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IMPACT OF WORK LIFE BALANCE ON EMPLOYEE JOB SATISFACTION IN PRIVATE SECTOR COMMERCIAL BANKS OF SRI LANKA

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Abstract

The core purpose of this study is to analyze the impact of work life balance on employee job satisfaction in private sector commercial banks of Sri Lanka. The data is collected keeping in consideration of demographic factors and factors affect for job satisfaction. Factors involved are job satisfaction and work life balance with respect to Working hours, Working conditions, work life balance programs, employee intention to change of job and work pressure.

Data is collected using both primaryand secondary sources. Primary data is collected through questionnaires where secondary data is collected through past research, journals and online web-sites. In primary date collection a total of 150 questionnaires are distributed among the employees of different commercial banks. The data is analyzed using SPSS, tests applied is correlation and regression. The findings suggest that work life balance has a significant impact on employee job satisfaction in private sector commercial banks of Sri Lanka.

This research can be beneficial for the private sector commercial banks to improve their policies, benefits programs and work distribution and in making job changes inside the organisation. This research can be utilized as a light for banks to pay attention to such factors, because their benefits are not only for employees but can benefit banks in the long run especially in maintain work force of the institution.

Key words: work life balance, job satisfaction, work force , private commercial banks

1. Introduction

The development and the rapid growth of the business world have created new activities and open new opportunities to the business organizations. Globalization also has made the organizations hard to retain their competitive advantage in market. This has affected the banking sector as well. Banking sector has become more competitive and it has become a big challenge for them.

These changes has affect not only in business activities but also in culture and perception of the employees. Most of the Organizational changes happen due to down-sizing, mergers or acquisitions and radical changes in technology have changed the work setups. The employees in present are more involved in their jobs than past times. The working hours, work pressure, high demanding jobs, use of sophisticated technology made it difficult for employees to keep a balance between their job and work commitments.

Businesses are facing increasing demands to raise efficiency and becoming more responsive to customers and employees. No longer is it just a matter of remuneration and promotional prospects; job seekers are increasingly making employment decisions on how well their current or potential workplace can support a balance between personal lives and paid occupation.

Considerable research has already been conducted on work life balance and employee satisfaction. Several research has been conducted on this issue and more efforts are being suggested to the bigger organizations, especially, the banking sector where longer working hours is a particular norm, to restore a work-life balance for the better good of the social and family life of the work force. Findings showed that job satisfaction at top level of management has negative correlation with family to work interference, family to work interference and stress and job satisfaction has positive correlation with job autonomy. Job satisfaction at the middle level

of employees decreases when work life conflict and stress increases. Job satisfaction at the lower level of employees has negative correlation with stress and family to work interference and positive correlation with job autonomy.

2. Background of the study

The core purpose of this study is to analyze the impact of work life balance on employee job satisfaction in private sector commercial banks of Sri Lanka. The current context of globalization and the changing nature of work have provided the impetus for this topic. Intensification of work and technology that blurs the boundary between work and the rest of life provides challenges for one and all. Competition and customer pressure have forced companies to rationalise and restructure, and as a consequence less people have to do more work (Poelmans et al. 2008).

In considering the impact of work life balance on employee job satisfaction it is at the core of issues central to human resource development. It is a measure of how happy employees are with their job and working environment. Keeping the morale high among employees can be of tremendous benefit to the company, as employees would be more likely to produce more, take fewer days off, and stay loyal to the company. The current work scenario is marked by intense pressure, constant deadlines, changing demographics, fast pace of change, increased use of technology and the virtual workplace. There are many factors found in improving and maintaining high employee satisfaction, which institutions would do well to implement.

Job satisfaction is not the same as motivation, although it is clearly linked. Job design aims to enhance job satisfaction and performance; methods include job rotation, job enlargement and job enrichment. Other influences on satisfaction include the management style and culture, employee involvement, empowerment and autonomous work groups, pay, work responsibilities, variety of tasks, promotional opportunities the work itself and co-workers. Under work life balance other terms that are used to refer to this domain include, work-family conflict, work-family integration, family friendly policies.

The following documentation is a research report based on analyzing the impact of work life balance on the job satisfaction of employees of private sector commercial banks. Furthermore, with an intensive study of those factors with use of questionnaires, data will be gathered which will be analyzed for the impact of each factor. The data will be collected keeping in consideration features such as gender, age, managerial position and tenure of job. Factors involved are job satisfaction and work life balance with respect to working conditions, work life balance programs, employee intention to change/leave job, work pressure/stress and Working hours.

3. Research problem

Banks timing is mostly from 9am to 5pm in Sri Lanka but originally there is no time limit so employees have to work for longer hours due to unpredictable workflows, and fast work places with tight deadlines compared to other jobs, which is also a reason of concern. As a result, many have reported experiencing stress and work life imbalance.

Therefore as the research problem it has formulated the following problem statement;

How does the work life balance on employee, impact on job satisfaction, in Private SectorCommercial Banks of Sri Lanka?

Further the study is being conducted only for the industry of the private commercial banking sector of Sri Lanka in order to research the impact of work life balance on job satisfaction.

4. Research questions

The research paper intends to examine employees experience of the work life balance linkage in private commercial banks in SL, and how they cope and deal with it. The main research questions are discussed as following:

Q1.What are the main work life balance linkage experienced by the employees?

There are five main work-life balance factors discussed through-out the research model. The Literature helps to identify these as the different dimensions, in order to find out the work life balance and discuss how the behaviours of employees are related to each other as well as what are the affect of each on work-life balance of employees.

Q2.What relationship exists between work life balance and job satisfaction on employees?

This research sought to determine whether job satisfaction differs by work life, and whether there is a relationship between work life and job satisfaction. In addition, this study used professional experiences as control variables. These variables are selected because previous studies have shown that such professional experience factors are related to work life balance and job satisfaction.

5. The objectives of the study

To empirically study the significance and impacts of work life balance on job satisfaction of employee of private sector commercial banks of SL. Thus the objective of this study is to examine the impact of work life balance on employee job satisfaction. This research can be helpful for banks to identify the factors which influence the employee work-life balance and the job satisfaction in the result and take decisions by the management to restore this balance.

As result fulfilment of following objectives is the main purpose behind conducting the research:

Main Objective : To find out the relationship of work life balance on job satisfaction among employees of private sector commercial banks of SL.

Specific Objective : To identify the factors which influence the employee work-life balance and the job satisfaction.

To find out the level of work life balance and job satisfaction and make measures to eliminate them by management decisions.

6. Significance of the study

Sri Lanka is a labour oriented developing country. There are many industries, which are enriching our economy. Among those industries, banking industry is most important. Because it has created many jobs towards the Sri Lankan economy.

The significance of this research is that selected scope for private sector commercial banks has not been undertaken by any research in the area of work life balance and job satisfaction until this. Since the private sector commercial banks spend considerable amount of money and time for their employees' benefits and

services, it is most important for these organization to understand those factors which may occurs its employee work life and job satisfaction in increasing the organization performance can be enhanced and achieve organization goals.

The findings of the study will help:

- To identify the prevalent type of work life balance in private sector commercial banks.

The study is of significance for the private sector commercial banks. The study contributes to existing body of knowledge by providing an insight into relationship exist between work life balances and job satisfaction among the employees . Globalization has brought tremendous changes in working conditions thus give rise to various issues and problems for employees.

- To identify HR coping mechanisms for achieving Work Life Balance

The study will help to get awareness about the issues and problems faced by employees at work place that will be of beneficial for organizations and institutions to formulate strategies that will booster satisfaction level and maintain a healthy work life balance among employees.

- Provide recommendations for better work-life balance policies, and strategies.

Ultimately it support the managements to enhance organizations effectiveness and efficiency through identifying different factors effect to employee work-life and job satisfaction. Through that they could build up and introduced new policies and strategies in order to eliminate the issues faced by employees.

7. Definition of Terms

7.1 Work-Life Balance

Work and *Life* have been rather loosely defined in literature (Guest 2002) where work is paid employment and life is everything outside of the formal employment but is usually used to denote the realm of family or home life (Ransome 2007). The concept is loosely defined and is seen to derive from gender division of labour and this renders work life balance its narrow focus (Ransome 2007). Further, *balance* implies an equal distribution of work and the rest of life. It is not possible to ensure that at all times there is an equal distribution among these. According to Guest, the term Work-Life Balance is in itself a misnomer (Guest 2002). Given the fluid nature of needs and responsibilities and their changing nature at different life stages, the division of activity will neither be easy to measure nor equal, and therefore notions of negotiation, cooperation and compromise, reciprocity and complementarities might be better terms than balance (Ransome 2007).

7.2 Job Satisfaction

Job satisfaction is the level of contentment a person feels regarding his or her job. This feeling is mainly based on an individual's perception of satisfaction. Job satisfaction can be influenced by a person's ability to complete required tasks, the level of communication in an organization, and the way management treats employees.

Job satisfaction falls into two levels: affective job satisfaction and cognitive job satisfaction. Affective job satisfaction is a person's emotional feeling about the job as a whole. Cognitive job satisfaction is how satisfied employees feel concerning some aspect of their job, such as pay, hours, or benefits.

7.3 Private Sector

The part of the economy that is not state controlled, and is run by individuals and companies for profit. The private sector encompasses all for-profit businesses that are not owned or operated by the government. Companies and corporations that are government run are part of what is known as the public sector, while charities and other non-profit organizations are part of the voluntary sector. In most free-market economies, the private sector is the sector where most jobs are held. This differs from countries where the government exerts considerable power over the economy.

7.4 Commercial Bank

This is a financial institution providing services for businesses, organisations and individuals. It provides services, such as accepting deposits, giving business loans and auto loans, mortgage lending, and basic investment products like savings accounts and certificates of deposit. Commercial banks make their profits by taking small, short-term, relatively liquid deposits and transforming these into larger, longer maturity loans. This process of asset transformation generates net income for the commercial bank.

A commercial bank is one primarily engaged in deposit and lending activities to both private and corporate clients in wholesale and retail banking. Other services typically include bank and credit cards, private banking, custody and guarantees, cash management and settlement as well as trade finance. The traditional commercial bank is a brick and mortar institution with tellers, safe deposit boxes, vaults and atms. However, some commercial banks do not have any physical branches and require consumers to complete all transactions by phone or internet. In exchange, they generally pay higher interest rates on investments and deposits, and charge lower fees.

Commercial banking activities are different than those of investment banking, which include underwriting, acting as an intermediary between an issuer of securities and the investing public, facilitating mergers and other corporate reorganizations, and also acting as a broker for institutional clients.

8. Literature Survey

Relationship between Work Life balance and Job Satisfaction

Nadeem& Abbas (2009) conducted a study in Pakistan to analyze the relationship between work life and job satisfaction. Data is collected from 157 employees of public and private sector through questionnaire. Data is analyzed through Correlation, Regression and Descriptive analysis. The research results indicate that work overload does not influence job satisfaction and there is a positive relationship exists between Job autonomy and job satisfaction.

Mcnall et al.(2010) conducted the study to analyze the relationship between flexible work arrangement and job satisfaction. Data is collected from 220 employees. Data is analyzed through regression analysis. Results of the study indicate that greater the flexible work arrangements provided more will be the satisfaction employee will have from their jobs.

Saif et al.(2011) conducted research in Pakistan to analyze relationship work life balance practices have with job satisfaction. Data is collected from 450 layoff supervisors from two large organizations in Pakistan through questionnaire. The results reveal that work life balance practices and level of job satisfaction share a Positive relationship.

Rani et al. (2011) conducted the study to evaluate the relationship between work life balance and employees satisfaction. Data is collected from 210 respondents in IT organizations through questionnaire. Multiply regression analysis was applied to drive the results. Results indicated job satisfaction have positive relationship with work life balance and negative relationship with work recognition, relationship with subordinate & supervisor and task at work.

Varatharaj&Vasantha (2012) conducted the study to examine relationship job satisfaction have with work life balance in women. Data is collected from 250 Service Sectors working women in Chennai city through questionnaire. Data is analyzed through, Correlation, Chi-Square test, Wallis Test and Kruskals. Result shows strong positive relationship exists between job satisfaction and work life balance.

Fatima &Rehman (2012) conducted research to examine role ambiguity and role conflict effect on employee's job satisfaction as well as leaving intention. Data is gathered from 120 teachers from Rawalpindi and Islamabad universities in Pakistan. SPSS and Regression Analysis are used to analyze the data. The results indicate that job role conflict and role ambiguity are negatively related to job satisfaction and positively related to job leaving intentions.

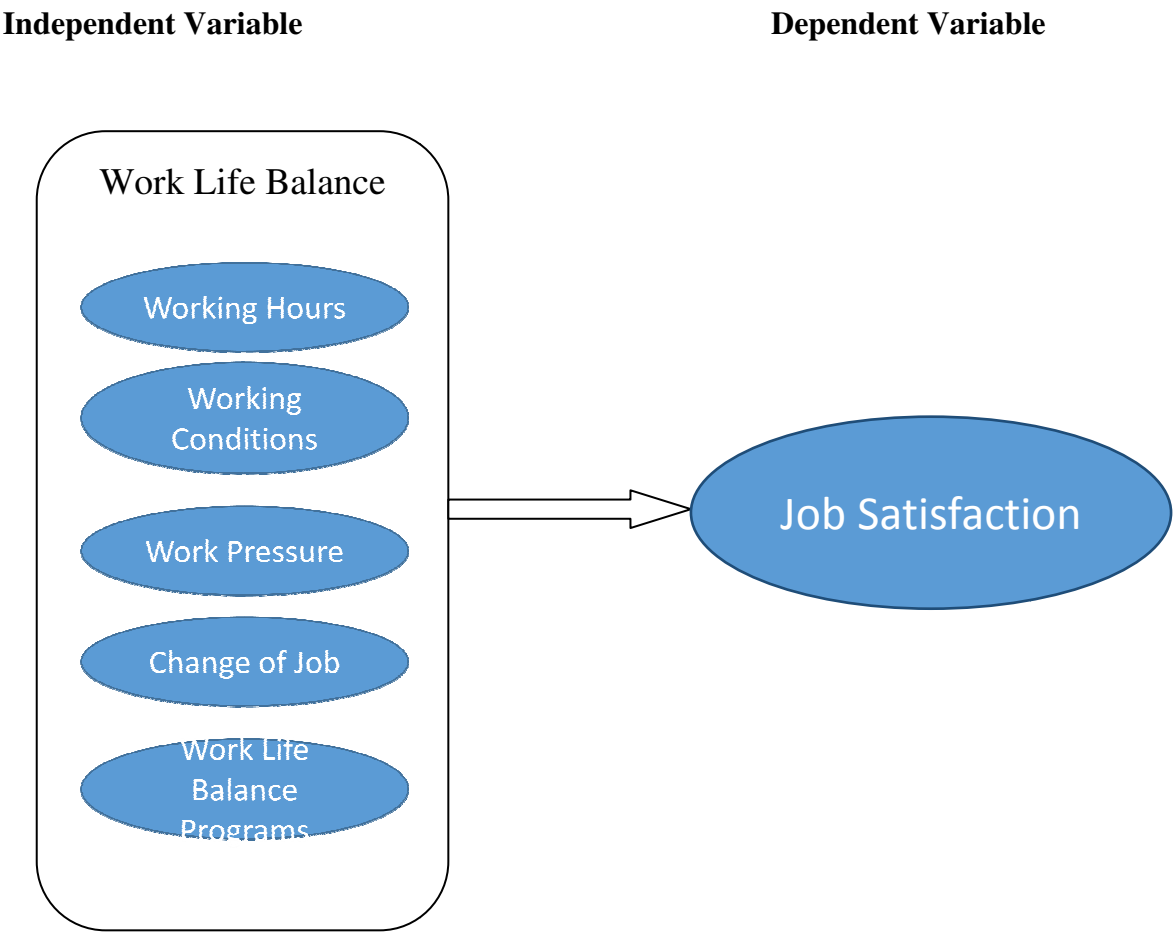
Quarat-ul-ain et al. (2013) conducted the study to examine the relationship of job satisfaction with role conflict and impact of job stress on the relationship in private banking sectors employee in Pakistan. Data is collected from 350 employees through questionnaire. Data is analyzed using SPSS, Correlation and ANOVA test. Study results shows that role conflict share a positive relationship with job stress and negative relationship with job satisfaction.

Gayathiri&Ramakrishnan (2013) conducted study to investigate the concept of quality of work life and to analyze nature of relationship it have with job satisfaction. The result indicates that the concept of work life quality is multidimensional and it influence employee's use of skills, knowledge, relationship with other and professional interaction and collaboration. Positive relationship exists between job satisfaction and quality of work.

Yadav&Dabhade (2013) conducted research to analyze the relationship that exists between work life balance and job satisfaction of the working women. Sample is collected from education sector and banking sector. Data is collected from 150 women employees 75 women from each sector. Authenticity of data is analyzed through application of standard deviation. The results indicate that work life balance and job satisfaction share significant relationship.

9. Research Framework

Figure 1. Research framework for the study about Impact of work life balance on employee job satisfaction.



Prepared by the Researcher

10. Hypotheses

H1: There is a significant relationship between Working hours and employee job satisfaction.

H2: There is a significant relationship between Working conditions and employee job satisfaction.

H3: There is a significant relationship between Work pressure and employee job satisfaction.

H4: There is a significant relationship between Change of job and employee job satisfaction.

H5: There is a significant relationship between Work-life balance programs and employee job satisfaction.

11. Research methodology

As a measure of data collection, it uses a self-structured questionnaire which includes closed questions in retrieving data and current status of factors affecting job satisfaction through work life balance.

Whistle primary data is collected through questionnaires with five point likertscale of Strongly Agree, Agree, Neutral, Agree and Strongly Disagree and secondary data has also been collected from books, magazines, research journals and web sites etc.

From all employees in different positions of private sector commercial banks here it has a counting of 150 heads as the sample where it is selected from the G*Power tool analysis.

The researcher has selected probability sampling design for the study in which simple random sampling is used. Researchers preferred simple random sample over the others because it provides the assurance that sample will accurately reflect the population on the basis of criteria used for simple random sampling (Cooper & Emory, 1995) (Johnson & Christensen, 2010). Sampling method is selected depending on the on the population since there are several number of employees among a bank and each element has a known and equal chance of being selected simple random sampling method is taken.

Data are being analyzed in identifying the relationship and impact of work life balance factors on job satisfaction of employees of private sector commercial banks. Therefore, the analysis is more Object Oriented.

Quantitative data analysis tools are used to analyze the collected data. Descriptive statistics are used to describe and interpret the results of the study. Correlation analysis more specifically Pearson correlation coefficient is used to measure the degree of association between selected work life balance and employee job satisfaction. From inferential statistics, Regression analysis is used to test the hypothesis of the study.

Data is been analyzed through Statistical Package for Social Sciences (SPSS). Descriptive Statistics, Correlation and Regression analysis has been applied to draw the results of the study.

12. Discussion

H1: There is a significant relationship between Working hours and employee job satisfaction.

39.0% variance in employee job satisfaction is enlightened by work life balance, which is evident by the value of R=0.390, at p=0.648 illustrates the model's goodness of fit, Significant positive relationship between predictor and predicted variable is evident by the value of t=0.458 .Therefore, based on the results it can be inferred with confidence that H1 is rejected.

H2: There is a significant relationship between Working conditions and employee job satisfaction.

40.6% variance in employee job satisfaction is enlightened by work life balance, which is evident by the value of R=0.406, at p=0.674 illustrates the model's goodness of fit.

Significant positive relationship between predictor and predicted variable is evident by

the value of t=0.422. Hence, on the basis of these results it can be inferred with confidence that H2 is rejected.

H3: There is a significant relationship between Work pressure and employee job satisfaction.

75.3% variance in employee job satisfaction is enlightened by employee participation,

which is evident by the value of R=0.753, at p=0.000 illustrates the model's goodness of fit. Significant positive relationship between predictor and predicted variable is evident by the value of t=4.242. Therefore, on the basis of these results it can be inferred with confidence that H3 is accepted.

H4: There is a significant relationship between Change of job and employee job satisfaction.

75.6% variance in employee job satisfaction is enlightened by Merit based promotions & performance based pay, which is evident by the value of R=0.756, at p=0.00 illustrates the model's goodness of fit, Significant positive relationship between predictor and predicted variable is evident by the value of t=3.832. Therefore, based on the results it can be inferred with confidence that H4 is accepted.

H5: There is a significant relationship between Work-life balance programs and employee job satisfaction.

74.0% variance in employee job satisfaction is enlightened by grievance handling procedure, which is evident by the value of R=0.740, at p=0.001 illustrates the model's goodness of fit, which is not satisfactory. Significant positive relationship between predictor and predicted variable is evident by the value of t=3.527. Hence, on the basis of these results it can be inferred with confidence that H5 is accepted.

This study has reported the findings from the statistical procedures used to answer the research questions. This study incorporates to researcher's efforts to recognize the impact of work life balance on employee job satisfaction in private sector commercial banks of SL. Specifically, the study is guided by two research questions:

1. What are the main work life balance linkages experienced by the employees?

2. What relationship exists between work life balance and job satisfaction on employees?

The study identified that there is a significance and a correlation among work life balance and job satisfaction and the linkages which it has strong effect for that significant and correlation. Moreover, some of the factors used in measures of work life balance are significant and with job satisfaction where some are not. According to the analysis the hypotheses that are tested and happened to be insignificant are;

H1: There is a significant relationship between Working hours and employee job satisfaction.

H2: There is a significant relationship between Working conditions and employee job satisfaction.

Where the following three hypotheses are found highly significant;

H3: There is a significant relationship between Work pressure and employee job satisfaction.

H4: There is a significant relationship between Change of job and employee job satisfaction.

H5: There is a significant relationship between Work-life balance programs and employee job satisfaction.

Previous studies also support findings of this study. Parvin and Kabir (2011) from their study shows that organizations should provide work life balance facilities to their employees so that employees can perform their duties effectively and leads organization to the success. Ezra and Deckman (1991) revealed in their research that satisfaction with work/life balance is a major component of employee's job satisfaction. A study by Dev 2012, conducted in India indicates that work-life balance is significantly correlated with job satisfaction in the banking sector. A study was conducted by Maren et al. (2013) to analyze work-life balance and job satisfaction among teachers exposed a negative relationship between work-life conflicts and job

satisfaction. The study suggested that if organizations offer facilities to reduce work-life conflicts, it will lead to improvement in employees' job satisfaction. Chahal et al. (2013) suggested to increase the efficiency of the employee's bank should timely appraise their employees and encourage them to work hard because satisfied employees are reason for the success of the organization. When employees are satisfied with their jobs they become loyal and committed to the organization. According to the research paper, Is Happiness Relative? an effective work life balance makes a person happier and more content (Veenhoven, 1991).
Nadeem and Abbas, (2009) found in their study that work pressure/stress is negatively correlated with job satisfaction in both private companies and public companies. Further Fatima and Sahibzada (2012) conducted a study on work-life balance in the universities. They concluded that due to heavy workload in universities, staff become dissatisfied. Hence, universities should develop strategies that could facilitate faculty needs to balance between work and life activities to achieve competitive advantage.Research by Rose (2003) also found an insignificant relationship among the job satisfaction and workload.

Saleem et al. (2013) found in their study that job stress have an impact on job satisfaction of employees in banking sector of Bahawalpur. Ashfaq et al. (2013) also found that work pressure has a relation with employee job performance in banking sector of Pakistan. Since work pressure has a significant impact on job satisfaction, organizations can promote employee job satisfaction by distributing job duties according to the employee's skills and clarify their tasks to each employee so that they can perform their work on time to reduce their work pressure.

This study has also found out that there is a significant correlation relation of work life balance programs on employee job satisfaction in private banking sector. It is supported by other studies also. For example, Ueda, (2012) concluded that work life balance programs have positive and significant effect on employee job satisfaction of full time and part time employees working in business organizations of Japan. According to findings of this study these programs help employees to reduce their work burden and they will effectively perform their job and not job activities. Accordingly, banking sector can increase employee's job satisfaction by increasing work life balance programs for employees, which is likely to help them manage their job life.
The study further has found that working hours and Working conditions do not have a much impact on employee's job satisfaction level because employees of private sector commercial banks since they have made it a norm to work long hours and give more priority to their job activities than non-job activities in their life. Also, as in most private sector organizations private sector commercial banks provide Working conditions to their employees by making the working environment more convenient, providing sufficient tools, equipment, organizing unleash events and atmospheres.
Findings of the current study further revealed that work life balance is significantly positively correlated with job satisfaction so by increasing the work life balance the job satisfaction of employees could also be increased.

13. Recommendations

The overall goals and objectives of the private commercial banks would be achieved if and only if employees are satisfied with the job. This could be achieved through different work life balance experiences. Through the source for employees satisfaction, employees become loyal and willing to stay in the organizations because, job satisfaction of employees reduce absenteeism and turn over intentions in private banks. Moreover, the

need and expectations of employees also play a vital role in increasing of employees' satisfaction through implementing two ways of communications and then by continually evaluating the work life balance practices of the banks as well.

Private commercial banks should revise and make an adjustment on certain rules and procedures that hinders the employees not to perform with their maximum effort since it has an effect on employees' level of satisfaction. It is recommended that the management of respective banks should be able to increase the level of commitment in banks by increasing satisfaction with the specified work life balance practices.

Each bank has to create a link between work pressure, change of job and WLB programs for the job satisfaction by preparing job descriptions and specifications; deciding terms and conditions of WLB policies; inside and outside the banks and should take other necessary measurements as well.

14. Suggestions for Future Research

This study examined the impact of work life balance and job satisfaction of employees of private sector commercial banks. This study can be replicated with samples as a whole of banking industry or as a comparison between private and public banking sector employees.

Analyzing satisfaction levels across work life balance and job satisfaction can help management to identify factors that contribute to the satisfaction or dissatisfaction of the employee of the bank. It is suggested that researchers need to pay more attention to different other factors in future studies of work life balance on job satisfaction behaviours.

Relationships with colleagues, subordinates and superiors, as well as perceptions of culture and climate of the institution, can significantly impact on job satisfaction (Hagedorn, 2000). Even though this dataset does not report these variables for individuals , it is believed that these are important factors for assessing work life balance linkages on job satisfaction of women and men separately in particular. In order to explore this matter in depth, it is suggested that interviews with focus group should be carried out, especially with women. An extension of the quantitative survey, interviews will add rich data to fill the voids left by the survey in addition to complimenting the survey data by allowing continuing employees to express in their own words their perceptions of their work life balance and job satisfaction. The qualitative data, therefore, drives this research. The feedback will support and strengthen the findings of this research. The mixed-method study will contribute more as the issues will be explored in depth rather than solely based on the numbers and figures.

Job satisfaction continues to be a challenging variable to predict, in part because there are number of facts that contribute to job satisfaction rather work life balance. Further research to determine the variables that affect job satisfaction should be conducted, such as using confirmatory factor analysis. Confirmatory factor analysis also allows the researcher to test the hypothesis that a relationship between the job satisfaction variables and their underlying latent construct(s) exists. Because this study used data solely from private sector commercial banks, it would be useful to know whether or not similar results can be found with the banking sector as a whole.

15. Limitations of the study

There are some common limitations for the researches of same also include in this as well,

- The sample size chosen for the above studies is not a true sample of the population which results in failure to generalize the results. Therefore their results may not be applicable to the banking sector as a whole.
- Modernization of the banking sector has resulted in increased use of information and communication technology. Even though, stress due to information technology was not considered much.
- Though focus is mainly towards studying work-life and job satisfaction level in private sector commercial banks, the same with respect to public banks and savings banks are very narrow.
- Time has become one of the major limitations as it has to be involves in other academic activities, therefore it had to run out of time in meeting projects tasks due to other pre- set priorities.
- The research is carried out in Sri Lankan content so the world environment is not considered where it could be found other different factors as results.

16. Conclusion

The goal of this study is to augment the knowledge of impact of work life balance on employee job satisfaction. This study revealed work life balance is significantly associated with job satisfaction. However, this study did not explore the level of satisfaction among gender across employees. This study focused primarily on analyzing work life balance on job satisfaction across five factors of Working hours, Working conditions, work pressure, change of job and WLB programs without considering the variety of demographic and professional variables.

In summary, this study has added information to understanding private sector commercial banks as having complex social scenarios with a variety of work conditions among organizations. The findings of this study offer suggestions for improvement of job satisfaction through work life balance.

- It is suggested that consideration be given to the development of guidelines in order to ensure that work load should not affects the WLB of employees. Whereas employees can reduce the pressure of work by prioritizing their work.
- Top management should realize the importance of work life balance and its adverse effect on job satisfaction.
- The need of policy is required to cater this problem. Different policies and strategies are needed for the people at different type jobs and at different stages of their career.

For the institution it is intended, the use of this information can include policy making to improve employees work conditions, managerial processes, guidance for work life balance practices, and inform about valuable aspects of organizational change. In a broader sense, the study also revealed that work environment is not only related to how they feel in their workplace, but also how they think about their life.

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Conflict Prognosis: The COMESA Early Warning System in Perspective

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Abstract
Peace and Security issues have taken centre stage in the institutional framework of regional organizations. Organizations that were hitherto preoccupied with the economic and political agenda have hastily infused issues of peace and security in their legal regimes. This has been given impetus by the realisation that economic and political integration will remain a mirage if issues of conflict and insecurity are not tackled. Consequently, measures to prevent conflict have been established. Early warning units have dotted every regional organisation. The Common Market for Eastern and Southern Africa[1] (COMESA),guided byvarious policy organ decisions and the COMESA Treaty, has established an early warning system that seeks to address structural factors to conflict. This article therefore discusses the COMESA Early Warning System (COMWARN). It highlights the major features of the early warning model. Limitations of the model are also flagged out at the end.

Key Words: Early Warning, Structural Vulnerability, COMWARN, Conflict, COMESA

1. Introduction

Regional integration or regionalism has emerged as a promising remedyto challenges of development. With regionalism,various initiatives to foster development have emerged and they include: the creation of Free Trade Areas (FTAs), Custom Unions, Economic Communities anda diverse array of other regional institutions dealing with different sectors of the society and economy. Regionalism theorizes that communities with close proximity, inter-linkages in cultures and ways of living and possibly similar interests face fewer impediments in their development trajectory. However, experience has revealed that, glitzy as regionalism is, it has always been hampered by conflict. Proliferation of conflicts has watered down the much touted objectives of regional integration.

Thus,the proliferation of conflict has prompted regional organisations to institutionalise issues of peace and security by developing mechanisms of dealing with conflict and insecurity in their respective regions. The institutionalisation of the peace and security agenda is anchored on the realisation that Africa cannot achieve

[1]The Common Market of Eastern and Southern Africa (COMESA) is a Regional Economic Community (REC) or block in Africa. It is composed of nineteen (19) Member states (Burundi, Comoros, Djibouti, DR Congo, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, Zimbabwe) spanning from Southern Africa, through Central and Eastern Africa up to North Africa. In 1994, COMESA succeeded its former predecessor, the Preferential Trade Area (PTA - formed 1981) with an objective of creating a Customs Union

its economic goal of a unitary economic community if the sub-regions are afflicted by conflicts (see for example Lancaster, 1991 and Mwagiru, 2010). To achieve peace and security on the continent, a framework - Africa Peace and Security Architecture (APSA) was developed. Under the APSA framework, the African Union (AU), through the Continental Early Warning System (CEWS) has been mandated to take the lead in conflict prevention with support from the regional blocks. Within the APSA framework, regional mechanisms have been developed to compliment the Continental Early Warning System efforts in conflict prevention. These include the COMESA Early Warning System (COMWARN) of the Common Market for Eastern and Southern Africa (COMESA), the Conflict Early Warning and Response Mechanism (CEWARN) of the Inter-Governmental Authority on Development (IGAD), the Early Warning and Response Network (ECOWARN) of the Economic Community of West African States(ECOWAS), the Central Early Warning System (MARAC) of the Economic Community of Central African States (ECCAS), the National Early Warning Centres (NEWCs) of the Southern African Development Cooperation (SADC), the East African Early Warning System (EACWARN) of the East African Community (EAC).

Despite the institutionalisation of regional early warning systems, it is apposite to note that studies in early warning systems in Africa (Cilliers, 2008; Cilliers, 2005;Mwaura and Schmeidl, 2002; Mwagiru, 2002; Mwagiru, 2010) with the exception of Porto (2013: 125) have largely focused on the CEWS, CEWARN and ECOWARN as units of analysis this is premised on the fact that these were the only early warning mechanisms in existence for a long time.COMWARN, has thus, been developed to compliment the earlier mechanisms. The establishment of COMWARN underscore the importance of subsidiarity, harmonization and coordination between the AU and REC's thus warranting scholarly interrogation. Therefore, this article stands out as a pioneer study in this area. By addressing the foregoing gap, the article contributes to both peace and security literature on the subject area. Conflict scholars have long written on early warning that primarily uses qualitative data as the ones cited but a few have analysed an early warning system that makes use of quantitative data. This article describes COMWARN as a model that relies predominantly on quantitative data. The paper begins by debunking the key concepts that relate to the subject area, it looks at the evolution of early warning systems both globally and in Africa. The paper ends by describing the COMESA Early Warning System (COMWARN).

2. Debunking the Concepts

Conflict prognosis can be understood from the prism of conflict prevention. It involves an accurate diagnosis of envisaged conflict situations with an interest of "averting the outbreak of violence and armed conflicts by pursuing a multi-stakeholder approach" (Ahmar, 2013:3). Conflict prevention has also been understood as the application of structural or diplomatic measures to keep low-level or long-fostering tensions and disputes from escalating into violent conflict, but it can also apply to efforts to limit the spread of violence if it does occur, or to avoid the reoccurrence of violence. Ideally, it should build on structured early warning, information gathering and a careful analysis of the factors driving the conflict (UN, 2008).

According to Carment and Schnabel (2003)conflict prevention is "a medium and long-term proactive operational or structural strategy undertaken by a variety ofactors, intended to identify and create the enabling conditions for a stableand more predictable international security environment." This definition seems to be more elaborate in that it takes into cognizance the development of actionable frameworks and apportions

responsibilities to different actors. It can be dissected into two, that is, direct prevention and structural prevention. Direct prevention involves immediate or short-term interventions that are designed to halt potential conflicts. This may involve diplomatic engagement with various actors. In most cases direct or operational prevention involves short-term, targeted mechanisms to "contain or reverse escalation" during a crisis. Strategies for direct or operational prevention include early warning and early response, preventive diplomacy, economic measures, and the use of military force (Shoemaker, 2005). Structuralprevention involves deliberate and concerted efforts aimed at addressing the root causes of conflicts along with potential escalators and trigger factors (Wanström and Weissmann 2005:19). In essence, it is preoccupied with addressing the crux of the problem which, in the long run, triggersconflict. It may entail addressing issues such as exclusion, poverty, ethnicity, and electoral systems, among others. It is apt to mention that the United Nations (UN) has given priority to conflict prevention as evidenced by the UN Charter authorising the Security Council, the Secretary-General, and the General Assembly in Chapters VI and VII to "settle disputes peacefully and to prevent the outbreak of wars and other forms of armed confrontation." Chapter VI contains a series of preventive devices such as "fact-finding, negotiation, mediation, conciliation, judicial settlement, and arbitration"(Ackermann, 2003).

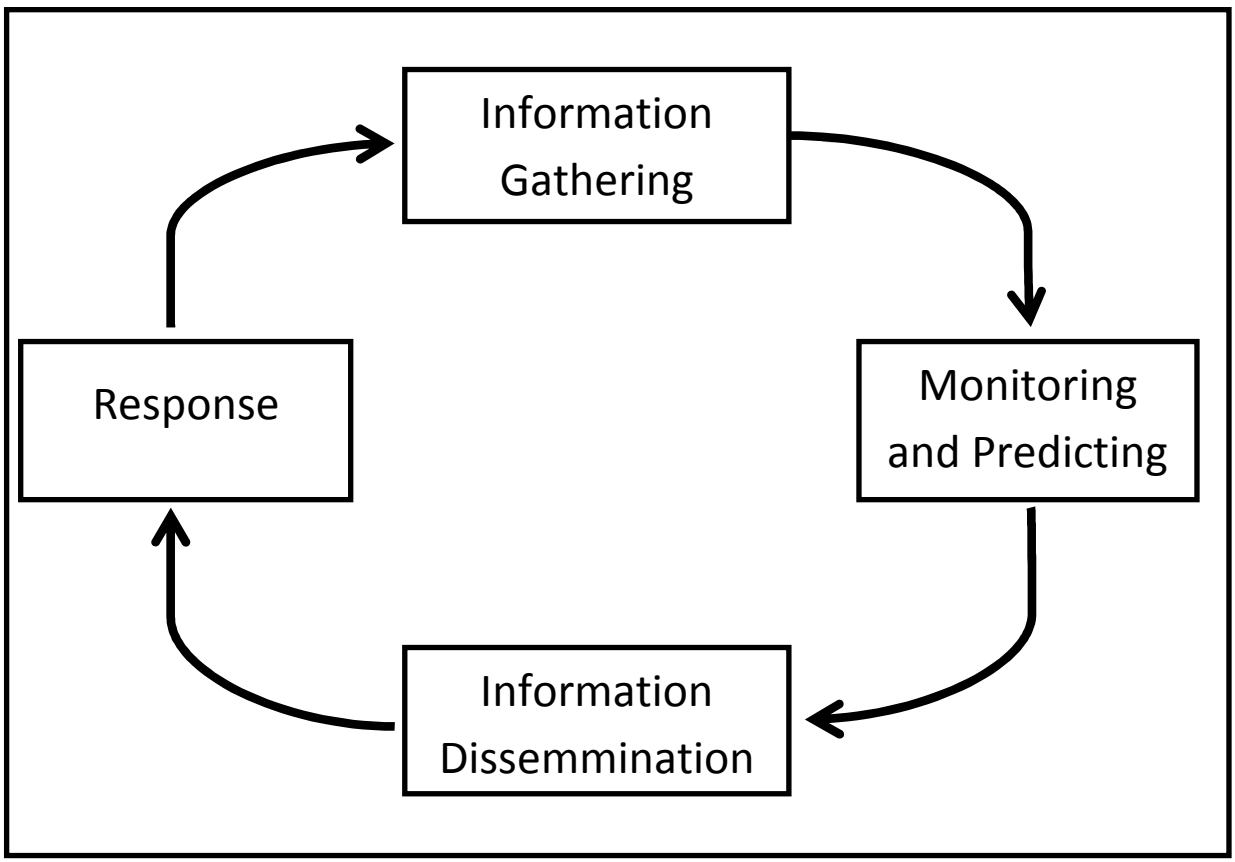
Conflict early warning, on the other hand,involves the processes of gathering information, analysis and offering policy response options. According to the Forum on Early Warning and Early Response (FEWER), early warning is a systematic collection and analysis of information coming from a crisis area and the provision of policy options to influential actors. Early warning has been used to predict a wide range of phenomena, from natural disasters, to stock market crashes, famines, refugee flows, and genocide.Nathan (2013) cogently notes that models of early warning system are currently being integrated into the policies of many governments, multilateral agencies and NGOs all over the world. In addition, several early warning systems or models and networks have been developed to assist, in particular, governments to identify and address conflicts at their nascent stages.

According to Austin (2004: 129-150)an early warning system entails a process that is hitched on the systematic collection of data, its analysis and the formulation of recommendations. From the foregoing discussion,we assert that data collection is central in driving the early warning agenda. Data forms the lifeblood of an early warning system. It suffices to note thatmore robust early warning systemsmake use of both qualitative data collected from open sources (newspaper, magazines, organizational reports), and quantitative data extracted from time-series data. The United Nations through the International Strategy for Disaster Reduction (ISDR) outlines four critical components that encompass an early warning system:

I. Information gathering: this entails gathering information from various sources, preparing mitigation options;
II. Monitoring and Predicting: involvesmonitoring situations in different settings and offering predictions that form the basis of intervention (either short-term or long-term);
III. Disseminating information: relaying information gathered is critical for potential actions. The communication needs to be reliable and timely, and the message needs to be succinct and easy to interpret;

IV. Response: response from actors is critical for a robust early warning system. The response needs to be swift and well-coordinated by the various actors involved in a situation (UN, 2006). The four components thus guide our description of the COMESA Early Warning System (COMWARN). The four (4) components can be summarized in figure1.

Figure 1: Four Components of Early Warning System



Source: Authors schematic representation

3. The Emergence of Early Warning Systems

The emergence of earlywarning systems in the 1950s is traceable to the events leading to the growth and expansion of military science. During this epoch, the Cold War protagonists developed Early Warning Units within the military intelligence to enhance their ability and capacity to predict potential attacks (Simon and Niels, 2006). In the 1960s and 1970s, early warning was given a boost by advancements in technology and statistical analysis (Matveeva 2006: 9). Matveeva (2006) further postulates that governments during this historical eraallocated large budgets to research to understand political behavior. This action according to her, gave impetus to further developments of early warning systems. With expansion of liberal democracy in the 1990s, both national and international organizations began to be fascinated byearly warning information with a view of developing tailor-made programmes that were cognizant of the predicted realities. It is noteworthy that the speedy evolution of the conflict early warning discourse since its conceptualisation has been propelled by the urgent need for accurate, timely and predictive information in order to prevent conflict; the advances

made in quantitative and qualitative analytical tools; (Díaz, 2012)and the need to reduce costs of war, both human and financial.

Rupesinghe (2005) identifies three generations of early warning systems. The first generation entailed an early warning system being housed in the West, far away from the battle fields. This system predominantly relied on secondary information from newspapers and organizational reports. The second generation shifted the early warning system from the "headquarters" to the specify country/region where conflict was prevalent. This shift was brought about by international organizations that started functioning in these conflict-affected regionsor countries. Despite the fact that the country or region became the epicenter for early warning systems, the analysis of field information continued to be carried outat the headquarters. A look at the African continent, the Economic Community of West African States (ECOWAS)has established an early warning systemthe ECOWAS Early Response Mechanism (ECOWARN) that befits the description of the second generation. They have constituted a pool of field monitors who gather information. The information is then transmitted to the headquarters for analysis.The Inter-Governmental Authority on Development (IGAD) through its early warning system – CEWARN follows a similar framework. The third generation of early warning systems are those that have been established by locals what Rupesinghe (2009:11) calls "early warning and early response system of citizens by citizens and for citizens." This typology of early warning systems is premised on the assumption that:

> Closeness to the conflict area enables one to understand the situation better and intervene rapidly and appropriately. By so doing, it intends to reduce the number of victims by preventing direct violence in community-based conflicts (micro conflict) (Rupesinghe 2009:11)

In Africa most pastoralist communities have informal early warning systems that can be classified in the third generation typology. In most cases they are not institutionalized. In Kenya the *nyuma kumi* concept can be construed as an early warning system that falls under the third generation. It is being championed by citizens and for citizens.

How then has the concept of an early warning system emerged in Africa? To answer this question, it is paramount to interrogate the conflict situation onthe continent. Africa has been described as a hotbed of conflict for many decades. In the immediate post-independence era, interstate conflicts took centre stage. Arbitrary boundaries superimposed by the outgoing colonial masters became a source of contention among the newly independent states. The international and regional call forthe respect of sovereignty and territorial integrity led to the decline of border disputes between and among states. With the end of theCold War and emergence of globalisation, new threats to state security have emerged threatening the well-being of the Westphalia state. Generally,the Hobbesian syndrome forming the basis for the abuse of power, tribal politics, economic and socio-political marginalisation, mal-electoral practices, and bad governance hasbrewed discontent among the populace and also fermented a plethora of security threats ranging from riots and strikes, insurgency and insurrection, coups and attempted coups, and election-related violence. In addition, religious extremism has been at the forefront of most terrorist activities. This has prompted continental, regional and national shiftsin terms of policy planning and actions. The emerging security challenges have triggered

interest in the establishment of early warning systems that are designed to deal with latent or manifest conflict before it escalates into crisis or full-blown war.

At the continent level, the African Union (AU) has taken into cognizance the emerging security challenges. The AU adopted a protocol in 2002 that established the fifteen-member Peace and Security Council (PSC) as "a collective security and early warning arrangement to facilitate timely and efficient response to conflict and crisis situations in Africa" (International Peace Institute, 2012). The AU has established the Africa Peace and Security Architecture (APSA) which is modelledaround "structures, objectives, principles and values, as well as decision-making processes relating to the prevention, management and resolution of crises and conflicts, post-conflict reconstruction and development" onthe African continent. The main pillar of APSA is the PSC, a "standing decision-making organ for the prevention, management and resolution of conflicts". It is established according to Article 2 of the PSC Protocol and in line with Article 5(2) of the Constitutive Act. The PSC is supported in the discharge of its mandate by various structures namely: the Commission, The Panel of the Wise (PANWISE), the Continental Early Warning System (CEWS), the African Standby Force (ASF) and the Peace Fund. Regional Economic Communities (RECs) and/or Regional Mechanisms (RMs) in Africa followed suit by developing early warning systems to propthe early warning pillar of the CEWS. This is in tandem with the CEWS legal regimes.

4. COMESA Early Warning System (COMWARN)

Regional EconomicCommunities (REC) have become invaluable vehicles for African countries to propelintegration. The logic is that the RECs can incrementally promote integration and in the long run pave way for one integrated political unit (read African Economic Community (AEC)). However, there has been realisation that conflicts have been a hindrance towards achieving this goal. Due to the proliferation of conflicts on the continent, the debate on the role of regional blocks in conflict prevention and management has gained much momentum in the recent past. Under the principle of subsidiarity, RECs are becoming critical actors in resolving conflicts in member states. A cursory look at the existing treaties of the RECs indicates that issues of peace and security have been given prominence.

In the COMESA region, policy organs and other decision makers have realized that conflict, especially in the Great Lakes Region (GLR) has significantly negatedthe pace of regional integration. To ameliorate the problem, COMESA member states have made a deliberate decision to include matters of peace and security in the integration master plan. In 2005 for instance COMESA member states made a decision to allow the Secretariat to establish an early warning system that would complement the CEWs.Drawing from the Treaty and other council decisions, an early warning system (COMWARN) has been established to track structural factors to conflict. Structural factors are defined as the existing systemic variables conditioned by decades and centuries of interactions with regard to external, regional and internal power relations (global and local governance). In this paper, we conceive structural factors as the prevailingsituations that form the pre-conditions forconflict. In other words they are the root causes to a conflict situation. The structural factors are characterized as (1)they are mostly static – they change slowly over time; (2) they are embedded (linked) to the historical/cultural context e.g. colonialism, globalisation, capitalism and (3) they are intertwined with other factors for them to causeconflict.

The COMESA Early Warning System (COMWARN) is primarily hinged on structural factors[2] (the structural layer). It utilizesa database model that thrives on statistical indicatorswhilst at the same time infusing dynamic data (the dynamic layer) to enrich the analysis and early response to conflict. Specifically, the structural layer of COMWARN employs the Structural Vulnerability Assessment (SVA) methodology to identify drivers (explanatory structural factors) with a potential of sustaining or improving the target variable (the COMESA Peace and Prosperity Index - CPPI) both at regional and country-specific levels. The lucidity behind dealing with structural factors or root causes to conflict is to try and "stem the conflict in the bud". The dynamic layer benefits from periodic peace and security reports created primarily from dynamic data collected from credible open sources including from media, international humanitarian organizations, research institutions and think tanks, among others. It basically adds credibility to the structural interpretation by giving more accurate and detailed meaning in line with the evolving dynamics.

The 14th meeting of the COMESA Ministers of Foreign Affairs (MOFAs) adopted an index which is a composite of four variables namely: Peace, Health, Wealth and Trade openness. Due to lack of appropriate measures, proxy indicators have been used in some cases without attenuating the provisions of the COMESA Treaty as enshrined in Article 3.

Table 1: The Composite Index

COMESA Peace & Prosperity Index (CPPI)			
No.	**Component**	**Description the Variable is Measured**	**Data Source**
1	**Peace**	Inverse of peak intensity of the HIIK conflict scales	Heidelberg Universityhttp://www.hiik.de/en/konfliktbarometer/index.html
2	**Health**	Inverse of child mortality	World Bank http://data.worldbank.org/data-catalog
3	**Wealth**	GDP per Capita (PPP)	World Bank http://data.worldbank.org/data-catalog
4	**Trade Openness**	Trade (% of GDP)	World Bank http://data.worldbank.org/data-catalog

Source: COMWARNPrimer

[2]A council decision was made by COMESA member states in 2010 that informed the establishment of an early warning system that focus primarily on the structural factors of conflict.

The selection of the four (Peace, Health, Wealth and Trade Openness) variables is guided by the provisions of Article 3 of the COMESA Treaty. A series of deliberations and consultations led to the final agreement to use the four variables as they were more reflective of the objectives articulated in Article 3 of the COMESA Treaty. Specifically,Article 3(a) aims at attaining sustainable growth and development of member states by promoting a more balanced and harmonious development of its production and marketing structure. This Article seeks to enhance the easy movement of factors of production within and between member states in the COMESA region. Thus, this aspect is represented by the variable "economic integration" which is measured as trade openness in the COMWARN model. Article 3(b) of the Treaty seeks to promote joint development in all fields of economic activity and the joint adoption of macro-economic policies and programmes that raise the standard of living of citizens and foster close relations among member states. An essential aspect of this sub-article is the improvement of standards of living of the populace. The COMWARN model is cognizant of the fact that improving standards of living is critical in reducing regional and national vulnerability to conflict. Therefore, it uses the variable "health" which is measured as inverse of child mortality to reflectthe improvementsinliving standards as encapsulated in Article 3(b). The theoretical underpinning behind the selection of this variable is hinged on the fact that improving the health standards of citizens, will in the long run provide a fertile ground for peace and prosperity to flourish. The overriding assumption is that a healthy population is a productive population. On the other hand, an unhealthy population overburdened by diseases is most probably unproductive therefore making the state and its citizen vulnerable. As noted by Mclnnes (2008) health problems such as the spread of infectious diseases pose an exogenous threat to the people of a state. According to him:

> a pandemic may cause social disruption and threaten the stability of a state: confidence in the state may be reduced if it cannot provide a basic level of protection against disease; social inequalities may be highlighted as the rich or privileged obtain access to better drugs or healthcare, potentially leading to public disorder; if large numbers of people die or are unwilling/unable to go to work, public services may be placed at risk threatening the functioning of a state; violence and disorder may appear if the authorities become unable to cope and if groups feel they have nothing to lose.

Article 3 (c) of the Treaty espouses the need to cooperate in the creation of an enabling environment for foreign, cross-border and domestic investment including the joint promotion of research and adaption of science and technology for development. In particular, the sub-article primarily underscores the need to enhance material well-being by creating wealth as a means of reducing regional and national vulnerability to conflict. Wealth creation in this case, is tethered to capital formation that includes employment, harnessing existing resources, building infrastructure, providing education, among otherdevelopments. The underlying assumption is that a wealthy population is less susceptible to violent conflict. Thisviewpoint has been challenged by scholars (see for example Hippe, 2002) who contend that predisposition to poverty does not cause conflict or make a society vulnerable to conflict. At the flip side of it, scholars have founda theoretical correlation between poverty (read lack of wealth creation) and conflict. In their monograph titled *"Assessing long-term state fragility in Africa: Prospects for 26 'more fragile' countries"*Cilliers and Sisk (2013) argue that poverty undeniably is linked to conflict. In their analysis of 26 more fragile countries they established that these countries were indisputably poor, experienced cyclic violence, characterized by exclusion and inequality

and had weak governance structures. Their findingsbuttress the decision by COMESA to include "wealth" as a variable in the Index (read CPPI) to measure the level of vulnerability to structural conflict/violence.

Under Article 3(d) of the COMESA Treaty, member states aim to cooperate in the promotion of peace and security and stability among the member states in order to enhance economic development in the region." Article 3(d) underscores the importance of peace in the realisation of development. In others words, it implies that member states can only enjoy economic dividends, if peace and security is guaranteed. Thus, the COMESA model uses the variable "peace" which is an inverse of the conflict barometer as conceptualized by the Heidelberg International Institute of Conflict (HIIK) in its composite Index (CPPI)[3]. The conjecture here is that peace is a stimulus for wealth creation - opens borders for trade to blossom and ultimately improves the standard of living (health) of a people. This, in the long run reduces vulnerability to conflict, hence "peace and prosperity."

The use of the four variables to form a composite Index (the CPPI) makes COMWARN a novel early warning model and differentiates it from other regional early warning systems. Apart from the provisions of Article 3 of the COMESA Treaty, other set parameters have been used in the selection of variables. They include (1) availability of data;(2) time span of the existing time-series data (at least spanning 10 years); (3) methods of data collection (systematic collection); and (4) comparability (time and space) of the data.To enhance the explanatory power of the model, 79 explanatory indicators/variables have been infused into the model with a possibility of increment whenever necessary. The explanatory variables assist in the analysis of the composite Index also referred to as the "target variable" or "dependent variable". The 79 explanatory indicators provide directions of the structural factors that are impacting positively or negatively on the CPPI. The explanatory indicators have been selected based on a baseline survey that was conducted to interrogate structural factors that are linked to conflict in the COMESA region. To ease analysis and shape policy options, COMESA policy organs categorized the 79 explanatory variables or independent variables into 8 baskets[4]:

a. Governance: The basket constitutes indicators/drivers that relate to the management and performance of governments. They seek to highlight the importance of policies, institutional performance, perception, among others, in improving the CPPI. They include: functioning of government, government economic effectiveness, government economic legitimacy, polity durability, government political effectiveness, political pluralism and participation, polity democracy, polity autocracy, governmentpolitical legitimacy,associational and organizational rights, domestic cooperation, rule of law, personal autonomy and individual rights, freedom of expression and belief, electoral process, women parliamentarians, and perceptionof corruption.

b. Education: The education basket encompassesindicators/drivers that seek to improve human development. The drivers under this basket are outlined as:secondary school enrolment, for both male and female, school students to teacher's ratio, primary school enrolment for both male and female, tertiary institutions enrolment, and youth age dependency.

[3]COMESA Peace and Prosperity Index (CPPI) – also referred to as "target" or "dependent variable" or "index"

[4]Some of the 79 explanatory variables can be categorized in more than one basket. This does not in any way skew interpretation.

c. Health: This basket constitutes indicators/drivers that relate to the state of social and physical well-being of the population. It also includes government efforts in fighting infectious diseases and improving the standards of living. The drivers in this basket include: female and male life expectancy, birth rate, total health expenditures, government health expenditures, public health expenditures, female mortality, standard of living – water, standard of living - sanitation, infectious diseases, elderly age dependency (above 64), disaster deaths-by population, and disaster affected-by population.

d. Social: The social basket is composed of drivers that are closely associated with government's ability to provide goods and services that improve the social welfare of its citizens. It entails, but is not limited to poverty reduction measures. The drivers under this basket include: youth age dependency (under 15), elderly age dependency (above 64), government social effectiveness, government social legitimacy, population density, urban population,refugees by origin, disaster deaths-by population, disaster affected-by population and women parliamentarians.

e. Environment: The environment basket includes drivers that are related to the environment include energy efficiency, protected land, protected waters and agricultural land.

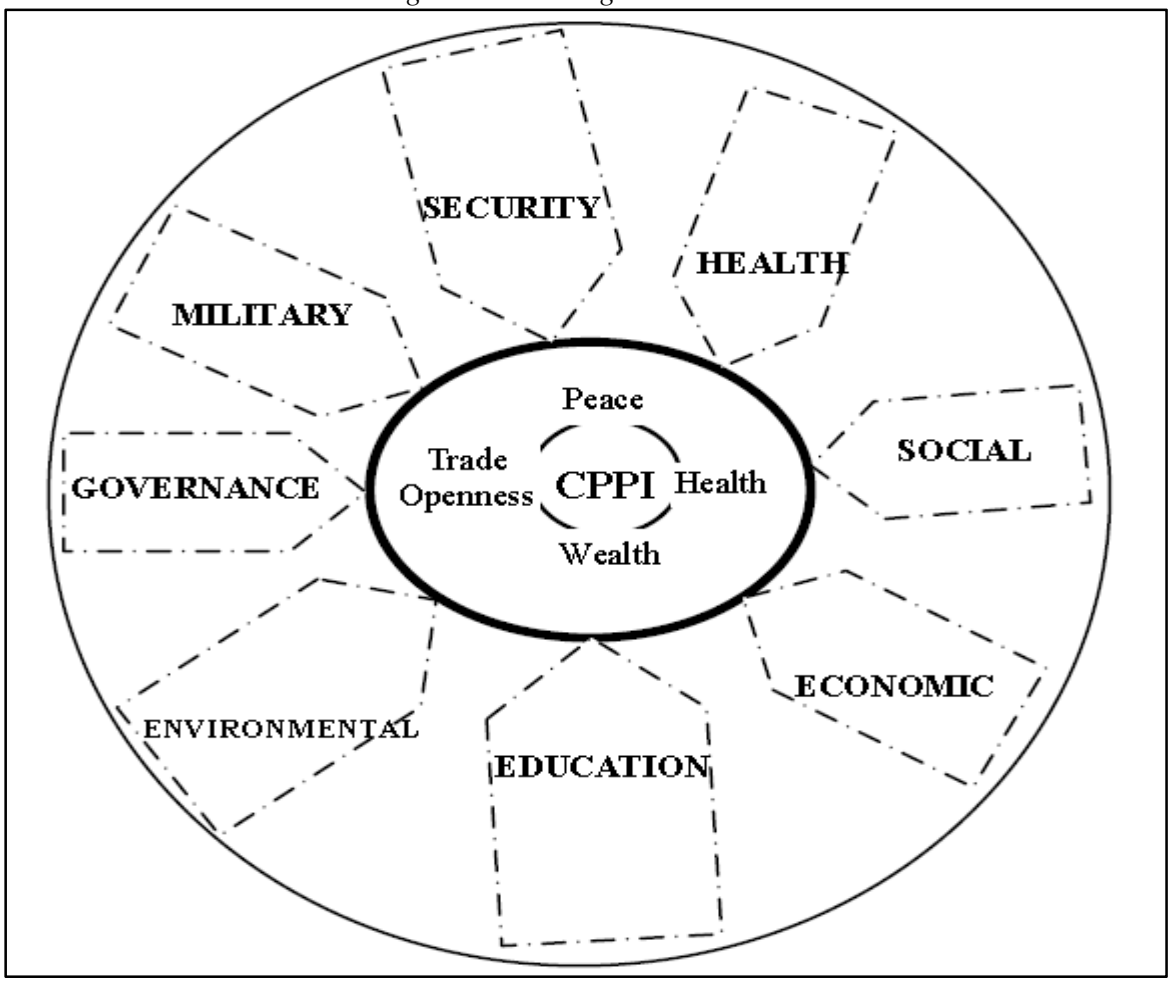
f. Economic: Economic basket comprises drivers that relate to economic issues as understood in the COMWARN model. The drivers under this basket are associated witheconomic development. It is composed of the following drivers: government-economic effectiveness, government-economic legitimacy, agricultural land, energy efficiency, natural resource rents, food production, livestock production, employed females, female youth employment, male youth employment, foreign debt obligations, foreign aid received, foreign direct investment, inflation, foreign debt payments, external debt repayments,government expenditures, capital formation and economic growth.

g. Security: The security basket is defined as structural factors that relate to state security and include, regional violence, country violence, neighbour violence by borders, regional violence by countries, battle deaths, bomb deaths, domestic conflict, international conflict, domestic cooperation, international cooperation, refugees by origin, refugees in asylum, government security effectiveness, neighbour violence, and government security legitimacy.These indicators are mainly collected by international research organizations such as Centre for Research on the Epidemiology of Disasters (CRED), Stockholm International Peace Research Institute (SIPRI) among others. These indicators are tracked periodically.

h. Military: The basket contains drivers that relate to defense and battle-related issues. It includes military personnel, militarisation-weapons sub-index, militarisation-expenditures sub-index, military expenditures, militarisation-personnel sub-index, bomb deaths and battle deaths. The model can be summarized as shown in figure 1 below, with the CPPI at the nucleus consisting of the four variables that make it a composite index or dependent variable. The 8 baskets on the

outskirts are packaged with independent variables (read Drivers) that have an association with the composite index (CPPI) and also influence or drive it.

Figure 1: The Eight Basket in relations to the CPPI



Source: Authors modeling

5. The Structural Vulnerability Assessment (SVA) Methodology

In terms of functionality, the SVA methodology[5] requires the specification of a target variable (CPPI) to be forecasted as well as a broad range of comparable structural indicators that are perceived to drive the target (CPPI). In addition, it requires specified time-series (cumulative) data or indicators dating back to at least ten (10) years. This allows the creation of a structural indicator data set or country profiles for the world, continent and region over at least the past decade through tothe present which can be compared at set intervals against the target (CPPI). This helps in providing evidence-based structural vulnerability forecasts using the target (CPPI). After creating historical profiles, a process of learning is used to establish a link between historical profiles of structural indicators and past levels of conflict and forecast future levels of the CPPI from past and

[5]Originally developed for the African Union (AU) and customized by COMESA for COMWARN.

present structural indicator profiles. This helps to support the contextualised diagnoses of structural vulnerability drivers. The model can also triangulate the forecasted CPPI results with country, regional and global data. After learning, it assigns probability scores of intensity or closeness to a certain level of each target at each interval that can be used to explain future associations to forecasted levels of the target. This also helps to identify the common or shared structural indicator drivers for each forecasted level of the CPPI and diagnose each of the individual, country-specific structural indicator effects. This supports the formulation of contextualized structural prevention and mitigation options based on the diagnosed structural indicator profiles. In summation, we posit that the COMWARN SVA methodology seeks to:

a. Provide a systematic approach for the purposes of periodic prioritisation of countries at risk for longer-term structural vulnerability
b. Provide evidence-based structural vulnerability forecasts using the CPPI
c. Support contextualized diagnoses of structural vulnerability drivers
d. Support the formulation of structural prevention and mitigation options

6. Input, Processingand Output: The Compilation of COMWARN Data

The COMWARN model is a symphony that utilizes both qualitative and quantitative data. In scientific research, qualitative data deals with designs, techniques and measures that do not have numerical data (Mugenda and Mugenda, 2003: 155 -156). On the other hand, quantitative data is described as "designs, techniques and measures that produce discreet numerical data or quantifiable data" (Mugenda and Mugenda, 2003). Jwan and Ong'ondo (2011: 4-5) observe that quantitative data in most cases consists of frequencies with definite categories. The categories can be structured as ordinal or cardinal depending on thecomplexity levels of measurement.Superior statistical techniques are thus used to compute such data (Jwan and Ong'ondo, 2011). In spite of the fact that the model utilizes the two typologies of data, it is apposite to note that the COMWARN SVA model predominantly relies and utilizes time series data (quantitative data) that is collected from various global data sources. The use of qualitative data gathered from open sources complement interpretation. The selection of the data to be used in the model is dependent on the 79 explanatory variables[6]. The model predominantly depends on data that has been collected by international organizations. This was proposed by COMESA policy organs in order to ensure that the data used in the model is standardized. In other words the region lacks data that has been systematically collected using the same methodological processes[7]. Some of the repositories that the COMWARN SVA model extracts structural data from include: the World Bank, Heidelberg Institute of International Conflict (HIIK) Transparency International (TI), Centre for Research on the Epidemiology of Disasters (CRED), Major Periods of Episodic Violence (INSCR-MPEV), the State Fragility Index (INSCR-SFI), and Freedom House (FH) among others. Datafrom these institutions thus allows for standardized data that complies with the COMWARN SVA model. At this point, one may argue that the model is designed using a western yardstick. It is noted that it is member states that provide the required data to these institutions, which enables them to put the data in a coherent format that can

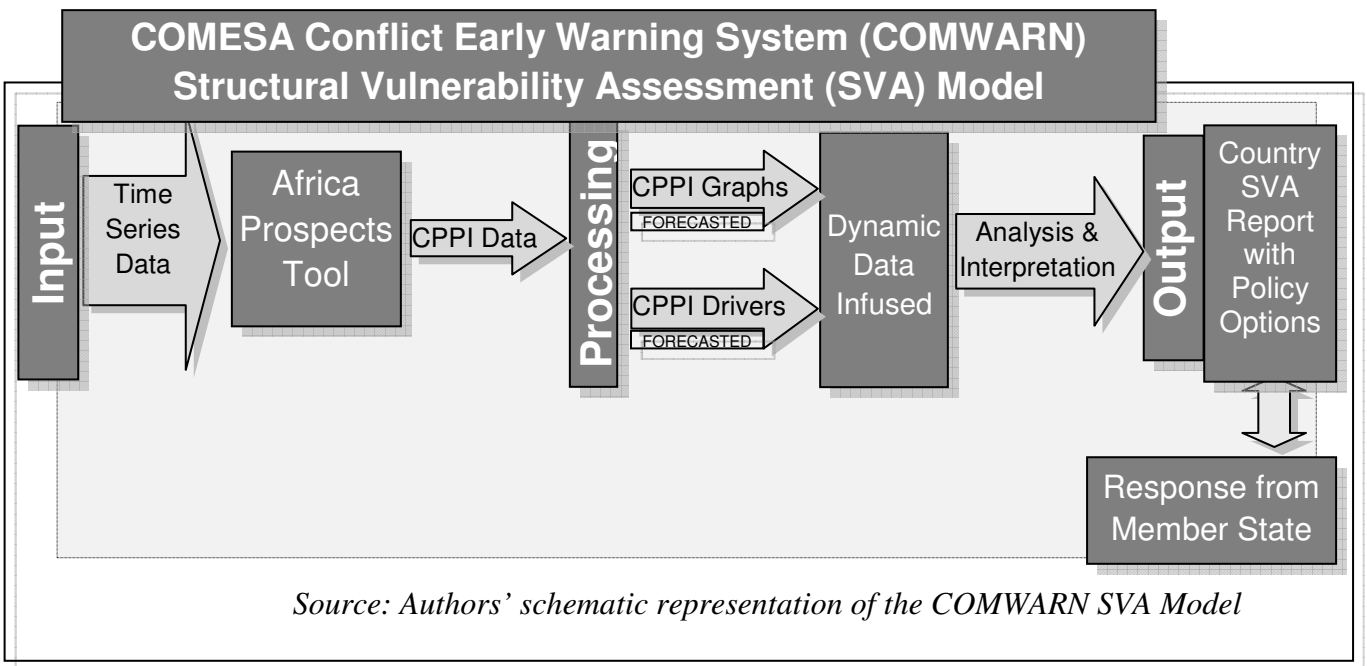
[6] The Number of the 79 variables currently being utilized is not caste on stone. It may change with time based on the emergence of new variables that are considered useful to the model and availability of data on the selected variable.

[7] In most cases member states employ different methodology in collecting data regarding different aspects of societal life for example school enrolment, employment, youth dependency among others. There is no standardized framework for collecting, coding and collating the collected data that cuts across board in the COMESA region.

be easily consumed by those who are interested in making constructive use of the data. Therefore, pessimist views on the data usage in the SVA model may be overstretched.

The data extracted from various global data sources are then loaded to the tool –Africa Prospects[8]. Africa Prospects is software that is loaded with formulas that compute, standardize, normalize and triangulate the input (data). The internal mechanism of the tool gives output of forecasted data which includes CPPI values and graphs, regional and country specific drivers. It is from the output that the analyses of structural factors that are associated with a high or low CPPI are discussed and mitigatory policy options are drawn. Results that depict a high CPPI imply that the country is less vulnerable to structural factors of conflict while results reflecting a low CPPI infer vulnerability to structural factors of conflict. It is at the stage of analysis that dynamic data is infused into the SVA analysis. Figure 2 indicates a schematic representation of the COMWARN SVA model.

Figure 2: COMWARN SVA Model



Source: Authors' schematic representation of the COMWARN SVA Model

As figure 2 suggests, the COMWARN model operates as a robust system with each part feeding into one another. The model has the following characteristics:

a. Interdependency: Just like any other model, the different parts of the COMWARN SVA model are interrelated. This implies that no part can operate without the other. For example the tool depends onaccurate data for it to function optimally while the interpretation component also depends on the output (CPPI data, graphs, and drivers)from the toolfor it to assign meanings.

[8]The Africa Prospects is a tool that was developed by the African Union (AU)and shared with COMESA though mutual cooperation agreement.

b. Recursive process: The process involves going back and forth. This process involves data verification, and drivers' verification. The idea is to enable analysts to have confidence inthe final output. The response component also entails recursive engagement between the COMESA secretariat and the consumers of the SVA reports – the member states.

c. A living model: the model operates like a living organism that needs revitalisation by inputting new data. Secondly, the explanatory variables in the model can change at any particular time depending of their usefulness

d. Focus on the longer term, structural influences and constraints: The model supports very early warnings thereby facilitating an emphasis on structural prevention rather than on crisis intervention or after the act mitigation of effects.

e. GIGO – Garbage In, Garbage Out: The model is very much dependent on accurate data entry as this contributes to accurate results**.**

Like other models COMWARN model has some limitations. Some of the limitations include:

a. Lack of data on some indicators especially those that relate to security issues. This may skew analysis.
b. Delay in the release of data which affects the preparation of structural vulnerability (SVA) reports
c. The assumption that historical data determines the future cannot be entirely generalized. This is based on the assumption that historical data may not capture current events for example the breakout of Ebola. Historical data may not anticipate such events.

7. Conclusion

From the foregoing discussion it is apparent that conflict prevention largely depends on having a robust early warning system that can detect conflict symptoms at the earliest time possible. The efforts to establish early warning systems both at the continental and regional level are a step in the right direction. However, there is need to link early warning and early response. Secondly, there is need for synergy between the different early warning systems in the continent. A platform should be established to facilitate information sharing among the different early warning systems on potential structural triggers to conflict. The platform will provide a platform for sharing best practices and lessons learned among and between the different early warning systems. Certainly, the success of the COMESA Early Warning System (COMWARN) hangs on its continued acceptance as well as timely and positive response from the MemberState. COMWARN should be viewed in line with other early warning systems in the continent. The more conflicts are nipped in the bud, the more human, financial and other material savings the region expects to gain, and consequently with other facets of integration streamlined, the trajectory will be less thorny and more expedient.

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On Some Covering Properties of B-open sets

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1. Abstract

In this paper we introduce and study the concepts of b-open set, b-continuous functions, then we also study the concepts of b- compact subsets and study some new characterizations of b- separation axioms such as b-T_2. Then we discuss the relations between the b-continuous functions and these concepts.

Keywords

b-open set, b-compact , b-open cover , b-closed sets , b-continuous

2. Introduction

Generalized open sets play a very important role in General Topology and they are now the research topics of many topologists worldwide. Levine [7] introduced the notion of semi-open sets and semi-continuity in topological spaces. Andrijevic [2] introduced a class of generalized open sets in topological spaces. Mashhour [9] introduced pre open sets in topological spaces.The class of b-open sets is contained in the class of semi-open and pre-open sets. n this paper we discuss the covering properties of b- sets and b- continuous functions. All through this paper(X ,τ) and (Y,σ)stand for topological spaces with no separation assumed, unless otherwise stated. the closure of A and the interior of A will be denoted by Cl(A) and Int(A) , respectively.

3. Preliminaries

Definition 3.1 A subset A of a space X is said to be [2],[10]:

1. Semi-open if $A \subseteq Cl(Int(A))$

2. Pre open if $A \subseteq Int(Cl(A))$

3.α -open if $A \subseteq Int(Cl(Int(A)))$

4. β -open if $A \subseteq Cl(Int(Cl(A)))$

5. b-open if $A \subseteq Cl(Int(A)) \cup Int(Cl(A))$

Definition 3.2. A function f : X → Y is called . [1] , [9]:

1. semi continuous if $f^{-1}(V)$ is semi open in X for each open set V of Y .
2. pre continuous if$f^{-1}(V)$ is pre open in X for each open set V of Y .
3. α -continuous if $f^{-1}(V)$ isα - open in X for each open set V of Y .
4. β -continuous if $f^{-1}(V)$ is β -open in X for each open set V of Y .
5. b-continuous if $f^{-1}(V)$ is b-open in X for each open set V of Y .

Definition 3.3 [10] A space X is a b-T_2 space iff for each x, y ∈ X such that x ≠ y there are b-open sets U, V ⊂ X so that x ∈ U, y ∈ V and U ∩ V = ∅ .

4. Covering Properties

Definition 4.1

Let $\{G_\alpha : \alpha \in \Delta\}$ be a family of b-open sets of the space X . the family $\{G_\alpha : \alpha \in \Delta\}$ covers X if $X \subseteq \bigcup_{\alpha\in\Delta} G_\alpha$.

Definition 4.2

A space X is called a b-compact space if each b-open cover of X has a finite subcover for X.

Theorem 4.3

Let A be a b-compact subset of the b-T_2 space X and $\notin A$. then there exist two disjoint b-open sets U and V containing x and A , respectively.

Proof :

Let $y \in A$, since X is b-T_2 space there exist two b-open sets $U_x, V_y \in X$ such that $x \in U_x, y \in V_y, U_x \cap V_y = \phi$, the family $\cup\{A \cap V_y : y \in A\}$ is open cover of A has a finite subcover $\{A \cap V_{y_1}, A \cap V_{y_2}, \ldots, A \cap V_{y_n}\}$, thus $U = U_{y_1} \cup U_{y_2} \cup \ldots \cup U_{y_n}$.

Theorem 4.4

If X is b-T_2 space and A is a b-open subset , if A is b-compact then A is a b-closed.

Proof:

Let $x \in X - A$,by the theorem 4.3 there exist two b-open sets U and V such that $x \in U, A \subseteq V, U \cap V = \phi$, thus $x \in U \subseteq X - V \subseteq X - A$,which implies $X - A$ is b-open so that A is b-closed .

Theorem 4.5

Let A and B be a two b-compact subsets of the b-T_2 space X , then there exist disjoint b-open sets U and V containing A and B , receptively .

Proof:

Let $b \in B$, since A is a b-compact subset and b-open in X , there exist two b-open sets

U_b , V_b such that $U_b \cap V_b = \phi ; b \in V_b , A \subseteq U_b$, **so** $\beta = \{B \cap V_b ; b \in B\}$ is a b-open cover of

B , since B is b-compact subset there exist finite subcover $\{B \cap V_{in} ; 1 \le i \le n\}$ from β .

Let $U = \bigcap_{i=1}^{n} U_{b_i}$, $V = \bigcup_{i}^{n} V_{b_i}$, thus $A \subseteq U, B \subseteq V, U \cap V = \phi$.

Theorem 4.5

Let $f : (X, \tau) \to (Y, \rho)$ be a continuous surjection open function , if X is a b-compact then Y is a b-compact .

Proof:

Let $\beta = \{V_\alpha : \alpha \in \Delta\}$ be a b-open cover of Y , then $L = \{f^{-1}(V_\alpha) : \alpha \in \Delta\}$ is a b-open cover of X .since X is a b-compact space , there exist a finite subcover from L to the space X . such that

$$X \subseteq \bigcup_{i=1}^{n} f^{-1}(V_{\alpha i}) \text{ , thus } Y = f(X) \subseteq f\left(\bigcup_{i=1}^{n} f^{-1}(V_{\alpha i})\right) = f\left(f^{-1}\left(\bigcup_{i=1}^{n}(V_{\alpha i})\right)\right) = \bigcup_{i=1}^{n}(V_{\alpha i})$$

Hence $Y \subseteq \bigcup_{i=1}^{n}(V_{\alpha i})$, this shows Y is a b-compact .

Corollary 4.6

B-compactness is a topological property

Proof:

The proof from theorem Theorem 4.5.

Definition 4.7:

A family of sets β has "finite intersection property" if every finite subfamily of β has a nonempty intersection.

Theorem 4.5

A topological space is compact if and only if any collection of its closed sets having the finite intersection property has non-empty intersection.

Proof:

Suppose X is b-compact, i.e., any collection of b-open subsets that cover X has a finite collection that also cover X. Further, suppose $\{G_\alpha : \alpha \in \Delta\}$is an arbitrary collection of b-closed subsets with the finite intersection property. We claim that $\bigcap_{\alpha\in\Delta} G_\alpha \neq \phi$ is non-empty. Suppose otherwise, i.e., suppose $\bigcap_{\alpha\in\Delta} G_\alpha = \phi$. Then $\bigcup_{\alpha\in\Delta}(X - G_\alpha) = X - \left(\bigcap_{\alpha\in\Delta} G_\alpha\right) = X - \phi = X$. Since each G_α is b-closed, the collection $\{X - G_\alpha : \alpha \in \Delta\}$is an b-open cover for X. By compactness, there is a finite subcover L such that

$X = \bigcup_{i=1}^{n}\left(X - G_{\alpha i}\right)$. But then $\bigcap_{i=1}^{n} G_{\alpha_i} = \bigcap_{i=1}^{n}\left(X - \left(X - G_{\alpha_i}\right)\right) = X - \left(\bigcup_{i=1}^{n}\left(X - G_{\alpha_i}\right)\right) = X - X = \phi$, which contradicts the finite intersection property of $\{G_\alpha : \alpha \in \Delta\}$.

Conversely , take the hypothesis that every family of a b-closed sets in X having the finite intersection property has a nonempty intersection .we are to show X is compact. let $\{G_\alpha : \alpha \in \Delta\}$ be any b-open cover of X. then $\{X - G_\alpha : \alpha \in \Delta\}$ is a family of b-closed sets such that $\cap X - G_\alpha = X - \left(\bigcup_{\alpha\in\Delta} G_\alpha\right) = X - X = \phi$. Consequently , our hypothesis implies the family

$\{X - G_\alpha : \alpha \in \Delta\}$ does not have the finite intersection property . Therefore , there is some finite sub collection $\{X - G_{\alpha_i} : i = 1,2,3,\ldots,n\}$ such that $\bigcap_{i=1}^{n} X - G_{\alpha_i} = \phi$ and hence

$X = \bigcup_{i=1}^{n} G_{\alpha_i} = \bigcup_{i=1}^{n}\left(X - \left(X - G_{\alpha_i}\right)\right) = X - \left(\bigcap_{i=1}^{n}\left(X - G_{\alpha_i}\right)\right) = X - \phi = X$.

Thus $X = \bigcup_{i=1}^{n} G_{\alpha_i}$, implying X is b-compact.

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Significance of offering a context specific language teaching in contexts persistent of cultural constraints

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Abstract

The purpose of this article is to identify and offer solutions to challenges experienced by pre-services teachers in using isiXhosa as a medium of instruction in teaching Biology and Life Orientation and at the same time language challenges experienced by medical school students in examining patients with abdominal sicknesses (Genitary Urinary Systems) where cultural constraints are dominant. The article focuses on student dilemmas in conveying required information because cultural embeddedness into the language.

Keywords: second language, medical jargon, terminology, communication, multilingualism, cultural sensitivity,

Introduction and contextual background

For the purposes of this article two language lecturers from two universities working in collaboratively to look beyond the surface of the criticality of not undermining the cultural embeddedness nuances into isiXhosa. In one university pre-service teachers were observed and in the other (university) medical school students were observed.

Pre-service teachers were interviewed during the second session of practice teaching were interviewed regarding their experiences in using isiXhosa as a medium of instruction for Scientific learning areas, and a language to conduct interviews in the clinical settings. The study comprised of twenty four (24) 4th year students studying towards teaching and thirty (30) 3rd year students studying towards becoming medical doctors. However, for the sake of this article, similar language matters will be reported and be the focus. Such challenges could range from participants' struggles on teaching students during the pre-service teaching and interviewing patients in isiXhosa where meaning could be lost because due to avoidance of cultural sensitive terms and concepts. In this context, avoidance can result into patients not getting the real diagnosis of their sickness, the same way that meaning could be compromised in teaching students curriculum appropriate terms with understanding. In which case meaning gets lost in trying to avoid sounding rude or less

There are many significant reasons for promotion of multilingualism in South African classrooms. These include exposing students to other languages used by other speakers in the form of second language learning. The benefit of such approach would prepare students to function fully in our diverse societies, and prepare them meet the language needs in the world of work. Particularly in a medical context where language is not just a barrier but could have serious life and death implication in case diagnosis was misinterpreted. Addressing patients in the language they understand is of significance in the medical context to avoid miscommunication of diagnosis which could be a predicament for the patient and medical practitioners. Also, the use of language is important to build a relationship between the medical context which the language reflects and creates (Young 2009).

Young's assertion is critical since misunderstandings generally occur due to a breakdown of communication as a result of an inaccurate expression on the part of the speaker, or the receiver's unintentional misinterpretation of an utterance, which according to Thomas (1983) is also referred to as pragmatic failure. Pragmatic failure in the words of Thomas (1983) often occurs when the illocutionary force of utterance, such as a request, has not been taken into consideration, resulting in speaker intent and hearer interpretation not matching. This is critical to a medical context and therefore requires the communicative competence to be well developed for optimal understanding.

Theoretical framework

The article uses theory of cognitive dissonance, cultural linguistics and Perkin's theory of difficulty as a framework to explain the classroom processes leading to this article.

Cognitive dissonance is employed because for teachers to express a spectrum of beliefs about the role of culture in suppressing meaning of concepts in meeting the needs of linguistically and culturally diverse students in Human sciences and Health Sciences. Although both pre-service teachers and medical students' creativity was restricted, cultural traits in the language does not really acknowledge the needs of students the language is intended for. To such that, the curriculum appears irrelevant and at time impractical due to the language's cultural embodiment. As a result, pre-service teachers and medical students implemented what they found to be for their students by adjusting the curriculum.

The theory of conceptual difficulty (Perkins, 1993) allows us to understand the language difficulty students grapple with. His notion of difficulty views language as a set of cognitive skills and a set of practices which entail the ability to synthesise information, comprehend meaning, evaluate content and searching information. Jurneidd's (1991) language management model helped to explain the implementation of multilingual interventions and the impact on understanding key concepts beyond the surface meaning. Thus, it becomes imperative for language for language practitioners to be aware of the manner in which cultural sensitivity can constraint learning and create predicament and stagnancy in progression.

Cultural linguistics is used for this article because culture plays a bigger part of isiXhosa language and to some extent has been molded to the task of expressing that community's culture. As a result, cultural concepts are embedded in language, and the framework of each language contains culturally specific features, traits and characters.

Method

This is an exploratory study. The research process involved analysis of terms taught in class, terms spoken in the clinics, analysing curriculum documents and relevant study materials. This study uses probability methods in that the selection is a simple random where the whole population is available and each member has an equal and known chance to be selected. Probability methods include random sampling, systematic sampling and stratified sampling. The advantage of the probability sampling is that the error can be calculated. Sampling error is the degree to which

In order to gain specific knowledge for a specific problem in this specific situation, the study found some of the principles of action research appropriate (Cohen and Manion 1994a: 194) While action research is not a method or a technique, its nature of being applied research which is carried by practitioners who have identified a need for change or improvement, it assists to arriving at recommendations on good practice that will tackle the problem or enhance the performance of the organization and individuals through changes to the rules and procedures within which they operate (Denscombe 2010:12).

Data Collection

Data are collected by means of observations, interaction with students and through reviewing study materials. For the purpose of this paper it two sets of data were used. One collected from the medical school by observing the manner in which students were struggling with the words taught and how language lectures had trouble in explaining these terms at university. The second part of data were collected from a Primary School where students that were taught Life Sciences learned body parts with caution whereby alternative words were used but the same way they were taught at home, this is not real terms but those used in the name of respect and sound less rude. Participant observation enables researchers as is possible to share the same experiences as the subjects, to understand better why they act the way they do. The researcher has to be accepted by the individuals or groups being studied, this can mean doing the same job, or live in the same environment and circumstances as the subjects (Lutz 1986:108).

Significance of teaching a discipline specific language to medical students:

Jargon used in clinics

Teaching isiXhosa to medical students who have not been exposed to isiXhosa or less exposed to the languages is a great but mammoth task. Our curriculum strive to maintain the language pure of any slang, code-mixing or code-switching or even leaning towards Xhosalising some of the difficult terms. However, the clinical jargon students get exposed to through clinical visits informs us that, there is another layer of the language we cannot ignore. For the purposes of aligning our curriculum to the cause of teaching isiXhosa at Medical school, we are not only required to acknowledge it but to somehow include it in our study materials, in our classes during contact time and accept its existence even during assessment. Since it is a spoken language that mediates understanding between the patient and the doctor and other medical practitioners in clinical settings, it has to be "visible". This becomes a challenge because, although we attempt to keep the standardized nature of the language, the clinical jargon keeps demanding 'acknowledgement' which pushes us to change.

This demand compels us to adapt the language to use as "standard variety" words that are already used in clinics. These words are either borrowed or coined to express the scientific meaning they carry and convey a message that is well understood by the patient (Madiba, 2001). This adaptation tends to increase the vocabulary of isiXhosa in Health Sciences which should be plausible because it enriches the language pool. In turn, it does not only see the medical setting as a "language consumer" but also a contributor towards second language development.

A challenge for appropriating study materials

The nature of study materials we develop for students should be assisting them to learn more about what they learn in class so that they can communicate in the field. Although this is happening successfully, there is a constant need of appropriating the content as students use the language in clinical settings. Adjusting study materials may be a daunting task, however necessary, particularly when the understanding of the illness is based on clinical jargon more than the standardized variety. Below is an example of a set of terminology that has proven to us that meaning making is essential and of significance in this field. A term might not have an equivalent but a phrase explaining the medical term could assist to mediate understanding. This has been practical into explaining many terms during curriculum development and lesson planning. For example, when one refers to some of terms and concepts explained below, they become clear and applicable. Although this is a daunting task but it is worth the effort because maintaining intellectualization of African languages requires critical awareness on difficulties of forcefully aligning concepts to equivalents they do not have. This has tendency to provide a different meaning that is decontextualised, a phenomena that would create confusion, if encouraged.

A challenge to appropriate materials

Although this is the language that students may not necessarily share with patients, but it is imperative that they understand in case they have to explain the meaning as cases arise.

Urinary genital system – Amalunguomchamo. The Xhosa meaning of the phrase describes the function of the body part is not the equivalent of the system discussed. Literally the meaning refers to "parts of urine" which is far different from the intended subject. So, this requires a collective effort from all language planners to be aware of these differences in meaning and start developing phrases that speak to the context.

Urethra – umbhobhowomchamoosukakwisinyiophumelangaphandle, umbhobhookhuphaumchamo. Again, this speaks more to the function of the tubes that releases the urine to the outside of the body. It does not provide an equivalent. Although providing phrases, is plausible, students should always be made aware of the fact that isiXhosa at times does not require developing an equivalent but the functionality of the term or concept.

Ureters – imibhobhoesukakwizintsoiyekwisinyi; these also are tubes that run from the kidneys to the bladder. The term suggests the function but not the illness of this body part, which the lesson is intending to do. This often creates contrasting

Ubufazi- the term literally means womanhood which is more than a vagina. The terms then falls short of really addressing the real issues.

Ebufazini (to the womanhood)–locative of the private which is not a direct meaning for "vagina." So, these linguistic repertoires compels the language users to

Ubudoda (manhood not the penis – from the word indoda)

Ebudodeni (to manhood a locative)

Incindiephumaebufazini /idistshaji– this means a juice that flows put of womanhood not necessarily a "discharge" which is supposed to be.

Incindicould be any other juice, for example, orange juice (incindi ye-orenji)

Ukwabelanangesondo – sharing the corner of the blanket (having sexual intercourse)

Ukulalana – a slang word gaining popularity meaning to have sex

Igusha – a sheep referring to the vagina

Ibhiskithi/ikhekhe- a biscuit-referring to the vagina

ikuku- a cake – referring to the vagina

usisi- sister-referring to the vagina

inkomo-a cow-referring to the vagina; probably this carries a connotation of an expectation that when a girl grows up and gets married, lobola was in the form of cows and still is although now, it has been concerted to money because of migration and limitations of space within urban areas.

Iketile-the literal meaning is the "kettle" -referring to the penis

Iindawozokuhlala – referring to bums; Literally the term "iindawozokuhlala" means sitting places and in fact there is nothing taboo about using the word "*iimpundu"* when referring to bums. However, our languages in the context of talking about private parts of the body have suffered a certain level of stereotyping and labelling from us and were never given an opportunity to be used freely of stigma. This will take time to overcomeas more time is needed to find common understanding about which words are acceptable to us, users of isiXhosa before teaching phrases that are contrary to the real meanings.

As shown above with selected terminology, this kind of terminology, in a way creates difficulty for students who are taught the importance of embracing the culture embedded in isiXhosa, while on the other side, it denies them opportunities to understand real isiXhosa terms. So, when culture is treated as the basis for causing communication barriers in this context, students might find it difficult to communicate the diagnosis. This in a way might create many communication problems at the interpersonal level which would communication strategies that should determine the propriety of interaction (Wang Jian-Ying, 2014). However the challenge to teach the learners real words emanate from societal stereotypes that any of these words in African languages, particularly in isiXhosa, are regarded as rude and taboo. Words above, from ukulalana to the last word, were collected from a school where learners brought these with because that is how they were taught at home. The irony is, teachers of LifeSkills in their classes were using the same words that their families used.

Student attitudes towards learning isiXhosa

Students appear to warm towards isiXhosa and very keen to learn. However, they favour inclusion of isiXhosa in their elementary schooling years. They attribute their reasons to a number of issues such as: Learning isiXhosa at an early age would make it easier for them to adapt into the medical jargon. Master of any language requires greater exposure to it. So, learning it at an early age would make them part of a greater society a bigger society where multilingualism and diversity are embraced, as enshrined in the National Language Plan (2002). Although students appreciate the opportunity to learn isiXhosa at this stage, the still see the process as overbearing and an extra effort. This view, in fact speaks to a curriculum that is inclusive of all languages spoken in each province in the country (National Language Plan, 2002). As students yearn to master the language beyond conducting a three steps examination (Taking Personal Information, History and Medical History), they feel the need to express themselves clearly in the language and being able to probe deeper. At present, the challenge is to ask questions and being unable to create a conversation outside the three steps.

What more needs to be done:

Identify key terms that are regarded as "clinical jargon" and include them in the curriculum to eliminate "communication complexities". Although this is might attract a lot of work but the integration sessions and clinical visits, where students interact with patients could inform us. Currently, we make mention of them and stick t our standardized variety. Extend use of cases to clinical settings by making them available to clinical hospital and clinical staff. The same way in schools pre-teachers should be enabled to use terms and concepts, when teaching Human Physiology concepts where teaching of private parts is concerned, in language that is appropriate yet not compromising meaning.

One of the things could be **appropriateness of interpreting training**. Design and develop adequate study material that could strengthen the language expertise of interpreters that are already in the clinics we work with and extend the programme to other clinics, interpreting in the healthcare sector. This appropriateness could assist in developing training materials that could be used by healthcare institutions, teacher training institutions in partnership with HEIs to ensure that learners both in HEIs and schools benefit favourable from what is taught.

Promote isiXhosa among pre-service teachers, nurses, doctorsand admin staff that are already in the field, particularly those who studied before the programme of, "Language of Becoming a Doctor" which was introduced only 10 years ago at UCTand those in the –pre-teacher service programme who are preparing to make significant contributions towards language learning and language teaching. Currently, this is happening in a small scale but if we were to influence language change in the medical context, this would be expanded to reach out to many.

Start introducing isiXhosa in Year 1-Year 3, of Rehabilitation Sciences. In the first year we can deal with introduction of grammar and sentence structure and spend time on Communicating in the Context and in their year focus on developing interview questions, questionnaires and summaries that patients/clients are part of. That will eliminate overloading the curriculum when they do isiXhosa and will facilitate the gradual process of learning that currently takes place among students.

In both scenariosmedical students and pre-service teachers felt that learning isiXhosa early would equip them for a greater society and prepare them for the future benefit of their clients. This would then compel the university to design a language programme for foreign students who would not have exposure to the language. While this could have been the case, students asserted that, students who are from provinces where isiXhosa is spoken (the Western Cape and Eastern Cape) could in turn serves as tutors. That would eliminate the high levels of scarcity of students who have medicine and the language background. This would be an opportunity to have tutors who understand the medical field and the language of the patient. Should this be approach, a lot of money could be saved since the number of students in need of isiXhosa would be quite reduced. Students saw the need for additive bilingualism at an early stage to avoid overloading their studies in medicine, when isiXhosa could have been part of their learning from early stages. Particularly in the Western Cape, where isiXhosa although is a second or third language but second in dominance. Since the Language Policy of the province acknowledges isiXhosa, it would not be a difficult to enlarge the scale of policy implementation.

It would also raise the status of the languages being learned so that they "...attain value, in particular, economic and intellectual and social value" (Webb 2008:16). However the restrictions and suppression imposed by culture should be slightly removed so as to not compromise the actual meanings of the language. They tend to be unnecessary and stifles the language freedom to be but seem to confuse it with many meanings that are seem peripheral to the language. And in most cases, the substitute words are most appropriate in other contexts and have other meanings, a process that leaves students with a lot of words to learn throughout the process.

CLOSING REMARKS

This area of work needs more investigation which would involve scholars from all linguistics fields to find a way that will bring clarity to terms and concepts that will be acceptable among all, the society, the schools and institutions of higher learning. This clarity would assist other language planners and users from different language backgrounds to use it as a way forward to rework the curriculum in this area.

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COMPONENT-ORIENTED PROGRAMMING: OBJECTED-ORIENTED AND BEYOND

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Abstract
This paper addresses the following questions: What is software component? How to build component? What is component-oriented programming, and how the programming languages contribute in this new programming paradigm? Since the development of computer, scientists, computer experts, have been trying to find a better way to build software applications.
Numerous programming languages were developed, and the newer one has more power, capabilities to facilitate programming. Along with the newer, object-oriented capability languages such as C++, Java, C#, programming paradigm is also changed, from the structured to object-oriented, and to component-oriented programming. This paper considers books, and research papers on similar topics that might provide a deeper understanding of software component, and the answers to these questions above.

Keywords
Computer component, Programming languages, Object-oriented, Software application, Programming paradigm

I. INTRODUCTION

The computer technology has changed rapidly. A personal computer we buy today is much more powerful than the one we bought just three years ago. As with the changes in computer hardware, and the demands of the industries, the way we write computer program, to build application software is also changed. Computer researchers, experts have been finding a better way, more efficiency and more effective. Frohlic classified three software development paradigms: structured, modular and object-oriented [1]. Component-oriented programming could be considered as a new paradigm in software engineering even it has been around more than ten years [2].

Example of such programming includes Sun Microsystem's JavaBean, a reusable software component that can be manipulated in a builder tool. Some JavaBeans are GUI elements such as buttons, or check boxes. Others are more complicated components such as database viewer, data feeder [3].

In general, components are units of deployment. A software component is what is actually deployed. It is a separated, isolatable part of a software system in a component-based approach [4]. The unit of deployment is static such as a class, a set of classes, or a framework of classes that are bundled together into a package. A component can be regarded as a collection of one or more classes, but it is different from class.

II. SOFTWARE COMPONENT

In a component-based approach, components are similar to class. That is component define and create objects. Both components and classes implement functionality through the behavior descriptions called interfaces. However, unlike classes, components may be implemented by a single class, multiple classes, or non-object-oriented procedures. Moreover, component names, unlike class names may not be used as type names. In components, interfaces are types and are separate from implementations.

Ed Roman defines a software component is programming code that implements a set of well-defined interfaces. It is manageable, chunk of logics. Components are not entire application. It is just a piece of puzzle in an application [5].Heineman and Councill define a software component is a software element that conforms to a component model and can be deployed independently without modification to a composition standard. According to Brown (2000), a component is distinguished by three main characteristics:

. A component is an unit of deployment based on component model which defines the rules for component.

. A component provides a packet of one or objects implementation.

. A component is an unit of assembly for constructing a system. Each created using Object-Oriented Programming Language or other technology [6].

II. 1. COMPONENT MODELS

Software components must conform to the standards defined by a component model. A component model defines a set of standards for component implementations, naming, composition, and deployment [7]. There are several component models available today such as Object Management Group (OMG) CORBA Component Model (CCM), Microsoft's COM/COM+ family, and Sun Microsystems's JavaBeans and Enterprise JavaBeans (EJBs). For example, Microsoft's Component Object Model (COM) requires each COM

component must have an IUnknown interface. Sun Microsystems defines some main characteristics of JavaBeans as following:

. If a bean has a property X, it should have public methods setX, and getX to assign and return value of the property.

. If a bean can generate events of the class YEvent, it should include public methods: void addYListener(YEvent), and void removeYListener(YEvent).

II. 2. ELEMENTS OF A COMPONENT

- Interfaces. One important concept about component is that it has a clearly defined of interfaces. An interface standard is required to enable software elements interact with one another. It defines what can be an interface. A component supports a provided interface if the component contains all implementations of operations defined by the interface.
- Composition standard. A component should encapsulate all necessary data and operations to perform its task independently and separated from the operating system. From the definition, a component is an independent unit for deployment.
- Component model implementation. Is a set of executable software elements necessary to support the execution of components in a component model

III. COMPONENT-ORIENTED PROGRAMMING.

The concept of software components has been around for a long time, but computer professionals understood “components” in their own different ways. A similar situation for “Objects and Object-Oriented Programming” until the late 1980s then things cleared out with the development of the most popular, fundamental object-oriented programming language C++. Now object-oriented programming is widely understanding and accepted, and a new programming paradigm has begun to emerge. It is component-oriented programming, a combination of modular and object-oriented programming mechanisms.

There are many debates concerning what exactly are and are not components. Some experts say components are coherent packages of useful behaviors. Others concentrate on components as physical, deployable unit software. Regardless of the differences, the principle concept of Component-Based Development (CBD) is to build systems from well-defined, independent units. Many professionals in the software industry are beginning to see the Component-Based Development (CBD) is an interesting approach to application development. This approach promises the reducing cycle time for the development and improving the quality of software.

III. 1.SOFTWARE REUSABILITY.

Why object-oriented and component-oriented programming are widely accepted and gain popularity quickly? The key answer for this question is “Software reusability”. Both object and component-oriented programming have the software reusability advantage and benefit. Reusability is a very important concept in software engineering. It saves time, energy for programmers, developers in building applications and of cause it also saves cost for the firm in the software development process. Instead of building the application from the scratch, we can use existing, available software components and assemble them to form a software system, or an application. These software components are available from software vendor that included with the description of the quality, functionality, and system requirement of the components. The software component

vendor must be well knowledgeable and has expertise in the component development to ensure the quality of the software products.

IV. DEVELOPMENT OF SOFTWARE COMPONENTS.

For many years, software developers have been trying to build modular and reusable software components by developing models for these components, the way the components should be constructed so they can be connected and work with each other. The goal for application developers is to make integration of software components a reality, so components can be reuse, assemble to make application. How to build software components? We need to design the software components in an implementation-neutral fashion This level of software design is independent of programming languages, even the latest language, and programmer prejudices.

In developing software components, several rules must be followed. Architectural conventions and rule must be explicit, interfaces be specified clearly unambiguous. Typically, components will be assembled by users, persons who are not developers, and potentially long after they were built. Therefore the relationships between implementations, and interface specifications, and user requirements must be verifiable, testable in a systematic way.

The development of a successful component is a complicated task. Heineman and Councill believe that we can increase the chance of success by careful designing the Software Component Infrastructure, and each individual component. The design starts with clear objective, which states the performance, and the result in the design of a set of software components that will form the infrastructure of the final software system. Paul Allen gives a more detail how to develop components. The Component-Based Development (CBD) involves a wide range of provisioning strategies of which the development is only one part. It should emphasis on the market awareness of available components. The range of the CBD should across a full Software Development Life Cycle (SDLC) and also the reuse of component knowledge and models. According to Allen, the CBD involves three basic ideas:

1. Planning, analyzing, and designing. This is an abstract level in term of interfaces that offers adaptive business capacity to business processes.
2. Provisioning.Using implementation techniques that include the reuse of available software, outsourcing, and extending components bought in market to create new one.
3. Deployment.Integrate the component into an infrastructure that supports the executing, managing, and upgrading the solution as a set.

To facilitate the process of development of components, there should be a standardized way for building, manage, and maintain components. Roman states that this approach should include the following:

1. Tools for developing components. The process of building component should allow the developer to focus on coding the core logic behind the components. This will promote the rapid application development (RAD) technique. For instance, an Integrated Development Environment (IDE) such as the Symantec's Visual Café, IBM's VisualAge for Javaassists Java developers building, debugging components rapidly.

2. A container to manage deployed components. This component container provides runtime environment. It also provides a set of frequently used services for components. For example, the container could automatically instantiate new components as necessary, to relieve this burden for the developers.
3. Tools for deploying, maintaining components. This should come along with the components, when they are purchased from components vendors. For example, a company that buys a component should be able to customize it for a particular environment. The company should also be able to maintain the component for which it purchased.

IV. 1. PROGRAMMING MODELS.

Traditional programming model is primarily based on the composition of functions or procedures that are coded within a program or from a library. In this context, programming style is caller driven. According to Szypersky, interfaces list call points or procedures or functions. This does not change when moving from traditional to object-oriented programming. As long as the objects are passive, programming style still remains caller driven even object-oriented is considered a higher programming technique.

The programming model changes when emphasis in connections between objects rather that at callers. A connection is really a binding between a caller and a callee, which are the two ends of a connection. Interface in this setting needs to describe both caller and calling point. Microsoft introduced Connectable Objectsapproach to speak of incoming and outgoing interfaces. Incoming interfaces are the traditional one, lists all points (methods). Outgoing interfaces declare what operations a component could invoke if it is properly connected .

How can we ensure that two people understand the same meaning of a flow chart? The Unified Modeling Language (UML) provides a standard language that can be used in many different ways. It can be divided into three distinct models depending the semantic levels:

a. Conceptual models.Software that identifies the concepts in the domain being study.
b. Specification models.Software that defines the specifications of the component. It models the "outside" of the component, not the "inside" implementation.
c. Implementation models. Models detail the implementation design of the software, the "inside" of the component.

Heineman and Councill have a similar use of Unified Modeling Language (UML). UML can be used to model a component's design and implementation. It is also useful in documentation of reuse feature. A component has a logical (abstract) and a physical (implementation) part, and both needed to be considered in defining the component.

The logical representation of a component is modeled using UML's subsystem, which can be viewed as a subtype of UML package. Therefore, it can realize the interfaces that are the operations in subsystem specification. An interface can be realized by multiple subsystems, and a subsystem can also realize multiple interfaces. Any subsystems that realize the same interface can be used to substitute one another. This is a major advantage "plug and play" of a component-based system.

The implementation representation of a component defines how its logical representation is implemented in a chosen environment (language, model). The implementation must include any implementation dependencies between components.

IV. 2. PROGRAMMING LANGUAGES FOR COMPONENT-ORIENTED.

Harvey M. Deitel remembers the frustration in the 1960s by software developers when they tried to develop a large-scale project. In summer 1967, a company "decommitted" from producing a commercial product that involved hundred of programmers for several years. It is difficult to get the software right. Software development is a complex process. Just as object-oriented programming (OOP), the component-oriented programming (COP) is defined in a typical object-oriented programming. Component-oriented programming requires the support of:

. Polymorphism (substitutability, replaceable).
. Modular encapsulation (higher level of information hiding).
. Dynamic late binding and loading (independent deployment).
.Type (class) and module safety.

What programming languages, which are capable, and suitable for creating components? We have been trying to develop a modern language that increases the power of each line of code written (statements). It is clear that high-level languages such as Fortran, Cobol, or C have more power than the low-level Assembly language.

Object-oriented programming languages (OOPLs) have become popular because they allow software engineers to develop units of software called classes that maps directly to the real world of entities in a particular domain. The OOPLs are well suited for developing business components, but great care must be taken when building large-scale systems.

Any languages with object-oriented capability can be used to build software components, since component-oriented based heavily in object-oriented programming. Some author such as Ed Roman prefers Java "Java: An Ideal Language for Component Architectures". Java supports the separation between interface and implementation. By separation, we can replace an implementation by a more effective one (plug-and-play feature).

Examples of Java components are JavaBeans, Enterprise JavaBeans (EJBs). JavaBean components regarded as small-grained application bits used in assembling larger components or an application. They are development components not deployable components. The EJB is defined as a deployable component called enterprise bean. They are larger and ready to be deployed. Other two types of Java components are Applets that can be deployed in a Web page, and Servlets deployed in a Web server.

Other authors Tom Archer and Andrew Whitechapel favor the .NET platform. The breadth and depth of the Microsoft .NET technologies delivers is astounding. C# is a new language, is also the first component-oriented language in the family of C, C++ programming languages. C# is simple, object-oriented and type-safe programming language that derived from C, and C++. It is a combination of Visual Basic and C++.

C, C++ programmers should feel comfortable with C# since it borrows core features such as expressions, statements, and overall syntax from C, and C++. Other than Java, C# allows direct pointer and address manipulation. The C# type system is also unified everything in C# is an object. It bridges the gap between value and reference types, allowing any pieces of data to be treated as objects.

V. CONCLUSION.

The major advantage of component-oriented programming over other programming paradigms is that its components promote rapid application development. In Object-Oriented Programming paradigm, the developers still need to write the infrastructure for the application. In component-based approach, the developers only need to assemble the components together. As a result, IT professionals can build applications quickly by assembling prewritten components rather than writing the entire application from scratch.

"Object orientation has failed but component software is succeeding". First, by definition, an object technology encapsulates state and behaviors (data and functions), allows inheritance and polymorphism. The definition does not mention independence, and compositions therefore object technology can be used to build single application. Second, object technology ignores the economic and marketing aspect. We have a small number of vendors of classes such as the classic Microsoft Foundation Classes (MFC). The MFC serves as a tool to simplify and unify programming in Microsoft's operating system environment, and applications.

Recently, based on true component technology, more successful vendors began to market their products. ComponentSource.com or Flashline.com sold thousands of ready-made software components mostly in the COM and Java categories, and VCL components from Borland International (Builder of C++ and Delphi), and Microsoft's products .NET components. Other software companies such as ILOG and Rogue Wave Software focus on C, C++, and Java components for simulation/optimization, visual presentation, and rule-based applications. ILOG approached $80 million in its fiscal year in 2001.

Microsoft Corporation also released their new component products: *COM+* as an extension of the Component Object Model (COM). COM+ builds on COM integrated features, making it easier for developers to create and use software components in any programming languages. Distributed Component Object Model (DCOM) is a protocol for components to communicate over a network in a reliable, secure environment [8].

In a recent report, Gartner Group predicted that by 2003, up to 70% of all new software solutions will be created with "building block" such as components and templates. A survey of worldwide markets and trends by International Data Corporation (IDC) estimated that by 2003, the worldwide market for components building and assembling would excess $8 billion with $2 million spent on acquiring components.

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