Yangon University of Economics Research Journal

Vol. 5,   No. 2

About the Journal

The Research Journal of Yangon University of Economics has come out by the guidelines of the Minister for the Ministry of Education in Myanmar. The journal aims at the advancement of research in all areas of Economics. It also has the aim of providing a scholastic platform to professionals, researchers, and academicians associated with the field of Economics. It is expected that the journal can provide implications for teaching and learning public policy, business policy and individual decision making.

The articles in this journal are contributed by researchers from all academic departments of our university. We fully appreciate the contributions of the researchers. We also admire their great efforts to contribute in this journal though gradually increasing numbers of the students enrolled in Yangon University of Economics make them occupied with teaching.

Yangon University of Economics has always been trying to promote the quality of education. This research journal is a proof of such endeavour.

Editorial Board

FINANCIAL DEEPENING AND ECONOMIC GROWTH IN MYANMAR

Dr. Su Su Myat[1]

ABSTRACT

Financial reform plays an important role in liberalization of financial system and development of financial sector. There has an ample literature on finance-growth nexus and empirical evidence for impact of financial development on economic growth. Myanmar has been under the ongoing process of financial reform since its inception in 1990. Under the reform process, financial liberalization has led to financial sector development to some extent. The study explores financial deepening which reflects the financial development. Financial development is indispensable for the effectiveness of monetary policy and financial stability. This study tries to find out the impact of financial liberalization on economic growth. Empirical analysis is done by using Vector Autoregressive method based on time series data. It is found that financial deepening could support to economic growth to some extent since growth of narrow money supply and growth of broad money supply have strong link with economic growth in one-year time lag, and bank credit to private sector have strong relationship with economic growth in two-year time lag .

Keywords: Financial Liberalization, Financial Deepening, Economic Growth

Introduction

A well-developed financial system enhances financial efficiency and thereby promotes economic growth. . It thus follows that economic growth rarely (if ever) occurs without a well-functioning financial system (McKinnon, 1973; Shaw, 1973; King & Levine, 1993). The financial structure is indispensable for the way in which the monetary policy conducts in achieving its major objectives: output and price stability. Through its transmission channels, monetary policy affects financial market and also affects real sector of the economy (Cecchetti 2006; Mishkin, 2007).

With the inception of the economic reform and opening-up policy in the late 1980s, the financial system of Myanmar has been reformed since the early 1990s to support for mobilizing and allocating financial resources and for providing an appropriate environment for the conduct of monetary policy. Key features of financial reform are the emergence of the new banking system, the newly established bond market, the practice of financial liberalization by gradually changing the system from repressed financial system to liberalized financial system. Although financial reform is still an ongoing process, it is worthwhile to analyze the impact of financial liberalization on economic growth.

---

[1] Professor, Department of Economics, Mandalay University of Distance Education

Problem Setting and Objective of the Study

Financial repression and its consequences were evident for a long period of almost three decades since realization of nationalization in 1963. Prior to financial reform embarked in 1990, repressed financial sector with only uncompetitive state banks provided credit which was mainly channeled to unviable loss-making state economic enterprises and to a less extent, to unflavored private sector. Administratively controlled interest rates which is one of the reasons of low domestic financial mobilization and highly overvalued official exchange rate with parallel multiple exchange rates in unofficial markets and segmented foreign exchange markets between public sector and private sector all created distortions in macro economy. Due to inception of financial reform in 1990 and its ongoing reform process lead to financial liberalization which tends to enhance economic growth. Under the ongoing process of financial reform, financial sector has developed to some extent compared to the one in its rudimentary stage prior to the reform process. The effect of financial liberalization brings about financial deepening and thereby tends to enhance economic growth. 'Financial deepening', which is measured as a ratio of financial assets to the gross domestic product (GDP) or broader monetary aggregates to (GDP), refers to the greater financial resource mobilization in the formal financial sector, and the ease in liquidity constraints of banks and enlargement of funds available to finance projects (Fischer 1993).

A critical issue which can be set for the study is "whether financial deepening supports economic growth". In this context, the study analyses the financial liberalization process and tries to examine the impact of financial deepening on economic growth in Myanmar. \

2. Method and Scope of the Study

For empirical study on impact of financial deepening on economic growth, time series data on macroeconomic and financial variables of the economy are applied. These variables include Gross Domestic Product (GDP), government expenditure, gross fixed capital formation, export, broad money supply (M2), narrow money supply (M1), quasi money and bank credit to private sector. Real GDP growth rate is chosen as a measure of output or economic growth. Government expenditure, gross fixed capital formation and export are used as growth affecting factors. As the measures of financial deepening, broad money supply, narrow money supply, quasi money supply and bank credit to private sector are included in the model. Since these variables are time series data and some variables are non-stationary in their levels, the dynamic model of Vector Autoregressive (VAR) is used for empirical analysis. The study uses secondary data released by Central Statistical Organization (CSO) Myanmar, International Monetary Fund, and United Nations.

Since financial system of Myanmar is dominated by banking sector and stock market capitalization is very thin, the study focuses on the banking sector. Empirical study covers the period from 1974 to 2014.

3.   Results/Findings

Private financial institutions were nationalized in the early days of socialist economic system and financial sector had been dominated by state-owned financial institutions and financial system had been repressed over the socialist period. Since economic system changed from socialist to market-oriented economic system, financial system has been liberalized by gradual removal of restrictions on financial sector under the military government and the democratic government.

After assuming state power in 1988 by the State Law and Order Restoration Council (SLORC), there was a change in economic system in which market orientation was to be encouraged. To this end, SLORC implemented reforms in various sectors of the economy. Consequently, SLORC passed a series of financial laws and started the financial sector reforms. During the period from 1990 to 2000, before the new democratic government took power, the financial reform process was preceded by the SLORC and the State Peace and Development Council (SPDC). The program of liberalizing financial sector includes three phrases;

Phase I: Allowing domestic private banks to establish and permitting foreign banks to open representative offices

Phase II: Allowing selected domestic banks to form joint ventures with foreign banks

Phase III: Allowing foreign banks to operate in their own rights.

The financial reform process consisted of following measures;

(i)   Allowing the establishment of domestic private banks and representative offices of foreign banks

(ii) Changing interest rates in flexible manner

(i)   Partial liberalization in foreign exchange management
(i)   Unification of foreign exchange rates
(ii) Establishment of monetary policy framework

As a result of financial liberalization programme, the banking sector has already opened up the participation of (24) private banks, and (13) foreign bank branches. In direct financing sector, Treasury bond and bill markets and Yangon Stock Exchange emerged.

Financial Deepening

Over two decades of financial reforms since the early 1990s, Myanmar's financial sector transformed from a repressed financial sector to a liberalized one. Consequently, the financial sector of Myanmar has deepened because of liberalized financial system. Private bank participation in banking industry and widening banking network make the banking sector more competitive and enhance people's banking habit and use of banking service by households and the corporate sector. Besides, allowing interest rate to change in a more flexible manner can attract deposits which are fund bank can mobilize to support financing investment. Time and saving bank deposits are financial savings, the difference between narrow money supply M1 and broad money supply M2, which is called quasi money. Increase in demand deposit leads to increase money supply M1 through the multiplier effect and likewise increase in time and savings deposit means increase in money supply M2 through multiplier effect. Consequently, increase in deposits means more credit creation for banks. So, financial deepening can be seen in some financial indicators related to deposits, credit and money supply. These indicators are as follows.

Cash-to Deposit Ratio

Cash to deposit ratio measures the extent to which banks are functioning in the creation of credit. In a properly functioning financial system, this ratio will be low since in such a system, deposits will be the most significant part of money supply. Cash to deposit ratios of Myanmar are shown in the following figure.

Figure (1)   Cash to Deposit Ratio
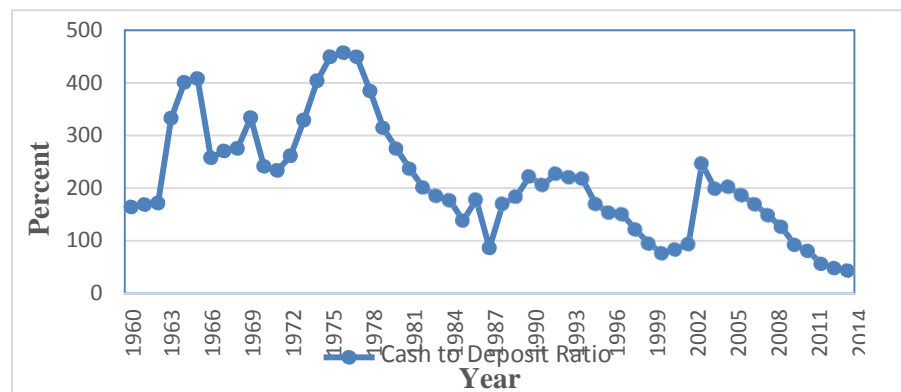
Source: Calculation based on data obtained from International Financial Statistics (IFS) (2015),
          International Monetary Fund (IMF).

In 1963, cash to deposit ratio remarkably increased after nationalization under the socialist regime[2] and the ratio remained high until 1965. The ratio significantly declined in 1966.

---

[2] In 1963, the government carried out nationalization and Burmanization of trade, banking and industry.

Since 1967, escalated consumer prices and lower economic growth led to a high ratio again in 1969 and the lower ratios were seen in 1970 and 1971.

During the period from 1972 to 1976, the ratio was getting higher and higher since the series of negative real interest rate could not attract people to save. From 1977 to 1987, the ratio was on a declining trend .After 1988, the cash to deposit ratio rose again due to political and economic unrest. After taking the reform measures initiated in the early 1990s, this ratio declined until 2002 due to increase in financial savings at banks. However, this ratio sharply increased in the year 2003 due to substantial withdrawal of deposits as a result of banking crisis in early 2003. After 2003 onwards, this ratio has gradually declined and keeps on a downward trend because of increase in bank deposits over the post crisis period.

Real Deposit Interest Rate

Savings behavior in any country is determined by many variables such as economy's growth rate, average income, political stability, macroeconomic stability, rate of returns on various financial and non-financial assets, branch network, and cultural norms. One of the factors that contributes to low savings ratios in Myanmar can be found out due to low and negative real deposit interest rates. It is shown in Figure (2).

Figure (2) Deposit Rate and Inflation Rate
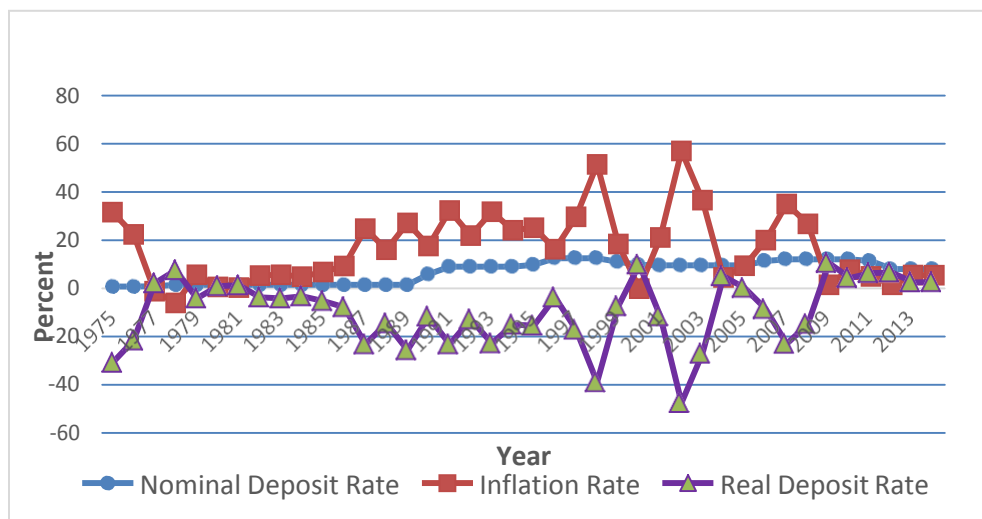
Source: Calculation of real deposit rates based on data obtained from IFS (2015), IMF.

A rise in the real deposit rate of interest is well recognized to promote financial deepening because positive real deposit rate provides attractiveness to people to hold their savings in financial, rather than non-financial, asset forms. It improves the intermediation between savers and investors. When nominal deposit rates are set below the inflation rate, negative real interest rates lower the demand for financial assets as savers are encouraged to invest in real assets rather than in financial assets.

This phenomenon is clearly seen. The real deposit interest rate has been low and even negative in most years over the period from 1975 to 2014. After taking financial reforms in 1992, though nominal deposit rates were raised as already mentioned in previous section, the real interest rate remains negative except in some years. It is because the inflation rate is higher than those modified interest rates and there is still restriction, like putting interest rate ceiling.

Since 2009, real deposit rate has been positive in successive years as a result of low rate of single digit inflation. Although an increase in bank branches, expanded banking facilities may contribute to growth of domestic savings, such a low level of real deposit interest rates could not attract domestic savings effectively.

Deposits to GDP Ratio

In Myanmar, there is low level of banking habit. People prefer saving their wealth in the form of material assets such as gold to saving in the form of financial assets like bank deposits. Such a kind of unproductive saving behavior limits domestic financial mobilization and thereby leads to low level of gross domestic savings. In order to mobilize domestic savings, financial reforms have been conducted in the early 1990s. The authority raised its official discount rate, deposit interest rates and other interest rates. This led to increase in domestic savings although interest rates in real terms are negative in most of the years over the period. Deposits to GDP ratios are shown in Figure (3).

Figure (3)   Demand Deposit and Time & Savings Deposit (as % of GDP)
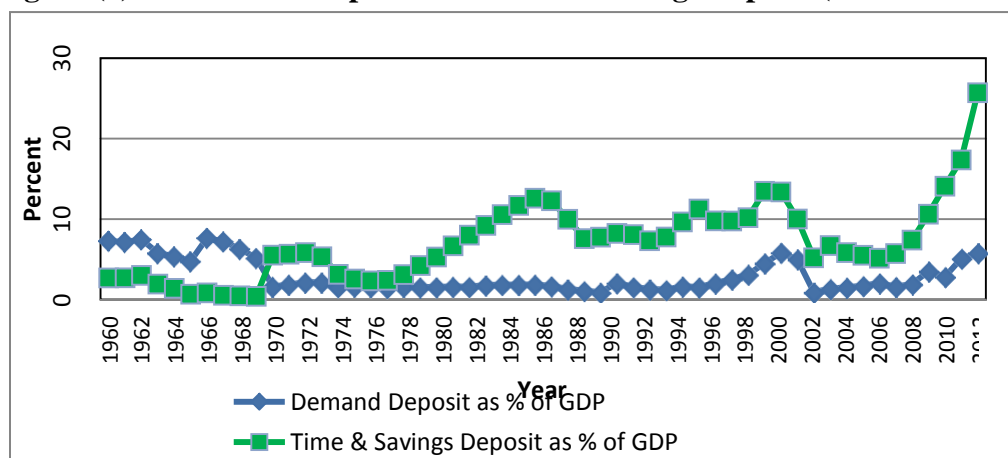
Source: Calculation based on data obtained from IFS (2015), IMF.

According to Figure (3), over the two decades of 1960s and 1970s, deposit ratios are quite low in relative terms. However, despite stagnant ratio of demand deposit from 1970 to 1995, time and savings deposits ratio of GDP has increased since the late 1970s and on an upward trend until the mid-1980s.Since 1987, time and savings deposit ratio started to decline. In 1988 when the country was exposed to insurrection, demand deposits and time and saving deposits as percent of GDP were 1.3 % and 9.9 % respectively, and in 1989, it continued to

decline to 1.1 % and to 7.6 % respectively. After initiation of financial reform in 1992, both types of deposits has increased and reached remarkable high in 2001 with 13.4 % of time and savings deposits ratio and 5.8% of demand deposits ratio as percent of GDP. However, the sharp decline was seen in these deposit ratios due to the adverse effect of banking crisis in the early 2003. After this year, demand deposit to GDP ratio was stagnant for some years until 2009 when it rose slightly. Regarding time and savings deposits, its ratio to GDP increased slightly in 2004 and then declined till 2007. Since 2008, it rose up year after year and reached its peak in 2013 with the ratio of 25.7%.

Credit to Private Sector

Since banks play as their role of financial intermediaries between surplus spending units (savers) and deficit spending units (borrowers), domestic financial mobilization can be measured as increasing ratio of credit to private sector to GDP as shown in the following figure.

Figure (4)   Credit to Private Sector (as % of GDP)
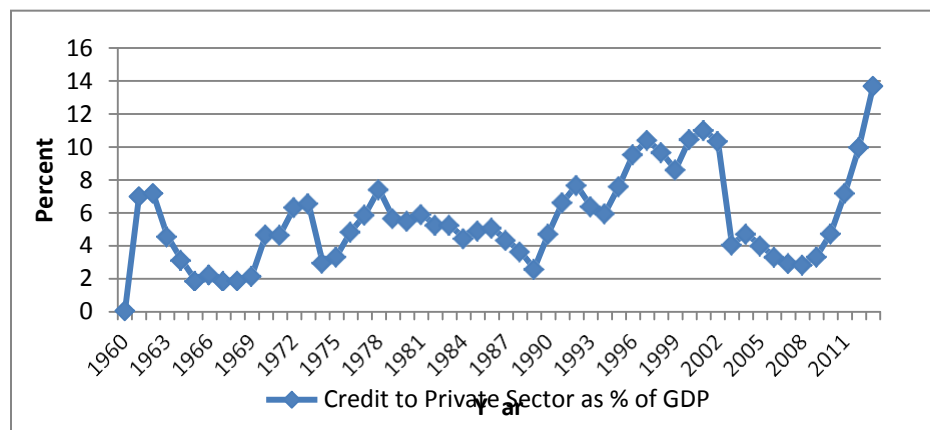
Source: Calculation based on data obtained from IFS (2015), IMF.

Note: Credit to private sector includes credit made by banking sector to private sector

According to Figure (4), disruptions is seen in the trend of credit to private sector as ratio of GDP during the socialist era, with remarkable lowest in the mid-1960s, the mid-1970s and the mid-1980s. After reform measures being taken, despite dramatic decline in 2003 and prolonged stagnant trend until 2009, credit to private sector as percentage of GDP is steadily going up since 2009 and it is as high as 13.7 % in 2013.

Money Supply to GDP ratio

Financial deepening can be traced in ratio of narrow money supply (M1) to nominal GDP and ratio of broad money supply (M2) to nominal GDP. The more is financial mobilization, the deeper the financial market is. The creation of deposit and credit through financial mobilization lead to increase in money supply through multiplier effect. Since the difference between M1

and M2 is time, saving and other deposits which is financial savings, one indicator of financial deepening is the gap between M1 and M2 as shown in the following figure.

Figure (5)   Money Supply to GDP Ratio
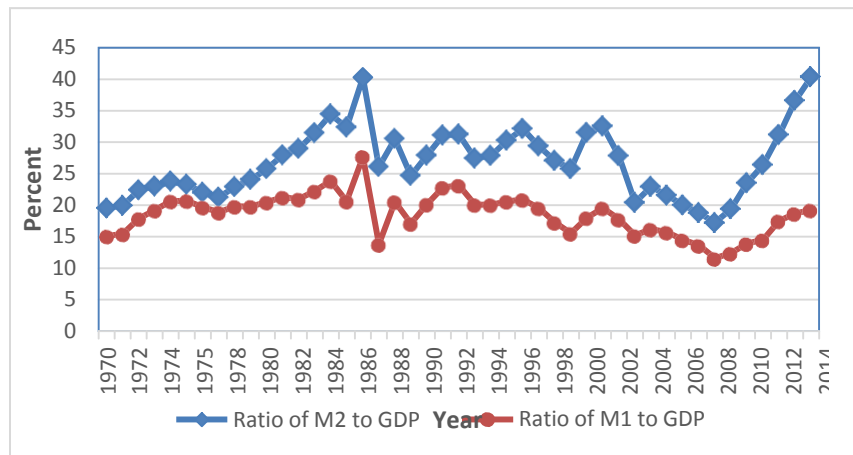
From 1960 to 1977, there was a narrow gap between M2 and M1 in relative terms. After 1977, M2 ratio turns to be much higher than M1 ratio. Difference between M2 and M1 is time and saving deposits and reflects the financial savings. This gap between M2 ratio and M1 ratio is much widening until 2002 after enactment of 1992 Saving Bank Law and reflecting the increased financial savings.

After the banking crisis which occurred in 2003, the gap between M2 ratio and M1 ratio became narrow until 2009. In 2009 the gap started to widen and after extensive reform measures taken by the Central Bank of Myanmar under the democratic government, the gap has continuously widen. In 2014, financial savings indicated by the gap between M2 ratio and M1 ratio is the largest over the period from 1960 to 2014.

In addition to emergence of private banking sector, and newly establishment of bond market, financial indicators such as declining cash-to-deposit ratio, positive real interest rate in recent years, growing ratio of demand and time and savings deposit to GDP, increasing ratio of private sector credit to GDP, and widening gap between M2 ratio and M1 ratio also show the fact that the financial sector is, to a certain extent, more developed than that existed in socialist period.

Effect of Financial Deepening on Economic Growth

Financial reforms have been undertaken in Myanmar since the early 1990s. Over the period under ongoing process of financial liberalization, the financial sector develops to some extent in terms of financial structure and financial deepening compared to its undeveloped rudimentary stage prior to the reform. In this chapter, therefore, it is tested empirically for the

hypothesis that financial deepening has impact on economic growth. Thus, the objective of this empirical study is to examine the relationship between selected financial indicators and economic growth in Myanmar, on time series basis.

Model Specification

In this study, the annual growth rates of narrow money supply (M1), broad money supply (M2), quasi money (Quasi), and credit to private sector (PRVC) are used as financial indicators. Other growth promoting factors such as ratio of government expenditure to nominal GDP, growth rate of domestic investment (INV) and growth rate of export (EX) are included.

The general regression model is built as follows:

$$GDP = c + \alpha_1 G + \alpha_2 INV + \alpha_3 EX + \alpha_4 F + u$$

In modifying the general regression equation, different financial indicators such as narrow money supply (M1), broad money supply (M2), quasi money supply (Quasi) and credit to private sector (PRVC) are alternately included in the model mentioned above.

By replacing specific financial indicators for F, four specific regression equations can be expressed as follows:

Regression Equation 1

$$GDP = c + \alpha_1 G + \alpha_2 INV + \alpha_3 EX + \alpha_4 M1 + u \qquad (1)$$

Regression Equation 2

$$GDP = c + \alpha_1 G + \alpha_2 INV + \alpha_3 EX + \alpha_4 M2 + u \qquad (2)$$

Regression Equation 3

$$GDP = c + \alpha_1 G + \alpha_2 INV + \alpha_3 EX + \alpha_4 QUASI + u \qquad (3)$$

Regression Equation 4

$$GDP = c + \alpha_1 G + \alpha_2 INV + \alpha_3 EX + \alpha_4 PRVC + u \qquad (4)$$

where GDP = Growth rate of real GDP

c = Constant term

G = Government expenditure ratio to nominal GDP

INV = Investment expenditure ratio to nominal GDP

EX = Growth rate of export

M1 = Growth rate of Narrow Money supply

M2 = Growth rate of Broad Money supply

QUASI = Growth rate of Quasi Money

PRVC = Growth rate of credit to private sector

u = Error term

Empirical Results

As all of these variables are time series, Augmented Dickey-Fuller unit root test is applied for testing stationarity of each series. Under unit root test, null hypothesis is that the series of the concerned variable has unit root, i.e., non-stationary. The alternative hypothesis that the series does not contain unit root and it is stationary.

If the null hypothesis of unit root test for the level of series can be rejected, this series has no unit root and it is integrated of order (0). If the null hypothesis of unit root for level of series cannot be rejected but the null hypothesis for first difference of series can be rejected, this series has one unit root and it is integrated of order (1). Similarly, if the null hypothesis for first difference of the series cannot be rejected but it can be rejected for second difference series, it has two unit roots and can be treated as integrated of order (2). Maximum lag length considered for unit root test is up to 5 periods of lag. Augmented Dickey-Fuller Unit Root test is applied for both without trend and with trend. Since coefficients of trend are significant in Quasi and M2 series, these two series are trend stationary. The following Table (1) and Table (2) provide the results of unit root test without trend and with trend respectively.

Table (1)   Results of Unit Root Test (Without Trend)

Name of Series	Level		First Difference		Integrated Order
	ADF	**Critical Value**	**ADF**	**Critical Value**	
GDP	-2.44 (lag 0)	-2.93 @5% [0.1354]	-8.62 (lag 0)	-3.60 @1% [0.0000]	1
G	-3.95 (lag 2)	-3.60 @1% [0.0040]			0
INV	0.23 (lag 1)	-2.93 @5% [0.9713]	-3.90 (lag 0)	-3.60 @1% [0.0045]	1
EX	-5.60 (lag 0)	-3.60 @1% [0.000]			0
M1	-3.03 (lag 1)	-2.93 @5 % [0.0404]			0
M2	-2.70 (lag 1)	-2.93 @10% [0.0802]			0
QUASI	-3.97 (lag 0)	-3.60 @1% [0.007]			0
PRVC	-4.44 (lag 0)	-3.60 @1% [0.0009]			0

Source: Results are obtained by using Eviews 8 Econometrics Software
Note 1: Without trend' means the series has only intercept.
Note 2: Lag length is automatically chosen based on maximum lag length suggested by Akaike Information Criterion (AIC).
Note 3: p-values are in square bracket

Table (2) Results of Unit Root Test (With Trend)

Name of Series	Level		First Difference		Integrated Order
	ADF	Critical Value	ADF	Critical Value	
GDP	-2.96 (lag 0)	-3.52 @5% [0.1542]	-8.53 (lag 0)	-4.20 @1% [0.0000]	1
G	-4.19 (lag 2)	-3.53 @1% [0.0104]			0
INV	0.01 (lag 1)	-3.52 @5% [0.9951]	-4.23 (lag 0)	-4.20 @1% [0.0091]	1
EX	-5.59 (lag 0)	-4.19 @1% [0.0002]			0
M1	-3.32 (lag 1)	-3.52 @5 % [0.0773]			0
M2	-6.14 (lag 0)	-4.19 @1% [0.0000]			0
QUASI	-4.56 (lag 0)	-4.19 @1% [0.0038]			0
PRVC	-4.64 (lag 0)	-4.19 @1% [0.0030]			0

Source: Results are obtained by using Eviews 8 Econometrics Software
Note1:   'With trend' means the series has both intercept and trend.
Note2:   Lag length is automatically chosen based on maximum lag length suggested by Akaike Information Criterion (AIC).
Note 3:   p-values are in square bracket

As GDP and INV series are non-stationary series, the next step is to apply cointegration test in order to investigate whether these series are integrated or not. Since G, EX, M1, M2, Quasi and PRVC series are stationary series, these series are excluded from cointegration analysis[3] and later included in Vector Autoregressive (VAR) model. Johansen cointegration test is applied to determine whether there is conintegration between GDP and INV which are I (1) series. For cointegration test, suitable lag order is chosen by using VAR lag order slection criteria. Among lag order selection creiteria, Schwarz information criterion (SC) suggests lag order 1, sequential modified LR test statistic (LR) suggests lag order 2 whereas Final prediction error (FPE), Akaike information criterion (AIC) and Hannan-Quinn information criterion (HQ) suggest lag order 3. Therefore, lag order 3 is chosen as appropriate lag order for cointegration test. According to the cointegration result, trace statistics and maximum Eigenvalue shows that there is no cointegration between GDP and INV.

Since there is no cointegration between non-stationary I (1) series and the regression model is composed of variables with different integrated of orders, I(0) and I(1), the usual approach adopted by Vector Autoregressive (VAR) aficionados is to work in levels, although all the

---

[3] Empirical procedure follows the study done by Nachega (2001).

variables should be stationary in VAR methodologies (Harvey, 1990, p.38). Also, Gujarati (2003, p.749) affirms that transformations of the data will not be easy if the model contains a mix of I (0) and I (1). Accordingly, the VAR is applied in level series for all of four regression equations mentioned above.

The simple two-variable VAR model is

$$y_t = c + \alpha_1 \, y_{t\text{-}1} + \ldots\ldots + \alpha_i y_{t\text{-}i} + \beta_1 \, x_{t\text{-}1} + \ldots.. + \beta_i \, x_{t\text{-}i} + u_{1t} \qquad (5)$$

$$x_t = c' + \delta_1 \, x_{t\text{-}1} + \ldots\ldots + \delta_i \, x_{t\text{-}i} + \gamma_1 \, y_{t\text{-}1} + \ldots.. + \gamma_i \, y_{t\text{-}i} + u_{2t} \qquad (6)$$

where i denotes lag. The system equations in this VAR model show that current y is explained in terms of lagged y and lagged x, and current x is explained in terms of lagged x and lagged y. Equation (5) and (6) can be expressed as

$$y_t = c + \sum_{i=1}^{2}\alpha_i \, y_{t\text{-}i} + \sum_{i=1}^{2}\beta_i \, x_{t\text{-}i} + u_{1t} \qquad (7)$$

$$x_t = c' + \sum_{i=1}^{2}\delta_i \, x_{t\text{-}i} + \sum_{i=1}^{2}\gamma_i \, y_{t\text{-}i} + u_{2t} \qquad (8)$$

Based on this VAR model, four regression equations: Equation (1), Equation (2), Equation (3) and Equation (4) are estimated. For VAR model, lag order 1 is chosen for Regression Equation (1) since all lag selection criteria suggest lag order 1. For Regression Equations (2) and (3), lag order 1 is selected because all lag selection criteria except AIC recommend lag order 1 in both equations. For Regression Equation (4), FPE, SC and HQ criteria suggest lag order 1 whereas LR and AIC criteria recommend lag order 2. In this case, higher lag order 2 is chosen.

Table (3) shows the VAR results of four Regression Equations: Equation (1), Equation (2), Equation (3) and Equation (4). According to Table (3), it is found that GDP in one-year lag appears with significant positive sign at 1 % level of significance in all equations. Coefficient of G in one-year lag is positive but insignificant in all equations. INV in one-year lag is positive but insignificant in Regression Equations (1), (3) and (4). EX is positive but insignificant in Regression Equation 3 and Regression Equation 4. Although current real economic growth (GDP) is explained by its past value or GDP in one-year lag, past values of other growth affecting factors such as ratio of government expenditure to GDP (G), ratio of investment to GDP (INV), and annual growth rate of exports (EX) cannot explain the current economic growth. In other words, unlike financial and monetary variables, these variables do not show time lag nature in this study.

Among financial variables, as coefficient of M1 in one-year lag is positively significant at 1 % level, M1 has positive effect on GDP. The coefficient of M2 in one-year lag is positive

and significant at 5 % level. So, M2 and GDP is also positively related in one-year lag. So, the pass-through effects of both measures of money supply in one-year lag show that money supply has stimulus effect on economic growth.

Table (3)   Results of VAR[4]

Dependent / Independent	GDP$_t$			
	Reg. Eqn.1	Reg.Eqn.2	Reg.Eqn.3	Reg.Eqn.4
GDP $_{t-1}$	0.7614** (7.3854)	0.6935** (6.0772)	0.7541** (5.8309)	0.5867** (3.5091)
GDP $_{t-2}$				0.2682 (1.5567)
G $_{t-1}$	0.1938 (0.8542)	0.1814 (0.7300)	0.0849 (0.3077)	0.3592 (1.2053)
G $_{t-2}$				-0.0134 (-0.0441)
INV $_{t-1}$	0.0333 (0.3478)	-0.0250 (-0.2389)	0.0154 (0.1167)	0.2683 (1.0124)
INV $_{t-2}$				-0.4309 (-1.4689)
EX $_{t-1}$	-0.0309 (-0.8987)	-0.0263 (-0.6823)	0.0221 (0.5258)	0.0420 (1.0976)
EX $_{t-2}$				-0.0527 (-1.4056)
M1 $_{t-1}$	0.1177** (4.0448)**			
M2 $_{t-1}$		0.1200** (2.8015)		
QUASI $_{t-1}$			-0.0089 (-0.2356)	
PRVC $_{t-1}$				-0.0322 (-1.6103)
PRVC $_{t-1}$				0.0469** (2.4602)
C	-3.7329 (-1.0974)	-2.4195 (-0.6564)	0.5115 (0.1307)	-0.8845 (-0.1935)
R-squared	0.7002	0.6420	0.5646	0.6945

Source: Results are obtained by using Eviews 8 Econometrics Software.

Note 1: Calculated t-statistics are in parenthesis.

Note 2: One asterisk and two asterisks indicates 5% and 1% level of significance respectively.

---

[4] Results are summarized by taking only the cases of GDP as dependent variable from original VAR results.

Quasi money, the difference between broad money supply M2 and narrow money supply M1, is financial savings or bank deposits and its expected sign is positive. The coefficient of QUASI in one-year lag is negative but not significant and that of QUASI in two-year lag is positive but insignificant. So, financial savings measured by quasi money does not support economic growth. The possible reason is that out of bank deposit which is quasi money, banks have not created credit efficiently and effectively to the domestic economy. Inefficiency of financial mobilization can be traced out by investigating credit creation by banks over the period from 1970 to 2013. Table (4) and Figure (6) show credit-to-deposit ratio of the banking sector.

Table (4)   Credit-to-Deposit Ratio

Year	Ratio (%)	Year	Ratio (%)	Year	Ratio (%)	Year	Ratio %)	Year	Ratio (%)
1970	107.0	1980	399.6	1990	85.9	2000	68.1	2010	37.3
1971	100.4	1981	437.0	1991	86.4	2001	70.2	2011	45.2
1972	152.9	1982	451.1	1992	99.3	2002	77.0	2012	60.7
1973	167.9	1983	462.6	1993	95.4	2003	78.6	2013	51.2
1974	178.9	1984	459.9	1994	93.3	2004	62.6		
1975	198.7	1985	469.4	1995	79.3	2005	63.6		
1976	135.0	1986	476.0	1996	85.2	2006	53.9		
1977	218.7	1987	466.6	1997	96.7	2007	47.6		
1978	347.0	1988	569.1	1998	102.4	2008	43.4		
1979	354.5	1989	35.2	1999	79.3	2009	39.2		

Source: Calculation based on data obtained from IFS, IMF (2015).

Figure (6)   Credit-to-Deposit Ratio
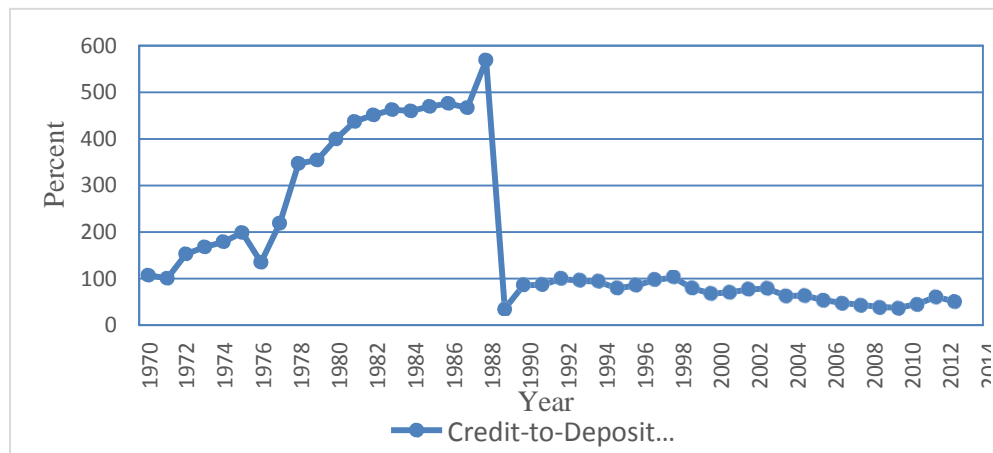
Source: Table (4)

Table (4) and Figure (6) show that over the period from 1970 to 1988, credit creation by banks had been much intensified with incredibly high rates over bank deposits. This period was under socialist economic system and banking sector was dominated by state banks only. These state-owned banks mainly provided credit to public sector including state-owned enterprises which were loss making in the same period. Therefore, bank credit which is much more than bank deposits could not support economic growth during this period. This is one possible reason for inefficiency of financial mobilization by banks before 1989. Therefore, Quasi money or bank deposits could not have positive effect on the economic growth.

In 1988, outbreak of demonstration changed the scenario to the opposite and credit-to-deposit ratio dramatically shrank from 569.1 percent in 1988 to 35.2 percent in 1989. It ranged between slightly above 100 percent and slightly below 80 percent during the period from 1990 to 1999. Over the period from 2000 to 2013, the ratio was quite low, below 70 percent and even lower than 50 percent in recent years. This reflects that banks did not mobilize deposits they accepted during this period. Moreover, banks do not make long term loans which is necessary for financing investment. Therefore, the period after 1989 is also the period of inefficiency in banks' financial mobilization because of low creation of credit which was lent out of deposits. Consequently, the empirical result shows that the coefficient of Quasi (quasi money) which is also called financial savings cannot support economic growth because banks held much excess reserves over deposits they accepted. On the other hand, quasi money or bank deposits does not support economic growth because banks did not make full mobilization of deposits i.e., banks did not lend effectively out of these deposits, despite increase in bank deposits year after year.

The coefficient of PRVC in one-year lag is negative and insignificant. However PRVC in two-year lag is positively significant at 5 % level. So, bank credit to private sector has positive effect on economic growth. So, the pass-through effect of bank credit channeled to private sector in two-year lag supports economic growth.

Summary

Participation of private banks in the banking sector makes the banking sector competitive and developed. Domestic financial mobilization promotes domestic financial savings which can be utilized for financing investment. Removal of financial repression such as administratively fixed interest rate control is also an important reform measure at the initial stage of financial liberalization.

By following financial liberalization, setting nominal deposit interest rates above inflation rate has result modestly positive real interest rates since 2009. This, in turn, increases the financial resources available to the financial system, since offering a positive real deposit rate has attracted savings that were previously held outside the formal financial sector. As a result

of positive real deposit rate and growing banking habit of the people, time and saving deposit ratio of GDP and bank credit to private sector ratio of GDP have been on upward trend since 2008 and 2009 respectively. Increased ratios of M1 to GDP, M2 to GDP, increase in Quasi money and increase in bank credit to private sector are all features of financial deepening which are results of financial liberalization.

In examining the effect of financial deepening on economic growth, it is empirically found that financial deepening can support to economic growth because growth of narrow money supply, and growth of broad money supply have positive effect on economic growth in their one-year lag and bank credit to private sector has positive effect on economic growth in two-year lag.

REFERENCES

1. Cecchetti, S. G. (2006). *Money, Banking and Financial Markets* (2nd Edition), McGraw-Hill/Irwin
2. Central Statistical Organization, Myanmar, *Statistical Yearbook*, several issues.
3. Central Statistical Organization, Myanmar, *Selected Monthly Economic Indicators*, several issues.
4. Fischer, S. (1993). The Role of Macroeconomic Factors in Growth. *Journal of Monetary Economics*, 32, 485-512
5. Gujarati, D. N., (2003), *Basic Econometrics,* 4th ed, McGraw-Hill, Inc.
6. Harvey, A., (1990), *The Econometric Analysis of Time Series* (2nd Edition), The MIT Press, Cambridge, Massachusetts.
7. International Monetary Fund, (2014), *International Financial Statistics.*
8. International Monetary Fund, (2015), *International Financial Statistics.*
9. King, R. G., & Levine, R. (August, 1993). Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics*, 108, 717-737.
10. McKinnon, R. I. (1973). *Money & Capital in Economic Development*. The Brookings Institution.
11. Mishkin, F. S., (2007), *Monetary Policy Strategy*. MIT Press, Cambridge, MA, USA.
12. Nachega, J.- C., (2001), "Financial Liberalization, Money Demand, and Inflation in Uganda", *IMF Working Paper 01(118)*), International Monetary Fund.
13. Shaw, E. S. (1973). *Financial Deepening in Economic Development*. Oxford University Press

THE PERCEPTION OF UNBANKED PEOPLE ON BANKING SERVICES IN MYANMAR

Khin Nwe Ohn[5] & Khin Sone[6]

ABSTRACT

The financial sector in Myanmar is the least developed of all in Southeast Asia. Although private banks in Myanmar effort their services to improve as international standards, the unbanked people are still in major percentage not only in rural but also in urban area of Myanmar. Therefore, the main objective of this study tries to identify the perception of unbanked staffs who are working in EFR Group of Companies. To analyze this, 180 staffs who are working in EFR Group of Companies are chosen and use five Likert scale questionnaires with four dimensions: cost of banking services, convenience, lack of knowledge in financial literacy, and trustworthy on banking services. In the study of convenience dimension, the results expose that inconveniences on using banking services for respondents due to take a time to solve the banking errors. As regard of trustworthy dimension, they worried about difficulties and inconveniences when they want to withdraw their money especially at the time of rumor or bad information come out. It suggests that private banks have to try more awareness of banking service performance to be convenience and for the trustworthy on banking services. It is needed to educate unbanked people that have no default or lost if there have any crisis in banking industrials since it is centralized control system by CBM for all performance of banking services in Myanmar.

Keywords: Unbanked people, Perception

1.   Introduction

The services from financial sector are one of the important of any country to develop from all point of views. The performance of banking services in Myanmar can change the people attitude towards using bank either rural or urban area in Myanmar. In recent days consumer's attitude has become an important area for the banks. The banking industry provides its people with variety of financial services. Therefore a banking organization must prioritize the provision of high quality service to its customers. This will help to gain positive attitude from customers. People are using the services of the banks to meet up their variety of purposes. Banks are the financial service providers, producing and selling management of the public funds as well as performing various major roles in the economy of any country. Globally banking process and its area are spreading faster as well as getting wider day by day.

---

[5] Associate Professor, Department of Commerce, Yangon University of Economics
[6] MBF- 21(2nd Batch), Master of Banking and Finance Programme, Yangon University of Economics

The Myanmar banking sector is particularly facing challenges in the swiftness and nature of the reform process, developing Human Resources, and in re-establishing trust in the banking sector. While most of private banks are extended at many destinations in the country, the unbanked people are not still interest to use bank. Some people have enough spend money from their salaries income and they have extra money to save, but they still do not use the banks and to get bank facilities like open saving account, use ATM card, cash transfer etc. Although various types of banking services and products development in Myanmar most of Myanmar people are still less in knowledge of financial illiterate, and mostly are unprepared for long-term financial planning and unclear for the usages of banking in their business. Similarly, some staff of private and public sectors are also not use banks although the current banking sector that are good position to show their performance in Myanmar.

Regardless of their low levels of income, poor have more needs for financial planning for people in developing countries and they should save money in banks regularly. Therefore, this study focuses on the one selected issue of why most of people do not use banking services and what their difficulties while they are using banks. According to the results of this study, more understanding the needs of the unbanked people is provided relevant financial services to these types of customer for the banking companies.

Objectives of the Study

The main objective of the study is to identify the unbanked people perception on services of private banks.

2.   Scope and Method of the Study

This paper is only focus on 180-staffs out of a total of 1000 staff in EFR Group of Companies. The simple random sampling method is used for study population for this study. Besides, this study is only on unbanked people perception on private banks not study on public banks and the study period is within the month of May 2016.

Descriptive method is used for this study. This study will be used both primary and secondary data. Primary data is collected by interviewing and raising questions in meetings with staffs in EFR Group of Companies. The structured questionnaires will be also used to explore to analyze the setting objectives. Some secondary data like the background of the banks and the services they are providing in this country. These secondary data have been collected from different web sites and from the brochures of the private banks.

Organization of the Study

This study is organized into five chapters. Introduction , literature review of the unbanked people and banking services, An Overview of banking services in Myanmar, The analysis of Customer Perceptions on Banking products and services and Conclusions and suggestions.

Literature Review of the Banking Sectors

The unbanked people in the world and banks focusing on people and people focusing on bank services are reviewed. To be aware the services that provide from the bank, there will need to make marketing in financial services. When marketing for financial products and services is making, customer behavior to banking products and services is the most important for financial institutions. The influencing main factors on customer behaviors are culture, social, personal and psychology influences in which perception, motivation, learning, beliefs and attitudes also need to notice to success in market.

The world's "unbanked" population shrank by 20 percent to 2 billion adults between 2011 and 2014 as 700 million gained accesses to financial services, according to the World Bank, evidence of progress in its ambitious goal for universal financial access by 2020. Any attempt to develop services for the unbanked must start with trying to understand the daily challenges and dynamics faced by this segment. The World Bank's CGAP puts the number of unbanked people in the world – those without access to formal financial services – at around 2.5 billion of the current global population – estimated at just over 7 billion people.

There are many reasons to believe that the number of unbanked people will shrink significantly in years to come, with important positive implications for economic growth and poverty reduction. First, grassroots and country-level efforts, both nonprofit and for-profit, are already showing how "unbanked" doesn't have to be the status quo—and these efforts are greatly facilitated by mobile phones. Second, major financial institutions are supporting efforts to give more of the world's population access to bank accounts and standard financial tools. Third, governments recognizing the value of getting citizens into the financial system are driving change by increasingly moving to electronic payments.

Marketing of services is relatively a new concept. It has been borrowed heavily from the concepts of marketing of physical goods offered long ago. Any business activity or trade can't do without marketing their products and strategic planning of their activities. Before narrowing down on the theories of marketing of financial services, it is appropriate to understand and define marketing from a strategic management perspective.

Consumer behavior guides in market segmentation, one of the important tools in bank marketing. Customers have different preferences and a purchase decision is effected after considering the range of services offered by the banks. These variations may be related to the

psychological differences among individuals on aspects such as attitude, motives, social class needs, culture, etc. Customer choice is largely decided by their perception according to their behavior. Consumer buying behaviour is influenced by four major factors: 1) Cultural, 2) Social, 3) Personal, and 4) Psychological. These factors cause consumers to develop product and brand preferences.

Overview of Banking Services in Myanmar

It is highlight that the role of CBM (Central Bank of Myanmar) in Myanmar for the knowledge of control system in financial sector. The main components of Myanmar's financial system, the banking sector comprises the Central Bank of Myanmar (CBM) which was established pursuant to the Central Bank of Myanmar Law in 1990, 4 other state-owned banks, and 24 domestic private banks. 13 Foreign banks in Myanmar are only permitted to open and 45 representative offices of foreign banks and finance companies are currently permitted to operate. 1 state-owned, and 12 newly licensed insurance companies, 4 private leasing companies, and an emerging capital market also under the control of Central Bank of Myanmar.

There is no credit information system and the CBM is only just developing its offsite and onsite supervision capabilities. The reporting systems of the banks and the CBM use fax, with no online, real-time link. The CBM's capacity to analyze and digest this data is limited, and none of this information is made public. The absence of well-functioning institutional infrastructure and information systems limits financial development; constrains the CBM's ability to monitor, analyze, and supervise the banking system; and impedes banks' liquidity and cash management. The lack of debtor information also leads banks to base their lending on collateral and guarantees, and limits lending to small borrowers.

Despite recent reform and liberalization of the financial sector, foreign banking companies still find it hard to penetrate the domestic market. Development of the private sector is keyto the country's sustainable development. Small and medium sized enterprises (SMEs) have the potential to become key drivers of poverty mitigation and job creation as they represent over 99% of the total industries in Myanmar; however, to date, their restricted access to financial services and credit represents an obstacle to their growth.

Indeed, the Global Competitiveness Index of the World Economic Forum ranks Myanmar at 134 out of 144 analyzed countries in terms of access to finance (GIZ, 2015). Local Myanmar banks are playing their part in reform initiatives by seizing the opportunity to expand their branch network and introduce new financial products

Since 2011, Myanmar has been going through broad political and economic reforms to foster a more open, integrated, and inclusive economy. A key principle of these reforms is ensuring

greater participation of the domestic and foreign private sector. The pace of reforms has been impressive. Indeed, efforts to improve at least some aspects of the investment climate are ongoing along most of the dimensions identified.

Banks use a variety of channels to access customers; these include branch, mobile money services, online, ATM, mobile branch and agency banking.

Banking Services of Private Banks

For domestic banking, most of private bank provide a comprehensive range of deposit products, financing options for large and small businesses through loans, overdrafts and hire purchases, reliable and extensive ATM and POS service via the MPU network.

These details are: Saving Account, Current Account, Fixed Deposit Account, Loans and Overdrafts, Hire Purchase, Gift Cheques, DebitCard, Credit card, ATM, Payment Orders, Bank Guarantees, Remittance.

For international banking, foreign trade finance as well as worldwide payment services with partners, including Western Union, VISA, Master Card, China Union Pay and other major card organizations. Other services include gift cheques, payment orders and local remittance services are provided. International banking service can be provided recently from most of private banks. These details are: Foreign Currency Account, Trade Finance Services, SWIFT Telegraphic Transfer, Visa Prepaid, VISA/MasterCard POS, Western Union.

The Unbanked Population in Myanmar

According to a 2013 report by the International Finance Corporation (IFC), the percentage of the population (about 51 million) with access to formal banking system is less than 5%. Multi-national corporations (MNC's) begin to roll into Myanmar, they are expecting the banking sector to carry out up to the international standards (MAP, 2014).

In Myanmar, there is a saying that 'cash is king' and while there have been many initiatives towards financial inclusion and electronic payments, it is as true now as it ever was. According to a study published by the World Bank, in Myanmar less than 10% of all adults make use of bank accounts or other financial products from a formal financial institution and 90 percent of all consumer payments are conducted with cash. One of the main reasons for this large unbanked population in Myanmar is geographical inaccessibility and poor infrastructure, with many of the unbanked living in remote rural areas. This, combined with the high cost of banking services and a lack of financial education and understanding, creates very high barriers to banking for poor rural populations.

The population of Myanmar is 29% of men and 17% of women have an account the population of 29.5 million are unbanked in Myanmar of a total adult population of over 38

million (ibid, 2014). It is estimated that less than 10% of Myanmar citizens have a bank account and that less 0.1% of the public are active in the credit market. A large informal banking system in Myanmar still exists. Remittance companies – licensed and unlicensed – remain popular as is the black market for foreign exchange.

Levels of personal saving are low in Myanmar. In the past year, less than half of the population saved any money, compared with the East Asia and Pacific average of 71% (World Bank, 2014). This might imply the difficulty people are experiencing in having a supplementary income readily available. Out of all savers, only 13% put their money in a financial institution, denoting lack of a long-term savings strategy, because of demand and/or supply factors.

The state of mobile banking is almost non-existent. In 2014, only 0.2% of the population had a mobile account, which is roughly the same as the East Asia and Pacific average (World Bank, 2014). Nearly all the population in Myanmar received payments for agricultural products in cash; 0.2% received them via a mobile phone. Recent innovations in branchless banking, such as telebanking and mobile banking, would allow Myanmar to leapfrog other countries and provide its people with access to finance more rapidly and cost-effectively. Given the importance of remittances in developing countries, mobile banking could greatly simplify transactions and reduce the need for the services of a close network, vehicles or Hundi individuals to achieve financial exchanges (Proximity Designs, 2014).

Analysis of Unbanked People Perception on Banking Services in Myanmar

This chapter describes a detailed presentation of methodology and procedures which have been followed in conducting the study about analyze the unbanked people perception on the banks in Myanmar. Then, the demographic characteristic of the 180 sampled staffs out of 1000 staffs of EFR Group of companies and analyses the unbanked people perception on the banks in Myanmar are describes based on the survey data collected by 2016 (May). Results of data analysis are calculated on the study sample have been explained, then the results were analyze, discussed, and compared in order to assess the unbanked people perception on the banks in Myanmar and why they are not using banks till to date even they have chance to use bank for their saving or deposit.

3.   Research Method

This section describes a detailed presentation of methodology and procedures which have been followed in conducting the study about analyze the unbanked people perception on the banks in Myanmar. Analytical descriptive method has been used to sustain quantitative measurement and analysis. Data has been collected through structured questionnaire as a

main tool for the study. The structured questionnaire has been designed especially for this study and contains two parts. First part of the questionnaires is the primary information about the demographic specifications of the sampled individuals. Second part is descried a set of 19 statements regarding the unbanked people perception on the banking services in Myanmar. This part have four dimension which are costof banking services, conveniences, lack of knowledge in financial literacy, trustworthy on banking services. Every question has five alternative answers according to Likert Scale which consists of five degrees (Strongly Disagree, Disagree, Neutral, Agree, StronglyAgree).

To verify the perspective of unbanked people on banking service of Myanmar banks, data analysis from EFR Group of Companies which companies are organized with over 20 units of companies in six industry. There have over 1000 work force not only office staff but also labor in manufacturing industrials in the group of companies. The population of the study consists of 1000 staffs in EFR Group of Companies.

The study sample has been selected by simple random sampling (SRS). Primary data is collected by interviewing and raising questions in meetings with staffs in EFR Group of Companies. Questionnaires will be also used in the sample unit of 180-staff out of total 1000 staff in EFR Group of Companies. The questionnaires have been collected within one month with a response rate of (100%).

In order to be able to select the appropriate method of analysis, the level of measurement must be understood. For each type of measurement, there is an appropriate method that can be applied. In this study, ordinal scales were used. Ordinal scale is a ranking or a rating data that normally uses integers in ascending or descending order. The numbers assigned to the important (1, 2, 3, 4, 5) do not indicate that the interval between scales are equal, nor do they indicate absolute quantities. They are merely numerical labels.

This study would use data analysis both qualitative and quantitative data analysis methods. The data analysis will be made utilizing (SPSS version 22).

The study would utilize the following statistical tools:
1. Cronbach's Alpha for Reliability Statistics
2. Spearman Rank correlation for Validity
3. Frequency and Descriptive analysis
4. Regression Analysis

Demographic Characteristic of Respondents

This section presents the profiles of selected 180 sampled staff of EFR Group of company. The profiles cover the gender, age, marital status, education, occupation (level), income, family size and main earner for family member.

All the data obtained from the questionnaires collected are interpreted and summarized in average, frequency distribution and percentage distribution. The frequency analysis of respondents' demographic data is illustrated in pie chart and bar chart in this chapter while the table of frequency counts, percentages and cumulative percentages of these data can be found details.

The respondents are not only males, but also females. The sample consists of 37 males and 143 females. In terms of the percentage, male respondents are 20.6 percent of the sample while female respondents are 79.4 percent of the sample. Therefore, female respondents are more than male.

Ages of respondents are classified into three groups. 82 respondents fall in the age group between 20 and 30 years, followed by 60 respondents fall in the age between under 20 years, and 38 respondents fall over 30 years. In term of percentage share, the age group between 20 and 30 years accounted for the highest share of 45.6% whereas the age group over 30 years accounted for the lowest share of 21.1%. This result shows that most of unbanked people are age between 20 and 30 years old.

The largest sample of respondents is single, holding 70.6%, which are more than married ones, as a percentage of 29.4% from the result.

There are three education levels among the respondents in the sample: under graduate, graduate, and post graduate. The education levels of respondents can influence on the perception of the banking product and services. According to the result, 63.9% of the total respondents are under graduate, 29.4% of the total respondents are graduates. Other 6.7% of respondents are post graduate Therefore; majority of unbanked people are under graduate because of they have not better knowledge of banking service and saving account.

The rank of position is divided into three levels: Top Management level, Operation Management Level and Operational Staff Level. It is illustrated that 60.6% are company operational staffs, 25.6% are operational managements. There is only 13.9% of top management level in candidate staff of EFR group of companies.

Respondents by Income show the majority of respondents earn average income while a small group of respondents earn higher income. In this case, 54.4% of respondents earn between 1 and 3 lakhs whereas 20.6% of the respondent earn over 3 lakhs. As their income level determines the type of industry they are involving, most of candidate are representative of operational staffs.

Level of Position in Family Member is divided into two categories; Main supporter and Follower. In term of percentage, follower has the larger share with 72.8% than the main supporter respondents with 27.2%. It is found that 49 respondents are main supporter, and

131 respondents are follower. According to the survey, followers are unbanked people in banking industry than main supporter.

Reliability Test

Before showing the results, it is very important to test the reliability of the dimensions in the questionnaires. Cronbach's alpha, a statistical test used to examine the internal consistency of attributes, was determined for each dimension in perceptions of banking product and services. This statistical test shows the attributes are related to each other and to the composite score. The composite score for each section of the questionnaires was obtained by summing the scores of individual statements. Cronbach's alpha is defined as

$$\underline{\hspace{2cm}} \qquad \frac{\Sigma}{\underline{\hspace{2cm}}}]$$
$$[$$

Where

α = Cronbach's alpha,

K = Number of Statements,

   = variance of each statement

   = variance for sum of all items

If alpha value is high, then this suggests that all of the items are reliable and the entire test is internally consistent. If alpha is low, than at least one of items are unreliable and must be identified via item analysis procedure. However, as per DeVellis (2003), the Cronbach's alpha value should ideally be above 0.7.

Table (1) Results of Each Dimension's Scores

Dimension	Type of Scale	No. of Items	Crobach's Alpha Value
Cost of Banking Services	5-point Likert	4	.785
Conveniences	5-point Likert	5	.827
Lack of Knowledge in Financial literacy	5-point Likert	5	.753
Trustworthy onBanking Services	5-point Likert	5	.796

Source: Survey Data (May, 2016)

The above Table shows the Cronbach's alpha scores for each dimension. The reason to compute the Cronbach's alpha for each dimension is to check the non-dimensionality of

measures when all multiple items are analyzed at once. Apparently, the Cronbach's alpha range from 0.753 to .891 exceeding the Nunnally's reliability criterion of 0.70 levels (Nunnally, 1987). Therefore, the contrast reliability for each dimension is deemed to be acceptable.

Perception of Unbanked People in Banking Services by Each Dimension

This section presents the sampled staff of EFR Group of companies' perception in the product and services of banking sector. There are four dimensions that are stated as perception on cost of banking services, perception on conveniences, perception on lack of knowledge in financial literacy and perception on trustworthy on banking services. The 180 candidate of EFR group of companies were asked to rate perception of banking product and services. Every question have five alternative answers according to Likert Scale which consists of five degrees (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree).The translation of level ranking was analyzed follow exterior of candidate's perception designed by Best (1997: 174).

> The score among 1.00 – 1.80 means lowest perception.
> The score among 1.81 – 2.61 means low perception.
> The score among 2.62 – 3.41 means average perception.
> The score among 3.41 – 4.21 means high perception.
> The score among 4.22 – 5.00 means highest perception.

Perception on Cost of Banking Services

There are four questions that are designed to obtain the perception level of respondents on the extent to which the cost of banking services. The higher level of mean score indicates unbanked people's perception greater cost factor scores and vice versa. In order to see the extent to which unbanked people's perception in banking product and services, the descriptive statistics like mean and standard deviation for perception scores on cost of banking services are calculated and presented in Table.

It shows that statement 3 has the highest mean score of 2.67 which means that the perception level is average for the transaction fee, most of the people from the respondents can accept the transaction fee even in expensive. In statement 4, the bank interest rate is not attractive for small amount of their deposit money, has the lowest mean score of 2.09.

It shows that the perception is low level even comparing in average overall mean scores of cost of banking services are 2.48. Regarding perception on cost of bank services as an average overall score 2.48, most of people perception is low that highlight their expectation

of bank interest rate to be more than current tariff and they deem to be some earning for their small amount of deposit if they can use bank service.

Table (2)   Perception on Cost of Banking Services

Sr. No	Statement	Mean	Std. Dev	Level
1	Although I have enough money to keep in an account or meet a minimum balance, I have not open banks account yet.	2.66	1.511	Average
2	I think the banking service cost is not expensive to use for my small money.	2.50	1.194	Low
3	I think the transportation cost is not expensive to use the banks.	2.67	1.105	Average
4	I think the bank interest rate is attractive for lending money small amount.	2.09	1.169	Low
Overall Mean Scores			2.48	

Source: Survey Data (May, 2016)

Perception on Conveniences

There are five questions that is designed to obtain the perception level of respondents on the extent to which the conveniences. The higher level of mean score indicates unbanked people perception greater conveniences factor scores and vice versa. In order to see the extent to which unbanked people perception in banking product and services, the descriptive statistics like mean and standard deviation for perception scores on conveniences are calculated and presented in Table.

Table shows that statement 3 has the highest mean score of 2.36; while statement 4 has the lowest mean score of 1.97. The overall mean scores of the conveniences dimension is 2.18. Even in highest mean score in 5 statements, the perception level is low, that is meant that the unbanked people are not conveniences to go bank from their home or work. And the lowest mean score of the statement means that using banking services would lead to a loss of convenience for them because of wasting time to fix errors.

Regarding the overall average mean score 2.18 can mention with low perception level that is not totally conveniences to use banking services in Myanmar. Actually, in Myanmar banking services is hedged with several kind of risk management by service provider which is barred not easy to use available service of banking business. It will be inconveniences for all customers.

Table (3) Perception on Conveniences

Sr.	Statement	Mean	Std.	Level
1	It would take me lots of time to go banks for deposits or using banking services.	2.24	1.231	Low
2	I think the bank current operating hour is convenience for me.	2.17	1.111	Low
3	The bank was not too far from my home or work, it is still convenient for me.	2.36	1.245	Low
4	Using banking services would lead to a convenience for me when I have enough time to fix for bank	1.97	1.138	Low
5	I think that Banks will make small amount of loans for household use.	2.15	1.101	Low
Overall Mean Scores			2.18	

Source: Survey Data (May, 2016)

Perception on Lack of Knowledge in Financial Literacy

There are five questions that is designed to obtain the perception level of respondents on the extent to which the lack of knowledge in financial literacy. The higher level of mean score indicates unbanked people's perception greater lack of knowledge in financial literacy factor scores and vice versa. In order to see the extent to which unbanked people's perception in banking product and services, the descriptive statistics like mean and standard deviation for perception scores on lack of knowledge in financial literacy are calculated and presented in Table (4).

Table shows that statement 1 has the highest mean score of 2.74; while statement 3 has the lowest mean score of 2.24. The overall mean scores of lack of knowledge in financial literacy dimension are 2.48 which can be translated that many individuals lack sufficient financial knowledge to navigate through the often complicated mainstream financial system in Myanmar. The learning to use banking services would not be easy, but their perception level is average to learn about it. Some of them might be wishing to learn about banking services. The low perception level of statement 3 comparing with overall mean score is stated that when bank account incurs fraud or hacking, there will have a potential loss of status in their social group. And they think that difficult to understand for the reason of that fraud happen because illiterate in finance matter.

Table (4) Perception on Lack of Knowledge in Financial Literacy

Sr. No.	Statement	Mean	Std. Dev	Level
1	I think that learning to use banking services would be easy.	2.74	1.346	Average
2	When transaction errors occur, it is sure that I shall get full compensation from banks.	2.67	1.344	Average
3	When my bank account incurs fraud or hacking, it will not affect a potential loss of status in my social group.	2.24	1.164	Low
4	I think that the settlement by Banks for any purchases is not risky.	2.45	1.150	Low
5	I think that using a bank provides more privacy for my personal finances.	2.31	1.270	Low
Overall Mean Scores			2.48	

Source: Survey Data (May, 2016)

Perception on Trustworthy on Banking Services

There are five questions that is designed to obtain the perception level of respondents on the extent to which the trustworthy on banking services. The higher level of mean score indicates unbanked people's perception greater trustworthy on banking services dimension scores and vice versa.

In order to see the extent to which unbanked people's perception in banking product and services, the descriptive statistics like mean and standard deviation for perception scores on trustworthy on banking services are calculated and presented in Table (5).

The Table (5) shows that statement 2 has the highest mean score of 2.72; while statement 4 has the lowest mean score of 2.03. The overall mean score of trustworthy on banking service is 2.54 which can be highlight that general perception on trustworthy on banking services is still low in order to use banking services promptly even banks are trying to provide the best service what customer wants.

The highest score statement 2 of the perception level is average, but they believe that it is not totally safe for the money in bank account and will difficult to withdraw back at the time of rumor or bad information. The lowest perception level of statement 4 is stated that the recording system of banking may have errors in sometime, means that most of people are not trustworthy on banking services for their current using system, service structure and customer services.

Table (5) Perception on Trustworthy on Banking Services

Sr. No.	Statement	Mean	Std. Dev	Level
1	I want to provide the information needed to handle transactions appropriately when banking service providers have access.	2.67	1.316	Average
2	I would feel totally safe for my money in bank account and will difficult when I want to withdraw back at the time of rumor or bad information.	2.72	1.345	Average
3	I'm not worried about using bank if other people know my financial illiterate.	2.58	1.199	Low
4	I don't think that the recording system of banking may have errors in sometime.	2.03	1.016	Low
5	I believe that it is not related with Taxation upon my deposit (personal income).	2.68	1.183	Average
Overall Mean Scores		2.54		

Source: Survey Data (May, 2016)

Overall Perceptions on Banking Services

In the comparative analysis of four dimensions that high perception on Trustworthy on Banking Services and low perception on convenience. The overall mean average scores of each factor are illustrated in the table.

Table (6) Overall Perception on Banking Services

Dimensions	Overall Perception
Cost of Banking Services	2.48
Trustworthy on Banking Services	2.54
Convenience	2.18
Lack of Knowledge in Financial Literacy	2.48

Source: Survey Data (May, 2016)

It is shown in table that overall average score of four dimensions, in which perception on convenience is the lowest score among them. By using banking services, there need to give time to go banks, and it lead to a loss of convenience because of wasting time to fix errors. Sometime, wrongly input the data of given personal information, deposited amount and discrepancy of withdraw money notes. It will be inconveniences for all customers, it is very seldom story, but most of people are not believe that kind of error in banks services and they

think that waste time to solve it. And it is also inconveniences factor thatbanks don't allow small amount of loans for household use for personally. Bank only allow loan for business if collateral can provide. Actually, in Myanmar banking services is hedged with several kind of risk management by service provider which is barred not easy to use available service of banking business.

Again it is demonstrated that corresponding average scores of "trustworthy on banking services" is 2.54 which the highest scores as compare to other dimension. It is not the main reason not to use banking services. And perception on convenience the lowest level is 2.18 which is expressed that most of people are not convenience for using banking service because of wasting time to fix errors when experience with financial literacy like wrongly stated personal information, beneficiary and advisory and also terms of banking usages. With this main reason the unbanked people are not trying to open bank account even in high income people who have excess money to save at bank. For the poor, who have small excess money for monthly basic, they also want to get loan from their household when they need money urgently, but banks have that kind of policy to permit loan for small amount for any of personal used.

The unbanked people did not use private banks in Myanmar, among the four dimensions, they would not feel totally safe and conveniences for their money in the bank account and most of them are worry about for the difficulties when they faced with some error in using banks services. They also don't believe banks are trustworthy since some incredible information is happen in their saving bank, there will restrict to withdraw for their money. Due to poor infrastructure and weak regulation, not strong monetary policy compare with other developing country, most of unbanked people are not dare to use banking service totally. The main factor is the custom of Myanmar people is not believe to others and mostly is more rely on their own management in all aspects (especially cash management of their daily life with their own parameters). Holding money as physically is more conveniences and safe than to save at banks and seeing and believing is their custom since old generation till to date.

4. Conclusion

The main aims of this study are identify the customer perception regarding performance of services in private banks in Myanmar. To do so, primary data is collected by structured questionnaires and interviewing with 180 staffs in EFR Group of Companies. When the data is analyzed it is both qualitative and quantitative method of data analysis is used and utilized SPSS version 22.

Findings and Discussion

Concerning of the profile of respondents, it found that most of the respondents are female staff and majority of respondents fall in the age group between 20 and 30 years. Large portion of respondents are single and their education level is under graduate. They work in EFR Group as operative workers mostly among them. Majority of respondents earn between 1 and 3 lakhs per month. According to the study of level of position in family member of respondents, it can find that largest of them are not responsible as main supporters in their family, mostly are followers. It regard with the perception of using banks, the four dimensions are used. These are cost of banking services, conveniences, lack of knowledge in financial literacy, trustworthy on banking services.

According to result of this study, the education levels of respondents can influence on the perception of the banking product and services. Majority of unbanked people have not better knowledge of banking service. Most of the unbanked people have lack of sufficient financial knowledge and they also have to negative views through the often complicated mainstream financial system in Myanmar.

In perception on cost of banking services, the individuals' perception is low to believe that the using banking services transaction fee is expensive for their small money. Monthly service charges, transfer fee, cherub withdrawal fee are considered to banking usage cost factors. Regarding perception on cost for using bank services, most of people expect bank interest rate to be more than current tariff and they deem to be some earning for their small amount of deposit if their money will save in bank account.

It is found that using banking services would lead to a loss of convenience because of wasting time to fix errors. Wrong data input for personal information, deposited amount, wrongly transfer not to nominated beneficiary, those factors because of bank service careless on customer requests are highly inconveniences to use banking services. Even though it is not very often happen, but most of people are not believing that kind of error in banks services and they don't want to spend their time to solve it. And it is not conveniences for the customers that don't allow any amount of loans for household use, even in small amount.

Analyze the level of lack of knowledge in financial literacy of unbanked people, the unbanked people perception is low because they think that incurs fraud or hacking, there will have a potential loss of status in their social group. And they are difficult to understand for the reason of that fraud happen because illiterate in finance matter. They are not willing to learn about financial planning for their life, most of people in Myanmar survive in daily wages that are not having a chance to save their small money in bank. So most of unbanked people may believe they are not needed to open an account in banks because mostly are not dare to open their background lack of financial literacy. Most unbanked people think that

using the banking service is not useful for their daily transactions in Myanmar. Actually, many individuals lack sufficient financial knowledge to find the way through the often complicated mainstream financial system in Myanmar.

Concerning of trustworthy on banking services, lowest perception level is found that the recording system of banking may have errors in sometime, means that most of people are not trustworthy on banking services for their current using system, service structure and customer services. Most of people may believe they are not willing open an account because they do not want to disclose their personal information which banks required details information as well as they feel that keeping their money is not safe in the account.

The overall average score of four dimensions, the perception on convenience is the lowest score among them. It is expressed that most of the people are not convenience to use banking services because not willing to accept to fix errors when experience with financial literacy like wrongly stated personal information, beneficiary and advisory and also terms of banking usages. With this main reason the unbanked people are not trying to open bank account even in high income people who have excess money to save at bank. For the poor, who have small excess money for monthly basic, they also want to get loan from their household when they need money urgently, but banks have that kind of policy to permit loan for small amount for any of personal used.

Suggestion

The main objective of this study is to learn and understand the customer perception regarding service operations of private banks. After studied upon customer perception and requirements for the banking operations in Myanmar needed to promote banking and financial sectors for country wise. Due to poor infrastructure of related banking service system (sophisticated banking system for operation, management and customer services: like core banking system), there will be still facing limited service scope. For the payment in banking, settlement in card system for daily transition is still needed for the whole structure. Most of people who want to use banking services are not still believe that to be conveniences. Therefore, the main major issue those banks have to consider if they want to increase their market share, particularly unbanked areas and they should use 'Know Your Customer' (KYC) regulations.

When looking at accessing the unbanked as a potential new market, banks generally have to reach outside their traditional paradigms. Traditional branch based banking is not a viable option for a widely spread rural population who find it prohibitively expensive and time consuming to travel to the nearest bank branch. On the other hand it is not practical or cost effective for the bank to set up full branches in rural areas with low population density.

As a result of the study, although the unbanked people live in urban area they do not want to use bank services. Most of the Myanmar people use cash in every daily transaction in lives. Therefore, the banks should be attracted new customers by education to save money in banks and promote infrastructures easy to access banking services, like as efficient ATM machines located in near customers. In branch banks, the staff are trained regularly and retrained when they have lack of good attitude in relation to customers. Besides, the private banks must consider new ways of accessing the unbanked. Mobile money services offered through the bank is one option although it has some drawbacks as it generally does not offer a full range of financial services. Mobile branches and/or agency banking on the other hand can be effective ways of reaching the unbanked and offering them a full range of services without the complexity and cost of running physical bank branches.

Most of unbanked people don't think that using banking services is useful for our daily transition in our country that is because of our people custom that resist to change daily cash based system. It is also need to advise by the way of advertising the awareness on the advantages of using banks services.

Especially, most of unbanked people feel that totally unsafe providing personal privacy information over banking. And also most of people still not rely on current communication system even private sector provided for those IT services. While basic savings accounts do appear to be useful to a minority, more sophisticated products might be necessary for others. The bankers are should give the assurance to the customers for the safe transaction ever. There will need to try for the service structure to be conveniences by all means to all customers.

To be more conveniences and to get more rely on banking services from people, secrecy of banking regulation should be more tighten, not to feel totally unsafe if the customer provides personal privacy information over banking. Banks need to perform to be more trustworthy from all customers, not only unbanked people but also existing current customers.

It can be suggested that this is a lower bound on potential demand for formal saving products. Serious attention should be paid to improving the delivery of financial services, doing so could improve the lives of millions of people. The banking industry needs to develop different fee and service structures designed to accommodate lower income depositors in much the same way banks currently provide VIP treatment to high-net-worth individuals.

For getting more market share and to be more used banking service from unbanked people, the private banks have to try more awareness of banking service performance and advertisement to be received trustworthy and conveniences, need to educate that there have

no default or lost if there have any crisis or errors in banking industrials since it is centralized control system by CBM for all performance of banking services in Myanmar.

Needs for Further Research

As there has a limited scope for banking service upon perception of unbanked only, and the sample size of the study based on 180 staff only from EFR Group of Companies. As conclusion, further study should be done with lager sample and expended survey on all rural area and urban area of Myanmar that will have more widely to get better results.

This study only focuses on unbanked people perception, but in this banking industrial there can be find out the under-banked people perception as well. In which the **unbanked** are adult people who do not have their own bank accounts. Along with the **under-banked**, they may rely on alternative financial services for their financial needs, where these are available. It can be more supportive to maintain the current banking services as well as any expending of service structure upon most of unbanked and under-banked requirements and demands in market.

REFERENCES

1. Akbar M. M. and ParvezNoorjahan (2009), Impact of Service Quality, Trust and customer Satisfaction on Customers Loyalty, *ABAC Journal Vol. 29, No.1 (January- April 2009, pp.24-38)*

2. Angur, M.G., Nataraajan, R. and. Jahera, J.S. Jr (1999), ``Service quality in the banking industry: an assessment in a developing economy'', *International Journal of Bank Marketin*g, Vol. 17 No. 3, pp. 116-23.

3. Assael, H. (1981), Consumer Behavior and Marketing Action, 3rd Edition, PWS-Kent Publishing Company, Boston, M. A.

4. Arthur Meidan (1996), Marketing of Financial Services, MacMillan Press, London.

5. Best JW (1997), Research in Education. 3rd ed. Englewood Cliff, NJ: Prentice Hall, Inc.

6. Brett King (2010), "Bank 2.0: How Customer Behaviour and Technology will change the future of financial services."

7. Demirguc-Kunt, Asli, and LeoraKlapper. 2012. "2011 Global Financial Inclusion (Global Findex) Database." (Bill and Melinda Gates Foundation and World Bank.)

8. Deutsche Gesellschaftfür International Zusammenarbeit (GIZ) GmbH, Financial Sector Development Project (Updated Version, February 2015) , "Myanmar's Financial Sector: A Challenging Environment for Banks"

9. *European Journal of Business and Management,* ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol 3, No.3

10. Financial Inclusion and the World's "Unbanked" Population , *Posted by Isobel Coleman, Senior Fellow for U.S. Foreign Policy, Director of the Civil Society, Markets, and Democracy Initiative, the Council on Foreign Relations.*

11. *International Journal of Business and Administration Research Review, Vol.1, Issue.5, April-June, 2014 Page 129*

12. Interim Country Partnership Strategy: Myanmar, 2012-2014

13. Indian Banks Association, Survey on Public Sector Banks Customer Service: 1996-1997, as reported in [BA Bulletin, special ISSUC, March-1997]

14. Jazeela M (January 2001), "The customer perception of banking products and services in Kerala with reference to specific customer segments in the urban area" By School of Management Studies Cochin University of Science and Technology Kochi - 680 022. Kcrala.

15. L.Daft, Richard (2010), "New Era of Management" 10th edition, South-Western Cengage Learning.

16. Myanmar's Financial Sector, A Challenging Environment for Banks (Updated Version, February 2015)

17. *Theodore Levitt* (1960)"Summary of Marketing Myopia"Posted on October 10, 2010.

18. Turnell, Sean (2009), Book examining the history of Burma's monetary and financial system, Fiery Dragons: Banks, Moneylenders and Microfinance in Burma were published by the Nordic Institute of Asian Studies (NIAS) Press.

19. UNCDF. Myanmar: Demand, Supply, Policy and Regulation (Myanmar Country Diagnostic Report : 2014) "MAP : Making Access Possible , CENFRI : The Center of Financial Regulation and Inclusion"

20. Dr.T.Vasanthi, February 2013 1 ISSN 2250-3153D. *"International Journal of Scientific and Research Publications, Volume 3,* Issue "Department of Commerce, TiruppurKumaranCollege)

21. Vibhorjain(February 2012), Volume 2, Issue 2, "The customer perception on service quality in banking sector" *International Journal of Research in Finance & Marketing* (Page 597-599)

RISKS OF INTERNATIONAL TRADE AND SETTLEMENT SYSTEMS IN MYANMAR

Dr. Soe Thu[7] & Mra Thu San[8]

ABSTRACT

International trade in the world has been widely studied and it becomes important for the nation's economic growth. Doing business across international borders face many of the same risks as would normally be evident in strictly domestic transactions. This paper observes the perception of importers on international trade payment systems in Myanmar and explores the risk of international trade according to use of payment systems. This study uses both qualitative and quantitative data analysis method. The simple random sampling method was applied as a sampling method. In this study, 50 importers out of 500 active importers from Myanmar trading industry are selected to analyze and the studied period is within the month of October 2016. Finding reveals that the importers are mostly using the telegraphic transfer settlement for their import trade. This study exposes that documentation risk is the highest risk and also the most obvious risk occurring in import trade of Myanmar trading industry. Finally, it is suggested that in conducting international trade, any transactions, procedures and payments should be carried out in due diligence and the carriage and transportation of the goods should be determined with proper INCOTERMS and in due course to hedge the unnecessary trade and settlement risks.

1. Introduction

Since earliest times, people have been trading surplus goods for profit or in exchange for other goods or services. This basic principle continues to guide international trade today. Certainly, today's mechanisms for payment, shipment methods, and the global economy make for a far more sophisticated market place than those of historical times, however, the basic principle of international trade remains. This sophistication has been accompanied by growth in the variety of goods available, numbers of buyers and sellers, channels of delivery and methods of payment. Certainly, the risks encountered by both buyers and sellers have increased also.

International trade is the exchange of capital, goods and services across international borders or territories, which could involve the activities of the government and individual. In most countries, such traded represents a significant share of gross domestic product (GDP). While international trade has been present throughout history, it's economic, social, and political importance has been on the rise in recent centuries. International trade (export and import) forms the essence of international finance. With exporters and importers happening between entities spanning across the world, separated not only by physical distance but by policy

---

7 Director of MBF Program, Professor & Head of the Department of Commerce
8 Candidate, MBF II Batch, MBF Programme, Yangon University of Economics

regulations different countries, certain protocols, rules and regulations have developed so that exporters and importers are bound to perform their side of bargain. With globalization of business, companies are sourcing raw materials from different parts of the world, identifying suppliers who would provide goods at the best price, selling products in markets where companies would get the best price irrespective geographical distance. When exporters and overseas importers do not know each other, operate in different countries with each country having its own rules and regulations, the international trades risk increases enormously. The supplier may not supply the right kind of product, may not deliver the goods on proper time, may not supply the negotiate amount etc. Similarly, after the goods, the overseas importer may reject the goods citing quality standards, may not pay the amount as per negotiated terms and in proper time.

In international trade, the export pricing is governed by host of factors besides the price of goods like, who bears the costs associated with customs clearance, freight insurance, loading and unloading expenses. Different countries have different business cultures and languages. It's a good idea to make sure to have a clear written contract to minimize the risk of understanding. The contract should set out where the goods are being delivered. When two parties are entering into a contract to buy& sell goods from each other, both parties should be clearly aware of who is bearing which costs. Hence, it is very important that both trading parties understand the trade terms in no uncertain way. Parties belonging to different countries may not be aware of different trading practices followed by different countries. To bring in some kind rationalization and standardization, International Commercial Terms, INCOTERMS were developed. The INCOTERMS, were created in 1936 with the purpose of providing a set of international rules for the interpretation of the most commonly used trade terms in foreign trade. INCOTERMS help in mitigating carriage risk. INCOTERMS rules can be invaluable for shifting costs and liability associated with exporting, importing and shipping and for avoiding disputes down the road but only if companies understand how to use them properly. While many businesses employ INCOTERMS rules in their commercial contracts, these contracts are often negotiated by individuals who don't really understand what the INCOTERMS rule means and don't know how to use them effectively. It provides orderly contract models that are easily identified across the nations and language barriers.

Today's traders need to have access to information and specialist services to ensure that all payment, finance and risk mitigation options are explored and all risks are evaluated before committing to a deal. International trade finance deals with money lent to sellers, i.e., exporters, and buyers, i.e., importers. In international trade transactions, there is always the "chicken and egg" question of payment to the seller versus shipping and delivery of the goods to the purchaser. If a seller requires payment in advance, then their sales may suffer since purchasers would rightfully fear that they might pay in advance and the sellers not ship

the goods. Likewise, if the seller ships the goods and trusts the buyer to pay, then the seller runs the risk that the purchaser may not pay. In order to address this recurring situation, banks step in as an intermediary and provide various types of financing that attempt to address the concerns of both the buyer and the seller.

Trading internationally involves a greater amount of risk than trading domestically, mostly due to the differences in laws, culture and currency. Exporting and importing activity leads to more occasions for companies, but also involves higher risks. Although the environment for international trade has changed significantly over the years, the risks that firms deal when vending their merchandises and services in other countries remain basically the same. Several different types of risks shall be faced by parties when conducting international trade settlement. Some risks can be more important for one kind of business than another. One of the main risks in international trade settlement is the absence of knowledge about the terms and conditions of the contract. Several different types of risks faced by parties in international trade can be defined as follow: Credit risk, Poor quality risk, Knowledge Inadequacy, Transportation and logistics risks, Documentation risk, Legal risks, Political risks, Unforeseen risks, Exchange rate risks, Country risk, Transit risk, and Cross-cultural risk, so on. The Objectives of the study is to observe the perception of importers on international trade payment systems in Myanmar and to explore the risk of International trade payment systems in Myanmar

This study mainly focused on the risk of international trade and settlement of importers in Myanmar Trading industry. The facts and information are from the importers who are conducting import trade in Myanmar. The simple random sampling (SRS) method was used in this study. Questionnaires were used in the sample unit of 50 importers out of the active 500 importers from trading companies and the studied period is within the month of October 2016. Secondary data was collected from other related reports of international trade, Economic Journals and internet websites, journals and reports.

2.   Theoretical Background

In mid-20th century, Marshall McLuban's (1962) concept of a global village revolutionized thinking about the inter connectedness of countries across the globe.Trade is essentially an international transformation of commodities, inputs and technology which promotes welfare in two ways. It extends the market of a country's output beyond national frontiers and may ensure better prices through exports. Through imports, it makes available commodities, inputs and technology which are either not available or are available only at higher prices, thus taking consumers to a higher level of satisfaction. Two of the key concepts in the economics of international trade are specialization and comparative advantage. It seems

readily apparent that countries can benefit from trade if each country does something better than the other, i.e. can produce goods or services at a low cost. (Vijayasri, G V, 2013).

International free trade has driven the development of today's economically advanced nations during the nineteenth and early twentieth century. Rapidly expanding trade especially or specifically the export sector provided an additional stimulus to growing local demands that led to establish of large scale industries. The positively significant sign of trade openness, both in the short run and long run may also signal its impact on increasing a nation's income. Trade is an important stimulator of economic growth and it enlarges a country's consumption capacities, increases world output, and provides access to scarce resources and worldwide markets. Trade helps counties achieve development by promoting and rewarding the sectors of the economy. It also takes advantage of scale economies. Looking back the trade theories, Mercantilism refers to the collection of economic thought existed in European countries during 1550-1750. The main thinking of Mercantilist was that a country's wealth was examined by a country's holding precious metal. Economic system under Mercantilism consists of three components; a manufacturing sector, a rural sector and the foreign colonies. The merchant class played the critical role in economic system. Labor is the basic factor of production. Mercantilist's economic policy aims to have excessive trade balance; if the country's export is larger than import, country's wealth increase. (Todaro, Michael P, 2009).

To succeed in today's global marketplace and win sales against foreign competitors, exporters offer their customers attractive sales terms supported by appropriate payment methods. Various trade terms are available to balance the trade transaction risks for both the importer and exporter. An importer will wish to negotiate the most favorable terms of purchase with overseas supplier. Importer will negotiate terms of purchase to ensure that to receive import purchase in the right quantity, right quality, at the right price and on time. At the same time importer can expect overseas supplier to negotiate terms that will minimize potential risks- particularly the risk of nonpayment. Import trade transactions can be structured in a number of ways. The structured used in a specific transaction reflects how well the participants know each other, the countries involved, and the competition in the market. A payment system consists of a set of instruments, banking procedures and typically, interbank funds transfer systems that ensure the circulation of money. Payment systems are vital part of the economic and financial infrastructure.

Globally five international trade payment methods are used. The method of payment used will usually depend on two important aspects. First, the negotiations between the exporter and importer before the sales contract are signed. Second, the commercial practice in the countries involved is important. When the exporters/importers negotiating the method of payment, they should aware that his/her decision on this matter will affect not only the risk of

the payment but also the alternative trade financing structures available. So that, during or before contract negotiations, exporters/importers should consider which of the payment methods are desirable for them. Some of the most common payment terms featured on international business invoices, along with their benefits and drawbacks are as follows: (1) Payment in advance.(2) Open account trading. (3) Payment on Cash on Delivery (COD). (4) Documentary Collection. (5) Letter of credit.(Mullineux, Andrew W and Murinde, V, 2003).

Risk is a fact of business life, more so of international business. The Management of International business is the management of risk. No manager can make a strategic business decision or enter into important business transaction without a full evaluation of the risks involved. Many of the best business plans have been ruined by a miscalculation or a mistake, or an error in judgment that could have been avoided with proper planning. If the risk cannot be reduced through advance planning and careful execution, perhaps it can be shifted to some other party to the transaction. If the risk cannot be shifted to another party to the transaction, it might be shifted to an insurance company. The risks in the global trade vary from those in national trade, and it is essential to treat worldwide trade with an extra degree of care and proper risk management and while all big organizations have extensive risk management departments, smaller businesses tend not to look at this issue in such a systematic way. There are several types of risks that any organization should be aware when it is decided to operate in the international market.

3.   International Trade and Payment System in Myanmar

Since Myanmar has changed its economic course from a centrally planned economy into a market oriented system, a series of structural reforms had been introduced and new legal policy instruments given the private sectors including foreign investors and businessmen the right to do business to make investment in the country were enacted.As the foreign policy of Myanmar is independent and active policy, foreign trade policy can be seen as independent though there are some constraints in international trade. As Myanmar is now following market-oriented system, efforts are being made to encourage private sector to participate in foreign trade. Because of these attempts and efforts, the actual participation of private sector in foreign trade is increasing threat it has now reached 70% of overall Myanmar foreign trade. InMyanmar, the export policy extends and explores foreign markets through effective use of its natural and human resources and promotes exports of traditional and value-added products. On the other hand, import policy gives priority to the importation of capital goods, which is a major requirement of the state, and raw materials and goods necessary to promote public health, export and national production so as not to reply on imports. (TPO Myanmar)

Myanmar's foreign trade is mainly with Asian countries. More than 70% of total export goes to the Asian region and round about 90% of total import comes from this region. Main export items include agricultural products such as rice and rice products, pulses and beans, forest products, fishery products, metals and minerals inclusive of natural gas, precious stone and pearls, amongst other. The major import items are capital goods, industrial raw materials, spare-parts and consumer goods.

Asian countries such as South Korea, Singapore, Thailand, China, Japan, Indonesia, Malaysia, Hong Kong, and India are main trading partners of Myanmar. Regionally the European Union ranks second in importance. Import by major trading countries with Myanmar are China, France, Germany, Hong Kong, India, Indonesia, Japan, Republic of Korea, Malaysia, Singapore, Thailand, United Kingdom and United States Export by major trading countries with Myanmar are China, Germany, Hong Kong, India, Indonesia, Japan, Republic of Korea, Malaysia Pakistan, Philippines, Singapore, Thailand, United Kingdom and United States.

The laws and regulations governing imports are complex and most importers use professional experts, known as freight forwarders and customs brokers, to assist them in planning and carrying out import transactions. Imports into Myanmar are controlled by the Customs Department of the Ministry of Finance. Customs is responsible for assessing and collecting applicable customs duties and taxes on imports and carrying out other regulatory and law enforcement responsibilities relating to imports. Customs is currently developing the Myanmar automated cargo clearance system (MACCS) designed to automate a number of areas of customs operations.

In Myanmar, informal international payment and settlement practices have succeeded among firms. To avoid both the restrictive controls on foreign exchange and trade and the U.S. financial sanctions, international remittances to and from Myanmar are often diverted via a third-party country such as Singapore, making financial transactions less transparent. Despite continuing reforms that in new government initiated in March 2011 and the easing of U.S. financial sanctions, informal payment and settlement practices remain concentrating. Without increases in remittances both to and from Myanmar, the convenience of a formal system will not be comprehended, leaving the playing field irregular between those firms reliable of financial compliance and those using the informal system.

4.　　Analysis of International Trade Risks and Settlement Systems

This analysis attempts to explore the risk of international trade that mainly effect according to use of payment system such as letter of credit settlement, telegraphic transfer settlement, documentary collection settlement and cash on delivery settlement. In this study, this

objective is main causes to analyze and 50 importers are interviewed by using the structured questionnaire.

4.1   Perception of Respondents on Payment Systems

In determining the risk of international trade that mainly effect according to use of payment system, four factors are considered such as importer's perception towards letter of credit settlement, telegraphic transfer of settlement, and payment types. There are total of 23 levels in these factors. The scores for each question concerned with corresponding factor level are discussed in the following subsection. All the four factors are measured via five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The sampled importers were asked to rate on the statements that describe their perception. A higher scale demonstrates the importer's practices the payment system of international trade and vice versa.

Letter of Credit Settlement

Importer's perception to use letter credit settlement are divided into seven statements, each statement carries one question. The higher the average scores the higher the respondents' perception and usage of the letter of credit settlement for their import trade and vice visa.

Table (1)   Perception on Letter of Credit Settlement

No.	Statement	Mean	Std. Deviation
1	Letter of Credit payment system is mostly used for my import trade.	3.26	1.46
2	Using Letter of Credit system for the import trade is easy and convenient for documentation work.	2.98	1.46
3	The Discrepancies are easy to amend in LC payment.	2.10	1.22
4	The cost of bank transactions in LC settlement for import trade is more costly than other.	3.88	1.12
5	The cost of amendment in LC settlement for import trade is costly.	2.02	1.09
6	The LC settlement using the Private banks from Myanmar needs to provide more documents.	2.94	1.31
7	The LC settlement using Private banks from Myanmar is more costly.	2.15	1.47
	Overall Mean Scores		2.76

Source: Survey Results, 2016

Table 1 shows that the cost of bank transaction in LC settlement for import trade in more costly than other has the highest mean score of 3.88; while the cost of amendment in LC settlement for import trade is costly has the lowest score of 2.02. The overall means scores of

letter of credit settlement is 2.76.Even the cost of bank transactions in LC settlement for import trade is more costly than other, using LC settlement is the most secure method as the bank assures for the shipment and guarantees for the payment.

4.2   Telegraphic Transfer Settlement

Importer's perception to use telegraphic transfer settlement are divided intoseven statements, each statement carries one question. The higher the average scores the higher the respondents' perception and the higher the respondents applied with the telegraphic transfer settlement for their import trade and vice versa. Table 2 shows that the payment in advance (TT) system is used for the import trade has the highest mean score of 4.2; while the open account payment system is used for the import trade has the lowest mean score 2.00.

Table (2)   Perception on Telegraphic Transfer Settlement

No.	Statement	Mean	Std. Deviation
1	Open account (Telegraphic Transfer) payment system is used for the import trade.	2.00	1.01
2	Payment in advance (Telegraphic Transfer) system is used for the import trade.	4.20	1.23
3	Using Telegraphic Transfer payment system for the import trade is easy and convenient for documentation work.	4.04	1.07
4	The Discrepancies are easy to amend in TT payment.	2.64	1.29
5	The cost of bank transactions in TT settlement for import trade is more costly than other.	2.90	1.45
6	The TT settlement using the Private banks from Myanmar needs to provide more documents.	2.56	1.33
7	The TT settlement using Private banks from Myanmar is more costly.	2.78	1.57
Overall Mean Scores			3.01

Source: Survey Results, 2016

The overall means scores of Telegraphic Transfer settlement is 3.01.As per the result, the importers from Myanmar are using TT system more than other since using TT payment system is easy and convenient. Even though the buyer and seller need to have strong relation for TT payment, it is the fastest and cheapest form of payment.

4.3   Documentary Collection Settlement

Importer's perception of using documentary collection is divided into five statements, each statement carries one question. The higher the average scores the higher the respondents used documentary collection for their import trade and vice versa.

Table (3)   Perception on Documentary Collection Settlement

No.	Statement	Mean	Std. Deviation
1	Documentary collection payment system is mostly used for the import trade.	2.00	1.05
2	The Documentary collection system using Private banks from Myanmar is more costly.	2.48	0.863
3	Using Documentary Collection payment system for the import trade is easy and convenient for documentation work.	2.44	0.787
4	The Discrepancies are easy to amend in Documentary collection payment.	2.52	0.863
5	The cost of bank transactions in Documentary collection settlement for import trade is more costly than other.	2.22	0.864
Overall Mean Scores			2.332

Source: Survey Results, 2016

Table 3 shows that the discrepancies are easy to amend in documentary collection payment has the highest mean score of 2.52; while documentary collection payment system is mostly used for the import trade has the lowest mean score 2.00. The overall means scores of documentary collection settlement is 2.332. According to the result, it can be seen that the documentary collection system is not mostly used for the import trade in Myanmar.

4.4   Cash on Delivery Settlement

Importer's perception of using cash on delivery settlement is divided into five statements, each statement carries one question. The higher the average scores the higher the respondents used the cash on delivery for their import trade and vice versa.

Table (4)   Perception on Cash on Delivery Settlement

No.	Statement	Mean	Std. Deviation
1	Cash on Delivery payment system is mostly used for the import trade.	1.80	0.948
2	Using Cash on Delivery payment system for the import trade is more costly than other.	2.16	0.817
3	Using Cash on Delivery payment system for the import trade is easy and convenient for documentation work.	2.50	0.789
4	The Discrepancies are easy to amend in Cash on Delivery payment.	2.26	0.803
Overall Mean Scores			2.18

Source: Survey Results, 2016

Table 4 shows that using cash on delivery payment system for the import trade is easy and convenient for documentation work has the highest mean score of 2.5; while cash on delivery payment is mostly used for the import trade has the lowest mean score of 1.8. The overall mean score of cash on delivery settlement is 2.18. The result shows, it is obvious that cash on delivery system is not mostly used for the import trade due to the lowest mean score.

4.5   Comparison of Payment Systems in Trading Business

In the comparative analysis of four factors that mainly effect the risk of international trade and settlement, it will be taken the average of each factor by their corresponding statement, for instance "Letter of Credit Settlement" as one of the four factors contains seven statement, it will take the average of seven statement under letter of credit settlement and compare with other factors average to see which factors is relatively more effective use for sampled importer in Trading business in Myanmar. The overall mean scores of each factor are illustrated in Table 5.

Table (5)   Overall Average Scores for each Factor

Factor	Overall Average Scores
Letter of Credit	2.76
Telegraphic Transfer	3.01
Documentary Collection	2.33
Cash on Delivery	2.18

Source: Survey Results, October 2016

The corresponding average scores of "Telegraphic Transfer" is 3.01 which the highest scores as compare to other factor. In these four types of payment systems, the usage of telegraphic transfer is the most because the mean score of the importer's perception and use of telegraphic transfer is 3.01 which is highest compare with LC, DC and COD with overall mean score 2.76, 2.33 and 2.18 respectively. According to this result, it can be seen that the importers from import trade are using TT settlement more than other settlement systems.

4.6   Risks of International Trade Settlement

Any business transaction contains a spectrum of risk. Trading internationally involves a great amount of risk due to the differences in law, culture and currency. Myanmar trading business presents variety of risks in conducting international trade and settlement. In this section, studying the three type of risk i.e. fraud risk, documentation risk and settlement risk that which risk are mainly facing in Myanmar Trading business.

(a)   Fraud Risk

Fraud risk concern with four statement. Therefore, four questions are designed to obtain the agreement level of importer on the fraud risk. Table 6 shows that there are internet information fraud attempts in TT settlement of import transaction has the highest mean score of 3.78; while there are some frauds in shopping documents in the LC settlement of import trade is 3.40.

Table (6)   Fraud Risk on International Trade Settlement

No.	Statement	Mean	Std. Deviation
1	There are some frauds in receipt of goods in the LC settlement of import trade.	3.44	1.25
2	There are some frauds in shipping documents in the LC settlement of import trade.	3.40	1.16
3	There are some fraud attempts where no arrival of goods in TT settlement of import trade.	3.42	1.46
4	There are internet information fraud attempts in TT settlement of import transactions.	3.78	1.28
Overall Mean Scores			3.51

Source: Survey Results, 2016

The overall means scores for fraud Risk on payment system is 3.51. This result showed, the importers using TT settlement are facing with internet information fraud risk more than others.

(b) Documentation Risk

There are five statements regarding the documentation risk. Therefore, five questions are designed to obtain the agreement level of importer on the documentation risk.Table 6 shows that there are risks where improper description of shipper, consignee or notifying party in bill of lading for import trade and incorrect description of weight and measurement of goods in Bill of Lading for the import trade has the highest mean score of 4.08; while there are, risks concerning in incorrect data and improper description in the submission documents while applying license for import trade has the lowest mean score of 3.84. The overall means score for documentation risk on payment system is 3.96.

Table (6)   Documentation Risk on International Trade Settlement

No.	Statement	Mean	Std. Deviation
1	There are risks concerning in absence of documents (for instance FDA, SGS Certi, Country of Origin) for the import trade.	4.00	0.99
2	There are risks concerning in incorrect description of goods and amount in commercial invoice for the import trade.	3.88	1.06
3	There are risks where improper description of shipper, consignee or notifying party in bill of lading for import trade. There are also risks for incorrect description of weight and measurement of goods in Bill of Lading for the import trade.	4.08	0.85
4	There are risks concerning in incorrect data and improper description in the submission documents while applying license for import trade.	3.84	1.27
5	There are risks concerning in incorrect description of items and quantities in packing list for the import transactions.	4.02	1.08
Overall Mean Scores			3.96

Source: Survey Results, 2016

According to this result, the documentation risks occurring in import trade are due to improper or incorrect description of bill of lading.

(c) Settlement Risk

There are six statements concerning about the settlement risk on payment system. Therefore, six questions are designed to obtain the agreement level of importer on the settlement risk.

Table (7)   Settlement Risk on International Trade

No.	Statement	Mean	Std. Deviation
1	There is risk in Letter of Credit (LC) payment system for import trade.	2.56	1.215
2	There is risk in Telegraphic Transfer (TT) payment system for import trade.	3.78	1.02
3	There are risks in Letter of Credit (LC) payment system for import trade by using CIF terms.	2.52	1.26
4	There are risks in Telegraphic Transfer (TT) payment system for import trade by using CIF terms.	3.42	1.03
5	There are risks in Telegraphic Transfer (TT) payment system for import trade by using FOB terms has risk.	4.02	1.06
6	There are risks in Letter of Credit (LC) payment system for import trade by using FOB terms has risk.	3.06	0.98
	Overall Mean Scores		3.23

Source: Survey Results, 2016

Table 7 shows that There are risks in telegraphic Transfer (TT) payment system for import trade by using FOB terms has risk has the highest mean score of 4.02; while there are risks in Letter of Credit (LC) payment system for import trade by using CIF terms is 2.52. The overall means scores for settlement risk on payment system is 3.23. As a result, the highest settlement risk is the TT settlement by using FOB term.

(d) Comparison of Risk Types

In the comparative analysis of three type of risk are mainly facing in the Myanmar trading business.

Table (8)   Overall Average Scores for each Type of Risk

Type of Risk	Overall Average Scores
Fraud Risk	3.51
Documentation Risk	3.96
Settlement Risk	3.23

Source: Survey Results, October 2016

The corresponding average scores of documentations risk is 3.96 which the highest scores as compare to other risk that are facing the Myanmar trading business, so it can be assume that importer in trading business generally face the documentation risk to use of payment system. Follow by fraud risk 3.51 which have the second highest scores as compare to settlement risk use of various payment systems. The result shows that documentation risk is the most obvious risk and highest risk in Myanmar import trade.

5.   Conclusion

After the assessment, the profile of the company found that the majority of the years of importer's company establishment are between 10 – 20 years. The majority of imported material from Myanmar Trading industry is construction materials. And most of the importers from Myanmar trading companies are importing the materialsunder USD 100,000.00 per month. According to the analysis, the importers are importing between 10-15 times per month in Myanmar import trade. The importers from Myanmar trading industry are mostly using Telegraphic Transfer during import trade. In Myanmar import trade, most of the importers are commonly using the CIF term. For the perception of knowledge of payment procedure, the importers understand all the procedures concerning to import trade procedure, payment systems, terms of trade and other procedures in general.

With regard to the determining of importer's perception and the risk of international trade that mainly effect according to use of payment system, four factors are considered. They are letter of credit settlement, telegraphic transfer of settlement, documentary collection settlement and cash on delivery settlement.

In perception on letter of credit settlement, the cost of bank transaction in LC settlement for import trade in more costly than other in which LC opening charges, advising charges, cancellation charges and handling charges are included. In perception towards telegraphic transfer (TT) settlement, payment in advance system is used for the import trade as using telegraphic transfer payment system for the import trade is easy and convenient for documentation work. The importers are not mostly used the documentary collection settlement for the import trade. Regarding with cash on delivery settlement, although it is easy and convenient for documentation work as it allows purchaser to pay at the time of delivery instead of having to pay upfront but the importers are not effectively using this system.

According to the analysis on risk of international trade settlement, the importers using TT settlement are facing internet information fraud attempts in import trade. Moreover, the documentation risks occurring in import trade are due to improper or incorrect description of

bill of lading. In addition, the importers using FOB terms for Telegraphic Transfer (TT) payment system are facing settlement risk in import trade as they have to make advance payment at the time the goods are on board.After all, it is apparent that the importers from Myanmar trading industry are using Telegraphic Transfer settlement system as money transfer can be done instantly and processed within 1 or 2days, privacy is maintained individually and it is easier to take money and roam from one location to another. Documentation risk is the highest risk occurring in Myanmar import trade as the documents play a major role in international trade.

6.   Suggestion

When doing business, decisions have to be made constantly, whose outcome is not certain and thus connected with risk. In Myanmar, doing business in International trade has a spectrum of risks. According to above finding, it can be seen that the importers are actively using telegraphic transfer in import trade. But the letter of credit system should be used for the import trade as this system plays a critical role in world trade today. Although using the letter of credit settlement system may need documentation work more than telegraphic transfer, the participation of the third party which is the bank provide additional security for both parties. By guaranteeing the payment with a documentary credit, the buyer can achieve more profitable terms of delivery payment for the goods. A credit against goods may be obtained when using letter of credit with deferred payment. Moreover, by using the bank's financing facility, the business can extend its credit term and a wide choice of financing for any terms of transaction. As CIF is more convenient way of shipping, the importers from Myanmar are using CIF terms in their import trade. Moreover, they do not have to deal with freight or other shipping details. But using telegraphic transfer with the terms of CIF may have risk as the buyers need to pay in advance before the goods are arrived. So, to mitigate this kind of risk, importers should use letter of credit system. Understanding all types, terms and conditions of letter of credit which are practicing in international trade is vital for the importers. Chances of complexities with the documents and fraud are less by using the advantage of the bank facility.

The result of the study showed that documentation risk is the highest risk in the import trade. Documents play a major role in international trade indeed. Standard payment procedures rely on them. Making the right documentation is a vital part of international trade. Thorough, accurate paperwork minimizes the risks of problems and delays. Moreover, while making written agreement between buyer and seller, the terms and conditions regarding the payment system should be cleared and proper channel should be used. Not only the payment system but also the nature of the goods is essential to consider in terms of payment. If it is necessary,

the expertise should be appointed. So, payment system should be made with due diligence to hedge the settlement risks of international trade. To include in import or export trades, it is important to know import and export regulations of transacting countries as this will aid knowledge of which goods may or may not be dealt with. And sales contract could be frustrated due to changes in laws and regulations. The nature of goods and cost of transportation will also determine what manner of INCOTERMS is to be applied. In addition, importers should familiarize with INCOTERMS rules, which are considered essential to use in contracts for the sale of goods internationally. It is especially important that importer master INCOTERMS for the preparation of a proforma invoice. One of the important factors needs to consider is the time difference between the payment and contract date where the currency exchange rate risks can be occurred. And then buying and selling in same currency will minimize foreign exchange risk.

As for conclusion, in any international trade transaction, certain minimum checks should be carried out. Additional checks are necessary when dealing for the first time with unknown parties and should have all the time a contingency plan against critical events. The literacy and effective use of the trade and payment procedures would be able to formulate successful import strategy to mitigate and hedge risks.

REFERENCES

1. Achor, Agbonika J A, 2015, Methods of International Trade and Payments, Kogi State University, Anyigba, Nigeria.

2. Duff, Victoria, 2016, Role of Commercial Banks in International Business, Hearst Newspapers, LLC.

3. Dinu, Ana-M, 2015, Risks Types in international Trade, Volume 7, No. 1

4. Koji Kubo, 2014, Myanmar's Financial Integration, Normalizing International Payment and Settlement Systems, The National Bureau of Asian Research.

5. Kojima, Eitaro 2011, Myanmar Intermediate Goods Trade and Industrial Development, BRC Research Report No.5, Bangkok Research Center, IDE-JETRO, Bangkok Thailand.

6. Marchetti, G, Morelli, M and Raimondi, V, 2012, Settlement Risk, Senarum University.

7. Mullineux, Andrew W and Murinde, V, 2003, Handbook of International Banking, Edward Elgar Publishing Limited.

8. Makki, Shiva S, 2004, Impact of Foreign Direct Investment and Trade on Economic Growth, Economic Research Service, USDA.

9. Napp, Ann-K, 2011, Financial Risk Management in SME, Aarhus University

10. Salinas, G&Aksoy A, 2006, Growth Before and After Trade Liberalization, World Bank Policy Research Working Paper 4062.

11. Todaro, Michael P. and Smith, Stephen C, 2009, Economic Development, 10th Edition, Addison-Wesley.

12. Vijayasri, G V, 2013, The Importance of International Trade in the World, Andhra University, Indai.

13. Youssef, Frida, 1998, Documentary Risk in commodity trade, United Nations Conference on Trade and Development.

14. Zin ZinNaing, Daw, 2013, Trade Policy Reform in Myanmar, Yangon University of Economics.

WEBSITE

1. Aung Thura, Dr., 2013, Trading in Myanmar: Understanding the Import & Export Payment System in Myanmar, Myanmar Private Sector Investment Summit. Retrieved from http://www.oilseedcrops.org/wp-content/uploads/2014/03/Understanding-the-Import-Export-Payment-System-in-Myanmar.pdf

2. EzazulHaque A. K. M, 2016, An Overview of International Trade Payment and Finance. Retrieved from https://www.linkedin.com/pulse/overview-international-trade-pnder P S Chahal, Risk Management in Export-Import Business. Retrieved from https://www.cuchd.in/elibrary/resource_library/University% 20School% 20of%20Business/MBT-512-Export%20Import%20Documentation/(2).pptx

3. Foreign Trade Analysis. Value of Foreign Trade. Retrieved from http://www.csostat.gov.mm/FTNote.htm

4. Guidance. International Trade Paperwork. International Trade Contracts and Incoterms. Retrieved from https://www.gov.uk/guidance/international-trade-paperwork-the...5

5. Guide to Importing Goods into Myanmar. Retrieved from www.myanmartradeportal.gov.mm

6. KoKo Lay, Brief on Trade Related Matters of Myanmar, November, 2013. UMFCCI, Yangon, Myanmar. Role of MOC. Retrieved from https://www.cieca.org.tw/ConferenceData.aspx?mrid=515

7. Methods of Payment in International Trade. Retrieved from http://www.export.gov/tradefinanceguide/eg_main_043221.asp

8. Managing your Export Risk, Your online Export Helpdesk. Retrieved from http://www.exporthelp.co.za/modules/ 10_risk/intro.html

9. Managing Trade Risk for Importers. International Finance. Retrieved from http://www.suncorpbank.com.au/foreign-currency/international-trade

10. Methods of Payment in International Trade. Retrieved from https://www.trade.gov/media/publications/pdf /tfg2008ch1

11. Risks in International Trade and Mitigating Measures. Retrieved from www.uob.com.sg/.../TradeTutorials_RisksinInternationalTrade

12. The Incoterms Rules. Retrieved from http://www.iccwbo.org

13. TPO Myanmar. Retrieved from https://www.intracen.org/WorkArea/DownloadAsset.aspx?id=49513

14. Trade Finance. Retrieved from http://www.kbzbank.com

15. Trade Policy of Myanmar. Embassy of Republic of Union of Myanmar, Ciro. Retrieved from https://www.mecairo.org/index.php/myanmar-com/trade-policy-of-myanmar

16. Types of Letter of Credits. Retrieved from http://www.letterofcredit.biz/at_sight_letter_of_credit_sample.html

17. Types of Foreign Trade. Retrieved from http://kalyan-city.blogspot.com/2011/03/what-is-foreign-trade-types-and.html

18. https://www.gov.uk/government/organisations/hm-revenue-customs

EMPLOYERS' SATISFACTION TOWARDS EMPLOYABILITY SKILLS OF B.COM/B.ACT GRADUATES FROM YANGON UNIVERSITY OF ECONOMICS

Dr. Soe Thu[9] & Thwe Thwe Tun[10]

ABSTRACT

This study intends to analyze employers' satisfaction towards employability skills of B.Com/B.Act graduates from Yangon University of Economics and explore the gap between the expectation and perception of employers. The SERVQUAL model is used to measure the gap. Both primary and secondary are used in this study. Personal interviews with randomly selected 228 employers (8% of 3000 enterprises) from three types of business are conducted by using structured questionnaire. In this study, the employability skills are categorized as four types which are technical skills, cognitive skill, and intrapersonal skill and interpersonal skill. The results of the gap in all types of skill are negative. In accordance with the observation that has been made by comparing mean value of each skill, the cognitive skill has the highest gap to meet employers' satisfaction. This gap is obtained due to the higher expectation of employers towards overseeing several tasks and analytical skill. The interpersonal skill is the skill which has the lowest gap. This is because the perception of employers towards the graduates' listening skill and collaboration skill which is not significantly different from their expectation. These results indicate that graduates should develop the employability skills to reduce the gap between the expectation and perception

Keywords: Employability skills, Types of Business and Gap Analysis

1.   Introduction

Investing in people is critical and essential for economic and social development of any country. Hence the education has to play a different role in economy especially; tertiary education institutions play an important role in supporting the country's economic objectives as well as in diffusing and applying new knowledge and developing a qualified local labor force. One of the basic functions of education is to cultivate people to meet the needs of the labor market. Today higher educational institutes are facing different challenges to equip graduates with correct competencies and attitudes required by the corporate world. The objective of higher education is to produce the output that meets the requirements of a society and therefore, important to identify what the labor market demands from higher education.

The employment of graduates to raise an organization's intellectual capital is a usual factor to hire an employee. To enable an organization's growth and constant innovation, recruiting

---

graduates is a wise decision for employers looking for employees who are primed for work, able to communicate, share their skills and appreciate their place in a wider organization and its business.

The two greatest concerns of employers today are finding good workers and training them. The difference between the skills needed on the job and those possessed by applicants, sometimes called the skills-gap, is of real concern to human resource managers and business owners looking to hire competent employees. While employers prefer to hire people who are trained and ready to go to work, they are usually willing to provide the specialized, job-specific training necessary for those lacking such skills.

From the viewpoints of employers or organizations, they would want to employ graduates for several underlying reasons such as the knowledge and ideas they bring to an organization, their willingness to learn and speed of learning, their flexibility, adaptability and ability to deal with change, their logical, analytic, critical, problem-solving and skills and the impact they have on innovations (Harvey & Mason, 1996). It had become a critical challenge for employers to attain best talent and good employment. Therefore, only the graduates with better competencies will be able to meet these challenges and fit in the job market.

Theoretical Background

Definition of Employability

The definition of employability includes many factors that contribute to the idea of being employable. Little (2001) suggests, that it is a multi-dimensional concept, and there is a need to distinguish between the factors relevant to the job and preparation for work. Morley (2001) however states that employability is not just about students making deposits in a bank of skills.

Hillage and Pollard (1998), however, see employability as being capable of getting and fulfilling work through the ability to be self-sufficient within the labor market, to realize the potential through sustainable employment. Knight and Yorke (2003) also define Employability as: "A set of achievements, understandings and personal attributes that make individuals more likely to gain employment and be successful in their chosen careers."

'Employability is having a set of skills, knowledge, understanding and personal attributes which make a person more likely to choose and secure occupations in which they can be satisfied and successful.' (Dacre Pool & Sewell, 2007).

Aspects of Employability

Maintaining employees with the proper skills for a given job is critical to all types of organizations in that it can lead to overall organizational success and employee performance

(Nilsson, S. and Ellström, P. (2012)). Specifically, having sufficient employability skills may be the primary characteristic that helps to increase an individual's confidence in a particular job and provide a subsequent positive impact to organizational performance. However, employability skills alone may not be enough to allow the potential of a skilled workforce to realistically improve organizational performance and productivity(Little, B. (2011)). Therefore, the process of identifying and developing relevant talent is critical for organizations in meeting both short and long-term performance goals.

However, it must be noted that the concept of employability is far broader than the concept of talent. Nevertheless to be employable, workers must possess talent. Moreover, organizations must work to promote the various types of talent they need by developing practices and systems that account for the current level of talent that resides within the workforce of the organization(Nilsson, S. and Ellström, P. (2012)).

In addition, the concept of qualifications is closely related to the broader definition of employability. This is because the qualifications, or the acquired competencies of graduates, can have a substantial impact on the ability to successfully perform in a given job(Aamodt, P., Hovdhaugen, E. and Bielfeldt, U. (2010)). Although many policy makers are currently placing greater emphasis on the relationships between workforce development and the role of higher education, the focus that many organizations still place on employability skills tends to be on selection rather than training(Little, B. (2011)) . Consequently, as significant strategic and financial costs can result from inappropriate hiring decisions, individual HRD programs should be designed by organizations to strategically develop employability skills to better meet future job demands (Nilsson, S. (2010)).

 Both universities and organizations must be aware that building relevant employability skills entails more than finding a job, it consists of the development of individual techniques, attributes, and/or experiences (Harvey, L. (2005)). Furthermore, the mismatch between the supply of overall employability skills and the corresponding demand for relevant skills is a key issue as universities continue to create more graduates than can be absorbed by the job market(Baciu, E. and Lazar, T. (2011)).

As a result of the multiplicity of definitions associated with employability skills and other related terminology, numerous investigators and organizations (both public and private) have attempted to provide various frameworks to explain this terminology in a comprehensive manner. For example, the definition of employability offered by (Hillage, J. and Pollard, E. (1998)) is part of a practical framework that defines employability and its associated skills in somewhat simplistic terms.

 As part of a more comprehensive approach, McQuaid, R.W. and Lindsay, C. (2005) identify a framework that analyzes the individual and external factors as well as the personal

circumstances that impact whether an individual is employable. As another example, an employability skills framework proposed by the Australian Department of Education, Employment and Workplace Relations focuses primarily on the knowledge and non-technical skills that are necessary to effectively participate in the workforce rather than the broader skill sets required in society.

Types of Employability Skills

Competencies such as ability, aptitude and qualities developed in context that can be applied to an occupation or career can be identified as employability skills. These competencies might develop employability skills as a result of the teaching and learning process in higher education or from work experience.

Hard skills refer to the skills in the technical category, dealing with data and administrative skills. Soft skills are defined as the "interpersonal, human, people or behavioral skills needed to apply technical skills and knowledge in the workplace" (Weber et al. 2009:356).

Technical Skills: Technical skills comprise the knowledge and capabilities to perform specialized tasks related to a specific field. In this part, defining the categories of technical skill is divided into two such as (1)the technical skill every graduates should have and (2) technical skill an accountant should have.

Cognitive Skill: Cognition has to do with how a person understands the world and acts in it. It is the set of mental abilities or processes that are part of nearly every human action while we are awake. Cognitive abilities are brain-based skills we need to carry out any task from the simplest to the most complex. They have more to do with the mechanisms of how we learn, remember, problem-solve, and pay attention, rather than with any actual knowledge.

Intrapersonal Skills: Intrapersonal skills deal with feelings, thoughts and emotions that are stirred up within an individual. This skill is not apparent because it is within a person and the individual next to them may not be aware of it. The American Heritage Dictionary 2010 has given the meaning of intrapersonal skill as 'existing or occurring within the individual self or mind. ' Intrapersonal is to do with self and it is the skill that helps one manage what is going on inside oneself. An illustration of intrapersonal is someone having consciousness of how they affect the world around them by managing their emotion in the tough conditions. Tenedero (2001) has stated the qualities of people with intrapersonal skills. People with intrapersonal intelligence are generally quiet and deliberate, works well alone, manage their personal growth and search for identity. They have excellent control of their feelings and moods. They express themselves through symbols.

Interpersonal skill: Bunk (1994) has framed the model of structural change in today's society considering the above skills through his concept of 'professional competence'. Accordingly an

employee within modern production systems can be described as anyone who is able to solve work tasks in an independent and flexible way and is able and willing to become involved in planning within his or her occupational environment and within the work organization.

Gap analysis

Gap analysis generally refers to the activity of studying the differences between standards and the delivery of those standards. For example, it would be useful for a firm to document differences between customer expectation and actual customer experiences in the delivery of medical care. The differences could be used to explain satisfaction and to document areas in need of improvement. However, in the process of identifying the gap, a before-and-after analysis must occur. This can take several forms. For example, in lean management we perform a Value Stream Map of the current process. Then we create a Value Stream Map of the desired state. The differences between the two define the "gap". Once the gap is defined, a game plan can be developed that will move the organization from its current state toward its desired future state.

Another tool for identifying the gap is a step chart. With the step chart, various "classes" of performance are identified—including world-class status. Then, current state and desired future state are noted on the chart. Once again, the difference between the two defines the "gap".

Importance of Gap Analysis

The main reason gap analysis is important to firms is the fact that gaps between customer expectations and customer experiences lead to customer dissatisfaction. Consequently, measuring gaps is the first step in enhancing customer satisfaction. Additionally, competitive advantages can be achieved by exceeding customer expectations. Gap analysis is the technique utilized to determine where firms exceed or fall below customer expectations.

Customer satisfaction leads to repeat purchases and repeat purchases lead to loyal customers. In turn, customer loyalty leads to enhanced brand equity and higher profits. Consequently, understanding customer perceptions is important to a firm's performance. As such, gap analysis is used as a tool to narrow the gap between perceptions and reality, thus enhancing customer satisfaction.

The issue of service quality can be used as an example to illustrate gaps. For this example, there are several gaps that are important to measure. From a service quality perspective, these include: (1) service quality gap; (2) management understanding gap; (3) service design gap; (4) service delivery gap; and (5) communication gap.

(1) Service Quality Gap

This gap indicates the difference between the service expected by customers and the service they actually receive. For example, customers may expect to wait only 20 minutes to see their doctor but, in fact, have to wait more than thirty minutes.

(2) Management Understanding Gap

This gap represents the difference between the quality level expected by customers and the perception of those expectations by management. For example, in a fast food environment, the customers may place a greater emphasis on order accuracy than promptness of service, but management may perceive promptness to be more important.

(3) Service Design Gap

This is the gap between management's perception of customer expectations and the development of this perception into delivery standards. For example, management might perceive that customers expect someone to answer their telephone calls in a timely fashion. To customers, "timely fashion" may mean within thirty seconds. However, if management designs delivery such that telephone calls are answered within sixty seconds, a service design gap is created.

(4) Service Delivery Gap

This gap represents the gap between the established delivery standards and actual service delivered. Given the above example, management may establish a standard such that telephone calls should be answered within thirty seconds. However, if it takes more than thirty seconds for calls to be answered, regardless of the cause, there is a delivery gap.

(5) Communication Gap

This is the gap between what is communicated to consumers and what is actually delivered. Advertising, for instance, may indicate to consumers that they can have their cars 'oil changed within twenty minutes when, in reality, it takes more than thirty minutes.

## 2.	Method

Sample and Research Design

Data are collected from 228 employers from Hlaingtharyar in Yangon. Those employers were interviewed using the structured questionnaires. The respondents include the employers from different types of business including manufacturing, trading and service. These types are analyzed and put into group after collecting the data.

The questionnaire was divided into two parts. Section A tried to investigate the characteristics of the organization such as type of organization, type of business, founded year, education, position and number of employees. Section B seeks the respondents' expectation and perception about employability skill of graduates. For each sub item of Part B in the questionnaire, five-point Likert scale was used, ranging from 1 meaning very low expectation and perception to 5 very high expectation and perception.

3.   Analysis and Results

Gap analysis was conducted with Microsoft Office Excel. Firstly, the descriptive statistics of the sample were computed. Out of 228 employers, the portion of the respondents who are the employers from production sector is 23%. The percentage of Manufacturing sector and trading sector are the same, the respondents from trading sector is also 23%.And the larger percentage 54% indicates the respondents from service sector. In studying the operating years, the years of the business are divided into three groups like below 5years, between 5 years and 10 years and above 10 years. According to the result, 31% of the respondents is from the business which has the life below 5 years and another is 20% represents the life between 5years and 10 years. The largest part is 49% which represents the business operating above 10 years.

The number of permanent employees is different according to the size of organization. The organization that hires permanent employees counting from 121 to 150 is the least which represent 1%. And the largest is 54% counting for fewer than 30 permanent employees. The organization which employs the 31-60 permanent employees is counting for 15% and over 150 permanent employees is 21%. There is similar percentage of 4% in related with the two ranges of 61 to 90 and 91 to 120 permanent employees. For the part of considering work-experience for recent graduates, it is needed to know whether there are part-time employees in the organization. According to the Table(4.5), the organization which does not hire part-time employees account for 66%, the largest percentage which is more than half. This means that there is still less chance for students to get work-experience and degree at the same time. The organization which has 1-3employees is 29%, and 4 – 6 employees is 4%.

The percentage of the number of employees fewer than 10 is the largest. The employers of the organization who employ 11-20 number of B.Com graduates come to 5%. The Table also shows the number of B.Com graduates ranges from 21 to 30 and above 50 each results each range with 3%. But employing graduates counted for 31 to 40 and 41 to 50 employees is very few or 0% is shown in table.41% resembles that there is no B.Act graduates employees employed in the organization. The range of the number of employees fewer than 10 employees is the largest up to 53%.The greater the range for the number of employees , the

less percentage will be found. The number of employees from 11 to 20 is 4% and the range 21 to 30 is 1%. But there are no more employees who employ the number of B.Act graduates more than 31 employees.

The negative gaps in all employability skills can be detected, thus the total gap was negative. It means that the performance of the graduates have not met the expectation of the employers. In other words, expectations are still greater than the actual performance. The value gaps in each sector when it is put in order from the smallest to largest are: interpersonal skill (-0.422), intrapersonal skill (-0.474) in trading sector, technical skill (-0.486), cognitive skill (-0.602) in manufacturing sector.

Table (1)   Comparison of Skill Gaps among Three Types of Business

	Technical Skill	Cognitive Skill	Intrapersonal Skill	Interpersonal Skill
Manufacturing	-0.486	-0.602	-0.418	-0.404
Service	-0.36	-0.494	-0.436	-0.388
Trading	-0.434	-0.58	-0.474	- 0.422

Source: Survey data 2016

The analysis is carried on by analyzing the mean values of each category which are divided into five categories in one type of employability skill. The detailed analyses of the following result are presented in Appendix A.

Analysis of technical skill by manufacturing, service and trading sectors, the value of gap in manufacturing is greater than other two sectors. This gap is obtained since the largest gap in language proficiency skill (-0.82), is resulted. Therefore, the graduates do not meet the expectation of the employers who want the language proficiency from their employees. In other two sectors, the gap is lower according to the results of positive gaps (0.22 and 0.18). These positive gaps mean that employer from service sector are satisfied with the competence in relevance with position (0.22) and the employers from trading sector are satisfied with computerized accounting skill (0.18) of graduates.

Analysis of cognitive skill in comparison of three sectors, the negative gap, the largest gap, (-0.6) is resulted manufacturing sector. In analyzing the categories of cognitive skill, the employers from manufacturing sectors pointed out that the perception of overseeing several tasks is much different from their expectation. This difference results the negative gap (-0.77) and the gap is greater than other two sectors according to this result. Also, the employers

from trading sector are not satisfied with the skill of overseeing several tasks. But the employers from service sector are not satisfied with the analytical skill of graduates.

Analysis of intrapersonal skill, the mean values of gap in three sectors have negative values. The negative gap is largest in trading sector because the larger gap value between the expectation and perception of employers towards functioning at an optimal level of performance contribute to the overall mean value of gap. The employers from other two sectors are also dissatisfied most in the skill of functioning at an optimal level of performance.

Analysis of interpersonal skill, the results are indicators of how the graduates can communicate well in their working environment. In categorization the negative gaps of skills form smallest to largest, the value of interpersonal skill is the least among four types of skill. This means that employers from all sectors agree that the perception of the skill of graduates is not significantly different from their expectation although the negative gap (indicator of dissatisfaction) is presented.

Findings

This study can reveal the factors of the organizations from the three types of business including trading, service and manufacturing. The factors included in this study are types of organization, types of business, operating years of business, number of permanent employees and part-time employees, number of B.Com graduated and B.Act graduated employees, position for graduates. Such factors collected from 228employers are demonstrated by pie chart and bar graph. Then, the study explored the gap (difference) between the employers' expectations and perceptions about sets of employability skill including technical skill, cognitive skill, intrapersonal skill and interpersonal skill.

The research has generated the interpersonal skill which has the lowest gap when it is compared to other types of skill. In accordance with the observations that have been made by comparing the mean value of each skill, the graduates have tried to improve the listening skill which is the heart of communication ability. The attention is given from the graduated employees to employers is considered to be good by the employers, which mean that the employers have received the performance of the graduates not significantly different from their expectation.

Intrapersonal skill is in the second row that has the lower gap when it is compared to other dimensions. The ability to complete their works before deadlines is the important skill required by the employers. In this type of skill, graduated employees are able to manage themselves to complete work in time. Therefore, it is found that B.Com/B.Act graduates learned how to perform effectively and efficiently toward their goals.

In the order from the lowest to highest negative gaps, technical skill ranks in third position in the gap analysis. Therefore, it can be concluded that most of the employers expect highly to language proficiency skill of their employees. Actually, only good language proficiency cannot make students to get employed. Other factors such as computerized accounting skill, competence in relevance with position can also influence on graduates' employability.

Cognitive skill is the skill that has the highest gap. Although employers expect highly for analytical skill, the perception is significantly different from their expectation. The graduated employees of the respondents are B.Com/ B.Act graduates and most of these graduates work as accountant. Therefore, the perception of employers towards the skill of overseeing several tasks by graduates is too low to meet employers' expectation.

The study reveal the importance placed on individual skill within each type of business also differed between the groups of employers. The findings therefore will be useful for the graduates in prioritizing skill to achieve positive outcomes in the satisfaction level of employers and their choice of study destinations. In conclusion, gap is not stable and it is a changeable aim which takes different needs of employers, therefore, it is recommended that the graduates should make efforts to improve and make better skills to meet the employers' expectation for higher employability.

Suggestions

In view of the theoretical studies of the employability skill and the conclusion of this study, the following recommendations and suggestions are presented. It is recommended that the graduates should aware the employers' expectations and standardize relevant skills with their expectations. According to the result, all dimensions indicate that expectations are greater than perceptions. It may not be enough to merely satisfy customers.

The higher expectation can cause the graduates difficulties. When the employers make enquiry at the job interview of the graduates for the first time, the communication skill including presentation is very important. If they can communicate the best, the employers will expect the best. If the job interview presentation is not good, the employers will switch to other new graduates. So, presentation and communication skill of the graduates can affect the expectation and perception of employers.

Needs for Further Study

Questionnaire of this study is limited to the four types of employability skill. The types of skills in questionnaire should be advanced by considering the characteristics and performance of an employee. Moreover, there was a limited range of response from the side of employers. Although the types of business are categorized into three types, there is no balance in the number of employers included in each type of skill. Also, the sectors should be more specialized by considering the types of business in which the graduates want to employ after they had graduated in their specialized field.

DEMOGRAPHIC TRANSITION IN SELECTED ASIAN COUNTRIES, 1990-2015

Khin Thet Tun[11]

ABSTRACT

The population growth in many developing countries is caused by relatively mortality and fertility. They are important indicators of population dynamics and play a role in changing the size and structure of population in a target area. In this study, changes in the pattern of fertility and mortality in some selected Asian countries from the period 1990 to 2015 are investigated. Firstly, the stages of demographic transition are classified by crude birth rate (CBR) and crude death rate (CDR). Secondly, the pattern of demographic transition is measured by total fertility rate (TFR) and life expectancy at birth (e0). Finally, the completion of demographic transition is calculated. Moreover, the relationships between total fertility rate (TFR) and some related variables and infant mortality rate (IMR) and some related variables are analyzed by using multiple linear regression analysis.

Keywords: **The stages of demographic transition, the completion of demographic transition, multiple linear regression analysis**

1.   Introduction

The changes in the size and growth of the population are main parts of the demographic transition. The improvement in human population growth at the beginning of the shift from high to low mortality rate and from high to low fertility rate that is known as the demographic transition. Today, in more developed countries, a demographic transition from high fertility level and mortality level to low fertility and mortality can more rapidly changes than in less developed countries. Both developed and developing countries are experiencing substantial changes in their age structures with potentially important implications for demographic transition. Beginning with the initiation of demographic transition in Japan at the 1960s, fertility and mortality decline in other Asian countries followed China, Singapore, Thailand and Republic of Korea beginning to fall by the 1970s. During the past three decades, some selected Asian countries have experienced the change in the levels and trends of fertility and mortality. The main differences between demographic transition in Asia and other regions have been the levels of fertility and mortality at the start of the decline and the pace of change during the transition. This transition provides a useful framework for assessing demographic trends and projecting future population size. Therefore, according to these descriptions, demographic transition for the selected Asian countries is studied in this paper.

---

[11] Lecturer, Department of Statistics, Yangon University of Economics

1.1 Objectives of the Study

The main objective of this study is to analyze the levels and trends of fertility and mortality changing stages of demographic transition among selected Asian countries based on the combination level of crude birth rates (CBR_s) and crude death rates (CDR_s), to examine the extent of completion of demographic transition among selected Asian countries based on life expectancy at birth (e_o) and total fertility rate (TFR) and to build the multiple linear regression models of demographic variables and other related socio economic variables.

1.2 Overview of Demographic Transition

By the beginning of the 20th century, it was apparent that mortality had fallen and fertility was beginning to fall too in many Western countries. From this historical experience, the theory of demographic transition or transition theory had occurred. The demographic transition is the transition from high birth and death rates to lower birth and death rates as a country or region develops from a pre-industrial to an industrialized economic system.

A number of theories concerned with fertility and mortality decline. The demographic transition has become a dramatic global phenomenon. It is characterized by a sustained decline in mortality and subsequently fertility, so that high and approximately equal death and birth rates eventually give way to low and approximately equal rates. Low death and birth rates are now well established in developed countries. In the developed world as a whole, United Nations (2002) data for 1995-2000 shows that life expectancy was 74.8 and the total fertility rate was 1.58. United Nations (2002) also shows that the developing world was in the process of transition; life expectancy has increased from 47.7 to 62.5 between 1960-1965 and 1995-2000. Total fertility has fallen from 6.03 to 3.11 during the same period.

The recent trends in age-specific fertility rates for Kenya, India and Peru using Demographic and Health survey data. It demonstrates that although fertility has fallen for women of all ages, the greatest falls have occurred in the 20-24, 25-29, 30-34, and 35-39 age groups. Falls have also occurred among 15-19 year olds. These trends indicate increasing control of marital fertility through use of contraception and increasingly delayed childbearing through rising age of female marriage.

Kirk (1996) stated that demographic transition theory is the theory that societies progress from a pre-modern regime of high fertility and high mortality to a post-modern regime of low fertility and low mortality. The basic concept of demographic transition theory has been outlined first by Thompson (1929), Landry (1934), Carr-Saunders (1936), and Davis (1945) and then subsequently developed Notestein (1945). The theory states that according to the classification of population specified by different combination of fertility and mortality levels, the standard of living rise with the industrialization.

1.3 Scope and Limitations of the Study

The study area focuses on Asian countries; namely Bangladesh, India, Philippines, Myanmar, Turkey, Thailand, Singapore, Hong Kong, Republic of Korea and Japan. The main sources of data and information are obtained from World Population Prospects (2015 Revision), World Bank, United Nations Development Programme (UNDP), Statistical Year Book for Asia Pacific (2015) and Asian Development Bank (ADB). The study period is used from 1990 to 2015 and secondary data are used in this paper.

2. Methodology

The demographic analysis and multiple linear regression analysis are used in this paper. In the demographic analysis, the stages of demographic transition are classified by CBR and CDR whereas the extent of the completion of demographic transition based on life expectancy and TFR. In regression analysis, multiple linear regression models are used to estimate and to test the relationships between two dependent variables (TFR, IMR) and their related independent variables.

2.1 Phases of Demographic Transition

Five phases of demographic transition which are shown in the following Table:

Table (1)   Five Phases of Demographic Transition

No.	Phases	Birth Rates	Death Rates	Natural Increase
1.	High Stationary	High	High	Zero or very low
2.	Early Expending	High	Falling slowly	Slow
3.	Late Expending	Falling	Falling faster than birth rate	Rapid
4.	Low Stationary	Low	Low	Zero or very low
5.	Declining	Low	Higher than birth rates	Negative

Source: United Nations, World Population Prospects, The 2015 Revision

2.2 Types of Demographic Transition Based on CBR and CDR

The progress in a demographic transition based on the combination of levels of crude birth rates and crude death rates can be classified into seven types as shown in Table (2).

2.3 Stages of Demographic Transition Classified by TFR and e_0

The pattern of demographic transition is broken into ten stages according to the combination of TFR and e_0. The ten stages are shown below.

Table (2)   Types of Demographic Transition Based on CBR and CDR

CBR (per 1000)	CDR (per 1000)	Type	Stage of Demographic Transition
$CBR < 20$	$CDR < 10$	A	Completed Stage of Transition
$20 \leq CBR < 40$	$CDR < 10$	B	Later Stage of Transition
$20 \leq CBR < 40$	$10 \leq CDR < 20$	C	Early Stage of Transition
$CBR \geq 40$	$10 \leq CDR < 20$	D	Initial Early Stage of Transition
$CBR \geq 40$	$CDR \geq 20$	E	Pre-modern Stage of Transition
$CBR \geq 40$	$CDR < 10$	F	Indefinable Stage of Transition
$20 \leq CBR < 40$	$CDR \geq 20$	G	Indefinable Stage of Transition

Source: United Nations, World Population Prospects, The 2015 Revision

Table (3)   Stages of Demographic Transition Based on TFR and e_0

TFR	Life Expectancy (e_0)	Stage
$TFR > 6$	$e_0 < 45$	11
$4.5 < TFR < 6$	$e_0 < 45$	12
$6 < TFR < 7.5$	$45 < e_0 < 55$	21
$4.5 < TFR < 6$	$45 < e_0 < 55$	22
$3 < TFR < 4.5$	$45 < e_0 < 55$	23
$4.5 < TFR < 6$	$55 < e_0 < 65$	32
$3 < TFR < 4.5$	$55 < e_0 < 65$	33
$4.5 < TFR < 6$	$55 < e_0 < 65$	34
$3 < TFR < 4.5$	$e_0 > 65$	43
$TFR < 3$	$e_0 > 65$	44

Source: United Nations, World Population Prospects, The 2015 Revision

Stage (11)   Mortality and fertility rates are still high.

Life expectancy at birth is less than 45 years and total fertility rate is higher than 6. The number (11) means that during this stage, fertility is at level 1 and mortality is also at level 1. The stage reached by a specific population is represented in rectangle (11) of Figure (1).

Stage (22)   Mortality and fertility rates begin to decline.

Life expectancy at birth is between 45 and 55 years and total fertility rate is between 4.5 and 6. The number (22) means that fertility and mortality are both at level 2. The stage reached by a specific population is represented in rectangle (22) of Figure (1).

Stage (33)   Decline of mortality and fertility rates accelerate.

Life expectancy at birth is between 55 and 65 years and total fertility rate is between 3 and 4.5. The number (33) means that fertility and mortality are both at level 3. The stage reached by a specific population is represented in rectangle (33) of Figure (1).

Stage (44)   Low mortality and fertility rates had reached.

Life expectancy at birth is over 65 years, and total fertility rate is below 3. The number (44) means that fertility and mortality are both at level 4. The stage reached by a specific population is represented in rectangle (44) of Figure (1).

Figure (1)   Fertility and Mortality Rates during the Process of Demographic Transition
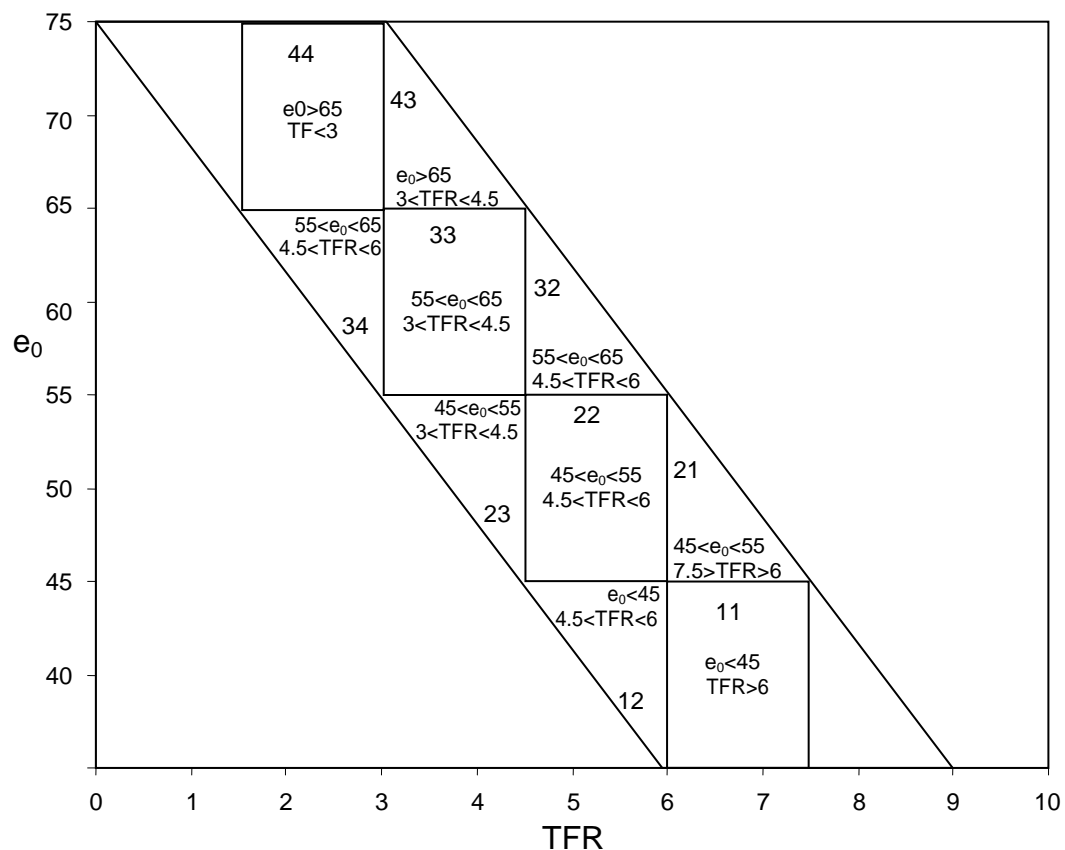
Source: United Nations, World Population Prospects, The 2015 Revision

2.4   Extent of Completion of Demographic Transition

Comparing the current TFR and life expectancy can indicate the extent to which a country has completed various stages of demographic transition. The following formula used is in computing for the extent of the completion of demographic transition.

$$\tfrac{1}{2} \ \{(TFR_{max} - TFR_{current}) \ / \ (TFR_{max} - TFR_{replace})\} + \tfrac{1}{2} \{1 - (e_{0max} - e_{0current}) / (e_{0max} - e_{0min})\} \times 100$$

where

TFR_{max} refers to the maximum rate of TFR

$TFR_{current}$ refers to the current rate of TFR

$TFR_{replace}$ refers to the replacement level of fertility

e_{0max} refers to the maximum value of the expectation of life at birth

e_{0min} refers to the minimum value of the expectation of life at birth

$e_{0current}$ refers to the current value of the expectation of life at birth

Then, the equation will be

½ {6.62 - $TFR_{current}$) / 4.52} + ½ {1- (83.7 -$e_{0current}$) / 33.6} x 100

This could be used as a measure of the extent of the completion of demographic transition.

2.5   Analysis of Multiple Linear Regression

2.5.1   Multiple Linear Regression Model

Multiple linear regression analysis is one of the most widely used of all statistical tools. Multiple regression analysis is a statistical tool that utilizes the relationship between two or more quantitative variables that one variable can be predicted from other variables.

Multiple regression models take the following form;

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \ldots + \beta_k X_{ik} + e_i$$

where

Y_i = value of the dependent variable in the ith trial of observation

β_0 = constant in the regression equation, which indicates the value of Y when all $X_{ik} = 0$

$\beta_1, \ldots, \beta_k$ = regression coefficients associated with each of the X_k independent variable

X_{ij} = value of the jth independent variable in the ith trial, or observation, associated with the process of sampling.

e_i = the random error in the ith trial or observation, associated with the process of sampling.

If the values of β_0 , β_1 , β_2, …, β_k are known, the previous equation is used to calculate the mean value of Y_i at the given values of X_{i1}, X_{i2},..., X_{ik}. In general, these parameter's values will not know and will have to estimate them from sample data. Using this sample, an estimated multiple regression equation can develop which takes the following form;

$$\hat{Y}_i = b_0 + b_1\,X_{i1} + b_2\,X_{i2} + ... + b_k\,X_{ik}$$

Where b_0, b_1, ..., b_k are the estimated values for the parameters β_0, β_1, β_2, …, β_k and $\hat{Y}_i$ is the estimated value of the dependent variable. The estimation procedure for multiple linear regression models is nearly identical to simple regression.

2.5.2   Test for the Significance of Overall Multiple Regression Model

The overall F-test is used to test for the significance of overall multiple regression model. The ANOVA procedure tests the null hypothesis that all the β-values are zero against the alternative that at least one β is not zero.

The multiple regression model is defined as

$$Y_i = \beta_0 + \beta_1\,X_{1i} + \beta_2\,X_{2i} + ... + \beta_k\,X_{ki} + e_i$$

The hypothesis for the *F* test takes the following form

Null Hypothesis   : $\beta_1 = \beta_2 = ... = \beta_k = 0$

Alternative Hypothesis   : At least one β_i are not equal to zero.
If the null hypothesis is rejected, conclude that one or more of the parameters in the model is not equal to zero. Thus, the overall relationship between the dependent variable Y and the independent variables X_1, X_2,…,X_k is significant. However, if the null hypothesis is not rejected, conclude that there is an overall significant relationship and the regression does not significantly to explain the variation in the dependent variable.

The test statistic for the F test is

$$F = \frac{\quad}{\quad}$$

Where, the MSR is the mean square due to the regression which is equal to

$$MSR =$$

And, the MSE is the mean square error which is equal to

$$MSE =$$

$$\frac{\quad}{\quad}$$

Where, n - k - 1 is the degree of freedom and *k* is the number of independent variables. The decision rule for the F - test takes the following form.

Reject the null hypothesis   : if $F > F_{\alpha,\,k,\,n-k-1}$

Do not reject null hypothesis   : if $F \leq F_{\alpha,\,k,\,n-k-1}$

Where, $F_{\alpha, k, n-k-1}$ is based on the F distribution with k degrees of freedom in the numerator, n - k - 1 degrees of freedom in the denominator, and a probability of the upper-tail of the probability distribution.

2.5.3 Log-Log Model or Double Log Model

The model used natural logs for variables on both sides of equation is called a log-log model. This model is handy when the relationship in nonlinear in parameters because the log transformation generates the desired linearity in parameters. Generally, any log transformation (natural or not) can be used to transform a nonlinear model in parameters in to a linear one.

The double log model, in its stochastic form, may be expressed as

$$LnY_i = \beta_0 + \beta_1 Ln X_{1i} + \beta_2 Ln X_{2i} + \ldots + \beta_k Ln X_{ki} + e_i$$

where,

Y_i = value of the dependent variable in the ith trial of observation

β_0 = constant in the regression equation, which indicates the value of Y when all $X_{ik} = 0$

$\beta_1, \ldots, \beta_k$ = regression coefficients associated with each of the X_k independent

X_{ij} = value of the jth independent variable in the ith trial, or observation, associated with the process of sampling.

e_i = the random error in the ith trial or observation, associated with the process of sampling.

3. Results and Findings

3.1 Comparison of Demographic Transition in Selected Asian Countries

Stages of demographic transition and types of demographic transition in selected Asian countries are classified by based on CBR and CDR whereas TFR and e_0.

3.1.1 Levels and Trends of Fertility

According to the United Nation's Estimates and Projections, CBRs and TFRs for selected Asian countries can be observed by five-year intervals. A trend of CBR and TFR is shown in Table (4), (5) and Figure (2), (3) from 1990-1995 to 2010-2015.

Table (4) shows that CBR in selected Asian countries. According to above table, the highest birth rates can be seen in 1990-1995 than other periods. The CBR for selected Asian countries ranges between 9.9 (Japan) and 33.0 (Bangladesh) live births per thousand population in 1990-1995. Philippines with 31.9 live births and India with 30.0 live births had nearly the same pattern of Philippines. The CBR of Bangladesh in 1990-1995 declined from 33.0 to 20.4 in 2010-2015. In 1995-2000, the lowest CBR can be seen in Hong Kong with 8.0

live births and the highest CBR can be seen in Philippines with 30.2 live births. Philippines were still in the highest CBR during 1995-2000 to 2010-2015.

Table (4)   Levels and Trends of CBR among Selected Asian Countries

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Bangladesh	33.0	29.3	26.0	22.5	20.4
India	30.0	27.6	25.3	22.9	20.4
Philippines	31.9	30.2	28.8	25.6	24.0
Myanmar	25.5	24.4	24.0	21.2	18.2
Turkey	24.5	22.8	20.8	18.7	17.3
Thailand	18.1	15.6	13.5	12.2	11.2
Singapore	17.6	14.3	11.3	10.1	9.3
Hong Kong	12.0	8.0	8.4	8.9	10.1
Republic of Korea	16.0	13.6	10.2	9.6	9.2
Japan	9.9	9.5	8.9	8.7	8.3

Source: United Nations, World Population Prospects, The 2015 Revision

At the end of the study period, 2010-2015, it was studied that Philippines had the highest CBR with 24.0 while Japan possess the lowest CBR with 8.3. The CBR of Bangladesh and India had reached the same pattern with 20.4 respectively. The CBR of Myanmar and Turkey was nearly the same with 18 live births. Similarly, Singapore and Republic of Korea was nearly the same with 9 live births in this period. The CBR for selected Asian countries are shown in Figure (2).

Figure (2)   Levels and Trends of CBR among Selected Asian Countries
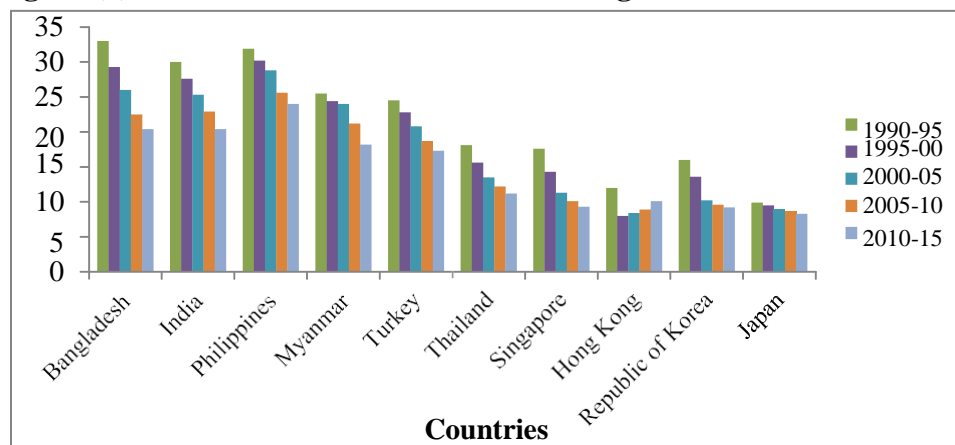
Source: Table (4)

Fertility is generally expressed as a TFR (Total Fertility Rate), which indicates the average number of children that a woman would bear at current age-specific fertility rate throughout her reproductive year (Age 15-49). Levels and trends of TFR for selected Asian countries are shown in Table (5) over the period 1990-1995 to 2010-2015.

Table (5) shows that the range of TFR was between 0.87 and 4.14 for selected Asian countries from during the study period, 1990-1995 to 2010-2015. Japan, Republic of Korea, Hong Kong, Singapore and Thailand were lower replacement level (2.1) during the study period. However, the TFR of other countries was higher than the replacement level of fertility. Countries with intermediate fertility (TFR of 2.1 to 3.5) include Myanmar and Turkey during the study period. The TFR of Bangladesh declined from about 4 in 1990-1995 to about 2 in 2010-2015. Turkey has reached to replacement level (2.1) in 2010-2015. Most of countries are lower replacement level except Myanmar, Philippines, India and Bangladesh.
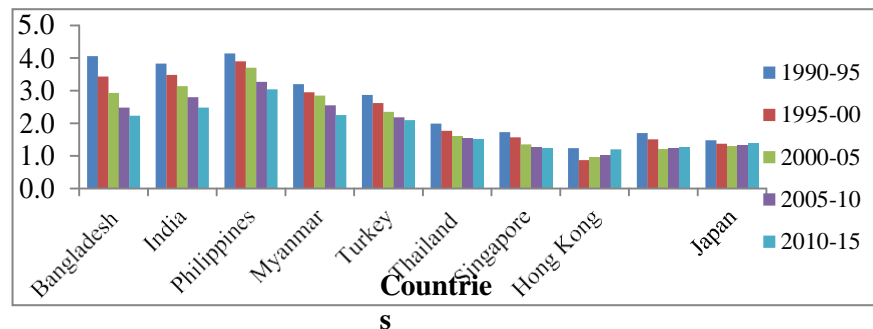
The TFR for selected Asian countries are shown in Figure (3).

Table (5)   Levels and Trends of TFR in Selected Asian Countries

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Bangladesh	4.06	3.43	2.93	2.48	2.23
India	3.83	3.48	3.14	2.80	2.48
Philippines	4.14	3.90	3.70	3.27	3.04
Myanmar	3.20	2.95	2.85	2.55	2.25
Turkey	2.87	2.62	2.35	2.18	2.10
Thailand	1.99	1.77	1.60	1.56	1.53
Singapore	1.73	1.57	1.35	1.26	1.23
Hong Kong	1.24	0.87	0.96	1.03	1.20
Republic of Korea	1.70	1.51	1.22	1.23	1.26
Japan	1.48	1.37	1.30	1.34	1.40

Source: United Nations, World Population Prospects, the 2015 Revisio

Figure (3)   Levels and Trends of TFR among Selected Asian Countries

Source: Table (5)

3.1.2 Levels and Trends of Mortality

Crude Death Rate (CDR), Infant Mortality Rate (IMR) and Life Expectancy at birth (e_0) are expressed as the measures of mortality. These rates for selected Asian countries are presented in Table (6) to (8) and Figure (4) to (6), over the period 1990-1995 to 2010-2015.
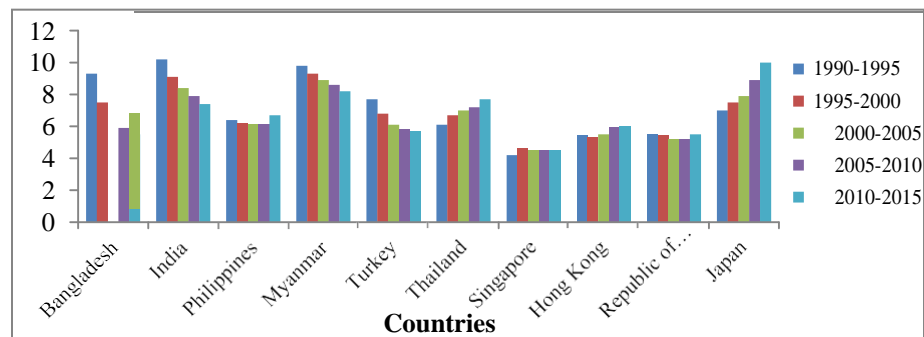
Table (6)   Levels and Trends of CDR among Selected Asian Countries

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Bangladesh	9.3	7.5	6.5	5.9	5.5
India	10.2	9.1	8.4	7.9	7.4
Philippines	6.4	6.2	6.1	6.1	6.7
Myanmar	9.8	9.3	8.9	8.6	8.2
Turkey	7.7	6.8	6.1	5.8	5.7
Thailand	6.1	6.7	7.0	7.2	7.7
Singapore	4.2	4.6	4.5	4.5	4.5
Hong Kong	5.4	5.3	5.5	5.9	6.0
Republic of Korea	5.5	5.4	5.2	5.2	5.5
Japan	7.0	7.5	7.9	8.9	10.0

Source: United Nations, World Population Prospects, The 2015 Revision

Table (6) shows that the change of CDR in some selected Asian countries in 1990-1995 to 2010-2015. The CDR was about between 4.2 and 10.2 from 1990-1995 to 2010-2015. The decline in CDR of all the selected Asian countries was less than 10 among the period 1995-2000 to 2010-2015 except India and Japan. The CDR of Japan was equal to 10 deaths in 2010-2015 and the CDR of India was equal to 10.2 deaths in 1990-1995. In the case of Bangladesh, mortality condition declined more rapidly than that in other countries. The CDR for selected Asian countries is shown in Figure (4).

Figure (4)   Levels and Trends of CDR among Selected Asian Countries

Source: Table (6)

Infant Mortality Rate (IMR) is also an important measure of mortality. High infant mortality is also a faster influencing increase in the demand for children, because mothers want to replace the child they lost. Table (7) indicates the IMR for selected Asian countries.
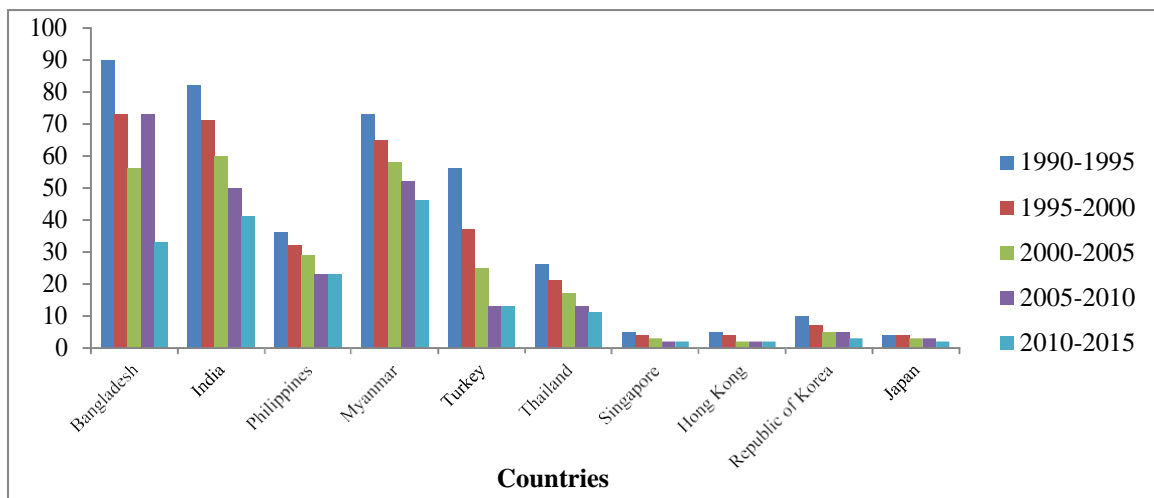
Table (7)   Levels and Trends of IMR among Selected Asian Countries

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Bangladesh	90	73	56	73	33
India	82	71	60	50	41
Philippines	36	32	29	23	23
Myanmar	73	65	58	52	46
Turkey	56	37	25	13	13
Thailand	26	21	17	13	11
Singapore	5	4	3	2	2
Hong Kong	5	4	2	2	2
Republic of Korea	10	7	5	5	3
Japan	4	4	3	3	2

Source: United Nations, World Population Prospects, The 2015 Revision

Table (7) reveals the change of IMR in selected Asian countries from 1990-1995 to 2010-2015. The range of IMR was between 2 and 90 deaths per 1000 live births. In 1990-1995, the lowest IMR can be seen in Japan and the highest IMR can be seen in Bangladesh. At the end of the study period, the highest IMR was 46 in Myanmar and the lowest IMR was 2 in Japan, Hong Kong and Singapore. The IMR for selected Asian countries are shown in Figure (5).

**Figure (5)   Levels and Trends of IMR among Selected Asian Countries**

Source: Table (7)

Table (8)   Levels and Trends of Life Expectancy (e_0) among Selected Asian Countries

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Bangladesh	60.00	63.76	66.72	69.04	71.01
India	59.20	61.59	63.57	65.46	67.47
Philippines	65.70	66.36	66.96	67.50	67.99
Myanmar	59.62	61.28	62.94	64.26	65.64
Turkey	65.49	68.49	71.38	73.38	74.48
Thailand	70.15	70.30	71.22	73.13	74.14
Singapore	76.97	77.68	79.21	81.23	82.64
Hong Kong	78.19	79.39	81.35	82.36	83.74
Republic of Korea	72.89	74.93	77.38	79.99	81.43
Japan	79.45	80.47	81.84	82.62	93.31

Source: United Nations, World Population Prospects, The 2015 Revision

Table (8) expresses the life expectancy (e_0) for studying countries over the periods 1990-1995 to 2010-2015. At the beginning of the study period 1990-1995, Japan was the highest life expectancy. Hong Kong and Singapore were nearly the same pattern of Japan. India was the lowest life expectancy in this period. Similarly, Myanmar and Bangladesh also possess it. At the end of the study period, 2010-2015, Japan was the highest and Myanmar is the lowest life expectancy. According to Table (9), all of selected Asian countries were increasing the life expectancies gradually. The life expectancies for selected Asian countries are shown in Figure (6).

Figure (6)   Levels and Trends of Life Expectancy (e_0) among Selected Asian Countries
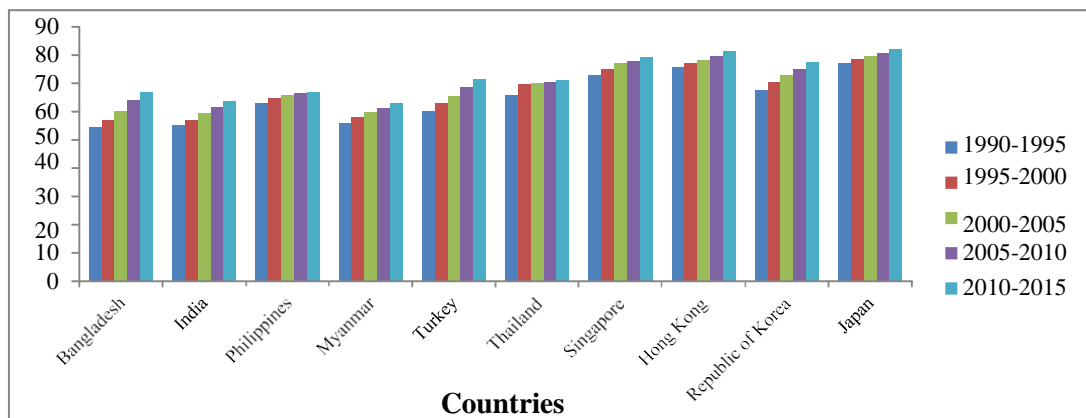
Source: Table (9)

Table (10)   Types of Demographic Transition Based on CBR and CDR in Selected Asian Countries

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
A CBR < 20 CDR < 10	Japan Rep: of Korea Hong Kong Singapore Thailand	Japan Rep: of Korea Hong Kong Singapore Thailand	Japan Rep: of Korea Hong Kong Singapore Thailand	Japan Rep: of Korea Hong Kong Singapore Thailand Turkey	Japan Rep: of Korea Hong Kong Singapore Thailand Turkey Myanmar
B 20≤CBR<40 CDR < 10	Turkey Myanmar Philippines Bangladesh	Turkey Myanmar Philippines India Bangladesh	Turkey Myanmar Philippines India Bangladesh	Myanmar Philippines India Bangladesh	Philippines India Bangladesh
C 20≤CBR<40 10≤CDR<20	India				
D CBR≥40 10≤CDR<20					
E CBR≥40 CDR ≥20					
F CBR≥40 CDR <10					
G 20≤CBR<40 CDR ≥20					

Source: United Nations, World Population Prospects, The 2015 Revision

Table (10) presents the distribution of selected Asian countries classified by the below mentioned types for the period of 1990-1995 to 2010-2015. According to this table, for the period 1990-1995, Japan, Republic of Korea, Hong Kong, Singapore and Thailand were in the completed stage (Type A) of a demographic transition and these countries were still at type A during the study period. On the contrary, India became the first country among some

selected Asian countries who had early stage (type C) of a demographic transition. By that time, Myanmar, Turkey, Philippines and Bangladesh still belonged to later stage (Type B). During the period 1995-2000, India changed to the later stage (Type B) of transition from Type C. Most of other countries remained stable their previous stage.

In 2010-2015, seven countries from the selected Asian countries were in the completed stage of a demographic transition and other three countries of Philippines, India and Bangladesh were still in the later stage of a demographic transition. Myanmar was still the later stage during 1990-1995 to 2005-2010 and reached the completed stage at 2010-2015. The majority of most of the selected Asian countries were still a transitional change in the completed stage during 2010-2015.

Table (11)   Stages of Demographic Transition Based on TFR and e_0 in Selected Asian Countries

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Bangladesh	33	43	44	44	44
India	33	33	33	44	44
Philippines	43	43	43	43	43
Myanmar	33	34	34	34	44
Turkey	44	44	44	44	44
Thailand	44	44	44	44	44
Singapore	44	44	44	44	44
Hong Kong	44	44	44	44	44
Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Republic of Korea	44	44	44	44	44
Japan	44	44	44	44	44

Source: United Nations, World Population Prospects, The 2015 Revision

Table (12)   Extent of the Completion of Demographic Transition in Selected Asian Countries

(%)

Countries	1990-95	1995-00	2000-05	2005-10	2010-15
Bangladesh	43	56	66	74	80
India	44	52	59	65	72
Philippines	51	54	57	63	66
Myanmar	52	57	61	66	71
Turkey	64	72	79	84	86
Thailand	81	84	87	90	92
Singapore	94	97	102	106	108
Hong Kong	101	107	109	110	110
Republic of Korea	88	93	100	104	106
Japan	101	103	106	107	107

Source: United Nations, World Population Prospects, The 2015 Revision

The value over 100% means that the country from above Table (12) had already finished in fertility transition. According to Table (12), it was found that the extent of completion of Bangladesh was the lowest with 43% and India was the second lowest with 44% among all selected Asian countries in 1990-1995. At that time, the completion of demographic transition of Myanmar was 52%. Similarly, Philippines with 59% had nearly the same pattern of demographic transition of Myanmar. Hong Kong and Japan were reached to the completed stage of the demographic transition in 1990-1995.

During the period 1995-2000, the completion of demographic transition in Bangladesh, India, Philippines and Myanmar were above 50%. Nearly half of the countries were around 50%. Singapore and Republic of Korea had reached nearly to the completed stage of the demographic transition.

For the period 2000-2005, Singapore and Republic of Korea had reached to the completed stage of the demographic transition. It was found that the completion of transition of Bangladesh had significantly increased from the period 1995-2000 to 2000-2005.The completion of demographic transition of Bangladesh and Myanmar were above 60% and it was gradually increased in selected Asian countries in 2005-2010.

During 2010-2015, the extent of the completion of demographic transition of Bangladesh became twice as much as the completion extent in 1990-1995. At the end of the study period, Japan, Republic of Korea, Hong Kong, and Singapore had reached to the completed stage of demographic transition. Thailand had nearly reached to the completed stage of demographic transition. But, Turkey, Bangladesh, India, Myanmar and Philippines could not reach to the completed demographic transition.

3.2   Multiple Linear Regression Model for Demographic Transition

3.2.1 Multiple Linear Regression Model for TFR in Selected Asian Countries

The multiple linear regression model for TFR is illustrated with four independent variables (PCGDP, POPDEN, LFPR and CBR) are calculated by using the fitted double-log model multiple regression model. The model was estimated on the time series data of during the period 1990 to 2015.

The general double-logarithmic multiple linear regression model for TFR is as follows:

$\text{Ln (TFR)} = \beta_0 + \beta_1 \text{ Ln (PCGDP)} + \beta_2 \text{ Ln (POPDEN)} + \beta_3 \text{ Ln (LFPR)} + \beta_4 \text{ Ln (CBR)} + e$

where;   Ln (PCGDP)   = Log of per capita gross domestic product (%)

Ln (POPDEN) = Log of population density (%)

Ln (LFPR)   = Log of labor force participation rate (%)

Ln (CBR)   = Log of crude birth rate (%)

e = random error

Table(13)   Correlation Matrix

	Ln (TFR)	Ln (PCGDP)	Ln (POPDEN)	Ln (LFPR)	Ln (CBR)
Ln (TFR)	1.000				
Ln (PCGDP)	-0.867	1.000			
Ln (POPDEN)	-0.507	0.509	1.000		
Ln (LFPR)	0.006	-0.322	0.097	1.000	
Ln (CBR)	0.879	-0.782	-0.338	0.093	1.0000

Source: STATA Output

According to Table (13), the log of TFR and log of per capital gross domestic product are strongly negative correlation, but log of TFR and log of crude birth rate are strongly positive

correlation. Furthermore, log of TFR and log of population density are fairly negative correlation and log of labor force participation rate is very low associated with log of TFR.

The following Table (14) presents the ANOVA for log of TFR in selected Asian countries.

Table (14)   ANOVA Table

Source	Sum of Squares	Degree of Freedom	Mean Squares	F	Sig
Model	42.933	4	10.733	578.887	0.000***
Residual	4.728	255	0.019		
Total	47.660	259	0.87404871		

Source: STATA Output

*** Statistically significant at 1% level

According to above Table (14), the value of F is 578.887. It is said that to be statistically significant at 1 percent level, given the fact that the probability value (0.000) is smaller than 0.01. This implies that the overall model is statistically significant. The estimated regression results are described in Table (15).

Table (15)   Estimated Values of Coefficients

Variables	Coefficient	Std. Error	t	p-value
Constant	4.149	0.404	10.269	0.000***
Ln(PCGDP)	-0.138	0.010	-13.956	0.000***
Ln(POPDEN)	-0.014	0.007	-2.011	0.045**
Ln(LFPR)	-0.734	0.080	-9.129	0.000***
Ln(CBR)	0.321	0.025	13.039	0.000***
R-squared				0.901
Adj R-squared				0.899
Durbin-Watson				1.913
n				260

Source: STATA Output

***, ** Statistically significant at 1% level and 5% level

The estimated double-log model for TFR can be expressed as follows:

Ln (TFR) = 4.149 - 0.138 Ln (PCGDP) - 0.014 Ln (POPDEN)-0.734 Ln (LFPR) + 0.321 Ln (CBR)

3.3 Multiple Linear Regression Model for IMR in Selected Asian Countries

The multiple linear regression model for IMR with four independent variables (CBR, PPUIWU, PPUIWR and FLF) are calculated by using the fitted double-log multiple regression model. The model was estimated using based on the time series data of during the period 1990 to 2015.

The general double-logarithmic multiple linear regression model for IMR is as following:

$$Ln\ (IMR) = \beta_0 + \beta_1\ Ln\ (CBR) + \beta_2\ Ln\ (PPUIWU) + \beta_3\ Ln\ (PPUIWR) + \beta_4\ Ln\ (FLF) + e$$

where; $Ln\ (CBR)$ = Log of crude birth rate (%)

$Ln\ (PPUIWU)$ = Log of percent of population using improved water in urban (%)

$Ln\ (PPUIWR)$ = Log of percent of population using improved water in rural (%)

$Ln\ (FLF)$ = Log of female labor force (%)

e   = random error

Data for these variables can be found in the periods from 1990 to 2015 for some selected Asian countries (Appendix). The functional formulas of the variables follow the standard rule that a logarithm is used.

Table (16)   Correlation Matrix

	Ln (IMR)	**Ln (CBR)**	**Ln (PPUIWU)**	**Ln (PPUIWR)**	**Ln (FLF)**
Ln(IMR)	1.0000				
Ln(CBR)	0.834	1.0000			
Ln(PPUIWU)	-0.785	-0.664	1.0000		
Ln(PPUIWR)	-0.467	-0.290	0.612	1.0000	
Ln(FLF)	0.128	-0.328	0.029	-0.094	1.0000

Source: STATA Output

According to Table (16), the log of IMR and log of crude birth rate are strongly positive correlation and log of female labor force is very low positive correlation with log of IMR. But, log of IMR and log of percent of population using improved drinking water in urban are

strongly negative correlation and log of percent of population using improved drinking water in rural is also fairly negative associated with log of IMR.

The following Table (17) presents the ANOVA Table for IMR in selected Asian countries.

Table (17)   ANOVA Table

Source	Sum of Squares	Degree of Freedom	Mean Squares	F	Sig
Model	353.741	4	88.435	276.016	0.000
Residual	81.702***	255	0.320		
Total	435.443	259			

Source: STATA Output

*** Statistically significant at 1 % level

According to above Table (17), the value of F is 276.016. It is said that to be statistically significant at 1 percent level, given the fact that the probability value (0.000) is smaller than 0.01. This implies that the overall model is statistically significant.

The estimated regression results are described in Table (18).

Table (18)   Estimated Values of Coefficients

Variables	Coefficient	Std. error	t	Sig
Constant	41.914***	4.017	10.435	0.000
Ln(CBR)	1.103***	0.089	12.387	0.000
Ln(PPUIWU)	-7.736***	0.907	-8.526	0.000
Ln(PPUIWR)	-0.763***	0.272	-2.801	0.005
Ln(FLF)	-1.025***	0.210	-4.881	0.000
R-squared	0.812			
Adj R-squared	0.809			
Durbin-Watson	2.180			
n	260			

Source: STATA Output

*** Statistically significant at 1 % level

4.　　Conclusion

Fertility and mortality statistics are not only important indicators of demographic situations but also social and health conditions of a nation. Nowadays, they are important parameters for the analysis of population projection and national planning of a country.

Changes in the composition of the population are determined by three factors: fertility, mortality and migration. Since international migration is negligible in most countries, the major factors of the changes of population can be occurred by fertility and mortality. From empirical evidence can be seen in most of the countries pass through of fertility and mortality rate occur in four stages: both high rates, the death rate declines, the birth rate falls and both low rates.

The demographic transition can be analyzed by fertility and mortality. According to the study, the CBR in selected Asian countries were ranged from nearly 10 to 33 live births per thousand populations since the beginning of the study period 1990-1995. During the end of the study period 2010-2015, the CBR in Singapore, Republic of Korea and Japan were less than 10 live births per thousand populations. It is studied that the highest CBR can be seen in Philippines and the lowest CBR can be seen in Japan.

Another measure of fertility is TFR. Based on the findings, the range of TFR is between 1.24 and 4.14 during the period 1990-1995. The TFR of Myanmar was declined from 3.2 in the period 1990-1995 to nearly replacement level in 2010-2015. The low level of TFR can be seen in Japan, Republic of Korea, Hong Kong, Singapore and Thailand, where it has fluctuated around 1 live birth per woman.

Similarly, the demographic transition can be analyzed by mortality. They are CDR, IMR and expectation of life. According to the study, the CDR in some selected Asian countries was between 4.2 and 10.2 deaths per thousand populations during the period 1990-1995. The decline of CDR can be seen in all studying countries except Japan during the period of total five years (2010-2015).

IMR is an essential measure of mortality. During the studying period 1990-1995 to 2010-2015, the IMR was slowly declining in all Asian countries under study. The highest IMR was found in India and the lowest IMR was found in Japan followed by the Hong Kong and Singapore in the beginning of the period, 1990-1995. But at the end of the period, the highest IMR was found in Myanmar and India was the second highest.

Life expectancy is another measure of mortality. According to above findings, it can be said that Japan, Republic of Korea, Hong Kong, Singapore and Thailand have the highest life expectancy compared with other countries during the study period. Turkey, Myanmar, Philippines, India and Bangladesh had low life expectancy.

Moreover, the progress of demographic transition in some selected Asian countries are classified by CBR and CDR. According to the results, Japan, Republic of Korea, Hong Kong, Singapore and Thailand have low CBR and low CDR (Type A). Turkey, Myanmar, Philippines and Bangladesh have median CBR and low CDR (Type B) during the period 1990-1995. At the end of the period, Philippines, India and Bangladesh have fallen in Type B and other countries were still in Type A. Therefore, almost all selected Asian countries have nearly completed stage of transition.

Furthermore, the stages of demographic transition based on TFR and life expectancy are studied. According to the findings, half of the selected Asian countries reached stage 44 and nearly half of the countries reached stage 33. During the beginning of the period 1990-1995, Japan, Republic of Korea, Hong Kong, Singapore, Thailand, Turkey and Philippines have reached to the low fertility and mortality rates. Myanmar, India and Bangladesh have declined of mortality and fertility rates. But at the end of the study period, all selected Asian countries had reached to the stage 44 except Philippines.

And then, the extent of the completion of demographic transition is calculated based on TFR and life expectancy. According to the results, Japan, Hong Kong and Singapore have reached to the completed stage of demographic transition in 2010-2015. But Turkey, Myanmar, Philippines, India and Bangladesh have not reached to the completed demographic transition.

Finally, the fitted multiple linear regression models for log of total fertility rate and log of infant mortality rate have been observed by using panel data. According to the results, it is found that if log of crude birth rate increases, log of total fertility rate will be increase. Log of per capita gross domestic product (%), log of population density (%) and log of labor force participation rate increase (%), log of total fertility rate will decrease. Furthermore, if log of percent of population using improved water in urban (%) , log of percent of population using improved water in rural(%) and log of female labor force (%) increase, log of infant mortality rate will decrease and if log of crude birth rate increases, log of infant mortality rate will increase respectively. Moreover, the correlation between log of log of total fertility rate and other related variables are observed by using correlation matrix. From the matrix, log of total fertility rate was strongly negative correlation between log of per capita gross domestic product (%) and strongly positive correlation between log of crude birth rate. Besides, log of population density (%) was observed the fairly negative correlation between log of total fertility rate. But, log of labor force participation rate was weakly positive by correlated between log of total fertility rate. Furthermore, log of infant mortality rate and log of crude birth rate are strongly all positive correlation and log of percent of population using improved water in urban (%) has strongly negative correlation with log of infant mortality rate. Furthermore, log of infant mortality rate and log of percent of population using improved

water in rural (%) are fairly negative correlation and log of female labor force (%) is very low positive associated with log of infant mortality rate.

REFERENCES

1. ADB (2015), Asia Development Bank.

2. Carr-Saunders, A. M. (1937), *World Population: Past Growth and Present Trends,* Clarendon Press, Oxford.

3. Cing Do Nem. (1999), "Regression with Co-integrated Economic Variables", Unpublished Master's Thesis. Department of Statistics, Yangon Institute of Economics.

4. Davis, Kingsely. (1945), *The World Demographic Transition, Annals of the American Academy of Political and Social Science*.

5. Easterlin, R. A. (1969), *Towards a Socio-economic Theory of Fertility*, *Fertility and Family Planning: A worldview (edited by S. J. Behrman, L. Corsa and R. Freedman)*, University of Michigan Press.

6. Grille, Halvor. (1969), *Summary Review of Fertility Differentials in Developed Countries*, I. U. S. S. P conference, London. (Mimeographed).

7. Kirk, Dudley. (1996), "Demographic Transition Theory, Population Studies", Vol. 50, No.3, *A journal of Demography*, London School of Economics, London.

FEMALE MARITAL PATTERNS IN MYANMAR

Khin Nu Win[12]

ABSTRACT

The fertility of East and South-East Asian countries, have declined in the second half of the twentieth century. The transition from high to low level of fertility in Myanmar has started around 1970_s. A major factor in the onset of Asian fertility transition is dramatic changes in marriage pattern. It is an essential in determining the size, composition and growth of the population through family formationconcerningthefemale reproductive rates. These rates are closely related to early and late marriages, female educational attainment, female labour force participation rate, place of residence, etc. Therefore, the singulatemean age at first marriage for female(SMAM), age-specific fertility rate(ASFR) andtotal fertility rate(TFR) are calculated in this paper. Moreover, the intrinsic rate of growth, the mean length of generation, gross reproduction rate(GRR) and net reproduction rate(NRR) are also estimated on the base of stable population model. According to the results, the SMAM can be seen around 22 to 25 years for all the states and the regions. The TFR ranges from nearly 2 to 4 persons per woman. The GRR and NRR are found to be fluctuating around 1 or 2 female live births per woman and the mean length of generation for female is nearly 28, 29 or 30 years for the whole country.

Keywords: **Singulate age at first marriage for female, Intrinsic rate of growth, Mean length of generation**

1.   Introduction

During the past three decades, there have been rapid changes in South-East Asian not only in the socio-economic and political situation, but also in the demographic situation. In almost all countries and regions in South-East Asia, population growth has declined to moderate or low levels of rapid decline in fertility. In recent years, marriage behavior and family life are changing in Asia. The changes of marriage have played a considerable role in the recent fertility declines in most of the Asian countries. It is one of the most important factors relating to population composition and the changes of population growth. Among the components of population changes, marital status has attracted considerable attention of researchers as well as policy makers in recent years.

In Myanmar, the marriage pattern has been changing. The proportion of never married has increased in the younger age group than other age groups. The Singulate Mean Age at First Marriage and mean length of generation are important determinants of marital fertility. Future reproduction or reproductive intentions are related to the existing family size.

---

[12] Lecturer, Department of Statistics, Yangon University of Economics

For several different purposes, demographers are interested in changing patterns of marital status and fertility; they analyze some demographic processes by using the stable population model. A stable model of population can be utilized to study the importance of various factors like biological, social, cultural, economic and psychological factors and their effects on the demographic process. Therefore, the stable population model is used to demonstrate the current female marital patterns of Myanmar in this paper.

1.2   Objectives of the Study

The objectives of the study are:
(i)   to determine the marital patterns of females in Myanmar,
(ii)   to investigate the estimates of fertility in the states and regions of Myanmar

1.3   Scope and Limitations of the Study

The study area is focused in terms of the States and Regions of Myanmar. The necessary data and information for this study have been collected from the 2014 Myanmar Population and Housing Census. The required information such as the number of women and the number of children ever born during the last twelve months is obtained from this census and the data on the total number of person- years lived for the cohort during the specified age interval are taken from Thematic Report on Mortality published by Department of Population, Ministry of Labour, Immigration and Population in 2016.

2.   Methods

In this paper, the changing patterns of marriage are calculated by using (i) Singulate Mean Age at Marriage and (ii) Mean Length of Generation. Moreover, the estimated intrinsic rate of growth, gross reproduction rate (GRR), and net reproduction rate (NRR) are calculated based on stable population model. Furthermore, age-specific fertility rate (ASFR) and total fertility rate (TFR) of Union, Urban and Rural areas are calculated for 2014.

2.1   Singulate Mean Age at First Marriage

An indirect method of estimating the SMAM is applied for the observation of age at marriage. This method uses the average number of years lived by an assumed cohort of women before their first marriage on the basic of (i) the percentage of women never-married by age, and (ii) that no first marriages occur after age 50 or before age 15.

Procedure for the Estimation of Singulate Mean Age at Marriage

Step 1: Calculation of proportions single for a given sex

The proportion single for the age group from 1 (15-19) to 8 (50-54) is denoted by U(i),

Where:

$$U(i) = \hspace{5cm} .$$

Step 2: Calculation of person years lived in the single state

$$RS_1 = 5\sum$$
$$RS_2 = RS_1 + 15.0.$$

The quantity 15.0 is the number of person-years lived in the single state from birth to age 15 by the hypothetical cohort of size under consideration.

Step 3: Estimation of proportion who ever marry

The proportion remaining single at age 50, RN is estimated as

$$RN = \frac{\rule{2cm}{0.4pt}}{}$$

The proportion ever marrying by age 50, RM is estimated as

$$RM = 1.0 - RN.$$

Step 4: Calculation of number of person-years lived by the proportion not marrying

Since RN is estimated to be proportion who not married by age 50, the total time spent in the single state by this proportion is $RS3 = 50.0\ RN$.

Step 5: Calculation of singulate mean age at marriage

The value of SMAM is the average number of years spent in the single state by those who marry before age 50. It is calculated as

$$SMAM = \frac{\rule{1.5cm}{0.4pt}}{}.$$

2.2 The Concepts of Stable and Stationary Population Model

The theoretical model of stable population has widely been used by demographers to represent and understand the structures, growth and evolution of human populations. By definition, stable population has age-specific fertility and mortality rates that remain constant over time. It can be proved mathematically that population with unchanging fertility and mortality patterns grow at a constant rate and acquire a characteristic age structure that does not change over time. The age composition of the stable population is determined by two factors: the prevailing life table and the growth rate in the annual number of births. The age composition will be constant and can be expressed in terms of the birth rate, growth rate, and life table survival function.

The stationary population model is sometimes used to study population processes. Stationary population model is a special case of stable population model with a zero growth rate (equal number of births and deaths). Such a population will have a constant age structure and certain simplified relationships among the demographic parameters.

2.3 Lotka's Intrinsic Rate of Growth

The concept of a stable population was first introduced into demography by Alfred J.Lotka. Hehas investigated the time required for a population with a given age structure and age-specific fertility and mortality to approach its ultimately stable form. He also proved that a closed population with constant age-specific fertility and mortality schedules would eventually have a constant rate of natural increase and it is called the intrinsic rate of a natural increase or intrinsic rate of growth.

Lotka computed the intrinsic rate of growth by solving the equation,

$$\int$$

Where: $= 1$

$p(x)$ = the probability of surviving from birth to age x, the L_x of the life table divided by l_0

r = the intrinsic rate of growth per head per annum

$f(x)$= the number of female live births per annum to each woman of age x

Since $f(x)= 0$, outside the childbearing period

$$\int \qquad\qquad = 1$$
$$1 \quad = \int$$
$$\underline{\qquad} = \int \qquad \underline{\qquad\qquad}$$

substitute $g(x)$ $= \underline{\qquad}$

$$\underline{\qquad}$$
$$\underline{\qquad} = \int$$
$$\underline{\qquad} \quad M_x$$

$$\mathrm{Log}\,(\underline{\qquad} \quad \log M_x\,(-r)$$

$$\mathrm{Log}_e\,(NRR)^{-1} = K_x\,(-r)$$

$$\mathrm{Log}_e\,(NRR)^{-1} = K_1(-r) + K_2\underline{\qquad} + K_3\underline{\qquad} + \ldots$$

If the higher moments $K_3, K_4, \ldots$ are ignored,

$$\text{Let } K_1 = \alpha,\ K_2 = \beta$$

$$-\text{Log}_e \text{NRR} = -\alpha r + \text{——}$$

$$0 = \beta \quad -2\alpha r + 2\,\text{Log}_e\,\text{NRR}$$

$$\beta \quad -2\alpha r + 2\,\text{Log}_e\,\text{NRR} = 0$$

It is same as $ax^2 + bx + c = 0$

$$a = \beta,\ b = -2\alpha,\ c = 2\text{Log}_e\,\text{NRR}$$

$$x = \sqrt{\underline{}}$$

Then,
$$r = \dfrac{\sqrt{}}{\underline{}}$$

$$r = \sqrt{}$$

Where: $R_o = \text{NRR}$, R_1 and R_2 are the 1st and 2nd moments of the curve representing the age schedule of net reproductively. The general equation for 1st, 2nd and nth moments is given by

$$R^{\varrho} = \int\!\!\!\int$$
$$R_2 = \int$$

$$_n \int \quad R =$$

$$\alpha = E(x) = \int$$
$$\alpha = \int \quad \text{——}$$
$$\alpha = \text{——}$$
$$\alpha = \int$$

$$\beta = V(x) = E(x^2) - [\,E(x)\,]^2$$

$$\beta = \int \qquad (\text{——}$$

$$= \int \quad \dfrac{\text{——}}{\text{——}} \quad (\text{——} \quad dx - \quad)$$

$$\text{(——)}$$

$$\int$$

$$\beta = \quad - \quad \frac{(\quad)}{\quad \sqrt{(\_)} \quad [\_ \quad (\_)]}$$

$$r = \frac{\sqrt{(\_)} \quad [\_ \quad (\_)]}{\_ \quad \_ \quad (\quad)}$$

2.4 Mean Length of Generation

The mean length of generation is defined as the mean age of mothers at the birth of their daughters. Since the stable population is growing at the annual rate r, compounded continuously and NRR is rate of growth in one generation by length, T years.

$$NRR =$$

$$T = \frac{\overline{\qquad\qquad}}{}$$

$$T = \text{Log}_e \ NRR$$

Where:

T represents the mean length of generation

r represents the intrinsic rate of growth

NRR represent the net reproduction rate

2.4.1 Intrinsic Birth Rate

The intrinsic birth rate or true birth rate is the birth rate that would eventually be reached in closed population, which is subject to constant age-specific fertility and mortality rates for a sufficiently long period of time. It is the birth rate of a stable population.

The intrinsic birth rate per annum is

$$b = \frac{\qquad\qquad}{\int}$$

Where:

p(x) is the probability of surviving from birth to age x

r is the intrinsic rate of natural growth per year.

2.4.2 Intrinsic Death Rate

The intrinsic death rate is equal to the difference between the intrinsic birth rate and the intrinsic rate of growth.

$$d = b\text{-}r$$

Where:

d = intrinsic death rate

b = intrinsic birth rate

r = intrinsic rate of growth

2.5   Age Specific Fertility Rate (ASFR)

Age Specific Fertility Rate is the number of live births to female of specified age per 1000 mid-year female population of that particular age in a specified period.

$$_5f_x = \text{ASFR} = \frac{_5B_x}{_5F_x} \times 1000$$

Where :

$_5B_x$ = number of live births to females aged between x and x+5 in an area during a year

$_5F_x$ = mid-year female population of aged x to x+5 in the same area during that year

2.6   Total Fertility Rate (TFR)

Total Fertility Rate (TFR) is defined as "the average number of children a woman would have assuming that current age-specific birth rates remain constant throughout her childbearing years". It is the average number of children a woman would have if she survives all her childbearing (or reproductive) years. Childbearing years are considered age 15 to 49.

$$\text{TFR} = \overline{\qquad\qquad}$$

2.7   Gross Reproduction Rate (GRR)

This measure is very similar to the (TFR) except that it considers only female rather than all births. It is calculated in the same way as the TFR but uses female age-specific fertility rates. GRR is the number of girl babies that would be produced by a woman who survives the entire reproductive period and if she experiences the ASFRs prevailing at the time under study.

$$\text{GRR} = 5 \sum_5 \quad_x$$

$$\text{GRR} = \frac{\sum}{\rule{3cm}{0.4pt}}$$

Where:

$_5 f^{*}{}_x$ = the ASFR for female births only.

$$_5 f^{*}{}_x = \frac{_5 FB_x}{_5 f_x}$$

2.8   Net Reproduction Rate (NRR)

The NRR is the average number of daughters that would be born to a woman taking into account the prevailing levels of fertility, female mortality and the sex ratio at birth. When the NRR is one, each woman is exactly replacing herself with one surviving daughter and this implies that fertility is at replacement level.

$$NRR = 5 \sum \frac{_5 L_x}{l_0} \quad x$$

$$NRR = 5 \sum \frac{_5 L_x \times f_x}{l_0 \times 2.05} \qquad \text{(Sex Ratio at birth is assumed as 1.05)}$$

3.   Results and Findings

3.1   Proportion of Never-Married Women

The following Table shows the changes in the proportion of never-married women by age group between 1973 and 2014 in Myanmar.

Table (1)   Proportion of Never-Married Women   (%)

Age Group	Year				
	1973	1983	1991	1997	2014
15-19	78.0	83.2	89.3	93.4	86.8
20-24	35.5	42.1	56.0	65.3	54.4
25-29	16.7	21.6	32.4	40.6	32.0
30-34	9.3	12.9	19.6	24.7	20.8
35-39	7.0	8.9	13.8	17.0	16.3
40-44	6.2	6.7	10.4	14.7	14.0
45-49	5.9	5.9	9.1	12.2	12.9

Source: 1973 Census, 1983 Census, 1991 PCFS, 1997 FRHS, 2014 Census

According to the results, the proportion of never-married women between the period of 1973 and 1997 gives a rise in the age pattern of proportion. This table clearly shows that the

proportion of single has increased from 78.0 percent in 1973 to 93.4 percent in 1997. But it has declined to 86.8 percent in 2014. The proportion of single for females aged 45-49 has risen from 1973 to 2014, 5.9 percent in 1973 and 1983, 9.1 percent in 1991 and 12.2 percent in 1997 and 12.9 percent in 2014. Generally, the proportion of never-married women has increased during the periods of study.

3.2   Proportion of Ever-Married Women

The following table shows the changes in proportion of ever married women by age between 1973 and 2014 in Myanmar.

From the above table, the proportion of ever married women in the age group 15-19 has declined from 20.7 percent in1973 to 12.4 percent in 2014.The largest proportion of ever married women are found to be age group 35-39 years. Among these age groups, it is found that the age groups like 30-34 years, 35-39 years, 40-44 years and 45-49 years are higher than other age groups.

Table (2)   Proportion of Ever-Married Women   (%)

Age Group	Year				
	1973	1983	1991	1997	2014
15-19	20.7	15.9	10.7	6.5	12.4
20-24	60.9	55.0	44.0	33.4	43.6
25-29	78.7	74.1	67.6	56.9	65.1
30-34	84.5	81.3	80.4	71.2	74.8
35-39	85.1	83.1	86.2	78.0	77.7
40-44	81.9	81.5	84.0	76.1	77.3
45-49	77.4	78.4	90.9	74.9	74.9

Source: 1973 Census, 1983 Census, 1991 PCFS, 1997 FRHS, 2014 Census

3.3   Changes in Marital Status for Female

Changes in age at marriage and proportion marrying have important influence on fertility trends. The patterns of marriage are very important because of their significant role in determining the size, composition and growth of the population through family formation and fertility. Generally, marital status is classified by four categories namely (1) Single, (2) Married, (3) Widowed and (4) Divorced. The following table describes the changes in marital status for female.

In 1973, the percent of single female was 37.4%. It has increased to 40% in 1983, 42.7% in 1991 and 55.1% in 1997. But, it has decreased to 29.5% in 2014. The married women have steadily declined from 1973 to 1997. It has declined from 50.7% in 1973 to 49.1% in 1983, 45.8% in1991, 36.4% in 1997. But, it has increased to 57.8% in 2014.Widowed women are one-fifth of married women and divorced women are very few. It might be due to Myanmar culture and other socio-economic factors.

Table (3)   Changes in Marital Status for Female   (%)

Year	Single	Married	Widowed	Divorced	Total
1973	37.4	50.7	10.0	1.8	100.0
1983	40.0	49.1	9.2	1.7	100.0
1991	42.7	45.8	9.6	2.0	100.0
1997	55.1	36.4	7.4	1.1	100.0
2014	29.5	57.8	10.4	2.0	100.0

Source: 1973 Census, 1983 Census, 1991 PCFS, 1997 FRHS, 2014 Census

3.4   Changes in Singulate Mean Age at First Marriage

The following Table shows the changes in Singulate Mean Age at First Marriage (SMAM) for female from the period 1973 to 2014 in Myanmar.

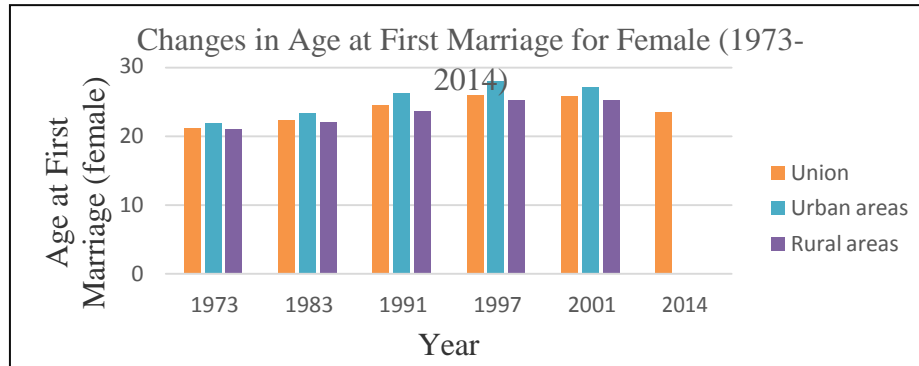**Table (4)   Changes in Singulate Mean Age at First Marriage for Female, 1973-2014 (Years)**

Regions	1973	1983	1991	1997	2001	2014
Union	21.2	22.4	24.5	26.0	25.8	23.6
Urban areas	21.9	23.3	26.3	28.0	27.2	-
Rural areas	21.0	22.1	23.7	25.3	25.3	-

Source: 1973 Census, 1983 Census, 1991 PCFS, 2001 FRHS, 2014 Census

Table (4) and Figure (1) show changes in singulate mean age at first marriage. It is one of the main factors of fertility changes. According to the results, the average age of women at first marriage has risen from 21.2 years in 1973 to 26.0 years in 1997. But it has declined from 25.8 years in 2001 to 23.6 years in 2014. For urban areas, the change in age at first marriage for female is 21.9 years in 1973 to 27.2 years in 2001. For rural areas, the change in age at first marriage for female is 21 years in 1973 to 25.3 years in 2001. Therefore, it can be

observed that singulate mean age at first marriage for female is found to be urban areas and is also higher than in rural areas.

Figure (1)   Changes in Singulate Mean Age at First Marriage for Female (SMAM), 1973-2014

Source: Table (4)

Table (5) describes the Singulate Mean Age at First Marriage (SMAM) of female as observed in 2014 Population Census for each state and region.

Table (5)   Singulate Mean Age at First Marriage (SMAM) for Female by States & Regions

States and Regions	SMAM(years)	States and Regions	SMAM(years)
Union	23.6	Magway	24.0
Kachin	23.8	Mandalay	24.4
Kayah	23.8	Mon	23.6
Kayin	22.8	Rakhine	22.4
Chin	22.7	Yangon	25.2
Sagaing	24.1	Shan	22.6
Tanintharyi	23.6	Ayeyawady	22.2
Bago	22.8	Nay Pyi Taw	23.0

Source: The 2014 Population and Housing Census

According to the results, the ranges of SMAM for female are from 22 to 25 years. There is no significant difference in each state and region. The highest Singulate Mean Age at First Marriage (SMAM) for female is found in Yangon Region and the lowest Singulate Mean Age at First Marriage (SMAM) for female is found in the Ayeyawady Region. It might be due to the differences in education, occupations, cultures, knowledge on fertility and other factors, etc.

3.5   Age Specific Fertility Rate (ASFR) of Union, Urban and Rural for 2014

The following Table presents the ASFRs of urban, rural and union for 2014.

Table (6)   ASFRs of Union, Urban and Rural for 2014

Age Group	ASFRs		
	Union	Urban	Rural
15-19	0.0218	0.0152	0.0246
20-24	0.0946	0.0682	0.1070
25-29	0.1185	0.0959	0.1286
30-34	0.1059	0.0910	0.1125
35-39	0.0745	0.0593	0.0812
40-44	0.0346	0.0232	0.0399
45-49	0.0081	0.0050	0.0096
TFR	2.29	1.789	2.517

Source: 2014 Population and Housing Census

According to the results, there is a substantial difference in fertility between urban and rural areas. Comparing to urban and rural areas, rural women have more additional children than these of urban women (3 versus 2). Generally, $ASFR_s$ in rural areas were more than those of urban areas for each reproductive age group. The ASFRs of middle age group 25-29 years and 30-34 years are higher than the other reproductive age groups. Table (7) and Figure (2) show ASFRs from various sources for different years.
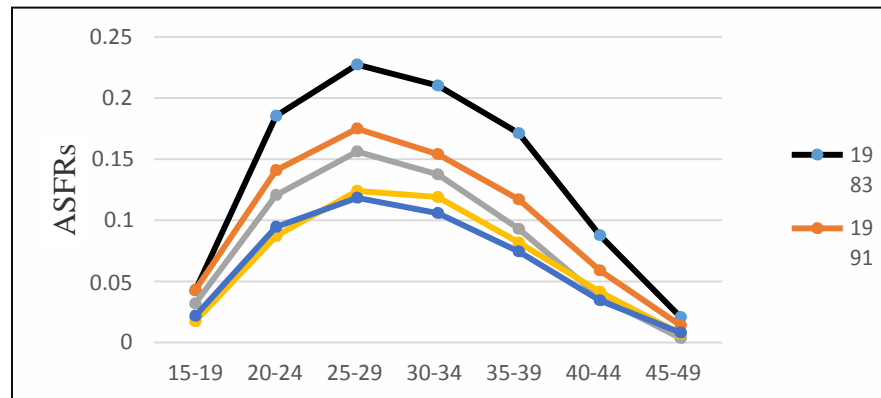
Table (7)   Changes in ASFRs (1983-2014)

Age	1983	1991	1997	2001	2014
15-19	0.0425	0.0430	0.0319	0.0174	0.0218
20-24	0.1855	0.1410	0.1206	0.0872	0.0946
25-29	0.2274	0.1750	0.1563	0.1240	0.1185
30-34	0.2102	0.1540	0.1375	0.1189	0.1059
35-39	0.1712	0.1170	0.0929	0.0818	0.0745
40-44	0.0878	0.0590	0.0372	0.0415	0.0346
45-49	0.0208	0.0140	0.0037	0.0070	0.0081

Source: PCFS (1992), FRHS (2002), 2014 Census

As a result, the fertility of the youngest age group 15-19 and the highest age group 45-49 has decreased and other age groups 25-29 and 30-34 has increased especially concentrated at ages between 25 and 29. The contributions of fertility by women under 20 and above 40 yearsare very low. The fertility of women age 25-29 years is higher than the other age groups.

Figure (2)   Changes of ASFRs (1983-2014)

Source: Table (7)

3.6   Intrinsic Birth and Death Rates by States and Regions

The intrinsic rate of growth is the most direct indication of actual growth of a given population during a given year. If births exceed deaths, the growth rate is positive. If deaths exceed births, the growth rate is negative. The true or intrinsic birth and death rates are the birth rate and death rate that would eventually be reached in a population subject to fixed fertility and mortality schedule. The following table shows intrinsic birth and death rates of each state and region.

As a result, the lowest intrinsic birth rate for female can be seen in Yangon Region and the highest in Chin State. The same pattern of intrinsic birth rate for male can be seen in those two regions. The lowest intrinsic death rate for female can be seen in Bago Region and the highest in Chin State. The same pattern of intrinsic death rate for male can be seenin those two regions. Generally, intrinsic birth rate of male is more than female for almost all the states and regions. Similarly, intrinsic death rate of male is more than female for the whole country except Sagaing Region.

3.7   Regional Differentials in Fertility and Female Marital Pattern

Intrinsic Rate of Growth, Total Fertility Rate (TFR), Gross Reproductive Rate (GRR), Net Reproduction Rate (NRR) and Mean Length of Generation for each state and region in Myanmar are calculated in Table (9).

According to the findings of State and Region wise, intrinsic rate of growth for Yangon Region is the lowest and Chin State is the highest. The intrinsic rate of growth for the whole

country in Myanmar is about 0.0009 percent. Moreover, the intrinsic rate of growth is found to be positive in rural areas and negative in urban areas. It can be assumed that the number of births is higher than that of deaths in the rural areas and the number of births is lower than that of deaths in the urban areas.

Table (8)   Intrinsic Birth and Death Rates by States and Regions

States & Regions	Intrinsic Birth Rate		Intrinsic Death Rate	
	Female	Male	Female	Male
Union	32.3	32.6	31.4	31.7
Urban areas	24.8	25.3	31.1	31.6
Rural areas	35.7	35.8	32	32.1
Kachin	40.4	41.3	32.2	33.1
kayah	47.8	48.6	34.4	35.2
Kayin	49.3	49.7	35.1	35.1
Chin	62.7	63.1	41.9	42.3
Sagaing	38.1	32.9	36.7	31.5
Tanintharyi	42.4	42.2	33.2	33
Bago	30.7	31.1	30.1	30.5
Magway	28.9	29.7	32.3	33.1
Mandalay	27.1	27.5	31.3	31.7
Mon	34.5	35.3	30.9	31.7
Rakhine	31.5	31.4	31.4	31.3
Yangon	23.7	24	31.4	31.7
Shan	38.3	38.3	32	32
Ayeyawady	36.6	36.7	32.7	32.8
Nay Pyi Taw	30.1	30	31.1	31

Source: The 2014 Population and Housing Census

Based on the findings, the Total Fertility Rate (TFR) ranges from 1.7 to 4.4. The lowest TFR can be observed in Yangon Region followed by Mandalay Region and the highest TFR can be observed in Chin State. It's about 2 times of Yangon and Mandalay Regions.

According to the results, GRR for Myanmar in 2014 was estimated at 1.12 female live births per woman; it is nearly 0.88 for urban and 1.23 for rural areas. These values are comparatively lower in urban than in rural areas. The chances of dying from pregnancy related causes are still high in some regions; it ranges from a minimum of 0.84 in Yangon Region to a maximum of 2.14 in Chin State. Similarly, the same pattern of fertility can be seen in NRR.

GRR and NRR fluctuated around 1 or 2 female live births per woman. Comparing the mean length of generation for female population, there are nearly 28, 29 or 30 years for the whole country in Myanmar. The mean length of generation has risen in Myanmar. It might be due to many reasons; knowledge and use of fertility control may have spread among women especially the younger generation and other factors, etc.

Table (9)   Regional Differential in Fertility and Female Marital Pattern

State	Intrinsic Rate	Total	Gross	Net	Mean Length
Union	0.0009	2.30	1.12	1.03	29.28
Urban areas	-0.0063	1.80	0.88	0.83	30.17
Rural areas	0.0037	2.50	1.23	1.12	29.95
Kachin	0.0082	2.80	1.38	1.28	29.79
Kayah	0.0134	3.30	1.63	1.50	30.24
Kayin	0.0142	3.40	1.68	1.53	30.15
Chin	0.0208	4.40	2.14	1.87	30.20
Sagaing	0.0014	2.30	1.13	1.04	30.35
Tanintharyi	0.0092	3.00	1.46	1.32	30.40
Bago	-0.0006	2.20	1.07	0.98	28.58
Magway	-0.0034	2.10	1.01	0.90	29.98
Mandalay	-0.0042	1.90	0.95	0.88	30.27
Mon	0.0036	2.40	1.19	1.11	30.16
Rakhine	0.00006	2.20	1.10	1.00	28.31
Yangon	-0.0077	1.70	0.84	0.79	30.65
Shan	0.0063	2.70	1.31	1.20	29.27
Ayeyawady	0.0039	2.60	1.26	1.12	29.88
Nay Pyi Taw	-0.0010	2.20	1.05	0.97	30.15

Source: 2014 Population and Housing Census

3.8   Impact of Socio-economic Factors on Fertility Changes (1973-2014)

Fertility is one of the most important determinants of population growth rate. It has important effect on social and economic development. The main factors that most directly affect fertility are Female Singulate Mean Age at Marriage (SMAM), Female Adult Literacy Rate

(FALR), FemaleLabour Force Participation Rate (FLFPR). Crude Birth Rate (CBR) and Total Fertility Rate (TFR) have changed based on the three factors already mentioned.

Table (10)   Impact of Socio-economic Factors on Fertility Changes (1973-2014)

Year	SMAM	FALR	FLFPR	CBR	TFR
1973	21.2	66.9	30.93	32.5	5.65
1983	22.4	76.6	34.40	28.3	4.73
1991	24.5	83.6	48.61	24.3	3.52
1997	26.4	90.0	47.18	22.4	3.48
2001	25.8	-	47.32	25.7	2.96
2014	23.6	86.9	50.50	18.0	2.30

Source: FRHS (1998), CSO (1992), CSO (1997), HDR (2005), Census (2014)

On the basis of the above Table, it is noted that the change in age at first marriage for female has increased from 1973 to 1997. And then, it has decreased from 2001 to 2014. The FALR has increased from 1973 to 1997 and slightly decreased in 2014. FLFPR has also increased during the study period. The CBR has decreased; it has fallen from 32.5 in 1973 to 18 in 2014 except 2001. The TFR has steadily declined from 5.65 in 1973 to 2.3 in 2014 which means that it has halved in 41 years. It can be concluded that female marital pattern can play an important role in major fertility declines. Moreover, it is very closely related to FALR and FLFPR. It can be said that increasing SMAM, FALR, FLFPR have occurred owing to the decreasing CBR and TFR.

4.   Discussion

In Asia today, the rate of fertility decline has been varied, so that fertility levels are widely diversed. More recently, fertility has declined dramatically almost everywhere. A change in the size and composition of population is related to changes of fertility. It is one of the most essential factors of population growth. In any study of fertility, changes in marriage pattern are important for the effects of reproduction.

In recent period, the delayed marriage and low fertility tend to be closely linked in Asia. Myanmar shows the most extreme marriage delays in the region while fertility is still slightly abovethe replacement level. Both delayed marriage and sharp fertility decline have occurred in South-East and East Asia when women's education level has been rising and their labour force participation generally increasing. In most developing countries, especially in Asia,

there has been a transition from traditional to modern patterns of marriage. The changing pattern of marriage may be caused by education, employment status, place of residence,etc.

Educational attainment has a positive relationship with the age at marriage and fertility is conversely related to educational attainment. Women with university education are the most likely to remain unmarried. It may be that more educated women have less reason to marry because they are able to be financially independent or it may be that it is more difficult for them to find a suitable partner. The educational level of society increase, the proportion of never married can also be expected to increase. Moreover, the effect of population structure is depending upon on education. The lower levels of education are associated with larger proportion of married and greater fertility, but also with a later age of marriage and consequently with delayed childbearing and lower fertility.

In general, the status of employment has a strongly influence on fertility. Women who are employed full-time tend to have smaller families. Employment of the mother has a positive effect on nutrition and health status of children. The lower occupational status tends to high fertility and the higher employment status tends to low fertility. The employment status is negative relationship of fertility changes and positive relationship of marital status. Moreover, never married women are more likely to be active in the labour force than ever married women.

Place of residence has an effect on age at marriage. Generally, early marriage is more common in rural areas than in urban areas. The highest proportion of women who married early occurred among women especially in villages and still lived in rural areas. Most of the women in urban areas are better educated compared to those in rural areas. Jobs in urban areas are usually outside the home and women are not allowed to bring their children to the place of work and they would not consider having more children.

5.   Conclusion

As a result, the largest proportion of never-married women is in 15-19 years reproductive age groups. From 1973-2014, the proportion of never-married women has increased all reproductive age groups except 2014. The proportion of married women is particularly age group 30-34, 35-39 and 40-44 years. The largest proportion of ever married women can be seen in age group 35-39 years.

Firstly, changes in female marital status are studied by four kinds of categories. Generally, the percent of single women has increased and the percent of married women hasalso decreased. Widowed women are one-fifth of married women and divorced women are very few. It might be due to culture of Myanmar women and other related factors.

Secondly, the changes in SMAM for female are presented for each state and region. The highest SMAM for female can be seen in Yangon Region and the lowest SMAM for female can be seen in Ayeyawady Region. But,there is no significant difference in each state and region. It might be due to the mothers' educational level, occupational status, knowledge on birth spacing and other factors, etc.

Thirdly, ASFRs of union, urban and rural for 2014 Census are presented. Based on findings, rural areas of ASFRs are more than urban areas of ASFRs for each reproductive age group. Moreover, the changes of ASFRs are studied for different years. As a result, the age below 20 and above 40 years, the ASFRs are very low. Especially, concentrated ASFRs are found to be at middle age group: 25-29 years.

Finally, the intrinsic rates of growth are calculated based on intrinsic birth and death rates. From the results, the lowest intrinsic birth rate is found to be Yangon Region and the highest intrinsic birth rate is found to be Chin State.The lowest intrinsic death rate for female can be seen in BagoRegion and the highest in Chin State. Furthermore, the mean length of generation is found to be each state and region based on the intrinsic rate of growth. Based on the results, the intrinsic rate of growth has decreased in Urban areas, Bago, Magway, Mandalay, Yangon Regions and Nay Pyi Taw Council Territory. It can be assumed that the number of deaths higher than the number of births in urban and some regions.

In addition, the TFR, GRR and NRR are calculated by states and regions. The TFR ranges from nearly 2 to 4 persons produce per woman. The lowest TFR is observed in Yangon Region and the highest TFR is observed in Chin State. GRR and NRR are fluctuated around 1 or 2 female live births per woman among states and regions. According to the study, NRR is only slightly less than the GRR. Besides, the mean length of generation for female is observed that nearly 28, 29 or 30 years for the whole country.In Chin State, the TFR has increased in other states and regions. It might be due to their cultural factors. The TFR has decreased in Yangon and Mandalay Regions. It might be due to the socio economic conditions and other related factors. These factors are higher costs of rearing children, women's education and employment opportunities.

Furthermore, the socio-economic factors on fertility changes are studied. Based on findings, SMAM, FALR, FLFPR have increased whereas the CBR and TFR have decreased during the year from 1973 to 2014. The SMAM for female is about 24 years for the whole country. The SMAM for females have become more and more uncommon to find at age group 15-19. Generally, the important factors of fertility decline are female education and female labor force participation. It is assumed that higher level of education is associated with higher age at first marriage, the use of birth control methods; desire to have small family size and to achieve the better standard of life.

Yangon University of Economics Research Journal

On the policy grounds, the decline in fertility can easilyhave profound effects on many socio-economic issues in Myanmar such as education, health care, housing plan, retirement protection, business opportunities and saving behaviors. It is hoped that the results of this paper would be useful for policy makers and future researchers.

REFERENCES

1. Central Statistical Organization (1992), Statistical Year Book, (1991).
2. Central Statistical Organization (1998), Statistical Year Book, (1997).
3. Department of Population (1998), "Myanmar Fertility and Reproductive Health Survey (1997)", Immigration and Manpower Department, Yangon, Myanmar.
4. Department of Population (2002), "Myanmar Fertility and Reproductive Health Survey (2001)", Immigration and Manpower Department, Yangon, Myanmar.
5. Department of Population (1976), "Population Census, 1973", Immigration and Manpower Department, Yangon, Myanmar.
6. Department of Population (1986), "Population Census, 1983", Immigration and Manpower Department, Yangon, Myanmar.
7. Department of Population (1992), "Myanmar Population Changes Fertility Survey (1991)", Immigration and Manpower Department, Yangon, Myanmar.
8. Halli, S.S and K. VaninadhaRao (1992), "Advanced Techniques of Population Analysis, The Plenum Series on Demographic methods and Population Analysis, Plenum Press, New York".
9. Department of Population (2015), "The 2014 Myanmar Population and Housing Census", , Ministry of Immigration and Population, Nay Pyi Taw, May, 2015.
10. Department of Population (2016), "Thematic Report on Fertility and Nuptiality,"Census report Volume 4-A, Ministry of Labour, Nay Pyi Taw, September,2016.
11. Department of Population (2016), "Thematic Report on Mortality, Census report Volume
12. 4-C, Ministry of Labour, Nay Pyi Taw, September, 2016.
13. Newell, C. (1988), "Method and Models in Demography", Belhaven Press, London.
14. Preston, S.H, Heuveline, P. and Guillot, M. (2001), "Demography Measuring and Modeling Population Processes", Black well publishers Inc, U.S.A.
15. Shryock, H.S, Jacob S. Siegel and Associates (1976), "The Methods and Materials of Demography", Condensed Edition by Edward G. Stockwell, Academic Press, U.S.A.
16. United Nations (2005), "Human Development Report".

FEMALE MARITAL PATTERNS IN MYANMAR

Dr. Tun Aung[13] & Thet Lyir Win[14]

ABSTRACT

The fertility of East and South-East Asian countries, have declined in the second half of the twentieth century. The transition from high to low level of fertility in Myanmar has started around 1970_s. A major factor in the onset of Asian fertility transition is dramatic changes in marriage pattern. It is an essential in determining the size, composition and growth of the population through family formationconcerningthefemale reproductive rates. These rates are closely related to early and late marriages, female educational attainment, female labour force participation rate, place of residence, etc. Therefore, the singulatemean age at first marriage for female(SMAM), age-specific fertility rate(ASFR) andtotal fertility rate(TFR) are calculated in this paper. Moreover, the intrinsic rate of growth, the mean length of generation, gross reproduction rate(GRR) and net reproduction rate(NRR) are also estimated on the base of stable population model. According to the results, the SMAM can be seen around 22 to 25 years for all the states and the regions. The TFR ranges from nearly 2 to 4 persons per woman. The GRR and NRR are found to be fluctuating around 1 or 2 female live births per woman and the mean length of generation for female is nearly 28, 29 or 30 years for the whole country.

Keywords: **Singulate age at first marriage for female, Intrinsic rate of growth, Mean length of generation**

2.   Introduction

During the past three decades, there have been rapid changes in South-East Asian not only in the socio-economic and political situation, but also in the demographic situation. In almost all countries and regions in South-East Asia, population growth has declined to moderate or low levels of rapid decline in fertility. In recent years, marriage behavior and family life are changing in Asia. The changes of marriage have played a considerable role in the recent fertility declines in most of the Asian countries. It is one of the most important factors relating to population composition and the changes of population growth. Among the components of population changes, marital status has attracted considerable attention of researchers as well as policy makers in recent years.

In Myanmar, the marriage pattern has been changing. The proportion of never married has increased in the younger age group than other age groups. The Singulate Mean Age at First Marriage and mean length of generation are important determinants of marital fertility. Future reproduction or reproductive intentions are related to the existing family size.

---

[13] Pro-rector, Yangon University of Economics
[14] Lecturer, Department of Statistics, Yangon University of Economics

For several different purposes, demographers are interested in changing patterns of marital status and fertility; they analyze some demographic processes by using the stable population model. A stable model of population can be utilized to study the importance of various factors like biological,social, cultural, economic and psychological factors and their effects on the demographic process. Therefore, the stable population model is used to demonstrate the current female marital patterns of Myanmar in this paper.

1.2 Objectives of the Study

The objectives of the study are:
(i)   to determine the marital patterns of females in Myanmar,
(ii)   to investigate the estimates of fertility in the states and regions of Myanmar

1.3 Scope and Limitations of the Study

The study area is focused in terms of the States and Regions of Myanmar. The necessary data and information for this study have been collected from the 2014 Myanmar Population and Housing Census. The required information such as the number of women and the number of children ever born during the last twelve months is obtained from this census and the data on the total number of person- years lived for the cohort during the specified age interval are taken from Thematic Report on Mortality published by Department of Population, Ministry of Labour, Immigration and Population in 2016.

2. Methods

In this paper, the changing patterns of marriage are calculated by using (i) Singulate Mean Age at Marriage and (ii) Mean Length of Generation. Moreover, the estimated intrinsic rate of growth, gross reproduction rate (GRR), and net reproduction rate (NRR) are calculated based on stable population model. Furthermore, age-specific fertility rate (ASFR) and total fertility rate (TFR) of Union, Urban and Rural areas are calculated for 2014.

2.1 Singulate Mean Age at First Marriage

An indirect method of estimating the SMAM is applied for the observation of age at marriage. This method uses the average number of years lived by an assumed cohort of women before their first marriage on the basic of (i) the percentage of women never-married by age, and (ii) that no first marriages occur after age 50 or before age 15.

Procedure for the Estimation of Singulate Mean Age at Marriage

Step 1: Calculation of proportions single for a given sex

The proportion single for the age group from 1 (15-19) to 8 (50-54) is denoted by U(i),

Where:

$$U(i) = \qquad\qquad\qquad\qquad\qquad .$$

Step 2: Calculation of person years lived in the single state

$$RS_1 = 5\sum$$
$$RS_2 = RS_1 + 15.0.$$

The quantity 15.0 is the number of person-years lived in the single state from birth to age 15 by the hypothetical cohort of size under consideration.

Step 3: Estimation of proportion who ever marry

The proportion remaining single at age 50, RN is estimated as

$$RN = \overline{\qquad\qquad}$$

The proportion ever marrying by age 50, RM is estimated as

$$RM = 1.0 - RN.$$

Step 4: Calculation of number of person-years lived by the proportion not marrying

Since RN is estimated to be proportion who not married by age 50, the total time spent in the single state by this proportion is $RS3 = 50.0\ RN$.

Step 5: Calculation of singulate mean age at marriage

The value of SMAM is the average number of years spent in the single state by those who marry before age 50. It is calculated as

$$SMAM = \overline{\qquad\quad}.$$

2.2 The Concepts of Stable and Stationary Population Model

The theoretical model of stable population has widely been used by demographers to represent and understand the structures, growth and evolution of human populations. By definition, stable population has age-specific fertility and mortality rates that remain constant over time. It can be proved mathematically that population with unchanging fertility and mortality patterns grow at a constant rate and acquire a characteristic age structure that does not change over time. The age composition of the stable population is determined by two factors: the prevailing life table and the growth rate in the annual number of births. The age composition will be constant and can be expressed in terms of the birth rate, growth rate, and life table survival function.

The stationary population model is sometimes used to study population processes. Stationary population model is a special case of stable population model with a zero growth rate (equal number of births and deaths). Such a population will have a constant age structure and certain simplified relationships among the demographic parameters.

2.3 Lotka's Intrinsic Rate of Growth

The concept of a stable population was first introduced into demography by Alfred J.Lotka. Hehas investigated the time required for a population with a given age structure and age-specific fertility and mortality to approach its ultimately stable form. He also proved that a closed population with constant age-specific fertility and mortality schedules would eventually have a constant rate of natural increase and it is called the intrinsic rate of a natural increase or intrinsic rate of growth.

Lotka computed the intrinsic rate of growth by solving the equation,

$$\int \qquad = 1$$

Where:

$p(x)$ = the probability of surviving from birth to age x, the L_x of the life table divided by l_0

r = the intrinsic rate of growth per head per annum

$f(x)$ = the number of female live births per annum to each woman of age x

Since $f(x) = 0$, outside the childbearing period

$$\int \qquad = 1$$

$$1 \quad = \int$$

$$\underline{\qquad} = \int \qquad \underline{\qquad\qquad}$$

substitute $g(x) \quad = \underline{\qquad}$

$$\frac{\underline{\qquad}}{\underline{\qquad}} = \int \quad M_x$$

$$\text{Log} \ (\underline{\quad} \qquad \log M_x \ (-r)$$

$$\text{Log}_e \ (\text{NRR})^{-1} = K_x \ (-r)$$

$$\text{Log}_e \ (\text{NRR})^{-1} = K_1(-r) + K_2 \underline{\quad} + K_3 \underline{\quad} + \dots$$

If the higher moments $K_3, K_4, \dots$ are ignored,

Let $K_1 = \alpha$, $K_2 = \beta$

$-\text{Log}_e \text{NRR} = -\alpha r + \underline{\quad}$

$0 = \beta \quad -2\alpha r + 2\,\text{Log}_e\,\text{NRR}$

$\beta \quad -2\alpha r + 2\,\text{Log}_e\,\text{NRR} = 0$

It is same as $ax^2 + bx + c = 0$

$a = \beta$, $b = -2\alpha$, $c = 2\text{Log}_e\,\text{NRR}$

$x = \dfrac{\sqrt{\underline{\quad}}}{\underline{\quad}}$

Then, $\quad r = \dfrac{\sqrt{\overline{\underline{\quad\quad\quad}}}}{\underline{\quad\quad\quad\quad}}$

$r = \dfrac{\sqrt{\overline{\underline{\quad\quad}}}}{\underline{\quad\quad}}$

Where: $R_o = \text{NRR}$, R_1 and R_2 are the 1st and 2nd moments of the curve representing the age schedule of net reproductively NRR general equation for 1st, 2nd and nth moments is given by

$R^{\,9} = \dfrac{\int}{\int}$

$R_2 = \int$

$^{n}R = \int$

$\alpha = E(x) = \int$

$\alpha = \int \quad \underline{\quad\quad}$

$\alpha = \underline{\quad}$

$\alpha = \int$

$\beta = V(x) = E(x^2) - [\,E(x)\,]^2$

$\beta = \int \qquad\qquad (\ -$

$= \int \quad \dfrac{\overline{\underline{\quad\quad}}}{\quad}\ dx - \quad (\ - \quad)$

$= \underline{\quad}$

$(\overline{\ }\ )$

$\int$

$$\beta = -\frac{(\quad)}{\underline{\quad}\ \sqrt{(\underline{\quad})}\ [\underline{\quad}\ (\underline{\quad})]}$$

$$r = \frac{\sqrt{(\underline{\quad})}\ [\underline{\quad}\ (\underline{\quad})]}{\underline{\quad}\ \underline{\quad}\ (\quad)}$$

2.4   Mean Length of Generation

The mean length of generation is defined as the mean age of mothers at the birth of their daughters. Since the stable population is growing at the annual rate r, compounded continuously and NRR is rate of growth in one generation by length, T years.

$$NRR =$$

$$T \quad = \overline{\qquad\qquad\qquad}$$

$$T \quad = Log_e\ NRR$$

Where:

T represents the mean length of generation

r represents the intrinsic rate of growth

NRR represent the net reproduction rate

2.4.1   Intrinsic Birth Rate

The intrinsic birth rate or true birth rate is the birth rate that would eventually be reached in closed population, which is subject to constant age-specific fertility and mortality rates for a sufficiently long period of time. It is the birth rate of a stable population.

The intrinsic birth rate per annum is

$$b = \frac{\qquad}{\int}$$

Where:

p(x) is the probability of surviving from birth to age x

r is the intrinsic rate of natural growth per year.

2.4.2   Intrinsic Death Rate

The intrinsic death rate is equal to the difference between the intrinsic birth rate and the intrinsic rate of growth.

$$d = b\text{-}r$$

Where:

d = intrinsic death rate

b = intrinsic birth rate

r = intrinsic rate of growth

2.5 Age Specific Fertility Rate (ASFR)

Age Specific Fertility Rate is the number of live births to female of specified age per 1000 mid-year female population of that particular age in a specified period.

$$_5 f_x = \text{ASFR} = \frac{_5 B_x}{_5 F_x} \times 1000$$

Where :

$_5B_x$ = number of live births to females aged between x and x+5 in an area during a year

$_5F_x$ = mid-year female population of aged x to x+5 in the same area during that year

2.6 Total Fertility Rate (TFR)

Total Fertility Rate (TFR) is defined as "the average number of children a woman would have assuming that current age-specific birth rates remain constant throughout her childbearing years". It is the average number of children a woman would have if she survives all her childbearing (or reproductive) years. Childbearing years are considered age 15 to 49.

$$\text{TFR} = \overline{\qquad\qquad}$$

2.7 Gross Reproduction Rate (GRR)

This measure is very similar to the (TFR) except that it considers only female rather than all births. It is calculated in the same way as the TFR but uses female age-specific fertility rates. GRR is the number of girl babies that would be produced by a woman who survives the entire reproductive period and if she experiences the ASFRs prevailing at the time under study.

$$\text{GRR} = 5 \sum_5 \quad_x$$

$$\text{GRR} = \frac{\Sigma}{\qquad\qquad}$$

Where:

$_5f^*_x$ = the ASFR for female births only.

$$_5f^*_x = \frac{_5FB_x}{_5f_x}$$

2.8   Net Reproduction Rate (NRR)

The NRR is the average number of daughters that would be born to a woman taking into account the prevailing levels of fertility, female mortality and the sex ratio at birth. When the NRR is one, each woman is exactly replacing herself with one surviving daughter and this implies that fertility is at replacement level.

$$\text{NRR} = 5 \sum \frac{_5L_x}{l_0} \quad x$$

$$\text{NRR} = 5 \sum \frac{_5L_x \times f_x}{l_0 \times 2.05} \quad \text{(Sex Ratio at birth is assumed as 1.05)}$$

3.   Results and Findings

3.1   Proportion of Never-Married Women

The following Table shows the changes in the proportion of never-married women by age group between 1973 and 2014 in Myanmar.

Table (1)   Proportion of Never-Married Women   (%)

Age Group	Year				
	1973	1983	1991	1997	2014
15-19	78.0	83.2	89.3	93.4	86.8
20-24	35.5	42.1	56.0	65.3	54.4
25-29	16.7	21.6	32.4	40.6	32.0
30-34	9.3	12.9	19.6	24.7	20.8
35-39	7.0	8.9	13.8	17.0	16.3
40-44	6.2	6.7	10.4	14.7	14.0
45-49	5.9	5.9	9.1	12.2	12.9

Source: 1973 Census, 1983 Census, 1991 PCFS, 1997 FRHS, 2014 Census

According to the results, the proportion of never-married women between the period of 1973 and 1997 gives a rise in the age pattern of proportion. This table clearly shows that the

proportion of single has increased from 78.0 percent in 1973 to 93.4 percent in 1997. But it has declined to 86.8 percent in 2014. The proportion of single for females aged 45-49 has risen from 1973 to 2014, 5.9 percent in 1973 and 1983, 9.1 percent in 1991 and 12.2 percent in 1997 and 12.9 percent in 2014. Generally, the proportion of never-married women has increased during the periods of study.

3.2 Proportion of Ever-Married Women

The following table shows the changes in proportion of ever married women by age between 1973 and 2014 in Myanmar.

From the above table, the proportion of ever married women in the age group 15-19 has declined from 20.7 percent in1973 to 12.4 percent in 2014.The largest proportion of ever married women are found to be age group 35-39 years. Among these age groups, it is found that the age groups like 30-34 years, 35-39 years, 40-44 years and 45-49 years are higher than other age groups.

Table (2)   Proportion of Ever-Married Women   (%)

Age Group	Year				
	1973	1983	1991	1997	2014
15-19	20.7	15.9	10.7	6.5	12.4
20-24	60.9	55.0	44.0	33.4	43.6
25-29	78.7	74.1	67.6	56.9	65.1
30-34	84.5	81.3	80.4	71.2	74.8
35-39	85.1	83.1	86.2	78.0	77.7
40-44	81.9	81.5	84.0	76.1	77.3
45-49	77.4	78.4	90.9	74.9	74.9

Source: 1973 Census, 1983 Census, 1991 PCFS, 1997 FRHS, 2014 Census

3.3 Changes in Marital Status for Female

Changes in age at marriage and proportion marrying have important influence on fertility trends. The patterns of marriage are very important because of their significant role in determining the size, composition and growth of the population through family formation and fertility. Generally, marital status is classified by four categories namely (1) Single, (2) Married, (3) Widowed and (4) Divorced. The following table describes the changes in marital status for female.

In 1973, the percent of single female was 37.4%. It has increased to 40% in 1983, 42.7% in 1991 and 55.1% in 1997. But, it has decreased to 29.5% in 2014. The married women have steadily declined from 1973 to 1997. It has declined from 50.7% in 1973 to 49.1% in 1983, 45.8% in1991, 36.4% in 1997. But, it has increased to 57.8% in 2014.Widowed women are one-fifth of married women and divorced women are very few. It might be due to Myanmar culture and other socio-economic factors.

Table (3)   Changes in Marital Status for Female   (%)

Year	Single	Married	Widowed	Divorced	Total
1973	37.4	50.7	10.0	1.8	100.0
1983	40.0	49.1	9.2	1.7	100.0
1991	42.7	45.8	9.6	2.0	100.0
1997	55.1	36.4	7.4	1.1	100.0
2014	29.5	57.8	10.4	2.0	100.0

Source: 1973 Census, 1983 Census, 1991 PCFS, 1997 FRHS, 2014 Census

3.4   Changes in Singulate Mean Age at First Marriage

The following Table shows the changes in Singulate Mean Age at First Marriage (SMAM) for female from the period 1973 to 2014 in Myanmar.

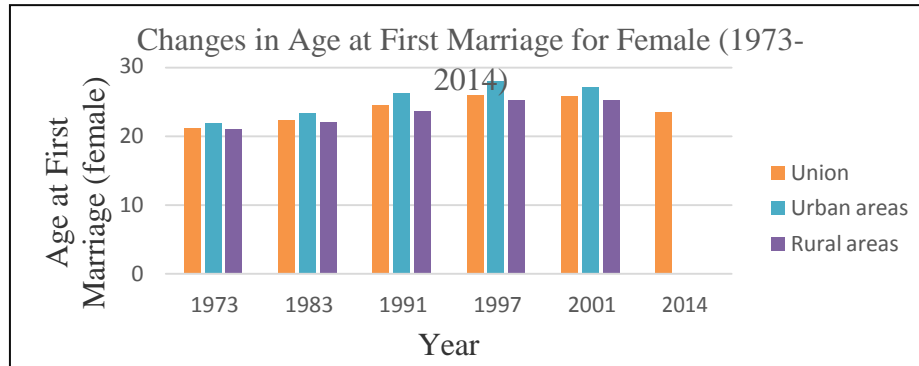**Table (4)   Changes in Singulate Mean Age at First Marriage for Female, 1973-2014 (Years)**

Regions	1973	1983	1991	1997	2001	2014
Union	21.2	22.4	24.5	26.0	25.8	23.6
Urban areas	21.9	23.3	26.3	28.0	27.2	-
Rural areas	21.0	22.1	23.7	25.3	25.3	-

Source: 1973 Census, 1983 Census, 1991 PCFS, 2001 FRHS, 2014 Census

Table (4) and Figure (1) show changes in singulate mean age at first marriage. It is one of the main factors of fertility changes. According to the results, the average age of women at first marriage has risen from 21.2 years in 1973 to 26.0 years in 1997. But it has declined from 25.8 years in 2001 to 23.6 years in 2014. For urban areas, the change in age at first marriage for female is 21.9 years in 1973 to 27.2 years in 2001. For rural areas, the change in age at first marriage for female is 21 years in 1973 to 25.3 years in 2001. Therefore, it can be

observed that singulate mean age at first marriage for female is found to be urban areas and is also higher than in rural areas.

Figure (1)   Changes in Singulate Mean Age at First Marriage for Female (SMAM), 1973-2014

Source: Table (4)

Table (5) describes the Singulate Mean Age at First Marriage (SMAM) of female as observed in 2014 Population Census for each state and region.

Table (5)   Singulate Mean Age at First Marriage (SMAM) for Female by States & Regions

States and Regions	SMAM(years)	States and Regions	SMAM(years)
Union	23.6	Magway	24.0
Kachin	23.8	Mandalay	24.4
Kayah	23.8	Mon	23.6
Kayin	22.8	Rakhine	22.4
Chin	22.7	Yangon	25.2
Sagaing	24.1	Shan	22.6
Tanintharyi	23.6	Ayeyawady	22.2
Bago	22.8	Nay Pyi Taw	23.0

Source: The 2014 Population and Housing Census

According to the results, the ranges of SMAM for female are from 22 to 25 years. There is no significant difference in each state and region. The highest Singulate Mean Age at First Marriage (SMAM) for female is found in Yangon Region and the lowest Singulate Mean Age at First Marriage (SMAM) for female is found in the Ayeyawady Region. It might be due to the differences in education, occupations, cultures, knowledge on fertility and other factors, etc.

3.5   Age Specific Fertility Rate (ASFR) of Union, Urban and Rural for 2014

The following Table presents the ASFRs of urban, rural and union for 2014.

Table (6)   ASFRs of Union, Urban and Rural for 2014

Age Group	ASFRs		
	Union	Urban	Rural
15-19	0.0218	0.0152	0.0246
20-24	0.0946	0.0682	0.1070
25-29	0.1185	0.0959	0.1286
30-34	0.1059	0.0910	0.1125
35-39	0.0745	0.0593	0.0812
40-44	0.0346	0.0232	0.0399
45-49	0.0081	0.0050	0.0096
TFR	2.29	1.789	2.517

Source: 2014 Population and Housing Census

According to the results, there is a substantial difference in fertility between urban and rural areas. Comparing to urban and rural areas, rural women have more additional children than these of urban women (3 versus 2). Generally, ASFR$_s$ in rural areas were more than those of urban areas for each reproductive age group. The ASFRs of middle age group 25-29 years and 30-34 years are higher than the other reproductive age groups. Table (7) and Figure (2) show ASFRs from various sources for different years.
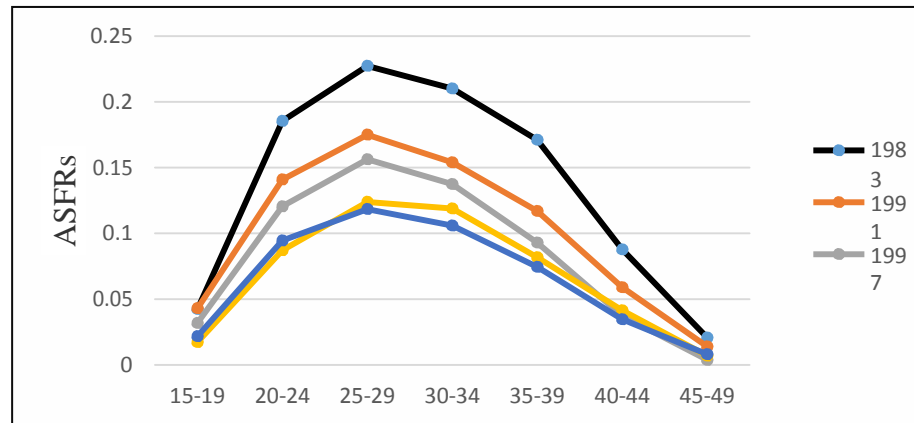
Table (7)   Changes in ASFRs (1983-2014)

Age	1983	1991	1997	2001	2014
15-19	0.0425	0.0430	0.0319	0.0174	0.0218
20-24	0.1855	0.1410	0.1206	0.0872	0.0946
25-29	0.2274	0.1750	0.1563	0.1240	0.1185
30-34	0.2102	0.1540	0.1375	0.1189	0.1059
35-39	0.1712	0.1170	0.0929	0.0818	0.0745
40-44	0.0878	0.0590	0.0372	0.0415	0.0346
45-49	0.0208	0.0140	0.0037	0.0070	0.0081

Source: PCFS (1992), FRHS (2002), 2014 Census

As a result, the fertility of the youngest age group 15-19 and the highest age group 45-49 has decreased and other age groups 25-29 and 30-34 has increased especially concentrated at ages between 25 and 29. The contributions of fertility by women under 20 and above 40 yearsare very low. The fertility of women age 25-29 years is higher than the other age groups.

Figure (2)   Changes of ASFRs (1983-2014)

Source: Table (7)

3.6   Intrinsic Birth and Death Rates by States and Regions

The intrinsic rate of growth is the most direct indication of actual growth of a given population during a given year. If births exceed deaths, the growth rate is positive. If deaths exceed births, the growth rate is negative. The true or intrinsic birth and death rates are the birth rate and death rate that would eventually be reached in a population subject to fixed fertility and mortality schedule. The following table shows intrinsic birth and death rates of each state and region.

As a result, the lowest intrinsic birth rate for female can be seen in Yangon Region and the highest in Chin State. The same pattern of intrinsic birth rate for male can be seen in those two regions. The lowest intrinsic death rate for female can be seen in Bago Region and the highest in Chin State. The same pattern of intrinsic death rate for male can be seenin those two regions. Generally, intrinsic birth rate of male is more than female for almost all the states and regions. Similarly, intrinsic death rate of male is more than female for the whole country except Sagaing Region.

3.7   Regional Differentials in Fertility and Female Marital Pattern

Intrinsic Rate of Growth, Total Fertility Rate (TFR), Gross Reproductive Rate (GRR), Net Reproduction Rate (NRR) and Mean Length of Generation for each state and region in Myanmar are calculated in Table (9).

According to the findings of State and Region wise, intrinsic rate of growth for Yangon Region is the lowest and Chin State is the highest. The intrinsic rate of growth for the whole

country in Myanmar is about 0.0009 percent. Moreover, the intrinsic rate of growth is found to be positive in rural areas and negative in urban areas. It can be assumed that the number of births is higher than that of deaths in the rural areas and the number of births is lower than that of deaths in the urban areas.

Table (8)   Intrinsic Birth and Death Rates by States and Regions

States & Regions	Intrinsic Birth Rate		Intrinsic Death Rate	
	Female	Male	Female	Male
Union	32.3	32.6	31.4	31.7
Urban areas	24.8	25.3	31.1	31.6
Rural areas	35.7	35.8	32	32.1
Kachin	40.4	41.3	32.2	33.1
kayah	47.8	48.6	34.4	35.2
Kayin	49.3	49.7	35.1	35.1
Chin	62.7	63.1	41.9	42.3
Sagaing	38.1	32.9	36.7	31.5
Tanintharyi	42.4	42.2	33.2	33
Bago	30.7	31.1	30.1	30.5
Magway	28.9	29.7	32.3	33.1
Mandalay	27.1	27.5	31.3	31.7
Mon	34.5	35.3	30.9	31.7
Rakhine	31.5	31.4	31.4	31.3
Yangon	23.7	24	31.4	31.7
Shan	38.3	38.3	32	32
Ayeyawady	36.6	36.7	32.7	32.8
Nay Pyi Taw	30.1	30	31.1	31

Source: The 2014 Population and Housing Census

Based on the findings, the Total Fertility Rate (TFR) ranges from 1.7 to 4.4. The lowest TFR can be observed in Yangon Region followed by Mandalay Region and the highest TFR can be observed in Chin State. It's about 2 times of Yangon and Mandalay Regions.

According to the results, GRR for Myanmar in 2014 was estimated at 1.12 female live births per woman; it is nearly 0.88 for urban and 1.23 for rural areas. These values are comparatively lower in urban than in rural areas. The chances of dying from pregnancy related causes are still high in some regions; it ranges from a minimum of 0.84 in Yangon Region to a maximum of 2.14 in Chin State. Similarly, the same pattern of fertility can be seen in NRR.

GRR and NRR fluctuated around 1 or 2 female live births per woman. Comparing the mean length of generation for female population, there are nearly 28, 29 or 30 years for the whole country in Myanmar. The mean length of generation has risen in Myanmar. It might be due to many reasons; knowledge and use of fertility control may have spread among women especially the younger generation and other factors, etc.

Table (9)   Regional Differential in Fertility and Female Marital Pattern

State	Intrinsic Rate	Total	Gross	Net	Mean Length
Union	0.0009	2.30	1.12	1.03	29.28
Urban areas	-0.0063	1.80	0.88	0.83	30.17
Rural areas	0.0037	2.50	1.23	1.12	29.95
Kachin	0.0082	2.80	1.38	1.28	29.79
Kayah	0.0134	3.30	1.63	1.50	30.24
Kayin	0.0142	3.40	1.68	1.53	30.15
Chin	0.0208	4.40	2.14	1.87	30.20
Sagaing	0.0014	2.30	1.13	1.04	30.35
Tanintharyi	0.0092	3.00	1.46	1.32	30.40
Bago	-0.0006	2.20	1.07	0.98	28.58
Magway	-0.0034	2.10	1.01	0.90	29.98
Mandalay	-0.0042	1.90	0.95	0.88	30.27
Mon	0.0036	2.40	1.19	1.11	30.16
Rakhine	0.00006	2.20	1.10	1.00	28.31
Yangon	-0.0077	1.70	0.84	0.79	30.65
Shan	0.0063	2.70	1.31	1.20	29.27
Ayeyawady	0.0039	2.60	1.26	1.12	29.88
Nay Pyi Taw	-0.0010	2.20	1.05	0.97	30.15

Source: 2014 Population and Housing Census

3.8   Impact of Socio-economic Factors on Fertility Changes (1973-2014)

Fertility is one of the most important determinants of population growth rate. It has important effect on social and economic development. The main factors that most directly affect fertility are Female Singulate Mean Age at Marriage (SMAM), Female Adult Literacy Rate

(FALR), FemaleLabour Force Participation Rate (FLFPR). Crude Birth Rate (CBR) and Total Fertility Rate (TFR) have changed based on the three factors already mentioned.

Table (10)   Impact of Socio-economic Factors on Fertility Changes (1973-2014)

Year	SMAM	FALR	FLFPR	CBR	TFR
1973	21.2	66.9	30.93	32.5	5.65
1983	22.4	76.6	34.40	28.3	4.73
1991	24.5	83.6	48.61	24.3	3.52
1997	26.4	90.0	47.18	22.4	3.48
2001	25.8	-	47.32	25.7	2.96
2014	23.6	86.9	50.50	18.0	2.30

Source: FRHS (1998), CSO (1992), CSO (1997), HDR (2005), Census (2014)

On the basis of the above Table, it is noted that the change in age at first marriage for female has increased from 1973 to 1997. And then, it has decreased from 2001 to 2014. The FALR has increased from 1973 to 1997 and slightly decreased in 2014. FLFPR has also increased during the study period. The CBR has decreased; it has fallen from 32.5 in 1973 to 18 in 2014 except 2001. The TFR has steadily declined from 5.65 in 1973 to 2.3 in 2014 which means that it has halved in 41 years. It can be concluded that female marital pattern can play an important role in major fertility declines. Moreover, it is very closely related to FALR and FLFPR. It can be said that increasing SMAM, FALR, FLFPR have occurred owing to the decreasing CBR and TFR.

4.   Discussion

In Asia today, the rate of fertility decline has been varied, so that fertility levels are widely diversed. More recently, fertility has declined dramatically almost everywhere. A change in the size and composition of population is related to changes of fertility. It is one of the most essential factors of population growth. In any study of fertility, changes in marriage pattern are important for the effects of reproduction.

In recent period, the delayed marriage and low fertility tend to be closely linked in Asia. Myanmar shows the most extreme marriage delays in the region while fertility is still slightly abovethe replacement level. Both delayed marriage and sharp fertility decline have occurred in South-East and East Asia when women's education level has been rising and their labour force participation generally increasing. In most developing countries, especially in Asia,

there has been a transition from traditional to modern patterns of marriage. The changing pattern of marriage may be caused by education, employment status, place of residence,etc.

Educational attainment has a positive relationship with the age at marriage and fertility is conversely related to educational attainment. Women with university education are the most likely to remain unmarried. It may be that more educated women have less reason to marry because they are able to be financially independent or it may be that it is more difficult for them to find a suitable partner. The educational level of society increase, the proportion of never married can also be expected to increase. Moreover, the effect of population structure is depending upon on education. The lower levels of education are associated with larger proportion of married and greater fertility, but also with a later age of marriage and consequently with delayed childbearing and lower fertility.

In general, the status of employment has a strongly influence on fertility. Women who are employed full-time tend to have smaller families. Employment of the mother has a positive effect on nutrition and health status of children. The lower occupational status tends to high fertility and the higher employment status tends to low fertility. The employment status is negative relationship of fertility changes and positive relationship of marital status. Moreover, never married women are more likely to be active in the labour force than ever married women.

Place of residence has an effect on age at marriage. Generally, early marriage is more common in rural areas than in urban areas. The highest proportion of women who married early occurred among women especially in villages and still lived in rural areas. Most of the women in urban areas are better educated compared to those in rural areas. Jobs in urban areas are usually outside the home and women are not allowed to bring their children to the place of work and they would not consider having more children.

5.   Conclusion

As a result, the largest proportion of never-married women is in 15-19 years reproductive age groups. From 1973-2014, the proportion of never-married women has increased all reproductive age groups except 2014. The proportion of married women is particularly age group 30-34, 35-39 and 40-44 years. The largest proportion of ever married women can be seen in age group 35-39 years.

Firstly, changes in female marital status are studied by four kinds of categories. Generally, the percent of single women has increased and the percent of married women hasalso decreased. Widowed women are one-fifth of married women and divorced women are very few. It might be due to culture of Myanmar women and other related factors.

Secondly, the changes in SMAM for female are presented for each state and region. The highest SMAM for female can be seen in Yangon Region and the lowest SMAM for female can be seen in Ayeyawady Region. But,there is no significant difference in each state and region. It might be due to the mothers' educational level, occupational status, knowledge on birth spacing and other factors, etc.

Thirdly, ASFRs of union, urban and rural for 2014 Census are presented. Based on findings, rural areas of ASFRs are more than urban areas of ASFRs for each reproductive age group. Moreover, the changes of ASFRs are studied for different years. As a result, the age below 20 and above 40 years, the ASFRs are very low. Especially, concentrated ASFRs are found to be at middle age group: 25-29 years.

Finally, the intrinsic rates of growth are calculated based on intrinsic birth and death rates. From the results, the lowest intrinsic birth rate is found to be Yangon Region and the highest intrinsic birth rate is found to be Chin State.The lowest intrinsic death rate for female can be seen in BagoRegion and the highest in Chin State. Furthermore, the mean length of generation is found to be each state and region based on the intrinsic rate of growth. Based on the results, the intrinsic rate of growth has decreased in Urban areas, Bago, Magway, Mandalay, Yangon Regions and Nay Pyi Taw Council Territory. It can be assumed that the number of deaths higher than the number of births in urban and some regions.

In addition, the TFR, GRR and NRR are calculated by states and regions. The TFR ranges from nearly 2 to 4 persons produce per woman. The lowest TFR is observed in Yangon Region and the highest TFR is observed in Chin State. GRR and NRR are fluctuated around 1 or 2 female live births per woman among states and regions. According to the study, NRR is only slightly less than the GRR. Besides, the mean length of generation for female is observed that nearly 28, 29 or 30 years for the whole country.In Chin State, the TFR has increased in other states and regions. It might be due to their cultural factors. The TFR has decreased in Yangon and Mandalay Regions. It might be due to the socio economic conditions and other related factors. These factors are higher costs of rearing children, women's education and employment opportunities.

Furthermore, the socio-economic factors on fertility changes are studied. Based on findings, SMAM, FALR, FLFPR have increased whereas the CBR and TFR have decreased during the year from 1973 to 2014. The SMAM for female is about 24 years for the whole country. The SMAM for females have become more and more uncommon to find at age group 15-19. Generally, the important factors of fertility decline are female education and female labor force participation. It is assumed that higher level of education is associated with higher age at first marriage, the use of birth control methods; desire to have small family size and to achieve the better standard of life.

On the policy grounds, the decline in fertility can easilyhave profound effects on many socio-economic issues in Myanmar such as education, health care, housing plan, retirement protection, business opportunities and saving behaviors. It is hoped that the results of this paper would be useful for policy makers and future researchers.

REFERENCES

17. Central Statistical Organization (1992), Statistical Year Book, (1991).
18. Central Statistical Organization (1998), Statistical Year Book, (1997).
19. Department of Population (1998), "Myanmar Fertility and Reproductive Health Survey (1997)", Immigration and Manpower Department, Yangon, Myanmar.
20. Department of Population (2002), "Myanmar Fertility and Reproductive Health Survey (2001)", Immigration and Manpower Department, Yangon, Myanmar.
21. Department of Population (1976), "Population Census, 1973", Immigration and Manpower Department, Yangon, Myanmar.
22. Department of Population (1986), "Population Census, 1983", Immigration and Manpower Department, Yangon, Myanmar.
23. Department of Population (1992), "Myanmar Population Changes Fertility Survey (1991)", Immigration and Manpower Department, Yangon, Myanmar.
24. Halli, S.S and K. VaninadhaRao (1992), "Advanced Techniques of Population Analysis, The Plenum Series on Demographic methods and Population Analysis, Plenum Press, New York".
25. Department of Population (2015), "The 2014 Myanmar Population and Housing Census", , Ministry of Immigration and Population, Nay Pyi Taw, May, 2015.
26. Department of Population (2016), "Thematic Report on Fertility and Nuptiality,"Census report Volume 4-A, Ministry of Labour, Nay Pyi Taw, September,2016.
27. Department of Population (2016), "Thematic Report on Mortality, Census report Volume
28. 4-C, Ministry of Labour, Nay Pyi Taw, September, 2016.
29. Newell, C. (1988), "Method and Models in Demography", Belhaven Press, London.
30. Preston, S.H, Heuveline, P. and Guillot, M. (2001), "Demography Measuring and Modeling Population Processes", Black well publishers Inc, U.S.A.
31. Shryock, H.S, Jacob S. Siegel and Associates (1976), "The Methods and Materials of Demography", Condensed Edition by Edward G. Stockwell, Academic Press, U.S.A.
32. United Nations (2005), "Human Development Report".

Yangon University of Economics Research Journal

Contents