based on economic status and availability of counterfeits. Hence, popular products such as mobile phones, apparel and computers should be investigated that are widely used in all walks of life and strata of society in such endeavors.

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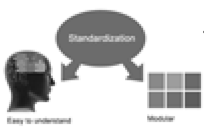

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Once you are designated as MARSB, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria.

It is mandatory to read all terms and conditions carefully.

# Auxiliary Memberships

## Institutional Fellow of Open Association of Research Society (USA)-OARS (USA)

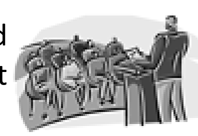
Global Journals Incorporation (USA) is accredited by Open Association of Research Society, U.S.A (OARS) and in turn, affiliates research institutions as "Institutional Fellow of Open Association of Research Society" (IFOARS).

The "FARSC" is a dignified title which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., FARSC or William Walldroff, M.S., FARSC.

The IFOARS institution is entitled to form a Board comprised of one Chairperson and three to five board members preferably from different streams. The Board will be recognized as "Institutional Board of Open Association of Research Society"-(IBOARS).

*The Institute will be entitled to following benefits:*

The IBOARS can initially review research papers of their institute and recommend them to publish with respective journal of Global Journals. It can also review the papers of other institutions after obtaining our consent. The second review will be done by peer reviewer of Global Journals Incorporation (USA)
The Board is at liberty to appoint a peer reviewer with the approval of chairperson after consulting us.
The author fees of such paper may be waived off up to 40%.



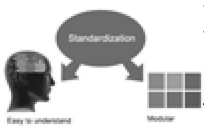
The Global Journals Incorporation (USA) at its discretion can also refer double blind peer reviewed paper at their end to the board for the verification and to get recommendation for final stage of acceptance of publication.

The IBOARS can organize symposium/seminar/conference in their country on behalf of Global Journals Incorporation (USA)-OARS (USA). The terms and conditions can be discussed separately.


The Board can also play vital role by exploring and giving valuable suggestions regarding the Standards of "Open Association of Research Society, U.S.A (OARS)" so that proper amendment can take place for the benefit of entire research community. We shall provide details of particular standard only on receipt of request from the Board.

The board members can also join us as Individual Fellow with 40% discount on total fees applicable to Individual Fellow. They will be entitled to avail all the benefits as declared. Please visit Individual Fellow-sub menu of GlobalJournals.org to have more relevant details.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.




After nomination of your institution as "Institutional Fellow" and constantly functioning successfully for one year, we can consider giving recognition to your institute to function as Regional/Zonal office on our behalf.
The board can also take up the additional allied activities for betterment after our consultation.

**The following entitlements are applicable to individual Fellows:**

Open Association of Research Society, U.S.A (OARS) By-laws states that an individual Fellow may use the designations as applicable, or the corresponding initials. The Credentials of individual Fellow and Associate designations signify that the individual has gained knowledge of the fundamental concepts. One is magnanimous and proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice.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We shall provide print version of 12 issues of any three journals [as per your requirement] out of our 38 journals worth $ 2376 USD.

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- The professional accredited with Fellow honor, is entitled to various benefits viz. name, fame, honor, regular flow of income, secured bright future, social status etc.

- In addition to above, if one is single author, then entitled to 40% discount on publishing research paper and can get 10%discount if one is co-author or main author among group of authors.
- The Fellow can organize symposium/seminar/conference on behalf of Global Journals Incorporation (USA) and he/she can also attend the same organized by other institutes on behalf of Global Journals.
- The Fellow can become member of Editorial Board Member after completing 3yrs.
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- Fellow can also join as paid peer reviewer and earn 15% remuneration of author charges and can also get an opportunity to join as member of the Editorial Board of Global Journals Incorporation (USA)
- • This individual has learned the basic methods of applying those concepts and techniques to common challenging situations. This individual has further demonstrated an in–depth understanding of the application of suitable techniques to a particular area of research practice.

**Note :**

"

- In future, if the board feels the necessity to change any board member, the same can be done with the consent of the chairperson along with anyone board member without our approval.
- In case, the chairperson needs to be replaced then consent of 2/3rd board members are required and they are also required to jointly pass the resolution copy of which should be sent to us. In such case, it will be compulsory to obtain our approval before replacement.
- In case of "Difference of Opinion [if any]" among the Board members, our decision will be final and binding to everyone. "

# Process of submission of Research Paper

The Area or field of specialization may or may not be of any category as mentioned in 'Scope of Journal' menu of the GlobalJournals.org website. There are 37 Research Journal categorized with Six parental Journals GJCST, GJMR, GJRE, GJMBR, GJSFR, GJHSS. For Authors should prefer the mentioned categories. There are three widely used systems UDC, DDC and LCC. The details are available as 'Knowledge Abstract' at Home page. The major advantage of this coding is that, the research work will be exposed to and shared with all over the world as we are being abstracted and indexed worldwide.

The paper should be in proper format. The format can be downloaded from first page of 'Author Guideline' Menu. The Author is expected to follow the general rules as mentioned in this menu. The paper should be written in MS-Word Format (*.DOC,*.DOCX).

The Author can submit the paper either online or offline. The authors should prefer online submission.<u>Online Submission</u>: There are three ways to submit your paper:

**(A) (I) First, register yourself using top right corner of Home page then Login. If you are already registered, then login using your username and password.**

**(II) Choose corresponding Journal.**

**(III) Click 'Submit Manuscript'. Fill required information and Upload the paper.**

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**(C) If these two are not convenient, and then email the paper directly to dean@globaljournals.org.**

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- Font type of all text should be Swis 721 Lt BT.
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- Two Column with Equal Column with of 3.38 and Gaping of .2
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- Paragraph before Spacing of 1 pt and After of 0 pt.
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- Large Images must be in One Column
- Numbering of First Main Headings (Heading 1) must be in Roman Letters, Capital Letter, and Font Size of 10.
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**You can use your own standard format also.**
**Author Guidelines:**

1. General,

2. Ethical Guidelines,

3. Submission of Manuscripts,

4. Manuscript’s Category,

5. Structure and Format of Manuscript,

6. After Acceptance.

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All authors should have been credited according to their appropriate contribution in research activity and preparing paper. Contributors who do not match the criteria as authors may be mentioned under Acknowledgement.

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Complete support for both authors and co-author is provided.

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Based on potential and nature, the manuscript can be categorized under the following heads:

Original research paper: Such papers are reports of high-level significant original research work.

Review papers: These are concise, significant but helpful and decisive topics for young researchers.

Research articles: These are handled with small investigation and applications

Research letters: The letters are small and concise comments on previously published matters.

**5.STRUCTURE AND FORMAT OF MANUSCRIPT**

The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also.Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

**Papers**: These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

(a)Title should be relevant and commensurate with the theme of the paper.

(b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.

(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

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(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and to make suggestions to improve briefness.

It is vital, that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

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*Language: The language of publication is UK English. Authors, for whom English is a second language, must have their manuscript efficiently edited by an English-speaking person before submission to make sure that, the English is of high excellence. It is preferable, that manuscripts should be professionally edited.*

Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

Abbreviations supposed to be used carefully. The abbreviated name or expression is supposed to be cited in full at first usage, followed by the conventional abbreviation in parentheses.

Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than 1.4 × 10-3 m3, or 4 mm somewhat than 4 × 10-3 m. Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

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*Abstract, used in Original Papers and Reviews:*

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Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

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A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy and planning a list of possible keywords and phrases to try.

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art.A few tips for deciding as strategically as possible about keyword search:

- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

*Acknowledgements: Please make these as concise as possible.*

References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

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Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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## TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

**1. Choosing the topic:** In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

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**3. Think Like Evaluators:** If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

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**11. Revise what you wrote:** When you write anything, always read it, summarize it and then finalize it.

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**16. Use proper verb tense:** Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

**17. Never use online paper:** If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

**18. Pick a good study spot:** To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

**19. Know what you know:** Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

**20. Use good quality grammar:** Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

**21. Arrangement of information:** Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

**22. Never start in last minute:** Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

**23. Multitasking in research is not good:** Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

**24. Never copy others' work:** Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

**25. Take proper rest and food:** No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

**26. Go for seminars:** Attend seminars if the topic is relevant to your research area. Utilize all your resources.

**27. Refresh your mind after intervals:** Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

**28. Make colleagues:** Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

**29. Think technically:** Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

**30. Think and then print:** When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

**31. Adding unnecessary information:** Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

**32. Never oversimplify everything:** To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

**33. Report concluded results:** Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

**34. After conclusion:** Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

## Informal Guidelines of Research Paper Writing

**Key points to remember:**

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

**Final Points:**

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.

Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

**General style:**

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

**Title Page:**

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.

**Abstract:**

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript--must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

**Introduction:**

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.

- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

**Procedures (Methods and Materials):**

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

**Results:**

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

**Discussion:**

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.

# The Administration Rules

Please carefully note down following rules and regulation before submitting your Research Paper to Global Journals Inc. (US):

**Segment Draft and Final Research Paper:** You have to strictly follow the template of research paper. If it is not done your paper may get rejected.

- The **major constraint** is that you must independently make all content, tables, graphs, and facts that are offered in the paper. You must write each part of the paper wholly on your own. The Peer-reviewers need to identify your own perceptive of the concepts in your own terms. NEVER extract straight from any foundation, and never rephrase someone else's analysis.

- Do not give permission to anyone else to "PROOFREAD" your manuscript.

- Methods to avoid Plagiarism is applied by us on every paper, if found guilty, you will be blacklisted by all of our collaborated research groups, your institution will be informed for this and strict legal actions will be taken immediately.)
- To guard yourself and others from possible illegal use please do not permit anyone right to use to your paper and files.

## Criterion for Grading a Research Paper (Compilation) by Global Journals Inc. (US)

**Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals Inc. (US).**

| Topics | Grades | | |
|---|---|---|---|
| | **A-B** | **C-D** | **E-F** |
| ***Abstract*** | Clear and concise with appropriate content, Correct format. 200 words or below | Unclear summary and no specific data, Incorrect form<br><br>Above 200 words | No specific data with ambiguous information<br><br>Above 250 words |
| ***Introduction*** | Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited | Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter | Out of place depth and content, hazy format |
| ***Methods and Procedures*** | Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads | Difficult to comprehend with embarrassed text, too much explanation but completed | Incorrect and unorganized structure with hazy meaning |
| ***Result*** | Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake | Complete and embarrassed text, difficult to comprehend | Irregular format with wrong facts and figures |
| ***Discussion*** | Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited | Wordy, unclear conclusion, spurious | Conclusion is not cited, unorganized, difficult to comprehend |
| ***References*** | Complete and correct format, well organized | Beside the point, Incomplete | Wrong format and structuring |

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