The Government of
The Republic of the Union of Myanmar
Ministry of Education

Department of Higher Education

Universities Research Journal

Vol. 12, No. 8 December, 2020

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The Republic of the Union of Myanmar
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Vol. 12, No. 8 December, 2020

Universities Research Journal 2019
Vol.12, No. 8

Educational Theory, Applied Economic, Economics, Commerce, Management Studies, Statistics

Editorial Board

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Educational Theory

A Study of Environmental Knowledge, Attitude and Behavior of Students

Si Thu Soe[1] , Su Su Thwin[2] & Su Chan Myae[3]

Abstract

This study aims to study the environmental knowledge, attitude and behavior of Grade 9 students in Einme Township, Ayeyarwady Region. The level of Grade 9 students' environmental knowledge, attitude and behavior and the variations of Grade 9 students' environmental knowledge, attitude and behavior by school group were explored. Both quantitative and qualitative methods were used in this study. A total of 400 Grade 9 students participated in this study. The questionnaire consists of the items concerning demographic information and items related to environmental knowledge, attitude, behavior and sources of environmental information. Open-ended questions were used as qualitative study. Questionnaire was validated by nine experienced teachers from Department of Educational Theory. The reliability coefficient of the questionnaire to explore environmental attitude was 0.74 and environmental behavior was 0.75. Descriptive statistics, Independent Samples *t* Test one-Way ANOVA were used to analyze the data. According to the findings, the environmental knowledge of Grade 9 students was satisfactory level, the level of environmental attitude was moderately high (mean=3.30, SD=0.29) and the level of environmental behavior was also moderately high (mean=2.78, SD=0.33). Students' major source of environmental information was school. There was a significant difference in environmental knowledge scores between Group A and Group D ($p<0.05$).

Keywords: Environment, Environmental Knowledge, Environmental Attitude, Environmental Behavior.

Introduction

Nature is a source of life for humans. Therefore, man cannot escape from the reliance by nature and the environment Environmental degradation becomes result of community behavior and community attitude in managing their environment (Sukarjita et al., 2015).

[1] Senior Teacher, BEHS Lu Kaung Kyun, Einme Township, Ayeyarwady Region
[2] Professor, Dr., Department of Educational Theory, Yangon University of Education
[3] Assistant Lecturer, Department of Educational Theory, Yangon University of Education

Education plays a critical role for promoting and improving the capacity of people to address environmental problems. The aim of education is to make individuals aware of their own responsibility for protecting and improving the environment, so that they will make their own behaviors and actions conform to the norms which ensure a healthy environment (Branimir, n.d, cited in UNESCO, 1977). Involving children from an early age in caring and loving the environment is very important for the acquisition of environmental knowledge.

Significance of the Study

Myanmar is one of the countries that has been facing many environmental problems. After the cyclone Nargis, there has been growing concern in Myanmar people about the increasing degradation of our environment. Lessons obtained from Nargis pointed out the necessary conditions for the ecosystems and livehoods sustainability as well as for reduction of the disaster risk.

The school can make major contributions to sustainability using the school children as a change agent. Students in schools are expected to nurture and develop their awareness and understanding of what is happening in their environment and the impact of human activities on the environment.

Aims of the Study

Main Aim

The main aim is to study the environmental knowledge, attitude and behavior of students.

Specific Aims

The specific aims of the study are

- To study the level of environmental knowledge of students
- To study the level of environmental attitude of students
- To study the level of environmental behavior of students
- To study the differences of students' environmental knowledge, attitude and behavior by school group

Research Questions

The research questions of the study are

1. What are the levels of environmental knowledge of students?
2. What are the levels of environmental attitude of students?
3. What are the levels of environmental behavior of students?
4. Are there any differences in students' environmental knowledge, attitude and behavior by school group?

Theoretical Framework

The aim of this study is to study environmental knowledge, attitude and behavior of students in Einme Township. The theoretical framework consists of the following.

Piaget's Cognitive Development Theory

Piaget divided cognitive development into four stages. They are sensory motor stage (birth to 2 years), pre-operational stage (2-7 years), concrete operational stage (7-11 years) and formal operational stage (11 years on). This study aimed to study environmental knowledge, attitude and behavior of Grade 9 students. The age of the students in this Grade may be 12 and above. According to Piaget's cognitive development theory, the students fall into formal operational stage of cognitive development.

In this stage, thinking is not only abstract but also logicalThe social context is more important in this stage. The concrete examples are required to help child understand the abstract relationships. The stage occurs during early adolescence and at this stage the child engages in more abstract thinking. By this point, the child's cognitive structures are like those of an adult and include conceptual reasoning. This is the highest level of thinking stage and child is capable of going beyond the concrete evidence. The learner's thoughts can be fostered by placing learner in a situation where they have to solve problems (Lazarus, 2010, cited in Lefa, 2014).

Environmental Knowledge

Knowledge refers to all the information and understanding that a person possesses and is acquired from both education and experience. Environmental knowledge includes all the cognitive understanding of the environment and its associated problems (Roth, 1992).

Environmental Attitude

An attitude has three components: affect, behavior and cognition. Affect describes how a person feels about an attitude object. Behavior refers to his intentions to take action about it. Cognition is what he believes to be true about the attitude object (Jain, 2014).

Environmental Behavior

Behavior is the way in which a person responds to a certain set of conditions. In this research, students' environmental behavior may be examined in terms of eco-management (direct action to restore, remediate, or improve a natural area), consumer action (either changing one's own consumer habits or supporting to do so) and persuasion (educating or appealing other members of the public).

Definitions of Key Terms

Environment

The environment can be defined as the complex around an organism, consisting of several biotic and abiotic factors, which influence, interact, demand, on or from the organism and sustains it, through various ways of energy transfer and movement (Johsi, 2009).

Environmental Knowledge

Environmental knowledge includes all the cognitive understanding of the environment and its associated problems (Roth, 1992).

Environmental Attitude

Environmental attitude is based on moral and social values and is a combination of people's beliefs, affective responses and behavioral intentions toward the environmental problems (Clayton & Myers, 2009, cited in Halkos & Matsiori, 2017).

Environmental Behavior

Environmental behavior refers to behaviors intended to have a positive impact on the environment by targeting problems and issues, as well as those that actually have a positive environmental consequence (McBeth et al., 2011).

Operational Definitions

Environment

In this study, environment means the natural environment which includes water, air, land and living things and the interrelationship which exists among them.

Environmental Knowledge

In this study, environmental knowledge of students is studied in terms of knowledge of ecosystem, knowledge of environmental problems and knowledge of action strategies, which the students acquire through their education and experience.

Environmental Attitude

In this research, environmental attitude of students is conceptually defined as what students believe about humanity's relation with nature, how they feel about environmentally related activities and problems and what students state they would like to do regarding the environment.

Environmental Behavior

In this study students' environmental behavior is studied as their behaviors for the benefit of the environment in terms of eco-management, persuasion and consumer action.

School Group

School group means a group of schools which is divided by the Township Education Office.

Methodology

Research Method

Quantitative and qualitative methods were used. For quantitative study, descriptive research design was used and data were collected through questionnaires. For qualitative study, open-ended questions were used.

Sample

A total of 400 Grade 9 students participated in this study. The number of students participated in this study were 120 students from Group

A, 130 students from Group B, 75 students from Group C and 75 students from Group C.

Instrumentation

A six-part questionnaire was constructed for this study. The first section contained two demographic information- gender and school. The second part was 30 multiple choice items. The third part was 21 items about environmental attitude of students. These items were assessed on a four-point Likert scale: 'strongly disagree, disagree, agree and strongly agree'. The fourth part was asked to rate the frequency of students' environmental behavior. This section consists of 21 items. These items were developed as four-point Likert items as never, sometimes, often and always. The fifth part was students' sources of environmental information. It included 8 items. For qualitative study, four open-ended questions were developed.

Procedure

The permission from the Township Education Officer was taken to do the research in selected schools of Einme Township. Self-administered method was used where the students filled the questionnaire which takes 45-minutes, in the class. Before the students started to fill in the questionnaire, the researcher gave detailed instructions and the students were allowed to ask questions in the process in case they did not understand something. According to the above procedure, the collection of the required data was conducted in twenty selected schools.

Data Analysis

In this study, the collected data were systematically analyzed by using Statistical Package for Social Science Software version 25 for quantitative data. Descriptive statistics was used to identify means and standard deviations of data. Independent Samples *t* Test and One-Way ANOVA were conducted to analyze data. The two statistics namely, Item Percent Correct (IPC) and Mean Percent Correct (MPC) were also used in order to describe Grade 9 students' environmental knowledge. The responses were read and categorized according to emerging themes.

Findings

Quantitative Findings

Findings on Level of Environmental Knowledge of Grade 9 Students

Table 1. Numbers and Percentages Showing Grade 9 Students' Level of Environmental Knowledge **(N=400)**

No.	Scoring Range (%)	Number of Students	Percentage	Remark
1	<50%	58	14.5%	Below Satisfactory
2	50%-74%	264	66%	Satisfactory
3	≥75%	78	19.5%	Above Satisfactory

Scoring Direction: <50%= Below Satisfactory, 50%-74%= Satisfactory ≥75% = Above Satisfactory

Findings on Grade 9 Students' Level of Environmental Attitude

Table 2. Mean Values and Standard Deviations Showing Level of Grade 9 Students' Environmental Attitude (N=400)

No.	Environmental Attitude	Mean	SD	Remark
1	Belief	3.28	.37	Moderately High
2	Affect	3.36	.40	Moderately High
3	Behavioral intention	3.26	.38	Moderately High
Overall		**3.30**	**.29**	**Moderately High**

Scoring Direction: 1.00-1.49= Low, 1.50-2.49=Moderately Low 2.50-3.49=Moderately High, 3.50-4.00=High

Findings on Grade 9 Students' Level of Environmental Behavior

Table 3. Mean Values and Standard Deviations Showing Level of Grade 9 Students' Environmental Behavior (N=400)

No.	Environmental Behavior	Mean	SD	Remark
1	Eco-management	3.17	.41	Moderately High
2	Consumer action	2.82	.42	Moderately High
3	Persuasion	2.34	.48	Moderately Low
Overall		**2.78**	**.33**	**Moderately High**

Scoring Direction: 1.00-1.49= Low, 1.50-2.49= Moderately Low
2.50-3.49= Moderately High, 3.50-4.00= High

Table 4. One-Way ANOVA Results Showing Environmental Knowledge, Environmental Attitude and Environmental Behavior of Grade 9 Students by School Group (N=400)

Variables	School Groups	n	Mean(SD)	*F*	*p*
Environmental Knowledge	Group A	120	19.45(4.55)	3.064	.028*
	Group B	130	18.79(4.24)		
	Group C	75	18.84(3.8)		
	Group D	75	17.57(4.01)		
Environmental Attitude	Group A	120	3.25(0.33)	2.847	.037*
	Group B	130	3.29(0.28)		
	Group C	75	3.35(0.29)		
	Group D	75	3.35(0.22)		
Environmental Behavior	Group A	120	2.78(0.35)	.854	n.s
	Group B	130	2.80(0.34)		
	Group C	75	2.72(0.32)		
	Group D	75	2.78(0.33)		

Qualitative Findings

Findings for Open-ended Questions

The open-ended question (1) is **"What activities of human can cause environmental degradation?"** For this question, the students participated in this study answered that this may be due to improper disposal of wastes (n =232,58%), cutting down the trees (n=229,57.25%), the extension of mechanical factories (n=72, 18%), overuse of vehicles (n=68,17).

The open-ended question (2) is **"Is environmental conservation important? Why?**" For this question, the answered that environmental conservation is important because of pollution, human beings may get serious health hazards. To live in a healthy life style (n=90,22.5%). If the environment is not protected, climate change can occur (n=89,22.25%). Without the environment, human beings and other living things can't survive be a risk of disasters (n=29,7.25%).

The open-ended question (3) is **"Do you want to protect the environment? If so, what do you want to do?"** For this question, the students participated in this study answered that they were willing to grow plants and trees (n=210,52.5%), pick up litter, reduce the use of plastics, talk to other to dispose wastes systematically and save energy (n=35,8.75%), save animals (n=15,3.75%), save water (n=11,2.75%) and recycle (n=10,2.5%).

The open-ended question (4) is **"How should we do to save our environment?".** For this question, the students answered that people should throw rubbish in a systematic manner (n=211,52.75%), plant trees as much as they can (n=204,51%), harvest trees in a systematic manner (n=50,12.5%), and reduce vehicles (n=35,8.75

Conclusion and Discussion

According to the finding result, it can be assumed that most students had satisfactory level of environmental knowledge. It was found that knowledge of action strategies was lower than the other two categories. This result was similar to the findings of Pe'er et al. (2007). In their study, they found that students were most knowledgeable in fundamental ecological processes and concepts but they were least knowledgeable about environmental action strategies.

The overall environmental attitude's mean score was 3.30. It can be interpreted students' have moderately high level of environmental attitude. Most students' affect for the environment was higher than the two categories. This finding was similar to the findings of Makki et al. (2010). In this study, they found that participants' scores on the affect subscale were relatively higher than their scores on the beliefs, intentions and behavior subscales. The emotional reaction is stronger when we experience the degradation directly (Chawla,1999). As Myanmar had been confronting many environmental problems such as climate change, floods, drought, pollution etc.

The overall mean score of students' environmental behavior was 2.78. Thus, it is appeared that students had most participated in direct conservation action (eco-management), followed by consumer action whereas they had less participated in persuasion action. So, the students had moderately high levels in two categories and overall environmental behavior. But, students had a moderately low level of environmental behavior in persuasion category. This may be because students did not know how to persuade others or due to their personal factors.

In examining the variations of environmental knowledge, environmental attitude and environmental behavior by school group, it was found that Group A significantly differs from Group D in environmental knowledge scores. This study suggested that this is likely due to greater sources of environmental information students have in Group A students.

According to responses from open-ended questions, it was found that students seem to be familiar with the plants and wastes regarding the natural environment. If each individual including students follow their suggestions, environment may become a cleaner and greener place to live and to pass onto future generations.

Suggestions

For promoting environmental learning, students themselves need to learn to observe what changes are taking place in their environment, analyze what are the causes and consequences of these changes, find ways for solving these changes and act for the good of our living environment.

As environmental learning cannot be developed only in the classroom and with the textbooks, various teaching strategies and materials,

such as problem solving relating to environment, play in nature can be more effective for students.

School should also make to improve students' environmental knowledge with the help of media to get more update information. School should incorporate with governmental organization and non-organization.

Need for Further Study

Further research should be expended to in-service teachers and pre-service teachers. Moreover, further studies need to investigate how students' environmental knowledge, attitude and behavior vary with age, grade, parents' education levels, socioeconomic status etc. and what factors influence in these variables.

Acknowledgements

We would like to express our respectful thanks to Dr. Aye Aye Myint (Rector, Yangon University of Education), Dr. Pyone Pyone Aung (Pro-Rector, Yangon University of Education) and Dr. Kay Thwe Hlaing (Pro-Rector, Yangon University of Education) for their allowance to do this study.

We would like to express our heartfelt gratitude to Dr. Daw Htay Khin (Professor, Head of Department, Department of Educational Theory, Yangon University of Education) for her continuous encouragement, expert judgement and kindly support.

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A Study of Principals' Talent Management Practices in Basic Education High Schools

Ei Ei Moe[1] , Khin Marni[2] & Pyae Phyo Khin[3]

Abstract

This study aims to investigate the teachers' perception on principals' talent management practices in Basic Education High schools, Insein Township, Yangon Region. In this study, questionnaire survey and qualitative interview section were conducted to collect the required data. By using cluster sampling, two hundred and ninety seven classroom teachers from Basic Education High schools in Insein Township, Yangon Region were selected as desired sample size. Descriptive statistics and coding method for interview results were used to analyze the data according to the research question.As the overall major finding of level of practices, principals in selected schools often implemented talent management practices according to the data from comparison of schools.

Keywords: Talent and Talent Management

Introduction

The task of managing talent has become more complex than ever before. Talent management in education is a key factor in attracting and keeping talented teachers. Talent management in the educational institutions can play a vital role in helping to develop personal effectiveness of all faculties. The talent management requires an effort of a school principal and this effort is shaped by the investment required to the activities to develop talents (Hamzah and Shamsudin, 2017). Thus, the role of principal in talent management practices is becoming more important to place right teachers in the right place, to plan career, to train them in areas where they can perform best and contribute best to the achievement of the organizational goal. In this study, principals' talent management practices will be studied by classifying three dimensions such as "Talent Identification", "Talent Development", and "Talent Culture". Education system so far, still has

[1] Daw, Assistant Lecturer, Department of Educational Theory, Yangon University of Education

[2] Associate Professor, Lecturer, Department of Educational Theory, Yangon University of Education

[3] Dr, Assistant Lecturer, Department of Educational Theory, Yangon University of Education

limitation in talent management practices (Behrstock, 2010). Actually, there is no system to attract, train and support the talent to stay in the area of education (Olson, 2008). To date, talent management in education sector has not been systematically investigated. Thus, this study identifies teachers' perception on principals' talent management practices in Basic Education High Schools.

Objectives of the Research

The objectives of this study are as follows:

- To study the levels of principals' practices on talent identification
- To study the levels of principals' practices on talent development
- To study the levels of principals' practices on talent culture

Research Questions

1. To what extent do teachers perceive the principals' practices on talent identification?
2. To what extent do teachers perceive the principals' practices on talent development?
3. To what extent do teachers perceive the principals' practices on talent culture?

Theoretical Framework of the Research

The following framework according to the perspective of Davies and Davies (2010) will be used in this research.

Talent Identification

Talent identification is the process and activities to define and discover the sources of talent. In talent identification, management of institution will search the talented academician that would best benefit for academy future performance (Hay Group, 2005) (Cited in Davies and Davies, 2010). So the best organizations are future focused and predict what skills, attitudes and behaviours they will need from their talented individuals. The identification or searching for talents among academician must also examine competencies that actually affect their performances (Davies and Davies, 2010).

Talent Development

In talent development, an effective organization will have a well-established process for the professional learning of all staff, which is effectively connected with other processes such as a performance management. According to Davies and Davies (2010), it is important to consider; what is in place for the development of all staff and where does talent enablement fit in. Talent development involves developing leaders via processes such as coaching, feedback, training, mentoring and challenging employees. Various training and workshops will increase the supply of highly skilled academicians, enhance the knowledge of teachers and equip them with up-to-date skills and upgrade their quality and productivity. Furthermore, by providing an external training, it generates professional growth for them.

Talent Culture

Cheese et al, (2008) express the view that motivation commitment, trust, empathy and inspiration, ensure that an individual is able to align their own interest with the organization. In order to become a talent-focused organization, the institution could focus on factors that determine the organization culture. Talented people need to feel valued and that their contribution is making a difference. Affirmation is powerful; feeling appreciated, recognized and valued is motivational. Opportunities will help the talented person feel motivated and aligned to the organization but future opportunities and roles will also need to be available at the right time. Therefore, it is imperative for the teachers to specifically understand the task objective and knowing the processing of the task. Culture is one of the most precious things an institution has (McShane & Von Glinow, 2010).

Definition of Key Terms

Talent

Talent consists of those individuals who can make a difference to organizational performance, either through their immediate contribution or in the longer term by demonstrating the highest levels of potential (Chartered Institute of Personnel and Development (CIPD), 2007).

Talent management

Talent management is the systematic attraction, identification, development, engagement/ retention and deployment of those individuals with high potential who are of particular value to an organization (CIPD, 2008).

Research Methodology

Both Quantitative and Qualitative methods were used in this study.

(i) Sample

In this study, two hundred and ninety seven classroom teachers from Basic Education High schools in Insein Township were considered as desired sample size by using cluster sampling in small-scale research. The principals from selected schools were chosen to conduct interviews. The interview questions were concerned about principals' opinions and difficulties related to their talent management strategies in their schools.

(ii) Instruments

In this study, questionnaire survey was used to gather the required data concerning the research focus. The questionnaire was divided into three parts. The part-A was concerned about demographic characteristics. The questionnaire part-B was about teachers' perception on principals' talent management practices.There were seven open-ended questions in part C. Items measuring this variable were clustered under the predetermined categories, i.e., talent identification, talent development, and talent management culture that were developed by researcher as the review of related literature identified by Davies & Davies (2010).

(iii)Procedure

First and foremost, relevant literature regarding talent management practices in education is explored. Next, the instrument is developed and modified in order to collect the required data. The pilot study was conducted with selected sixty classroom teachers at B.E.H.S No. (1) in Thingangyun Township. The reliability coefficient (Cronbach α) for the questionnaire was 0.91 for the teachers' perception on principals' talent management practices. The questionnaires were delivered to classroom teachers and recollected them after one week. Interviews were conducted with selected principals to obtain more information about talent

management practices and ranged from fifty minutes to one hour for all principals.

(iv) Data Analysis

Using SPSS, descriptive analysis was used to tabulate means and standard deviations for groups of items. There were 11 positive items and 8 positive items and 5 negative items (items 5, 8, 9, 12 and 13) in the extent of teachers' perception on principals' talent management culture.

Findings

Quantitative Findings

Table 1. Mean Values and Standard Deviation of Principals' Talent Management Practices perceived by Teachers

Variables	N	Mean	SD
Talent Identification	297	**3.11**	.33
Talent Development	297	2.61	.59
Talent Culture	297	3.03	.38
Overall	297	2.91	.34

1.01-1.49=never, 1.5-2.49=sometimes, 2.5-3.49= often, 3.5-4 = always

According to Table 4.1, in talent identification, 253 out of 297 teachers (85.19%) perceived that principals **often** identified teachers' performance and assigned the task based on their performance. In talent development, 113 out of 297 teachers (38.1%) perceived that principals **sometimes** implemented talent development activities and 153 out of 297 teachers (51.5%) perceived that principals **often** implemented talent development activities. With respect to the talent culture, 249 out of 297 teachers (83.84%) perceived that principals often created talent management culture. In the overall practices, 265 out of 297 teachers (89.23%) perceived that principals often performed talent management practices.

Table 2. Comparison of Overall Mean Values and Standard Deviation of Principals' Talent management Practices

Variables	School	N	Mean	SD
Talent Management Practices	School A	67	2.83	.34
	School B	48	3.04	.29
	School C	77	2.83	.30
	School D	40	**3.14**	.28
	School E	45	3.01	.29
	School F	20	2.55	.40
	Total	297	2.91	.34

1.01-1.49 = never, 1.5-2.49=sometimes, 2.5-3.49=often, 3.5-4 = always

To sum up the data from the table 4.2, according to the overall overall mean value (3.14) of practices, principals in these schools often implemented talent management practices. It was the highest values among variables. Thus, it can be assumed that principal in **school D** was likely to implement talent management practices including talent identification, talent development, and talent management culture for his staff more than other principals.

Qualitative Findings

Results from the interview: Managing Talent Identification

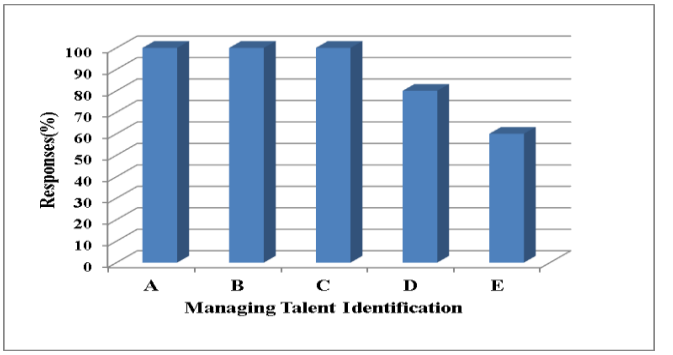

Figure 1. Principals' Managing Talent Identification

Table 3. Key to Coding for Managing Talent Identification

Code	Descriptions
A	Lack of performance evaluation
B	Making decision about administrative tasks based on teachers' performance
C	Being aware of teachers who can give the best advice and decisions
D	Identifying teachers in specific fields who can lead successfully for school events and activities
E	Delegation of subjects based on teachers' knowledge and skills

According to the participants, making decision about administrative tasks based on teachers' performance is the most important (100% of participants) approach used to perform among High school principals in Insein Township. In addition, all principals stated that they practice the delegation of subjects based on their knowledge and skills. There were 80% of responses about identifying teachers in specific fields who can lead successfully for school events and activities. Being aware of teachers who can give the best advice and decisions was also considered a very important approach in identifying talent according to 100% responses from participants. Besides, all principals admitted that there is no performance evaluation system in their schools.

Results from the interview: Managing Talent Development

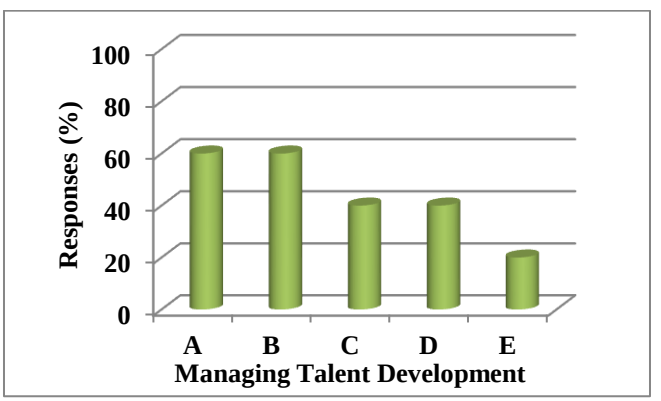

Figure 2. Principals' Managing Talent Development

Table 4. Key to Coding for Managing Talent Development

Code	Descriptions
A	Job rotation
B	Giving no chance to visit partner schools within township level
C	Observation of instructional strategies from experienced teachers
D	Giving teachers opportunities for making decision
E	Lack of mentoring and coaching

Giving no chance to visit schools within township groups is totally indicated by all respondents. Only 40% of participants explained about the observation of instructional strategies from experienced teachers taken together by principals who offer opportunities for making decision to their teachers to be work facilitation. 60 % of participants gave different answers.

Results from the interview: Managing Talent Culture

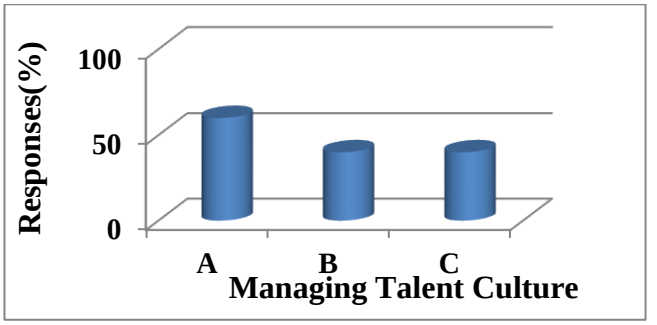

Figure 3. Principals' Managing Talent Culture

Table 5. Key to Coding of the Descriptions of Managing Talent Culture

Code	Descriptions
A	Encouraging to cooperate among staff to enhance job accomplishment
B	Recognizing teacher's effort and praise for individual performance
C	Supporting financial aids

According to the interview results, only 40% participants admitted that it is needed to recognize teacher's effort and praise for individual performance because motivation is important for job satisfaction. There was also consensus among 60% of participants that building cooperation among staff enhances job accomplishment. Supporting financial aids is indicated by only 40% of participants.

Conclusion

Discussion and Conclusion

According to quantitative and qualitative results, school leader should create an environment that builds a "pool" of leadership talent for individual teachers. Coaching should be designed to improve the competencies of individual organization members through committed support, feedback. Individual Development Plan (IDP), the individualized approach in determining each teacher's needs, should be implemented to enhance job skills to achieve expanded roles within the school. Job shadowing should be designed to increase awareness. Principals should assign different contexts for teachers in order to devolve responsibilities for new roles at different levels. school administrators should focus on working with informal groupings and partnerships to share expertise and plan joint staff-development activities. Teachers should feel empowered and involved in the decision-making process to become part of a team.All principals should create positive talent management culture that focuses attention on individual teachers, their aspirations, their needs, their development, and positive social and psychological interactions within the schools. Assessing talent should be done from the top levels of school managerial positions to all teachers in order for the organization to identify talents among teachers and exploit them to increase school performance.

Recommendation for Further Research

Further researchers endeavoring to study the talent management practices should consider conducting the research in urban, suburban, and rural in school system including primary, middle, and high schools. The study was also limited to only government high schools, so it can be extended to universities of education, education colleges, and also to non-government schools. As future researchers, they will need to establish well design for developing indicators of talent management practices.

Acknowledgements

I wish to express my sincere thanks to Dr. Aye Aye Myint (Rector, Yangon University of Education) for their permission to carry out this small-scale research. Special acknowledgement also goes to Dr. Daw Htay Khin (Professor, Head of Department of Educational Theory, Yangon University of Education) and Dr. Su Su Thwin (Assistant Professor, Department of Educational Theory, Yangon University of Education) for their advice and guidance.There are no proper words to respect for my supervisor, Dr. Khin Mar Ni (Lecturer, Department of Educational Theory, Yangon University of Education) for examining this research. I would like to express deepest thank to my co-supervisor, Dr. Pyae Phyo Khin (Assistant Lecturer, Department of Educational Theory, Yangon University of Education) who had carefully read and commented throughout my study.

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Primary Teachers' Professional Development Activities

Htike Khin Khin[1], Htay Khin[2] & Theingi Nwe Oo[3]

Abstract

The objectives of this study were to study primary teachers' participation in professional development activities and to study primary teachers' perceptions on their needs of professional development. The questionnaire was developed based on "An analysis of teachers' professional development based on the Teaching and Learning International Survey" (OECD, 2009), others' research and literature review. Both quantitative and qualitative methods were adopted. 130 teachers were selected as subjects by using purposive sampling. For quantitative study, 40 items with five-point Likert scale for activities and 11 items with four point Liket scale for needs were used to collect data. For qualitative study, 8 interview questions were used. Descriptive statistics, independent samples *t* test, one-way ANOVA and Tukey were used to find out the significant differences in teachers' participation in their professional development activities grouped by academic qualification and trainings. The quantitative findings showed that teachers often participated in all professional development activities. There was a significant difference grouped by their teaching services in professional development activities. There were significant differences in observation, participation and research activities in training for new curriculum refresher courses. It was found that teachers moderately need for their professional development. In qualitative finding, most of the teachers do not get the opportunities to participate in professional development activities.

Keyword: professional development

Introduction

Education is a cornerstone of economic and social development; primary education is its' foundation. Advance education and training must rest on the solid foundation of good primary education. Primary education has other benefits for individuals and society as well (Lockheed and Verspoor, 1991). It must aim at giving students the opportunities for personal development and confidence to adapt new situations as well as to change these when they find it necessary (Fredriksson, 2004). Young

[1] Tutor, Yankin Education College, Yankin Township
[2] Professor and Head (Retired), Dr., Department of Educational Theory
[3] Lecturer, Dr., Department of Educational Theory

people and children must be given the tools through education to deal with the different tasks that they will need to perform in their lives. Thus education is the necessary investment to the development of human resources.

The teacher is the important factor in teaching/learning process. Thus, the area of teacher development is a major area of concern for the immediate future. Similarly, upgrading the quality of basic education teachers is one of the main tasks of the education promotion program in Myanmar (Ministry of Education, 2005).

Effective professional development enables teachers to develop the knowledge and skills they need to address students' learning challenges. Professional development is not effective unless it causes teachers to improve their instruction or causes administrators to become better school leaders.

Sparks (1995) described that in order to change practice insignificant and worthwhile ways, teachers must not only learn new subject matters and new instructional techniques but they must alter their beliefs and conceptions of practice. Guskey (2003) argued that change in beliefs and attitude occurs subsequent to change in practice and results from observing the impact of change of their practice on student outcomes. Ye Aung (2006) said that a teacher can do not only teaching the subject but also monitoring, guiding, helping pupils. They can afford and learn themselves more for that responsibility. That is the virtue of teachers and they could be called teachers.

Considering the mentioned above reasons, the study will present an emphasis to the professional development activities of the Primary Teachers in Yankin Township, Yangon Region.

Objectives

- To study primary teachers' participation in professional development activities
- To study primary teachers' perceptions on their needs of professional development

Research Questions

This study is focused on the following questions:

- To what extent do primary teachers participate in professional development activities?
- To what extent do primary teachers perceive their needs of professional development?

Definition of Key Terms

Professional Development

Professional development is defined as activities that develop an individual skill, knowledge, expertise and other characteristics as a teacher. (The Organisation for Economic Cooperation and Development (OECD), 2009).

Theoretical Framework of the Study

In this study, professional development activities for primary teachers are based on (OECD, 2009).

- courses / workshops
- education conferences or seminars
- qualification programme
- observation visits to other schools
- participation in a network of teachers
- individual or collaborative research
- mentoring and/or peer observation and coaching
- reading professional literature
- engaging in informal dialogue with peers

The professional development undertaken by teachers most commonly consisted of informal dialogue to improve teaching, specified courses and workshops, and reading professional literature (OECD, 2009).

OECD (2009) stated the eleven professional development needs. They are content and performance standards in the main subject field(s), student assessment practices, classroom management, knowledge and

understanding of the main subject field(s), knowledge and understanding of instructional practices (knowledge mediation) in the main subject field(s), Information and Communication Technology (ICT) skills for teaching, teaching students with special learning needs, students discipline and behavior problems, school management and administration, teaching in a multicultural setting, student counseling.

Methodology

Research Design

Both quantitative and qualitative methods were used to collect the information about teachers' participation in their professional development activities and teachers' perception on needs of professional development in Yankin Township. Data were collected through questionnaire survey in quantitative study and interview questions were used in qualitative study.

Sample

In this study, purposive sampling method was used. Two BEHS, seven BEMS and ten BEPS schools were selected for samples. The target population was primary teachers from Basic Education Schools. 130 primary teachers participated as respondents for quantitative data. 12 teachers were randomly selected from 6 schools for qualitative data.

Research Instrumentation

The questionnaire was developed based on "An analysis of teachers' professional development based on the Teaching and Learning International Survey'' (OECD, 2009), others' research and literature review. It consisted of totally 51 items: 40 items concerned with the teachers' participation in professional development activities and 11 items concerned with the teachers' perception on needs of professional development. For interview, 8 questions were developed.

Data Analysis

Descriptive statistics, independent samples *t* test, one-way ANOVA and Tukey were used for the analysis of qualitative data. Qualitative data was analyzed based on categorizing and interpreting the interview.

Findings

Quantitative Findings

The teachers' participation in professional development activities was explored by using 40 items of the questionnaire survey in this study.

Table 1. Mean Values and Standard Deviations of Teachers' Participation in Professional Development Activities (N=130)

No.	PD Activities	Mean	SD	Remark
1	Courses / workshops	2.58	0.85	Sometimes
2	Education conferences or seminars	2.81	0.77	Sometimes
3	Qualification programme	**2.54**	0.96	Sometimes
4	Observation visits to other schools	3.28	0.85	Sometimes
5	Participation in a network of teachers	3.89	0.69	Often
6	Individual or collaborative research	3.34	0.79	Sometimes
7	Mentoring and coaching	3.56	0.89	Often
8	Reading professional literature	**3.91**	0.78	Often
9	Engaging in informal dialogue with peers	3.89	0.79	Often
Overall		**3.50**	0.60	Often

Scoring Direction: 1.00-1.49=Never 1.50-2.49=Seldom
2.50-3.49=Sometimes 3.50-4.49=Often
4.50-5.00=Always

According to Table 1, it was found that teachers were often participated in all professional development activities.

Table 2. Mean Values and Standard Deviations of Teachers' Perception on Needs of Professional Development (N=130)

No.	Variable	Mean	SD	Remark
1	Content and performance standards in my main subject field(s)	2.55	1.08	Moderate

No.	Variable	Mean	SD	Remark
2	Student assessment practices	2.81	1.01	Moderate
3	Classroom management	2.48	1.12	Low
4	Knowledge and understanding of my main subject field(s)	2.59	1.08	Moderate
5	Knowledge and understanding of instructional practices (knowledge mediation) in my subject field(s)	2.58	1.03	Moderate
6	Information and Communication Technology (ICT)	**3.05**	0.79	Moderate
7	Teaching students with special learning needs	2.69	1.17	Moderate
8	Student discipline and behavior problems	2.50	1.08	Moderate
9	School management and administration	2.40	1.06	Low
10	Teaching in a multicultural setting	**2.31**	1.07	Low
11	Student counseling	2.45	1.06	Low
	Overall	2.58	.86	Moderate

Scoring: 1.00-1.49=No need at all 2.50-3.49=Moderate level of need
1.50-2.49 =Low level of need 3.50-4.00=High level of need

According to this table, the overall mean values of teachers' perception on needs of professional development was 2.58. Thus, it could be found that the teachers perceived that their professional development needs were moderate level of needs.

Qualitative Findings

There were 8 questions for teachers. Each school responded the following:

Most teachers from primary schools responded that there have no chances to attend conferences, seminar and workshops.

Every primary teacher responded that qualification programmes taught the new curriculum to the teachers and made them to be useful in

current situation and their life-long learning society. Qualification programmes that train teachers to become qualified teachers.

Every primary teachers responded that they receive strategies for issue and difficulties which arise from other teachers teaching, new problem-solving methods and effective teaching method. By observing outstanding teachers, they get good examples.

The relationship among the primary teachers is satisfactory, helpful and kind to each other. In network, they communicate friendly with other teachers and get opportunities to share ideas and to encourage other thinking.

Teachers make the active participation in research, are aware of their children's strengths and weakness and good attitude towards school and teach to be outstanding student.

Every primary teachers responded that teachers can solve new problems about teaching-learning process and perceive insights. Teachers can connect with daily life situation.

Every primary teachers responded that study Pyinnya Ta Zaung, Education Papers, Journal/Books and Newspaper. They make reading professional literature, well-resourced library support from the school.

Every primary teacher responded that they engage in informal dialogue with colleagues. So, teachers have self-confidence and motivation, teacher have improving teaching ability.

Discussion

Hallinger and Murphy (1986) stated that principals work together with teachers directly by conducting in-service workshops for their staff and by working in the classroom with teachers who are learning new skills. They need to arrange for teachers to observe their colleagues' teaching. So, principals should arrange teachers to attend workshops and seminars in the school level, township level and in-service training. Teachers want to attend PD training which can fulfill their pedagogical knowledge, requirements of professional teachers and effective classroom management.

Michael (2001) viewed the professional development as a developmental process that allows the teachers to expand and elaborate their professional knowledge base. Reitzug (2002) gave a definition on the

professional development as processes and activities designed to enhance the professional knowledge, skills and attitude of educators.

Primary teachers sometimes participate observation that visit to other schools. Jackson and Davis (2000 cited in Mertens, 2004) defined professional development as the range of formal and informal process and activities that the teachers engage in both inside and outside school, in order to improve their teaching knowledge and skills. According to the result primary teachers sometimes participate in individual and collaborative research. Teachers need the active participation in research and interest on their children's progress. Teachers get advices, technologies and sharing experiences. Mills (2000) suggested that action research is systematic inquiry done by teachers (or other individuals in an educational setting) to gather information about, and subsequently improve, the ways their particular educational setting operates, how they teach, and how well their students learn. Every primary teacher record and interest to care and provide student needs.

According to Mertens (2004) peer coaching was conduct coaching. Teachers helping teachers has become a formalized and well-received way of ensuring direct assistance to every staff member. Principal encourage primary teachers to read professional literature such as Pyinnya Ta Zaung, Education Papers, Journals/Books and Newspaper.

Teacher is a lifelong journey of learning rather than a final destination of 'knowledge how to teach'. Teachers must continue to update skills and knowledge to become more effective teachers and their professional development activities must be aligned with new knowledge and be related to the real responsibilities of a good teacher (Villarreal, 2005). Every teacher must get chance to attend the refresher courses. Livneh & Livneh, 1999 said that teaching service (years in the classroom) is a critical factor to consider when professional development programmes are managed.

Sang (2003) highlighted that all teachers should master skill of using computers. Most of the primary teachers have no knowledge, interest and skills for computer using ability even at the basic level. ICT is not fully used in teaching/learning situation among primary teachers. That is necessary to provide ICT materials to primary schools and conduct effective computer training for the teachers. So as to encourage the use of ICT

resources in teaching/learning situation as much as possible. Therefore, teacher education needs to include training in technology.

Most of teachers often participate in professional development activities and they moderately need for their professional development. Thus, systematically designed professional development activities and providing opportunities for professional development are vitally important for the development of primary teachers.

Recommendations

The following suggestions are based on the analyses of the research findings.

- Every primary teacher should get opportunities to participate in professional development activities.
- Educational courses and workshops, conferences and seminars and qualification programmes should frequently be offered in school hours by the experts.
- Every primary teacher should practice how to use information and communication technology and use electronic devices in teaching very often.
- The programmes for demonstration of lesson from experience teachers should be arranged by media channels.
- The teachers who have attended refresher courses should be harmony with their assigned duties.
- The teachers should cooperate with teachers from other schools for improving teaching skill.
- The board of study should be organized systematically and implemented practically in every school
- Every primary teacher should study their new teaching skills and apply the effective teaching methods in teaching.
- Principal should supervise and should monthly discuss the strengths and weaknesses of teachers' teaching.
- Every primary teachers need to be provided enough time and opportunities for professional development activities.

- The teachers should grasp the opportunities and apply them effectively in their profession.
- Every primary teacher should read journals, magazine, and books to enhance their professional development.

Needs for Further Research

This study tried to study the extent of participation in professional development activities for primary teachers in the schools of Yankin Township with the broad function of investigating the teachers' participation of professional development activities and their perception on needs of professional development. The conclusions were drawn based on the finding from the questionnaire survey. It still shows the necessity to explore the most appropriate and effective professional development activities for teachers of primary, middle and high school levels.

Acknowledgements

First and foremost, we would like to express our gratitude to Dr. Pyone Pyone Aung and Dr. Kay Thwe Hlaing (Pro-Rector, Yangon University of Education) for their allowing us to complete this thesis successfully. We would like to offer our note of respectful appreciation to Dr. Khin Mar Ni (Professor, Head of Department of Educational Theory, Yangon University of Education) for her great help, invaluable advice and guidance. Moreover, we would like to offer our thanks to the people who in one way or another gave physical and moral support throughout our research journey.

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A Study of Instructional Supervision Practices of Principals for Promoting Student Achievement

Thuzar Lwin[1] & Cho Cho Sett[2]

Abstract

The specific aims of this research are to study the level of instructional supervision practices of principals perceived by teachers in Basic Education High Schools Manaung Township, Rakhine State, to study the differences of teachers' perceptions on instructional supervision practices of principals for promoting student achievement among schools, and to study the relationship between instructional supervision practices of principals and student achievement in Basic Education High Schools. Quantitative and qualitative methods were used in this study. A total of one hundred and thirty two teachers were selected as sample from five Basic Education High Schools, Manaung Township, Rakhine State. Purposive sampling method was used. For quantitative study, questionnaire for instructional supervision practices of principals for promoting student achievement based upon Glickman et al., (2004).The Cronbach's alpha of the whole scale of instructional supervision practices was 0.921. Descriptive statistics, One-Way ANOVA and Spearman's rho correlation was used to analyze the data in this study. For qualitative methodology, open-ended questions were conducted. In studying instructional supervision practices of principals for promoting student achievement, the level of instructional supervision practices of principals perceived by teachers was moderately high level (Mean=4.04). Then, there were significant differences in the teachers' perceptions of instructional supervision practices of principals among schools. According to Spearman's rho correlation, there was a positively low correlation between instructional supervision practices of principals and student achievement (r=.273, p>0.01).

Keywords: instructional supervision practices, student achievement

Introduction

Education plays a crucial role in this knowledge age. The development of the country solely depends on its education system, supervision and supervisors are essential ones to build a quality education.

[1] M.Ed. Second Year Student, EAS 8, Department of Educational Theory, Yangon University of Education

[2] Dr., Lecturer, Department of Educational Theory, Yangon University of Education

Supervision in school is very important and instructional supervisory role of the principal is the key to the improvement of quality education in any school and leads to enabling student perform well in their academics (Zepeda, 2007).

According to Ayot and Briggs (2000), ineffective instructional supervision leads to poor performance among learners. Principals' supervisory activities on instruction facilitate not only professional development of the teacher but also student achievement. Instructional supervision is critical to assist teachers in maintaining and improving their instructional practices. Hamzah et al. (2013) stated that supervision is a crucial aspect of educational management as it can enhance the quality of educational organization. In short, the improvement of teachers' work performance and student achievement seem to depend on the supervisory practices experienced by the principals.

Significance of the Study

Supervision of instruction is regarded as the process of enhancing professional growth of teachers, the curriculum and improving the techniques of teaching in the classroom through democratic interactions between the teachers and the supervisors. Instructional supervision occupies a unique place in the entire education system and it becomes absolutely expedient to give its prominent attention (Okendu, 2012).Glatthorn (1990) stated that unless teachers view supervision as a process of promoting professional growth and student learning the supervised exercised would not have the desired effect. Teachers' perceptions related to instructional supervision is a process to comprehend, analyze, evaluate and interpret the nature of supervision conducted by the supervisor. Instructional supervision can affect the success of the supervisory process in schools. For these reasons, it is significantly important to study the instructional supervisory practices of principals for developing student achievement in Basic Education High Schools.

Aims of the Study

Main Aim

To study the instructional supervision practices of principals for promoting student achievement in Basic Education High Schools, Manaung Township, Rakhine State.

Specific Aims

The specific aims of this study are as follows;

(1) To study the level of instructional supervision practices of principals perceived by teachers in Basic Education High Schools, Manaung Township, Rakhine State.

(2) To study the differences of teachers' perceptions on instructional supervision practices of principals for promoting student achievement among schools.

(3) To study the relationship between instructional supervision practices of principals and student achievement in Basic Education High Schools.

Research Questions

This study is focused on the following research questions.

(1) To what extent do principals carry out instructional supervision practices perceived by teachers in Basic Education High Schools, Manaung Township, Rakhine State?

(2) Are there any significant differences of teachers' perceptions on instructional supervision practices of principals for promoting student achievement among schools?

(3) Is there any relationship between instructional supervision practices of principals and student achievement in Basic Education High Schools?

Theoretical Framework

In this study, the principals' supervisory practices are measured by four supervisory behaviors such as directive control behavior, directive informational behavior, collaborative behavior, and nondirective behavior based on (Glickman et al., 2004).

1. Directive Control Behavior

The directive control behavior to supervision is utilized with teachers when it is assumed that the supervisor has greater knowledge and expertise regarding an issue or when teachers are lacking the appropriate skills within a given skills. Directive control behavior is used when either the faculty member is struggling and needs close monitoring and/or

guidance. It may also be used when a teacher refuses to comply with a school policy. In this approach, the final decision always lies with the supervisor.

2. Directive Informational Behavior

The supervisor using directive informational behavior acts as the informational source for the goal and activities of the improvement plan. The supervisor, based on observations, suggests a clear instructional improvement goal and discusses with the alternative activities for reaching that goals. The supervisor remains the information source but always asks for and considers teacher perceptions.

3. Collaborative Behavior

Collaborative supervisory behavior is based on the belief that teaching is primarily problem solving whereby two or more persons jointly hypotheses to a problem, experiment, and implement those teaching strategies that appear to be most relevant in their own surroundings. The supervisor's role is to guide the problem-solving process, be an active member of the interaction, and keep the teachers focused on their common problems.

4. Nondirective Behavior

Nondirective behavior is based on the assumption that an individual teacher knows best what instructional changes need to be made and has the ability to think and act on his or her own. The decision belongs to the teacher. The role of the supervisor is to assist the teacher in the process of thinking through his or her actions. The supervisor helps the teacher to come to his or her own conclusions. The supervisor does not interject his or her own ideas into the discussion. All verbalization by the supervisor are intended as feedback or to extend the teacher's thinking; they do not influence the actual design.

Definitions of Key Terms

Supervision

Supervision is what school personnel do with adults and things for the purpose of maintaining or changing the operation of the school in order to directly influence the attainment of major instructional goals of the school (Harris, 1963).

Supervisory Practices

Set of behaviors purposefully arranged for accomplishing some specific aspects of a task (Harris, 1963).

Operational Definitions of the Study

Instructional Supervision Practices

Instructional supervision practices refer to the performance given by the principal to the teachers to improve students' achievement.

Student achievement

Student achievement in this study refers to the Grade-10 students' pass rate in previous three years (2016-2018) in Basic Education High Schools in Manaung Township, Rakhine State**.**

Methodology

Quantitative Method

Sample

There are five Basic Education High Schools in Manaung Township. Purposive sampling method was used in this study. One hundred and thirty two of Primary, Junior and Senior teachers were participated in this research as participants.

In this study, schools were classified into two groups according to their matriculation pass rate of the last previous three years (2016-2018). The average pass rate of three years (2016-2018) in Manaung Township was 12.09%. The above average group regarded as school above 12.09% and below average group regarded as school below 12.09%. Their matriculation pass rates are shown in Table 1.

Table 1. Demographic Information about Matriculation Pass Rates in Basic Education High Schools, Manaung Township, Rakhine State

No	Schools	2016	2017	2018	Average pass rates	Level of pass rate
1	School A	17.85%	8.3%	10.00%	12.05%	Below the average
2	School B	8.77%	4.54%	3.51%	5.61%	Below the Average
3	School C	20.68%	5.88%	10.84%	12.47%	Above the average
4	School D	12.50%	27.5%	16.67%	18.89%	Above the average
5	School E	15.51%	7.69%	11.11%	11.44%	Below the average

Instrumentation

The questionnaire was composed of 40 items which are instructional supervision practices of principals: 10 items for directive control behavior, 10 items for directive informational behavior, 10 items for collaborative behavior, and 10 items for nondirective behavior. All 40 items of the questionnaire were analyzed through the use of 5-point Likert scale. And then, with regarding to the teachers' perceptions on their principals' instructional supervision practices , the participants were requested to respond to 40 items through 1-5 (1= never , 2 = rarely, 3 = sometimes, 4 = often, 5 = always) was used.

Instrument Validity

Before pilot study, instrument was reviewed by a panel of experts. This panel included nine experts, an expert who was a professor, qualified in educational administration and supervision, an associate professor who was well-versed in educational administration and supervision and five

lecturers and two assistant lecturers, who were qualified in educational management fields.

Instrument Reliability

Then the pilot test was conducted on 18th September, 2018 with 40 senior teachers in No.1 Basic Education High School, Lamataw Township. The internal consistency (Cronbach's alpha of instructional supervision practices for promoting student achievement) of the questionnaire was 0.921.

Procedure

After receiving permission from the Director General of Department of Basic Education, the questionnaire were handed to the respondents in different schools in selected Basic Education High Schools in Manaung Township, Rakhine State. After that, about 132 sets of questionnaires were distributed to Primary, Junior and Senior teachers in the selected high schools on 6th November, 2018. One week later, the questionnaires were recollected through the help of principals of each school. The respondent rate was 100%.

Data Analysis

The collected data of this study were systematically analyzed by using the Statistical Package for the Social Science (SPSS) software version 25.Descriptive analysis, One Way of Analysis Variance (ANOVA) and Spearman's rho correlation were used in this study.

Qualitative Method

Open-ended questionnaire consists of three questions. The first one is teachers' perceptions on instructional supervision practices of principals for promoting students achievement. The second one is teachers' perceptions on the collaborative activities that the principal conduct with teachers for promoting students achievement and the last one is teachers' perceptions on weakness and strength points of their principals' instructional supervision practices.

Findings

Quantitative Findings

The analysis of collected data in order to identify the supervision practices of principals for promoting student achievement that are perceived by teachers were presented in this part. Findings on instructional supervision practices of principals for promoting student achievement were based on teachers' perceptions in selected Basic Education High Schools in Manaung Township, Rakhine State.

Table 2. Mean Values and Standard Deviations of Teachers' Perceptions on Instructional Supervision Practices of Principals for Promoting Students Achievement in Basic Education High Schools (N=132)

No	Instructional Supervision Practices Dimensions	Mean	SD	Level of Supervision Practices
1	Directive Control Behavior	4.13	.79	Moderately high level
2	Directive Informational Behavior	3.94	.82	Moderately high level
3	Collaborative Behavior	4.01	.72	Moderately high level
4	Nondirective Behavior	4.08	.69	Moderately high level
	Total Instructional Supervision Practices	4.04	.69	Moderately high level

Scoring Direction:

1.00-1.80= Low level of supervision practices
1.81-2.60= Moderately low level of supervision practices
2.61-3.40= Average level of supervision practices
3.41-4.20= Moderately high level of supervision practices
4.21-5.00= High level of supervision practices

Findings of the study of Teachers' Perceptions on their Instructional Supervision Practices of Principals for Promoting Student Achievement among Schools

Table 3. Mean Values and Standard Deviations of Teachers' Perceptions on Instructional Supervision Practices of Principals for Promoting Student Achievement at School A (n=34)

No	Instructional Supervision Practices Dimensions	Mean	SD	Level of Supervision Practices
1	Directive Control Behavior	3.91	.59	Moderately high level
2	Directive Informational Behavior	3.61	.61	Moderately high level
3	Collaborative Behavior	4.38	.85	High level
4	Nondirective Behavior	4.06	.43	Moderately high level
	Total Instructional Supervision Practices	3.89	.43	Moderately high level

Scoring Direction:

1.00-1.80= Low level of supervision practices
1.81-2.60= Moderately low level of supervision practices
2.61-3.40= Average level of supervision practices
3.41-4.20= Moderately high level of supervision practices
4.21-5.00= High level of supervision practices

Table 4. Mean Values and Standard Deviations of Teachers' Perceptions on Instructional Supervision Practices of principals for Promoting Student Achievement at School B (n=31)

No	Instructional Supervision Practices Dimensions	Mean	SD	Level of Supervision Practices
1	Directive Control Behavior	4.72	59	High level

No	Instructional Supervision Practices Dimensions	Mean	SD	Level of Supervision Practices
2	Directive Informational Behavior	4.69	.65	High level
3	Collaborative Behavior	4.39	.77	High level
4	Nondirective Behavior	4.45	.71	High level
	Total Instructional Supervision Practices	4.56	.63	High level

Scoring Direction:

1.00-1.80= Low level of supervision practices
1.81-2.60= Moderately low level of supervision practices
2.61-3.40= Average level of supervision practices
3.41-4.20= Moderately high level of supervision practices
4.21-5.00= High level of supervision practices

Table 5. Mean Values and Standard Deviations of Teachers' Perceptions on Instructional Supervision Practices of Principals for Promoting Student Achievement at School C (n=28)

No	Instructional Supervision Practices Dimensions	Mean	SD	Level of Supervision Practices
1	Directive Control Behavior	3.98	.85	Moderately high level
2	Directive Informational Behavior	3.56	.81	Moderately high level
3	Collaborative Behavior	3.75	.84	Moderately high level
4	Nondirective Behavior	3.81	.88	Moderately high level
	Total Instructional Supervision Practices	3.78	.78	Moderately high level

Scoring Direction:

1.00-1.80= Low level of supervision practices

1.81-2.60= Moderately low level of supervision practices
2.61-3.40= Average level of supervision practices
3.41-4.20= Moderately high level of supervision practices
4.21-5.00= High level of supervision practices

Table 6. Mean Values and Standard Deviations of Teachers' Perception on Instructional Supervision Practices of Principals for Promoting Student Achievement at school D (n=23)

No	**Instructional Supervision Practices Dimensions**	**Mean**	**SD**	**Level of Supervision Practices**
1	Directive Control Behavior	3.73	.86	Moderately high level
2	Directive Informational Behavior	3.84	.90	Moderately high level
3	Collaborative Behavior	3.78	.69	Moderately high level
4	Nondirective Behavior	3.88	.54	Moderately high level
	Total Instructional Supervision Practices	3.81	.68	Moderately high level

Scoring Direction:

1.00-1.80= Low level of supervision practices
1.81-2.60= Moderately low level of supervision practices
2.61-3.40= Average level of supervision practices
3.41-4.20= Moderately high level of supervision practices
4.21-5.00= High level of supervision practices

Table 7. Mean Values and Standard Deviations of Teachers' Perceptions on Instructional Supervision Practices of Principals for Promoting Student Achievement at school E (n=16)

No	Instructional Supervision Practices Dimensions	Mean	SD	Level of Supervision Practices
1	Directive Control Behavior	4.32	.61	High level
2	Directive Informational Behavior	4.00	.40	Moderately high level
3	Collaborative Behavior	4.10	.62	Moderately high level
4	Nondirective Behavior	4.21	.69	High level
	Total Instructional Supervision Practices	4.16	.54	Moderately high level

Scoring Direction:

1.00-1.80= Low level of supervision practices
1.81-2.60= Moderately low level of supervision practices
2.61-3.40= Average level of supervision practices
3.41-4.20= Moderately high level of supervision practices
4.21-5.00= High level of supervision practices

Table 8. Mean Values and Standard Deviations of Teachers' Perceptions on Instructional Supervision Practices of Principals for Promoting Student Achievement in Basic Education High Schools. (N=132)

No	School	Mean	SD	Level of Supervision Practices
1	School A	3.89	.43	Moderately high level
2	School B	4.56	.63	High level
3	School C	3.78	.78	Moderately high level
4	School D	3.81	.68	Moderately high level
5	School E	4.16	.54	Moderately high level
	Total	4.04	.69	Moderately high level

Table 9. The One-Way ANOVA Results for Teachers' Perceptions on Instructional Supervision Practices of Principals for Promoting Student Achievement among Schools (N=132)

No	Instructional Supervision Practices Dimensions		Sum of Squares	*df*	Mean Squares	*F*	*p*
1	Directive Control Behavior	Between Groups	17.446	4	4.362	8.695	.000***
		Within Groups	63.707	127	.502		
		Total	81.153	131			
2	Directive Informational Behavior	Between Groups	25.443	4	6.361	12.876	.000***
		Within Groups	62.40	127	.494		
		Total	88.184	131			
3	Collaborative Behavior	Between Groups	7.721	4	1.930	4.014	.004**
		Within Groups	61.080	127	.481		
		Total	68.801	131			
4	Nondirective Behavior	Between Groups	7.444	4	1.861	4.256	.003**
		Within Groups	55.532	127	.437		
		Total	62.977	131			
	Total	Between Groups	12.646	4	3.161	8.207	.000***
		Within Groups	48.922	127	.385		
		Total	61.568	131			

*p<.05, **p<.01, ***p<.001 at significant level and *ns* = no significant

Table 10. The Results of Turkey HSD Multiple Comparisons of Teachers' Perceptions on Instructional Supervision Practices of Principals for Promoting Student Achievement among Schools (N=132)

Dimensions	**(I)Group**	**(J)Group**	**Mean Difference (I-J)**	***p***
Directive Control Behavior	School B	School A	.81670*	.000***
		School C	.74077*	.001**
		School D	.99215*	.000***
Directive Informational Behavior	School B	School A	1.07884*	.000***
		School C	1.12926 *	.000***
		School D	.85442*	.000***
		School E	.69355*	.014*
Collaborative Behavior	School B	School C	.64032*	.005**
		School D	.60771*	.015*
Nondirective Behavior	School B	School C	.63802*	.003**
		School D	.56690*	.019*
Total	School B	School A	.67173*	.000***
		School C	.78701*	.000***
		School D	.75529*	.000***

Note:* The mean difference is significant at the 0.05 level.

Table 11. Relationship between instructional supervision practices of Principals and Student Achievement (N=132)

	Two Groups		**Instructional Supervision Practices**	**Student Achievement**
Spearman's rho	Instructional Supervision Practices	Correlation Coefficient Sig. (2-tailed)	1	.273** .002
	Student Achievement	Correlation Coefficient Sig. (2-tailed)	.273** .002	1

** Correlation is significant at the 0.01 level (2-tailed).

Qualitative Findings

Findings of the Study from Open-ended Questions

There are three open-ended questions in the instrument.

The open-ended question (1) is **"State the instructional supervision practices of principals in your school."** For this question, the teachers participated in this study answered as follows.

30.31% of teachers (n=40) answered that their principal directed teachers to do well the lesson plans, note of lessons, diaries and teaching aids that suits with the lessons before the class. 15.90% of teachers (n=21) stated that their principal paid attention to create positive school climate but weak in the management strategies about the school. 14.39% of teachers (n=19) stated that their principal was fair in allocating the subject teachers according to their representative subjects.12.12% of teachers (n=16) stated that their principal is good at instructing teachers, explained thoroughly about the problems and solved the difficulties in the very good ways. 6.82% of teachers (n=9) claimed that their principal directed teachers to attend workshops, pointed out the subject deans to manage systematically from the beginning of the school year. 6.06% of teachers (n=8) answered that their principal checked out the classroom regularly and directed teachers how to manage the classroom effectively. 3.79% of teachers (n=5) answered that

their principal instructed to obey the school disciplines. 3.79% of teachers (n=5) stated that their principal treated open discussion with the teachers and suggested teachers to help each other between teaching staff. 3.03% of teachers (n=4) stated that their principal positively criticized the needs of the teachers. 1.52% of teachers (n=2) claimed that their principal observed teachers' instruction and directed teachers to use different teaching methods that suit students' needs.1.52% of teachers (n=2) answered that their principal suggested teachers to teach thoroughly extra-curriculum activities. 0.76% of teacher (n=1) complained that their principal didn't accept the teachers' discussion.

The open-ended question (2) is **"State the collaborative activities that the principals conduct with teachers for promoting students achievement**". For this question, the teachers participated in this study answered as follows.

65.16% of teachers (n=86) stated that their principal cooperated with teachers to improve instruction.7.58% of teachers (n=10) stated that there was no collaborative relationship between the principal and teachers.7.58% of teachers (n=10) answered that their principal made regular meeting for the improvement of the school. 6.82% of teachers (n=9) claimed that their principal suggested to make subject discussion among teachers to improve collaboration. 4.55% of teachers (n=6) stated that their principal cooperated with teachers in the monthly assessment tests and instructed to make remedial teaching for the lower learners. 4.55% of teachers (n=6) claimed that their principal made strong decisions with teachers for the improvement of matriculation examination pass rate. 3.80% of teachers (n=5) replied that their principals didn't make the meeting with the Parent Teacher Association (PTA) to discuss the welfare of the school.

The open-ended question (3) is **"Discuss about weakness and strength points of instructional supervision practices of principal in your school**". For question, the teachers participated in this study answered as follows.

19.70% of teachers (n=26) replied that their principal was weak in helping teachers to get clear information about the instruction. 15.91% of teachers (n=21) stated that their principal treated teachers friendly, listened the difficulties of the teachers and supported to create positive school climate. 14.39% of teachers (n=19) answered that their principal assisted teachers in academic activities.12.88% of teachers (n=17) stated that their

principal did not do well in the school management. 11.37% of teachers (n=15) answered that their principal paid attention to the overall development of the school. 9.09% of teachers (n=12) claimed that their principal made regular classroom visitations but he didn't discuss about the instruction with the teachers. 7.58% of teachers (n=10) replied that their principal made regular monthly meetings, overtime class and night camp for promoting matriculation pass rate.3.79% of teachers (n=5) stated that their principal was an authoritarian person and he ignore teachers' perceptions. 3.03% of teachers (n=4) claimed that their principal gave opportunities to teachers to make decisions concern with school problems. 2.27% of teachers (n=3) stated that there was no enough teaching aids for the instruction.

Conclusion and Discussion

No school can succeed in a situation where a principal does not constantly check the work of his subordinates. Without supervision of instruction by principal of Basic Education Schools, the products may not achieve the overall goals of higher learning (Beardwell & Claydon, 2007). According to Afolakemi (2007), student achievement depend on school factors and environmental factors. The aim of this study was to study the instructional supervision practices of principals for promoting student achievement in Basic Education High Schools of Manaung Township, Rakhine State.

In a quantitative study, instructional supervision practices of principals consisted of four dimensions: directive control behavior, directive informational behavior, collaborative behavior and nondirective behavior. From quantitative findings, the level of instructional supervision practices of principals perceived by teachers was moderately high level.

When analyzing whether there were significant differences of teachers' perceptions on their instructional supervision practices of principals for promoting student achievement among schools, the results of One-Way ANOVA and the results of Turkey HSD Multiple Comparisons were used. By the results of One-Way ANOVA, it could be concluded that there were significant differences in all dimensions. Moreover, the results of Turkey HSD Multiple Comparisons showed that School B was significantly different from School A, School C and School D. In this study, schools

were classified into two groups according to their matriculation pass rate of the three years (2016-2018).

The average pass rate of three years (2016-2018) in Manaung Township was 12.09%. The above average group regarded as school above 12.09% and below average group regarded as school below 12.09%.According to the average pass rate, School A, School B and School E were below average groups and, School C, and School D were above average groups. It was found that there was a positively low correlation between each dimension of instructional supervision practices and student achievement. Moreover, this study revealed that there was a positively low correlation between instructional supervision practices of principals and student achievement. This means that if the teachers' perceptions on instructional supervision practices of principals are high, the student achievement is likely high or if the teachers' perceptions on instructional supervision practices of principals are low, the student achievement is likely low. Glanz, et al, (2007) found that there was a connection between instructional supervision and student achievement.

In general, instructional supervision practices are mainly important for all principals and they should use these all dimensions (directive control behavior, directive informational behavior, collaborative behavior and nondirective behavior) depend on their suitable circumstances. Therefore, principals must paid attention to the facts that can affect overall development of the students so that the student achievement level of the schools may be follow automatically.

Recommendation

Based on the results of this study, the following facts are suggested for principals' instructional supervision practices for promoting student achievement in Basic Education High Schools.

- Principals should focus on collaborative relationship with teachers.
- Principals should listen the teachers' perceptions and feedback about the instruction in order to solve instructional problems.
- Principals should have the ability to persuade parents and other committee members to participate in the school activities.
- Principals should inform teachers with clear information in order to perform well in their instructional activity.

- Principals should try to know how to assist required teaching aids and material resources that can support the students to understand the lessons clearly.

Need for Further Research

As the suggestions for further research, it is essential to study the instructional supervision practices of principals for promoting student achievement in other dimensions. This study is limited to study instructional supervision practices of principals for promoting student achievement in Basic Education High Schools from Manaung Township.

Acknowledgements

First of all, we would like to express our respectful thanks to Dr. Aye Aye Myint (Rector, Yangon University of Education) and Dr. Pyone Pyone Aung (Pro Rector, Yangon University of Education).

We would like to offer our respectful gratitude to Dr. Daw Htay Khin (Professor, Head of Department, Department of Educational Theory) for her continuously encouragement, and invaluable guidance throughout this study.

Further, we would acknowledge to the responsible persons from the Basic Education High Schools who participated in this study, the librarian and the staff members of Yangon University of Education.

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Teacher Empowerment and Job Satisfaction in Basic Education High Schools in Hlaing Township

Thae Htet Min Lwin[1], Cho Cho Sett[2] & Theingi Nwe Oo[3]

Abstract

The objectives of this study are to investigate the levels of teacher empowerment and to analyze the levels of their job satisfaction, to study the relationship between teacher empowerment and job satisfaction in basic education high schools in Hlaing Township. Both quantitative and qualitative methods were adopted in this study. The sample consisted of 116 teachers in four high schools in Hlaing Township. For quantitative study, questionnaire for teachers were used to collected data. Interview was used for qualitative study. The internal consistency (Cronbach's alpha) of teacher empowerment and job satisfaction were 0.735 and 0.539 respectively. Descriptive statistics and Pearson product moment correction were employed to analyze the data in quantitative study In this study, teacher empowerment in all high schools was high level. Teacher job satisfaction in all high schools was moderate level. There was an association between teacher empowerment and job satisfaction ($r=0.529$, $p<.01$). It was also found that teacher empowerment related to their job satisfaction based on the qualitative data.

Keywords: Teacher Empowerment and Job Satisfaction

Introduction

Recent changes in education at the local and state levels have caused changes in the nature of both administrative and teacher job roles and expectations. Principals today face increased job complexity, rising standards, and greater demands. Teacher empowerment is considered by some to be a basic element of school reform (Blasé & Blasé, 2001 cited in Lintner, 2008). A teacher's sense of empowerment represents an important variable in comprehensive school improvement efforts of today's effective school movement. Therefore, the concept of empowered teachers within a school community integrates the use of independence and self-sufficiency to improve the teaching and learning process (Sharp, 2009).

[1] Assistant Lecturer, Daw, Department of Educational Theory, Yangon University of Education

[2] Associate Professor, Dr., Department of Educational Theory, Yangon University of Education

[3] Lecturer, Dr., Department of Educational Theory, Yangon University of Education

On the other hand, attempts to improve performance in schools will never succeed if teachers' job satisfaction is ignored. According to Shann (2001 cited in Ngimbudzi, 2009), "teacher satisfaction has been shown to be a predictor of teacher retention, determinant of teacher commitment, and, in turn, a contributor to school effectiveness". The satisfied workers have a very constructive attitude about work, and adversely. In this study, the researcher will attempt to explore teacher empowerment and job satisfaction by conducting quantitative and qualitative analyses.

Objectives

The objectives of this study are as follows:

- To investigate the levels of teacher empowerment in Basic Education High Schools in Hlaing Township
- To study the levels of teachers' job satisfaction in Basic Education High Schools in Hlaing Township
- To study the relationship between teacher empowerment and job satisfaction in Basic Education High Schools in Hlaing Township

Research Questions

1. To what extent do principals empower their teachers in Basic Education High Schools in Hlaing Township?
2. What are the levels of teacher job satisfaction in relation to empowerment in Basic Education High Schools in Hlaing Township?
3. Is there any relationship between teacher empowerment and their job satisfaction in Basic Education High Schools in Hlaing Township?

Definitions of Key Terms

Teacher Empowerment

Teacher Empowerment is defined as the process whereby teachers develop the competence to take charge of their own growth, resolve their own problems, and to be given opportunities to display these competencies within the school (Short & Johnson, 1994).

Job Satisfaction

Job satisfaction is defined as a pleasurable or positive emotional state resulting from the appraisal of one's job or job's experiences (Locke, 1976 cited in Cypert, 2009). Job satisfaction is defined as the degree to which a person's work fulfills individual needs.

Theoretical Framework of the Study

The following theoretical framework leads to the research work.

The following six dimensions of teacher empowerment and job satisfaction are used in this study. Six dimensions of teacher empowerment (Short & Rinhart, 1992) are decision making, professional growth, status, self-efficacy, autonomy and impact.

Decision making involves participation in critical decisions that directly affect teacher's work. To be effective, teachers' participation in decision-making must be genuine, and the teachers need to be confident that their decisions actually impact real outcomes.

Professional growth is the perception that the school provides opportunities for professional growth, development, continuous learning, and expansion of skills. It is essential that teachers model life-long learning for their students' benefit, as well as an antidote to teacher burnout.

Status is the perception of professional respect and admiration between colleagues. Recognition of teacher status can be found in comments and attitudes from the various constituents of the school environment and student response to the teacher's instructions.

Self-efficacy is the perception that the teacher has the skills and abilities to impact student learning. Self-efficacy develops as individuals acquire self-knowledge and the belief that they are personally competent and have mastered skills necessary to affect desired outcomes.

Autonomy is the perception that the teacher can control aspects of their work. . The hallmark of autonomy is the sense of freedom to make certain decisions. Autonomy is fostered when school environments support risk taking and experimentation by teachers

Impact is the perception that the teacher can effect and influence the school. Teacher impact is one of the characteristics of transformational

teacher-leaders. Teacher-leaders use their influence to make a difference on significant issues within the school by utilizing others in making changes.

Job satisfaction is a pleasurable or positive emotional state resulting from the appraisal of one's job or job's experiences (Locke, 1976 cited in Cypert, 2009). Satisfactoriness was the extent to which the individual can meet job demands and was a function of relationship between the individual's abilities and the ability requirements of the job. Satisfaction was the extent to which the job meets the expectations and needs of the individual (Dawis et al., 1968).

Methodology

Research Method

Both quantitative and qualitative methods were used in this study.

Sample

The sample was consisted of four Basic Education High Schools in Hlaing Township. In addition, 131 teachers from Basic Education High Schools in Hlaing Township were chosen by using census sampling method for quantitative study. Purposive sampling method is used in qualitative study.

Instruments

This questionnaire included 37 items (four point Likert-type) relating to teacher empowerment and 20 items (four point Likert-type) items related to teachers' job satisfaction. The internal consistencies (Cronbach's alpha) were 0.74 for the questionnaire to explore teacher empowerment and 0.54 for the questionnaire of teachers' job satisfaction. Interview questions were used for qualitative study.

Procedures

In order to construct appropriate questionnaires concerning this study, the related literature was reviewed and analyzed. In addition, the researcher got some advice and guidance from 5 expert teachers who were experienced and well versed in this field. Pilot study was conducted on 14th January 2018 from a high school. After reviewing and modifying the items

of questionnaires based on the responses of pilot test, questionnaires were distributed on the 22nd January 2018 and collected after lasting 10 days.

Data Analysis

Descriptive and Pearson-product moment correlation coefficient were used for quantitative data analysis. Qualitative data analysis based on categorizing and interpreting the recordings and interview questions.

Findings

According to the quantitative findings, Table 1 showed descriptive statistics for teacher empowerment in Basic Education High Schools in Hlaing Township. According to Table 1, teachers were in moderate level of decision making and professional growth and in high level of impact, status, self-efficacy and autonomy. So, they possessed high level of teacher empowerment.

Table 1. Descriptive Statistics for Teacher Empowerment in Basic Education High Schools in Hlaing Township

Dimensions	Mean	SD	Remark
Decision Making	2.88	0.32	Moderate level
Professional Growth	3.00	0.29	Moderate level
Status	3.08	0.29	High level
Self-Efficacy	3.13	0.29	High level
Autonomy	3.10	0.36	High level
Impact	3.03	0.30	High level
Teacher Empowerment	**3.04**	**0.25**	**High level**

1.00 – 2.00 = low level 2.01 – 3.00 = moderate level
3.01 – 4.00 = high level

Table 2 showed descriptive statistics for teacher job satisfaction in Basic Education High Schools in Hlaing Township. According to Table 2, teachers possessed moderate level of job satisfaction.

Table 2. Descriptive Statistics for Teacher Job Satisfaction in Basic Education High Schools in Hlaing Township

Dimension	Mean	SD	Remark
Job Satisfaction	2.96	0.38	Moderate level

1.00 – 2.00 = low level 2.01 – 3.00 = moderate level
3.01 – 4.00 = high level

The Pearson-product moment correlation was utilized to find the relationship between teacher empowerment perceived by teachers and job satisfaction (See Table 3). According to Table 3, teacher empowerment (r=0.529, p=0.000) are moderately correlated with teachers' job satisfaction.

Table 3. Correlations Between Teacher Empowerment and Job Satisfaction Perceived by Teachers

Dimensions	Mean	SD	DM	PG	ST	SE	AU	IM	TE	JS
Decision Making	2.88	0.32	1							
Professional Growth	3.00	0.29	.574**	1						
Status	3.09	0.30	.475**	.624**	1					
Self-efficacy	3.13	0.29	.291**	.557**	.763**	1				
Autonomy	3.10	0.37	.478**	.650**	.504**	.541**	1			
Impact	3.03	0.30	.663**	.580**	.700**	.661**	.606**	1		
Teacher Empowerment	3.04	0.25	.724**	.824**	.832**	.781**	.799**	.868**	1	
Job Satisfaction	2.96	0.38	.411**	.375**	.402**	.348**	.442**	.567**	.529**	1

**p<0.01

Note: DM= Decision Making
PG= Professional Growth
ST= Status
SE= Self-Efficacy
AU= Autonomy
IM= Impact
TE= Teacher Empowerment
JS= Job Satisfaction

According to the qualitative findings, teachers said that principals decided almost all cases in schools and they seldom permitted teachers to decide but they allowed and recognized their teachers' advices. They gave teachers the opportunity to continue learning for their professional

development. Teachers got the respect and support of their colleagues and help each other. Teachers believed that they had the ability to improve their students' potential abilities. Principals gave opportunities their teachers to choose and teach with teaching methods and teaching aids that will the students to understand but they instructed them to teach subjects conform to syllabus and monthly courses. Teachers said that they had an impact on other teachers and students to participate actively in and out of the school activities and they participated in staff development program and they also helped as a coach and supporters. Therefore, almost all teachers in all high schools felt that they perceived empowerment in professional growth, status, self-efficacy, impact and autonomy but they less perceived empowerment in Decision Making.

Teachers from all schools said that they satisfied because their principals made a real effort to maintain good relationship with teachers, parents and community members who contributed the school welfare. They tried to implement the school goals together with teachers. They tried to ensure that the teachers were enjoyed their work, getting opportunities to enhance their interests and enthusiasms, and being sympathy in teachers' personal affairs. They worked happily in schools because of the relationship of colleagues and mutual trust, respect each other, willing to work together and reciprocal assistance. However, sometimes the teachers were unhappy for subject leaders' bias, the students' misbehaviour and extra workload. Most of the teachers satisfied with their work but sometime, they were less satisfied.

Conclusion

Discussion and Conclusion

Almost all teachers possessed high level of impact, status, self-efficacy and autonomy of teacher empowerment and moderate level of empowerment on decision making and professional growth. Therefore, principals should encourage and emphasize on teachers' participation in decision making and professional growth which are dimensions of teacher empowerment. It has been shown to lead to greater productivity, job satisfaction, and organizational commitment (Rice & Schneider, 1994 cited in Cypert, 2009). Empowering teachers has its greatest impact on student achievement when emphasis on the core technology of teaching and learning in schools. So, if principals of the studied high schools want them

to culture and promote feeling of competence, impact, feeling of meaning and independence in workplace, they can promote their empowerment. In additions, to be effective schools, teacher empowerment needs to be authentic (Bogler & Somech, 2004). Therefore, teacher empowerment is perceived as a crucial factor that affects school effectiveness.

Teachers perceived moderate level of job satisfaction. Job satisfaction can lead to behaviours that can have either a positive or negative affect on organizational functioning (Chamundeswari, 2013). School principals and other deems should arrange teachers' experience sharing within school and out the schools. All these make teachers to be effective as well as satisfied in the job. They should reduce possibly teachers' workloads. The principals, schools, and community should support teachers through facilitating transportations road access, building house, provision pure water, facilitate access of electricity and supply good working condition with necessary refreshment material like internets services and others. This helps teachers to increases status in the profession as well as increases their level of satisfaction on job.

According to these findings, the more teachers increase perceived level of empowerment; the more they increase job satisfaction and the more teachers decrease level of empowerment; the more they decrease job satisfaction. Therefore, it can be said that there was relationship between teacher empowerment and job satisfaction perceived by teachers. Shen (1997, cited in Cypert, 2009) contended that creating a work environment which allows teachers to have influence and control of school and teaching policies leads to greater levels of job satisfaction and empowerment and ultimately, increased teacher retention. The principals should focus on creating an empowering work environment for teachers by increasing participation in decision making, providing opportunities for professional growth, fostering professional respect between colleagues, promoting self-efficacy, allowing for teacher autonomy, and welcoming teacher input on school-related issues. The higher the empowerment the teachers feel in their work, the more satisfied with their work.

Recommendations

- Principals should provide teachers with meaningful professional development opportunities for all teachers.
- Teachers should be provided opportunities to make the decision in school activities.
- Teachers should be encouraged to identify their strongest skills as a starting point for their own professional development.
- Principals should consider their personal behaviors that have effects on teacher empowerment and job satisfaction.
- Principals need to use their interpersonal skills to attract loyalty and trust from their staffs and encourage and motivate them.
- Principals should create empowerment environment for their teachers that encourage teachers' job satisfaction.

Need for Further Research

This study tried to explore the relationship between teacher empowerment and job satisfaction in all Basic Education High Schools in Hlaing Township. It is necessary to investigate teacher empowerment and job satisfaction in other states and regions to represent the whole country. Further studies are needed to be expended the job satisfaction and performance of school teachers. Moreover, the relationship between teacher empowerment and school outcomes should be studied. In addition, further study should be taken student demographic information and school size as variables in order to find out the relationship between teacher empowerment and their commitment. More longitudinal studies need to be conducted on teacher empowerment.

Acknowledgements

We would like to express our gratitude to Dr. Pyone Pyone Aung (Pro-rector, Yangon University of Education) and Dr. Kay Thwe Hlaing (Pro-rector, Yangon University of Education) for allowing us to do this research successfully. Special acknowledgement also goes to Dr. Khin Mar Ni (Professor and Head of Department of Educational Theory, Yangon University of Education) for her advice, guidance and long standing commitment during our research work. We would like to offer our note of respectful appreciation to Dr. Phyu Phyu Yin (Professor, Department of Educational Theory, Yangon University of Education) for her great help, invaluable advice and guidance. Moreover, we appreciate to all persons who willingly helped us in carrying out this research.

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Relationship between Occupational Stress and Job Satisfaction of Teachers

Thae Hsu Khine[1] & Lwin Lwin Than[2]

Abstract

This study investigated the relationship between occupational stress and job satisfaction of teachers at selected Basic Education High Schools in Tatkon Township. Two instruments, questionnaire for occupational stress of teachers and questionnaire for job satisfaction of teachers, were used to collect the data needed for the study. All senior, junior and primary school teachers (N=357) from the eight selected Basic Education High Schools in Tatkon Township participated in this study. A distribution of participating schools was monitored and adjusted using the criterion that the principal who had been at the school for at least one year. For this study, descriptive statistics such as mean and standard deviation, one way analysis of variance (ANOVA) and Pearson product moment correlation were utilized. The results of this study indicated that occupational stress level of teachers at selected schools in Tatkon Township was moderate and job satisfaction level of teachers was also moderate. Based on the results of correlation analysis, a negative and high significant relationship between occupational stress and job satisfaction of teachers (***r***= -.667, ***p***<0.01) was found in selected Basic Education High Schools in Tatkon Township.

Keywords: occupational stress, job satisfaction

Introduction

Occupational stress, also known as job stress, is the inability to cope with the pressures in a job, because of a poor fit between someone's abilities and his/her work requirements and conditions (Holmlund-Rytkönen and Strandvik, 2005, as cited in Yaacob and Long, 2015). For teachers, it is also important to have high job satisfaction in their profession. Then only they will be able to deliver 100% for the quality of our new generations and our education. According to Demirtas (2010, as cited in Kenney, 2013) it is expected that a school which has teachers with high level of job satisfaction gives qualified education and increases student success levels. Low teaching satisfaction correlates with the outcomes of work

[1] Deputy Staff Officer, Department of Education Research Planning and Training
[2] Associate Professor, Department of Educational Theory, Sagaing University of Education

stress, that is, psychological distress and low self-esteem (Ho & Au, 2006, cited in Kenney, 2013). Since there is a strong relationship between teachers' occupational stress and their job satisfaction, it is important for teachers to realize the stress and the stressors that cause all the negative effects and to be able to manage them. Then only, they can have the high job satisfaction in work and lead to successful educational system.

Purpose of the Study

The purpose of the research is to investigate the relationship between occupational stress and job satisfaction of teachers at selected Basic Education High Schools in Tatkon Township.

The specific objectives of the study are:

1. To examine the level of occupational stress perceived by teachers at selected Basic Education High Schools in Tatkon Township,
2. To explain the level of job satisfaction perceived by teachers at selected Basic Education High Schools in Tatkon Township, and
3. To find out the relationship between occupational stress and job satisfaction of teachers at selected Basic Education High Schools in Tatkon Township.

Research Questions

1. What are the levels of occupational stress as indicated by teachers at selected Basic Education High Schools in Tatkon Township?
2. What are the levels of job satisfaction as perceived by teachers at selected Basic Education High Schools in Tatkon Township?
3. Is there any relationship between occupational stress and job satisfaction of teachers at selected Basic Education High Schools in Tatkon Township?

Theoretical Framework

The theoretical framework of this study is established based on reviewing related literature. According to Srivastava and Singh (1981), occupational stress will be examined by twelve dimensions such as role overload, role ambiguity, role conflict, unreasonable group and political pressure, responsibility for the person, powerlessness, under-participation, poor-peer relations at work, intrinsic impoverishment, low status and strenuous working conditions and unprofitability.

Again, job satisfaction will be measured by six dimensions according to Smith, Kendall and Hulin (1969). They are work on present job, present pay, opportunities for promotion, supervision, co-workers and job in general scale.

Review of Related Literature

Occupational Stress

Occupational stress of school teachers is a "response by a teacher of negative effect (such as angers, anxiety or depression) accompanied by potentially pathogenic physiological changes (such as increased heart rate, or release of adrenocorticotrophic hormone into the blood-stream) as a result of the demands made upon the teacher in his role as a teacher", (Kyriacou and Sutcliffe, 1977, cited in Anna, 1982).

Job stress has a significant relationship with job satisfaction and it is viewed as an antecedent of job satisfaction (Stamps and Piedmonte, 1986; Stanton et al, 2002, as cited in Malik, 2013). There is an inverse relationship between perceived stress and job satisfaction. The lack of satisfaction can be a source of stress while high satisfaction can lessen the effects of stress which means both job stress and job satisfaction are interrelated (Flanagan and Flanagan, 2002; Sveinsdottir et al, 2006; Zangaro and Soeken, 2007, as cited in Malik, 2013). Effective stress management will not only increase job satisfaction but indirectly will improve business results (Muhammad et al, 2011, as cited in Malik, 2013).

Job Satisfaction

As quoted by Miskel, Fevurly and Steward (1979,as cited in Anna, 1982), job satisfaction can be defined as any combination of psychological, physiological and environmental circumstances that causes a person to say. "I am satisfied with my job". Job satisfaction may also be defined as the

pleasurable emotional state resulting from the appraisal of one's job or occupation as achieving or facilitating one's values.

Facets of Job Satisfaction

Smith, Kendall, and Hulin developed the Job Descriptive Index (JDI) in 1969. According to Smith et al. (1969, as cited in Skibba, 2002), job satisfaction is operationalized at the facet level to include 6 job facets. They are as follows:

(i) Work on Present Job

This scale is designed to measure how people feel about the job they are currently doing. It measures how satisfied an employee is with the work.

(ii) Present Pay

This scale measures how people feel with their pay and the difference between what people are actually getting and what they believe they should be getting.

(iii) Opportunities for Promotion

This scale measures how the employees feel about the procedures that the administration follows in accordance with giving promotions.

(iv) Supervision

This scale of the JDI measures how satisfied people are with their supervisors. Typically, if supervisors are employee-centered, meaning that they take interest in their employees and listen to them, then the employees are more satisfied with their supervisors. Employees also find more satisfaction with supervisors if the supervisors are deemed competent with their job.

(v) People on Your Present Job (Co-workers)

This scale looks at the relationship and satisfaction that the employees have with their co-workers. This area of satisfaction is measured by how well employees get along with each other and how well they look up to their fellow employees.

(vi) Job in General (JIG)

The Job in General scale is a measure that is included with the Job Descriptive Index. The scale was developed to assess the overall satisfaction of people with their jobs.

Methodology

In this study, descriptive research method was used. For descriptive research, researcher used the questionnaire for occupational stress of teachers developed by Srivastava and Singh (1981) including 46 items and the questionnaire for job satisfaction of teachers developed by Smith et al., (1969) including 27 items.

Research Findings

For Research Question (1)

According to table 1, it can be found that the level of occupational stress of teachers in each selected school fell in the range between 2.34 and 3.67. Therefore, the occupational stress level of teachers in each selected school was the moderate level. Similarly, as overall mean scores of teachers' occupational stress was 2.67, it can be said that the occupational stress level of teachers for all selected High Schools was the moderate level.

Table 1. Mean Scores and Standard Deviations for Occupational Stress of Teachers in All Selected Basic Education High Schools

Occupational Stress	Schools								All Selected Schools (n=357)
	A (n=87)	B (n=83)	C (n=46)	D (n=33)	E (n=34)	F (n=27)	G (n=28)	H (n=19)	
role overload	3.25	3.23	3.66	3.01	3.41	2.94	3.35	3.32	**3.28**
role ambiguity	2.56	2.48	2.33	2.13	2.62	2.40	2.31	2.34	**2.43**
role conflict	2.88	2.65	2.75	2.87	2.95	2.88	3.16	2.84	**2.84**
unreasonable group and political pressures	3.52	3.48	3.55	3.36	3.82	3.60	3.85	3.28	**3.55**
responsibility for person	3.74	3.82	3.68	3.69	3.92	3.48	3.79	3.63	**3.74**
under participation	2.10	2.07	1.87	2.02	1.83	1.99	1.99	2.09	**2.01**
powerlessness	2.46	2.43	2.01	2.13	2.25	2.42	2.27	2.16	**2.31**
poor peer relations	2.54	2.43	2.46	2.26	2.43	2.26	2.59	2.51	**2.45**
Intrinsic impoverishment	2.47	2.25	2.44	2.24	2.50	2.01	2.12	2.11	**2.32**
low status	2.17	2.19	1.98	2.11	2.09	1.95	1.94	2.19	**2.10**
strenuous working conditions	2.74	2.65	2.68	2.58	2.96	2.26	2.77	2.34	**2.66**

Occupational Stress	Schools								All Selected Schools (n=357)
	A (n=87)	B (n=83)	C (n=46)	D (n=33)	E (n=34)	F (n=27)	G (n=28)	H (n=19)	
unprofitability	3.33	3.33	3.32	2.82	3.56	3.11	3.29	3.13	**3.27**
Average Overall Occupational Stress	**2.84**	**2.76**	**2.79**	**2.64**	**2.89**	**2.64**	**2.83**	**2.70**	**2.78**

1.00-2.33 = Low level, 2.34-3.67 = Moderate level, 3.68-5.00 = High level

For Research Question (2)

Job Satisfaction Perceived by Teachers for All Selected Basic Education High Schools

According to table 2, it can be found that the level of job satisfaction of teachers in each selected school fell in the range between 2.34 and 3.67. Therefore, it can be said that the level of job satisfaction of teachers in each selected school was the moderate level. Similarly , the job satisfaction level of teachers for all selected High Schools was the moderate level.

Table 2. Mean Scores and Standard Deviations for Job Satisfaction of Teachers in All Selected Basic Education High Schools

Job Satisfaction	Schools								All Selected Schools (n=357)
	A (n=87)	B (n=83)	C (n=46)	D (n=33)	E (n=34)	F (n=27)	G (n=28)	H (n=19)	
work on present job	3.34	3.57	3.49	3.53	3.62	3.52	3.61	3.40	**3.49**
pay	3.12	2.95	3.14	3.26	2.90	2.91	2.93	2.89	**3.03**
opportunities for promotion	3.13	3.35	3.24	3.13	3.06	3.47	3.11	3.31	**3.22**
supervision	3.40	3.50	3.76	3.89	3.23	3.79	3.55	3.79	**3.56**
people on present job	3.32	3.73	3.47	3.89	3.38	4.01	3.76	3.47	**3.59**
job in general	3.74	3.91	3.74	3.84	3.82	3.67	3.86	3.71	**3.80**
Average Overall Job Satisfaction	**3.34**	**3.50**	**3.48**	**3.58**	**3.33**	**3.56**	**3.46**	**3.44**	**3.45**

1.00-2.33 = Low level, 2.34-3.67 = Moderate level,3.68-5.00 = High level

For Research Question (3)

According to table 3, the Pearson-product moment coefficient or **r** was - .667. The value of correlational coefficient (**r = -** .667) represents a high level as interpretation of the strength of relationship (Cohen,1988, as cited in Statistics Solutions.com). The study found that a negative and high correlation between occupational stress and job satisfaction of teachers. Thus it can be interpreted that when the levels of occupational stress increase, the level of job satisfaction will be decrease. On the other hand, when the levels of occupational stress decrease, the levels of job satisfaction will increase.

Table 3. Correlation between Occupational Stress and Job Satisfaction of Teachers at Selected Schools

Variables	Occupational Stress	Job Satisfaction
Occupational Stress Sig. (2-tailed)	1	-.667** .000
Job Satisfaction Sig. (2-tailed)	-.667** .000	1

**.Correlation is significant at the 0.01 level (2-tailed)

Conclusion and Discussion

In order to examine the relationship between occupational stress and job satisfaction of teachers, three research questions were developed to guide this study.

Research Question One asked teachers to investigate the teachers' perception of occupational stress at selected Basic Education High Schools in Tatkon Township. According to the research findings, the mean score of overall occupational stress of teachers in selected high schools in Tatkon Township ($\overline{X}$ =2.78) was in the limit between 2.34 and 3.67. Therefore, the level of teachers' occupational stress was moderate. There were twelve dimensions of occupational stress: role overload, role ambiguity, role conflict, unreasonable group and political pressures, responsibility for person, under participation, powerlessness, poor peer relations, intrinsic impoverishment, low status, strenuous working conditions and unprofitability. In teachers' perception of occupational stress, the level of occupational stress of teachers for one dimension, responsibility for person

was high stress level, for the dimensions such as role overload, role ambiguity, role conflict, unreasonable group and political pressures, poor peer relations, strenuous working conditions and unprofitability were moderate levels and for other dimensions, the levels of occupational stress of teachers were low levels. Moreover, the mean score of responsibility for person ($\bar{X}$ =3.74) was the highest and the mean score of under participation ($\bar{X}$ =2.01) was the lowest (see Table 1).

In this study, it can be said that responsibilities for person such as responsibility for the students' efficiency and productivity, responsibility for the future of pupils and the great responsibility for the progress and prosperity of the organization/department or school are the main causes of stress for the teachers at selected Basic Education High Schools in Tatkon Township. Conflicting or uncertain job expectations, too much responsibility (Rees & Redfern, 2000, cited in El Shikieri et al., 2011), too many "hats to wear", being undervalued and the threat of redundancy are all some of the sources of occupation stress (Fairbrother & Warn, 2003; Manshor et al., 2003, as cited in El Shikieri et al., 2011). Claude and Cole (1992, as cited in Ekundayo, 2014) suggested that in order to manage occupational stress effectively, management should consider providing training as an on-going updating process, consistent rewards for effective output and opportunities for employees to try new duties and different task.

Secondly, the Research Question Two was to investigate the teachers' perceptions about their job satisfaction at selected Basic Education High Schools in Tatkon Township. According to teachers' response, the mean score of overall job satisfaction of teachers at selected schools in Tatkon Township ($\bar{X}$ =3.45) was in the limit between 2.34 and 3.67. Therefore, the level of job satisfaction of teachers at selected schools in Tatkon Township was moderate satisfaction level. According to the results, it was also found that the level of job satisfaction of teachers for one factor "job in general" was high satisfaction level and for other factors such as "work on present job", "pay", "opportunities for promotion", "supervision" and "people on present job" were moderate satisfaction levels. According to the ranking order of the mean scores, the mean score of job in general ($\bar{X}$=3.80) was the highest and of pay ($\bar{X}$=3.03) was the lowest (see Table 2).

In this study, it can be interpreted that the teachers from selected schools in Tatkon Township are slightly satisfied with their salary and opportunities for promotion although they have high satisfaction towards their profession of teaching, their colleagues and their supervisors in schools. No one works for free, nor should they. Employees want to earn

fair wages and salaries, and employers want their workers to feel that is what they are getting. To that end, it is logical that employees and employers alike view money as the fundamental incentive for satisfactory job performance (James Houran & Keith Kefgen, as cited in Baaren et al., 2014). Moreover, reward system is a key determinant of the employee's attitude towards his organization and his work. Employees must have promotion opportunity (RADHA R. SHARMA, 1997, as cited in Baaren et al., 2014). According to Demirtas (2010, as cited in Kenny, 2013), it is expected that a school which has teachers with high level of job satisfaction gives qualified education and increases student success levels.

Lastly, the Research Question Three asked teachers to investigate the relationship between occupational stress and job satisfaction of teachers at selected Basic Education High Schools in Tatkon Township. The study found that a negative and high correlation between occupational stress and job satisfaction of teachers. The correlation r=-0.667 was significant at $p<0.01$ level. This means that the levels of teachers' job satisfaction will decrease when the levels of teachers' occupational stress increase. On the other hand, the levels of teachers' job satisfaction will increase when the levels of teachers' occupational stress decrease.

Acknowledgements

We would to offer my respectful gratitude to Dr. Saw Pyone Naing (Rector), Dr. Myat Myat Thaw (Pro-Rector), Dr. Daw Khin Mar Yee (Retired Professor and Head of Department, Department of Educational Theory), Dr. Daw Zin Nwe Than (Professor and Head of Department of Educational Theory, Sagaing University of Education), U Myint Oo (Associate Professor, Department of Educational Theory), and Dr. Daw Htay Khin (Retired Professor and Head of Department, Department of Educational Theory, Yangon University of Education).Finally, we are intended to all people who supported to complete this study.

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Relationship between Principals' Confidence, Humility and Effectiveness

Sai Thurein Win[1] & Zin Nwe Than [2]

Abstract

The purpose of this study was to investigate the relationship between teachers' perceptions of principals' confidence, humility and effectiveness at selected Basic Education High Schools in Pinlaung Township. Mixed methods research was applied to collect the required data. The sample for quantitative study was selected through purposive sampling which included 8 principals and 211 teachers from 8 selected Basic Education High Schools. This quantitative study was conducted by using three instruments for quantitative analysis. For the qualitative data, interviews were conducted with 4 principals and 24 teachers from 4 selected Basic Education High Schools to obtain detailed information about principals' confidence, humility and effectiveness in their own words. The results of this study revealed that principals' confidence was strongly and positively correlated with effectiveness ($r=0.762$, $p<0.01$). Similarly, a strong positive correlation was found between principals' humility and effectiveness ($r=0.709$, $p<0.01$). Again, principals' confidence was also highly and positively related with humility ($r=0.783$, $p<0.01$). The qualitative data provided by interviews with principals and teachers were consistent with the findings of quantitative findings. Further research needs to extend the study to other building levels and townships or regions to determine if confidence and humility are associated with effectiveness.

Keywords: Confidence, Humility, Effectiveness

Introduction

In the current competitive environment, organizations attempt to be as successful as possible. Undoubtedly, one of the critical variables in determining the success or failure of an organization is leadership. Effective the need to obtain a competitive advantage, the need to foster ethical behavior and the need to manage a diverse workforce fairly and equitably (Moorhead & Griffin, 2004, as cited in Sun, Ibrahim, Mamat, & Nawi, 2017).

[1] Senior Teacher, No.(1) Basic Education High School, Pinlaung Township

[2] Professor, Dr., Department of Educational Theory, Sagaing University of Education

Yukl (2002, as cited in Mesterova, Prochazka, & Vaculik, 2015) asserted that the transformational leader articulates the vision in a clear and appealing manner, explains how to attain the vision, acts confidently and optimistically, expresses confidence in the followers, emphasizes values with symbolic actions, leads by example, and empowers followers to achieve the vision. Lowe et al. (1996, as cited in Erkutl, 2008) found that individuals who exhibited transformational leadership were perceived to be more effective leaders with better work outcomes than who exhibited other leadership styles.

Apart from leadership style, self-confidence and humility of leaders are considered as important factors. Self-confidence refers to people's self-judgment of their capabilities and skill, or their perceived competence to deal successfully with the demands of a variety of situations (Shrauger & Schohn, 1995, as cited in McCormick, 2001). Similarly, humility refers to a developmental orientation, which is associated with a willingness to view oneself accurately, characterized by an appreciation of others' strength and contributions, teachability and a low self-focus (Owens, Johnson & Mitchell, 2013).

To sum up, by keeping in view the importance of self-confidence, humility and leadership effectiveness, the present study was designed to investigate the relationships among principals' self-confidence, humility and effectiveness at selected Basic Education High Schools in Pinlaung Township. Although it is likely to have shortcoming and weakness, the researchers believes that this study will help educational leaders in the development of a better understanding and appreciation of the importance of those variables which are vital for improvement of the educational organization.

Purpose of the Study

The general purpose of this study is to investigate the relationship among teachers' perceptions of principals' confidence, humility and effectiveness at Basic Education High Schools in Pinlaung Township.

Research Questions

The following research questions guide the direction of the study.

1. What are the levels of confidence, humility and effectiveness of principals perceived by teachers in selected Basic Education High Schools in Pinlaung Township?
2. What is the relationship between principals' confidence and their effectiveness?
3. What is the relationship between principals' humility and their effectiveness?
4. Is there any relationship between principals' confidence and their humility?

Review of the Related Literature

Self-Confidence

Self-confidence refers to people's self-judgment of their capabilities and skill, or their perceived competence to deal successfully with the demands of a variety of situations (Shrauger & Schohn, 1995, as cited in McCormick, 2001). In this study, there are two dimensions of principals' self-confidence: leader efficacy and task confidence. Leader efficacy is the principal's general confidence in their leadership abilities and task confidence refers to the principal's confidence related to specific leadership tasks (Oyer, 2011).

Humility

Owens (2009, as cited in Owens et al., 2013) defined humility as a developmental orientation, which he found to be associated with a willingness to view oneself accurately, characterized by an appreciation of others' strength and contributions, teachability and a low self-focus. In this study, three dimensions of humility, teachability, appreciation and self-awareness, developed by Owens (2009, as cited in Oyer, 2011) are used. Teachability is manifested by showing openness to learning, feedback, and new ideas from others (Owens et al., 2013). Appreciation refers to the capacity to view others in an appreciative, non-threatened way (Exline et al., 2004; Owens, 2009, as cited in Beauchesne, 2014). Similarly, self-awareness means the capacity to evaluate one's strengths and weaknesses without positive or negative exaggeration (Owens & Hekman, 2012).

Leadership Effectiveness

Leadership effectiveness is the process of influencing others to understand and agree about what needs to be done and how it can be done effectively, and the process of facilitating individual and collective efforts to accomplish the shared objectives (Yukl, 2011). In this study, transformational leadership and outcomes of leadership will be used as the dimensions of principal's effectiveness. Transformational leadership refers to the process of influencing in which principals articulates the vision in a clear and appealing manner, explains how to attain the vision, acts confidently and optimistically, expresses confidence in teachers, emphasizes values with symbolic actions, leads by example, and empowers teachers to achieve the vision (Yukl, 2002, as cited in Mesterova, et al., 2015). Outcomes of leadership refers to the principals' ability to generate extra effort in teachers, to effectively satisfy the professional needs of teachers and to generate satisfaction in teachers (Bass & Avolio, 2007, as cited in Oyer, 2011).

Methodology

Research Method

Mixed methods research was employed in this study.

Participants

A total of 8 principals and 211 teachers representing the 8 selected Basic Education High Schools (including branch high schools) included in the quantitative study. For the qualitative study, the researcher conducted interviews with 4 principals and 24 teachers at different levels from 4 selected Basic Education High Schools in Pinlaung Township.

Instruments

In order to collect and analyze quantitative data, three instruments such as "Oyer Confidence Scale" developed by Oyer (2011) to examine the principals' confidence, "Owens Humility Scale" developed by B. P. Owens (2009, as cited in Oyer, 2011) to measure teachers' perceptions of principals' humility, "Multifactor Leadership Questionnaire (MLQ) 5x-Short" developed by Avolio and Bass (2004, as cited in Flanigan, 2012) to study the principals' effectiveness. In addition, in order to obtain detailed information about principals' confidence, humility and effectiveness as a

qualitative data, the researchers developed the interview questions based on the questionnaires and related literature.

Data Analysis

Descriptive statistics such as means and standard deviations were calculated by using SPSS to explore principals' confidence, humility and effectiveness of selected high schools. The decision rule for interpreting the level of confidence, humility and effectiveness data was that the mean value from 1.00 to 2.33 was defined as low level of confidence, humility and effectiveness. Again, the mean value from 2.34 to 3.67 was defined as moderate level of confidence, humility and effectiveness; the mean value from 3.68 to 5.00 was defined as high level of confidence, humility and effectiveness. In addition, Pearson-product moment correlation was utilized to investigate the relationships among principals' confidence, humility and effectiveness. In addition to quantitative analysis, data collected from qualitative analysis (interviews with principals and teachers) was categorized and analyzed to complement qualitative findings on principals' confidence, humility and effectiveness.

Findings

Principals' Confidence Perceived by Teachers in All Selected High Schools

According to the statistical information in Table 1, the mean scores for the two dimensions of principals' confidence such as, "leader efficacy" and "task confidence", and the "overall confidence" of the 2 selected high schools (S3 and S4) were at moderate levels. On the other hand, the mean scores for "leader efficacy", "task confidence" and "overall confidence" of 6 selected high schools (S1, S2, S5, S6, S7, and S8) were at high levels. All in all, the mean values for two dimensions of principals' confidence such as overall leader efficacy and overall task confidence were high. Similarly, the mean value for the overall principals' confidence was high. This indicated that the principals from all selected high schools in Pinlaung Township had high level of confidence in carrying out their administrative roles.

Table 1. Mean Values and Standard Deviations of Principals' Confidence Perceived by Teachers in All Selected High Schools

Dimensions	High Schools								All Schools (N=211)
	S1	S2	S3	S4	S5	S6	S7	S8	
Leader Efficacy	3.97 (.343)	4.01 (.448)	3.59 (.681)	3.32 (.645)	3.96 (.121)	3.96 (.223)	3.92 (.288)	3.87 (.264)	**3.86** (.452)
Task Confidence	3.89 (.412)	4.01 (.425)	3.55 (.755)	3.18 (.679)	3.85 (.312)	3.91 (.299)	3.92 (.288)	3.88 (.344)	**3.81** (.507)
Overall Confidence	3.92 (.374)	4.01 (.430)	3.57 (.679)	3.23 (.649)	3.89 (.215)	3.93 (.264)	3.92 (.274)	3.88 (.507)	**3.83** (.472)

Note: 1.00-2.33 = low level, 2.34-3.67 = moderate level, 3.68-5.00 = high level

Principals' Humility Perceived by Teachers in All Selected High Schools

According to Table 2, the mean scores of the 4 schools (S2, S6, S7, and S8) were high while the mean score of S4 was moderate in all dimensions of humility and "overall humility" according to teachers' ratings.

Table 2. Mean Values and Standard Deviations of Principals' Humility Perceived by Teachers in All Selected High Schools

Humility	High Schools								All Schools (N=211)
	S1	S2	S3	S4	S5	S6	S7	S8	
Teachability	3.45 (.810)	3.89 (.516)	3.77 (.766)	3.17 (.799)	3.70 (.369)	3.95 (.195)	3.96 (.424)	3.94 (.236)	**3.70** (.616)
Appreciation	3.71 (.573)	3.95 (.371)	3.73 (.809)	3.00 (.816)	3.77 (.427)	3.97 (.168)	4.00 (.320)	3.92 (.296)	**3.76** (.574)
Self-Awareness	3.70 (.649)	3.82 (.459)	3.61 (.917)	3.16 (.756)	3.52 (.544)	3.97 (.134)	3.98 (.249)	3.80 (.332)	**3.69** (.592)
Overall Humility	3.61 (.655)	3.88 (.412)	3.70 (.789)	3.12 (.736)	3.65 (.385)	3.96 (.156)	3.94 (.289)	3.69 (.242)	**3.72** (.562)

Note: 1.00-2.33 = low level, 2.34-3.67 = moderate level, 3.68-5.00 = high level

Moreover, the mean scores of S3, and S5 were high in two dimensions of principals' humility namely, "teachability" and "appreciation", and moderate in dimension of "self-awareness". However, the overall mean score of principals' humility was high in S3 and moderate in S5. Again, the two dimensions of principals' humility, "appreciation" and "self-awareness" mean scores were high but one dimension of principals' humility, "teachability" and overall principals' humility were moderate in S1. In conclusion, it can be seen from the Table 2 that teachers from all selected high schools in Pinlaung Township believed that their principals had high level of humility in leading schools and staffs because the mean scores for three dimensions of principals' humility and "overall humility" ranged between 3.69 and 3.76. This indicated that all the principals' from selected high schools in Pinlaung Township had high level of humility based on teachers' perceptive.

Principals' Effectiveness Perceived by Teachers in All Selected High Schools

Table 3 presents mean values and standard deviations of principals' effectiveness perceived by teachers in all selected high schools. According to Table 3, the mean scores for all principals' effectiveness dimensions of the 5 selected schools (S1, S2, S6, S7 and S8) were at high level but the mean scores for those of 2 selected schools (S3 and S4) were at moderate level.

Table 3. Mean Values and Standard Deviations of Principals' Effectiveness Perceived by Teachers in All Selected High Schools

Dimensions	**High Schools**								**Composite Mean (N=211)**
	S1	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	
Transformational Leadership	3.87 (.642)	4.10 (.603)	3.40 (.879)	2.84 (.724)	3.69 (.574)	3.93 (.519)	3.81 (.530)	3.91 (.506)	**3.75** (.714)
Outcomes of Leadership	3.86 (.695)	4.14 (.596)	3.34 (.949)	2.86 (.746)	3.67 (.589)	4.13 (.544)	3.87 (.633)	3.95 (.476)	**3.78** (.751)
Overall Effectiveness	3.87 (.652)	4.11 (.588)	3.38 (.885)	2.85 (.717)	3.68 (.565)	3.99 (.514)	3.83 (.551)	3.92 (.475)	**3.76** (.714)

Note: 1.00-2.33 = low level, 2.34-3.67 = moderate level,
3.68-5.00 = high level

On the other hand, the mean scores for "transformational leadership" and "overall effectiveness" were high but the mean score for "outcomes of leadership" was moderate in S5 according to the teachers' responses. In summary, the mean scores for "overall transformational leadership", "overall outcomes of leadership" and "overall effectiveness" were at the high level in all selected high schools. This indicated that the effectiveness of selected principals from high schools in Pinlaung Township was high.

Relationships among Teachers' Perceptions of Principals' Confidence, Humility and Effectiveness

Table 4 displays the correlations among teachers' perceptions of principals' confidence, humility and effectiveness in all selected high schools in Pinlaung Township. Based on the findings, a statistically significant and positive relationship between teachers' perceptions of principals' confidence and their effectiveness (r=0.762, p<0.01) was found at selected high schools in Pinlaung Township.

Table 4. Correlations among Teachers' Perceptions of Principals' Confidence Humility and Effectiveness in All Selected High Schools

	1	**2**	**3**
1. Confidence	1		
2. Humility	.783**	1	
3. Effectiveness	.762**	.709**	1

Note: **Correlation is significant at the 0.01 level (2- tailed).

Likewise, a positive and high relationship was also existed between teachers' perception of principals' humility and their effectiveness (r=0.709, p<0.01). Furthermore, it was principals' confidence which hit the highest level of relationship (r=0.783, p<0.01) with their humility.

Conclusion and Discussion

According to the ratings of teachers, principals' from selected Basic Education High Schools in Pinlaung Township had high levels in all dimensions of principals' confidence such as "leader efficacy" and "task confidence" and "overall confidence". Similarly, they had high levels in all

dimensions of humility and "overall humility". When studying the mean scores of principals' effectiveness rated by teachers, all clusters of principals' effectiveness, "transformational leadership" and "outcomes of leadership", and "overall effectiveness" were found to be in the range of high level.

Based on the research findings, there was a significant and positive relationship between teachers' perceptions of principals' confidence and their effectiveness (r=0.762, p<0.01) at selected high schools in Pinlaung Township. It can be interpreted that leaders who were confident in doing their tasks were likely to be effective leaders other than leaders who were not confident. This study is congruence with previous studies of Oyer (2011) and McCosh (2012) which also found a strong and positive correlation between confidence and effectiveness.

When investigating the relationship between "overall humility" and "overall effectiveness", it was found that "overall humility" was positively and strongly correlated with "overall effectiveness" (r=0.709, p<0.01). Therefore, it can be concluded that leaders who had willingness to learn from others that they don't know, leaders who appreciated or complimented others on their efforts, and leaders who admitted their mistakes will likely to be more effective leaders. This finding is similar to the findings of Collin (2001) which stated that the most effective leaders (level 5 leaders) possessed humility.

When analyzing the correlation between "overall confidence" and "overall humility", a positively and highly relationship was found between "overall confidence" and "overall humility"(r=0.783, p<0.01). Therefore, it can be said that, leaders' confidence will increase along with the increase in leaders' humility. This findings is congruence with the findings of Oyer (2011) and McCosh (2012) which stated that humility is compatible with confidence. Moreover, a small number of empirical studies (Alston, 2005; King et al., 2007; Theoharis, 2008, as cited in Oyer, 2011) suggest that effective leaders can possess both confidence and humility.

Based on the qualitative analysis, principals from selected high schools in Pinlaung Township were carrying out their duties confidently because teachers and principals themselves reported that they could inspire teachers to participate in school activities, could deal with the school-wide problems successfully, and promote teachers' professional development

effectively. Moreover, principals from selected high schools in Pinlaung Township had high level of humility in performing school tasks because they accepted advice from teachers when carrying out schools functions and appreciated teachers for their efforts and take responsibilities for their actions according to the responses of principals and teachers.

As for leadership effectiveness of principals from selected high schools in Pinlaung Township, it was found that they had high level of leadership effectiveness because they could fulfill the requirements of schools and teachers effectively, built mutual respect with teachers and cooperated effectively with teachers in every respect of the schools. The qualitative data provided by interviews with principals and teachers were consistent with the findings of quantitative findings.

Acknowledgements

We would like to offer our respectful gratitude to Dr. Saw Pyone Naing (Rector, Sagaing University of Education), Dr. Myat Myat Thaw (Pro-Rector, Sagaing University of Education), Dr. Daw Khin Mer Yee (Retired Professor and Head of Department, Department of Educational Theory, Sagaing University of Education), and Dr. Aye Aye Cho (Retired Professor and Head of Department, Department of Educational Theory, Yangon University of Education) for their valuable expertise, support, constructive suggestions and criticism to complete my work. Most importantly, we wish to extend a special word of thanks to teachers from Basic Education High Schools in Pinlaung Township for cooperation and willingness to participate in this study.

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Factors Influencing on Principals-Teachers Relationships

Thu Zar Shine[1] & Win Win Thein[2]

Abstract

The main aim of this study is to examine the factors influencing on principals-teachers relationships at selected Basic Education High Schools in Monywa Township. Two existing survey instruments such as Factors Influencing on Principals-Teachers Relationships Questionnaire to study the factors and Principals-Teachers Relationships Questionnaire was used to find out the relationships among the constructs. All senior, junior, and primary school teachers (N=305) from four selected high schools in Monywa Township participated in the study. Descriptive statistics, bivariate correlations and multiple regressions were used in analyzing data. The result showed that all factors influencing on principals-teachers relationships have significantly and positive relationship with principals-teachers relationship. Moreover, principal's leadership style (β=.359) had the greatest impact of all the independent variables. In this study, it was found that the factors such as principal's leadership style , teacher induction and mentoring programs, teacher isolation, professional development and teacher incentives have direct effect on promoting a positive principals-teachers relationships.

Keywords: Principals-Teachers Relationships, Induction, Mentoring, Isolation, Professional Development, Incentives

Introduction

The development of every society depends on the nature and functionality of its educational system. Most of the teachers have left the profession due to personal characteristics, educational preparation, their initial commitment to teaching, and many external factors (Hope, 1999, cited in Gray, 2013). Teachers complain of ineffective induction programs, lack of professional mentors, and a principal's lack of fostering strong collaboration on site as reasons for leaving. However, the relationship that teachers have with their school principal can be one of the most influential factors that may keep teachers in classrooms (Murphy & Angelski, 1996/1997, cited in Gray, 2013).

[1] Senior Teacher, Myinmu Township
[2] Associate Professor, Department of Educational Theory, Sagaing University of Education

Effective leaders constantly foster purposeful interaction and problem solving, and are wary of easy consensus (Fullan, 2011, cited in Edgerson, 2006). Daily interpersonal interactions of a principal are necessary to garner trust and support from teachers. In order for our educational system to flourish and student achievement to increase in this ever-changing environment, schools must consider the relationship between the principal within the school, and each teacher.

There are many factors that may contribute to a strained relationship between principals and teachers. Lack of support from principals is a pivotal reason for teachers abandoning the profession. Support from a principal may vary from teacher to teacher, but many teachers view support from principals as providing effective orientation and induction activities (Hope, 1999, cited in Gray, 2013). If school districts are going to retain quality teachers, they must invest in effective mentoring programs, those that foster interaction and learning from experienced professionals.

Purposes of the Study

The general aim of this study is to examine the factors influencing on principals-teachers relationships at Basic Education High Schools in Monywa Township.

The specific purposes of this study are:

- To examine a relationship between principals' leadership style and the principals-teachers relationships,
- To explore a relationship between effective induction/mentoring programs for teachers and the principals-teachers relationships,
- To find out a relationship between teacher isolation and the principals-teachers relationships,
- To examine a relationship between the level of professional development provided by principals and the principals-teachers relationships,
- To explore a relationship between incentives for knowledge and skill provided by principals and the principals-teachers relationships, and
- To examine the factor that has the greatest impact on the principals-teachers relationships.

Review of Related Literature

There are five dimensions of factors influencing on principal-teacher relationship in this study: principal's leadership style, teacher induction and mentoring program, teacher isolation, professional development and teacher incentives. Transformational theory (Relationship theory) linked to the dimensions of factors influencing on principal-teacher relationship.

Principal's Leadership Style

Principal's leadership style is the pattern or way of doing things by the principal in pursuit of his or her duties (Jay, 2014). Principals have their own unique ways of interacting with teachers and implementing leadership styles for optimum effect (Van Niekerk, 2009). To acquire the success or the accomplishment of objective of a school, a principal must belong to the qualities of a leader and he pays attention to his teachers' needs and then must try to address these needs (cited in Josanvic-Vrgovic & Pavlvic, 2014).

Teacher Induction and Mentoring Programs

Induction is a professional development program that incorporates mentoring and is designed to offer "support, guidance, and orientation for beginning teachers during the transition into their first teaching job"; these programs help teachers through their first year by supporting ongoing dialogue and collaboration among teachers, which accelerate the new teachers' effectiveness and increases student achievement. Mentoring can be the key in preparing beginning teachers for the demands of a profession that is often learned on the job rather than in a certification program (LINCs).

Teacher Isolation

Isolation is related to stress overload, stagnation, and burn-out. Isolation is not restricted to particular types of schools or levels of education (Brantley & Gaikwad, 1992). The best way to ensure teacher collaboration and eliminate teacher isolation is to create professional learning communities. The professional learning communities (PLCs) approach to teaching shifts the focus away from an isolated teacher-centered approach to instruction. Instead, the focus becomes a student-centered approach, where teachers work collaboratively and interdependently to focus on a shared mission, collective capacity building, inquiry into

learning gaps, reflective practice and developing effective instructional practices to meet the individual needs of all students (Darling-Hammond, 1996, cited in Kessels, 1979).

Professional Development

Professional development is defined as the "process and activities designed to enhance the professional knowledge, skills and attitude of educators so that they might, in turn, improve the learning of students (Guskey, 2000, as cited in Lewandowski, 2005). Professional development addresses these concerns in four key ways: (1) through updating and enhancing the teaching skills and pedagogical content knowledge of all teachers: (2) through filling the gap often left by an inadequate teacher preparation programs: (3) through providing an accountability mechanism for the school reform movement: and (4) through seeking to improve the education of students and addressing their achievement gaps (Bayar, 2013).

Teacher Incentives

Incentives are most effective when there is a tight link between performance and rewards. If principals offer incentives for teachers, teachers become interested in teaching and also enhance principal-teacher relationship and student achievement (Fryer, 2008). Proponents of teacher incentives argue that they can drive improvements in student outcomes through multiple channels: (1) by providing financial incentives for teachers to focus or increase their effort (2) by encouraging the development of stronger teaching skills, (3) by increasing incentives for high performing teachers to enter or remain in schools subject to the incentives, and (4) by altering the selection of individuals into teaching towards those who are more able to benefit from such a reward system (Wyckoff, 2013).

Methodology

Participants

The target population for this study was all teachers (primary teachers, junior teachers and senior teachers) at selected Basic Education High Schools in Monywa Township. A distribution of participating schools was monitored and adjusted using the criterion that the principal had been at the current school for at least three years. So, out of 11 high schools in Monywa Township, 4 high schools met the criterion. So, a total of 305

teachers (112 senior teachers, 181 junior teachers and 12 primary teachers) from four Selected Basic Education High Schools participated in this study.

Research Method

Descriptive survey method was adopted in this study.

Instruments

Questionnaire for teachers was used to explore the basic demographic information of teachers, their perceptions of factors and principals-teachers relationships. This questionnaire consisted of two Parts: factors influencing on principals-teachers relationships questionnaire developed by Gray (2013) and principals-teachers relationships questionnaire developed by Rafferty (2003).

Data Analysis

Based on the results of responses, the data were computed with One-way ANOVA and post hoc multiple comparison test, Pearson product moment correlation and multiple regression were utilized. The mean values ($\bar{\mathbf{X}}$) for factors influencing on principals-teachers relationships and the principals-teachers relationships were interpreted by Wiersma, (2009) as 1.00-2.49 is low, 2.50 -3.49 is moderate, 3.50 -5.00 is high.

Research Findings

Table 1. Correlation between Principal's Leadership Style and Principals-Teachers Relationships at Selected High Schools in Monywa Township

Two Groups	Principal's Leadership Style	Principals-Teachers Relationships
Principal's Leadership Style	1	.770**
Principals-Teachers Relationships	.770**	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 1 shows that principal's leadership style was significantly correlated with principals-teachers relationships (r=.770, p<.01). This implies that a significant and high positive relationship exists between two variables.

Table 2. Correlation between Teacher Induction and Mentoring Programs and Principals-Teachers Relationships at Selected High Schools in Monywa Township

Two Groups	Teacher Induction and Mentoring Program	Principals-Teachers Relationships
Teacher Induction and Mentoring Program	1	.722**
Principals-Teachers Relationships	.722**	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 2 shows that teacher induction and mentoring program was significantly correlated with principals-teachers relationships (r=.722, p<0.01). This implies that a significant and high positive relationship exists between two variables.

Table 3. Correlation between Teacher Isolation and Principals-Teachers Relationships at Selected High Schools in Monywa Township

Two Groups	Teacher Isolation	Principals-Teachers Relationships
Teacher Isolation	1	.589**
Principals-Teachers relationships	.589**	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows that teacher isolation was significantly correlated with principals-teachers relationships (r=.589, p<0.01). This implies that a significant and moderate relationship exists between two variables.

Table 4. Correlation between Professional Development and Principals-Teachers Relationships at Selected High Schools in Monywa Township

Two Groups	Professional Development	Principals-Teachers Relationships
Professional Development	1	.732**
Principals-Teachers Relationships	.732**	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows that professional development was significantly correlated with principals-teachers relationships (r=.732, p<0.01). This implies that there is a positively high and significant relationship between the two variables.

Table 5. Correlation between Teacher Incentives and Principals-Teachers Relationships at Selected High Schools in Monywa Township

Two Groups	Teacher Incentives	Principals-Teachers Relationships
Teacher Incentives	1	.536**
Principals-Teachers Relationships	.536**	1

** Correlation is significant at the 0.01 level (2-tailed).

Table 5 shows that teacher incentives was significantly correlated with principals-teachers relationships (r=.536, p<0.01). This implies that a significant and moderate relationship exists between two variables.

Table 7. Multiple Regression Analysis for Factors Influencing on Principals-Teachers Relationships among Selected High Schools

Dependent Variables	Predictors	Beta (β)	*t*	R^2
Principals-Teachers Relationships	Principals' Leadership Style	.359	6.081**	.673
	Teacher Induction and Mentoring Programs	.214	3.831**	
	Teacher Isolation	.036	.772	
	Professional Development	.278	5.143**	
	Teacher Incentives	.038	.872	

Note **p<.001, F (5,299) = 124.481

In Table 7, principal's leadership style (β= .359, *t*= 6.081, *p*<.001) appears to be the best predictor of principals-teachers relationships. Professional development (β= .278, *t*= 5.143, *p*<.001) appears to be the second best predictor of principals-teachers relationships. Teacher induction and mentoring program (β= .214, *t*= 3.831, *p*<.001) appears to be the third best predictor of principals-teachers relationships. However, the other two dimensions such as teacher isolation and teacher incentives, were not predicted to this principals-teachers relationships. The adjusted R squared value was .673. This indicated that 67% of the variance in principals-teachers relationships was explained by the model and this is a larger effect, according to (Cohen, 1998, cited in Morgan, 2004).

Open-Ended Responses

For the first open-ended question, it described other factors that impact on principals-teachers relationships. The principal should discuss the school affairs as a family and this cooperation can lead to the success. For second question, the responses of most of the teachers were: interaction among principal and teachers should be openly and friendly to improve principals-teachers relationships and the principals should arrange meetings and discussions in order to share new knowledge and skills.

Conclusion and Discussion

Research question one was concluded that there was a high and positive relationship between principal's leadership style and principals-teachers relationships. This means that the teacher's perceptions on their principal's leadership style increase, the principals-teachers relationships also increase. In that, principal should encourage teachers to become masters in their field of expertise and to share their knowledge with faculty members. Principals should be free from bias and leadership style also changes based on the situation or circumstances. So, teachers may get the habit of doing work with rules, satisfy in their job and then improve principals-teachers relationships.

Research question two was concluded that there was a high and positive relationship between two variables. This means that teacher's perception on teacher induction and mentoring program increases, principals-teachers relationships also increase. It also found that problems about principals-teachers relationship may stem from lack of induction and mentoring program. In teacher induction and mentoring program, the principal should provide an effective induction program for new teachers and give opportunities for teachers meet consistently during the school year.

In Research question three, according to teacher's perceptions, there was a moderate and positive relationship between two variables. This means that teacher isolation decreases, the principals-teachers relationships also increase. In teacher isolation, the principal should allow the teachers to consult and participate in decision making and provide opportunities for teachers to meet in grade-level and school-wide teams according to the academic disciplines. Therefore, teachers may get the good advice from their colleagues, share their experiences and then they may be happy in their work and improve principals-teachers relationships.

In Research question four, according to teacher's perceptions, there is positively high and significant relationship between two variables. This means that teacher's perception on professional development increases, principals-teachers relationships also increase. This outcome is consistent with the researches of Gyimah (2013). Principal should take an active role in planning, participating in and evaluating professional development activities with their staff and also facilitate opportunities for professional growth by enabling teachers to attend conferences, establishing mechanisms that facilitate the exchange of professional dialogue, and personally sharing

ideas and materials with staff. So, teachers may feel confident in their job and may see principal as a role model and then they may construct a good relationship with their principals.

Research question five was concluded that there was a moderate and positive relationship between two variables. This means that teacher's perception on teacher incentives increases, principals-teachers relationship also increases. Principal can enhance the performance of teachers by offering reward, recognition and celebration for individual and collective success. (Schmoker, 2006, cited in Gray, 2013) indicated that reward and recognition will result in enthusiastic work, support from faculty and in eliminating resistance. So, principals may attract or retain qualified teachers and talented practitioners who are already in the profession, may be more interested in their work and then improve principals-teachers relationship.

In Research question six, Multiple Regression was used. Based on beta weight, principal's leadership style appears to be the best predictor of principals-teachers relationships. This means that principal's leadership style has the greatest impact on principals-teachers relationships. The outcome is consistent with the research of Gray (2013) in that principal's leadership style was the most influential factor that impacts the principals-teachers relationship. Therefore, if their principals highly provided incentives and removed teacher isolation, principals-teachers relationships may be better than the present time.

Acknowledgements

First of all, we would like to express my profound gratitude and appreciation to Dr. Saw Pyone Naing (Rector, Sagaing University of Education), Dr. Myat Myat Thaw (Pro-Rector, Sagaing University of Education) for their guidance and suggestions for this study. Second, we want to express my sincere thanks and deep respect to Dr. Zin Nwe Than (Associate Professor and Head of Department, Department of Educational Theory, Sagaing University of Education) for her tremendous assistance and criticisms towards the completion of this study. We recognize and appreciate the encouragement to all my teachers and colleagues from the Department of Educational Theory for their unceasing support. Finally, we most sincerely wish to thank the principals and the teachers who participated in the essential task of data collection.

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Relationship between Principals' Instructional Leadership Practices and Teaching Practices of Teachers

Thet Su Su Myaing[1] & Nyein Ma Ma Khin[2]

Abstract

The main purpose of this research was to find out the relationship between principals' instructional leadership practices and teaching practices of teachers in selected Basic Education High Schools and Branch High Schools in Yenanchaung Township. This study was based on Hallinger & Murphy's Model (1985) for instructional leadership and Piaget & Vygotsky's Constructivist Learning Theory for teaching practices. The questionnaire survey method was applied to collect the data from selected six Basic Education High Schools and four Branch High Schools. All teachers (304 teachers) at different level of selected high schools and branch schools were included in this study. Principals' instructional leadership practices were identified through the use of *Principal Instructional Management Rating Scale* (PIMRS) developed by Hallinger and Murphy (1987). Similarly, *Teachers' Instructional Practices Questionnaire* developed by Al-Hosani (2015) was also employed to measure the teaching practices of teachers. Data was analyzed by the use of descriptive statistics, independent samples *t*-test, one-way analysis of variance (ANOVA), post hoc multiple comparison tests and Person-product moment correlation coefficient through SPSS software. This study found that the perceptions of teachers in selected schools had high level of principal's instructional leadership practices. Besides, teachers from selected schools showed that they had high level high extent of teaching practices. In addition, the principals' instructional leadership practices were positively and highly related to teaching practices of teachers (r=.734, p<0.01). And then, all functions of principals' instructional leadership practices and teaching practices of teachers were significantly related to each other. Therefore, it can be concluded that principals' instructional leadership practices enhance the teaching practices of teachers in selected high schools.

Keywords: Leadership, Instructional Leadership, Principal Instructional Leadership Practices, Teaching, Teaching practices.

[1] Senior Teacher, Yenanchaung Township

[2] Associate Professor, Department of Educational Theory, Sagaing University of Education

Introduction

The principal's role in the school is a complex one, a role that has many duties and responsibilities. One role is being an instructional leader to help the teachers improve their teaching. An instructional leader's role consists of communicating the school mission and goals, providing supervision to teachers in order to develop their skills and abilities, providing professional development opportunities, and creating schools, which exudes collaboration, trust, and empowerment (Blase & Blasé, 1999, citied in Poirier, 2009).

In addition, principals have an influence on teaching practices of teachers. Principals use the following leadership strategies to enhance teaching practices: (a) communicating goals, (b) supervising instruction, (c) promoting professional development, (d) providing resources, and (e) providing incentives (Sheppars, 1996, cited in Lineburg, 2010).

On the other hand, the teacher in the classroom has the greatest influence on student learning and achievement (Hoge, 2016). The best teaching practices for teachers are influential, efficient and capable to advance students' learning. This study may provide the principals and teachers with a better understanding of instructional leadership and teaching practices of teachers in order to help develop their abilities, skills, and knowledge. This study will also reveal understanding of how the instructional leadership role of the principal may influence teaching practices towards the attainment of effective teaching and learning in the classroom. So, it is necessary to study the principals' instructional leadership practices and their relationships to teaching practices of teachers in classroom.

Purposes of the Study

The general purpose of this study is to examine the relationship between principals' instructional leadership practices and teaching practices of teachers.

The specific purposes of this study are,

- To investigate the principals' instructional leadership practices as perceived by teachers,
- To explore teaching practices as perceived by teachers, and

- To find out the relationship between the principals' instructional leadership practices and teaching practices of teachers.

Theoretical Framework

- Instructional Leadership

The Hallinger and Murphy (1985) framework of instructional leadership was among the first to identify specific, key behaviors enacted by principal in an attempt to more carefully define the construct of instructional leadership. The definition of instructional leadership is comprised of three dimensions: defining the school's mission; managing the instructional program and promoting a positive a school climate.

- Teaching Practices of Teachers

Among the most important who wrote about constructivist learning theory was Piaget with his individual-oriented approach and Vygotsky with his sociocultural approach. Piaget explained in his theory that the child is an active learner, with God-given biological ability to think and build knowledge by himself. As for Vygotsky, the child builds his knowledge through interaction and communication with peers at schools, family members, and teachers (Al-Hosani, 2015).

Review of Related Literature

Instructional Leadership

Instructional leadership is defined as action that a principal takes or delegates to others to promote growth in student learning (Flath, 1989). Instructional leadership refers to a series of behaviors designed to affect classroom instruction. Such behaviors include principal informing teachers about new educational strategies and tools for effective instruction (Leithwood, 1994, Whitaker, 1998, citied in Sindhvad, 2009).

Defining the School Mission

The first dimension refers to principals as leaders of academic progress of students ensuring collaboration among staff in sharing the school mission clearly (Hallinger & Murphy, 1985). This dimension consists of two functions: frame the school goals and communicate the school's goals.

Managing the Instructional Program

The second dimension refers to principals as the core of all managerial works where principal instructional leadership practices act as a key player to stimulate, supervise and monitor teaching and learning in schools (Hallinger & Murphy, 1985). This dimension encompassed three functions: supervise and evaluate instruction, and coordinate the curriculum and monitor student progress.

Developing the School Learning Climate

The third dimension refers to the principal's need to practice establishing a climate for supporting continuous development of teaching and learning (Hallinger & Murphy, 1985). This dimension includes five functions: protect instructional time, maintain high visibility, provide incentives for teachers, promote professional development, and provide incentives for learning (cited in Mannan, 2017).

Teaching Practices of Teachers

Teaching practices are the specific actions and discourse that take place with a lesson and that physically enact the approach and strategy. Taking a cue from Alexander (2001, cited in Wesbrook, 2013), teaching practices comprise: teacher spoken discourse; visual representation; the act of setting or providing tasks of learners to cognitively engage with new content or develop physical skills; a variety of social interactions; teachers' monitoring, use of feedback, intervention, remediation and formative and summative assessment of the students.

Research Method

Questionnaire survey method was used to collect the required data in this study. A total of 304 primary, junior, and senior assistant teachers were asked to answer the questionnaire to obtain necessary information about the study.

Instrumentation

There are three main parts in the questionnaire, part 1 for demographic information, part 2 is the questionnaire for principals' instructional leadership practices and part 3 is the questionnaire for teaching practices of teachers. The instrument used in this study was the *Principal Instructional Management Rating Scale* (PIMRS) developed by Hallinger

and Murphy (1987, cited in Al-Hosani, 2015). The instrument used in this study was the *Teachers' Instructional Practices Questionnaire* developed by Al-Hosani (2015).

Procedure

The questionnaire for teachers were distributed to two selected Basic Education High Schools for the pilot study. The necessary data were obtained from 97 teachers of the selected schools in Kyaukse Township, Mandalay Division. Then, the major study was conducted. Completed questionnaires were received. The percentage of respondents was 93.25%. All dimensions were calculated to have highly reliability with Cronbach's alpha coefficients are 0.96 for principals' instructional leadership practices and 0.85 for teaching practices of teachers. The Statistical Package for Social Science (SPSS) version 23 was used for the data obtained from the questionnaire to be analyzed.

Research Findings

For Research Question (1)

For a response rate of 93.25%, 304 out of 326 teachers within the selected schools and responded to the survey (See Table 1).

Table 1. Means and Standard Deviations of Principals' Instructional Leadership Practices Perceived by Teachers in Selected Schools (N=304)

Schools	N	Mean	SD	Extent
A	74	3.86	0.481	High
B	32	3.66	0.641	High
C	32	3.9	0.444	High
D	28	3.81	0.621	High
E	21	3.83	0.291	High
F	33	3.76	0.637	High
G	21	2.94	1.07	Moderate
H	18	3.83	0.282	High

Schools	N	Mean	SD	Extent
I	27	3.59	0.526	High
J	18	4.12	0.339	High
Overall	304	3.75	0.612	High

1.00 to 2.49=low level, 2.50 to 3.49=moderate level, 3.50 to 5.00=high level

Among the schools, the perception of teachers from school "J" was the highest and the perception of teachers from school "G" was the lowest in their "Principals' Instructional Leadership Practices".

Table 2. Means and Standard Deviations for Each Dimension of Principals' Instructional Leadership Practices Perceived by Teachers (N=304)

Dimensions of Principals' Instructional Leadership Practices	Mean	Standard Deviation	Extent
Frame the School Goals	4.26	0.67	High
Communicate the School Goals	4.28	0.642	High
Supervise and Evaluate Instruction	3.97	0.711	High
Coordinate the Curriculum	4.15	0.748	High
Monitor Student Progress	3.94	0.715	High
Protect Instructional Time	3.39	0.642	Moderate
Promote Professional Development	3.67	0.772	High
Maintain High Visibility	3.13	0.903	Moderate
Provide Incentives for Teachers	3.85	0.74	High
Provide Incentives for Learning	3.67	0.733	High
Overall	3.75	0.612	High

1.00 to 2.49= low level, 2.50 to 3.49= moderate level, 3.50 to 5.00= high level

According to Table 2, the teachers at high schools and branch high schools perceived that communicate the school goals ($\bar{X}$=4.28) was the

highest mean score and maintain high visibility ($\bar{X}$=3.13) was the lowest mean score among all dimensions of instructional leadership practices.

For Research Question (2)

For a response rate of 93.25%, 304 out of 326 teachers within the selected high schools and branch high schools responded to the survey (See Table 3).

Table 3. Means and Standard Deviations of Teaching Practice of Teachers in Selected Basic Education High Schools (N=304)

Schools	N	Mean	SD	Extent
A	74	4.24	0.517	High
B	32	4.21	0.562	High
C	32	4.18	0.381	High
D	28	4.27	0.456	High
E	21	4.31	0.425	High
F	33	4.29	0.451	High
G	21	3.97	0.485	High
H	18	4.18	0.38	High
I	27	4.15	0.537	High
J	18	4.43	0.386	High
Overall	304	4.22	0.479	High

1.00 to 2.49= low level, 2.50 to 3.49= moderate level, 3.50 to 5.00= high level

Among the selected high schools and branch high schools, the teachers from school "J" was the highest practiced and the teachers from school "G" was the lowest practiced in their "Teaching Practices of Teachers".

Table 4. Means and Standard Deviations for Each Item of Teaching Practices of Teachers in Selected Schools (N=304)

Items	Mean	SD	Extent
I use tests or quizzes to assess my students' learning	4.32	.649	High
I assign students to work in small group to complete tasks	4.07	.761	High
I work with students individually	4.23	.950	High
I assign with students to work on projects require one week/some to complete	3.96	.909	High
Students work individually with the textbook or worksheet	4.72	.721	High
I give different works to students according to their abilities	4.60	.724	High
I check my students' exercises	4.83	.475	High
I use lecture style to present new topics	4.09	.957	High
I ask my students to plan or suggest different classroom activities	3.91	.943	High
I ask my students to write an essay to explain their thinking	3.76	1.053	High
I ask my students to think of every step of the lesson	4.23	.808	High
I state learning goals clearly	4.53	.744	High
I ask the students to work in the small groups according to their abilities	4.12	1.984	High
I present a short revision about the previous lesson in the beginning of the new lesson	4.65	.673	High
I review with the students their homework	4.19	.958	High
I ask different questions to check up students' understanding	4.44	.682	High
I ask my students to create projects that will be used by someone else	4.17	.819	High
I ask my students to reflect and evaluate their works	4.33	.791	High

Items	Mean	SD	Extent
I ask my students to hold debates to express their opinion	3.12	.983	Moderate
Overall Teaching Practices	4.22	.497	High

1.00 to 2.49= low level, 2.50 to 3.49= moderate level, 3.50 to 5.00= high level

According to Table 4, the teachers at high schools and branch high schools perceived that "teaching practice that checking students' exercises" ($\bar{X}$=4.83) was the highest mean score of and "teaching practice that asking students to hold debates to express their opinion" ($\bar{X}$=3.12) was the lowest mean score among the teaching practices of teachers.

For Research Question (3)

In order to answer this question, Pearson-product moment correlation coefficient was conducted for principals' instructional leadership practices and teaching practices of teachers.

Table 5. Correlations between Principals' Instructional Leadership Practices and Teaching Practices of Teachers in Selected Schools

No	Variables	Principals' Instructional Leadership	Teaching Practices of Teachers
1	Principals' Instructional Leadership Sig (2-tailed)	1	.734** .000
2	Teaching Practices of Teachers Sig (2-tailed)	.734** .000	1

** Correlation is significant at the 0.01 level (2-tailed).

According to Table 5, principals' instructional leadership practices was significantly related to teaching practices of teachers in selected Basic Education High Schools and Basic Education Branch High Schools (r=.734, p<.01). This correlation implied that a significant and high

relationship between principals' instructional leadership practices and teaching practices of teachers, r =.734, $r \geq \pm.65$. Finding of this study displayed as the level of principals' instructional leadership practices increased, the level of teaching practices of teachers also increased.

Table 6. Correlations between Principals' Instructional Leadership Practices and Teaching Practices of Teachers in Selected Basic Education High Schools

No	Variables	Principals' Instructional Leadership	Teaching Practices of Teachers
1	Principals' Instructional Leadership Sig (2-tailed)	1	.747** .000
2	Teaching Practices of Teachers Sig (2-tailed)	.747** .000	1

** Correlation is significant at the 0.01 level (2-tailed).

According to Table 6, principals' instructional leadership practices was significantly related to teaching practices of teachers in selected Basic Education High Schools (r =.747, p<.01). This correlation implied that a significant and high relationship between principals' instructional leadership practices and teaching practices of teachers, r =.747, $r \geq \pm.65$.

Table 7. Correlations between Principals' Instructional Leadership Practices and Teaching Practices of Teachers in Selected Branch High Schools

No	Variables	Principals' Instructional Leadership	Teaching Practices of Teachers
1	Principals' Instructional Leadership Sig (2-tailed)	1	.742** .000
2	Teaching Practices of Teachers Sig (2-tailed)	.742** .000	1

** Correlation is significant at the 0.01 level (2-tailed).

According to Table 7, principals' instructional leadership practices was significantly related to teaching practices of teachers in selected Basic Education Branch High Schools (r =.742, p<.01). This correlation implied that a significant and high relationship between principals' instructional leadership practices and teaching practices of teachers, r =.742, $r \geq \pm.65$.

Conclusion and Discussion

In Research question one, according to results of the study, by studying the data, all teachers from selected high schools and branch high schools rated "Communicate the school goals" ($\bar{X}$=4.28) as the highest participations of principals while "Maintain high visibility" ($\bar{X}$=3.13) as the lowest participations of principals from the ten specific job functions. In accordance with the Likert-scale, the teachers' perceptions for "Protect instructional time", and "Maintain high visibility" were that their principal moderate practiced these job functions. This means that the selected schools were not high achieving schools because of the principals in these schools sometimes practiced the above functions. This may imply that principals in selected high schools and branch high schools should make more practice to these job functions "Protect instructional time" and "Maintain high visibility" in order to implement the educational objectives.

In research question two, the data indicated the teachers at high schools and branch high schools perceived that "teaching practice that checking students' exercises" ($\bar{X}$=4.83) was the highest mean score of and "teaching practice that asking students to hold debates to express their opinion" ($\bar{X}$=3.12) was the lowest mean score among the teaching practices of teachers. Thus, the teachers in selected high schools and branch high schools should make more practice to this teaching practice "teaching practice that asking students to hold debates to express their opinion" for improving students' learning.

In Research question three, principals' instructional leadership practices was significantly related to teaching practices of teachers in selected Basic Education High Schools and Basic Education Branch High Schools (r =.734, p<.01). This correlation implied that a positively high relationship between principals' instructional leadership practices and teaching practices of teachers, r =.734, $r \geq \pm.65$. This means that the level of principals' instructional leadership practices increased, the level of teaching practices of teachers also increased.

Therefore, the school principals should communicate the school mission and goals, provide supervision of teachers' instruction and promote professional development opportunities in order to enhance teaching practices of teachers.

Acknowledgements

First of all, we would like to express my profound gratitude and appreciation to Dr. Saw Pyone Naing (Rector, Sagaing University of Education), Dr. Myat Myat Thaw (Pro-Rector, Sagaing University of Education) for their guidance and suggestions for this study. Second, we want to express my sincere thanks and deep respect to Dr. Zin Nwe Than (Associate Professor and Head of Department, Department of Educational Theory, Sagaing University of Education) for her tremendous assistance and criticisms towards the completion of this study. We recognize and appreciate the encouragement to all teachers and colleagues from the Department of Educational Theory for their unceasing support.

Finally, we most sincerely wish to thank the principals and the teachers who participated in the essential task of data collection.

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Relationship among Principal Leadership Style, School Climate and Teacher Self-efficacy

Zarchi Win[1] & Daw Khin Moe[2]

Abstract

The main purpose of this study was to investigate the relationship among principal leadership style, school climate and teacher self-efficacy at selected high schools in Sagaing Township. This study was used purposive sampling method. Three questionnaires, *Principal Leadership Questionnaire (PLQ)* developed by Damanik (2014), *School-Level Environment Questionnaire (SLEQ)* developed by Fisher and Fraser (1990) and *Teacher Self-Efficacy Scale (TSES)* developed by Schwarzer and Jerusalem (1995, as cited in Damanik, 2014), were used to collect data. Data was analyzed by the use of descriptive statistics, and Pearson-product moment correlation coefficient through SPSS software. The findings of the study indicated that there were high levels in principal leadership style, school climate and teacher self-efficacy based on teachers' perceptions at selected high schools in Sagaing Township. When studying the correlation between principal leadership style and school climate, it was found that principal leadership style was positively and highly correlated with school climate (r=.719, p<0.01). Again, there was a positively and moderately correlation between principal leadership style and teacher self-efficacy (r=.546, p<0.01). In addition, school climate was positively and highly correlated with teacher self-efficacy (r=.663, p<0.01). Therefore, school climate and teacher self-efficacy can enhance through the transformational leadership style of the school principal.

Keywords: Transformational Leadership, School Climate, Self-Efficacy

Introduction

Education is the fundamental to the development of modern society. Education is always in a constant state of change; new curriculum and methods of improving student achievement are always at the top of educational discussions. The most significant factors in the educational resources include quality and number of teachers' in educational institutions, quality of education, principal leadership style, work facilities and working environment. Principal and teachers help schools to achieve its goals (Abubakar, Inawa & Hamma, 2017). Educators are constantly faced with the challenge of finding better ways to meet students' needs and goals.

[1] Senior Teacher, Basic Education High Schools No. (1), Muse Township
[2] Lecturer, Department of Educational Theory, Sagaing University of Education

With the new challenges and demands on principals, additional leadership strategies are needed for success in securing highly qualified teachers and the success of the school (Mead & Rotherham, 2003, as cited in Hearn, 2013). These leadership strategies are commonly known as leadership styles.

Moreover, school climate, is the feel of a school that affects everything that happens within a school setting, it has great influence on the success of the teachers as well as student achievement. A positive school climate promotes cooperative learning, respect, and mutual trust. These particular aspects have been shown directly to improve the learning environment (Halpin, 1966).

And then, teachers' self-efficacy is also one of the most important components in education. Teachers' self-efficacy is a significant factor that influences teachers' positive attitudes toward helping their students, their level of satisfaction, and their desire to motivate their students (Bandura, 1997, as cited in Waskanyei, 2013). The finding of this study is significant for school principals because they can gain practical ideas about how they can modify their behavior in ways that are likely to improve the school climate and teacher self-efficacy.

Aim of the Study

To investigate the relationship among principal leadership style, school climate and teachers' self-efficacy at selected Basic Education High Schools in Sagaing Township.

Research Questions

- What are the levels of teachers' perceptions on their principal's leadership style, school climate and teacher self-efficacy at selected Basic Education High Schools in Sagaing Township?
- Is there any significant relationship between principal's leadership style and school climate at selected Basic Education High Schools in Sagaing Township?
- Is there any significant relationship between principal's leadership style and teacher self-efficacy at selected Basic Education High Schools in Sagaing Township?
- Is there any significant relationship between school climate and teacher self-efficacy at selected Basic Education High Schools in Sagaing Township?

Review of Related Literature

Principal Leadership Style

Bass and Riggio (2006, as cited in Boateng, 2014) describe transformational leadership as a new paradigm of leadership. They describe transformational leaders as those who stimulate and inspire their followers and in doing that develop their own leadership capacities. Transformational leadership proponents such as Bass (1985, 1998, as cited in Boateng, 2014) and Bass and Riggio (2006, as cited in Boateng, 2014) have argued that transformational leadership has four main components: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. In this study, six aspects considered important to transformational leadership such as professional interaction, participatory decision making, individual support, intellectual stimulation, articulating school vision and goals, and moral perspective were examined.

School Climate

The school climate was defined in various ways including: a social system of shared norms and expectation; an environment of the school as indicated by the amount of students' negative or positive behavior at school (Johnson, Johnson & Zimmerman, 1996, as cited in Damanik, 2014); a shared and enduring moral perception of psychologically important aspects of the school and things that happen every day at school and the reactions that people have to those things (Asif, 2011). The school climate, as discussed in the present study, is limited to school-level environment or psychological context, based on the teachers' perceptions of their work and teaching (Fisher & Fraser, 1990). In this study, five factors related to the school climate such as affiliation, free from work pressure, staff freedom, resource adequacy and goal consensus were examined.

Teacher Self-efficacy

According to Albert Bandura (1986), self-efficacy is people's judgment of their capabilities to organize and execute courses of action required to attain designated types of performance. Social learning theorists described self-efficacy as a sense of confidence regarding a person's performance of specific tasks (Lorsbach & Jinks, 1999, as cited in Lacks, 2016). It is argued, therefore, that individuals develop general anticipation regarding cause and effect based upon their experience, and that individuals develop particular beliefs about their ability to cope with specific situations (Bandura, 1997, as cited in Lacks, 2016).

Bandura (1986) argued that in educational settings teachers can exercise some influence over their own self-efficacy. He conceptualized teachers' self-efficacy as an individual teacher's belief in his or her own ability to plan, organize and carry out activities that are required to attain teaching and learning goals. Therefore, teachers with high academic self-efficacy would demonstrate greater success in teaching. Similarly, Skaalvik and Skaalvik (2010, as cited in Damanik, 2014) argued that a teacher with a high sense of self-efficacy is more likely to trust in his or her own capability to master different types of environmental demands than a teacher who does not.

Methodology

Descriptive statistical design was adopted in this study. As quantitative research method, data was collected with questionnaires for teachers. Data on principal leadership style came from analyzing Principal Leadership Questionnaire (PLQ) developed by Damanik (2014), data for school climate came from analyzing School-Level Environment Questionnaire (SLEQ) developed by Fisher and Fraser (1990, as cited in Damanik, 2014) and data for teacher self-efficacy came from analyzing Teacher Self-Efficacy Scale (TSES) developed by Schwarzer and Jerusalem (1995, as cited in Damanik, 2014). All teachers (who had been at least one year service at the current school) from selected Basic Education High schools (including branch high school) in Sagaing Township participated in this study. Collected data was analyzed by use of descriptive statistics, and Pearson-product moment correlation through SPSS software.

Research Findings

Teachers' Perceptions of Principal Leadership Style in Selected Basic Education High Schools

Table 1shows the mean values and standard deviations for principal leadership style perceived by teachers in selected high schools. According to Table 1, out of the dimensions of principal leadership style, the mean value of "Professional Interaction", "Participatory Decision Making", "Intellectual Stimulation" and "Articulating Vision and Goals" had the highest mean value ($\overline{X}$=4.05) and followed in descending order by "Individual Support" ($\overline{X}$=3.98) and "Moral Perspective" had the mean value of ($\overline{X}$=3.97). According to mean values, teachers' perceptions of all

dimensions of principal leadership style were high level for the whole sample.

Table 1. Mean Values and Standard Deviations for Principal Leadership Style Perceived by Teachers in Selected High Schools

Principal Leadership Style Dimensions	No. of Teachers	Mean	Standard Deviation	Remark
Professional Interaction	253	**4.05**	.428	High
Participatory Decision Making	253	**4.05**	.403	High
Individual Support	253	3.98	.452	High
Intellectual Stimulation	253	**4.05**	.458	High
Articulating Vision and Goals	253	**4.05**	.451	High
Moral Perspective	253	**3.97**	.421	High
Principal Leadership Style (overall)	253	4.03	.384	High

1.00-2.33 = Low Level 2.34-3.67 = Average Level 3.68-5.00 = High Level

Teachers' Perceptions on School Climate in Selected Basic Education High Schools

Table 2. Mean Values and Standard Deviations for School Climate Perceived by Teachers in Selected High Schools

School Climate Dimensions	No. of Teachers	Mean	Standard Deviation	Remark
Affiliation	253	4.03	.381	High
Free from Work Pressure	253	3.73	.500	High
Staff Freedom	253	3.98	.368	High
Resource Adequacy	253	**3.49**	.636	Average
Goal Consensus	253	**4.08**	.309	High
Overall Dimensions	253	3.86	.316	High

1.00-2.33 = Low Level 2.34-3.67 = Average Level 3.68-5.00 = High Level

According to Table 2, out of the dimensions of school climate, "Goal consensus" dimension had the highest mean value ($\overline{X}$=4.08), followed in descending order by "Affiliation" dimension had the mean value ($\overline{X}$=4.03), "Staff Freedom" dimension had the mean value ($\overline{X}$=3.98), "Free from Work Pressure" dimension had the mean value ($\overline{X}$=3.73) and "Resource Adequacy" dimension had the mean value ($\overline{X}$=3.49). It can be concluded that the "Resource adequacy" was average level and other dimensions such as "Affiliation", "Free from Work Pressure", "Staff Freedom" and "Goal Consensus" were high levels for the whole sample.

Teachers' Perceptions on Teacher Self-efficacy in Selected Basic Education High Schools

Table 3 shows the mean values and standard deviations for teacher self-efficacy for the whole sample. It was found that teachers in all selected schools were high level for teachers' self-efficacy.

Table 3. Mean Values and Standard Deviations for Teacher Self-Efficacy Perceived by Teachers in Selected Basic Education High Schools

Variable	No. of Teachers	Mean	Standard Deviation	Remark
Teacher Self-efficacy	253	3.96	.354	High

1.00-2.33 = Low Level 2.34-3.67 = Average Level 3.68-5.00 = High Level

Relationship between Principal Leadership Style and School Climate in Selected Basic Education High Schools

According to Table 4, principal leadership style and school climate displayed coefficient at r = .719, p<0.01, that is there is a positively and highly correlation between principal leadership style and school climate.

Table 4. Relationship between Principal Leadership Style and School Climate in Selected Basic Education High Schools

Variables	Principal Leadership Style	School Climate
Principal Leadership Style	1	.719**
School Climate	.719**	1

******correlation is significant at the 0.01 level (2-tailed).

Relationship between Principal Leadership Style and Teacher Self-Efficacy in Selected Basic Education High Schools

According to Table 5, principal leadership style and teacher self-efficacy displayed coefficient at $r = .546$, $p<0.01$, that is there is a positively and moderately correlation between principal leadership style and school climate.

Table 5. Relationship between Principal Leadership Style and Teacher Self-Efficacy in Selected Basic Education High Schools

Variables	Principal Leadership Style	Teacher Self-Efficacy
Principal Leadership Style	1	.546**
Teacher Self-Efficacy	.546**	1

******correlation is significant at the 0.01 level (2-tailed).

Relationship between School Climate and Teacher Self-Efficacy in Selected High Schools

According to Table 6, principal leadership style and teachers' self-efficacy displayed coefficient at $r = .663$, $p<0.01$, that is there is a positively and highly correlation between principal leadership style and school climate.

Table 6. Relationship between School Climate and Teacher Self-Efficacy in Selected Basic Education High Schools

Variables	School Climate	Teacher Self-Efficacy
School Climate	1	.663**
Teacher Self-Efficacy	.663**	1

**correlation is significant at the 0.01 level (2-tailed).

Conclusion, Discussion and Recommendation

Research question one investigated the levels of teachers' perceptions on their principal leadership style, school climate and teacher self-efficacy at selected Basic Education High Schools in Sagaing Township. The result showed that there were high levels of teachers' perception in all dimensions of principal leadership style.

With regard to professional interaction behavior, teachers in this study perceived highly this behavior from their principals. With regard to participatory decision making, teachers were highly involved in decision making in this study. With regard to individual support behavior, teachers in this study perceived highly individual support from their principals.

With regard to intellectual stimulation, teachers in this study perceived highly intellectual stimulation from their principals. With regard to moral perspective, teachers in this study perceived highly their principals have moral values.

With regard to the school climate, the result of this study indicated that there were high level in four dimensions of school climate such as affiliation, free from work pressure, staff freedom and goal consensus. But, there was an average level in only one dimension such as resource adequacy in the sample schools. Concerning with affiliation, teachers in this study highly perceived good affiliation.

With regard to free from work pressure, there was a high level for the dimension of free from work pressure. With regard to resource adequacy, there was an average level for resource adequacy in the sample schools. Those schools should get a fair share of resources from the district and also need the community support to be more adequate of school resources. With regard to goal consensus, teachers in this study perceived highly goal consensus in the selected schools and actively performed to implement the school's goals. With regard to teachers' self-efficacy, the result indicated that most of the teachers had high level for teachers' self-efficacy. Teachers believed that they can successfully teach the most difficult students, they can be responsive to their students' needs, they can influence on students' academic achievement.

Research question two examined the relationship between principal leadership style and school climate at selected Basic Education High Schools in Sagaing Township. The result indicated that there was a positively and highly correlation between principal leadership style and school climate (r = .719, p<0.01). This finding is found to be consistent with the results of Moolenaar and his colleagues (2010, as cited in Lane, 2016) who found that transformational leadership was positively and significantly related to teachers' perceptions of their school's climate. Therefore, it can be concluded that the more the teachers perceived their principal to demonstrate practices associated with transformational leadership, the more favorable the school climate would be.

Research question three evaluated the relationship between principal leadership and teacher self-efficacy at selected Basic Education High Schools in Sagaing Township. The result in this study described that there was a positively and moderately correlation between principal leadership style and teacher self-efficacy (r = .546, p<0.01). Similarly, the research of Sharma and Singh (2017) described there was a significant correlation between principal transformational leadership and teacher self-efficacy. Therefore, it can be concluded that the more the teachers perceived their principal to demonstrate practices associated with transformational leadership, the more positive teacher self-efficacy would be.

Research question four investigated the relationship between school climate and teacher self-efficacy. In this study, there was a positively and highly correlation between school climate and teacher self-efficacy (r = .663, p<0.01). This finding is found to be consistent with the study of Lacks (2016) who found that there was a positive correlation between school climate and teacher self-efficacy. Therefore, it can be concluded that the more favorable teachers' perceptions of their school climate, the more positive their self-efficacy would be.

This study examined both the school climate and teachers' self-efficacy as related by school leadership behavior. As such, the results provide valuable information about the types of behaviors that are likely to improve the school climate and teachers' self-efficacy, both of which are important features of an effective school. The future school leaders will gain a better understanding of the specific leadership competencies that influence a school's climate and teacher self-efficacy. The results of this study provided important educational implications related to the quality of the school climate and teachers' self-efficacy, and how these are related by the principal's leadership behavior. The results of the study provide practical implications and relevant information for researchers, school administrators and school principals, with respect to the importance of leadership behavior and its influence on elements of the school climate that are important for school improvement. These finding can be used to guide future interventions at improving the school climate and teachers' self-efficacy. Overall, the contributions of this study are in line with Grayson and Alvarez's (2008, as cited in Damanik, 2014) study, who argued that teachers' perceptions of the school climate are influenced not only by students' behaviors, but also by the social features of the school environment. The teacher-administrator relationship is an important contributor to teacher's feelings of connectedness to the system in which the

principal serves as a facilitator. Further, findings by Hepburn and Brown (2001, as cited in Damanik, 2014) suggest that teachers who are satisfied with the behavior and support by the principal show more positive attitudes towards their occupation.

Acknowledgements

This research project would not have been possible without the help and support we received from many people. First of all, we would like to extend our sincere gratitude to Dr. Saw Pyone Naing (Rector, Sagaing University of Education), and Dr. Myat Myat Thaw (Pro-Rector, Sagaing University of Education) for their kind permission to do this research. Then, we want to devote my heartfelt respect and special thanks to Dr. Khin Mar Yee (Retired Professor and Department of Educational Theory, Sagaing University of Education) and Dr. Zin Nwe Than (Professor and Head of Department, Department of Educational Theory, Sagaing University of Education) for their understanding, mentorship, guidance, quite patience, invaluable comments, and accessibility during my research work.

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Relationship between Principal Self-Efficacy and Behaviours Related Affecting Student Achievement

Hnin Wint Mon[1] & Moe Moe Aung[2]

Abstract

This study focused on examining the relationship between principal self-efficacy and behaviours related to affecting student achievement at selected Basic Education High Schools in Lewe Township. Quantitative research method was utilized in this study. Seven principals and 269 teachers participated in this study. Data were collected by using two questionnaires: *"Principal Efficacy, Environment, and Behaviour Scale (PEEBS)"* designed by Szymendera (2013) (Questionnaire for Principals and Questionnaire for Teachers) was used to collect data on principal self-efficacy and behaviours related to student achievement. For data analysis, descriptive statistic, independent sample *t* test, one way analysis of variance (ANOVA), and Pearson product-moment correlation coefficient were explored by using SPSS. The results found that, principals had high level of self-efficacy and often practiced direct and indirect behavior. There are statistically significant differences in the perceptions of principal self-efficacy according to their gender, age, and teaching service. Statistically significant differences were found in the perceptions of teachers on principal behaviors to their position. Principal self-efficacy and behaviors related to affecting student achievement were positively and moderately correlated (r=.442, p<0.01). These findings can be concluded that the principals who possess high level of self-efficacy practised leadership behaviours related to affecting student achievement.

Keywords: Principal Self-Efficacy, Behaviour, Student Academic Achievement

Introduction

The role of the principal is vital with respect to overall performance of the school and student achievement because the position is essential to address challenges and changes of varying nature. It is important to learn about how to effectively support them. One way to help school principals is to understand that they face a variety of ever-changing challenges. With each challenge, principals have initial beliefs about the degree to which they feel they can be successful. This concept is known as self-efficacy. Self-

[1] Senior Teacher, Basic Education High School, Lewe Township
[2] Lecturer, Department of Educational Theory, Sagaing University of Education

efficacy beliefs have a direct influence on effort, persistence, and resiliency in spite of changing job demands, expectations, and challenges (Tschannen-Moran & Gareis, 2004). Principal self-efficacy beliefs are important because they guide the leader's actions and behaviours that affect expectations for students as well as teachers' motivation and school improvement processes (Versland & Erickson, 2017). Therefore, this study explored the relationship of principal self-efficacy and behaviors related to affecting student achievement.

Significance of the Study

The self-efficacy beliefs of school principals and their perceptions of those beliefs play a critical role in principal leadership and, subsequently, the quality of the schools they lead. A principal's sense of efficacy is a judgment of his or her capabilities to structure a particular course of action in order to produce desired outcomes in the school he or she leads (Bandura, 1994).This study could help principals who are facing increased pressure to improve students achievement in their school thus the need for this study.

Purpose of the Study

The main purpose of the study is to examine the relationship between principal self-efficacy and behaviours related to affecting student achievement at selected Basic Education High Schools in Lewe Township.

Research Questions

The following research questions guide the study.

- Are there any differences in principal self-efficacy and behaviours related to affecting student achievement between perceptions of principals and teachers at selected Basic Education High Schools in Lewe Township?
- Are there any differences in teachers on principal self-efficacy and behaviours related to affecting student achievement according to their demographic data (gender, age, position, academic qualification)?
- Is there any relationship between principal self-efficacy and behaviours related to affecting student achievement?

Theoretical Framework

Bandura's (1986) Social Cognitive Theory is used as the theoretical framework in this study. This theory asserts that human functioning is the product of a relationship between personal, behavioural and environmental influences. It posits that people should be viewed as self-organizing, proactive, self-reflecting and self-regulating rather than as reactive organisms shaped and shepherded by environmental forces or driven by concealed inner impulses (Pajares, 2002). It contends that an individual's belief structure is the mediator between knowledge and action, and, through the process of self-reflection, people are able to evaluate their own thoughts and actions. The manner in which individuals interpret the results of their own actions will alter and inform their future thoughts and actions (Nye, 2008).

Review of the Related Literature

The Nature of Self-Efficacy

Self-efficacy refers to a person's belief concerning his or her own ability to perform given actions (Pajares, 2002). The concept of self-efficacy stems from Albert Bandura's social cognitive theory. Self-efficacy beliefs are important because they are predictive of human behaviour. Bandura (1997, as cited in Nye, 2008) described how beliefs influence the courses of action people choose for themselves, how much effort they expend, how long they persevere in the face of adversity, and their level of accomplishment. Tschannen-Moran and Gareis (2004) delineated these responsibilities into three categories: instructional leadership, management leadership, and moral leadership. As principals' efficacy beliefs about their ability to provide moral, instructional, and management leadership are developed and reinforced, these beliefs have a powerful impact on their decisions, actions, and behaviours. Principals with a high sense of self-efficacy encounter challenges and see them as opportunities to excel and make a difference. Principals with low self-efficacy avoid facing challenges if possible.

Leadership Behaviours

Leadership behaviours of the school leaders are the lines or activities of an individual or a group attention to facet towards attaining a goal in a given condition (Hersey & Johnson, 1996, as cited in Tatlah et al.,

2014). Effective leaders can be defined as those persons, occupying various roles in the school, who work with others to provide direction and who exert influence on persons and things in order to achieve the school's goals (Leithwood & Riehl, 2003, as cited in Hasanvand et al., 2013). In other words, effective principals facilitate effective schools for teachers and ultimately student's success. The impact of principal leadership behaviours was indirect; principal leaders influenced mediating factors (e.g., student learning experiences or classroom conditions) which, in turn, influenced student success. Principals leadership must also drive instructional and organizational leadership and management to advance student achievement (Pinto, 2014).

Methodology

This study focused to examine the relationship between principal self-efficacy and behaviours related to affecting student achievement at selected Basic Education High Schools in Lewe Township. Quantitative research method was utilized in this study. Data were collected by using two questionnaires. *"Principal Efficacy, Environment, and Behaviour Scale (PEEBS)"* designed by Szymendera (2013) (Questionnaire for Principals and Questionnaire for Teachers) was used to collect data on principal self-efficacy and behaviours related to student achievement. The first portion of the survey instrument collected demographic data. The second portion of the survey instrument used Tschannen-Moran and Gareis' (2004) "*Principal Sense of Efficacy Scale (PSES)"* to collect data on principal self-efficacy. The third portion of the survey instrument collected data on principal actual indirect and direct behaviours related to affecting student achievement. The target population of this study was seven principals and 269 teachers from selected Basic Education High Schools in Lewe Township.

Research Findings

Quantitative Research Findings

Table 1. Principal Self-Efficacy Perceived by Principals and Teachers at Selected Basic Education High Schools

Dimensions of Principal Self-Efficacy	**Principals (N=7)**	**Teachers (n=269)**	**Mean Difference**
Efficacy for Management	4.02	4.08	-0.06
Efficacy for Instructional Leadership	3.98	4.09	-0.11
Efficacy for Moral Leadership	4.14	4.08	0.06

Table 1 shows that the dimension of "Efficacy for Moral Leadership" had the greatest mean (4.14), followed, in descending order, by "Efficacy for Management" (4.02), and "Efficacy for Instructional Leadership" (3.98) according to principals' ratings.

Table 2. ANOVA Results for Principal Self-Efficacy Perceived by Teachers among Selected Basic Education High Schools

Groups	**Sum of Squares**	***df***	**Mean Square**	***F***	***p***
Between Groups	8.432	6	1.405	11.061	**.000*** **
Within Groups	33.288	262	.127		
Total	41.720	268			

Note. ***p<0.001

According to Table 2, it was found that there was a significant difference in teachers' perceptions on principal self-efficacy in their high schools.

Table 3. Independent Samples *t* Test Results for Principal Self-Efficacy Perceived by Teachers according to Their Gender

Variable	**Gender**	**Mean**	***t***	***df***	***p***	**Mean Differences**
Principal Self-Efficacy	Male	3.93	-2.242	267	**.026***	-.170
	Female	4.10				

Note. *p<0.05

According to Table 3, it was found that there was a significant difference in teachers' perceptions on principal self-efficacy according to their gender. So, female teachers' perceptions on principal self-efficacy were higher than the male teachers' perceptions.

Table 4. ANOVA Results for Principal Self-Efficacy Perceived by Teachers according to Their Age

Principal Self-Efficacy	**Sum of Squares**	***df***	**Mean Square**	***F***	***p***
Between Groups	2.306	7	.329	2.182	**.036***
Within Groups	39.414	261	.151		
Total	41.720	268			

Note. *p<0.05

According to Table 4, it was found that there was a significant difference in teachers' perceptions on principal self-efficacy according to their age.

Table 5. ANOVA Results for Principal Self-Efficacy Perceived by Teachers according to their Teaching Service

Principal Self-Efficacy	**Sum of Squares**	***df***	**Mean Square**	***F***	***P***
Between Groups	2.294	7	.328	2.169	**.037***
Within Groups	39.426	261	.151		
Total	41.720	268			

Note. *p<0.05

According to Table 5, it was found that there was a significant difference in teachers' perceptions on principal self-efficacy according to their years of teaching service.

Table 6. Principal Behaviours Related to Affecting Student Achievement Perceived by Principals and Teachers at Selected Basic Education High Schools

Dimensions of Principal Behaviours Related to Affecting Student Achievement	**Principals (N=7)**	**Teachers (n=269)**	**Mean Difference**
Indirect Behaviours	4.32	4.30	0.02
Direct Behaviours	4.16	4.12	0.04

1-1.49=Never, 1.5-2.49=Rarely, 2.5-3.49=Sometimes, 3.5-4.49=Often, 4.5-5.00=Almost Always

According to Table 6, the mean values of "Indirect Behaviours" (4.32) were greater than the mean values of "Direct Behaviours" (4.16). So, the principals rated that they often perform "Indirect Behaviours" and "Direct Behaviours".

Table 7. ANOVA Results for Principal Behaviours Related to Affecting Student Achievement Perceived by Teachers among Selected Basic Education High Schools

Groups	**Sum of Squares**	***df***	**Mean Square**	***F***	***p***
Between Groups	17.708	6	2.951	8.102	**.000*** **
Within Groups	95.438	262	.364		
Total	113.146	268			

Note. ***p<0.001

According to Table 7, it was found that there was a significant difference in teachers' perceptions on behaviours related to affecting student achievement in their high schools.

Table 8. ANOVA Results for Principal Behaviours Related to Affecting Student Achievement Perceived by Teachers according to Their Teaching Service

Principal Behaviours Related to Affecting Student Achievement	**Sum of Squares**	***df***	**Mean Square**	***F***	***p***
Between Groups	4.097	7	.585	1.401	.205
Within Groups	109.049	261	.418		
Total	113.146	268			

According to Table 8, it was found that there was no significant difference in teachers' perceptions on principal behaviours related to affecting student achievement according to their teaching service.

Table 9. ANOVA Results for Principal Behaviours Related to Affecting Student Achievement Perceived by Teachers according to Their Position

Principal Behaviours Related to Affecting Student Achievement	**Sum of Squares**	***df***	**Mean Square**	***F***	***p***
Between Groups	6.024	2	3.012	7.479	**.001****
Within Groups	107.122	266	.403		
Total	113.146	268			

Note. **p<0.01

According to Table 9 it was found that there was a significant difference in teachers' perceptions on principal behaviours related to affecting student achievement according to their position.

Table 10. Relationship between Teachers' Perceptions of Principal Self-Efficacy and Behaviours

Variables	**Principal Self-Efficacy**	**Principal Behaviours Related to Affecting Student Achievement**
Principal Self-Efficacy	1	.442**
Principal Behaviours Related to Affecting Student Achievement	.442**	1

**Correlation is significant at the 0.01 level (2-tailed).

According to Table 10, it was found that the principal self-efficacy was positively and moderately correlated with principal behaviours related to affecting student achievement (r=.442, p<0.01).

Table 11. Correlation between Each Dimension of Principal Self-Efficacy and Behaviours Perceived by Teachers

Dimensions	**EM**	**EIL**	**EML**
Indirect Behaviours	.454**	.356**	.460**
Direct Behaviours	.385**	.312**	.389**

**Correlation is significant at the 0.01 level (2-tailed).

According to Table 11 there was a moderate positive correlation between "Efficacy for Management" and "Indirect Behaviours" (r=.454, p<0.01) at selected high schools. Similarly, it was also found that "Efficacy for Management" was moderately and positively correlated to "Direct Behaviours" (r=.385, p<0.01). Moreover, it was found that there was a moderate positive correlation between "Efficacy for Instructional Leadership" and "Indirect Behaviours" (r=.356, p<0.01). On the other hand, it was found that "Efficacy for Instructional Leadership" was a low positive correlation to "Direct Beahviours" (r=.385, p<0.01). Additionally, it was found that "Efficacy for Moral Leadership" was moderately and positively correlated to "Indirect Beahviours" (r=.460, p<0.01) and "Direct Behaviours" (r=.389, p<0.01).

Conclusion and Discussion

Analyses of quantitative data collected from this study attempted to answer three research questions. Research question one found out that the differences in the perceptions of principal self-efficacy and behaviours related to affecting student achievement between principals and teachers. Research question two analyzed the significant differences in principal self-efficacy according to teachers' demographic data, it was found that there were significant differences in principal self-efficacy according to their gender, age and teaching service. Finally, research question three was to explore the relationship between teachers' perceptions of principal self-efficacy and behaviours related to affecting student achievement. Based on the research findings, principal self-efficacy and behaviours related to affecting student achievement were positively and moderately correlated (r=.442, p<0.01). These findings can be concluded that the principals who possess high level of self-efficacy practised leadership behaviours related to affecting student achievement. The more self-efficacy they possessed, the more behaviours related to affecting student achievement they practised.

Acknowledgements

I would like to offer our respectful gratitude to Dr. Saw Pyone Naing (Rector), Dr. Myat Myat Thaw (Pro-Rector), Dr. Khin Mar Yee (Retired Professor), Dr. Zaw Win (Retired Lecturer), Dr. Zin Nwe Than (Associate Professor and Head of Department), Sagaing University of Education. Finally, I am intended to all people who supported to complete this study.

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Principals' Instructional Leadership and Organizational Health Perceived by Teachers

Aye Chan Kay Khine[1] & Myint Oo[2]

Abstract

This study investigated the principals' instructional leadership and organizational health perceived by teachers at selected Basic Education High Schools in Chan Aye Thar San Township. In this study *Principal Instructional Management Rating Scale (PIMRS)* developed by Hallinger and Murphy (1985) was utilized to examine the principals' instructional leadership perceived by teachers and *Organizational Health Inventory-Secondary (OHI-S)* developed by Hoy, Tarter, and Kottkamp (1991) was utilized to find out the organizational health perceived by teachers. All senior, junior and primary school teachers (N=327) from selected high schools participated in this study. Based on the research findings, it was found that the principals from selected Basic Education High Schools had high levels of instructional leadership and the schools had high levels of organizational health according to teachers' perceptions. There were significant differences among schools both in the areas of principals' instructional leadership and organizational health of the schools. It was also found that principals' instructional leadership was highly and positively related to organizational health (r =.766, p<0.01).

Keywords: instructional leadership, organizational health, perceptions, rating scale

Introduction

Instructional leaders were defined as principals who attempted to improve instructional programs, teaching and learning, and student performance by developing a conducive working environment; provide direction, needed resources, and desired school" (Wanzare & Da Costa, 2000, as cited in Poirier, 2009).

The effective principal is actively involved in all aspects of the instructional program, sets expectations for continuous improvement and collegiality, models the kinds of behaviors desired, participates in in-service training with teachers, and consistently gives priority to instructional

[1] Med student, Department of Educational Theory, Sagaing University of Education
[2] Associate Professor, Department of Educational Theory, Sagaing University of Education

concerns (Smith & Andrew, 1989). Sapone (1985, as cited in Smith & Andrew, 1989) maintains that any school can increase efficiency and effectiveness if the principal is able to demonstrate curriculum and instructional leadership.

Hoy et al., (1991) postulated that a healthy school is one in which the technical, managerial and institutional levels are all in harmony, and the school meets functional needs as it successfully copes with disruptive external forces and directs energy toward its mission. Organizational health affects a school's efficiency and power to continuously improve. Improvement in the state of organizational health should be the prime target of change efforts in schools. Only then can change efforts be effective (Hoy et al., 1991, cited in Owens, 2015).

Purpose of the Study

The general purpose of this study was to examine the perceptions of teachers on instructional leadership of principals and organizational health at selected Basic Education High Schools in Chan Aye Thar San Township, Mandalay Region.

In order to support the general purpose, the specific objectives were set as follows;

- To examine the perceptions of teachers on instructional leadership of principals at selected Basic Education High Schools in Chan Aye Thar San Township.
- To determine the perceptions of teachers on organizational health at selected Basic Education High Schools in Chan Aye Thar San Township.
- To find out the relationship between the teachers' perceptions on instructional leadership of principals and organizational health.

Research Questions

This study was guided by the following research questions;

(1) To what extent do teachers perceive on instructional leadership of principals at selected Basic Education High Schools in Chan Aye Thar San Township?

(2) To what extent do teachers perceive on organizational health at selected Basic Education High Schools in Chan Aye Thar San Township?

(3) Is there any relationship between the teachers' perceptions on instructional leadership of principals and organizational health?

Theoretical Framework

The instructional leadership framework of Hallinger and Murphy (1985) serves as the foundation for this research. Hallinger and Murphy (1985) developed a framework of instructional leadership comprised of the following dimensions: (a) defining the school's mission, (b) managing the instructional program, and (c) promoting a positive school learning climate. These dimensions are further delineated into ten instructional leadership functions: (1) framing the school goals, (2) communicating school goals, (3) supervising and evaluating instruction, (4) coordinating curriculum, (5) monitoring student progress, (6) protecting instructional time, (7) promoting professional development (8) maintaining high visibility, (9) providing incentives for teachers, (10) providing incentives for students.

Review of Related Literature

Leadership

Leadership involves a type of responsibility aimed at achieving particular ends by applying the available resources (human and material) and ensuring a cohesive and coherent organization in the process (Ololube, 2013, as cited in Amanchukwu et al., 2015). Northouse (2007, as cited in Amanchukwu et al., 2015) and Rowe (2007, as cited in Amanchukwu et al., 2015) described leadership as a process whereby an individual influences a group of individuals to achieve a common goal.

Organizational Health

The concept of organizational health was used by Miles in 1969 in organizational health analysis of schools. Miles suggested a model for the organizational health of the schools and defined healthy organization in the following terms: "A healthy organization is the one which is not static in its existing setting, but is ever developing itself and its skills to handle and carry on" (Miles, 1969, Akbaba-Altun, 2001, as cited in Kant, 2017).

Methodology

Method and Design

In order to fulfill the purpose of the study, the quantitative approaches were adopted. A descriptive statistical design and questionnaire survey was utilized for this study.

Population and Sample

There are 10 Basic Education High Schools in Chan Aye Thar San Township. Out of 10 high schools, 5(50%) high schools were chosen as sample. The schools where the principals had at least one year of service at their present schools were selected as sample. Out of 330 teachers from selected Basic Education High Schools, 327 teachers completed the questionnaire and so, the return rate was 99.09%.

Research Instrument

In this study, two questionnaires were utilized to collect the quantitative data from teachers. They were the Principal Instructional Management Rating Scale (PIMRS) developed by Hallinger and Murphy in 1985 (Questionnaire 1) and the Organizational Health Inventory-Secondary (OHI-S) developed by Hoy, Tarter, and Kottkamp in 1991 (Questionnaire 2).

Reliability

In order to find out the internal consistency reliability, Cronbach's Alpha (α) was used to calculate the reliability of the research instrument. The reliability coefficients were found 0.747 for instructional leadership questionnaire and 0.738 for organizational health.

Findings

According to Table 1, it was found that the teachers from selected Basic Education High Schools perceived their principals' instructional leadership were at high levels in all job functions. The perception of teachers from School "E" was the highest and the perception of teachers from School "D" was the lowest in *"Provide Incentives for Learning"* among the selected high schools. Among the selected high schools, the rating of teachers from School "A" was the highest and the rating of teachers from School "D" was the lowest in *"Monitor Student Progress"*.

Again, the perception of teachers from School "E" was the highest and the perception of teachers from School "D" was the lowest in *"Protect Instructional Time"* and *"Maintain High Visibility"* among the selected high schools. Among the selected high schools, the rating of teachers from School "B" was the highest and the rating of teachers from School "D" was the lowest in *"Provide Incentives for Teachers"*.

Table 1. Mean Values and Standard Deviations of Principals' Instructional Leadership Perceived by Teachers in Selected Basic Education High Schools

School / **Job Functions**	**A (n1=22)**	**B (n2=72)**	**C (n3=72)**	**D (n4=50)**	**E (n5=111)**	**Total (N=327)**
Frame the School Goals	4.45 (.645)	4.21 (.812)	4.12 (.787)	**4.55** (.586)	4.31 (.736)	4.31 (.736)
Communicate the School Goals	4.43 (.718)	3.29 (.861)	4.32 (.637)	4.26 (.659)	**4.59** (.444)	4.40 (.659)
Supervise and Evaluate Instruction	4.12 (.661)	4.09 (.841)	3.94 (.777)	3.59 (.868)	**4.16** (.589)	4.01 (.763)
Coordinate the Curriculum	4.11 (.594)	4.00 (.952)	3.98 (.783)	3.89 (.789)	**4.41** (.581)	4.13 (.779)
Monitor Student Progress	**4.06** (.628)	3.98 (.889)	3.83 (.767)	3.60 (.714)	3.69 (.554)	3.97 (.742)
Protect Instructional Time	3.57 (.559)	3.78 (.848)	3.49 (.704)	3.42 (.679)	**3.87** (.546)	3.62 (.687)
Maintain High Visibility	3.47 (.769)	3.78 (.914)	3.52 (.882)	3.25 (.888)	**3.87** (.777)	3.65 (.873)
Provide Incentives for Teachers	3.54 (.682)	**3.89** (1.13)	3.38 (.919)	3.06 (.928)	3.82 (.773)	3.61 (.957)
Promote Professional Development	4.18 (.681)	4.24 (.789)	3.77 (.785)	3.66 (.923)	**4.40** (.594)	4.10 (.798)

School / Job Functions	A (n1=22)	B (n2=72)	C (n3=72)	D (n4=50)	E (n5=111)	Total (N=327)
Provide Incentives for Learning	3.87 (.871)	4.12 (.928)	3.81 (.805)	3.50 (.936)	**4.40** (.654)	4.04 (.870)
Instructional Leadership	3.99 (.587)	4.04 (.796)	3.82 (.641)	3.64 (.657)	**4.21** (.452)	3.98 (.653)

1-2.49 = Low Level 2.50-3.49 = Moderate Level 3.5-5.00 = High Level

Table 2. Mean Values and Standard Deviations of Organizational Health Perceived by Teachers in Selected Basic Education High Schools

School / Dimensions	A (n1=22)	B (n2=72)	C (n3=72)	D (n4=50)	E (n5=111)	Total (N=327)
Institutional Integrity	**4.29** (.391)	3.56 (.846)	3.83 (.627)	3.55 (.702)	3.84 (.673)	3.76 (.718)
Initiating Structure	4.25 (.555)	4.10 (.980)	4.14 (.768)	4.14 (.745)	**4.60** (.534)	4.30 (.766)
Consideration	3.69 (.748)	3.69 (1.20)	3.58 (.902)	3.43 (.954)	**4.20** (.627)	3.78 (.940)
Principal Influence	**4.25** (.505)	3.90 (.709)	3.99 (.675)	3.71 (.739)	4.23 (.576)	4.03 (.675)
Resource Support	3.45 (.628)	**3.89** (1.18)	3.44 (.859)	3.58 (.881)	3.79 (.918)	3.68 (.962)
Morale	4.28 (.612)	4.49 (.467)	4.31 (.724)	4.09 (.669)	**4.57** (.495)	4.40 (.605)
Academic Emphasis	3.69 (.802)	4.08 (.694)	4.06 (.688)	3.77 (.794)	**4.60** (.495)	4.18 (.732)
Organizational Health	3.98 (.437)	3.95 (.596)	3.91 (.501)	3.75 (.545)	**4.26** (.432)	4.02 (.535)

1.00-2.49 = Low level 2.50-3.49 = Moderate level 3.50-5.00 = High level

According to Table 2, it was found that the teachers from selected Basic Education High Schools perceived that their organizational health of schools at high level in all dimensions. The total mean value of ‘‘*Morale’’* was the highest while *‘‘Resource Support’’* was the lowest. Among the selected high schools, the rating of teachers from School “A” was the highest and the rating of teachers from School “D” was the lowest in *‘‘Institutional Integrity’’.* The perception of teachers from School “E” was the highest and the perception of teachers from School “B” was the lowest in *“Initiating Structure”* among the selected high schools.

In addition, the perception of teachers from School “E” was the highest and the perception of teachers from School “D” was the lowest in *“Consideration”* among the selected high schools. The perception of teachers from School “A” was the highest and the perception of teachers from School “D” was the lowest in *“Principal Influence”* among the selected high schools.

Table 3. Correlation between Job Functions of Instructional Leadership and Dimensions of Organizational Health

	II	**IS**	**C**	**PI**	**RS**	**M**	**AE**
Frame the School Goals	.126*	.538**	.546**	.397**	.488**	.374**	.511**
Communicate the School Goals	.089	.602**	.523**	.375**	.553**	.453**	.603**
Supervise and Evaluate Instruction	.076	.453**	.540**	373**	.536**	.341**	.504**
Coordinate the Curriculum	.060	.630**	.555**	.454**	.542**	.441**	.578**
Monitor Student Progress	.062	.588**	.564**	.409**	.579**	.439**	.585**
Protect Instructional Time	-.048	.402**	.443**	.282**	.479**	.346**	.445**
Maintain High Visibility	-.004	.380**	.548**	.285**	.593**	343**	.521**
Provide Incentives for Teachers	-.051	.407**	.651**	.314**	.597**	.339**	.526**

	II	IS	C	PI	RS	M	AE
Promote Professional Development	.068	.607**	.665**	.489**	.647**	.458**	.586**
Provide Incentives for Learning	.141*	.528**	.642**	.365**	.531**	.377**	.537**

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Note: II = Institutional Integrity, IS = Initiating Structure,
C = Consideration, PI = Principal Influence,
RS = Resource Support, M = Morale,
AE = Academic Emphasis

Table 3 shows the correlation between the job functions of instructional leadership and dimension of organizational health in selected Basic Education High Schools in Chan Aye Thar San Township.

Table 4. Correlation between Principals' Instructional Leadership and Organizational Health

No.	Variables	Instructional Leadership	Organizational Health
1	Instructional Leadership Sig. (2-tailed)	1	.766** .000
2	Organizational Health Sig. (2-tailed)	.766** .000	1

According to Table 4, there was a highly and positively correlation between principals' instructional leadership and organizational health (r = .766, p<0.01) at 0.01 level. Therefore, it can be said that if the instructional leadership of principals is good, the organizational health of the school will be high.

Conclusion and Discussion

According to the perceptions of teachers, it was found that the principals from selected high schools had a high level of instructional leadership. When comparing the mean values of the job functions of instructional leadership, the mean value of "*Communicate the School Goals"* was the highest while the mean value of "*Provide Incentives for Teachers"* was the lowest

Research question two evaluated the organizational health perceived by teachers in selected high schools. According to the perceptions of teachers, it was found that the organizational health in all selected high schools had high level. This finding can be regarded as positive in terms of showing morale of teachers at a high level. It can be stated that the teachers have a collective sense of friendliness, openness, enthusiasm, and trust among faculty members.

Research question three was to find out the relationship between the principals' instructional leadership and organizational health at selected high schools. Based on the research findings, there was a highly and positively correlation between principals' instructional leadership and organizational health (r = .766, p<0.01). Therefore, it can be said that if the instructional leadership of principals is good, the organizational health of schools will be high.

Acknowledgements

We would like to express our sincere gratitude to Dr. Saw Pyone Naing (Rector, Sagaing University of Education), and Dr. Myat Myat Thaw (Pro-rector, Sagaing University of Education) for their permission to conduct this research. We are deeply thankful to Dr. Daw Khin Mar Yee (Retired Professor and Head of Department, Department of Educational Theory, Sagaing University of Education) for her sympathetic understanding and invaluable comments. We are also greatly indebted to Dr. Zin Nwe Than (Professor and Head of Department, Department of Educational Theory, Sagaing University of Education).

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Internal Marketing and Employee Performance of Private Schools in Mandalay

Thiha Htun*

Abstract

This study attempts to explore the internal marketing of private schools, and to analyze the relationship between the internal marketing and employee performance of private schools in Mandalay. This study utilizes primary data from 200 teaching staffs of private schools from Mandalay in 2019. Descriptive Statistics and multiple regression analysis were applied to analyze the variables from this empirical study. In exploring the relationship between internal marketing and employee performance of private schools in Mandalay, it is found that training and commitment can effectively increase employee performance of private schools in Mandalay. In addition, work life balance and appraisal lead to achieve superior performance of employee in the private schools. However, opportunity does not show significant effect on the improvement of employee performance in the private schools. Based on the findings of the study, recommendations and implications for private schools are presented.

Keywords: internal marketing, commitment, work life balance, appraisal

Introduction

The performance of business enterprises largely depends on the formulation and implementation of marketing strategy that is compatible with the overall goal within a particular entity. Marketing can be seen as one of the fundamental functions of business organizations to outperform competitors and be competitive in the market. Every organizations implement marketing programs to attract prospective customers to patronize the firm's offerings in the market. Also, many scholars take into account the distinct features of marketing practices from the organizational point of view aimed at improvement of performance. The implementation of marketing practices is the key to attract, develop, and maintain effective human resources for the improvement of employees, and improve organizational performance.

* Lecturer, Dr., Department of Management Studies, Meiktila University of Economics

Marketing activities can be carried out into external marketing and internal marketing within an organization. Internal marketing aims at the application of marketing strategy to the satisfaction of customers for the long-run relationships within the business entity. Such kinds of marketing strategy are carried out at the functional level of organization in the business community. Internal marketing activities in the organization comprise training, opportunity, performance appraisal, work life balance, and commitment. Such kinds of internal marketing activities are important to improve employee performance which is very critical to the improvement of overall organizational performance.

Training and development, one important method in internal marketing of the organization, is essential to the improvement of knowledge, skill and ability of employees at all levels within an organization. Training programs, trainers, training duration, training methods are important to meet training objectives of the organization. Many organizations arrange training for the different levels of employee in respective department, and training effectiveness are measured through the performance criteria in the workplace to meet the required effectiveness.

Internal marketing is an essential component in the implementation of policy in the organization, and employment opportunities in an incentive to create commitment and effective work performance of employees. Such kinds of employment opportunities are needed to create through the sound performance appraisal which is central to internal marketing in the organization and better management of performance for the organizational improvement. The critical role of internal marketing practices creates work life balance of employees, and good climate in the work.

The establishment of private school in the education sector promote to the development and structure of institutes, and this situation highlight the changing pattern of service industry. At present, the number of private schools to fulfill local needs of education has increased year by year. In 2015, the Ministry of Education began working on a Private Education Law to finally put in place a regulatory framework for all private schools. Private schools recruit and hire teaching staff to provide services through effective lectures and guidelines which are necessary to the qualification of students, and to achieve higher grades in the examination. Internal marketing practices paly an essential role for private school founders to motivate employees within the organization itself. Also, internal marketing

practices are needed to implement in the organization to retain qualified employee as higher employee performance are critical to the establishment of private school in the region.

The Education Services Sector can be considered as one of the most important sectors contributing to growth of industry. Skilled employees are employed in the education services to offer better education service to students. The achievement of sustainable development of the organization requires effective HR Policy and guided line as employees can be considered as the most important resource person in the organization. The managers of private schools must ensure that there is an effective internal marketing in their organizations to achieve organizational objectives. As the competition between same firms in the same sector, private schools need to apply internal marketing practices for employees to achieve strategic aims.

Objectives of the Study

The overall objective of the study is to examine internal marketing and employee performance of private schools in Mandalay. The specific objectives of this study are:

(1) To explore the internal marketing practices of private schools in Mandalay, and

(2) To analyse the relationship between the internal marketing and employee performance of private schools in Mandalay.

Scope and Methods of the Study

The required data was collected by conducting personal interview with employees in Mandalay by using structured questionnaires. This study focuses on 200 teaching staffs from private schools in Mandalay in 2019 to analyze the internal marketing of private schools in Mandalay Region.

In order to comprehend the internal marketing of private schools, this study uses structured Likert-type questionnaires. Descriptive statistics was used to identify internal marketing practices of private schools, and multiple regression was applied to predict the value of a variable based on the value of two or more other variables. Program SPSS Statistics for Windows, version 23 is the main analytical tool used in this research. It

provides comprehensive information such as the coefficient of each independent variable, intercept, R-squared and Adjusted R^2, and Root MSE, which in turn are used to interpret the findings. This statistic program also allows investigation of the descriptive analysis.

Literature Review

Internal marketing aims to is to get employee motivated and achieve higher performance, and to achieve service excellence. The term internal marketing in the organizations appears to have been first used by Berry et al. (1976) and later by George (1977) and Thompson et al. (1978) and Murray (1979). Internal marketing can be defined as "treating both employees and customers with equal importance through proactive programs in order to achieve the objectives of the organization (Braimah, 2016, Woodruffe, 1995). Greene et al. (1994) defines internal marketing as the "promoting of the firm and its product(s) to the firm's employees, and for this strategy to be successful top-level management must fully embrace it".

Internal marketing is increasingly important to organizations due to growth in significance of the service sector and the knowledge-based economy (Dunmore, 2002). Also, the important aspect of internal marketing is that it is practiced within professional services. In fact, internal marketing can enhance employee to comprehend the values of the organization, develop better employee performance, provide better service quality, and good citizenship behavior in the organization. Internal marketing in the organizations have been implement through effective deployment of the organization's policies in order to fulfill better quality of service to fulfill customer needs and to achieve customer satisfaction.

Internal marketing practices have been adopted the organization in various economic sectors in order to increase the performance of the organization through the effective employee performance. According to Berry (1981), the human resource practices such as selection, recruitment, and other practices are vital factors that provide quality services in the organization. Internal marketing practices have been adopted within the organizations through the means of Training (Gronroos, 2000), reward (Foreman and Money, 1995), feedback, an open environment for communication (Tansuhaj, 1991). Tansuhaj (1991) mentioned that

communication, staff training; appraisal and feedback, and customer consciousness are dimensions of internal marketing measurement.

Internal marketing has been started to solve the problems that occur due to the lack of delivering services in a high quality (Panigyrakis, 2009). The objective of internal marketing is to get motivated and customer conscious employees in order to achieve service excellence. Motivated employees are crucial to a company's success, effective internal marketing can achieve superior employee performance to gain competitive advantage in the industry. (Tansuhaj et al., 1991) pointed that internal marketing is essential to increase the organizational commitment of employees, and proceed to increased job satisfaction; increased job performance and lower turnover of staff (Jenkins and Thomlinson, 1992; Schlessenger and Haskett, 1991).

Muriuki, Maru, and Losgei (2006) found that internal marketing strategy significantly influences employee performance; the study also established a significant relationship between employee commitment and employee performance among selected public universities in Kenya. Chang & Chang (2009) found that internal marketing was positively related to job commitment of nurses in Taiwan, and a positive effect of internal marketing on employee performance (Iliopoulus & Priporas, 2011). Al-Hawary et al. (2013) proved that internal marketing practices were positively correlated with employee performance of banks in Jordan. Also, job satisfaction, and internal marketing enhance employee performance (Tansuhaj, Randall, and McCullough, 2010).

Internal marketing can be regarded as a leading figure to develop the competency of employees to offer better service to customers, and nowadays companies always compete in order to improve service quality by training, developing, selecting and recruiting the human capabilities in the organization (Berry,1981). International marketing programs develop in the organization with the effective policy guidelines of top management, and implement in the various levels of the organization. Thus, the implementation of human resource management practices through effective training and development programs, leading and managing people effectively, performance management in the whole life of employees, employee retention of resource person in the organization create strong dignity which lead to improve effective performance of workforce.

Ahmed et al. (2012) revealed a positive relationship between the Internal marketing practices and employee performance. Hwang and Chi's (2005) research on international hotels in Taiwan also support internal marketing's positive impact on employee performance. Chang and Chang (2009) in their study on hospitals observe that internal marketing has a positive influence on employee performance. In fact, internal marketing can be applied as an important management tool for ensuring the motivation of employees which leads to superior performance in the organization. The effective implementation of an internal marketing program within the organization ensures that employee motivation leads to better corporate culture which remain sustainable in the competitive industry.

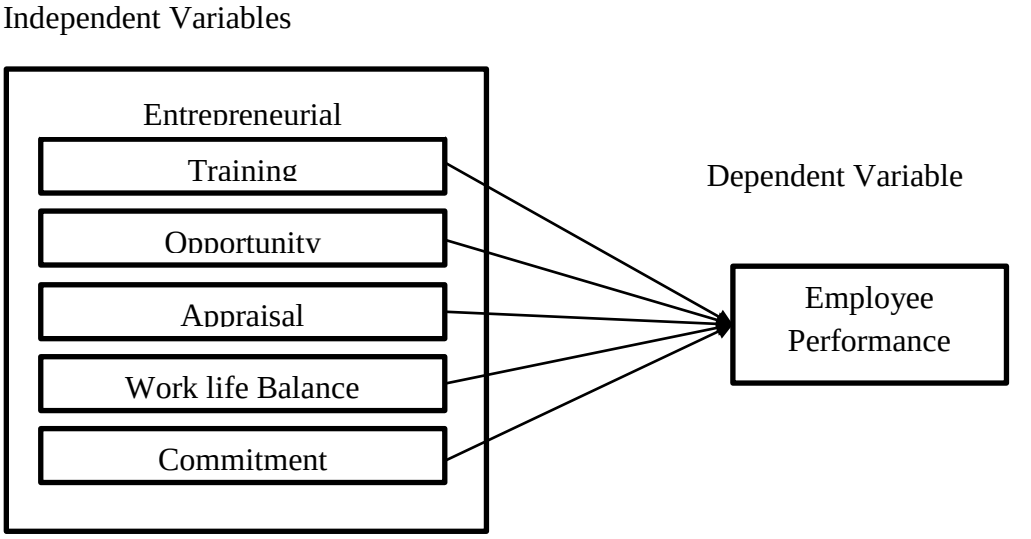

Figure 1. Conceptual Framework of the Study

Source: Own Compilation Based on Previous Studies

According to the previous literature, internal marketing practices have direct and indirect effects on employee commitment, employee performance, employee motivation, and employee performance. Some empirical studies found the mediating effect but some proved direct effect on the relationship between internal marketing practices and employee performance. Internal marketing practices of private schools are explored based on such factors such as effective training and development program, creating employment opportunity, performance management within the organization, work life balance, and organizational commitment of private

school in Mandalay. The employee performance of private schools is measured based on labor productivity, work commitment, higher quality of work done in the organization.

As shown in the conceptual framework, training, opportunity, appraisal, wok life balance, and commitment are used as independent variables and employee performance is used as dependent variable in this study. Thus, this study proposed that internal marketing practices will have significant effect on the employee performance in the private schools.

Findings

To identify internal marketing practices of private schools, the mean values and standard deviation for each internal marketing practices are shown in the following. The mean values describe the average perception of employees at private schools, the standard deviation explains how much deviates from the mean values, and the alpha values depict the internal consistency among variables. As shown in the followings, the alpha values are above 0.70, the minimum acceptance level. The standard deviation for each variable is below one which explains that it does not deviate from the mean value.

According to Table (1), internal marketing practices are at the strongly agree level and thus it can be concluded that internal marketing practices of private schools have high degree of implementation. Among the five internal marketing practices of private schools included in this study, training show the maximum mean value explaining private schools have arranged effective training to employees in the organization. On the other hand, employment opportunity shows the minimum mean value but it reveals the agree level. Thus, it can be inferred that private schools have provided adequate level of employment opportunities to employees form the organization depending on the skill level and work experience.

Table 1. Descriptive Statistics of Entrepreneurial Competencies

Sr.	Variables	Mean	SD	Items	Alpha
1	Training	4.33	0.6028	6	0.783
2	Opportunity	4.02	0.7376	6	0.798
3	Appraisal	4.12	0.6748	6	0.766
4	Work life Balance	4.21	0.7699	6	0.767
5	Commitment	4.31	0.5696	6	0.768
6	Employee Performance	4.39	0.4728	6	0.780

Source: Survey Data (March 2019)

Internal marketing practices of private schools are explored based on such factors such as training, employment opportunity, performance appraisal, work life balance, and organizational commitment of private school in Mandalay. The employee performance of labor productivity, work commitment, higher quality of work done is measured on a continuous scale and multiple regression analysis is applied. The effect of internal marketing practices of training, employment opportunity, performance appraisal, work life balance, and organizational commitment on the employee performance is described in Table (2).

Table 2. Multiple Regression Analysis of Entrepreneurial Competences

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	1.664	0.233			
Training	0.147**	0.053	0.188	2.783	0.006
Opportunity	-0.053	0.043	-0.083	-1.228	0.221
Appraisal	0.084*	0.050	0.121	1.696	0.091
Work life Balance	0.081*	0.042	0.132	1.931	0.055
Commitment	0.374**	0.057	0.451	6.608	0.000

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
R-square	0.453				
Adjusted R^2	0.439				
F	32.094**				

Note: ** and * show statistical significant at 1% and 10% levels respectively.
Dependent Variable: Employee Performance
Source: Survey Data (March 2019)

According to the results in Table (2), the model explains that the variation in overall level of industrial agglomeration exists as R^2 value is 0.453 percent. This indicates that independent variable can explain 45.30 percent of the variations in dependent variable. Thus, the variability of the residual values around the regression line relative to the overall variability is small, and the predictions from the regression equation are good. The value F of 32.094 with a p-value of 0.000 indicates that the model as a whole is statistically significant at 1 percent level. According to the multiple regression results, employee performance will increase 8.456 if private schools do not offer internal marketing practices to employees.

Training has effect on employee performance with the regression coefficient of 0.147 at a significant level of 1 percent and it implies that employee performance of private schools will increase 0.147 if the influence of training increases by one unit. The formulating and implementation of training programs such as development training objectives, training methods, trainers, and application of training knowledge enhance the improvement of employee performance of private school.

Appraisal of the private school has effect on employee performance with the regression coefficient of 0.084 at a significant level of 10 percent and it implies that employee performance of private schools will increase 0.084 if the influence of appraisal increases by one unit. This can be suggested that performance management system in the organization have been implemented to the improvement of employee performance, and appraisal between each employee level is effective to retain effective human

resource in the organization at present and for the better future prospect in the industry.

Work life balance within an organization has effect on employee performance with the regression coefficient of 0.081 at a significant level of 10 percent and it implies that employee performance of private schools will increase 0.081 if the influence of training increases by one unit. The management of work place to be good atmosphere, effective internal marketing program to reduce job stress, and organizational culture to give mutual agreement in the work place is an effective tool to the improvement of work outcome among employees at the private school.

Commitment for internal marketing within an organization has effect on employee performance with the regression coefficient of 0.374 at a significant level of 1 percent and it implies that employee performance of private schools will increase 0.374 if the influence of commitment for internal marketing within an organization increases by one unit. Organizational commitment of internal marketing practices to offer better education services, the arrangement of job positions which are compactable with individual situations, effective negotiation within groups, and better teamwork are effective tools to the improvement of work outcome among employees at the private school.

According to empirical survey results mentioned above, opportunity of private schools for employees do not have any significant effect to improve employee performance at private schools. Creating job opportunity for employees have been considered only the side of organizational development, and job opportunity is mainly based on experience and work performance among employees at private school. In addition, many employees at private schools have enjoyed secure work life in the work, and better job opportunity are not taken into account on the side of individual preference.

Conclusion

This study analyses the internal marketing of private schools in Mandalay region. Private schools were operated effectively to provide better education services in Mandalay, and these private schools have adequate levels of employees to offer education services to students. Internal marketing practices are needed to be improved through effective

training and development, better employment opportunities, continuous management of performance at each level of employees. These firms can maintain better management practices, organization development methods, and employee empowerment to offer better internal marketing system in the organization.

In this study, training contributes to better employee performance in private school industries, this mean that development training objectives, training methods, trainers, and application of training knowledge enhance the improvement of employee performance of private school. Commitment of internal marketing practices to offer better education services, the arrangement of job positions leads to improve performance of employees. In addition, appraisal and work life balance are significant factors contributing to enhance performance of employees in the private school. Opportunity of private schools for employees do not have any significant effect to improve employee performance at private schools.

In order to achieve the higher level of employee performance, it is necessary to utilize the effective internal marketing practices to be compatible with the progress of private schools by monitoring the nature of level and attitude of employee in the workplace. Moreover, the owners of private schools should attempt to manage the workforce and retain effective skilled labor to grasp the opportunities through the implementation of internal marketing practices. The manager of private schools is required to maximize the performance of employees through effective training and development practices, and work opportunities that are basic requirements for effective management of employees.

The study of internal marketing in this study is based on primary data of survey from private schools, and most points presented are mainly based on perception of employees to reflect the current situations of private schools in Mandalay. The relationship between internal marketing practices and organizational citizen behavior should be studied for next empirical study in the region. The distinct feature of internal marketing and employee engagement might be future study to show policy implications for the owners of private schools to develop sustainable growth in the future.

Acknowledgements

I would like to express my grateful acknowledgment to Dr. Tun Aung, Rector of Meiktila University of Economics, for his guidance during the preparation of this paper. My acknowledgement goes to Dr. Thida Kyu, Pro Rector of the Meiktila University of Economics for her supportive encouragement. I also wish to convey my heartfelt appreciation to Professor Dr. Khine Mar Hlaing, Head of the Department of Management Studies, for her kind guidance and support from the beginning until the completion of this work. Without their support, this study would not have been possible.

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A Simulation Study on the Effect of Outliers on Parameters Estimation in Time Series Models

Maw Maw Khin*

Abstract

The simulation results point out that Maximum Likelihood (ML) estimator of the autoregressive parameter φ in the AR(1) model with innovation outlier (IO) is consistent, but inefficient. Under the AR(1) model with additive outlier (AO), the (ML) estimator is not even consistent with the desired property of consistency. The ML estimates are extremely sensitive to the presence of AO but not to the presence of IO. The residual autocovariances estimates (RA) based on bisquare family have very good robustness properties for AR(1) with AO outlier and AR(1) model with IO outlier and they compare favorably with the generalized *M*-estimates (*GM*). The results of the simulation data lead to the recommendation of the use of robust methods in time series analysis. Application of these robust methods provides outlier resistant estimates.

Keywords: Robust Estimators, Maximum Likelihood, Additive Outlier, Innovation Outlier

Introduction

Outliers are aberrant observations that are away from the rest of the data. They can be caused by recurrent events such as recording errors or non-recurrent events such as changes in economic policies, wars, disasters and so on. They tend to occur if errors have fat-tailed distributions which might lead to large disturbances. Sometimes, outliers appear through misspecification of estimated relationships (linear instead of nonlinear relationships, omitted variables and so on).

There is no issue that outliers can cause problems with inference using the traditional methods. The only problem is that how outliers should be tackled, that is, whether they are excluded or included. According to Legendre (1805), he suggested to throw these observations out. So did Edgeworth (1887). However, if outliers are caused by misspecification of the relationships estimated, a proper course is to change the specification. If outliers are caused by fat-tailed error distributions, a proper course is to use

* Professor and Head. Dr., Department of Statistics, Yangon University of Economics

robust methods (Maddala and Yong Yin, 1997). Thus, there are three courses of action one can take:

(i) throwing the rascals out.

(ii) leaving them in but under control (robust methods) or

(iii) changing the model.

For (i), it is required to identify the outliers. In time series analysis, outliers can cause biases in parameter estimation as well as misspecification, resulting in misleading conclusion. For this reason, several outlier detection and robust estimation procedures have been proposed in the literature for time series analysis. The methods of outliers' detection are excluded from this study.

Robust estimation in the time series context is a difficult task because different types of outliers may occur in any data set. For instance, outliers can replace with or be added to some observations of the stochastic process. They can also be found in the innovation driving process. Furthermore, the configuration of time points in which the contaminations like isolated and patchy outliers occur gives different effects on estimation of parameters of time series models. Outliers should be investigated carefully. Often they contain valuable information about the process under investigation or the data gathering and recording process. Before considering the possible elimination of these points from the data, one should try to understand why they appeared.

Some of the robust estimators for time series parameters proposed in the literature are *M*-estimators, generalized *M*-estimators (*GM*) (Denby and Martin, 1979), residual autocovariances estimators (RA) (Bustos and Yohai, 1986) and approximate conditional mean robust filter estimators (ACM) (Martin, 1979). These estimators were applied to simulated as well as real data to estimate the parameters of ARMA and ARIMA models and their performances were compared with the ML estimator in the presence of AO or IO. In this paper, these robust methods were used to provide resistant results which are stable in the presence of outliers.

In time series problem, because successive observations are correlated, outliers can cause more problems for detection. Fox (1972) first addressed outlier problems in time series by classifying outliers as additive outliers (AO) and innovation outliers (IO). These two types of outliers and other robustness problems in time series were discussed extensively in the

time series literature (Denby and Martin, 1979, and Hampel et al., 1986). Another types of disturbances were introduced by Chen and Tiao (1990). They are the level shift (LS) and temporary change in level (TC). In the following, these types of outliers in time series analysis were described and their plots of AO, IO, LS and TC were shown in following Figure 1.

In real data application, OLS and ML estimates are very sensitive to the various types of outliers. They are not efficient and inconsistent when data contain outlying observations. Therefore, robust estimation methods are necessary because these estimates are not much affected by outliers. That's why, the study aims how outliers affect in parameters estimations in time series models with simulation data.

Data and Methods

The study attempts to analyze the effect of outliers on estimation of parameters in time series models. In attempting to achieve the objectives of the study, classical and robust methods were used, based on simulated data. Firstly, the simulated data sets were generated using AR(1) and MA(1) models. Then, the clean data gained were transformed into outlier contaminated data sets using AO and IO outliers. Next, the results were compared in terms of ME and MSE criteria and finally, the most suitable estimation method was explored. Four robust estimators (*M*, *GM*, ACM and RA) were considered in this study. Before analysis, some types of outliers which can occur in a time series, only additive outlier (AO) and innovation outlier (IO) were discussed.

Additive outlier

Additive outlier (AO) represents a disturbance which is committed to a particular observation. Mathematically, the observed time series is seen as

$$Y_t = Z_t + w_a I_t^{(d)}$$

where Y_t is a contaminated time series, Z_t is an outlier-free time series, w_a denotes the magnitude of the disturbance and $I_t^{(d)}$ is an indicator variable defined by

$$I_t^{(d)} = \begin{cases} 1 & if \quad t = d \\ 0 & if \quad t \neq d . \end{cases}$$

In other words, for an AO model, $Y_t = Z_t$ if $t \neq d$ and $Y_d = Z_d + w_a$ otherwise. The typical reason for an AO is a recording or measurement error. Outbreaks of wars, strikes, an abrupt change in the market structure of some group of commodities, a technical change or new equipment in a communication system, or simply unexpected geophysical phenomena (e.g., earthquakes) are all possible causes of AOs.

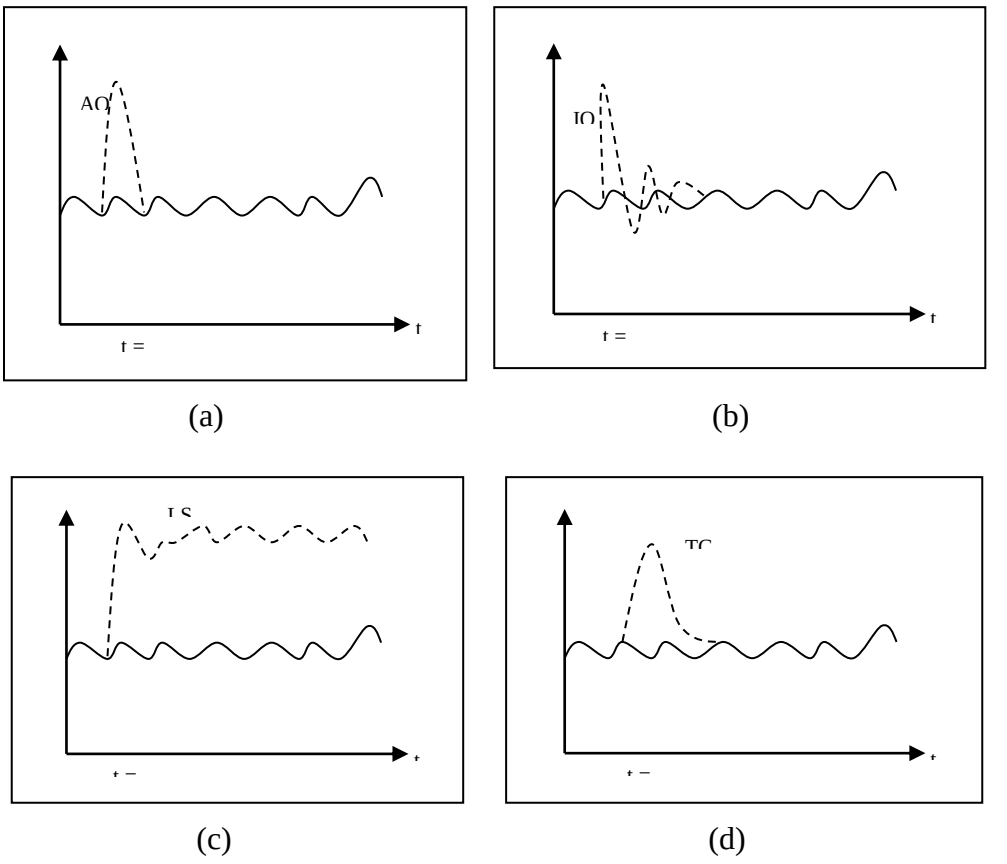

Figure 1. Types of Outliers (a) the plot of additive outlier; (b) the plot of innovation outlier; (c) the plot of level shift; and (d) the plot of temporary change

Innovation Outlier

Another type of outlier is called an innovation outlier (IO), which is a disturbance in the innovational series $\{a_t\}$ and may affect every subsequent observation of the series. Mathematically, an IO model is

$$Y_t = \frac{\theta(B)}{\phi(B)}\left(a_t + w_v I_t^{(d)}\right)$$

where $I_t^{(d)}$ is defined as shown above and w_v denotes the magnitude of the disturbance. Rewriting the model as

$$Y_t = Z_t + \frac{\theta(B)}{\phi(B)} w_v I_t^{(d)}.$$

It can be seen that an IO affects the series through its own dynamic $\frac{\theta(B)}{\phi(B)}$ and it becomes part of the system thereafter. In practice, an IO often indicates an onset of certain chances in the system. Obviously, many other types of disturbance can occur in time series. The AO and IO models only two many possibilities.

Level Shift

Mathematically, a level shift (LS) can be described by

$$Y_t = Z_t + \frac{w_s}{(1-B)} I_t^{(d)} \qquad (1)$$

where w_s is the amount of shift in the level of Z_t. It can be written as $\frac{1}{(1-B)} = 1 + B + B^2 + \cdots$.

The above model (1) can be seen as follows:

$$Y_t = \begin{cases} Z_t & for \quad t < d \\ Z_t + w_s & for \quad t \geq d. \end{cases}$$

Thus, the fixed constant w_s is added to every observation one or after d. Such a level shift is permanent.

Temporary Change

In some cases, the effect of a level shift is only temporary. In a mathematical model, such a shift is described as:

$$Y_t = Z_t + \frac{w_c}{(1 - \delta B)} I_t^{(d)}, \quad 0 < \delta < 1. \tag{2}$$

since, $\frac{1}{(1 - \delta B)} = 1 + \delta B + \delta^2 B^2 + \cdots$ the magnitudes of level shift at times $d, d+1, d+2, \ldots$ are $w_c, \delta w_c, \delta^2 w_c, \ldots$. Thus, the initial shift is w_c and the subsequent shifts are discounted at the rate δ. With $0 < \delta < 1$, the shift decays exponentially to zero. Such a temporary level shift refers to a transient change model. In practice, the values of δ are a predetermined constant. Its value may be 0.8 or 0.7.

Results and Discussion

In order to study the effect of outliers in estimation of parameters in time series model, each of 30 outlier free series of AR(1) with $\phi = 0.50$, MA(1) with $\theta = 0.50$ for n = 50, μ = 0 were generated using S-PLUS software. In this simulation study, let Y_t is an observed series and Z_t is an outlier free series. Consider the observed series $\{Y_t\}$ which were contaminated by two scenarios, given by

(i) $Y_t = Z_t + X_t v_t$ for AO

(ii) $Y_t = Z_t + v_t$ for IO

where $\{Z_t\}$, $\{X_t\}$ and $\{v_t\}$ are independent and identically distributed (i.i.d.) series. For AR(1) model, the $\{Z_t\}$ assumed to be a stationary,

$$Z_t = \phi Z_{t-1} + a_t \tag{3}$$

where ϕ is the autoregressive parameter and the a_t is the error term with mean 0 and variance 1. For MA(1) model, the $\{Z_t\}$ assumed to be an invertible,

$$Z_t = a_t - \theta\, a_{t-1} \tag{4}$$

where θ is the moving average parameter.

Regarding the first scenario, the Bernoulli process $\{X_t\}$ satisfies $P(x_t = 1) = \gamma$ and $P(x_t = 0) = 1 - \gamma$ so that the fraction of contamination is γ. This contamination fraction was set at 0%, 1%, 5 % and 10%. The $\{v_t\}$ has the form

$$v_t = \begin{cases} 10, & for\ \ x_t = 1,\ \ for \quad t = 10, 20, 30, 40, 50 \\ 0, & otherwise \quad . \end{cases}$$

For 1% contaminated, 10 is added to Z_{10}, for 5% contaminated, 10 is added to Z_{10} and Z_{20} and for 10% contaminated, 10 is added to Z_{10}, Z_{20}, Z_{30}, Z_{40} and Z_{50}. Concerning the second scenario, the $\{v_t\}$ has the following mixture density

$$F = (1 - \gamma) N(0, \sigma^2) + \gamma\, N(0, \tau^2)$$

with γ = 0.01, 0.05 and 0.10 and σ = 1 and τ = 3. For each estimator and for each type of simulated series, the mean error (ME) and the mean squared error (MSE) were computed using the following formulas

$$ME = \left\| ave_j\ \hat{\phi}_j - \phi \right\| \quad , \quad MSE = ave_j \left\| \hat{\phi}_j - \phi \right\|^2 ,$$

where ave_j denotes the average across the 30 replications and $\|.\|$ is the Euclidian norm operator. The words “efficient” and “robust” for the same concept of performance, that is an efficient (or robust) estimator is called so when its sample MSE is low. For each of these models, five different estimates: the ML estimate, the *GM*-estimate, the ACM type robust filter, the RA estimate based on the Huber family $\psi_{H,chr}$ (RAH-estimate) given by

$$\psi_{H,c}(u) = \text{sgn}\ (u) \min\ (|u|, c),$$

and the RA estimate based on the bisquare family $\psi_{B,cbr}$ (RAB-estimate) given by

$$\psi_{B,c}(u) = u\left(1 - u^2 / c^2\right)^2, \qquad 0 \le |u| \le c$$

were computed. In this study, the tuning constant c in the Huber family is 1.645 and in the bisquare family is 5.58. The estimators included in the simulations as well as real data applications are as follows:

ML: The maximum likelihood estimates;

MH: M-estimates with $\Psi(.)$ of the Huber type, c = 1.345;

MB: M-estimates with $\Psi(.)$ of the bisquare type, c = 4.685;

GM: GM-estimates;

ACM: Approximate conditional mean estimates;

RAH: RA-estimates with $\Psi(.)$ of the Huber type, c = 1.645; and

RAB: RA-estimates with $\Psi(.)$ of the bisquare type, c = 5.58.

To study the effect of outlier contamination on the bias and efficiency of the maximum likelihood (ML) and the robust estimators, model (3) is used. Tables (1) to (3) show the results of the simulation study with 30 replications of sample of size 50 for purely AR(1) model and for an AR(1) model with additive outliers (ARAO) and for an AR(1) model with innovation outliers (ARIO). The tables contain the average of the 30 estimators obtained for ϕ = 0.50, the corresponding MSEs as well as relative efficiencies (REF), defined as the ratio of the MSE of the ML estimator to the MSE of the robust estimator under consideration. The results shown in Table (1) suggest that there are no outliers, the MSE of ML and robust estimates are quite close to each other.

According to Table (2), it is clear that the resulting large MEs show just how sensitive the ML estimates are when the observations contain a small fraction of AO and IO. It is found that, the MEs and MSEs of ML estimates of AR(1) are not able to cope with contaminated situations, neither AO nor IO. It is clear that even a small fractions of outliers (γ = 1%) has a very large influence on the ML estimates. These estimators show a less resistance in terms of the mean value, it also has smaller efficiency than the robust estimators.

Moreover, the *GM*-estimator can handle both AO and IO quite successfully in the AR (1) model in line with the Monte Carlo results of Martin and Yohai (1985). Besides, the RA estimator based on the bisquare family compare favorably with the ML, *GM* and ACM estimators. From

Table (3), it is clear that when the percentage of contamination increased to 5%, the RA estimator based on the Huber family yield a mean that is close to the true parameter for ARIO(1) model.

Tables (4) and (5) give the results of simulation study using 30 replications corresponding to (i) an MA(1) model with additive outliers (MAAO) model, and (ii) an MA(1) model with innovation outliers (MAIO) model. The tables contain the average of the 30 estimators obtained for θ = 0.50. It is found out that the ML estimates are not very sensitive to the presence of innovation outliers. These results are in line with the Monte Carlo simulation results of Busto and Yohai (1986).

Regarding MAAO model with γ = 0.01 and 0.05, the RAB performs much better than the ML estimates. However, under the MAIO model with γ = 0.01, the RAB is more robust than the ML estimates. When moving average terms are present, the *GM*-estimates are neither resistant nor robust. The simulation results indicate that the RA provides a good approximation to the true parameter of AR and MA models with AO and IO in line with the Monte Carlo simulation results of Busto and Yohai (1986).

Table 1. Simulation Results for the AR(1) Model with ϕ = 0.5

Estimates	γ **= 0 %**		
	ME	**MSE**	**REF**
ML	0.2681	0.0922	1.0000
GM	0.2583	0.0853	1.0809
ACM	0.2608	0.0926	0.9957
RAH	0.1244	0.0847	1.0885
RAB	0.2522	0.0865	1.0659

Source: Calculation Based on Simulated Data Sets

Table 2. Simulation Results for the ARAO(1) Model with ϕ = 0.5

Estimates	γ **= 1%**			γ **= 5%**			γ **= 10%**		
	ME	**MSE**	**REF**	**ME**	**MSE**	**REF**	**ME**	**MSE**	**REF**
ML	0.3672	0.1514	1.0000	0.4336	0.2000	1.0000	0.5240	0.2826	1.0000
GM	0.2545	0.0910	1.6637	0.2663	0.0882	2.2673	0.2661	0.0948	2.9810
ACM	0.2592	0.0950	1.5937	0.2554	0.0876	2.2829	0.2732	0.1066	2.6510
RAH	0.1295	0.1138	1.3304	0.1496	0.0899	2.2245	0.4417	0.0532	5.3120
RAB	0.2380	0.0837	1.8088	0.2278	0.0711	2.8127	0.1003	0.0304	9.2961

Source: Calculation Based on Simulated Data Sets

Table 3. Simulation Results for the ARIO(1) Model with ϕ = 0.5

Estimates	γ **= 1%**			γ **= 5%**			γ **= 10%**		
	ME	**MSE**	**REF**	**ME**	**MSE**	**REF**	**ME**	**MSE**	**REF**
ML	0.3493	0.1380	1.0000	0.4053	0.1935	1.0000	0.3577	0.1665	1.0000
GM	0.2749	0.0934	1.4775	0.2669	0.0985	1.9645	0.2812	0.1081	1.5402
ACM	0.2742	0.0946	1.4588	0.2794	0.1087	1.7801	0.3004	0.1220	1.3648
RAH	0.3340	0.1068	1.2921	0.1414	0.0658	2.9407	0.2202	0.1332	1.2500
RAB	0.2602	0.0881	1.5664	0.2759	0.0961	2.0135	0.2815	0.1088	1.5303

Source: Calculation Based on Simulated Data Sets

Table 4. Simulation Results for the MAAO(1) Model with θ = 0.5

Estimates	γ **= 1%**			γ **= 5%**			γ **= 10%**		
	ME	**MSE**	**REF**	**ME**	**MSE**	**REF**	**ME**	**MSE**	**REF**
ML	0.3409	0.1298	1.0000	0.3287	0.1275	1.0000	0.2852	0.0987	1.0000
GM	0.7888	0.6377	0.2035	0.7952	0.6501	0.1961	0.7936	0.6513	0.1515
ACM	0.7898	0.6373	0.2037	0.7851	0.6293	0.2026	0.7741	0.6163	0.1601
RAH	0.3156	0.1501	0.8648	0.3994	0.1863	0.6844	0.4855	0.2555	0.3863
RAB	0.2499	0.0781	1.6620	0.2882	0.1047	1.2178	0.5097	0.2824	0.3495

Source: Calculation Based on Simulated Data Sets

Table 5. Simulation Results for the MAIO(1) Model with θ = 0.5

Estimates	γ = 1%			γ = 5%			γ = 10%		
	ME	MSE	REF	ME	MSE	REF	ME	MSE	REF
ML	0.1989	0.0640	1.0000	0.2001	0.0581	1.0000	0.2119	0.0682	1.0000
GM	0.7769	0.6219	0.1029	0.7752	0.6150	0.0945	0.7474	0.5653	0.1206
ACM	0.7738	0.6172	0.1037	0.7529	0.5893	0.0986	0.7478	0.5658	0.1205
RAH	0.2743	0.1343	0.4765	0.2710	0.1230	0.4724	0.3227	0.1387	0.4917
RAB	0.1923	0.0599	1.0684	0.2260	0.0810	0.7173	0.2246	0.0742	0.9191

Source: Calculation Based on Simulated Data Sets

Conclusion

Outliers in an economic time series include deviations that occur because of unusual events such as policy changes, environmental regulations, economic changes, advertising promotions, supply interruptions, natural disasters, wars, strikes and similar events. In time series, outliers can take several forms. Among than additive outlier (AO) and innovation outlier (IO) are focused in this study. The difference between AO and IO is that in fact an AO is interpreted as an outlying observation added after the realization to affect a single observation and an IO as an outlying observation added during the realization with influence on all succeeding observations.

In the case of an AR(1) model, one IO yields one outlier in the response variable and a number of "good" leverage points ("good" refers to the fact that the leverage points lie close to the fitted line determined by the majority of the data), which actually improve the accuracy of the parameter estimate. Therefore, one IO only affects one residual. On the other hand, one AO results in one outlier in the vertical direction and one "bad" leverage point ("bad" refers to the fact that the leverage point does not lie close to the fitted line determined by the majority of the data). Thus, AO also affects the next residual inflating two consecutive residuals. The presence of such outliers in a time series can also have substantial effects on parameters estimation.

The effect of outliers on estimation of parameter in time series models is analyzed by using simulation. In this simulation study, the time series models such as AR(1) with AO outlier, AR(1) with IO outlier, MA(1) with AO outlier and MA(1) with IO outlier are investigated and the parameters of each model is estimated by using ML method and robust methods. The results from simulation comparisons indicate that the RA estimates based on bisquare family have very good robustness properties for AR(1) with AO outlier and AR(1) model with IO outlier and they compare favorably with the *GM*-estimates. When the percentage of contamination increased to 5%, the RA estimator based on the Huber family yielded a mean that is close to the true parameter for AR(1) with IO outlier model.

Moreover, the *GM*-estimator can handle both AO and IO quite successfully in the AR(1) model. The ML estimates of AR(1) are not able to cope with contaminated situations, neither AO nor IO. It is clear that even a small fraction of outliers (γ = 1%) has a very large influence on the ML estimates. The RA estimates also behave robustly in terms of efficiency for the MA(1) model with AO when γ = 0.01 and 0.05. When moving average terms are present, the *GM*-estimates are neither resistant nor robust. Under the MA(1) model with IO outlier, it is preferable to use the ML estimates. On the other hand, the ML estimate is extremely sensitive to the presence of AOs. Since small fraction of AOs may cause a large bias in the ML estimates, they are more dangerous than IOs.

Acknowledgement

I would like to thank to Rector of Yangon University of Economics who gave me a chance to publish the research in Universities Research Journal, Vol. 12, 2019.

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Effects of Outliers on Model Identification in Time Series Analysis

Mya Thandar*

Abstract

In this paper, definition and types of outlier, ARIMA models for time series with outliers, effects of outlier on model identification are presented. Effects of additive outlier (AO) and innovational outlier (IO), on model identification based on autocorrelation function (acf) and partial autocorrelation function (pacf) using simulated data are investigated. The effect of outlier on the acf and pacf is found to be much more significant in the case of AO than that of IO. If the values of outlier increase, the values of acf and pacf will decrease for AO case of both autoregressive (AR) and moving average (MA) series. It is found that the effects of outliers on the acf and pacf depend on both the magnitude and type of outliers. Therefore, in consequence of the effects, the problems of model identification spring up in the literature of time-series analysis in the context of outliers. So, these problems should be tackled as a separate research area.

Keywords: additive outlier, innovational outlier, autocorrelation function, partial autocorrelation function, autoregressive and moving average

Introduction

A time series is a sequence of observations on a variable of interest collected sequentially in time. Analyzing of Time-series is essential in many fields including economics, business, and sciences and concerned with techniques for the analysis of dependent structure of observations. Time series data may often be affected by unusual events which create spurious observations that are inconsistent with the rest of the series. Such unusual observations are referred to as outliers. The existence of the outliers has significant influence on the analysis of time series data. They may influence adjacent observations due to the presence of autocorrelation pattern in the time series. Consequently, the typical time series model may not represent if a time series includes outliers. According to the literatures, outliers effect

* Professor, Department of Statistics, Yangon University of Economics

the mean, variance, acf, pacf, error variance, parameter estimates, AIC and BIC values. So, the problems in the model identification due to the outliers can be encountered. Thus, the investigation into presence of outliers is a crucial aspect of time-series analysis and this study aims to investigate the effects of outliers on model identification of a time series.

Objective of the Study

The main objective of the study is to investigate the effects of outliers on model identification in time series analysis.

Scope and Limitations of the Study

Among the various types of outliers which can occur in a time series, only AO and IO are considered most often in the literature and this study focuses on these two types of outliers. Only the stochastic univariate time series models, namely AR and MA models are considered since most of the outlier detection methods have applied to these models. In this study, outlier problems tackled only in time domain and only non-seasonal time series models are considered.

Method

An analytical method with the support of tables and figures has been extensively used in this study. This method is observed to be more suitable to the nature and characteristics of the observed data series. The simulations are carried out in order to study the effects of outliers on some model identification tools such as acf and pacf as well as some model selection criteria including Akaike's Information Criterion (AIC) and Bayesian Information Criterion (BIC).

Definition of Outliers

Outliers in a time series data set can rise for different reasons. There are two types of anomalies, namely gross errors and outliers. Gross errors are faulty observations, for example measurement, reading and typing errors. They should naturally be identified and corrected whenever possible. If the observation treated as a potential outlier cannot be shown to be a gross error it has to be considered as an outlier. These observations, from now called outliers and their effects on model identification are considered in this study.

Types of Outliers and Their Effects on the Observed Time Series

Outliers can take several forms in time series. The formal definition and a classification of outliers in a time series context were first proposed by Fox (1972). He proposed a classification of time series outliers to type I and type II based on an autoregressive model. These two types have later been renamed as additive and innovational outliers, and are usually abbreviated as AO and IO respectively. AO affects single observation and there is no "carry-over" effect. IO affects the observations from the outlier position onwards and it has "carry-over" effect as well as decays.

ARIMA Models for Time Series with Outliers

In the standard outlier literature (e.g. Tsay, 1986 and 1988; Chen and Liu, 1993), a time series with outliers is modeled as ARIMA plus intervention. The basic reference to ARIMA model is Box and Jenkins (1976). The parametric approach to modeling the time series in terms of linear difference equations has led to an important class of models, namely autoregressive integrated moving average models with order p, d and q, known as ARIMA (p, d, q) (Box and Jenkins, 1976). If Z_t is an observed time series, then the ARIMA (p, d, q) model is

$$\phi (B) (1-B)^d Z_t = \theta (B) a_t \qquad (1)$$

where $\phi (B) = 1 - \phi_1 B - \phi_2 B^2 - \ldots - \phi_p B^p$ and $\theta (B) = 1- \theta_1 B - \theta_2 B^2 - \ldots - \theta_q B^q$ are polynomials of degree p and q in B, ϕ_i , i = 1, 2, . . . , p and θ_j , j = 1, 2, . . . , q are the autoregressive and moving average parameters of the time series respectively and B is the backward shift operator, that is, $B^j Z_t = Z_{t-j}$. In the above model, a_t is the white noise or error series with mean zero and variance σ_a^2 referred to as the error variance.

It is assumed that the series $(1-B)^d Z_t$ to be stationary, i.e., the roots of $\phi (B) = 0$ lie outside the unit circle, and invertible, that is, the roots of $\theta (B) = 0$ lie outside the unit circle. When d = 0, Equation (1) represents a stationary process ARMA (p, q), given by

$$\phi (B) Z_t = \theta (B) a_t . \qquad (2)$$

The ARMA (p, q) process Z_t can also be represented as

$$Z_t = \psi (B) a_t \qquad (3)$$

where $\psi (B) = 1 + \psi_1 B + \psi_2 B^2 + \ldots$ and ψ weights are calculated by equating the coefficients of B in the equation $\phi (B) \psi (B) = \theta (B)$. For the

series to be stationary, it is assumed that ψ (B) converges for $|B| \leq 1$, that is, the ψ weights have the condition $\sum_{j=0}^{\infty} |\psi_j| < \infty$. Similarly, Z_t can also be represented as an inverted form of the model using the π weight as

$$\pi (B)\, Z_t = a_t \qquad (4)$$

where $\pi (B) = 1 - \pi_1 B - \pi_2 B^2 \ldots .$ The π weights are analogously obtained by equating coefficients of B in $\phi (B) = \theta (B)\, \pi (B)$. To satisfy the condition of invertibility it is assumed that π (B) converges on or within the unit circle. Alternatively, the π weight are assumed to satisfy the condition $\sum_{j=0}^{\infty} |\pi_j| < \infty$. (Box and Jenkins, 1976).

In this study, the analysis of stationary and invertible time series ARMA (p, q) with outliers are considered. Let Y_t be the observed time series and Z_t be the underlying time series which is free of the impact of outliers. Assume that Z_t follows a general ARIMA model in Equation (1). Then the general outlier model for on observed time series Y_t is defined as

$$Y_t = f (t) + Z_t \qquad (5)$$

where Z_t is a regular ARIMA model and outliers are incorporated through f(t). f(t) can be denoted different outliers types, which are as follows.

An additive outlier (AO) model, that is, $f (t) = \omega P_t^{(T)}$ at time T in ARMA (p, q) (Fox, 1972; Abraham and Box , 1979) is

$$Y_t = \omega P_t^{(T)} + Z_t \qquad (6)$$

where Y_t is the observed series, Z_t is an unobserved outlier free series as in Equation (2), ω is the outlier parameter - $-\infty < \omega < \infty$ and

$$P_t^{(T)} = 1 , t = T ,$$

$$= 0 , t \neq T ,$$

is the indicator variable representing the presence or absence of an outlier at time T. The presence of AOs, is clearly seen in a time series plot as AO does not have any carry- over effect.

An innovational outlier (IO) model at time T, that is, $f (t) = \omega \psi (B) P_t^{(T)}$, in ARMA (p, q) is specified by (Fox 1972; Abraham and Box, 1979)

$$Y_t = \omega \psi (B) P_t^{(T)} + Z_t \qquad (7)$$

where as before, Y_t is the observed series, Z_t is an unobserved outlier free series as in Equation (2), ω is the outlier parameter $-\infty < \omega < \infty$ and

$$P_t^{(T)} = 1 , t = T ,$$

$$= 0 , t \neq T ,$$

is the indicator variable which represents the presence or absence of an outlier at time T. The IO affects all observations Y_T, Y_{T+1}, . . . beyond time T and decays with ψ weights as it has carry-over effect.

It is not unusual to come across time series data with more than one outlier. The problem of handling multiple outliers is more complicated, for the simple reason that the outliers could be of different types (Barnett and Lewis, 1994). More generally, an observed time series Y_t might be affected by outliers of different types at several points of time T_1, T_2, . . . , T_k and we have the following multiple outlier model of the general form

$$Y_t = \sum_{j=1}^{k} \omega_j V_j (B) P_t^{(Tj)} + Z_t \qquad (8)$$

where k is the total number of outliers present in the series, ω_j, $j = 1 , 2 , . . . , k$ are the corresponding outlier parameters which may not be distinct and

$$V_j (B) = 1 \qquad \text{for an AO ,}$$

$$= \psi (B) \qquad \text{for an IO ,}$$

when an outlier type present at time point T_j , $j = 1, 2 , . . . , k$.

Problems of interest associated with these types of outlier models are to be identified the timing and the type of outliers and to estimate the magnitude ω of the outlier effect, so that the analysis of the time series will adjust for these outlier effects.

In order to know the effects of the outliers on the model identification of the observed time series, one must understand the acf and pacf because the time series model identification is based on the autocorrelation and partial autocorrelation functions of the observed time series.

Results and Findings

Tolvi (1998) suggested that in time series of short to moderate length, often the presence of a single outlier will result in a true AR model being falsely identified as an MA or ARMA model, and that the identified lag lengths (p and q) will also be wrong. Only AR and MA models are considered in this study because ARMA is a mixed model and it is difficult to decide a model based on the patterns of acf and pacf.

In order to study the effect of outlier in model identification, 100 outlier free ($\omega = 0$) AR (1) series for $n = 100$ and $\phi = 0.7$ were again generated using S-PLUS Software and an AO and an IO with outlier parameters $\omega = 0, 5, 10$ were introduced at $t = 50$.

In the information criterion approach for model selection, models that yield a minimum value for the criterion are to be preferred, and the AIC or BIC values are compared among various model as the basis for the selection of the model. Since the BIC criterion imposes a greater penalty for the number of estimated parameters than does AIC, use of minimum BIC for model selection would always result in a chosen model whose number of parameters is no greater than that chosen under AIC (Box, and Jenkins 1976). Hence, the BIC was also used as the model selection criterion in this study.

To fit each generated AR(1) series, some other commonly used models such as AR(2), MA(1), MA(2), ARMA(1,1), ARMA(2,1), ARMA(1,2) and ARMA(2,2) were considered. The BIC values for each fitted models were computed and compared with the BIC value of generated AR(1) model. If the BIC value of the fitted AR(1) model is minimum among others, it is the correct model selection for the generated AR(1) series. The Table (1) represents the percentages of correct and incorrect model selection cases for the generated AR(1) series based on BIC.

Table 1. Correct and Incorrect Percentages of Model Selection Cases: AR(1) with an AO and an IO at t = 50 (n = 100 and $\phi = 0.7$; 100 replications)

ω	AO		IO	
	Correct %	**Incorrect %**	**Correct %**	**Incorrect %**
0	88	12	88	12
5	86	14	95	5
10	76	24	93	7

According to Table (1), it can be seen that the percentage of correct model selection decreases as the value of outlier parameter increases in the AO case of AR(1) series whereas the percentage of correct model selection does not decrease as the value of outlier parameter increases in the IO case of AR(1) series. It can be said that the outlier affects on model identification in the case of AR(1) with an AO.

Again, 100 outlier free ($\omega = 0$) MA(1) series for n = 100 and $\theta = 0.7$ were generated using S-PLUS Software and an AO and an IO with outlier parameters $\omega = 0, 5, 10$, were also introduced at t = 50. Then, each generated MA(1) series was also fitted by some commonly used model as mentioned above and BIC values for each fitted model were also computed and compared with the BIC value of the generated MA(1) model. If the BIC values of the fitted possible models are greater than the BIC value of the correct fitted model MA(1), the correct model is obtained for the generated MA(1) series. The Table (2) indicates the percentages of correct and incorrect model selection cases for the generated MA(1) series based on BIC.

Table 2. Correct and Incorrect Percentages of Model Selection Cases: MA(1) with an AO and an IO at t = 50 (n = 100 and $\theta = 0.7$; 100 replications)

ω	AO		IO	
	Correct %	**Incorrect %**	**Correct %**	**Incorrect %**
0	91	9	91	9
5	84	16	83	17
10	76	24	92	8

From Table (2), it is also shown that the percentage of correct model selection cases declines as the value of outlier parameter increases in the AO case of MA(1) series but the percentage of correct model selection does not decline as the value of outlier parameter increases in the IO case of MA(1) series. Here, it can be said that the outlier affects on model identification in the case of MA (1) with an AO.

According to the simulation results as shown in Tables (1) and (2), it is clear that the effect of AO outlier is serious for both AR(1) and MA(1) models' identification but effect of IO outlier is not as clear as AO. Each particular generated series for AR(1) and MA(1) were also considered and the models were fitted by using the acf and pacf.

Here, under the hypothesis of the underlying process is a white noise sequence, the variance of the acf $\hat{\rho}_k$ can be approximated by

$$V(\hat{\rho}_k) \approx \frac{1}{n}(1 + 2\hat{\rho}_1^2 + \ldots + 2\hat{\rho}_{k-1}^2) \qquad (9)$$

and the variance of pacf $\hat{\phi}_{kk}$ can be computed as

$$V(\hat{\phi}_{kk}) \approx \frac{1}{n}. \qquad (10)$$

Hence $\pm$ 2 S. E (Standard Error) can be used as critical limits on the acf and pacf to test the hypothesis of a white noise process.

The following figures show the plots of the acf and pacf together with their confidence limits for the generated outlier free AR(1) series as well as its outlier contaminated series of AO ($\omega = 10$) and an IO ($\omega = 10$) at

t = 50. Figures 1 and 2 show that the generated AR(1) series follows an AR(1) model because the acf of the generated AR(1) model tails off and the pacf of the model cuts off after lag 1.

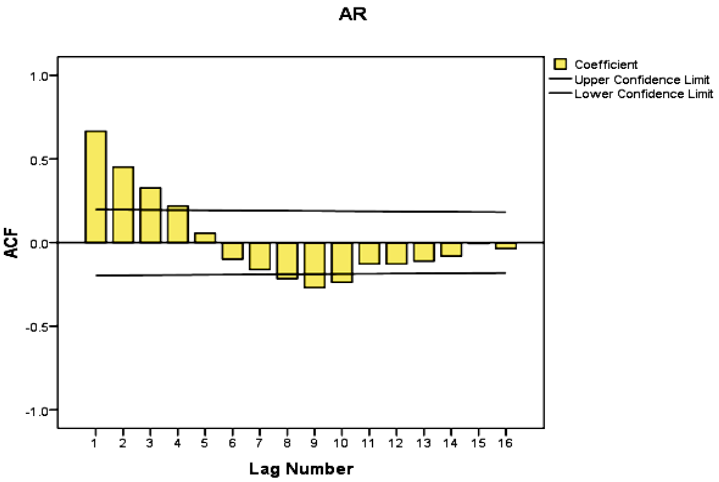

Figure 1. ACF of Generated AR(1) Series (n = 100, ϕ = 0.7)

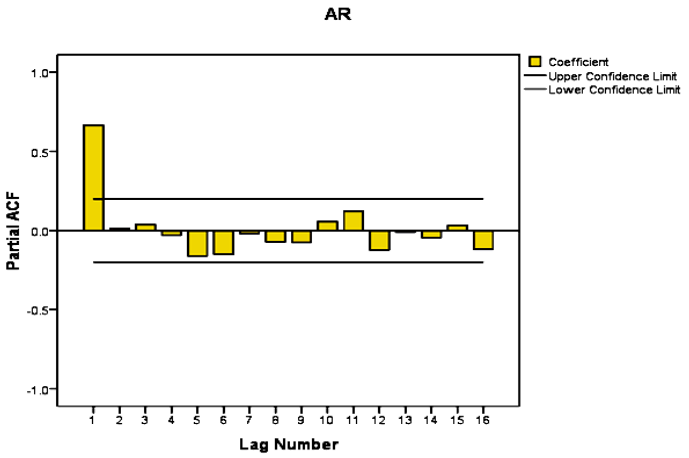

Figure 2. PACF of Generated AR(1) Series (n = 100, ϕ = 0.7)

Figures (3) and (4) indicate that the acf and pacf of the generated AR(1) series with an AO (ω = 10) at t = 50 do not show the theoretical patterns of acf and pacf for an AR(1) model. It suggests a white noise or

random phenomenon. Thus, the generated AR(1) series with an AO outlier at t = 50 with ω = 10 does not follow an AR(1) model.

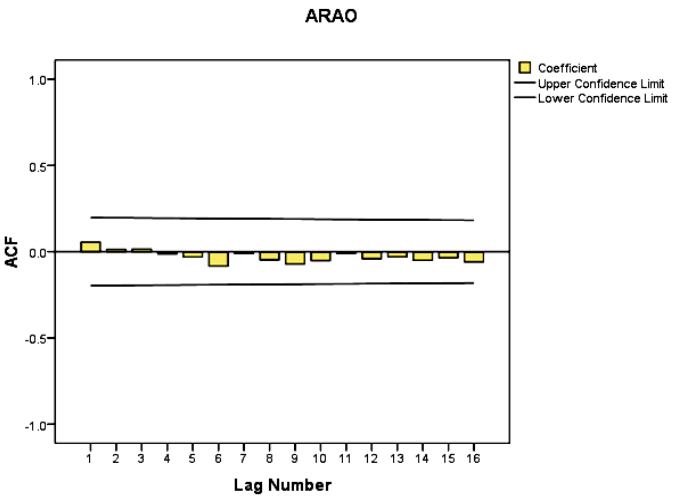

Figure 3. ACF of Generated AR(1) Series with an AO at t = 50 (n=100, ϕ = 0.7, ω = 10)

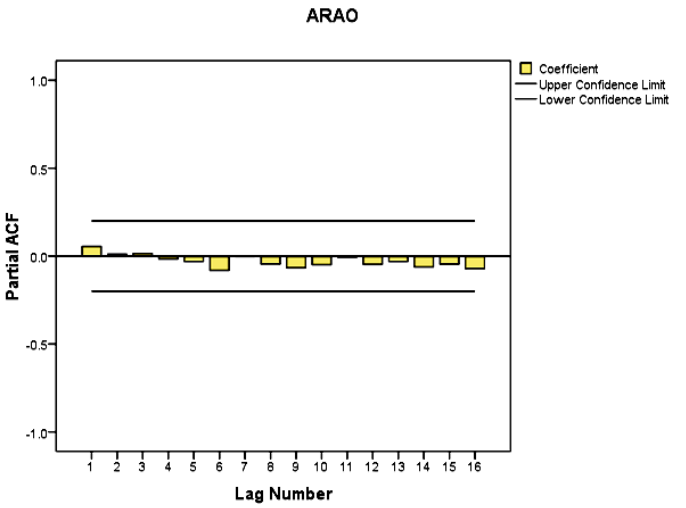

Figure 4. PACF of Generated AR(1) Series with an AO at t = 50 (n=100, ϕ=0.7, ω = 10)

According to Figures 5 and 6, it is shown that *acf* of AR(1) series with an IO outlier (ω = 10) at t = 50 tails off and its *pacf* cuts off after lag 1. Therefore, AR(1) series with an IO outlier (ω = 10) is identified as an AR(1) model.

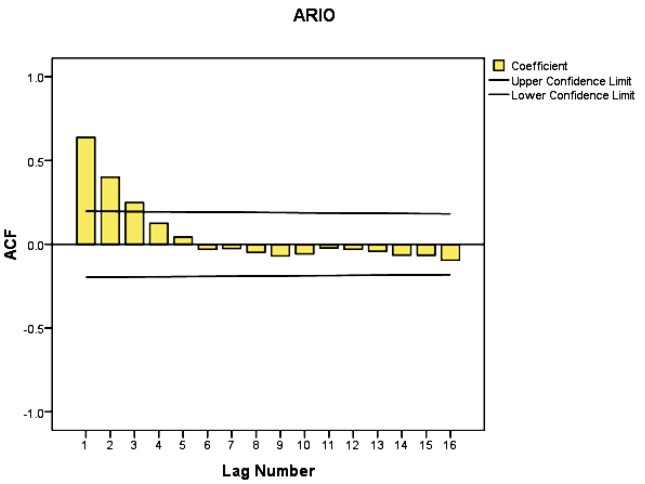

Figure 5. ACF of Generated AR(1) Series with an IO at t = 50 (n = 100, ϕ = 0.7, ω = 10)

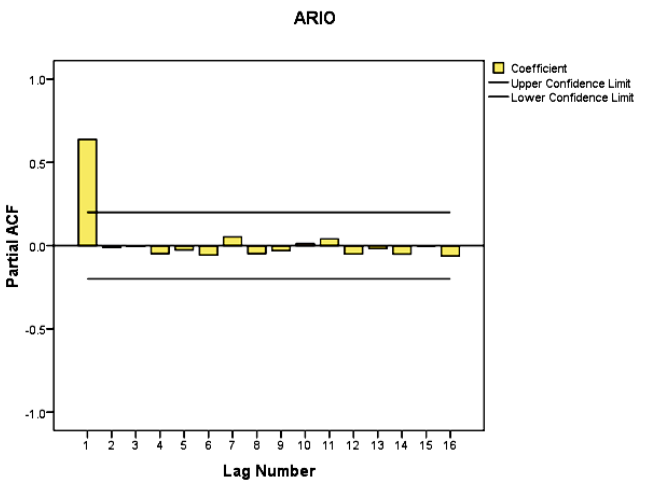

Figure 6. PACF of Generated AR(1) Series with an IO at t = 50 (n=100, ϕ = 0.7, ω = 10)

Figures (7) and (8) show the plots of the acf and pacf for the generated outlier free MA(1) series and its outlier contaminated series with an AO (ω=10) and an IO (ω = 10) at t = 50. It can be seen that the generated MA(1) series follows MA(1) model since the acf of the generated series cuts off after lag 1 and the pacf of the model tails off.

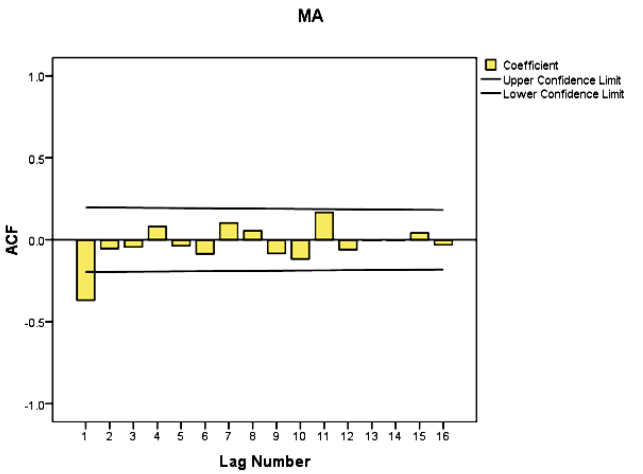

Figure 7. ACF of Generated MA(1) Series (n = 100, θ = 0.7)

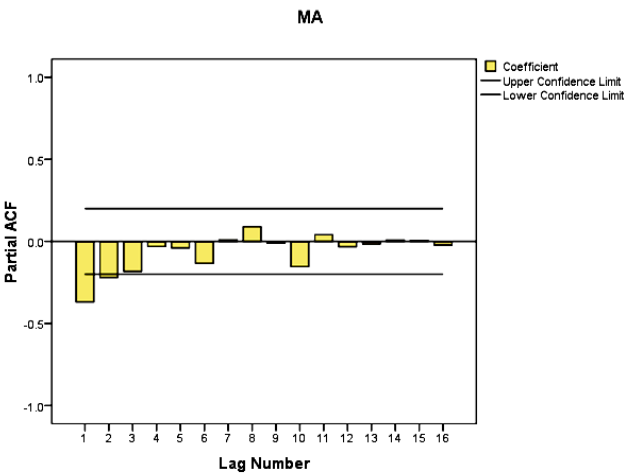

Figure 8. PACF of Generated MA(1) Series (n = 100, θ = 0.7)

Figures (9) and (10) indicate that the acf and pacf of the generated MA(1) series with an AO (ω = 10) at t = 50 do not show the theoretical

patterns of acf and pacf for MA(1) model. Therefore, it can be said that this series does not follow MA(1) model.

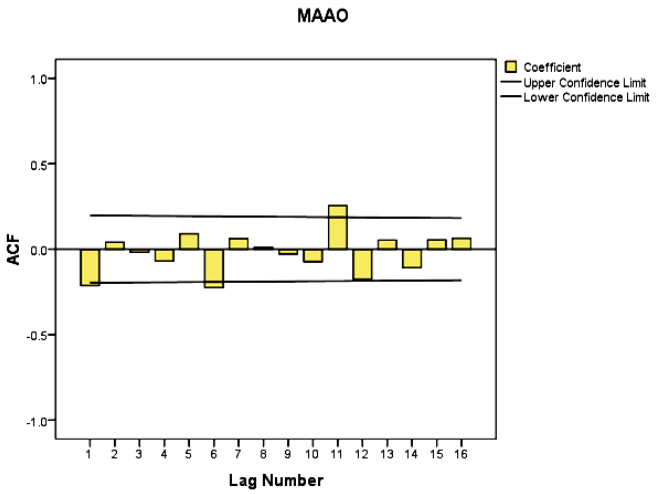

Figure 9. ACF of Generated MA(1) Series with an AO at t = 50 (n=100, θ = 0.7, ω = 10)

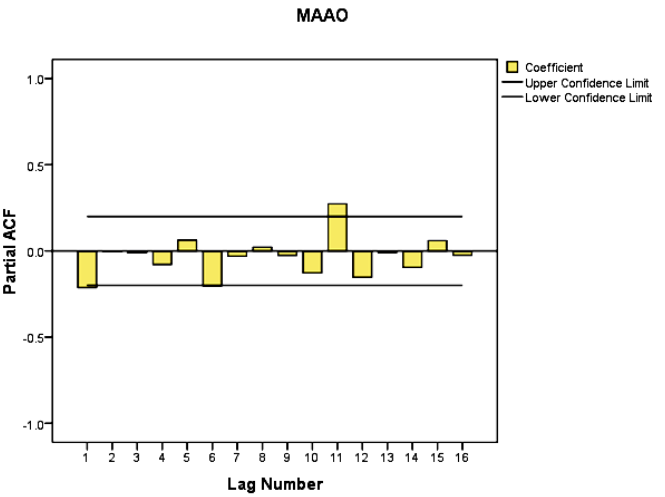

Figure 10. PACF of Generated MA(1) Series with an AO at t = 50 (n=100, θ=0.7, ω = 10)

Figures (11) and (12) show that acf of MA(1) series with an IO outlier ($\omega = 10$) at t = 50 cuts off after lag 1 and its pacf tails off. Therefore, MA(1) series with an IO outlier ($\omega = 10$) is identified as an MA(1) model.

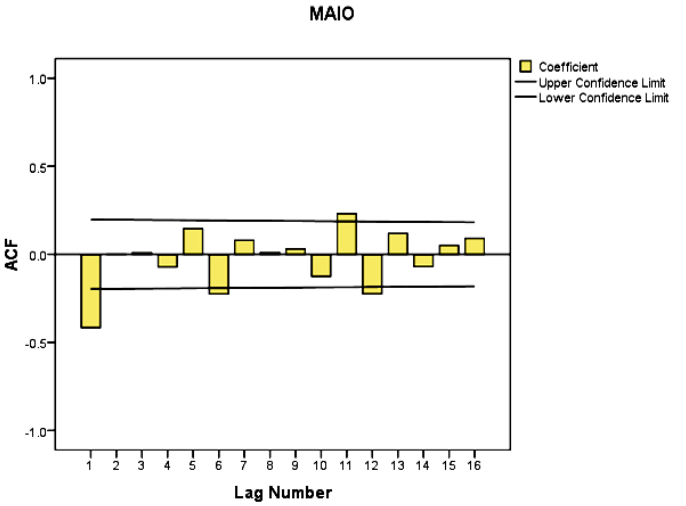

Figure 11. ACF of Generated MA(1) Series with an IO at t = 50 (n=100, θ = 0.7, ω = 10)

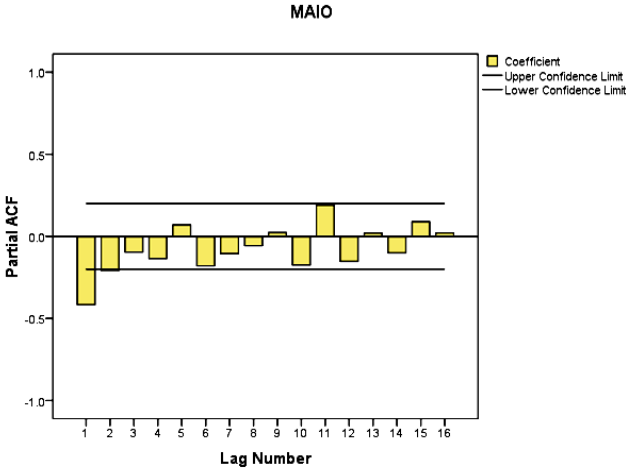

Figure 12. PACF of Generated MA(1) Series with an IO at t = 50 (n=100, θ=0.7, ω = 10)

Based on the simulated results as mentioned above, it can be concluded that the effect of an AO outlier is more serious in model identification but an IO outlier has no effect on model identification for both AR(1) and MA(1) cases.

Discussion

It is clear from the simulated results that the effect of presence of outlier on the estimates of autocorrelation and partial autocorrelation functions depend on both the magnitude and type of outlier. According to the findings,, it is clear that both AO and IO types of outlier effect on the acf and pacf. Therefore, it can be concluded that there may have problems in the model identification. According to the simulation results, it is clear that the effect of AO outlier is serious for both AR(1) and MA(1) models' identification but effect of IO outlier is not as clear as AO. It can said that the effect of an AO outlier is more serious in model identification but an IO outlier has no effect on model identification for both AR(1) and MA(1) cases.

Suggestion

As further study, the effects of other types of outliers such as level shifts (LS), temporary or transient changes (TC), variance changes (VC) and reallocation outlier (RO) should be considered and effects on mixed ARMA models should be deliberated. In addition, outlier problems for seasonal time series models should be investigated.

Acknowledgement

Completion of this research paper was due to support and encouragement of numerous people. I would like to thank all those who made this paper possible. Firstly, I would like to thank to Professor Dr. Tin Win, Rector, Yangon University of Economics and Professor Dr. Nilar Myint Htoo, Pro-rector, Yangon University of Economics for their approvals to write this paper. Moreover, I would like to thank to Professor Dr. So Win, Rector, Monywa University of Economics for his valuable comments and suggestions to improve this paper and Professor Dr. Maw Maw Khin, Head of Department of Statistics, Yangon University of Economics, for her kind permission to prepare and finalize this paper.

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The Moderation Effect of Occupation Types on the Relationship between Residents' Perceptions of Tourism Impacts and Support for Tourism Development

(A Case Study of Bagan Heritage Zone)

Hlaing Hlaing Moe*

Abstract

Tourism is a crucial sector of economic growth for developing countries including Myanmar. Bagan is one of the prominent tourist destinations in Myanmar. The analysis of the research was applied Hierarchical Multiple Regression. The primary data were collected by using two-stage sampling method with simple random sampling without replacement at both stages. A sample of 433 households was selected in the study. The aim of the article is to determine the interaction effect between residents' perception of tourism impacts and support for tourism development regarding occupation types as a moderator variable. It is discovered that the occupation types moderates the relationship between residents' perception of tourism impacts (economic and sociocultural impacts) and support for tourism development.

Keywords: Economic and sociocultural impacts of tourism, Tourism development, Sustainable tourism, Hierarchical Multiple Regression.

Introduction

Tourism is an essential sector of economic growth for many countries. Tourism can beneficially contribute to the achievement of Sustainable Development Goals (SDGs) among nations. Nowadays, tourism is one of the economic sectors of Myanmar. Myanmar has become an emerging tourist destination for international travellers who are keen to experience Myanmar's abundant wealth of cultural and natural heritage, genuine hospitality and spiritual values. The Pyu ancient cities are the first sites in Myanmar that are inscribed on the world heritage list. Bagan, Mrauk Oo and Pindaya are the most attractions of historical heritage sites. Bagan has inscribed the UNESCO's World Heritage Site in July 2019. These sites

* Associate Professor, Department of Statistics, Yangon University of Economics

are already gained economic benefits but it has initiated to experience environmental and sociocultural pressures from tourism (MOHT, 2013).

Myanmar tourism statistics clearly stated that international tourist arrivals increased from 0.79 million in 2010 to 4.36 million in 2019. The tourism receipts increased from US$254 million in 2010 to US$2819 million in 2019. The tourism industry created about 6.5 per cent of the job opportunities in 2015. It can seem that tourism industry becomes an essential sector in Myanmar. There is a relationship between tourism and standard of living for residents in tourist destinations. Tourism not only directly contributes to employment and income but also indirectly contributes to improving health, education and transportation services. The residents recognize to support tourism development because their employment opportunities, income and living standard are high. The main factor of local tourism development is the residents' support for tourism in tourist destinations. Regarding the development of tourism, there are economic and sociocultural impacts of tourism, and these impacts are needed to analyze the tourist destinations. This study aims to analyze the interaction effect of occupation types on the relationship between residents' perception of tourism impacts (economic and sociocultural impacts) and support for tourism development in Bagan.

Literature Review

Tourism is one of the world's largest industries. It is a major area of interest because of a large number of tourists and their consumption and the greater impacts on the local communities. Many countries have tried to attract international tourists and to reap international tourism. Tourism provides foreign revenues, increases employment, attracts foreign and domestic private capital for development and promotes economic independence (Britton, 1982). Christaller (1963) pointed out that tourism can be used to achieve economic development in peripheral regions because tourists travel from core metropolitan areas to the periphery.

World Travel and Tourism Council (WTTC, 2008) predicted a steady growth for world travel and tourism between 2009 and 2018 with average growth of 4.4% per annum over the period, supporting 297 million jobs and contributing 10.5% of global GDP by 2018. UNWTO argued that tourism can lead to economic growth through its potential for job creation, foreign exchange earnings and its multiplier effect. The studies of tourism

impacts emerged in the 1960s with much emphasis on economic growth. In the 1970s, the impacts of tourism undertook to sociocultural issues (Bryden, 1973). In the 1980s, the environmental impacts of tourism became the sole concern of tourism researchers (Butler, 1980). In the 1990s, the studies of tourism impacts are an integration of the effects of the preceding impacts, leading to a shift from "Mass Tourism" to "Sustainable Tourism" in the form of ecotourism, heritage tourism and community tourism.

Tourism impacts arise in a complex interrelationship among the destination, the tourism industry and tourists. McCool and Martin (1994) investigated mountain residents' attitudes toward tourism that revealed four factors including impacts, benefits, equity and extent. However, researchers noticed that respondents' greatest concern is the sociocultural impacts of tourism with regard to the demonstration effect and different cultural values of tourists. The residents agreed that economic gains of tourism were greater than social costs (Sheldon and Var, 1984). Tourism contributes to social problems such as begging, gambling, drug trafficking, and prostitution (Var and Kim, 1989). However, tourism brings more opportunities to upgrade facilities such as outdoor recreation facilities, parks and roads (Liu and Var, 1986).

Tourism contributes to broader and deeper sociocultural transformations in tourist destinations. The residents feel that tourism improves the standard of living and it helps the residents to earn more foreign income (Var and Kim, 1989). The authors stated that tourism contributes to the renaissance of traditional arts and crafts. Acculturation takes place when two or more cultures come into contact for a sustained period and ideas are exchanged (Liu and Var, 1986). In undeveloped countries, local cultures and customs tend to be overwhelmed by more developed cultures, especially Western ones (Liu and Var, 1986). Furthermore, the youths in the tourist destinations can emulate the speech, clothes and bad behaviour of tourists. Sustainable tourism is delivering economic benefits to destinations and communities through competitive tourism businesses that create employment and it is minimizing adverse impacts on the environment. The residents' view and support is importance for local government, policymakers and businesses.

Objectives

The following objectives are set in this study:

(i) To analyze the interaction effect of occupation types on the relationship between residents' perception of economic impacts of tourism and support for tourism development in Bagan.

(ii) To explore the interaction effect of occupation types on the relationship between residents' perception of sociocultural impacts of tourism and support for tourism development in Bagan.

Conceptual Framework

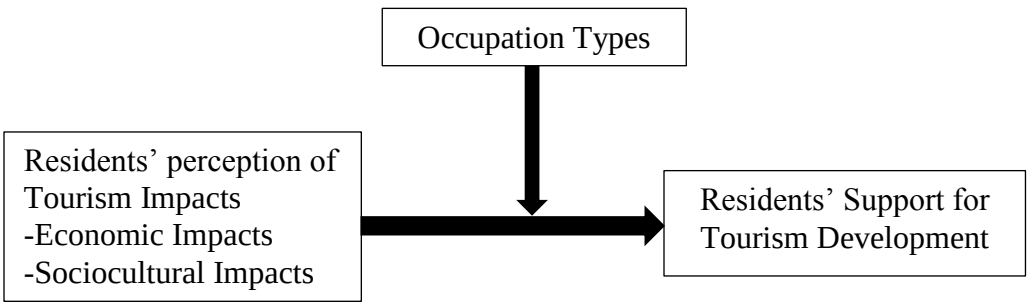

Figure 1. Conceptual Framework

Regarding the above conceptual framework, the primary objectives are supported by the following hypotheses.

H_1: The relationship between the residents' perception of economic impacts of tourism and support for tourism development is stronger for employed residents in tourism industry than employed residents in non-tourism industry.

H_2: The relationship between the residents' perception of sociocultural impacts of tourism and support for tourism development is stronger for employed residents in tourism industry than employed residents in non-tourism industry.

Methodology

Survey Design

Household sample survey was conducted in Bagan-Nyaung Oo Region to obtain the required primary data. The structured questionnaire was used to collect the primary data. The five-point Likert type scale

ranging from 1 with "strongly disagree" to 5 with "strongly agree" was used. Only one person in each household was invited to participate in the study. Two-stage sampling design was used to carry out a household sample survey. Wards are treated as first-stage sampling units (FSUs) and households in the FSUs are treated as second-stage sampling units (SSUs). The target population consisted of residents at age 18 years and above. Data are collected during December 2017 to February 2018 using a structured questionnaire with 446 households. Due to incomplete questionnaires, only 433 complete questionnaires are used for subsequent data analysis.

Latent and Measured Variables of Model

The measured variables represent the scale for each latent variable to measure. The measured and latent variables are presented in Table 1.

Table 1: Latent and Measured Variables

Latent and Measured Variables
Economic impacts of tourism (Eco)
eco1: Increase income and employment opportunities of residents
eco2: Receive income from tourists
eco3: Depend on tourism
eco4: Get foreign earnings
eco5: Raise living standard of residents
eco6: Receive tax revenues for local government
eco7: Develop education and health care facilities
eco8: Increase the price goods and services
eco9: Increase the price of estate and dwelling houses
eco10: Spend a lot of money in the community
Sociocultural impacts of tourism (Soccul)
soccul1: Raise the pride of the local culture for residents
soccul2: Encourage the conservation of cultural activities for residents
Soccul3: Preserve the historical areas and pagodas in the community
Soccul4: Create a valuable culture exchange between tourists and residents
Soccul5: Appreciate Myanmar traditional cultures
Soccul6: Provide social benefits of local residents

Soccul7: Maintain roads and other local services Soccul8: Raise crime rate in the community Soccul9: Imitate the inappropriate behaviour and clothing style of tourists Soccul10: Disrupt the traditional culture in the community
Residents' support for tourism development (RSTD) rstd1: Conduct financial investment rstd2: Participate in increasing the volume of tourists rstd3: Carry out sustainable tourism development rstd4: Promote tourism-related products rstd5: Adherence Myanmar Responsible Tourism Policy

Data Analysis and Results

Sample Respondents' Profile

According to gender, 260 residents (60%) are males while 173 residents (40%) are females. In terms of the marital status, majority of the residents (58.4%) are married and followed by single (28.4%). The majority of the residents (92.8%) are Buddhist. According to the birthplace, (55.2%) of residents are born in Bagan and (44.8%) of residents are not born in Bagan. Most of the residents (34.4%) are the age group of 31-40. The average age of residents is 40 years. The majority of residents (33.3%) have Bachelor's degree. The majority of residents (31.2%) have earned between 1 and 2 lakh kyats per month. The most of residents (69.3%) are concerned with tourism industry and (30.7%) of residents are not concerned with the tourism industry.

Factor Analysis

Factor analysis is used in data reduction. To determine the appropriateness of factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity tests are examined. The results of factor analysis are shown in Table 1. Regarding the results of factor analysis, all these measured variables are valid and reliable.

Table 1. Results of Factor Analysis for Latent Variables

Latent variables	Measured variables	KMO	Bartlett's test of sphericity	Eigen value	Variance explained	Cronbach's alpha
Eco	eco1, eco2, eco3, eco4, eco5 and eco7	0.889	0.001	5.07	63%	0.92
Soccul	soccul1, soccul2, soccul3, soccul4, soccul5, soccul6 and soccul7	0.872	0.000	4.88	78%	0.93
RSTD	rstd1, rstd2, rstd3, rstd4 and rstd5	0.803	0.001	2.63	53%	0.76

Analysis of Moderation Effects (Interaction Effects)

Moderation refers to a change in the relationship between an independent variable and a dependent variable, depending on the level of a third variable as the moderator variable. This data analysis deals with the moderation effects of occupation types on the relationship between the perception of tourism impacts and residents' support for tourism development. The dependent variable (residents' support for tourism development) is regressed on an independent variable (economic and sociocultural impacts of tourism) and a moderator with the types of occupation designated as a dummy variable. Hence, "1" may indicate residents work in the tourism industry and "0" may designate residents do not work in the tourism industry in the model. The types of occupation are designated as a dummy variable. Group 1 refers to employed residents don't work in tourism industry (n=133) and Group 2 refers to employed residents work in tourism industry (n=300).

The Hierarchical Multiple Regression (HMR) was conducted with residents' perception of economic impacts of tourism (Eco) and occupation types (D_i) as independent variables and the residents' support for tourism development (RSTD) as a dependent variable. The residents work in the tourism industry (D_i=1) and residents who don't work in the tourism industry (D_i=0). The models of RSTD are described.

$$Model\ 1: RSTD = \alpha_1 + \alpha_2 D_i + \beta_1 Eco + u$$

$$Model\ 2: RSTD = \alpha_1 + \alpha_2 D_i + \beta_1 Eco + \beta_2 (EcoD_i) + u$$

Residents' support for tourism development Models are obtained the following results.

$$Model\ 1: RSTD = 3.543 + 0.52 D_i + 0.118 Eco$$
$$Se \quad (0.032) \quad (0.039) \quad (0.030)$$
$$t \quad (110.75)^{***} \quad (13.44)^{***} \quad (3.88)^{***}$$
$$R^2 = 0.347, F = 114.05^{***}$$

$$Model\ 2: RSTD = 3.562 + 0.508 D_i + 0.218 Eco + 0.189 EcoD_i$$
$$Se \quad (0.032) \quad (0.038) \quad (0.044) \quad (0.060)$$
$$t \quad (110.48)^{***} \quad (13.20)^{***} \quad (4.97)^{***} \quad (3.14)^{***}$$
$$R^2 = 0.362, \Delta R^2 = 0.015^{***}, F = 80.88^{***}$$

In Model 1, R^2=0.347 means that Eco and D_i explain about 34.7% of the variation in the residents' support for tourism development. It is found that residents' support for tourism development is expected to be higher by about 0.52 point for tourism industry than for non-tourism industry, controlling the perception of economic impacts of tourism. In Model 2, R^2=0.362 means that Eco, D_i and $EcoD_i$ explain about 36.2% of the variation in the residents' support for tourism development. ΔR^2 (1.5%) is the percentage increase in the variation explained by the addition of the interaction term ($EcoD_i$). This increase is statistically significant at 1% level. It is found that the relationship between residents' perception of the economic impacts of tourism and support for tourism development is moderated by types of occupation. Therefore, the relationship between the residents' perception of economic impacts of tourism and support for tourism development is stronger for employed residents in tourism industry than employed residents in non-tourism industry. From Model 2, the regression equations of residents' support for tourism development in non-

tourism industry (group 1) and tourism industry (group 2) are obtained as follows:

Group1: RSTD = 3.562+0.218 Eco

Group2: RSTD =4.07+0.407 Eco

The Hierarchical Multiple Regression (HMR) was conducted with residents' perception of sociocultural impacts of tourism (Soccul) and occupation types (D_i) as independent variables, and the residents' support for tourism development (RSTD) as a dependent variable. The residents work in the tourism industry (D_i=1) and residents who don't work in the tourism industry (D_i=0). The models of RSTD and the results are described.

$$Model\ \ 3: RSTD = \alpha_1 + \alpha_2 D_i + \beta_1 Soccul + u$$

$$Model\ \ 4: RSTD = \alpha_1 + \alpha_2 D_i + \beta_1 Socul + \beta_2 (SocculD_i) + u$$

Residents' support for tourism development Models are obtained the following results.

$$Model\ \ 3: RSTD = 3.569 + 0.489 D_i + 0.111 Soccul$$
$$Se \quad (0.033) \quad (0.04) \quad (0.025)$$
$$t \quad (107.77)*** \quad (12.19)*** \quad (4.46)***$$
$$R^2 = 0.354,\ F = 117.65***$$

$$Model\ \ 4: RSTD = 3.673 + 0.399 D_i + 0.351 Soccul + 0.345 SocculD_i$$
$$Se \quad (0.035) \quad (0.041) \quad (0.043) \quad (0.052)$$
$$t \quad (104.38)*** \quad (9.82)*** \quad (8.16)*** \quad (6.69)***$$
$$R^2 = 0.415,\ \Delta R^2 = 0.061 **,\ F = 101.31***$$

In Model 3, R^2=0.354 means that Soccul and D_i explain about 35.4% of the variation in the residents' support for tourism development. It is found that residents' support for tourism development is expected to be higher by about 0.489 point for tourism industry than for non-tourism industry, controlling the perception of sociocultural impacts of tourism. In Model 4, R^2 =0.415 means that Soccul, D_i and $SocculD_i$ explain about 41.5% of the variation in the residents' support for tourism development. ΔR^2 (6.1%) which is the percentage increase in the variation explained by the addition of the interaction term ($SocculD_i$). This increase is statistically significant at 1% level. It is found that the relationship between residents' perception of the sociocultural impacts of tourism and support for tourism

development is moderated by types of occupation. The relationship between the residents' perception of sociocultural impacts of tourism and support for tourism development is stronger for employed residents in tourism industry than employed residents in non-tourism industry. From Model 4, the regression equations of residents' support for tourism development in non-tourism industry (group 1) and tourism industry (group 2) are obtained as follows:

Group1: RSTD = 3.673 + 0.351 Soccul

Group2: RSTD = 4.072 + 0.696 Soccul

Conclusion

A sample of 433 residents is used in the data analysis. This study finds that residents have median income 3 lakh kyats. Moreover, most of the residents work in tourism industry. This study highlights the role of tourism industry in Bagan. The research discovers that the tourism industry has more developed than non-tourism industry in Bagan. Most of residents work in tourism industry and they perceive the positive economic and sociocultural impacts of tourism. Therefore, residents who work in tourism industry are more supportive for tourism development than residents who work in non-tourism industry.

Suggestions

Tourism industry of Myanmar is increasing rapidly. Emerging tourism development in Bagan, the major findings of the study have the following suggestions. The positive economic and sociocultural impacts of tourism are the main factors to increase residents' support for tourism development. Therefore, government and tourism planners should implement creating employment opportunities, enhancing living standard of local residents, preserving historical sites, conserving of traditional culture and sustainable culture heritage in tourist destinations. Tourism development can make the achievement of Sustainable Development Goals (SDGs) in Myanmar because tourism industry has contributed job opportunities and has reduced local poverty. Therefore, the government should implement sustainable development of tourism industry in Bagan and other tourist destinations.

Limitations and Further Research

This study makes some essential contributions to further research. First, the proposed model is examined a developed tourist destination. Hence, further researches should consider other tourist destinations in Myanmar. Moreover, the development of tourism industry can be analyzed making a comparison between Bagan and other tourist destinations. Then, the study focuses on residents' perception of the economic and sociocultural impacts of tourism. Therefore, residents' perception of environmental impacts of tourism should be considered in further researches.

Acknowledgements

I am greatly indebted to Rector Dr. Tin Win, Pro-Rector Dr. Nilar Myint Htoo, Head of Professor Dr. Maw Maw Khin and Professor Dr. Mya Thandar, Department of Statistics, Yangon University of Economics.

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The Quality of Statistics and Development of Countries

Kyaing Kyaing Thet*

Abstract

Quality Statistics is very important for development of countries. Nowadays, it is increasing the awareness of people that the quality statistics is indispensible tools for making efficient decisions to attain the sustainable development of countries. Without quality statistics, governments cannot make proper planning, monitoring and evaluation of development programmes and projects and good decision with respect to their government policy formation. Therefore, the relationship between quality of statistics and development of countries is studied based on evidence base in this paper. Quality of statistics is measured by dummy variable and development of countries is used as proxy of human development index. If the country is IMF's SDDS (International Monetary Fund's Special Data Dissemination Standard) subscriber, it is assign 1 and if it is non IMF's subscriber, it is set 0. Among 175 countries of 2018 human development report, 30% of countries are selected by using simple random sampling method. In terms of mean values of HDI, it can be seen that IMF's SDDS subscriber countries are more developed than non IMF's SDDS subscribers. According to the findings, it is found that there is relationship between, quality statistics and development of countries. It can be found that the countries with high quality standards attain the higher human development.

Keywords: IMF's SDDS, Quality of Statistics, Human Development Index

Rationale of the Study

Today, it has been widely accepted that quality statistics are very important for making efficient decisions. Without valid statistics, it is difficult to make the right decisions in policies perspective. Statistics is an indispensable tool for national development of nations. It is very useful for proper planning, monitoring and evaluation of development programmes and projects. With a help of quality statistics, government can make a proper decision with respect to their government policy formulation.

* Professor, Head, Department of Statistics, Monywa University of Economics

Governments at all levels should embark on building a very viable information system in order to have adequate statistical information for designing a formidable social and economic policy. It has been advocated that the National statistical system in any country should get more attention if the country is to have an orderly and definite development programme (United Nations Resolution on World Statistics Day, 2010)(Ward, 2004).

According to Peer Review of Myanmar's National Statistical System (2016), Myanmar is trying to improve the entire National Statistical System of Myanmar to the extent that statistics produced meet data users' needs, especially in this age of information and communications technologies. It is the time of the development of statistics and the statistical system. Therefore, a new statistics law has been formulated which strengthens the relationship of statistics producers and stakeholders, as well promotes quality statistics across government. In addition, a statistical policy brief and a National Strategy for the Development of Statistics (NSDS) have already been formulated. NSDS leads a clear path and set concrete milestones for developing quality and accurate official statistics in Myanmar. To highlight the importance of quality statistics, the relationship between quality statistics and development of countries is studied in this paper.

Objectives of the Study

There are two objectives of the study. These objectives are as follows:

(1) To compare the development of the countries

(2) To analyze the relationship of quality statistics and development of countries

Method of Study

In this study, 58 countries are randomly selected by using simple random sampling method to highlight the relationship of quality statistics and development of countries. Human development index(HDI) is proxy for development of countries and quality of statistics is measured by using dummy variable. If the selected country is the country that subscribes to the IMF's special data dissemination standard and make a commitment to observe the standard, it is assign 1 and if not it is 0. The comparative

analysis of human development is carried out by using independent sample t test and the relationship of development and quality of statistics is studied by using correlation analysis and regression analysis.

Scope and Limitations of the Study

In this study, 58 countries are randomly selected among 175 countries of the 2018 human development report. Among the various statistical methods, inferential analysis, correlation analysis and regression analysis are applied. Among the development indicators, human development index is used as a proxy for the development of countries. There are various measurement of quality of statistics, only IMF's SDDS is used.

Quality of Statistics

High quality statistics should be accurate and be quickly produced. However, as the element of customer satisfaction is introduced to the concept of quality, the meaning of statistics quality is newly interpreted based on the following premise: ‘Are statistics produced and provided which are fit for users?’ It is necessary to introduce a new concept of statistics quality assessment in order to provide a certain quality that customers want and maintain it.

Statistics quality is determined by "fitness for use" which indicates that how much the needs of statistics users are fulfilled. Fitness for use is a multi-dimensional concept, not a single dimensional one. The dimension of statistics quality is different, depending on scholars. International organizations, which deal with statistics, have not yet offered the standardized dimension of statistics quality.

According to Korea Statistics, statistics quality is defined based on six different dimensions. These dimensions are relevance, accuracy, timeliness and punctuality, comparability, coherence and accessibility and clarity. Relevance means how much statistical data meet the demands of users in terms of comprehensive scope, concept, and contents. In short,

relevance is associated with the concept that statistics are produced and provided to relevant statistics users. To enhance the relevance of statistics, the important way is to conduct the user satisfaction survey.

Accuracy of statistics can be defined as how close the unknown true value and estimated value are because most statistics obtained from sample estimate the parameters of population. If the different between statistics and parameters are smaller, the more accuracy will be. In the case of survey statistics, error occurs from comprehensive scope, sample drawing, survey response and non-response, and statistics production process. In the case of processed statistics like national accounts, error may take place due to the inaccuracy of sample survey or total survey and mismatch among comprehensive scope, survey timing, and assessment method. Accuracy can be measured by examining the size of sampling or non-sampling error, and the difference between the estimated and final value.

"Timeliness" is the concept, which is associated with the reflection degree of statistics that shows the difference between data production time and data dissemination time. "Punctuality" is the concept, which shows whether statistics are disseminated on schedule. If the time lag between production and dissemination time is short, timeliness is high. Some key statistics' dissemination schedule are announced in advance to let statistics users know the one earlier. If this preliminary dissemination schedule is met, punctuality is high.

"Comparability" means whether statistical data, which are aggregated based on the same concept, classification, measurement tool, measurement process and basic data, can be compared with each other even though the statistical data were prepared in different time or space. Regarding a particular statistics, comparability is used to check whether they are compared with the statistical data of other countries or cities, or other years. In order to increase international comparability, it is necessary to apply international standards, international classifications and assessment methods. Also, if the cycle of producing statistics is irregular or long, time comparability could be low because concepts, survey items and methods may be different from the past. In this case, therefore, special attention is required.

"Coherence" means how similar statistical data are about the same economic and social issues. These data are produced based on different basic data or production methods. For example, it is possible that preliminary and final data, annual and quarterly (monthly) data, statistics surveys and national accounts may be produced based on different data

resources and production methods. But, if these data show similar results, coherence is high.

"Accessibility" means how easy users are able to access statistical data. "Clarity" means the quality of information about how statistics were produced. There are various ways which make it possible for users to easily access statistical data. One method is providing various statistical data by creating the database of statistical data, posting periodicals and news releases on the homepage, and delivering prompt reports via SMS. The other method adding a search function to the website to ensure that users easily search for statistical data. To help users understand these data, providing meta-data is the surest way to increase clarity of statistics. The

meta-data include the process of producing statistics, the way of making better use of data and micro data, and the advice on using statistics.

Statistics Quality Management

The statistics quality management means all activities that are done according to the cycle of“ Plan Do Check Act (PDCA)”to enhance quality statistics. The statistics quality management system provides the maximum satisfaction for users and integrates all means necessary to produce the best statistics possible with a minimum amount of budget. High quality statistics are produced if statistics quality is properly managed at every stage.

Statistics quality management is designed to produce high quality statistics. Therefore, the aim of quality management is to improve the quality of statistics. To meet this end, it is essential that quality assessment results are used to enhance the quality of statistics. This is called the "feedback" process. Through statistics quality assessment, high quality statistics which are selected as best practices need to be shared with statistics users. In the case of low quality statistics, meanwhile, they should be improved after problems are checked. It is necessary to enhance the quality while operating the statistics quality management system. To do so, the scope of improvement should be clearly defined by accurately assessing the quality of all items at each stage of statistics production.

Statistics quality assessment is designed to gauge the accuracy, timeliness, and usefulness of statistical data. Also, it is conducted to figure out whether users are able to easily access, analyze, and capitalize on the statistical data.

The first step of quality assessment is set a basic plan to carry out quality assessment, and then implement improvement tasks of the statistics. According to statistics quality assessment of Korea, there are five areas in the assessment process. These are basis for quality management, User satisfaction and the reflection degree of user demands, detailed process of producing statistics, accuracy of collected data, statistical service date. To check the basic for quality management, it is needed to assess the statistics production environment and the recognition of people who are responsible for statistics by using the present condition report of basis for quality management services. To analyze the user satisfaction and the reflection degree of user demands, it is needed to carry out surveys and focus group interviews in order to inspect how much statistics are used, and assess how much users are satisfied with the statistics.

To assess the detailed process of producing statistics, make a checklist of quality assessment in the form of questionnaire, and then let internal and external researchers assess it. Internal assessment is made by the person in charge and external assessment is made by external

examiners. To assess the accuracy of collected data, examine the statistics production background by interviewing field surveyors and respondents and check the selection of input data and the suitability of data processing. For the statistical service date, it is needed to check any error of published data, such as news releases, reports, and the database, and user convenience.

Empirical Analysis on Quality of Statistics and Development of Countries

Quality statistics means the statistics that meet the international statistical standard. According to the International Organization for Standardization (ISO), international standards are usually documents established by consensus and approved by a recognized body that provides for common and repeated use, rules, guidelines for activities or their results, aimed at the achievement of the optimum degree of order in a given context.

An international statistical standard is a comprehensive document of statistical guidelines and recommendations for managing statistical frameworks, processes, and surveys, and administrative sources to support the production of information on a topic or variable.

According to the Economist (1993), Canada, Australia and the Netherlands are the top countries whose statistical system is the high quality level. Besides these countries, Sweden, Finland, Denmark, France, Germany, and the United Kingdom, in Europe have high quality statistical system. In Asia, China, India, Indonesia, Republic of South Korea, Malaysia, Philippines, Singapore, Sri Lanka and Thailand are the countries that subscribe to the International Monetary Fund (IMF)'s Special Data Dissemination Standard (SDDS) see pg 65, The Economics (1993).[1] Among these countries, Statistical offices of Korea, Philippines and Malaysia also are certified ISO 9001 standard. It can be found that the statistical system of these countries meet the international quality standard. These countries are subscribers of IMF's SDDS.

Comparative Analysis for Development of Countries

Development of the selected countries is measured by using human development index (HDI). HDI is a composite measure of three basic components of human development: longevity, knowledge and standard of living. Longevity is measured by life expectancy at birth, and education is measured by mean years of schooling (Years that a 25-year old person or older has spent in school) and expected years of schooling (Years that a 5-year old child will spend with his education in his whole life, and standard of living is measured by gross national income at purchasing power parity per capita. To compare the development of countries, mean of HDI are calculated for IMF's SDDS subscribers and non subscribers. The calculated mean values of HDI for two groups of countries can be seen in Table (1). The SDDS is a global benchmark for disseminating macroeconomic statistics to the public. SDDS subscription indicates that a country meets the test of "good statistical citizenship."

[1] The Economist; London Vol. 328, Iss. 7828, (Sep 11, 1993): 65.

Table 1. Mean Values of HDI and Two-Sample 't' Test

Group	No. of Countries	Mean of HDI	Standard Deviation	Calculated t Value	p-Value
IMF's SDDS Subscriber	20 (34.48%)	0.862	0.082	5.887	0.000
IMF's SDDS Non-Subscribers	38(65.52%)	0.694	0.134		

Estimated Means of HDI for Two Groups

Source: Author's calculation based on data obtained from 2018 Human Development Report[2]

According to Table (1), 34.48% are the countries that subscribers to the IMF's SDDS (special data dissemination standard) and 65.52% are non- subscribers of IMF's SDDS. The estimated mean value of HDI of IMF's SDDS subscribers is more than that of IMF's SDDS subscribers because the calculated t value is significant at 1% level and its sign is positive. In terms of mean HDI, it can be seen that the IMF's SDDS subscribers is more developed than non IMF's SDDS subscribers.

The Relationship of Quality Statistics and Development of Countries

To highlight the relationship of quality of statistics and development of countries, in addition to mean values, Pearson's correlation coefficient is calculated. Since the calculated value of correlation coefficient is 0.56 and it is significant at 1% level, it can be said that there is positive relationship between development of countries and quality of statistics.

To highlight the quality of statistics and development of countries, the simple linear regression model is used. In the model, HDI is used to measure the development of countries and it is dependent variable. Quality of statistics is measured by using dummy variables. If the country is the subscriber of IMF's SDDS, it is assign 1 and if it is not, it is assign 0. The

[2] Appendix

simple linear regression model of HDI on quality statistics is presented as follows:

$$HDI = \beta_0 + \beta_1 D_i + \varepsilon_i \quad (1)$$

Where, HDI= Proxy for development of countries

D_i = 1, if the selected country is the IMF's SDDS subscriber

= 0, if the selected country is the non IMF's SDDS subscriber

ε_I = the random error term

The calculated results of simple linear regression model are presented in Table (2).

Table 2. Estimated Results for Simple Linear Regression Model of HDI on Quality of Statistics

Variable	**Coefficient**	**Robust Standard Error**	**t**	**P-value**
Constant	0.694	0.022	31.73	0.000
Quality of Statistics	0.168	0.028	5.89	0.000
F	34.72			0.000
R^2	0.32			

Source: Author's calculation[3]

The estimated simple linear regression model is

HDI= 0.694 + 0.168 D (2)

SE (0.022) (0.028)

t 31.73*** 5.89***

*** means it is significant at 1% level.

[3] Appendix

According to Table (2), the calculated value of coefficient of quality of statistics is significant at 1% level and its sign is positive. Therefore, there is positively significant effect of quality of statistics on development of countries. Since the calculated value of coefficient of quality of statistics is 0.168, HDI of the subscribers of IMF's SDDS is 0.168 more than that of non-subscribers. Therefore, it can be said that the countries that produce better quality statistics can attain the higher level of human development.

Conclusion and Suggestion

According to the findings, development of countries significantly depends on the quality statistics. Most of countries are now trying to strengthen its statistical capacity to produce quality statistics. Good and reliable statistics are essential for measuring progress in reaching development goals and provide essential information about the effectiveness of policies and programmes. These quality statistics help governments improve their policies and to be transparent and accountable about the delivery of development results. Reliable statistics are a key element towards better measurement, monitoring and management of the results of development assistance. To produce the quality statistics, there should be systematic quality management system for quality of statistics. Myanmar is trying now to attain the sustainable development through national development plan. To implement the strategic plan, it should be based on quality statistics. To produce the quality statistics, it is essential to collaborate among government, producers of statistics, various users and statisticians. Therefore, to attain development goals, it is necessary to collaborate among stakeholders of statistics.

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Factor Effecting Students Performance on Basic Statistics Course in Monywa University of Economics

Lwin Moe Thu[1] & Myint Moe Moe Khin[2]

Abstract

This study aims to identify factors that may contribute to economics students in Monywa University of Economics having difficult in basic level statistics courses. This paper attempted to identify the relationship between (1) student's scores on the survey of attitudes towards statistics (SATS); (2) course performance as measured by student's final scores in the course; and (3) their scores on the final exam. Data were collected from 182 second year students in five different classes of the Monywa University of Economics during 2017-2018 academic year. The results found that for the SATS survey, it suggests that student willing to put effort in order to understand statistics didn't achieve in statistics courses unless they didn't have the interest of statistics and students' attitudes about the usefulness and worth of statistics. For the analysis of average Basic Statistics mark and Mathematical skill, it is found that mathematics mark gained by students increased, the average statistics mark the received also increased.

Keywords: SATS, Correlation Analysis, Multiple Regressions Analysis

Introduction

Statistics education, like all forms of education, has two related aspects, namely teaching and learning. Teaching can be modified and adjusted by instructors. Instructors can try to design ways of teaching that improve student learning. The assumption is that improved learning will lead to improved conceptual understanding. Designing ways of teaching that directly influence student learning, involves attempts to make the subject matter clearer, more comprehensible and thus easier to learn for the student. Instructors also try to design ways of teaching that make it easier for students to apply what they have learned; i.e. ways of teaching that make it easier for the students to put their knowledge into practice. Such attempts that directly act upon learning are characterized by, for example, trying to select appropriate learning material, improving lectures, writing

[1] Final Year Honours (Statistics), Monywa University of Economics
[2] Professor, Dr. Department of Statistics, Monywa University of Economics

better text books, selecting and applying computer software, and upgrading practical training sessions.

Learning, however, involves more than that. Learning is also dependent on the effort students are willing to invest and on their style of studying, which both are strongly related to other motivational aspects. Motivation is a term that is often loosely used to refer to related constructs, such as attribution, affect, self-efficacy, goal orientation, perceived competence, and interest, without attempts at a more precise definition (Murphy & Alexander, 2000). However, despite the lack of a generally accepted definition of motivation, it can be conceptualized as the constellation of interrelated thoughts, feelings, and behavior a person displays. For example, defeatist thoughts may be linked with negative affect which may be linked to passive behavior (Peterson, Maier & Seligman, 1993; Pintrich & Schunk, 1996).

Generally, if a student has two learning tasks, and one of them is thought to be interesting, enjoyable, and easy; the other one boring, unpleasant, and difficult, then it is likely that the student will put more effort into the first learning task and study the corresponding material more thoroughly. This supposition seems trivial, yet from a review of the literature on educational research it can be concluded not much research has been done on ways of teaching that make learning more pleasant and enjoyable. Affective aspects are usually not highly valued.

Research in statistics education is not an exception in this respect. A broad search of the statistics education literature of the past fifteen years only yielded one article specifically about affect. It addresses humor in the classroom (Friedman, Friedman & Amoo, 2002). The authors only give examples, descriptions, and assumed effects; they did not manipulate humor and measure the established effects. This is the same for articles on attitudes toward statistics. The attitude of a person also includes affective aspects (Gal et al., 1997).

All first year university students in Monywa University of Economics (MUE) require regardless of major, to take one basic statistics course. For example, the university where the study will be conducted requires its students to take at least two statistics courses in order to graduate. Students have to deal with demanding tasks such as learning and applying statistical procedures in these courses. The first course is Basic Statistics, the second is Applied Statistics. The second course is not required

but it is offered as an elective. Therefore, it is important to investigate the characteristics needed for MUE students to succeed in statistics courses. Several factors are assumed to affect student performance.

Objectives of the Study

The objectives of this study are to examine the relationship between mathematics scores in matriculation exams and students' final scores in statistics courses and to analyze the relationship between student's attitudes toward statistics (SATS) and students' final scores in statistics courses.

Scope and Limitations of the Study

In this study, some limitations are subjected. First, the present study is the only second year MUE students. There are five specializations in MUE. The target population is about 913 second year students in the second semester of 2017-2018 academic year. To determine which factors are important for the student success, the students' attitudes towards statistics by using most recent Survey of Attitudes Toward Statistics (SATS) designed originally by Schau in 1995 and updated by her in 2003, and viewing the effect of each subscale on the final grades of students in previous academic year. It is assumed that students in this study answered survey questions honestly and do the best of their abilities. Finally, the other limitation of study is the term of student performance in the statistics courses or student achievement refers to the final average scores in the basic statistics course at the end of the semester.

Methodology

Methods

Quantitative and qualitative data analysis is carried out in this study. The required primary data are collected from students who attending second year at MUE during second semester in 2017-2018 academic year by using stratified random sampling method. Five- point Likert scale is used for SATS in this study over two-week period in July, 2018. In the first phase, the descriptive study is carried out to identify students characteristics most associated with success in statistics courses in MUE. In the second phase, the linear regression analysis is applied in the study of the relationship between mathematics scores in admissions exams and students' final scores in statistics courses. In addition, Cronbach’s Alpha is calculated to test the

reliability and internal consistency of each SATS subscale of MUE second year students. Finally, multiple linear regression analysis is used for to analyze the relationship between SATS subscale and students' final scores in statistics courses.

Sampling Design

(a) Sample

Stratified random sampling is used to collect required primary data based on stratifying variable is major specialization. According to sampling method, specialization major is classified as each stratum. The first stratum is statistics specialization students and it contains 50 students. The second stratum is Economics specialization students and contains 42 students. The third stratum is Management specialization students and contains 36 students. The final stratum is Commerce and Accounting specialization students and contains 54 students. The total sample size collected for this study is 182 students.

(b) Variables

The student's scores in the Basic Statistics courses was the dependent variable measured. However, the final grade in this courses, represented the numerical ranging from 0 to 100, was chosen the dependent variable in this study. The independent variables are contained several distinct measures of qualitative ability, student's scores on the matriculation Mathematics score and students' self-reported of their own mathematical skills.

Attitudes towards Statistics

Several instruments were reported to measure the attitudes of students as mentioned in the earlier section; in this study the SATS in the latest versions with six components (Schau et al, 1995) was used. The Survey of Attitudes toward Statistics (SATS) was used in this study to determine whether the attitude of students' toward statistics in MUE has a relationship with their achievement in statistics classes. Several articles suggest that the attitudes of students toward statistics (Garfield, 2003; Shau, 2005). However, this study found that only students' basic math skills and their attitudes about how much effort students are willing to put forth in order to understand statistics, the interest of students in statistics and

students' attitudes about the usefulness, relevance and worth of statistics were related to their performance in statistics courses. The SATS used this study is made up of six subscales: (1) Effort, which represent how much effort students are willing to put forth in order to understand statistics. (2) Affect, which contain the positive and negative feelings concerning statistics; (3) Cognitive Competence, which includes the students' attitude about intellectual knowledge and skills when applied to statistics; (4) Difficulty, which represents students' attitudes about the difficulty of statistics as a subject; (5) Interest, which represents the interest of students in statistics; and finally (6) Value, which represents students' attitudes about the usefulness, relevance and worth of statistics.

Results and Findings

Demographic Characteristics of Students

According to the results, 89% of the students are female and 11 % of the students are male. It can be seen that a higher number of females than males in MUE. The average age of all students is 18.23 years with standard deviation of 0.49 years and only 2.7 % are17 years old. Most of the students are 18 years old with 70.9% of the students is the largest groups. It can be found that the largest age of students in this analysis is 18 years. Moreover, the second year specialization of Statistics is 50 students, specialization of Economics is 42 students and the specialization of Management is 36 students and the specialization of Commerce & Accounting is 54 students respectively. Among these, Commerce and accounting students are the highest percentage with 29.7%, the second highest percentage are Statistics with 27.5%. The least percentage of students is Management students with 19.8%. It is found that Commerce and Accounting major students are the most responding students.

Association between Time Spent on Using Internet and Students' Characteristics

The students are asked about their time spent on using internet hours per week during this semester. Gender, age level and specializing majors by hours per week on the internet are analyzed. According to the results, 63.7% of the students claimed to have spent less than twenty hours per week on the internet and 36.3% of the students claimed to have above twenty hours per

week on the internet. The average hour per week on the internet of all students is 17.33 hours with standard deviation of 12.64 hours.

It is found that the percentage of male students using the internet was 11% and only 4.4 % of the male students who claimed to have spent twenty hours and above per week on the internet However, it is observed that the percentage of the female students using the internet is 89% .and 57.1 % of the female students who claimed to have spent less than twenty hours per week on the internet. The Chi-square test shows that there is no association between time spent using internet per week and gender.

Regarding to time spent on using internet hours per week by the age of students, it can be seen that the highest percentage 45.1% of the students who are 18 years old and claimed to have less than twenty hours per week on the internet. The Chi-square test cannot apply since minimum expected count is 1.81 in this association between time spent using internet per week and age of students.

Comparison of students of each specialization and using the internet hours per week, the largest percentage of 17.6% of the students who are Commerce and Accounting major specialization students and to have less than twenty hours per week on the internet. It is found that, the lowest percentage 2.7% of the students who are Business Management specialization students and claimed to have twenty and above hours per week on the internet. According to the Chi-square results, there is association between time spent using internet per week and major specialization students at 5% level of significance.

Relationship between Matriculation Mathematics Score and Statistics Score

Student achievement was determined by using the matriculation Mathematics mark and two semester final exam scores on Basic Statistics course in this study. Most of the students who gained Mathematics marks between 65 and 74 with 58.8% of students which is the largest groups. The second largest group is between 56 and 64 with 23.6% of the students. The smallest mark groups is between 75 and over with 17.6% of the students. It is calculated that the average and standard deviation of the matriculation Mathematics mark is 68.91 and 7.31 marks respectively.

Regarding to the spending study hours per week on Basic Statistics subject, it was found that the largest group of students' spending study hour on Basic Statistics subject is less than 10 hours per week with 72.5%. The second largest group of study hour per week is between 10 and 20 hours with 17%. The smallest study hour per week is more than 30 hours with 3.8 % of the students. It can be said that most of the students who studying less than ten hours per week on Basic Statistics subject.

As a calculated results, the largest percentage of students who gained Basic Statistics mark in their final exam is 75 and over with 35.2%. The second largest percentage of students group is between 65 and 74 with 33%. The least respondent group is 0 to 34 with 0.5%. It is found that the average and standard deviation of Basic Statistics mark is 69.53 and 9.29 marks respectively in this study.

A statistical model is hypothesized to represent the relationship between matriculation Mathematics marks and average Basic Statistics mark. According to the results, correlation coefficients was 0.16, there is statistically significant between Mathematics mark that the students gained in the matriculation exam and average final Basic Statistics mark at 5% level.

The Measurement of SATS Variables

The reliability analysis is conducted on six subscales that comprised 31 items in the questionnaire. The results for the Cronbach's Alpha coefficients of the six subscales are ranged from 0.64 to 0.79. These values are well above the generally agreed upon lower limit of 0.60 (Hair et al., 2006). Cronbach's Alpha coefficient of effort is 0.64. The coefficient is over 0.6. Therefore, effort is moderate level. The coefficient of affect is 0.71, the coefficient of cognitive is 0.73, the coefficient of difficult is 0.70, the coefficient of interest is 0.72 and the coefficient of value is 0.79 respectively. Thus, the results are indicating internal consistency of the factors and reliability of the scale.

Multiple Linear Regression Analysis

To investigate the relative impacts SATS factors that influenced average Basic Statistics mark, the six orthogonal factors were used in a multiple regression analysis. The equation for average Basic Statistics marks was expressed in the following equation:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon_i$$

Where: Y_i = Average Basic Statistics Mark

β_0 = Constant (intercept) ε_i = random error

X_1 = Effort X_2 = Affect X_3 = Cognitive

X_4 = Difficulty X_5 = Interest X_6 =Value

$\beta_1, \ldots, \beta_6$= regression coefficient of Factor 1 to Factor 6.

Table (3.1) showed that the results of the multiple regression analysis. To predict the regression model, the multiple correlation coefficient (R), adjusted coefficient of determination (Adjusted R^2), and F ratio were examined. First, the R of independent variable (six factors, X_1 to X_6) on the dependent variable (average statistics mark, or Y) is 0.302, which showed that the average statistics mark had positive and fairly over related with the six subscales. Second, adjusted R^2 is the value or percentage that indicates how the independent variables can explain the dependent variable. The calculated value of the adjusted R^2 is 0.06, suggesting that more than 6% of the variation of average Basic Statistics mark was explained by the six factors.

Table 1. Estimated Results for Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t-value	p-value	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	52.85	7.40		7.14	0.00		
Effort	-0.96	1.58	-0.19	-1.88	0.06	0.52	1.91
Affect	4.06	1.70	0.25	2.39	0.02	0.48	2.07
Cognitive	-1.42	1.63	-0.11	-0.87	0.39	0.35	2.90
Difficult	-0.54	1.53	0.00	-0.04	0.97	5.91	1.69
Interest	3.07	1.83	0.15	1.68	0.10	0.61	1.63
Value	1.72	2.07	0.11	0.83	0.41	0.31	3.24
R	0.302						
Adjusted R^2	0.06						
F-value	2.92				0.01		

Source SPSS output

The coefficient of Effort of the students is -2.959 with p-value = 0.062<0.1 and so, the coefficient of effort is statistically significant at 10% level on the average statistics mark. However the coefficients of Cognitive, Difficult, and Value are not significant at even 10% level. But the coefficient Affect is 4.063 with p-value = 0.02<0.05 and so, the coefficient of Affect is statistically significant at 5% level. Moreover, the coefficient of Interest is 3.07 with p-value 0.096 <0.1 and so, the coefficient of Interest is significant at 10% level. It can be concluded that the effort is negatively correlated on average Basic Statistics mark, although the Affect and Interest are positively correlated on average Basic Statistics mark. The VIF value of each variable is not exceeding 10 and this mean that there is no autocorrelation between the independent variables.

Conclusion and Discussion

According to the results, 63.7% of the students claimed to have spent less than twenty hours per week on the internet and 36.3% of the students claimed to have above twenty hours per week on the internet. There is association between time spent using internet per week and major specialization students at 5% level of significance.

It was found that the average and standard deviation of the matriculation Mathematics mark is 68.91 and 7.31 marks respectively. It was observed that the average and standard deviation of Basic Statistics mark is 69.53 and 9.29 marks respectively in this study. There is statistically significant between Mathematics mark that the students gained in the matriculation exam and average final Basic Statistics mark at 5% level.

According to the results of correlation coefficients, there is statistically significant between Mathematics mark that the students gained in the matriculation exam and average final Basic Statistics grade at 5% significance level, the correlation coefficient is 0.16. It can be concluded that mathematics mark gained by the students in the matriculation exam increase, the statistics average that they received will also increase.

Based on the results of this study, Based on the research of the study, several recommendations can be made for the analyzing of the statistics teaching methods and there can be found that there is a statistically significant relationship between average statistics mark and students'

mathematics skill, and next there can be found that statistically significant between average statistics mark of students and Survey Attitude towards Statistics (SATS). These results found that there is significant positively relationship between average statistics mark and affect and interest of the students toward statistics but negatively relationship with the subscale of the effort. This study helps understanding of the theoretical information of STATS toward the students. For the another study, this study suggest that to collected more sample to determine whether other variables in the SATS will effect to the students' achievement in basic statistics courses.

Acknowledgements

I wish to express my deepest gratitude and heartfelt thanks to Professor Dr. Soe Win, Rector of Monywa University of Economics, and Professor Dr. Ni Ni Aung, Pro-Rector of Monywa University of Economics for giving me opportunity to do this study. I would like to express my thanks to Dr. Kyaing Kyaing Thet, Professor & Head, Department of Statistics, Monywa University of Economics, for her comments and suggestions. I am also very grateful to all my colleagues at the Department of Statistics for their kind cooperation and to all teachers and students involved in this study.

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The Effect of Foreign Direct Investment on Economic Growth of Myanmar

Win Nge Lay[1] & Sein Sein Aye[2]

Abstract

This study attempts to investigate the effect of Myanmar economy using foreign direct investment and inflation rate on real gross domestic product. The required data are obtained from Statistical Year Book and World Economic Outlook Database (2016) over the year (1990/91 to 2015/16). The based period of gross domestic product is shifted into (2000/01) constant prices. Augmented Dickey- Fuller test is performed prior to Autoregressive Distributed Lag Model. The results indicate that all the level values of foreign direct investment, inflation rate and real gross domestic product are stationary. Based on the results of Autoregressive Distributed Lag model, foreign direct investment inflows and inflation rate have long run and statistical significant impact on economic growth of Myanmar. Therefore, Myanmar should take managing foreign direct investment as a priority in order to attain high-quality investment in all sectors and parts of the country.

Keywords: Augmented Dickey-Fuller Unit Root Test, Multiple Regression Analysis, Autoregressive Distributed Lag Model

Introduction

Most countries strive to attract foreign direct investment as a tool of economic development due to its acknowledged advantages. Foreign direct investment of a country is essential to improve a country's economic development for many reasons. The key determinant of sustained economic growth is regarded as the level of investment of a country.

One of the core features of globalization and the world economy over the past two decades is Foreign direct investment. As a source of capital, most developing countries were starting to look to foreign direct investment when flows of official development assistance (ODA) declined sharply in the 1990s. Foreign direct investment is vital to improve the capacity of the host country in responding to the opportunities given by global economic integration.

1 Master, Statistics Majoring.
2 Lecture, Department of Statistics, Monywa University of Economics.

Myanmar, one of the 13 least developed countries (LDCs) in Asia and the Pacific is enormously rich in natural resources, and it possesses young workforce, and it is close to the world's most dynamic trading economics, including China and India. Myanmar starts to rebuild its trade and investment links with the region and the global economy.

Myanmar had been undertaking economic reforms since 1988. From that time on, the country has officially adopted market-oriented economy and welcomed foreign direct investment inflow. Soon after the adoption of a market-oriented economy, Myanmar foreign Investment Law was promulgated on 30 November 1988 and Myanmar Foreign Investment Commission was formed on 7 December 1988. Myanmar fully recognizes the advantages of foreign direct investment for its economic development. As a result, the government has been actively encouraging foreign direct investment in Myanmar.

Objectives of the Study

The main objectives of the study are

(1) To investigate the effect of foreign direct investment on economic growth in Myanmar.

(2) To examine the impact of inflation rate on economic growth in Myanmar.

Methods of Study

In this paper, secondary data were used for analysis over the period from 1990-1991 to 2015-2016. Autoregressive Distributed Lag Model is constructed to investigate the impacts of foreign direct investment and inflation rate on real gross domestic product. Augmented Dickey-Fuller test is performed for the stationarity of the data and Jarque-Bera test is used to analyze the normality assumption of the residual series.

Scope and Limitations of the Study

The based period of gross domestic product is shifted into (2000-01) constant price. A real value of gross domestic product is a proxy for economic growth of Myanmar. Due to the problem of autocorrelation and level stationarity of all the data series, Autoregressive Distributed Lag Model is constructed.

Methodology

Identification of the Model

The model between linear and log-linear model is identified by using Mackinnon, White and Davidson (MWD) test on multiple regression equations.

$$Y_t = \alpha_0 + \alpha_1 X_{1t} + \alpha_2 X_{2t} + \alpha_3 X_{3t} + \mu_t \quad (1)$$

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \mu_t \quad (2)$$

Jarque - Bera (JB) Test of Normality

The Jarque - Bera test of normality is based on the ordinary least square residuals. This test first computes the skewness and kurtosis, which measures of the ordinary least square residuals and can be used the following test statistic:

$$JB = n[\frac{s^2}{6} + \frac{(k-3)^2}{24}] \quad (3)$$

where n = sample size, S = skewness coefficient, and K = kurtosis coefficient. Therefore, the Jarque - Bera test of normality is a test of the joint hypothesis that S and K are 0 and 3 respectively. In that case the value of the Jarque - Bera statistic is expected to be 0.

Under the null hypothesis that the residuals are normally distributed, Jarque and Bera showed that asymptotically the Jarque - Bera statistic follows the Chi- Square distribution with 2 df. If the computed p value of the Jarque - Bera statistic is sufficiently low, the null hypothesis that residuals are normally distributed can be rejected. Otherwise, if the p value is reasonably high, the null hypothesis cannot be rejected.

Results and Findings

Model Identification of Linear and Log-Linear Multiple Regression Equations

The result of identification model based on (MWD) test on multiple regression equation:

RGDP =1207596.934+ 23.029FDI+ 9853.442INF- 442945.843Z_1 (4)

S.e	(20.191)	(293.386)	(491949.044)
t- ratio	(1.141)	(33.585)	(-0.900)

According the above result, it is found that absolute terms the t-ratio of Z_1 coefficient (-0.900) is not greater than the critical values. Therefore, null hypothesis of a linear regression model cannot be rejected at conventional level of significance. To conduct confirmation test to log-linear equation on (MWD) test is the next step.

Ln RGDP = 12.611+ 0.040 LnFDI+ 0.432 Ln INF-0.0019Z_2 (5)

S. e	(0.009)	(0.014)	(0.000)
t- ratio	(4.395)	(31.621)	(-7.501)

According the above result, it is found that absolute terms the t ratio of Z_2 coefficient (-7.501) is greater than the critical values. Therefore, alternative hypothesis of a log-linear regression model can be rejected at conventional level of significance. Thus, it can be assumed that linear regression model is the true model for this study.

Graphical Presentation on Normality of the Disturbances

(a) The follows are normality assumption of the disturbances from the simple regression equation of real gross domestic product on foreign direct investment.

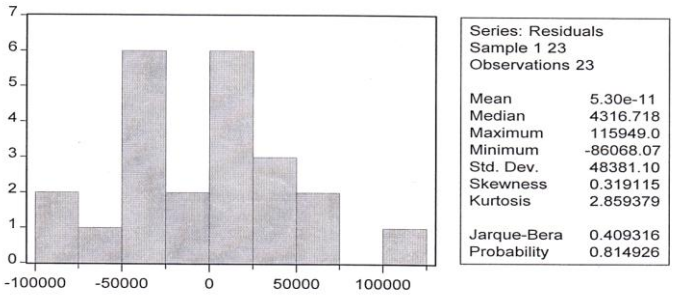

Figure 1. Normal Curve Showing the Residual of Real Gross Domestic Product on Foreign Direct Investment

According the figure (1), it is found that p value is fairly high. Thus, it cannot be rejected the fact that the null hypothesis of residuals series are normally distributed.

(b) The normality assumption of the disturbances from the simple regression equation of real gross domestic product on inflation rate show in follow figure:

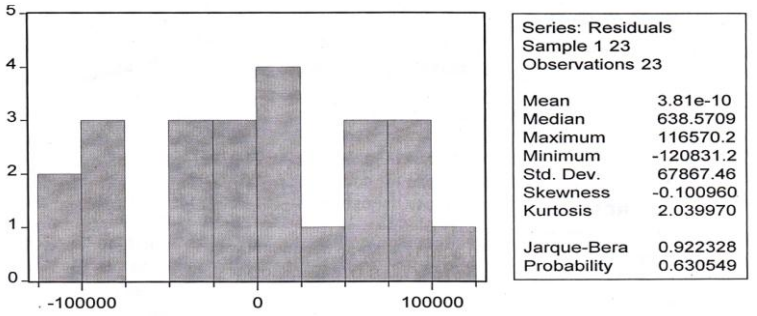

Figure 2. Normal Curve Showing the Residual of Real Gross Domestic Product on Inflation Rate

According the figure (2), it is found that the p value is fairly high. Thus, it cannot be rejected the fact that the null hypothesis of residuals series are normally distributed.

Results of Testing for Unit Root

Testing for unit root is a test is a test in which the data series are stationary or non-stationary. Augmented Dickey- Fuller test is used to perform this test. The results are shown in Table (1).

Table 1. Results of Unit Root Test on Real Gross Domestic Product, Foreign Direct Investment and Inflation Rate

H_0: The observe series are non- stationary.

Variable	Test Type(c , p)	ADF-statistics	Decision
RGDP	(1, 0)	9.643	Reject H_0
	(1, 1)	1.349	Do not Reject H_0
	(1, 2)	0.893	Do not Reject H_0
FDI	(1, 0)	-3.630	Reject H_0
	(1, 1)	-2.627	Do not Reject H_0
	(1, 2)	-1.842	Do not Reject H_0
INF	(1, 0)	2.369	Do not Reject H_0
	(1, 1)	0.328	Do not Reject H_0
	(1, 2)	1.574	Do not RejectH_0

Note: test type (c, p), where c denotes drift term, p denotes lag length, the 99%
critical value for Augmented Distributed Lag test is -3.753, 95% is-2.998 and 90% is -2.639.

According to Table (1), it is stated by the result of Augmented Dickey- Fuller test that the level values of all the data series are stationary at lag length (0), (1) and (2) for 99%, 95% and 90% respectively. Thus, the data series are all level stationary.

Results of Autoregressive Distributed Lag (ADL) Model

The optimal lag length is chosen to conduct the Autoregressive Distributed Lag test by using sequential modified LR test statistic; Final prediction error, Akaike information criterion, Schwarz information

criterion and Hannan- Quinn information criterion are used. As shown in Table (2), all criterions suggest lag length two as the optimal lag length for the two models.

Table 2. Lag Length Criterion for Autoregressive Distributed Lag (ADL) Model

Lag	LR	FPE	AIC	SC	HQ
0	NA	14217776.83	43.03174	43.13048	43.05657
1	148.4071	628227.0167	35.95921	36.25542	36.03370
2	27.86340*	704728.2468*	34.75907*	35.25276*	34.88323*

*indicates lag order selected by the criterion

(a) in Equation (6), the results of Autoregressive Distributed Lag model for real gross domestic product on foreign direct investment:

$$\Delta RGDP_t = 28982.05 + 0.8074\Delta RGDP_{t-1} + + 13.7292\Delta FDI_t - 3.7087\Delta FDI_{t-1}$$

S.e (22234.9) (0.1352) (5.4500) (3.9910)

$$+0.0262 RGDP_{t-1} - 16.1787 FDI_t \quad (6)$$

(0.0143) (7.2112)

$R^2 = 0.9618$ DW=1.9288 LM=0.2923

By Equation (6), it is indicated by the result of Breusch-Godfrcy Serial Correlation (LM) test and Durbin Watson Statistic indicate that there is no serial correlation among the residual series. The coefficient of first different series ΔFDI_t is statistically significance. It means that the increase expected real gross domestic product by 13.729 on an average is caused by 1unit increases in foreign direct investment. The long run multiplier of real gross domestic product changing to foreign direct investment is 617.5076 {this value arrived at through calculating the expression of [-(-16.1787/0.0262)]}. It indicates the expected real gross domestic product will be increased 617.5076 units on an average if foreign direct investment increases on one unit in the long run.

(b) in Equation (7), it is described the results of Autoregressive Distributed Lag model for real gross domestic product on inflation rate:

$$\Delta RGDP_t = 211092.6 + 0.0840\Delta RGDP_{t-1} + 3814.101\Delta INF_t - 382.6864\Delta INF_{t-1}$$

S.e (144683.9) (0.3215) (1741.290) (1305.864)

$$+0.2352RGDP_{t-1} - 1871.177INF_t - 0.1114\Delta RGDP_{t-2} + 4041.876\Delta INF_{t-2} \quad (7)$$

(0.1138) (1092.333) (0.2584)

(1725.796)

R^2= 0.9269 DW=1.5587 LM=0.0289

Based on Equation (7), it is indicated by the result of Breusch - Godfrcy Serial Correlation (LM) test and Durbin Watson Statistic that there is no serial correlation among the residual series. The coefficient of first different series ΔINF_t is statistically significance. It means that the increase of the expected real value of real gross domestic product is caused by 3814.101 on an average 1unit increases in inflation rate. The long run multiplier of real gross domestic product changing to inflation rate is 7955.1772 {this value arrived at through calculating the expression of [-(-1871.1770/0.2352)]}. It indicates the expected real gross domestic product will be increased 7955 units if inflation rate increases on one unit in the long run.

Conclusion and Discussions

According the result, the linear regression model in model identification of linear and log-linear multiple regression equations are the true models. The results of normality test, the residuals of normally distributed for real gross domestic product on foreign direct investment and real gross domestic product on inflation. Augmented Dicker- Fuller unit root test is used to test the data series are stationary. According to the results, it can be seen that the level values of all the data series are stationary. Based on the result of Autoregressive Distributed Lag model, economic growth of Myanmar has been statistically significant impact by foreign direct investment and inflation rate and they have long run economic growth of Myanmar. Thus, foreign direct investment and inflation rate can be considered as the important factors affecting economic growth of Myanmar. This study concludes foreign direct investment and inflation rate have long run and positive impact of economic growth in Myanmar. Thus, the economic growth activities and other sides in the country is being provided by encouraging and promoting of foreign direct investment and inflation rate.

The continuously implementation of foreign investment law should be taken by government and it should also act the law effectively and should always give priority to be achieved macroeconomic stability in order to come more foreign investment of country for national economic growth and development in the future.

Acknowledgement

First and foremost, I would like to express my deepest gratitude and heartfelt thanks to Professor Dr. Soe Win, Rector of Monywa university of Economics and Dr. Ni Ni Aung, Pro-rector Monywa university of Economics for giving me opportunity to write this research paper. I would like to express my grateful thanks to Dr. Kyaing Kyaing Thet, Professor and Head, Department of Statistics and Dr. Myint Moe Moe Khin, Professor, Department of statistics, for their kindness to give me permission to write this research paper. I would also like to express my sincere gratitude to all of those who supported my research paper in different ways.

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A Study on Demographic Transition in South-East Asian Countries (1990 - 2015)

Aye Thet Mon[1] & Win Mar[2]

Abstract

In this research paper, the levels and trends of demographic transition are classified the types of CBR and CDR and stages of TFR and LE. According to the results, Myanmar was the early stage of transition, belonging to type C during the starting period. But in 2010-15, Myanmar reached to the completed stage of transition, belonging to type A. Moreover, the extent of completion of demographic transition is calculated based on TFR and LE. Based on finding, the extent of the demographic transition can be seen in Brunei, Cambodia, Indonesia, Laos, Myanmar could not reach to the completed demographic transition whereas Brunei, Thailand and Vietnam were nearly reached to the completed stage of demographic transition.

Keywords: Demographic Transition, Crude Birth Rate, Crude Death Rate, Total Fertility Rate, Life Expectancy,

Introduction

The changes in the size and growth of population are main parts of the demographic transition. The improvement in human population growth at the beginning of the shift from high to low mortality rate and from high to low fertility rate that is known as the demographic transition. This transformation is of worldwide significance because South-East Asia is home to 1.6 billion people in 2018-roughly one third of the world population of 7.6 billion (United Nations 2011).Because of very rapid growth during the last half of the 20th century, the population of South-East Asia increased almost three-fold from 1950 to 2010.

Demographic transition is the transition from high birth and death rates to lower birth and death rates as a country or region develops from a pre-industrial to an industrialized economic system. Today, in more developed countries a demographic transition from high fertility level and mortality level to low fertility and mortality can more rapidly change than

[1] M.Eon (Stats), Monywa University of Economics
[2] Lecturer, Department of Statistics, Monywa University of Economics

in less developed countries. Fertility and mortality decline has changed the South-East Asia population transition over the later period of the last century. Most South-East Asian countries, except for a few in South and West Asia, are well along their demographic transition from conditions of high mortality and fertility to low mortality and fertility. In the first decade of the 21st century, below-replacement levels of fertility (TFR less than 2.1) are universal in East Asia, and are evident in some surprising places, including Vietnam, Myanmar, and Iran. The population of South-East Asia is growing with a growth rate of approximately 2 percent. South-East Asian countries pass through the various stages of the transition, population growth from natural increase (birth rate minus death rate) and decline depending on the gap between the birth rate and death rates. This transition provides a useful framework for assessing demographic trends and projecting future population size. Therefore, demographic transition for South-East Asian countries are studied in this study.

Objectives of the Study

The objectives of the study are as followed:

(i) to identify the types and stages of demographic transition,

(ii) to examine the extent of completion of demographic transition and

(iii) to find out Myanmar demographic transition with other South-East Asian countries.

Method of Study

In this thesis, an attempt has been made a descriptive analysis and demographic analysis using secondary data from World Population Prospects, 2017. The study period is used from 1990 to 2015.

Review on Related Literatures: Demographic Transition In South-East Asian Countries (1990 - 2015)

Dyson (2011) stated that the key benefits of the demographic transition for women related to the reduction in fertility. The researcher argues that "in pre-transitional circumstances, with an average of five or six live births per woman per reproductive lifetime, the related facts of

pregnancy, lactation, and childcare dominate women's – much shorter – lives.

Andrew Mason (2005) studied "Demographic transition and demographic dividends in developed and developing countries". This paper presents a formal approach to quantifying the two demographic dividends drawing on a recent paper by Mason and Lee (forthcoming).

V Bhaskar (2015) studied "The demographic transition and the position of Women: A marriage market perspective". The present international evidence on the marriage market implications of cohort size growth, and set out a theoretical model of how marriage markets adjust to imbalances. The paper focuses on one implication of the demographic transition, for the marriage market and for the consequent position of women.

Theoretical Background and Causes of Demographic Transition

Stages and phase of demographic transition, pattern of demographic transition classified by CBR and CDR, pattern of demographic transition classified by TFR and life expectancy and Extent of completion of demographic transition are described.

Stages and Phases of Demographic Transition

According to the theory of demographic transition, a country has to pass through the following stages of population growth.

Stage 1 – A relatively static population with high fertility and high mortality.

Stage 2 – A rapid population growth that is based on continuing high fertility and falling mortality.

Stage 3 – A relatively static population that is based on a new balance between low fertility and low mortality.

Stage 4 – A relatively low population growth with below-replacement level fertility and low mortality.

Stage 5 – The declining rate of population with an excess level of mortality over fertility.

There are five phases of demographic transition. They are shown in the following Table (1)

Table 1. Five Phases of Demographic Transition

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

Types of Demographic Transition Classified by CBR and CDR

The progress in a demographic transition based on the combination of level of crude birth rates and crude death rates can be classified into the following seven types:

Type A – low crude birth rate (< 20 per 1000) combined with low crude death rate (< 10 per 1000).

Type B – median crude birth rate(≥ 20 and < 40 per 1000) combined with low crude death rate (<10 per 1000).

Type C – median crude birth rate(≥20 and < 40 per 1000) combined with median crude death rate (≥ 10 and < 20 per 1000).

Type D – high crude birth rate (≥ 40 per 1000) combined with median crude death rate (between ≥10 and < 20 per 1000).

Type E – igh crude birth rate (≥ 40 per 1000) combined with high crude death rate (≥ 20 per 1000).

Type F – high crude birth rate (≥40 per 1000) combined with low crude death rate (<10 per 1000).

Type G – median crude birth rate (≥20 and < 40 per 1000) combined with high crude death rate (≥20 per 1000).

Table (2) shows difference stages of demographic transition.

Table 2. Types of Demographic Transition Based on CBR and CDR

CBR (per 1000)	**CDR (per 1000)**	**Type**	**Stages of Demographic Transition**
CBR < 20	CDR < 10	A	Completed stage of transition
20 ≥CBR <40	CDR < 10	B	Later stage of transition
20 ≥ CBR <40	10≥CDR < 20	C	Early stage of transition
CBR ≥40	10 ≥ CDR <20	D	Initial early stage of transition
CBR≥40	CDR≥20	E	Indefinable stage of transition
CBR≥40	CDR < 10	F	Indefinable stage of transition
20 ≥ CBR < 40	CDR≥20	G	Indefinable stage of transition

Stages of Demographic Transition Classified by Total Fertility Rate (TFR) and Life Expectancy (LE)

The pattern of demographic transition is broken into four stages according to the combination of TFR and LE (e_0). The four stages are shown below:

First stage (11) – Mortality and fertility rates are still high.

Life expectancy at birth is less than 45 years and total fertility rate is higher than '6'. The number (11) means that during this stage, fertility is at level '1' and mortality is also at level '1'.

Second stage (22) – Mortality and fertility rates begin to decline.

Life expectancy at birth is between 45 and 55 years and total fertility rate is between 4.5 and 6. The number (22) means that fertility and mortality are both at level 2.

Third stage (33) - The decline of mortality and fertility rates accelerate.

Life expectancy at birth is between 55 and 65 years and total fertility rate is between 3 and 4.5. The number (33) means that fertility and mortality are both at level 3.

Fourth stage (44) – low mortality and fertility rates had reached. Life expectancy at birth is over 65 years, and total fertility rate is below 3. The

number (44) means that fertility and mortality are both at level 4. The four stages of demographic transition are shown in Table (3)

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

TFR	**Life Expectancy (e_0)**	**Stages**
TFR >6	$\mathbf{e_0}$< 45	11
4.5 < TFR <6	45 <$\mathbf{e_0}$<55	22
3 < TFR< 4.5	55 <$\mathbf{e_0}$<65	33
TFR < 3	$\mathbf{e_0}$ > 65	44

Extent of Completion of Demographic Transition

Comparing the current TFR and life expectancy can indicate the extent to which a country has completed various stages of demographic transition. According to UNICEF, The State of World's Children 2016, the highest approximate level of TFR was 6.4 (Somalla) and the lowest TFR was 1.2 (Singapore), and the highest life expectancy was 80 (Japan) and the lowest was 49 (Swaziland) in 2015. For low mortality country, the replacement level of fertility is defined as about 2.1. The completion of demographic transition involves changes in TFR between the maximum rate and replacement level, and life expectancy with respect to the limit between the maximum rate and minimum rate. A simple average of differences between the current and maximum rate of TFR as well the maximum value of expressed as a percentage of the total change. The following formula used is in computing for the extent of the completion of demographic transition.

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

Finding

Analysis of Fertility and Mortality Trends

According to the United Nation's Estimates and Projections, CBRs, CDRs, TFRs and LEs for South-East Asian countries can be observed by five-year intervals. A trend of CBR, CDR, TFR and LEs are shown in Tables (4) and (5) from 1990-1995 to 2010-2015.

Table 4. Levels and Trends of CBR and CDR in South-East Asian Countries

Country	1990-95		1995-2000		2000-05		2005-10		2010-15	
	CDR	CBR	CDR	CBR	CDR	CBR	CBR	CDR	CDR	CBR
Brunei	3.5	28.1	3.1	23.9	3.0	21.9	3.1	20.1	3.4	18.2
Cambodia	11.6	40.3	10.2	30.3	9.1	25.1	8.3	23.3	7.8	21.6
Indonesia	8.1	24.5	7.6	21.9	7.4	21.0	7.2	19.1	6.8	17.4
Laos	11.9	40.0	9.4	33.6	7.9	27.8	6.6	24.1	6.1	21.8
Malaysia	5.0	27.5	4.7	25.3	4.6	23.1	4.7	20.9	4.7	19.8
Myanmar	10.3	25.0	9.3	22.3	8.9	19.3	8.9	17.9	8.3	16.7
Philippines	6.4	31.8	6.1	30.2	6.0	29.0	4.9	25.9	5.7	24.5
Singapore	4.3	18.7	4.4	14.4	4.6	10.2	4.6	8.9	5.1	9.5
Thailand	5.4	18.0	6.4	15.6	6.6	14.1	7.2	12.9	7.6	11.5
Timor	15.9	44.5	12.9	46.1	10.0	40.4	8.7	39.4	7.7	37.6
Vietnam	6.9	27.3	5.8	19.0	5.3	17.2	5.2	17.2	5.2	15.9

Source: UN, World Population Prospects, The 2017 Revision Volume: 1

Table (4) show that CBR in South-East Asian Countries were observed over 20 except Singapore for the period of 1990-95. The CBR of all South-East Asian countries has declined in 2000s except Timor-Leste. It had continuous declined the period of 2005-10. At the end of the study period, 2010-15, Timor-Leste has the highest CBR of 37.6 while Singapore posses the lowest CBR of 9.5. The CBR of Myanmar, Brunei, Indonesia and Vietnam were nearly the same in this period. In addition, table (4) shows the change of CDR in South-East Asian countries from 1990s to 2010s. The CDR was about between 3 and 16 in 1990s. The decline in CDR was less than 10 except Cambodia, Laos, Myanmar and Timor-Leste. After 2005s, CDR was less than 10 in all Asian countries. Among these countries, Brunei was found to be the lowest and Myanmar was found to be the highest, the period 2010-15.

Table 5. Levels and Trends of TFR and LE in South-East Asian Countries

Country	**1990-95**		**1995-2000**		**2000-05**		**2005-10**		**2010-15**	
	LE	**TFR**	**LE**	**TFR**	**LE**	**TFR**	**LE**	**TFR**	**LE**	**TFR**
Brunei	74.2	3.28	75.5	2.60	76.7	2.28	77.5	2.11	78.2	1.98
Cambodia	55.8	5.44	56.8	4.31	58.8	3.41	61.5	2.80	63.7	2.42
Indonesia	63.1	2.90	64.9	2.55	66.4	2.38	67.9	2.19	70.0	2.06
Laos	56.3	5.88	60.0	4.81	62.8	3.70	66.1	3.02	67.9	2.54
Malaysia	70.6	3.42	71.6	3.17	72.5	2.96	73.4	2.72	74.6	2.57
Myanmar	58.8	3.10	61.2	2.65	62.4	2.25	63.5	2.08	66.0	1.94
Philippines	65.6	4.14	66.4	3.90	67.1	3.70	67.8	3.27	69.2	3.05
Singapore	76.8	1.84	78.0	1.57	79.4	1.32	80.6	1.25	81.3	1.37
Thailand	72.3	1.99	72.2	1.77	72.9	1.68	73.6	1.63	74.4	1.53
Timor	48.6	5.68	53.8	7.00	58.2	6.96	60.8	6.53	63.1	5.92
Vietnam	67.9	3.23	70.7	2.18	73.1	1.93	74.3	1.89	75.5	1.75

Source: UN, World Population Prospects, The 2017 Revision Volume: 1

Tables (5) indicated that in all South-East Asian countries, TFR was about nearly 6 in Cambodia, Laos and Timor-Leste in 1990s. After 2000s, TFR was declined into about 3 except Timor-Leste. In this period, Singapore, Thailand and Vietnam were lower than TFRs of replacement level. During at the end of the period, Cambodia, Laos, Malaysia, Philippines and Timor-Leste were higher than replacement level and other countries were lower than replacement level. In addition, table (5) express the life expectancies for South-East Asian countries over the period 1990-95 to 2010-15. At the beginning of the study period Singapore was the highest life expectancy and Timor-Leste was the lowest life expectancy. In this period, Brunei, Malaysia and Thailand were nearly the same pattern of Singapore. Then the continuously increase could be found until 2010s. At the end of period, life expectancies of all South-East Asian countries were above 60 year.

Conclusion

Discussions

In many developing countries, the demographic transition began in the middle of the 20th century and changes have taken place over a period of just decades. Today, many developing countries particularly in Asia has low fertility and mortality rates and population growth is slowing. Fertility and mortality data are not only important indicators of demographic transitions but also social and health conditions of a nation.

In this research paper, the patterns of demographic transition in South-East Asian countries were analyzed by CBR and CDR, TFR and LE. Moreover, the extent of demographic transition is calculated by TFR and LE. Based on findings, Singapore and Thailand were low CBR and low CDR (Type A) during the period 1990-95. In this period, Brunei, Indonesia, Malaysia, Philippines and Vietnam were median CBR and low CDR (Type B). Myanmar was median CBR and median CDR. The remaining countries, Cambodia, Laos and Timor-Leste were high CBR and median CDR (Type E). At the end of the period, all studying countries were low CBR and low CDR (Type A) except Cambodia, Laos, Philippines and Timor-Leste. Myanmar reached the completed stage of demographic transition in that time.

Moreover, the stages of demographic transition based on TFR and LE are studied. According to the results, Singapore and Thailand were low fertility and mortality rates during the beginning of the period 1990-95. During the end of study period, all South-East Asian countries were low fertility and low mortality rates except Cambodia, Philippines and Timor-Leste.

Furthermore, the extent of the completion of demographic transition is calculated based on TFR and LE. According to findings, Singapore reached to the nearly completed stages of demographic transition in 1990-95. The lowest extent of completion of demographic transition can be seen in Timor-Leste at that time. At the end of study period, Brunei, Thailand and Vietnam were nearly reached to the completed stage of demographic transition. Myanmar, Laos and Philippines could not reach to the completed demographic transition but Singapore reach to the fifth stage demographic transition at the same period.

Recommendations

Population growth and socio-economic development are very closely related. In an over-populated country where economic development is low and resources are limited, a change in the size and structure of population could have serious impact on standard of living and quality of life. In most developing countries, mortality has fallen but it is not followed by fertility. Major factors that could produce a decline in fertility are female's education and female's labor force participation. Decline in fertility and mortality occurred for slowed population growth and improvements in the standard of living of families.

Acknowledgements

First and foremost, I would like to express my deepest gratitude and heartfelt thanks to Professor Dr. Soe Win, Rector of Monywa University of Economics and Dr. Ni Ni Aung, Pro-rector of Monywa University of Economics for giving me opportunity to write this research.

I would like to express my grateful thanks to Dr. Kyaing Kyaing Thet, Professor and Head, Department of Statistics and Dr. Myint Moe Moe Khin, Professor, Department of Statistics, Monywa University of Economics for their kindness.

I would like to express my thanks to Dr. Phyu Phyu Khaing, Professor and Head, Department of Statistics, Meiktila University of Economics, for her valuable suggestions and comments.

I would like to express my sincere thanks to Daw Khin Nu Win, Lecturer, Department of Statistics, Yangon University of Economics, for her good suggestions and comments on the perspective of this research paper.

Finally, I also truly express my thanks to my family for their unconditional love, sustained support and encouragement in my life.

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