ASSESSING SERVICE QUALITY AND THE CHALLENGES IN THE MALDIVES RESORT HOTEL

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ABSTRACT

The objective of this research is to assess the employee's service quality in the Maldives resort hotels and to identify areas of performance improvement. In order to assess the service Quality performance only measures SERVPERF approach were applied. From this research it can be concluded that the overall quality of the service provided in the Maldives is good and can be further improved. The main challenges identified by the industry managers was the high staff turnover, further research is required to understand this issue. The major issues related to employees competency and job commitment improvement can be resolved through collaborative work by the hotel industry and hospitality educational institutes. The main issues related to high employee's turnover could be improved by providing career guidance and hotel industry cooperation among the hotel. This research had identified the key perimeter that the relevant stakeholders had work to improve the level of services provided to the guests in the Maldives resort hotels.

Keywords: Maldives, Service Quality, Resort Hotels. Performance, Challenges

INTRODUCTION

The paper assess the current Maldives human resources status in the tourism industry and measure the service quality of the employees in the resort hotels. The Service quality Assessments in the paper can be used as a guideline for interested stakeholders. The purpose of this analysis is to provide comprehensive up to date information of the human resources challenges that Maldives faces. Most concerning aspect in Maldives the lack of skilled man-power shortage. This can lead to negative socio-cultural impact in the future. The solution is far more complex, and this needs to be discussed in multi-sectorial level. However, the training needed for the tourism sector should be identified, necessary institutions for delivering tourism workforce should be developed, and importance of women participation in the tourism industry should be highlighted at national level.

Maldives is located in the South West of Sri Lanka on the equator. A total of 1192 islands are spread over 26 atolls with an area of 115,300 Km^2 (including the sea with in the territorial area), 99 % is covered by water. An Atoll is a ring of islands occurring together and each atoll is an administrative division. Out of this, 199 islands are inhabited, 866 uninhabited and 127 are exclusive resort islands.

The government is unitary. Planning, funding and infrastructure development for atolls are conducted in Male, the capital city. Dhivehi is the official language of Maldives; however English is widely spoken, since schools follow the British system of education.

The climate is warm and humid with an average daily temperature around 29- 32 degrees Celsius, annual rainfall of 1847 millimeters and 7.65 hours of sunshine per day.

The country has a population of 389480, out of which 87000 are economically active. (Census 2014). Maldives economy has traditionally been reliant on fishing and agriculture. Today the main industry in Maldives is Tourism. From 97000 economically active populations, 38000 are employed by the government, 54000 in the private sector. Employment in the hotel sector consists of 17326 locals and 11674 expatriates. Considering the other tourism businesses and multiplier effects, the tourism industry is likely responsible for over 29000 jobs. As the largest industry and longest employer, tourism contributes to the economic well-being of the country. It is quite evident, that tourism is the base or the core of the Maldives industries, due to the fact that the rest of the industries directly or indirectly depend on tourism.

Tourism in Maldives was in exploring stage in 1972, when an Italian enthusiast Mr. George Cabin started tourism with some Maldivian partners in Vihamanaafusi Island. Destination life cycle model (Buhalis, 2000) explains the stages of development as exploration, involvement, development, consolidation, stagnation, rejuvenation and decline and currently the Maldives is in development stage.

OBJECTIVE

The objective of this research is to assess the employee's service quality in the Maldives resort hotels and to identify areas of performance improvement.

LITERATURE REVIEW

Service Quality

As a concept, quality has been in organisations for centuries, only recently it has been engaged as a formal management function and the discipline is still evolving (Haksever et al, 2003). Tourism industry has witnessed a tremendous change in the recent years and in order to adapt to these changers and businesses are looking for ways to improve their operations performance and capabilities (Atilgan et al, 2003). Service quality (SQ) is believed to be one of the factor which could increase the profitability of an operation and gives a considerable competitive edge (Slack, et al 2004 and Wild, 2003). Several authors believe that quality is not only a strong competitive advantage for organisation; it simply is the recipe for being in the business and the cause for survival (Haksever et al, 2003). Authors justify why SQ is essential for survival for below reasons:

High customer share – Quality is a vital ingredient of customer satisfaction and high satisfaction leads to loyal customers; Higher Market Share - Loyal customers provide a solid platform for the organisation and new customers are attracted by their word-of-mouth advertising which leads to a larger market share for the organisation; Loyal Employees – When superior quality services are provided its employees take pride in their work and gain high level of satisfaction from their jobs. Satisfied employees tend to be loyal and productive. Lower costs – Superior quality means doing things right from the first time, which leads to less money spend to correct this mistakes or compensate dissatisfied customers.

Less vulnerability to price competition – Companies such as Hilton Maldives Resort, known for their superior brand for their superior quality of service can usually charge premium prices because they offer better quality. Consequently, they usually do not have to compete on the basis of price.

Regardless of the authors justification, many authors argued that relationship between service quality and customer loyalty remains unclear but they agree that it is an important determinant of SQ (Gremler and Brown, 1995 – cited in Bloemer et al, 1999, p.1082).

Service quality measurement

There has been considerable amount of studies carried out to measure service quality (Davies et al, 1999) regardless of an exact measurement tool is unclear (Seth et al,2005 and Dedeke, 2003). To identify a perfect

measurement instrument for SQ is challenging, since different criteria's are used by different customer groups to evaluate service, and can vary depending on the situation and the circumstances (Eccles et al, 1997). Some of the studies to investigate SQ includes hotels (Claver et al, 2006), hospitals (Winiewski et al, 2005), construction companies (Holey, 2000), universities (Anderson, 1996), airlines (Zaid, 1995) and local government (Donnelly et al, 1995). Authors of the above researches are based on a measurement conceptual analysis and a theoretical model to show the relationship that exists between different variables. Some of the SQ conceptual models developed are explained below:

Technical and functional quality model (Grönroos, 1984)

According to author, a firm in order to compete successfully it must have an understanding of consumer perception of quality and the way service quality is influenced. To manage perceive service quality, firm has to match the expected service and perceive service to each other so that customer satisfaction is achieved. The author identified three component of service quality as: technical quality, functional quality and image. Based on this concept a model was developed (see appendix A);

GAP model (Parasuraman et al, 1985)

Authors proposed that service quality (SQ) is a function of differences between
expectation and performance along the quality dimensions. A model (see appendix B) was developed based on gap analysis. The initial research was later refined with their representative scale named SERVQUAL for measuring SQ (Parasuraman, et al, 1988). In their year 1988 exploration the original ten dimensions were reduced to five, as: reliability, responsiveness, tangibility, assurance (communication, competence, credibility, courtesy and security) and empathy (RATER). SERVQUAL is conceptualised that customer assessment of SQ is based on the gap between what customers expect from the service provider and the customer's evaluation of the performance of the service provider (P-E). Then, they developed a 22 item instrument with which to measure customer expectations and perceptions on the five RATER dimensions. Four or five numbered items are used to measure each dimensions. The instrument is administered twice in different forms, first to measure expectations and second to measure perceptions;

Performance only model (Cronin and Taylor, 1992)

The authors had a study on service quality (SQ) concepts and measurement and its relationship with customer satisfaction and purchase intention and concluded perceptions only are better predictor of SQ. According to them, SQ can be conceptualised as "similar to an attitude" therefore can be operational zed by the adequacy – importance model (see appendix C). A SQ measurement instrument called SERVPERF was developed. The instrument was utilised with 22 item on five dimensions as SERVQUAL but with modification and performance only statements. The five dimensions and there definition were *reliability*: the service ability to deliver the promised service dependably and accurately; *responsiveness*: the service providers wiliness to help customers and provide prompt service; *assurance*: the service ability to inspire trust and confidence; *empathy*: the service aspect that stresses the treatment of customers as individuals; *tangible*: the service dimension that focuses on the elements that represent the service physically.

Concepts reliability and critics

SERVQUAL has been highly criticised by Buttle (1994) and Cronin and Taylor (1992).Buttle argues that SERVQUAL has many theoretical and operational shortfalls. According to the author, SERVQUAL is based on a disconfirmation paradigm rather than attitudinal paradigm; there is little evidence that customers assess service quality in terms of P-E gaps; five dimensions are not universal; four or five items can't capture the variability with in SQ dimensions and administrating the instrument twice causes boredom and confusion.

Buttles critics on aspects of SERVQUAL dimensions also reflects SERVPERF the SQ instrument of Cronin et al (1992), since it uses similar dimensions. As per Cronin and Taylor, conceptual advance in literature suggest that SERVQUAL measures neither service quality nor customer satisfaction (Cronin et al, 1994 – cited in Dedke, 2003, p.277). Cronin et al (1992) believes that SERVPERF measures performance better than any other measures of SQ, and it has greater predictive power. Although, Robinson (1999) challenges that there is no clear indication that "Performance only measures"(SERVPERF) provide a greater predictive power in measuring SQ. Despite the differences between SERVQUAL and SERVPERF, these two instruments share the same concept "perceived service quality" (see GAP model p.6 and performance model); base on these models it is clearly evident that service performance is an important factor in determining SQ.

METHODLOGY

To assess the service quality after the dive experience a mixed method had been employed. Two specific research instruments was used for primary data collection. These are one-to-one structured interview and administration of a qualitative survey instrument.

Qualitative research design

In order to conduct this research an initial services delivery observations were conducted in the resort hotels and few industry experts were consulted. This approach could give a clearer view of the service quality to assist the research design (Hannabuss, 1996).

The qualitative data collected from these interviews were analyzed and triangulated as a group with the some stakeholders to improve the reliability and validity of the analysis. Based on this process, a qualitative research instrument was developed and administered. In order to assess the service quality of the employees, 46 different Human Resources Managers (HRM) in the resort hotels' were interviewed. An absolute performance measure (SERVPERF) were taken to ascertain HRM's perception on the service quality of the employees in the resort hotels.

Research instrument and data analysis

The survey instruments (interviews and questionnaire) were based on the "performance only" paradigm (Cronin and Taylor, 1992), the questionnaire was modified to suite the resort hotels service. Similar adjustment had been made by other researchers and approves validity (Davies, Baron, Gear and Read, 1999).The adopted questionnaire were 27 questions instead of 22 as proposed by Cronin and Taylor (1992), since five extra statements are absolutely necessary in order to analyze the most important attribute of SQ for the Human Resources Managers. Some questionnaires were mailed to the Mangers and some were filled through telephone interviews due to their busy schedule. For each item respondents were asked to rate their perceptions from the service dimensions listed on five point Likert scale anchored at strongly agree and strongly disagree. Questionnaire also contained a part where respondents were asked to rate level of importance, on the dimensions similarly anchored from highly important and not important. The performance only paradigm clearly identifies, responsiveness, assurance, tangibles, empathy and reliability as customer determinants of service quality. Questionnaire also contained a section to analyze their demographic profiles in relation to service quality. Two open question were structured at the end of the questionnaire to assess the challenges they faced in the industry and to understand the level of support required from the hospitality and tourism institution. A pilot test was conducted to refine the research instrument. The sample size of the pilot test was 2. It was assumed that the observations and interviews during the research design process will minimize the pilot sample size.

Once the pilot test were completed 80 survey questionnaires were distributed to different HR managers and the questionnaires and the interviews were carried out within four weeks. All the survey questionnaires and

interviews were divided into five categories, tangibles, reliability, responsiveness, assurance and empathy. The HR mangers perception on five point Likert scale (strongly agree – strongly disagree) were coded and analyzed. A sum for the each range of were calculated and based on this a percentage were calculated.

The most important attribute were calculated by summing the different range of scales on five point Likert scale (highly important – not important) for each dimension. The dimension which customer states as the most as to be "highly important" will generally be the important attribute for the business, but in the event this outcome is not achieved a combination of the other scales were created to find a pattern. The qualitative data to analyze the key challenges in the industry were interpreted based on the interviews.

RESULTS

The employees performances were assessed based on the SERVPERF dimension and the following statements were used the asses the Service Quality. The following statements were categorized an analyzed

1- The employees has update industry and product Knowledge.
2- The employees are excellent in performing their job tasks.
3. The employees have excellent attitude
3- The employees have excellent attitude.
4- The employees have a well-groomed appearance.
5- The employees communication skills are excellent.
6- The employees are highly commited to work
7- Agreed duty times are are respected by the employees.
8- The employees are always ready to help the guests to solve a problem.
9- The activities and tasks are performed correctly at the first time.
10- The services are performed as promised.
11-The staffs will give exact time infromation on activities to the guests.
12- The employees are very efficient and effective
13- Staffs are always helpful to the guests.
14- Employees alaways take the time to help the guests.
15- Employes gives the feeling of confidence and security to guests.
16- The guest feel safe while on holiday.
17- The staffs are alwys friendly and smiling.
18- The employees have answers to all the guest questions.

19- Employees gives individual care.
20- Employees are available at all the time for guest services and inquieries.
21- The employees are interested and passionate about their job.
22- Employees take consideration of special wishes from the guests.

There are 5 points listed concerning the employees and service. We would like to know how important these points are to you when you judge the quality of the service provided by the employees.

1-The pysical appearence of the employees

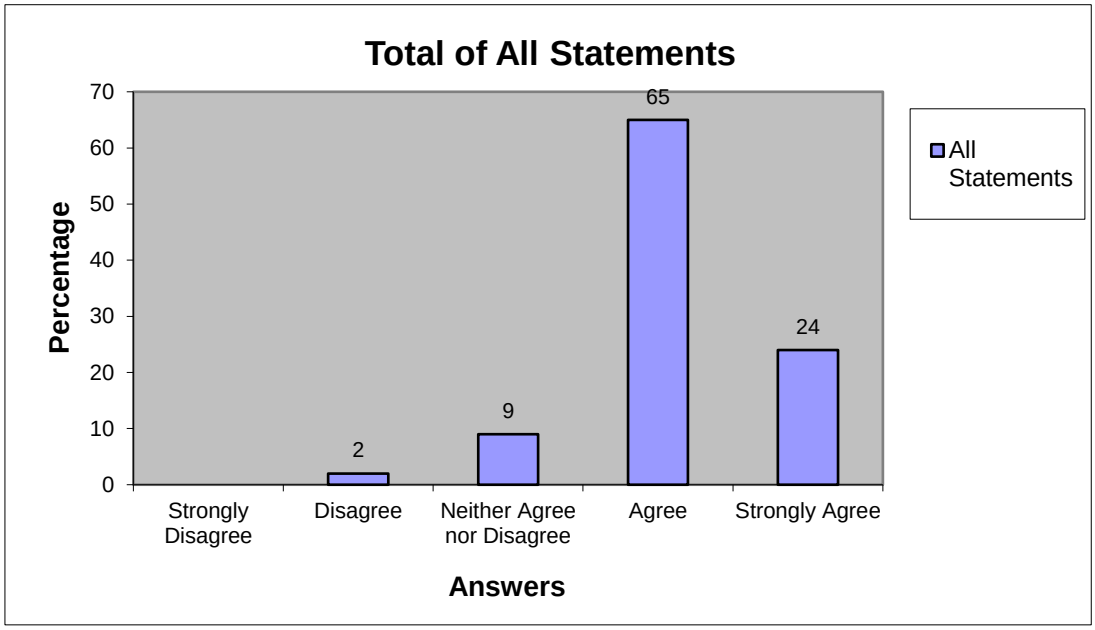
2- Providing the promised service without much delay

3- Willingness of the employees to To help customers immediately

4- The knowledge and helpfullness of the employees and their ability to give confidence to cutomers

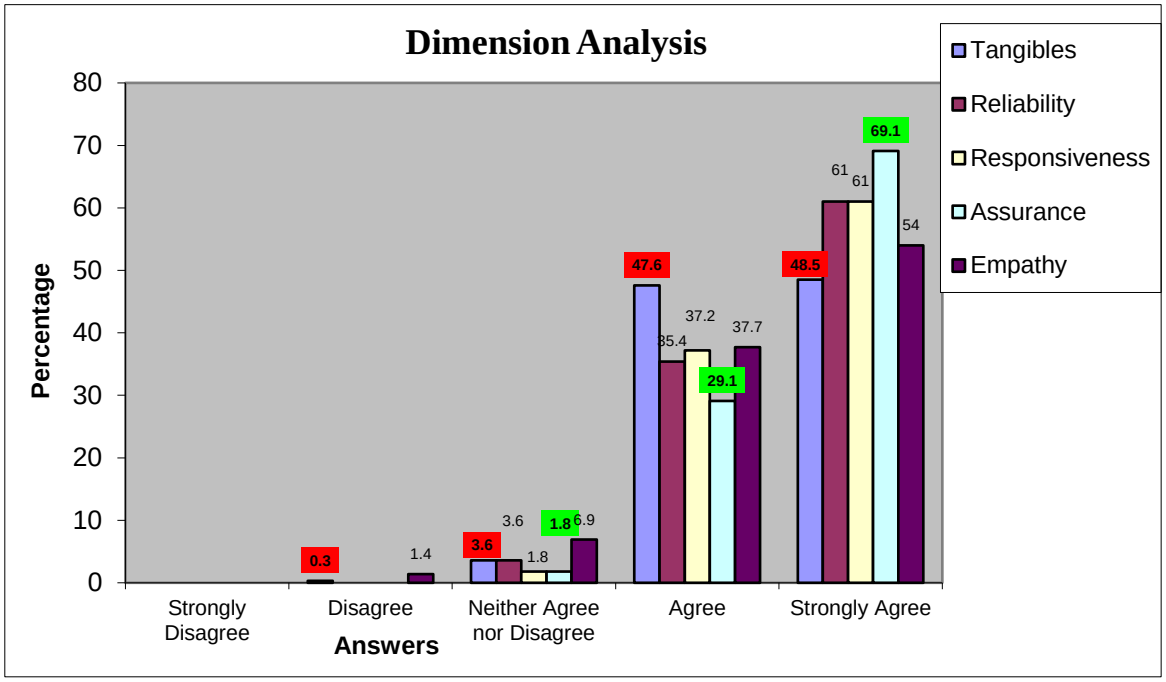
5- Personal Care of the customers.

Overall Service Quality Results **Figure 1**



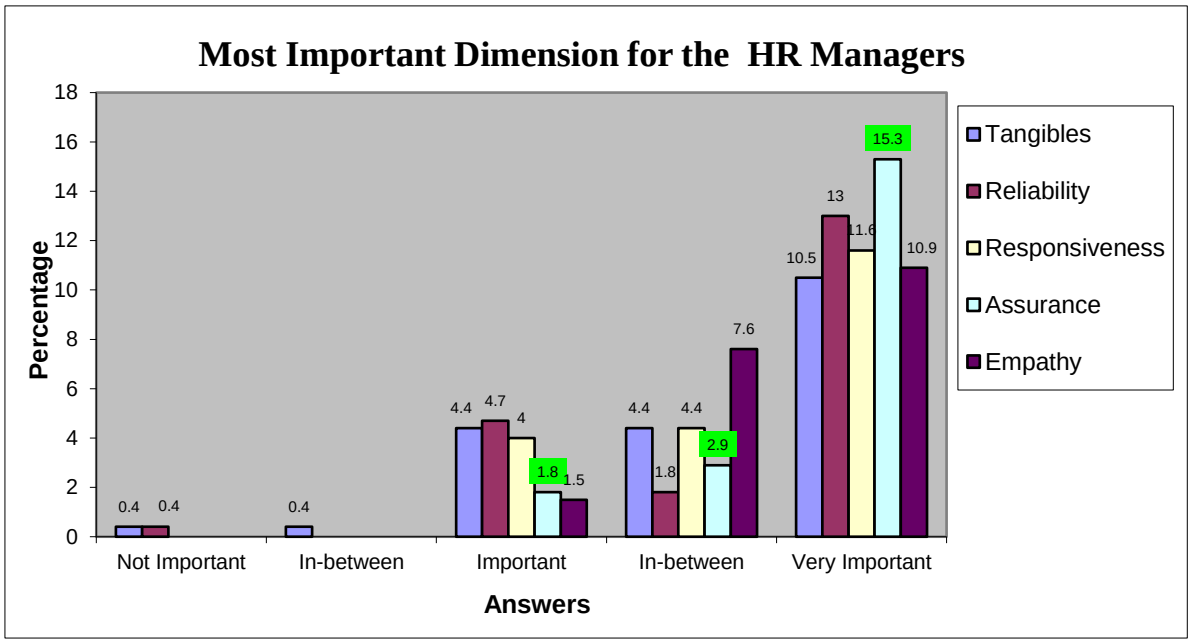
From the results we can clearly see that the overall service quality of the employees in the resort hotel are good. The 24 percent of the respondents strongly agree that the level of services provided from the resort hotel employees are at an excellent level and 65 percent of them states that it's in a good level. It's also clearly evident that 11 percent of the respondents are not convinced that that the employees are providing the services at expected level. When looked at the strongly disagree scale its 0, therefore we can conclude that the overall standard of services provided from the Maldives resorts hotels are at high standard.

Service Quality Dimension **Figure 2**



The assurance provided to the guest during the holiday is the strongest aspects of the service and responsiveness, reliability, empathy and tangibles respectively. This clearly means that the Maldives is a very safe and secure destination with personalized and friendly service. It is also important to note that the resort hotel could further improve the tangibles and reliability of the of the hotel employees.

Most Important Dimension **Figure 3**



From the resorts HR mangers point of view the most important dimension for the resorts are assurance and reliability of the employees in providing the services to the guests and responsiveness, empathy and tangible respectively.

According to the HR Managers the main challenges faced to the resort hotels are the poor level long term commitment by the employees due to the labor shortage in the industry. Due to the high demand and almost the same labor pool in the hotel industry there is a strong tendency of moving from one resort to another in a very short period. The level of job commitment is the major issue faced by the industry. In addition to this the level of problem solving skills and the attitude towards the work seems to be highly concerning the employers. Majority of the mangers address concerns related to high cost of recruitment due to high staff turnover.

From interviews most of the HR mangers stated that the level of services provided in the industry could be further improved by focusing on the following aspects:

- Providing the updated product knowledge to employees.
- Providing trainigs to improve the employees daily job tasks.
- Developing and providing motivational and team building activiteis to improve the attitude towards work.
- Maintaining and monitoring employees grooming standards.
- Motivating the employees to improve the commitement to work and developing HR streategies to sustain the employees.

Conclusion and Future Work

This research will enable the resort hotel managers to understand the current service quality status in the Maldives. The research had identified the weakest areas in the resort and key challenges faced by the industry as a whole. The overall service quality standard in the resorts are good but overall tangibles and reliability of the employees could be improved. In addition to this it's important that the resort hotel and educational institutions to train the employees on the weakest dimension identified in the findings. The main issues related to high employee's turnover could be improved by providing career guidance and hotel industry cooperation's.

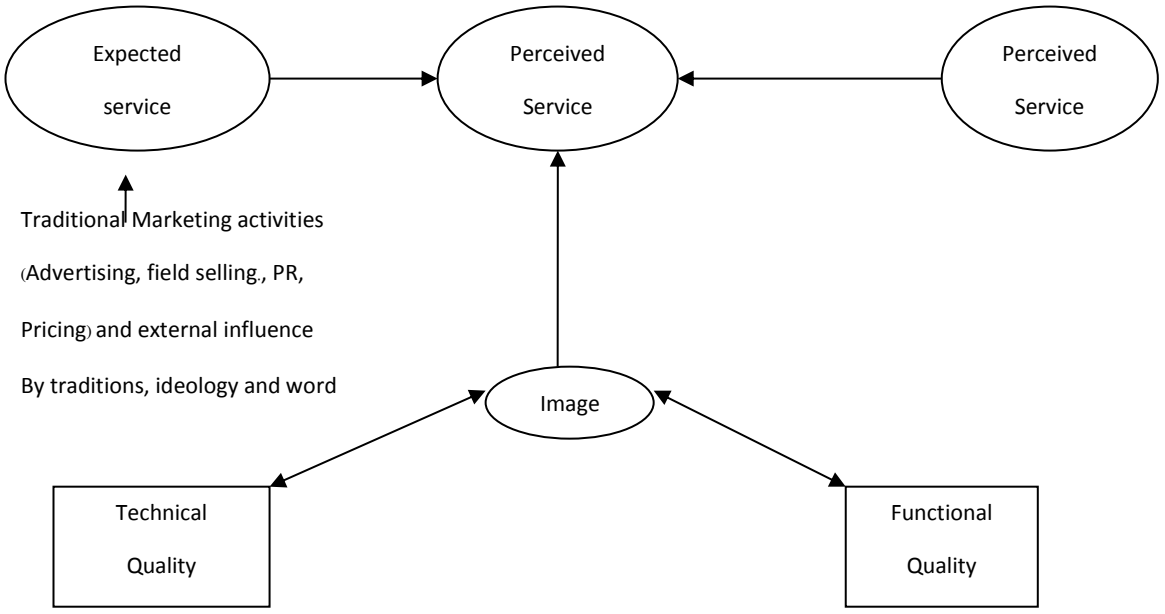
The key problem related to level of employee's competency on performing the job requires immediate attention of relevant stakeholder including the educational institutes and industry. It is crucial that the hotel industry and the educational institutes to work together to develop the necessary labor shortage in the Maldives.

This research had identified the key perimeters that the relevant stakeholders had work to improve the level of services provided to the guests. In addition to this further research has to be conducted to understand the major issues faced by the employees to improve the level of service provided to the guests. Most importantly a compressive research need to be conducted to understand why the resort employees are continuously moving to different resort for employment.

APPENDICES

A

Technical and functional quality m



Source: Adopted from Grönroos (1984)

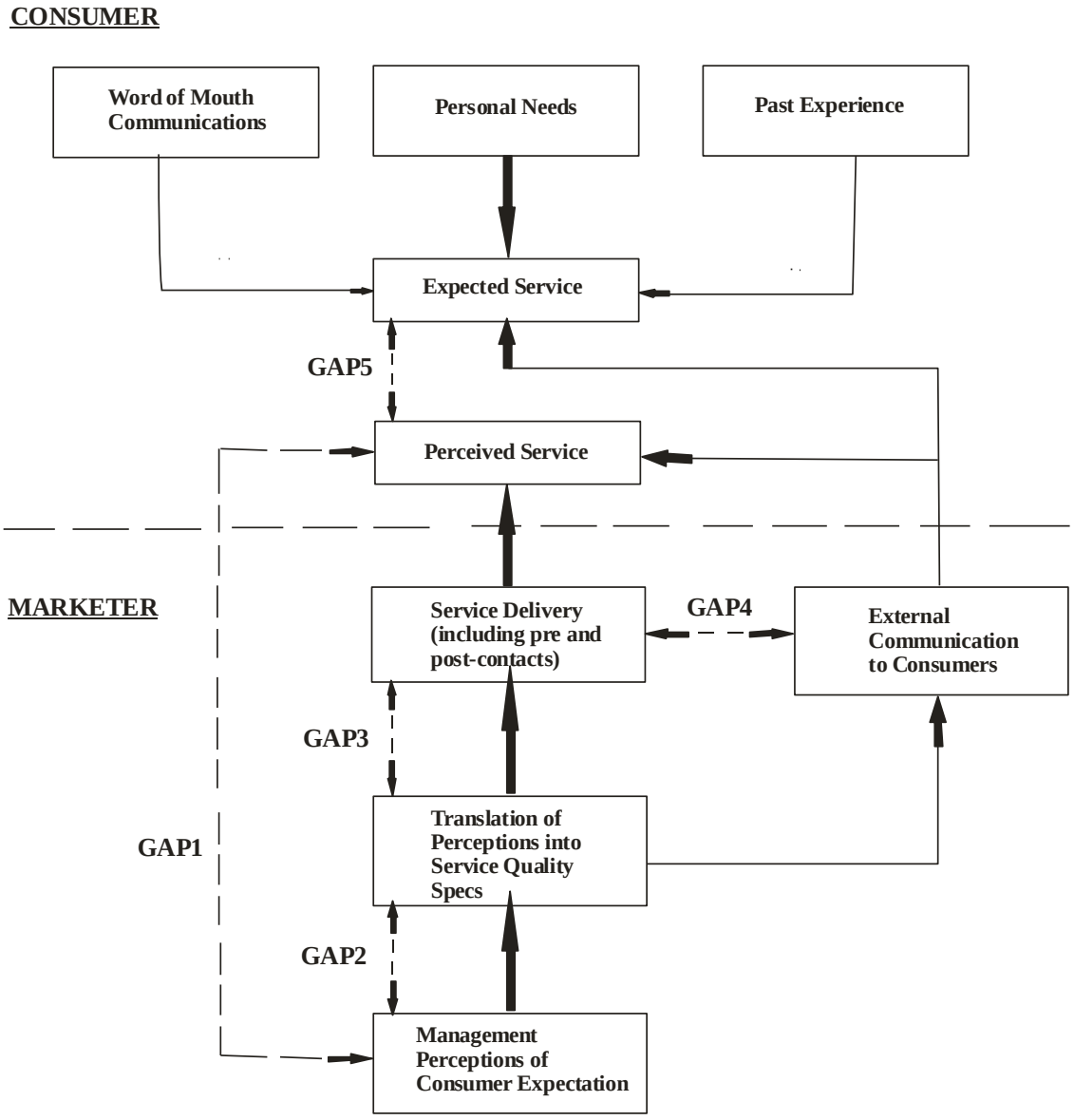
(1) Technical quality is the quality of what consumer actually receives as a result of his/her interaction with the service firm and is important to him/her and to his/her evaluation of the quality of the service.

(2) Functional quality is how he/she gets the technical outcome. This is important to him and to his/her views of service he/she has received.

(3) Image is very important to service firms and this can be expected to build up mainly by technical and functional quality of service including the other factors (tradition, ideology, word of mouth, pricing and public relations).

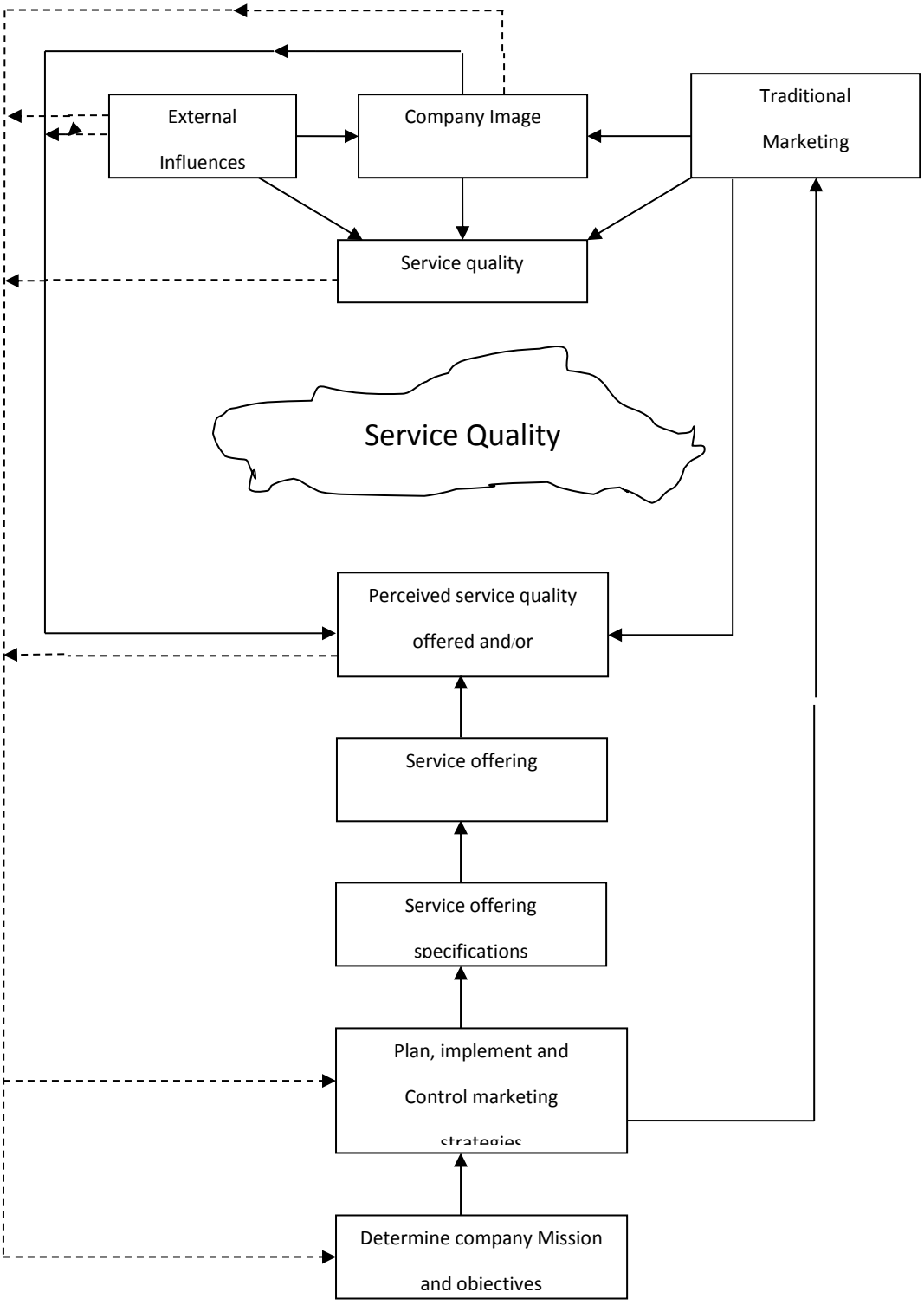
B

Conceptual Model of Service Quality



Source: Adopted from Parasuraman et al. (1985)

C **Performance only model**



Source: Adopted from Cronin and Taylor, 1992

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LOCATION SELECTION FOR GRASS FLOWER WAREHOUSE IN CHIANG RAI PROVINCE BY THE SIMPLE ADDITIVE WEIGHTING (SAW) AND THE ANALYTIC HIERARCHY PROCESS (AHP) METHOD

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ABSTRACT

The purpose of this paper is to select warehouse location for grass flowers in Chiang Rai province comparing of two techniques Multiple Criteria Decision Making (MCDM) between the two methods for Simple Additive Weighting (SAW) Method and The Analytic Hierarchy Process (AHP). For selected of grass flowers location warehouse in Chiang Rai Province. The entrepreneurs of grass flowers trading need to increase warehouse building to meet customer satisfaction. Thus, this paper is to surveyed 7 criteria of the entrepreneurs consist of size of property, property cost, labor cost, public utility, mode of transportation, ability to access of location and distance from supplier and investigated locating in 4 districts using conjunctive constrain method to screen the alternative consist of Mae Jan district, Mae Sai district, Chiang Saen district and Chiang Khong district were used to selection. The decisions making of location selection used by SAW and AHP, the result of this comparison found that Tambon Pa Sang, Mae Chan district is appropriate located for building grass flowers warehouse in Chiang Rai province.

Keywords SAW, AHP, Location selection

INTRODUCTION

Regarding the necessity of the inventory, entrepreneurs may not want the much inventory in the stock because of the economic liquidity and the cost of the organization. But, in terms of inefficient logistic management and range and duration of transportation management, there will have the space of time condition. If the distance is longer, there will take longer time for transportation, as well as higher cost of transportation. That are causes to have the inventories to reduce the cost, and the warehouse is also important to store the inventories.

Therefore, the location is very important to pay attention to the distance to the sources of production, the size of the area, land's price, the cost of wage, along with the pattern of transportation. All of these are factors of the new chosen location to set the warehouse to save the logistic cost. That means if the location is not appropriate, there will be following problems such as the logistic cost may be higher because of farther distance from sources of production and market. Moreover, there will be insufficient quality labors, elements or materials, along with other necessary factors. Generally, the location has no dominant advantage than other areas. Only the best properties of the land towards the business will be paid attention for the least effect in the future. Generally, the efficient location for the business should be spent the cost of production and service as least as possible. Thus, many factors will be involved to choose the location of the business because the location is very important to the business of the organization such as transportation planning, investment, and income, etc. (Sudathip Tuntinikulchai and Sakda Hongthong, 2004) [5]. Brooms are important to clean the house and the life of broom may not long, so the demand is also high continually. Form the demand, the production and income of brooms are also high. This is the new business to earn more money for the villages in Northern and Northeastern Thailand. The supporting evidences show that there are more brooms producers. Also, the producing of the

broom will use many elements, especially grass which is the main elements of the brooms. The grass will be collected only in one season from November to March. During this period, the grass will be cheaper. The entrepreneur has to store the grass for further demand all year. There is more demand in the market each year and the entrepreneur has to buy the grass at a higher cost because of higher demand. From the mentioned problem, the entrepreneur needs to find the new appropriate location to store the grass in Chiang Rai Province to increase the capacity of the storage and reduce logistic cost.

LITERATURE, THEORY & METHODOLOGY

SAW method is a simple, hassle-free process. It is calculated from the product of the weight value. And the appropriateness of each rule, then multiply the sum of all the rules together. The highest scoring option will be selected first. The steps of the SAW method are as follows

Step 1 Change the range of rules to a range of comparisons. Set of rules can be divided into 2 types: positive criteria. And negative criteria, both of which are based on the following equation.

Positive criteria $r_{ij} = \left(\frac{a_{ij}}{c^*_{ij}} \right), j \in B \quad c^*_{ij} = \max c_{ij}, j \in B$

Negative criteria $r_{ij} = \left(\frac{a_{ij}}{c^*_{ij}} \right), j \in B \quad a^*_{ij} = \max a_{ij}, j \in C$

Step 2 Find alternatives in each choice. By considering the following equation.

$$v_i = \sum_{j=1}^{n} W_j r_{ij} \qquad i = 1,2...,m$$

by r_{ij} Instead of the adjusted score of the choice

Step 3, when the matrix V is added and the weight value of each rule is added. Include scores from all criteria in each choice. By considering the following equation

$$V_i = \sum_{j=1}^{n} v_i \qquad i = 1,2,...,m$$

Step 4, in the appropriate selection of the decision. Will be determined by the V_j value of each choice. The most appropriate option is the most valuable option is V_j arrange suitable options to the least appropriate option

Analytic Hierarchy Process (AHP)

The elements of AHP are as follows.

- Criteria
- Comparison of criteria
- Table of priority or preference level

Elements in decision process can be divided into 4 parts.

1. The problem or goal is the beginning of the decision that affects the determination and evaluation of the alternatives.

2. Major Criteria.

3. Sub Criteria is secondary criteria used to enhance effective decision making process.

4. Alternative. The consideration of alternatives is the most important step in the decision process. It also

affects the ability to diagnose alternatives.

The priority setting of criteria

Priorities among the elements of the hierarchy are established by making a series of judgments based on pairwise comparisons of the element as shown in table 1

Figure 1
A Simple AHP hierarchy

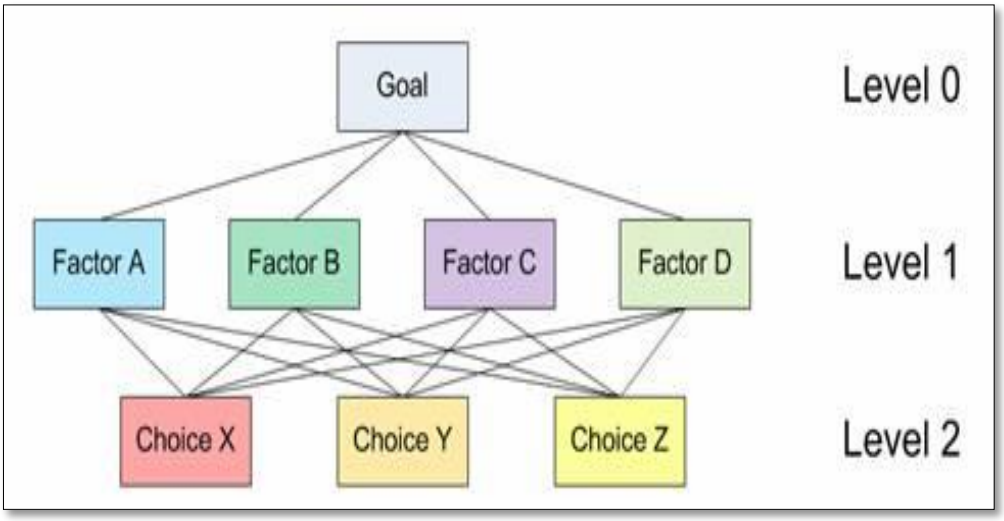


Table 1
Preference level and numerical value of AHP hierarchy

Numerical Value	Preference Level
9	Very Strong
8	Strong to very strong
7	Strong
6	Marginally strong to strong
5	Marginally strong
4	Moderate to marginally strong
3	Moderate
2	Equal to moderate
1	Equal

AHP has the following steps:

Step 1 Divide problem into a hierarchy of goal, criteria, sub-criteria and alternatives.

Step 2 Enter input data into Pairwise Comparison Matrix to determine the weights for comparison of various criteria. Given that

A1, A2, A3, ...An are decision criteria.

Analysis is conducted in the form of matrix n x n

$$\begin{bmatrix} A_1 & A_2 & A_3 & \\ 1 & A_2/A_1 & A_3/A_1 & A_1 \\ A_1/A_2 & 1 & A_3/A_2 & A_2 \\ A_1/A_3 & A_2/A_3 & 1 & A_3 \end{bmatrix}$$

Step 3 Estimate the weights through Geometric Mean

Step 4 Set the weights with respect to the criteria or sub-criteria and ratings with respect to the alternatives.

Step 5 Estimate consistencies. If consistency ratio(CR) is greater than 0.1, it means incorrect data. If consistency ratio (CR) is less than 0.1, it means correct data. Consistency ratio (CR) can be calculated by:

$$CR = \frac{CI}{RI} \quad (1)$$

Where CR = consistency ratio

CI = consistency index

RI = random index

So, consistency index (CI) can be obtained through

$$CI = \frac{\lambda - n}{n - 1} \quad (2)$$

Where n = number of criteria

And Random Index (RI) shown in table 2

Table 2
Values of Random Index (RI)

N	1	2	3	4	5	6	7
RI	0	0	0.58	0.90	1.12	1.24	1.32

8	9	10	11	12	13	14	15
1.41	1.45	1.49	1.51	1.48	1.56	1.57	1.59

RESULTS

The results stated that the criteria are depended on the appropriate to the research's objectives. So, method the appropriate criteria were synthesized from the involving researches' reviews. Moreover, the proper criteria were set by considering from the possible choices to choose the warehouse of grass in Chiang Rai Province. From the reviews of involving literatures and the evaluation of the location's surroundings, there are 7 criteria were set to choose the location covered all concerns as below. Size of property (X1), Property cost (X2), Labor cost (X3), Public utility (X4), Mode of transportation (X5), Ability to access of Location (X6) and, Distance from supplier (X7)

The basic of criteria for the location of warehouse of grass in Chiang Rai Province is Conjunctive constrain method. The filtering factors are as below.

1. It must less than 50 kilometers far from material source.
2. It must be located on main transport routes.
3. It has main road linking the area.

From the initial screening by the above constrained conditions, the choices were cut into 5 districts, including.

1. Tambon Krung Mae Chan Chiang Khong District (A1)
2. Tambon Sri Don Chai Chiang Khong District (A2)
3. Tambon Ban Saew Chiang Saen District (A3)
4. Tambon Mae Chan Mae Chan District (A4)
5. Tambon Pa Sang Mae Chan District (A5)

After study the related researches to select the multi-criteria to choose the best place for the warehouse, the results stated that the criteria are depended on the appropriate to the research's objectives. So, Analytic Hierarchy Process (AHP) method the appropriate criteria were synthesized from the involving researches' reviews. Moreover, the proper criteria were set by considering from the possible choices to choose the warehouse of grass flower in Chiang Rai Province. From the reviews of involving literatures and the evaluation of the location's surroundings, there are 7 criteria were set to choose the location covered all concerns as below.

1. Size of property (X1),
2. Property cost (X2),
3. Labor cost (X3),
4. Public utility (X4),
5. Mode of transportation(X5),
6. Ability to access of Location (X6) and
7. Distance from supplier (X7)

The basic of criteria for the location of warehouse of grass flower in Chiang Rai Province is Conjunctive constrain method. The filtering factors are as below.

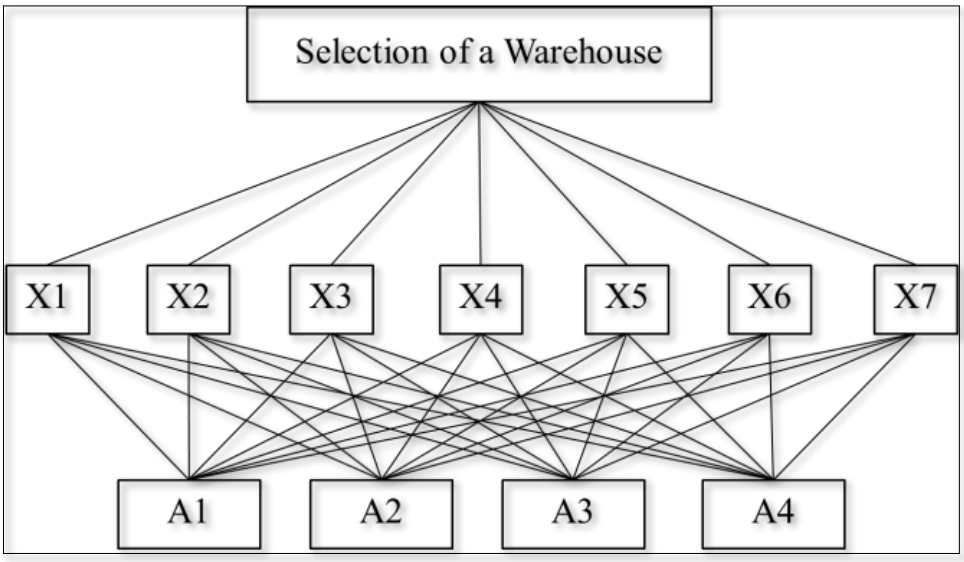
1. It must less than 50 kilometers far from material source.
2. It must be located on main transport routes.
3. It has main road linking the area.

From the initial screening by the above constrained conditions, the choices were cut into 4 districts, including.

1. Tambon Krung Mae Chan Chiang Khong District (A1)
2. Tambon Sri Don Chai Chiang Khong District (A2)
3. Tambon Ban Saew Chiang Saen District (A3)
4. Tambon Mae Chan Mae Chan District (A4)
5. Tambon Pa Sang Mae Chan District (A5)

The AHP hierarchy can be shown in the figure 2

Figure 2
A simple AHP hierarchy, with goal to select the Location Selection of Warehouse of Grass Flower in Chiang Rai Province



From the mention above, AHP criteria is to estimate the importance of each attribute. And the criteria to create matrixes pairwise comparisons to set the weight, as shown in table 3 with consistency at 0.08, 0.1 lower than the criterion is the highest possible index, showing the stability of the committee. And, each of matrixes pairwise comparisons of the attribute X1 to X7 was shown in table 3

Table 3
Pairwise comparisons Matrix of attribute X1 to X7

	X1	**X2**	**X3**	**X4**	**X5**	**X6**	**X7**	**Weight**
X1	1	1/3	4	6	4	4	1/5	0.16
X2	3	1	6	5	6	5	1/3	0.27
X3	1/4	1/6	1	1/2	2	3	1/5	0.06
X4	1/6	1/5	2	1	2	3	1/7	0.07
X5	1/4	1/6	1/2	1/2	1	½	1/4	0.04
X6	1/4	1/5	1/3	1/3	2	1	1/4	0.04
X7	5	3	5	7	4	4	1	0.37
Inconsistency = 0.08								

After making pairwise comparisons, the weight of the alternatives will be obtained and then make adjustments to the sum 1 as shown in Table 4. Finally summing the scores by multiplying the weight of each criterion by the weight of each criterion as shown in Table 4

Table 4
Total sum of alternatives scores

Alternative	Score
A1	0.2960
A2	0.1403
A3	0.2608
A4	0.3028
A5	0.2624

From AHP criteria to choose the location of the warehouse of grass in Chiang Rai Province through the 7 criteria, the results stated that Chiang Khong district is the interesting place to be the location of the warehouse. The runner-up district is Mae Chan, Chiang Saen, and Mae Sai, respectively.

When analyzing data for selection in various ways. With different ideas To find the most appropriate alternative from the various methods. There are 2 methods of decision making: SAW And how to AHP the results of the order of choice in various ways. It can be concluded that Option A5 (Tambon Pa Sang, Mae Chan District) is the most appropriate choice. To build a warehouse of grass since it is the first place selected from the two methods ranked second to the A1 (Tambon Pa Sang, Mae Chan District) A2 (Tambon Sri Srichon, Chiang Khong District) A6 (Tambon Mae Chan, Mae Chan District) and A3 (Tambon Ban Saew, Chiang Saen District) , respectively.

The results of the selection of grassland storehouse by SAW method

In the data analysis, the first step is to smooth the data shown above. This will make the data considerably more convenient. From Table 5, data is smoothed with Vector Normalization. Weight configuration for this study, we used the Ratio Weighting method, which is considered heavy weight by considering the geometric mean of each factor. The weighted values are then calculated by multiplying the score by the smoothness multiplied by the weight of each factor as shown in Table 6

Table 5
Conclude smooth adjustment information and the weight value of the factors

Factors	Weight value of Factors	A1 T.Klung, A.Chiang Khong	A2 T.Sridonchai, A.Chiang Khong	A3 T.Ban Seaw, A.Chiang Saen	A4 T.Mae Chan, A.Mae Chan	A5 T.Pa Sang, A.Mae Chan
X1	0.1789	0.4399	0.2932	0.5027	0.3519	0.5865
X2	0.1368	0.5880	0.5586	0.2940	0.2940	0.4116
X3	0.1263	0.3885	0.4856	0.1943	0.5828	0.4856
X4	0.0947	0.3714	0.3714	0.1857	0.3714	0.7428
X5	0.0632	0.5000	0.5000	0.3000	0.4000	0.5000
X6	0.0632	0.5774	0.5774	0.1925	0.3849	0.3849
X7	0.0632	0.2294	0.6882	0.2294	0.4588	0.4588
X8	0.0420	0.5208	0.3906	0.5208	0.3906	0.3906

Factors	Weight value of Factors	A1 T.Klung, A.Chiang Khong	A2 T.Sridonchai, A.Chiang Khong	A3 T.Ban Seaw, A.Chiang Saen	A4 T.Mae Chan, A.Mae Chan	A5 T.Pa Sang, A.Mae Chan
X9	0.0420	0.4743	0.4743	0.3162	0.4743	0.4743
X10	0.0316	0.5443	0.4082	0.4082	0.5443	0.2722
X11	0.0316	0.4642	0.4642	0.3714	0.4642	0.4642
X12	0.0316	0.5345	0.5345	0.5345	0.2673	0.2673
X13	0.0316	0.4472	0.4472	0.4472	0.4472	0.4472
X14	0.0211	0.4642	0.4642	0.3714	0.4642	0.4642
X15	0.0211	0.5000	0.5000	0.0000	0.5000	0.5000
X16	0.0211	0.4743	0.4743	0.3162	0.4743	0.4743

Table 6
The results are considered by SAW Method and Sequence

Selection	Score	Sequence
A1	0.4610	3
A2	0.4622	2
A3	0.3232	5
A4	0.4117	4
A5	**0.4904**	**1**

The SAW results shown on table 6 shows the SAW results. The result is A5, Pa Sang Sub-District, Mae Chan District, Chiang Rai Province. As the most valuable alternative area, it is considered to be the most suitable area for selection of grass collection areas. Chiang Rai Province by SAW method.

Summary of the results of the selection of grass collection from all three methods. Based on the multiple deterministic decision-making (MCDM) approach, three methods can be used to summarize the average of the responses from the MCDM method of consideration, as shown in Table 7, and summarize the results of each final score. How loud is shown in the table 8

Table 7
Results from the MADM method and sequence mean

Selections	SAW Method	AHP Method	Sequence Mean
A1	3	2	2.33
A2	2	3	2.67
A3	5	5	5
A4	4	4	4
A5	1	1	1

Table 8
show last of each method

Sequence	SAW METHOD		AHP METHOD	
	Selection	Score	Selection	Score
1	A5	0.4904	A5	0.2624
2	A1	0.4622	A1	0.2331
3	A2	0.4610	A2	0.2073
4	A4	0.4117	A4	0.1712
5	A3	0.3232	A3	0.1260

When analyzing data for selection in various ways with different ideas to find the most appropriate alternative from the various methods. There are 2 methods of decision making: SAW and AHP from the results of the order of choice in various ways. It can be concluded that option A5 (Tambon Pa Sang, Mae Chan District) is the most appropriate choice to create a grass store because it is the first place to be selected from the two methods ranked second A1(Tambon Klung, Chiang Khong District), A2 (Tambon Sri Don Chai, Chiang Khong District), A4 (Tambon Mae Chan, Mae Chan District) and A3 (Tambon Ban Saew, Chiang Saen District), respectively. After the appropriate area, in the next step, the researcher will use the area to design and arrange the flowering store.

CONCLUSION

Based on the objectives of the study on the selection, location and design of grassland inventory in Chiang Rai province, the objectives were firstly to select suitable locations for the establishment of grass flower collection store in Chiang Rai province. This study investigates the factors that are important for site selection. And from an entrepreneur interview. And who is involved in the decision 3 people.

The selection of appropriate locations for grassland inventory will be based on a total of 16 criteria, including land price factors, size of land area Number of raw material suppliers Quantity of raw materials in the area Accessibility to the source of labor resources near raw material sources. The number of competitors in the feng shui area, the environment, transport patterns, community outlook, future opportunities, sources of funding, and transportation routes. All factors have been taken into account. And ratings from entrepreneurs and 3 related persons, Pairwise Comparison and Analytic Hierarchy Process (AHP) based on all 21 factors analyzed.

The importance of each factor was determined and the factor of 95 percent was determined. The total of 16 factors influenced the selection of the grass flower collection area in Chiang Rai province. As mentioned above, it is a decision-making tool. And then, we have considered the appropriate areas by introducing Geographic Information System (GIS) to help screen the appropriate areas in the preliminary selection of locations. Chiang Rai province Based on the preliminary selection criteria:

1) Away from sources of raw materials up to 50 kilometers.

2) The area adjacent to the main road.

3) It is the area that is on the major transportation routes.

4) Non-conservation areas and national parks.

5) is an empty area and no land and flat land of 3 rai or more.

6) It is a non-community area and an area with buildings.

7) is basically agricultural. It is not the area where perennials and fruit trees are planted, as well as the nursery.

8) Non-water areas such as natural water sources. And the water source created.

In addition, considering the appropriate areas. Also, take into account the area available for sale. And the price of land. After doing the preliminary area study, collect information about the area from the area. And

selected all 5 areas were selected from 14 areas. After that, 5 areas were selected for the site selection. SAW and AHP methods. The results of these three methods, as shown in Table 8, ware compared. And selected the most suitable area only one area. It can be seen that the area that has been selected as the suitable area for establishing grass flower collection in Chiang Rai is area A5, Pa Sang, Mae Chan, Chiang Rai. Because it is the first place to calculate the two methods, with a score from the SAW method 0.4904, and the AHP method 0.2624.

ACKNOWLEDGEMENT

The author would like to express sincere thanks to Suan Sunandha Rajabhat University for funding this research project.

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UNCERTAINTY QUANTIFICATION IN RAINFALL INTENSITY DURATION FREQUENCY CURVES BASED ON HISTORICAL EXTREME PRECIPITATION QUANTILES

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ABSTRACT

Intensity–duration–frequency (IDF) curves form the basis for quantifying the magnitude of rainfall events that are used in the design of a variety of civil infrastructure, especially in an urban environment. It is important that the capacity of urban infrastructure (e.g. storm sewers, culverts, and storm water management ponds) be appropriately sized to avoid overdesign or underdesign, which could lead to economic losses and/or increased property damage and possible increased risk of loss of life. Thus, obtaining high quality estimates of IDF curves is important. Uncertainty in intensity–duration–frequency (IDF) curves is usually disregarded in the view of difficulties associated in assigning a value to it. In this paper, Latin Hypercube Sampling (LHS) and regional frequency analysis based on L-moments approach were utilized during the research in order to estimate the uncertainty in the Intensity Duration Frequency (IDF) curves based on historical extreme precipitation quantiles from different stations in The Langat River Basin. Uncertainties of the rainfall intensity in Intensity Duration Frequency curves were estimated with the bootstrap sampling method and were described by a generalized extreme value (GEV) distribution. Shape parameter, scale parameter, and location parameter, were modeled as a function of rainfall duration and rainfall intensity using 10^3 LHS set samples for all the durations and return periods considered for each rainfall station.

Keywords: Uncertainty analysis; IDF; Latin Hypercube Sampling; Bootstraping

1. Introduction

Drainage and flood control structures are commonly designed to handle specific storm events derived from historical and point rainfall intensity-duration-frequency (IDF) curves based on the assumptions that rainfall spatial distributions and temporal patterns will remain unchanged throughout the design lifetimes of the infrastructures. The success of those designs depended on the accuracy of the IDF characterization of extreme rainfall events and spatial variation. However, inherent uncertainties involved in estimates, analysis and assumptions used in the preparation of rainfall spatial and temporal patterns data might violate these assumptions, affecting the reliability of the IDF curves and their use for designing drainage system and assessing flood vulnerability of a specific location.

The uncertainties in extreme rainfall event estimation have been analyzed in research to investigate the impact of climate change [1, 2, 3] and to estimate the impact of uncertain input to stormwater system design [4, 5] and Many attempts have been made to quantify uncertainties in rainfall frequency analysis [6, 7, 8,3]. In general, the uncertainty in rainfall frequency analysis comes from data and sampling errors. The data uncertainty is originated from measurements errors resulting from instrumental and human errors and also due to inadequate representativeness of a data sample due to temporal and spatial variability of the data. The use of a limited quantity of rainfall data (such as data of short record length) in the frequency analysis introduces sampling uncertainty, which is transmitted eventually to the design rainfall amount and adopted hyetograph [9].

To quantify the parametric uncertainty in IDF bootstrap procedure is employed which is based on resampling technique [10, 11, 12, 13]. The bootstrap [14] is a computational procedure that uses intensive resampling with replacement, in order to reduce uncertainty [10]. In addition, it is the simplest approach since it does not require complex computations of derivatives and Hessian-matrix inversion involved in linear methods, the Monte Carlo and Latin Hypercube Sampling (LHS) solutions of the integrals involved in the Bayesian approach [15]. Bootstrap technique has been used successfully in hydrological modeling and it is the topic of current research. Documented applications of bootstrap ranges from estimating means, confidence intervals, parameter uncertainties and network design techniques (e.g. [16].

In this paper, by Latin Hypercube Sampling (LHS) technique, sampling from a Generalized extreme value (GEV) distribution fitted to the original precipitation extreme observations, a large number of bootstrap

samples are constructed. Latin Hypercube Sampling (LHS) and regional frequency analysis based on L-moments approach were utilized during the research in order to estimate the uncertainty in the Intensity Duration Frequency (IDF) curves based on historical extreme precipitation quantiles from different stations in The Langat River Basin. Uncertainties of the rainfall intensity in Intensity Duration Frequency curves were estimated with the bootstrap sampling method and were described by a generalized extreme value (GEV) distribution.

2. Methodology

2.1. Study Area

The study area is located in upstream of The Langat River, The Langat River Basin lies in the mid western part of Peninsular Malaysia and involves two states viz. Selangor State and Negeri Sembilan State, part of the Klang River Valley and now also includes the Putrajaya Federal Government Administrative Center. (Figure 1)

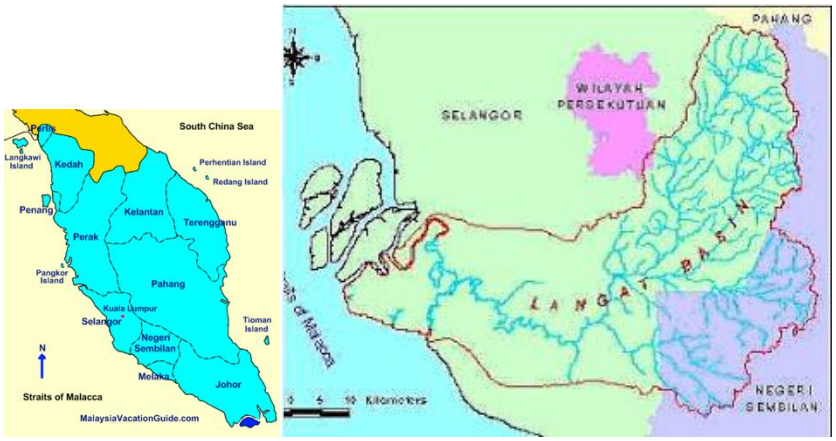

Figure 1. Study area location

2.2. Rainfall data analysis

The fifteen minutes' rainfall data from 18 rainfall stations are collected from the Department of Irrigation and Drainage (DID) (Figure 2).

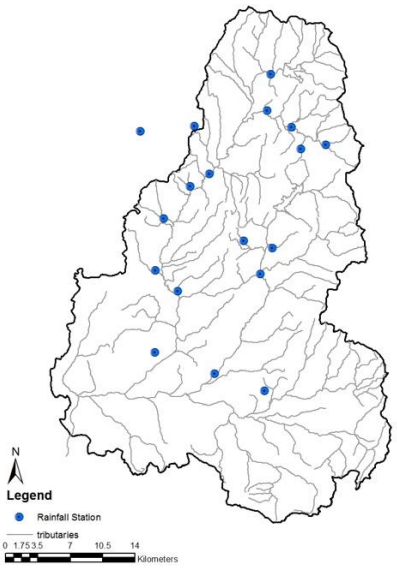

Figure 2 Rainfall Stations

The annual maximum rainfall is among the important parameters in hydrological studies that can be used for the purpose of flood design. Using the rainfall data from 2000-2013, these series were derived and plotted for different sites (Figure 2). To estimate the less probable maximum rainfalls with high return periods, the extreme data have been fitted to 11 theoretical probability distributions including Generalized Extreme Value (GEV), Gamma, Gamma (3P), Normal, Lognormal, Lognormal (3P), Logistic, Generalized Logistic, Gumbel (Maximum Extreme Value Type 1), Exponential and Exponential (2P). The parameters of each distribution were estimated using one of the methods of moments, maximum likelihood, least squares and L-moment. The choice of the method for estimating the parameters, where possible, has been based on the least intensive computation. In general, the assessment indicated that the Generalized Extreme Value (GEV) distribution was better fitted to the annual maximum rainfalls at all sites of the study area. This distribution is also recommended by NERC of Great Britain. To estimate the parameters of this distribution the L-moments method has been used. The GEV distribution is a flexible three parameter model that combines the Gumbel, Frechet, and Weibull maximum extreme value distributions. The cumulative distribution function for GEV distribution is:

$$F(x) = \exp\left(-\left(1 + k\left(\frac{x-\mu}{\sigma}\right)\right)^{\frac{-1}{k}}\right) \qquad k \neq 0 \qquad (1)$$

Where x is rainfall and k, σ and μ are shape, scale and location parameters, respectively. For visual assessment of goodness of fit, the observed data are plotted against their corresponding GEV distribution values.

2.3 Uncertainty Analysis Method

A study is conducted herein to investigate the uncertainty involved in IDF curves. Sampling is the initial step for most uncertainty analysis. In this study parametric bootstrap technic base on LHS sampling was applied for estimating confidence interval of IDF curves.

The bootstrap, introduced by [14], is a technique for determining the accuracy of statistics in circumstances in which confidence intervals cannot be obtained analytically or when an approximation based on the limit distribution is not satisfactory [10, 11]. There are two basic approaches to the bootstrap: (1) Nonparametric bootstrap, which is based on resampling with replacement from a given sample and calculating the required statistic from a large number of repeated samples (it is often termed 'resampling'), (2) Parametric bootstrap that randomly generates samples from a parametric model (distribution) fitted to the data and calculates the statistics from a large number of randomly drawn samples. In this study, the parametric bootstrap was applied to GEV distribution fitted to observation rainfall data. The principle of the parametric bootstrap is to provide a way to simulate repeated data from the fitted distribution.

3. Results

3.1. Estimated parameters and quantiles

The GEV distribution parameters: "location" ε , "scale" α and "shape" ξ. For all durations was estimated. the estimate is obtained as the mean of the ensemble of estimates computed by repeating 1000 times the LHS resampling. Since scale invariance has been assumed, GEV location parameter ε and GEV scale parameter α are dimensionless: the only dimensional parameter is the scale coefficient, measured in mm and representing the average rainfall depth for unity event duration (table 1). The shape parameter ξ assumes values around zero: the GEV distribution reduces to a Gumbel distribution in the limit ξ = 0.

Table 1. Estimated GEV parameters for D = 15, 30, 60, 90 and 120 minutes, standard deviations are estimated by LHS in the parametric bootstrap resampling algorithm and given between brackets.

	Location (ε)	Scale (α)	Shape (ξ)
15	28.635(0.359)	6.983(0.248)	0.0775(0.0027)
30	47.117(0.758)	10.621(0.569)	0.1383(0.0033)
60	67.11(1.604)	15.412(1.270)	0.1740(0.0034
90	75.67(2.037)	17.413(1.531)	0.1389(0.0033)
120	78.09(2.720)	20.091(2.101)	0.1576(0.0033)

Parameter estimation is obtained for each synthetic series, i.e. at each duration, by applying the L-moments algorithm.

3.2. IDF curves uncertainty estimation

The bootstrap method was employed to assess this uncertainty. This method considers only the uncertainty due to the estimation of the GEV parameters and sampling errors. For each of the 1000 bootstrap samples, the relations between the GEV parameters and duration were re-estimated using generalized least squares, so that 1000 DDF curves could be constructed. The uncertainty of design rainfall in this research is represented as the confidence interval at the confidence level of 95%. There are two methods to describe the relationships between the rainfall intensity and the confidence intervals: the analytical method and the resampling method. In both methods, the sample sets are fitted with the GEV distribution using L-moments [17].

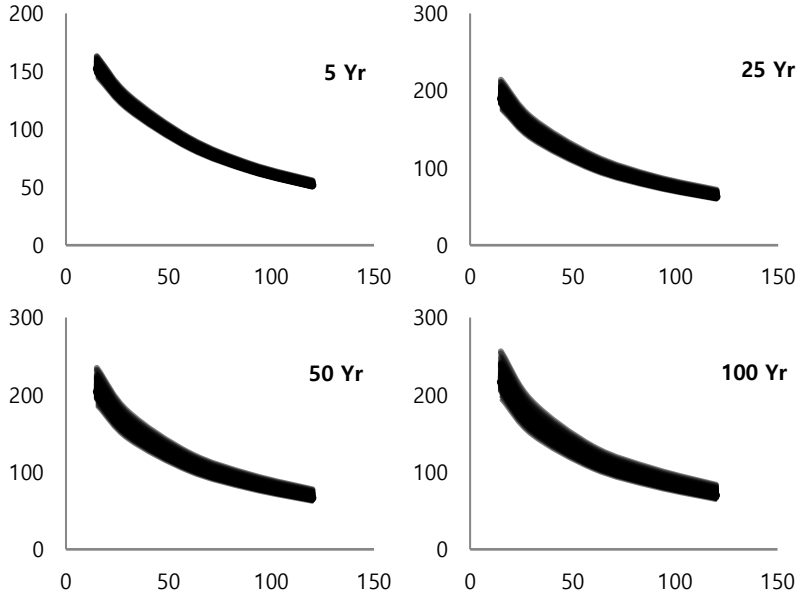

Figure 3. Rainfall IDF curves and 95%confidence interval (uncertainty band) for the return periods of

5, 25, 50 and 100 years (Vertical axis is Rainfall intensity (mm/hr) and Horizontal axis is rainfall duration)

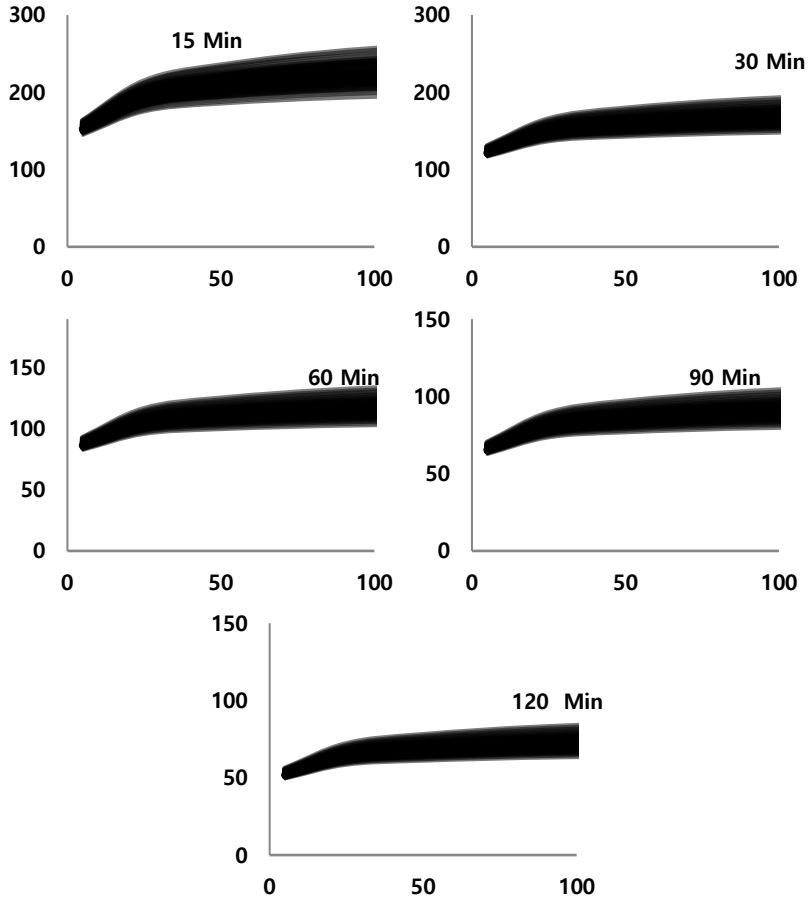

Figure 4. Variation of uncertainty band in different rainfall durations (Vertical axis is Rainfall intensity (mm/hr) and Horizontal axis is return period (Year))

The uncertainties in design rainfalls could sometimes be very large. An issue is raised when examining the confidence intervals related to storm durations. IDF curves provide the confidence intervals for durations of 15 min, 30 min, 60 min 90 min and 120 min. However, the design rainfall for storm- water system design could be over any duration □2 h, depending upon the hydrologic characteristics (e.g. time of concentration) of the catchment. The confidence limits are needed to compare with expected values, to be confident of the design rainfall selected. Therefore, interpolation or regression of the confidence intervals is necessary, in addition to the regression of the expected values of design rainfall intensities. Figure 3 illustrates the IDF curves for Langat river basin. The cautionary note in the upper left corner indicates the large range of the confidence intervals. The 5 y return period event of 15 min duration rainfall is estimated to be 153.6 mm/h as an expected value, with a 95% confidence interval of ±12.1 mm/h, which is almost ±7.8% of the expected value. Consequently, designers are looking at a design rainfall intensity which could be anywhere from 141.5 mm/h to 165.7 mm/h, reflecting the 95% confidence interval.

According to the DDF curves and their 95 % confidence bands, for longer return periods (T) uncertainty increases substantially (figure 4). Figure 4 shows the uncertainty band decreasing with increasing rainfall durations. This outcome can be expected since the accuracy of long duration data normally is higher than short durations. Figure 5 shows the uncertainty bands in different rainfall durations, the curves reveals that confidence intervals increased with increasing return periods.

4. Conclusion

Uncertainty in design rainfall estimates can arise from different sources, such as poor quality data, limitation in record length, model type and parameter estimation procedure. A method is presented in this paper to quantify uncertainty in design rainfall estimates base on LHS. The proposed method involves use of Latin Hypercube Sampling simulation technique where 1000 estimates of rainfall quantiles for a given average recurrence interval are generated from the fitted General Extreme Value (GEV). The GEV distribution is defined by bootstrapping of the observed annual maximum (AM) series of 15min rainfall duration at the selected stations. This bootstrapping method provides an estimate of the mean and standard error of the parameters of the GEV distribution, and their correlation structure. The proposed LHS simulation technique is being enhanced by adding other sources of uncertainty (e.g. data quality and trends in the AM rainfall data), which will enable to define uncertainty in the final design rainfall data.

The design rainfall intensities obtained from the IDF curve regression equations may be exceeded more frequently than the design return period. Modelers should compare these intensities with the corresponding confidence intervals to decide which of the intensities (the upper confidence limit or the interpolated expected value) should be used in modeling.

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STRESS AND BURNOUT AMONG OCCUPATIONAL HEALTH AND SAFETY EXPERTS

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ABSTRACT

In the 21th century the situation of domestic and world economy, the uncertainty of political life, rapid urbanization, inadequate infrastructure facilities, technological changes, habits, conflicts and competitive factors are in progress in our daily life. Physiological and psychological diseases caused by stress are some symptoms on our dangerous stress level. As a result; loss of productivity, absenteeism, higher health insurance payments, increased staff turnover rate, work accidents are some factors to take into consideration.

Occupation health and safety is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. Occupational health and safety specialists examine the workplace for environmental/ physical factors or psychological factors that could affect employee health, safety, comfort, and performance.

The purpose of this study was to determine the job stress and burnout levels among OHS specialist whose are responsible for the employees' occupational health and safety and risks assessment. In this study, Job stress and burnout status of OSH specialists have examined the according to A-B-C class expertise, genders and industries which they works. Questionnaires' were mailed by online to the addresses of the Ministry of Labor and Social Security, where specialists were registered. This data base was reached and the first 3000 e-mail addresses of the e-mail list were reached and the questionnaires were sent online to 1000 e-mail addresses by sampling method. The turnover rate of the experts is 84%. The study comprised 841 OHS Experts; 217 females and 624 males (mean age = 36.82+8.36). Questionaries' sent their email address by online and return rate was. 63%. .For data collection, a socio-demographic questionnaire and the stress scale and Maslach Burnout scale were used. Data were evaluated using the T-Test, Pearson Correlation and One-Way Anova analysis. As a result of this study, stress and burnout levels, statistically significant difference was determined between the A-B-C Expert groups in respect of gender and demographic factors ($p > 0.05$) and job stress very common among OHS Experts.

Keywords: Stress, Burnout, Occupational Health and Safety Experts, Maslach Burnout scale, Psychosocial risks.

FOREIGN LANGUAGE LERNING DIARY: CRITICAL REFLECTIVE PRACTICE ND ACTION RESEARCH

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ABSTRACT

A total of sixty-five subjects enrolled in their third or final year in their degree in English Language and Literature ('Filología Inglesa') at the Universidad de Las Palmas de Gran Canaria took part in a research project that consisted of being taught an unknown language (Croatian) for four sessions (60 minutes each) from 2011-2013. During these experimental lessons, these future teachers had a two-fold role: they were at the same time students and observers of the teaching and learning process. Students were given an open- ended questionnaire after each session and it this paper we are going to address the question about pre and post lesson expectations. The results obtained for 'expressions to communicate and vocabulary' (31% and 26% respectively) demonstrate that the use of a lexically-based Communicative Approach seems to be effective since more than 50% of the students affirm that they have acquired necessary lexis to be able to communicate at a basic level in only one hour. Regarding strategies, techniques and methodology students have mainly highlighted the use of mime, gestures and visuals. The context created and the vocabulary taught made sense, grammar as such was not taught explicitly, but they did unconsciously acquire grammar items such as: personal pronouns, possessive adjectives and present simple. Thanks to appropriate strategies and the use of a Communicative Approach, our subjects seem to have acquired much more than they originally thought they would be able to. Also, here we can relate to the concept of ´flow` coined by Csikszentmihalyi and his optimal experience theory. If the students are experiencing ´flow´ it means that they are concentrated on the task and that they are going to take full advantage of it.

THE COMPARISON BETWEEN CRIME AND ITS PUNISHMENT IN PRE ISLAMIC AND ISLAMIC ERA IN IRAN

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ABSTRACT

Criminal behavior in all era is the act that the law prohibits it. To prevent the crime always there were legislators or religious men, who considered punishment in proportion with crime. By studying of old Zoroastrian texts, we find that some actions that were considered as a crime in last time, now are not crime. Although the acts such as, murder, theft, adultery, magic, assault and battery always have been the worst crime. The Zoroastrian religious men, wrote the books about crimes and their punishments and compensations in the world and hereafter. In Vendidad of Avesta and in some Pahlavi books like "Dīnkard", "Dādestān –i Dēnig", "šāyist nē šāyist", "Rivāyāt-i Pahlavi" and etc, we can see sections in which mention about crimes and their punishments. The book of "Ardāwirāf nāmag" also shows the rewards or punishments of souls in heaven and hell. The greatest zoroastrian's legal book which to reach us is Mādiān-i hazār dādestān (the book of thousand judgments). After rising Islam in Iran legislators have imposed. the Laws according to Holy book "Qur'an" and also Islamic law. This article is surveying crimes and their punishments in pre Islamic and Islamic time by using historical method supported by library sources.

Keywords: "Punishment", "Crime", "Islamic", "pre-Islamic"

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COMPARISON OF SACRIFICE CEREMONIES IN IRAN AND INDIA

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ABSTRACT

Sacrifice ritual in India and ancient Iran has been of particular importance. This ritual is called Yajna and Yasna respectively in India and Iran. In Brahmanas and later Avesta, sacrifice ritual is considered one of the most important religious ceremonies. It follows from commonalities between sacrifice rituals in India and Iran that these rituals are of the same root. The root of Yajna and Yasna rituals shall be looked for among ancient Indo-Iranian peoples. The most important commonalities in holding sacrifice rituals in Iran and India are fire elements, Iranian *haoma* drink or Indian *soma*, bloody and non-bloody sacrifices, and singing holy hymns [of praise] by spirituals holding the rituals. Given the importance of these elements in both Yasna and Yajna ceremonies, we can find out their common root in a period before separation of Indian and Iranian peoples from each other and their settlement in India and Iran.

Ancient Indo-Iranians believed that there were many divinities in the world who administered various cases; therefore, these divinities had to be worshiped to be calmed so that order is established in the world; sacrifices and offerings were also required in these worships. Sacrifices and offerings were made in two general goals: (1) Please gods; and (2) Continuously establish order in a better manner in the administration of world affairs.

The ancient Indo-Iranians not only were performing the sacrifice to their gods, they also worshiped two vital elements: water and fire. In their view, these two elements had a vital and priceless value. Indo-Iranians considered waters as goddesses whom they called "Ops". They prayed and made sacrifices for them. Fire played a vital and valuable role in the life of Indo-Iranians who were faced with harsh winters. Like their Indo-European ancestors, they also worshiped fire as a god. Given the similarities between the two rites of Yajna and Yasna, it could be that there are still sacrificial rituals among Iranian and Indian peoples. This paper aims to study the similarities between these two rituals in Iran and India.

Keywords
Yajna, Yasna, Soma, Haoma, Medha, Myazda, Fire, Sacrifice.

INTRODUCTION

Primitive man was afraid of natural events, and since he did not know the cause or origin of these events, it thought they were due to the will of gods or invisible spirits. He tried to make sacrifices to gods and supernatural powers in order to please them and establish order in the world. Many worships, offerings and sacrifices made by early man to gods and supernatural powers were at first because of his fear; however, the passage of time and the progress in human life have attenuated those beliefs.The word "sacrifice", in the science of religion, means to kill a living being (including human, animal, plant ...) to get close to gods in order to please them (Mostafavi,1990,p. 21). The word in Arabic is derived from *gharib* (closeness or proximity), and the goal of every sacrifice was to approach gods or natural forces (Dehkhoda Persian Dictionary).The word "sacrifice", in Arabic, also means to "get close" and sacrifice is a means to that end. The influence of Sami culture and the importance of bloody offerings often make one think that the sacrifice means to slaughter an animal and offer it to a god, while sacrifice also includes non-bloody offerings, and bloody sacrifices are only one example of this ritual (Rainey, 1996, vol. 15,p. 639). Offerings in sacrificial rituals are divined in two bloody and non-bloody groups. The bloody sacrificial ritual dates back to times where human beings or animals were offered as ritual offerings, and blood-shedding was an essential part of this type of sacrifice. The bloody sacrificial ritual appeared first among farmers who believed in the magic of land fertility. This ritual was then accepted by breeders. The ritual probably emerged since independence among various primitive classes, including the sacrifice of men and animals including goats, sheep, camels, horses and fowls. But human sacrifice was also common in most countries of the world in ancient times (Henninger, 1987,p. 456).

Bloody sacrifices were later replaced by other kinds of sacrifice especially in cases where humans were objects of offering. It is also possible that animal sacrifices are replaced by those of men. In the non-bloody sacrificial ritual, non-bloody offerings were made including water, milk, honey, egg, wine... etc. The latter

was offered as grape's and earth's blood to get close to gods. In addition, ancient Iranians believed that the spirit of ancestors and the earth goddess, Anahita, used these offerings.Water was offered as a source of life and the main substance of living things a different variety of which is still common among Iranians and other nations. For example, pouring water on earth when someone wanted to travel or water sprinkling ceremony known also as "Abgiran" or "Mardgiran" celebration (Mostafavi, 1990,p. 23).

Sacrificial ritual in Iran and India

Rituals, related to sacrifice in Iran and India, were common since ancient times and were specially characterized. Object of sacrifice is mentioned in Vedas and also in Avesta (Mostafavi, 1990,p. 77). Sacrificial ritual in Iran and India are one of the most important religious rituals. In Iran, this ritual is called Yasna, but it's known as Yajna in India.Yasna (or Yasne) in Avestan is used in two meanings: a very important religious ritual in Zoroastrianism, and one of the most important names in current Avestan scripts. Yasna consists of seventy-two chapters. It is known as hāiti in Avestan, an equivalent of sāti in Sanskrit, or hāt in Pahlavi, and hā in Persian. The Gathas of Zarathustra are also one of these 72 "hā". In these scripts, Yazatas were invited to a ceremony, and then the ceremony instructions were given. Such as other Avestan scripts, Yasna was also written like a hymn.

The equivalent for the word Yasna, in Avestan language, is Yajna in Sanskrit and Yazišn in Pahlavi, which meant adoration, worship, and/or a prayer which was said in sacrificial ceremonies. The root of the word is yaz in Avestan, yaj in Sanskrit and yaĝ in Indo-European languages, and it means "to worship, to praise, and to sacrifice" (Poordavood, 1923,pp. 234-25).

Mary Boyce believes that, "...it follows from similarities between sacrificial rituals among Zoroastrians and Brahmans that the origin of these practices should be sought during the Indo-Iranians' period. Offerings made by Zoroastrians include: milk, pure water, haoma plant sap (soma in India), fruits, vegetables, butter, and meat of animals... etc. The word that they used for this kind of offerings was Myazda, or Medha in Indian (Boyce, 1996: vol. 1, p. 148).

Ancient Aryans sacrificed all kinds of animal such as horse to their gods. Horse sacrifice was more important and effective than other offerings because it was precious and valuables for Aryans (Bayrnas, 2004,p. 96). Aryans made bloody and non-bloody offerings for sun, fire and Ahura Mazda, including bread, flower, fragrant substances, cattle, sheep, horse and deer...etc. Regarding the bloody sacrifices, only the smell of the sacrifice was for gods and the meat was given to priests and worshipers (Lisan, 1976,p. 60).

When Zoroastrianism emerged, people worshiped various gods the biggest of them were Izadmehr, Izadbanu, Anahita, land and fertility goddesses, and god Haoma. Zoroaster rose against priests who accomplished prayer for these gods. He said that there was no god but Ahura Mazda in the world and that other gods are the latter's manifestation and an attribute of his attributes (Durant, 1999,pp. 426-431). Zoroaster was not only against haoma, an intoxicant wine, he was also opposed to animal sacrifice. He worshiped Ahura Mazda by thanksgiving and making a vow, and praised Anahita without sacrificing any animal contrary to Persians who praised her by sacrificing a hundred horses, one thousand cattle, and ten thousand sheep. But after the death of Zoroaster, that its time cannot be accurately represented, the sacrifice of animals was resumed (Edwards, 1979,p. 19).

The first question that comes to mind about the Iranian Yasna and the Indian Yajna ceremonies is that for whom these sacrifices and offerings were made. Ancient Indo-Iranians believed that there were many divinities in the world around them, who are responsible for the world. To please these gods, they had to be praised and prayed by making sacrifices and offerings. The latter were generally offered to gods with two main objectives: first to please and satisfy them, and second, to make them powerful as much as possible so that they could establish order in the world in a better way. Consequently, sacrifice can be deemed as a certain contract between immolators and the god for whom sacrifices were offered. During this process, immolators offer their sacrifices in hopes of receiving a blessing and mercy from that god (Boyce, 1996,pp. 147-148). Ancient Indo-Iranians made their sacrifices not only to gods but also to two essential elements: water and fire (Idem, 145-153). They were steppe nomads and shepherds, so they considered a special place for these two elements. Due to the lack of rain in steppes, water had a critical value. Indo-Iranians thought that water was a benediction from goddesses called Ops, so they prayed and made offerings and sacrifices for them. In Avestan, offering was called zaoθra. The offering made by Zoroastrians to waters included three elements: milk, sap, or leaf of two plants. These three elements are the symbol of plant and animal kingdom both of which needs water to survive. According to Zoroastrians, the offering (zaoθra) of water which was sanctified by invocation of god was able to return the reduced lifeblood of water. Fire is another element in Zoroastrian religious customs. Fire played also a vital and valuable role for Indo-Iranian steppe nomads who were faced with harsh winters. Like their ancestors, they also worshiped fire as a god. This god was called Agni among Indians and Zoroastrians it Ater (Boyce, 2002,pp. 25-26).

The purpose of Yasna and Yajna ceremonies

Sacrificial ceremonies are linked with creation in Indian and Iranian traditions. In the beliefs of ancient Iran, yazesh is a symbol of creation. Zoroastrians believe that Ahura Mazda along with Gods and Amshaspandans collectively participate in sacrificial rituals so that a steady stream of celestial force is run along with the human force protecting the world (Boyce, 1996,p. 221). Indo-Iranians believed to a natural governing law to guarantee regular movement of the sun, circulation of seasons, and existence durability in an organized way. This law was known as Rateh or Arteh among Hindus and as Asheh among Avestan people. They considered offerings and sacrifices made by people as a part of this natural process. They believed that these practices helped gods by enabling them to keep order in the material world (Boyce, 2002,p. 30). In fact, indirect offerings to gods through Mobeds could help strengthen and restore order to the world.In general, the four following cases can explain the purpose of holding Yasna and Yajna ceremonies respectively in Iran and India: (1) Establish world order; (2) Please gods; (3) Fulfill immolator's material needs; and (4) Fulfill immolator's spiritual needs.The main joint elements in holding the Iranian Yasna and Indian Yajna ceremonies include: Four elements of fire (Indian Agni and Iranian Ater), Iranian haoma and Indian soma, holy hymns, and priests who hold bloody or non-bloody sacrificial ceremonies. Given the existence of these elements in both Yasna and Yajna rituals, their common roots can be found during a period before the separation of the two Indian and Iranian people from each other and their settlement in India and Iran. Considering the importance of the sacrificial ritual, it is expected that such ceremonies and practices still remain in important Indian and Iranian current rituals…….

Fire

In India, fire is both earthly and divine. When they place their offerings or sacrifices on the flames, they believe that fire is intermediary between man and gods. Agni is a god who receives offerings or sacrifices in the form of fire and offers them as a Dinmard or Dinyar (assistant of religion) (Hinlz, 1994,p. 46). Indo-Iranians also made offerings to fire composed of three elements including firewood, smell (of plants' dry leaves), and animal fat. They offered firewood and smell probably three times a day during daily prayers (morning, midday and evening). Fat was offered to fire whenever a family has some meat to cook. It should be noted here that the two first offerings were a symbol of plant kingdom, while the fat was a symbol of animal realm.Offerings to water and fire formed the principle of daily religious rituals for Indo-Iranians. This principle is now called Yasna and Yajna respectively by Iranians and Indians. In this ceremony, a part of fire offering (zaoθra) was made of a bloody sacrifice. This was regularly performed. Indo-Iranians felt a danger in killing animals and they never tried to do this without prior sanctification and invocation of gods (believing that this invocation would allow to the spirit of an animal continue its life) (Boyce, 2002,pp. 26-27).

Iranian haoma and Indian soma

In ritual offerings to waters, which were made at the end of Yasna ceremony, milk, a plant's leaves and another plant's sap were used. The plant rubbed for these offerings was called Soma in Sanskrit and Haoma in Avestan languages. But it may be better to say: "A plant which is pressed." We don't know the name of the main plant used by Indo-Iranians, but it may be a species of Ephedra. They considered the sap of this plant to be refreshing and tonic and believed that the offering of this plant would have the same effect to gods so that they keep order in the world and administer nature-related events in a better manner. Ritual compression of this plant to prepare the Iranian haoma and the Indian soma to offer it to waters is the most principal part of the Iranian Yasna and Indian Yajna religious ceremonies (Idem,pp. 27-28).

Indo-Iranian haoma is a nearly elusive but a much known vision in the Western mind. Haoma is both a plant and a divinity. The rites of pressing this plant are accompanied with celestial phenomena such as sunshine and rain. However, haoma was considered a divine Mobed who itself was a non-bloody sacrifice, but making a bloody sacrifice. Its death defeats evil and believers could achieve life by attending this ritual banquet.Soma is one of the main characters in the Indian Vedic rituals, and it's both a plant and a god. Its sap is passed through a woolen filter and poured in casks full of milk and water. Yellow color of this plant is likened to sunray and its fluidity is compared to rain. As a result, soma has been called the king of rivers and cause of fertility. They believe that this beverage has healing power, so they think that it can cure a born blind or a lame. The Indian soma has a global domination and plays the role of man's religion and gives power to them. The Iranian haoma is completely similar to soma and it's now compared to an Ephedra. It is normally thought that this plant has the ability to exhilarate and heal, but it is more effective when it is sanctified and praised. The Iranian haoma is the son of Ahura Mazda. It is also a divine Mobed who makes offerings to gods, so like all earthly Mobeds it has to partake of the sacrificed animal. This way, it will be able to protect the spirit of that animal; otherwise, the latter's spirit will complain to the immolator in judgment day. Because when Zoroaster was squeezing the haoma, the latter's god came to him, so it is thought that whenever believers make an offering, this god is also present there. Thus, when haoma is being

sacrificed, we can imagine in its character a warrior who fights against evil, a divine Mobed who itself is sacrificed in the sacrificial ceremony so that people can survive, and also the god Haoma (Hilnz, 1994,pp.50-52).

Bloody and non-bloody sacrifices in Yasna and Yajna

In current Yasna rite, animal sacrifice is not performed anymore and it is replaced by a non-bloody sacrifice, haoma. However, cattle or sheep were sacrificed in this rite not so long ago (Boyce, 1970,pp. 67-68), and it may yet be common in certain predominantly Zoroastrian villages. Zoroaster, in line with his religious amendments, cancelled animal sacrificial rites. In later periods, sacrificing animals again became current to some extent; even, some Pahlavi books explain how to make a bloody sacrifice to different gods. For example, two books titled "Shayest, Nashayest", chapter 11, and "Revayat-e Pahlavi", chapter 59, can be mentioned. In the Indian Yajna rite, sacrificing animals (except of some schools in which killing animals is indecent) remains common and is considered a very important part of this rite. In studying sacrificial rites in India, we encounter some cases suggesting that Indians sacrificed also human beings until about a hundred years ago. Sacrifice of human beings in India is called nara-medha or puruṣa-medha (Aiyangar 1987,pp. 476-477, 479; Dubois, 2007,pp. 730-732). Another important ritual sacrifice that was prevalent in India is açva-medha or horse sacrifice. In the big Yajna rite, where usually horses are sacrificed, it was believed that the god to whom a sacrifice was offered preferred human sacrifice or nara-medha. Sometimes, hog, sheep, elephant or other animals were sacrificed (Dubois, 2007,pp.578-580).

Sacrificing animals by slaughter can yet be seen in Zoroastrian mountain shrines around Yazd province in Iran. Such sacrifices are made in Zoroastrian shrines by anyone for any reason from worship and thanksgiving to regret and repentance of sin or fulfillment of a vow. The time of sacrifice is mentioned in Yasht 5 from sunrise to sunset, and everybody who makes a vow to water between these two periods of the day has put its offering in the jaws of dragon (Boyce, 1975,p. 250).

Holy hymns

In both Yasna and Yajna ceremonies, holy hymns or litanies are sung. The hymn which is recited in Yasna among Zoroastrians is a part of the holy book of Avesta. The seventy-two chapters of Yasna can be linguistically and conceptually broken into three distinct sections. One section is the "last Yasna" 1 which includes Yasna 1-27 and Yasna 54-72; the other is "Yasna Haptanghaiti"2 which includes Yasna 35-41; and at last, the "old Yasna" 3 or Gathas which consists of Yasna 28-34 and 42-53 (Reichelt, 1968: 168). In Yajna ceremony, some parts of sacred hymns or Vedas are recited. But contrary to Yasna ceremonies, the texts recited in Yajna ceremony can hardly be specified, because there are several Yajna ceremonies and their texts are also different. We only mention to the extent that the hymns recited in sacrifice ritual ceremonies are parts of Samaveda and Yajurveda (Radhakrishnan 2008,pp. 63-65).

Priest holding the ceremony

The priest or Mobed holding these ceremonies represents another joint element of Yasna and Yajna. These ceremonies are hold by seven (and sometimes eight) Mobeds the most important of whom is referred to as Zaotar in Iran and Hotṛ in India. In Iran, however, these ceremonies have been shortened and since then, the number of these Mobeds has reduced from seven to two; and second or assistant Mobed is responsible for other Mobeds.

Holding Yajna ceremony

The first thing that draws the viewer's attention in Yajna is the coordination of actions and litanies in this ceremony. In fact, we can say that every action is accompanied with its own litany in Yajna ceremony. The most important part of Yajna ceremony is its sacrifice in which substances such as milk, butter, bread, cereals, meat or soma are offered to the fire. This small portion of sacrifice is deemed as an independent practice in all Yajna rituals. A Dinyar (assistant of religion) and/or usually an Adhavaryu put the above substances on the flames. Although in more complicated sacrifices, this is done by several Dinyars. When Adhavaryu stands besides the offering fire, he shouts at another Dinyar called āgnīdhra: omśrāvaya, which means "Hope it's heard"; and āgnīdhra answers: "Astu śrausšat", which means "So be it, someone is hearing". Then, it's Adhavaryu's turn who calls Hoter so that he recites offering-related poems (yājyā). Poems' recitation begins in the name of the god to whom offerings are made, and they continue by inviting to worship (yaja). In fact, Hoter says: " ye yajāmahe", namely, "We are worshiping." At the same moment, Adhavaryu puts offerings on the fire and the immolator says: " tyāga ", namely, "Devotion", and then whispers: "Not for me, but for the god to whom belongs the sacrifice."

In Yajna ceremony, actions related to the preparation of sacrifice are of special importance, including acceptance of a vow, selection of a Dinyar (assistant of religion), grooming the place of sacrifice, setting

fire, preparation of vow substances... etc., but the expression of these complicated and long practices is not possible in this paper (Heesterman, 1986, vol.15,p.228).

Types of sacrifice

Agnihotra is the simplest type of sacrifice, which means actually offering boiled milk in both the morning and evening time. Isti is the most complicated one which is, in fact, a kind of plant sacrifice composed of one or more slices of bread, cereals boiled in butter and milk, and a jar of butterfat. Before the sacrifices are ready, fire is ignited by using pieces of wood. Hoter sings a hymn, then, Adhavaryu puts the sacrifices on the fire. Paśubandha is another type of sacrificing an animal along with Isti. Two other priests attend this sacrificial ceremony, who are referred to as maitrāvarun who helps Hoter, and prati prasthātr who is the assistant of Adhavaryu.The most complicated sacrifice is Sama which consists of Isti and an animal sacrifice with its specific rituals. In this sort of sacrifice, Samaveda hymns are recited by four groups more than anything else. This sacrificial ceremony necessitates, in general, the attendance of sixteen or, according to scriptures, seventeen Dinyars (assistants of religion) divided into four groups according to four Vedas. Official sacrifice is called śrauta. This name had been selected based on Śruti which means "heard" and represents Vedic attributes. In śrauta rite, Isti sacrifice is made every two week in the form of new moon and full moon, and as pashubandhe, sama, and agni setuma (fire worship) (Ibid,pp. 228-229).

Another important sacrifice is Aśvamedha or the sacrifice of horse. In this sacrifice, sama sacrificial rite is first performed in detail for three days, a horse is released along with several warriors so that it wanders around the desert for a year, and then it is sacrificed. Puruśamedha is another sacrifice in which a human being is sacrificed. This sacrifice is theoretically based on Purusha hymn in Rigveda. But it seems that this kind of sacrifice has never been common in śrauta system. However, it should be emphasized that the immolator itself attends the sacrificial ceremony (Ibid, p.230).

Holding of the Yasna ceremony

Yasna has been a sacred ritual during the long centuries of official Zoroastrian religion. It is based on preparation and consumption of a holy beverage called haoma that drives out the death. Yasna rite must be performed each morning by special religious leaders. Nowadays, this ceremony is held by two Mobeds or religious leaders called Zut and Raspi. In ancient times, this religious rite was held by seven Mobeds above all another Mobed attended who was called Zut. Each of the names given to these leaders represents the related function in holding Yasna ceremony. The name of these Mobeds in Avesta is as follows: Zut or Zaotar, Hâvanan, Âtrəvaxš, Frabərətar, Âbərət or Frabərətar, Âsnâtar, Raêthwiškara or Raspi, and Sraošâvarəz. In the second book of Nirangistan, chapter 27, the function of each of these Mobeds is discussed: During yazesh (worship), Zut recited Gathas; Havnan pressed haoma's branches in mortar; Atrokhsh had to provide services to the holy fire; Frabərətar was responsible for putting tools at the disposal of the bigger Mobed during yazshen (prayer and worship); Asentar had to wash haoma and Abert to provide service to the water; and the duty of Sraošâvarəz was to go and get things (Poordavood, 2001; annotations to Khordeh Avesta or small Avesta.p. 161; annotations to Yasna, vol. 2,pp. 16-18).

Zoroastrians not only do not offer sacrifice to demons, but reject any conciliation with demonic powers. This is what distinguishes a Zoroastrian sacrifice from an Indian one. Mary Boyce writes in this regard: "Brahmanas performs rituals of intercession with evil spirits every day. Of the five "great offerings" (Mahāyajnah) which are obligatory for Brahmanas householders twice daily, one is an offering for the demons, to be placed by the household rubbish-heap. One of the reasons for Zoroaster's strength and greatness is that he has severely, and without the least mercy, forbidden and condemned any forgiveness or compromise with demonic forces (Boyce,1996, p. 170).

Since Yasna ceremony is held in a morning, Havnan, the god who protects the first "period" of a daytime, and his colleagues, namely saavanghi and visiyeh, are the first gods who are mentioned in this ceremony. According to Mary Boyce, it is obligatory that this ceremony is held in the morning, because if held in other periods of a day, demons may steal the offerings made to gods. The book of Nirangistan reads: "Someone who makes an offering to the water between sunset and sunrise, it's like putting the offering to the jaws of a dragon." This ceremony is also held in India in the morning, with this difference, however, that it is not obligatory and may be held in other periods of the days than morning (Idem, pp. 170-171).

The sound of smashing the haoma in mortar has also been a sign of the ceremony beginning. This sound invited Zoroastrians to the place of worship. Then Zut and Raspi started reading the prayer text. Yasna ceremony starts officially by praising Ahura Mazda. Amshaspandan, the gods responsible for five periods of the day, six gahambars and the month of holy days and their fellow gods, and certain other gods including Geosh and Azar were also praised and worshiped. Mithra in the first period of the day and Sraosha at the last period were always awake gods in Zoroastrianism, who protected creations of Ahura Mazda day and night (Amouzegar, 2007, p. 241).

In ancient manuscripts, the second Hāt in Yasna was called Barsam Yasht. In this Hāt, the same gods are invited and this time, they are worshiped by Ab-Zohr (liquid offerings such as haoma, milk...) and Barsam. Ab-Zohr was prepared by the milk mixed with two species of vegetables found in the world of plants. This liquid offering was poured calmly and unhurriedly in the water by Mobed and sometimes local women and girls who whispered Avesta texts: the way of combining elements in this offering could be a memento of Aryans speculation about the creation and development of plants. Water helps plants grow (the plant which is added to the mixture is a symbol thereof). Plants also help, directly or indirectly, with the breeding of animals (the milk which is added to the mixture is symbol thereof). As a result, elements of both creations return again to the water so as to increase the latter's life-giving ability (Boyce, 1996,pp. 157-159).

The Hāts 3 to 8 in Yasna are called Drōn Sraosha . Like the first Hot, they are dedicated for worshiping the gods. Drōn is a kind of unleavened small and white bread which was offered to gods. In the said chapters, the name of this bread has not been mentioned, except in the first paragraph of the third Hot of Myazdeh (Medha in Sanskrit meaning victim or sacrifice). This word indicates non-liquid offerings such as bread, meat, and fruit.Hots 9 to 11, called Yasht Hot, are one of the important parts of Yasna, and regard haoma plant and its pressing rite. When reciting these Hots, a few drops of haoma sap, prepared before the rite, are drunk. In Hot 9, the name of four people who pressed haoma for the first time and were given a good child as reward, is quoted. Vivahvant was the first person who was given a child named Jamshid. The second person was Atbin, Freydoun's father; the third person was Atrat, father of Orvakhshayah and Garshasp; and the fourth person was Purshasb, father of Zoroaster (Boyce, 1996, pp. 97-99).

In Hot 17 of Yasna, five types of fire are praised. We talked about the importance of fire and water among ancient Aryans. Fire in this sacrificial ceremony is a messenger who conveys offerings to gods. As seen, all offerings were placed on the fire in India. But in Iran, since fire is a very sacred element, it must be kept away from contamination. As a result, Iranians place on the flames only those things that belong to the fire such as wood or fat. Iranians roast offerings on the flames and offer the resulting smoke to the gods. In sacrificial ceremonies, offerings are often eaten collectively, that is a holy practice. It is said that the tradition of collectively eating foods is related to this same ceremony (Boyce, 1996, pp. 163-164).In Yasna ceremony, Zut and Raspi prepare haoma by reciting Hot 22, and continue until the end of chapter 26. The resulting sap of the haoma is not drunk during the ceremony. Gods are also worshiped and praised in these chapters.

Conclusion on sacrifice

By studying the common points between the two Indian Yajna and Iranian Yasna ceremonies, their common root can be discovered; among these commonalities, we can mention the common lexical root of both Yajna and Yasna words, common objectives in holding the two ceremonies, presence of common elements including water, fire, Iranian soma and Indian haoma, recitation of holy hymns and bloody and non-bloody sacrifices... in both ceremonies. Regarding the commonalities on sacrificial ceremonies between Zoroastrians and Brahmanas, the common root of these traditions and ceremonies before the separation of Indo-Iranian peoples can be found out.

Ancient Indo-Iranians believed that there were many divinities in the world around who are responsible for various things in; so offerings and sacrifices must be made to them. These offerings and sacrifices were made to gods for two main purposes: first, to please and satisfy them; second, to empower them as much as possible so that they could establish order in a better way in the world. In general, four goals can be sought for in holding Yasna ceremony in Iran and Yajna ceremony in India: (1) To establish order in the world; (2) To please gods; (3) To fulfill material needs of immolators; and (4) To fulfill spiritual needs of immolators.

Among things offered to gods by Zoroastrians are: milk, pure water, haoma plant's sap (Indian soma), fruit, vegetables, butter, animal meat... etc. Myazda was the common word used for these offerings, which is equivalent to Indian Medha.

In current Yasna ceremony, animal sacrifice is not performed anymore and it is replaced by a non-bloody sacrifice, haoma. However, cattle or sheep were sacrificed in this ceremony not so long ago, and it may yet be common in certain predominantly Zoroastrian villages.

In the Indian Yajna ceremony, sacrificing animals (except of some schools in which killing animals is indecent) remains common and is considered a very important part of this ceremony. The ceremony of sacrificing a horse is one of the most important ceremonies that were common in India.

With regard to differences in holding the two Iranian and Indian sacrificial ceremonies, it can be noted that Zoroastrians did not offer sacrifices for demons and rejected any kind of compromise with demonic powers; and this distinguished Zoroastrian sacrifice form the Indian one: Brahmanas perfume intercession rituals by referring to evil spirits every day. Of the five "great offerings" (Mahāyajnah) which are obligatory for Brahmanas householders twice daily, one is an offering for the demons, to be placed by the household rubbish-heap. Given the difference existing between these two ceremonies in the way the latter were held, we understand the cultural effect of locals living in India and Iran, and also the effect of climate factors of these two countries on beliefs of immigrant Indo-Iranian peoples.

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THE END OF THE WORLD SALVAGE BASED ON MAZDEAN BELIEFS IN TERMS OF GAHAN TEXTS

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ABSTRACT

The notion of achieving the final victory and a carefree world where human ideals are fulfilled is always of greater importance inherited from the ancient texts. The manifestations of this notion and waiting for the advent of the savior is apparent in Iranian religious works of ancient times.This paper analyzes the concept of Saošyant (profit supplier) and Fraša karta (repair of the world), which is closely connected with the idea of saving in Mazdean beliefs based on Gāhān texts and compares them with medieval texts. Despite the emergence of apocalyptic concepts in the words Saošyant and Fraša karta in medieval texts, based on the use of the words in Gathas it should be noted that the concept of savior from Saošyant in Gathas is not just apocalyptic and the belief of coming saviors in future is related to the New Avesta.

Keyword: Avesta, Gāhān, Saošyant, Fraša karta, Zoroastrianism, Savior, beneficence

Introduction

The fate of human and the world are the beliefs that have drawn attentions in almost all religions. The human being has always been eager to get knowledge about his fate. By the study of Iranian ancient history and meditation on the most ancient Iranian religious and social beliefs, we will realize that not only they were not exempt from this rule, but the fate of man after death have been very important in the oldest religious texts. This article addresses the two concepts of Zoroastrianism saviors and the end of the world according to the Zoroastrians beliefs that have been presented as apocalyptic concepts in medieval period in Zoroaster's hymns in Gathas. The question that arises here is whether the renewal of the world and Saošyant beliefs are the apocalyptic and eschatological concepts. In this regard while the purpose is to address the two important eschatological concepts in Zoroastrianism; the later Avesta and Pahlavi texts are referenced.

Are the renewal of the world and Saošyant beliefs the apocalyptic and eschatological concepts?

The belief in the advent of the savior at the end of the world and the salvation in order to comply with the law of God exists in all religions. But the characteristics of the Savior and the place of his advent are among the issues that are not the same in all religions. The turning point of these beliefs is in the coming of an innocent Saviour with miracles that are not measurable with the worldly criteria (Rashed Mohassel, 2002: 243; Boyce, 2002: 42).

Before addressing the concept of Fraša karta and Saošyant in Gathas it is necessary to address these issues generally based on universal Zoroastrianism years in Mazdean beliefs in medieval texts of Iran.

Zoroastrian texts are not unanimous about the number of millennia in universal years. Some believe that it is nine thousand years and others believe that it is twelve thousand years because of twelve months and the signs of Zodiac. Christensen does not consider these differences based on the denominational differences and consider it as accounting for three thousand years and believes the Ahriman battle in Zarvān and non-Zarvān traditions as nine thousand years (Christensen, 1995: 212).

Benveniste believes this period is nine thousand years between Zrvanyan and in non Zaravan Mazdean believe it is twelve thousand years. But Nyberg's belief about the cosmic year is the opposite of Benveniste's belief. However, the theory that is more common based on the first season of Bundahisn is the belief in twelve thousand years which is divided into four periods of three thousand years. (Benveniste, 1998:71; Zener 1955: 96; Nyberg, 1980: 387)

The first three millennia is the Minavi (divine) age. In these three millennia Ahura Mazda created the spiritual world. In the second millennium the physical world was formed that was free from harm and injury that is why in Mazdean history it is called the Golden age. The third three millennia is the period of monarchy of kings, human creation the domination of Ahriman. In the last three millennia some events happen that lead to the end of the world. The fourth three millennia which is the last one is related to the advent of the Mazdean Promised ones. This period begins with the advent of Zoroaster and then his three sons emerge and rebuild the religion of Zoroaster which is corrupted due to the spread evil (Zand-i Wahman yasn: 35-36; Boyce, 2002: 51-50).

According to the Yasht 19th at the end of the world is renewed with the advent of Saošyant. At this time the helpers follow Saošyant who do Good thoughts, Good words, Good deeds and never tell lies. At the end of the time three sons of Zoroaster are born called Hūšidar, Hūšidarmāh and Saošyant. These three saviors will advent every thousand years in the last three thousand years are born out of Zoroaster semen marvelously which are kept in the Kianse (Hamoun) Lake by pure Faravahars and will be born by a virgin. (Yasht 19: 11.92, Yasht13: 62, 128, Satna Rostamji 1985: 57-56; Humbach1998: 11-17)

About the birth of three Zoroastrianism promised it is said that Zoroaster coupled that three times with his wife Hvōv. Nēryōsang god took their seeds and gave them to Venus goddess and they are kept in the Kianse (Hamoun) Lake by 99999 Faravahars (Yasht13: 62; Minavi Kherad 1: 95; Bundahisn 18: 142).

The first savior Hūšidar with the Avestan form ūkhšit ereta (the Kianse (Hamoun) Lake which is located in Sistan.According to tradition the first lake had fresh water, and there were no snakes and toads in it but it gradually salted due to the evil and in Fraša karta it will lose its salinity by the destruction of Ahriman)which means the developer of the sacred law. With his advent the situation becomes close to paradise. The first advent is a test for the arrival of perfection. But it is still not perfect and world's reconstruction is not finished. In this period evil prevails like a fearful winter and death which is Ahriman's biggest weapon looses its power before the advent of the second savior (Bundahisn part 18, 142- Pahlavi traditions 48: (1) 16-2; Minavi kherad: 76 Bundahisn Section 9: 74; Yasht13: 96-142).

At the time of Hūšidarmāh the second savior with the Avestan form Ukhšyat nemah which means the developer of prayer, the world's situation will approach that of the paradise. Man will no longer need to eat meat and becomes vegetarian. But the evil is not vanished yet and it will appear again. He will emerge in the form of Zahāk and will be destroyed by Garshasb the legendary hero (Purdavud, 1995:15; Minavi kherad: 78; Pahlavi traditions 48: 2:29 -25).

In the time of the last savior i.e. Saošyant with the Avestan form Astvat ereta which means the developer of the world Fraša karta or the world's reconstruction is finished. He will raise the dead where they are passed away and lead them to the final toward the last judgment. Everyone will see the result of his good or bad deeds. After the rewards and punishments everyone are placed in molten metal rivers to have the same purity and they will get the immortality elixir after the last sacrifice from the hands of Saošyant (Minavi kherad: 79-78; Pahlavi traditions 482: 67-54; Yasht vol2 p. 102-101).

Saošyant

The word Saošyant is one of the most important terms in ancient Iranian texts that used for many times in Gathas and later Avesta. Avesta experts have different translations for this word. Barthholomae translates it as the savior and relates the singular form to Zoroaster and the plural form to the Zoroaster fallowers. Lommel translates it as the helper and Humbach translates it as the beneficent. Kellens considers Saošyant as the executer of sacrifice ceremony. Humbach like Kellens had considered a ceremonial meaning for this term but later he introduced it as a moral concept meaning righteous. Hinz believes that this term is used two general concepts and refers to the religious leaders (Kellens, 313: 1991; Hinz1995: 83.85; Humbach 1991: 192; Lommel1903: 226; Barthelme, 1904: 1551).

Saošyant is the nominative adjective for future from the root sao which means swelling, enlargement and the future stem sign šiia- and adjectival transient suffix -nt. Purdavoud considers the term from the root su / sav which means beneficence and based on derivation considers it equal to the Middle Persian word sudōmand" and "sudresān"which means beneficent (Purdavoud, 2002: 203; Bailey 1979: 429; Whitney 1924: 429).

This term is used for a total of six times in the Gatha three times in single form and three times as the plurals which is used as single forms (translations are based on the translation of the Avesta books, research reports, and Jaleel Doustkhah and Persian sources. Also when referring to specific Yasht this book has been referred to) including:

“So whoever is an enemy to the evils and people who follow them has a separate way from those who humiliate" Ahura Mazda ". For Such a person who thinks good about him, and wise saviors and the helpers of pure religion (Mazda) will be a friend, brother and even a father (Yasn 45, 11).

O Mazda!

How can I find that you in the in light of "Asha" rule the ones who try to bother me?

Aware me of the “good manners" norm.

The savior must know his reward (Yasn 48, 9).

“They should seek for " Mazda " satisfaction with deeds, thoughts and words and pray freely with good deeds and in praise.

Kei Goshtasp the follower of Zoroaster Spytman and Farshushtar have chosen the right religion that "Ahura" sent to yhe savior (Yasn53: 2).

Pargraphs of Gatha that have used this term in plural form are as follows:

"O Ahura Mazda!

… the way in which you showed me the good deed is the education of saviors (only) good deed will be source of joy in the light of "Asha" (the way) that you selected the aware 34, 13)

"O Mazda!

When will that day come that the "Asha" will shine to maintain the world under the wise educations of the saviors?

Who are the ones that good deeds will help them?

O Ahura!

I (just) choose your education” (Yasn46: 3).

“These are the lands saviors who will do “good deeds” and their deeds are based on “Asha” and your trainings.

They are truly selected to crush Anger "(Yasn 48, 12).

In presenting the differences between the singular and plural forms of Saošyant (in new Avesta when it is used in the plural form it is not different from Gāhān Saošyant. But when it is used in the singular form it refers to the Saošyant as the last time savior) in Gatha Barthélemy believes that the plural form refers to those who help Zoroaster in the way of salvation and the singular form refers to Zoroaster undoubtedly who is the greatest Saošyant. Pourdavoud agrees with in this sense. Lommel with reference to Yasn 43 paragraph 3 writes Zoroaster waits for a man who was greater than him who would shoe the beneficent way in this world’s life and the divine world and he is “well known and pure” like himself and Hinz believes that although Zoroaster can be one Saošyant but he is not the only one (Barthélemy1904: 1551; Poordavoud, 1999: 203; Hinz1995: 83; Lommel, 1930: 229).

According to Yasn 34 Saošyants have the Dinas that move toward reward. Dina means both religious conscience and internal wisdom of the man about himself and the world. Dina is one of the five elements of human being and its being good or bad depends on the human deeds. Saošyant's Dina is described as purity and holiness. Saošyant through this Dina will make people as a friend, brother or father like a village chief or the head of a family which indicates their social mission (Hinz, 1995: 86-84; Parvi, 1965: 29-28, Yasn 34, 13, Yasn 45 : 11).

Using this Dina Saošyants move toward good thoughts and achieve the reward they deserve through the generosity of Mazda. The main character of Saošyant is his divine ability and his internal wisdom i.e. Dina belongs to it. (Yasn 13:34; Yasn 2:53).

Another component of Saošyant's divine ability is his wisdom. He understands the divine trainings through his wisdom. Kellens comparing the Rigveda concepts for the desired way considers the concept of way in the paragraphs as a ritual concept and considers it as a metaphor of ritual sacrifice that links God and human being and considers Saošyant as the executer of this ritual. But as Hinz truly mentions we can not be sure that Zoroaster has used this term for Rigveda concept. And since the word Saošyant is sometimes applied in Gathas paragraph and parts which are not related to the rituals and Saošyant has no other Rigveda meaning the meaning of the way here is the way of thinking (Kellens, 1974: 202; Hinz , 1995: 87; Humbach, 1991: 186; Yasn 53: 2, Yasn 48, 12).

It can be observed from the words of Zoroaster that he is waiting for the savior who will expand the good rule everywhere. Poordavoud considers the final savior as Zoroaster himself in the end of the world and believes that Zoroaster is not waiting for the savor but he is waiting for the final victory (Yasn 16:31; Poordavoud, 1999: 155)

Fraša karta in Gatha

The word Fraša karta is used frequently in Avesta. Some people believe that this word is not mentioned in Gatha while others believe that this word is used in two parts of (fraša) meaning new, Bright, Amazing and(karta) from the root kar meaning doing and committing. Fraša karta in new Avesta and medieval texts is an equivalent of the renewal of the world the meaning of which is related to the advent of Saošyant (Humbach1991: 127; Lommel, 1930: 226; Molton: 378; Jackson: 149).

Datistan-i Dinik, Bundahisn and Denkard are among the medieval texts that refer to the restructure of the world. It is mentioned in Bundahisn that Ormazd raised people out of nothing and he can revive something he has created before and Datistan-i Dinik approves that it is easier to repair something which is already built (Mehr, 1995:109-110).

Hintze does not consider Fraša karta as the end of the world but he considers it as the reconstruction of the world into the state before the attack of Ahriman (Hintze: 107).

The end of the world is not addressed in Gatha. Ahura Mazda is eternal and creation is his mastery. The thing that Gatha refers to is the end of the time. The end of one period and its continuation beyond the time! End of the time is a turning point which is followed by the victory of Ashavan and this turning point is Fraša karta. In Zoroastrian beliefs Fraša karta is against the original creation, and it means the reconstruction of the world and the resurrection of the dead, and it is the time when the world becomes free from the demonic forces (Dalla, 1963: 290; Yasn 28: 2; Yasn 48: 4 , 5, 6, 9).

Gatha consider Zoroaster as the pioneer of the ones who believes in the advent of the savior and eschatology. So Zoroastrian Yasna asks Ahura Mazda and believers to rebuild the life the climax of which is in his faith in end of the time (Molton, 1972: 328; Yasn 15:34).

In order to analyze the concept of Fraša karta in Gāhān first the contexts of it must be mentioned. The paragraphs in which this term has been used include:

"O Mazda!

Make me aware of the best words and dees to praise you in the light of "Asha" and "good deed".

O Ahura

With “divine kingdom” of yourself give us a new life full of "Asha"

(Yasn 15:34)

While in New Avesta and in the medieval texts the meaning of Fraša karta is referred to the Zoroastrianism savior, this concept does not have an eschatological meaning in Gatha and it is not related to a specific character. It can be understood from Zoroaster hymns about Fraša karta that he is one of the pioneer believers of the Apocalypse. According to Gatha Zoroaster’s belief is not summarized in the renewal or eschatological meaning of it. But the world renewal is eternal and Zoroaster asks Amshaspndan and Mazda to make the world new (Yasht 13: 11,12, 23, 24, 89, 96, Bahar, 2001: 147 -145; Molton, 1972: 328).

Dalla referring to section 15 of Yasn 34 writes “Ahura Mazda will reconstruct the world based on his Divine will. All the world is moving toward realization of this purpose and the humanity is moving toward this ideal” (Dalla, 1963: 111)

"O Mazda!

We want to be yours and Ahvrayyan who renew the existence.

Help us in the light of “Asha” to make our thoughts closer when our wisdom hesitates.”

(Yasn 9:30)

"O Mazda!

I consider myself as your admirer and I will praise you as long as I has the power under the light of “Asha” I will praise you.

(I wish) the world in the light of “good deef” would answer the best hope of the righteous people”.

(Yasn 11:50)

"O Mazda, O Asha, O good deed!

As you are like this, help me in the changes of life in this world so that I shall move toward you with a deep hearted prayer”

(Yasn 6:34)

O Ahura Mazda!

I truly say: Everyone - whether man or woman- who does the things that you confirm he will be in the light of “good deed” and get “Asha” and “divine kingdom” reward.

I will lead such people to praise you and lead them in the path of judgment.

(Yasn 10:46)

According to the writings of Gatha there is no end to this world. Gatha points to the end of time. The end of time is the end of a period of creation and its continuation beyond the time and above dimensions. The end of time is a turning point which includes the victory of Ashun in achieving their goal which is the life without discord, anger and grief and oppression. The victory which is the result of individual and group endeavors of the righteous:

"O Ahura Mazda!

I turn to you with good deeds

Bestow me the reward of Astomand and divine world which is due to “Asha” and calm and open the religion of the wise people

(Yasn 2:28)

"O Ahura Mazda!

I found you pure when I met you at the beginning of creation and I found out that how you put a reward for the deeds and words until the end of creation: reward for the righteous, and punishmen for the evil”

(Yasn 5: 43)

"Who in the light of "Asha" works out the request of Zarathustra which is the world renewal he deserved the eternal life and he will achieve whatever he wants in this fruitful world

O Mazda! Most informed!

You have revealed these to me”

(Yasn 19:46)

Given the evidence in Gatha it can be said that perhaps what Zoroaster expects from the world renewal might not be the same as what is mentioned in later Zoroastrian texts about Fraša karta. Referring to paragraph 6 of the Yasna 34 Lommel believes that Zoroaster called for a complete change in the world. Focusing on Zoroaster hymns it can be concluded that he waited for transformation and modernization of the world after winning against Duruj. A final transformation in favor of Ahura Mazda and Mazda-worshipers (Lommel, 1930: 227-25) .

The attention paid to the justice of God in hymns of Zoroaster and the reward and punishment considered for the righteous and evil presents Zoroaster's belief in a world better than the current one. Concepts like judgement, Chinvat Bridge, reward and punishment are all the concepts in Gatha that refer to an important event in the end of world and beginning a new life (Paveri, 1965: 56-55; Molton, 1972: 156).

Thus, it should be stated that the doctrine of Fraša karta and the advent of apocalyptic saviors refer to Zoroaster. Fraša karta or renovation is related to believers in Asha and Ahura Mazda which will happen with the help of the creatures and Mazda-worshipers. After Fraša karta according to Zoroaster maybe it becomes possible to understand from the effort of Mazda-worshipers to fulfill the victory of the worlds against the world of evil that with the excess of good deeds compared to the evil deeds the final judgment happens (Paveri, 1968 : 113; Barthélemy, 1904: 702).

CONCLUSION

In the end we can conclude that the concepts of Fraša karta and Saošyant presented in Gatha do not have merely eschatological aspects. But the concepts are always present in human life. So Saošyants have religious rather than ritual characters and they manifest this religiousness through the beneficence to the Asha system, and their character is not merely apocalyptical. Saošyants in Gatha are great people who lead people following the teachings of Zoroaster and listening to Mazda as well as moving on the right way. They fight with evil behavior and finally as they reach their reward, they provide peace for the people.

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DEVELOPMENT OF A SYSTEM TO COUNT NUMBER OF REBARS FOR INSPECTION USING VISION RECOGNITION

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ABSTRACT

Abstract- When rebars are in stock, the quantity of rebars should be checked. However, it is very difficult to grasp this quantity confirmation work with the naked eye. Therefore, the purpose of this paper is to develop an automatic counting system for rebars using vision recognition. The system is developed based on Open Source Computer Vision(OpenCV) libraries which are open-source software for computer vision. The cross section of the rebar is circular. The number of rebars are checked with a photograph of the section of the rebars. Hence, it is really important for the automatic counting system to recognize circulars correctly to count the rebars. In the OpenCV, a Circular Hough Transform(CHT) algorithm is provided to detect circles in an image. In this paper, an Angle-based Circle Detection(ACD) algorithm is proposed to improve the recognition rate for the circles in an image. Also, we designed a new equipment to increase the precision of the counting system. The CHT(Circular Hough Transform) and the ACD(Angle-based Circle Detection) algorithm are compared in terms of recognition rate for circles in this paper. As experimental results, the developed system has better recognition rate.

Keywords-Automatic counting system, Vision recognition, Circular detection

THE IMPLICATION OF ECONOMIC GRWOTH WITHOUT DEVELOPMENT: A CASE OF THE NIGERIA ECONOMY

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ABSTRACT

This study examines empirically the relationship between economic growth and development in Nigerian over the period 1980 to 2015.Quarterly secondary data obtained from the Central Bank of Nigeria (CBN) statistical bulletin (2015) and energy information administration (EIA) was used. The Ordinary Least Square (OLS) econometric techniques were adopted in analysing the data for this study; from the analysis it was observed that all the variables were stationary at their first differences, using the Phillip-Perron unit root test; and had a long-run relationship using the Johansen Co-integration test. The Error Correction Mechanism was used to test the empirical relationship between the investigating variables. The study found out that there is a long-run significant positive relationship among the variables; and that economic growth in Nigeria has a statistically significant negative impact on economic development in Nigeria. The findings of this study also showed that inflation rate has a negative though not significant impact on economic development and a real exchange rate has negative but not statistically significant effect on economic development in Nigeria. This study concludes that the impressive growth rates in Nigeria's economic indicators, which gave the status of the Africa's biggest economy in 2014 has not translated into development. This is seen by very high rates of unemployment, poverty of almost 70% and low Human Development Index. This study recommended that the resultant effects of sustainable and effectively managed economy will result in reduction in inflation ration rates; stabilize exchange rates, price stability, and reduction in unemployment and poverty incidence in the country amongst others.

Keywords: Human development index, natural resource abundance, economic growth, Economic Indicators

2. INTRODUCTION

Human development index is a composite statistic of life expectancy, education and income indices used to rank countries into four tiers of human development. Nigeria earned about N51.50 trillion as proceeds from oil alone from1979-2011, out of which N3.10 trillion and the total sum of N48.40 trillion was earned between 1979-1999 and 2000-2011 respectively (National Bureau of Statistics, 2011). One may begin to wonder why is it that a nation with such financial boom, endowed with plenty of natural resources, riches and splendid wealth, still record high level of unemployment, 70% of its population are relatively poor, income inequality amongst other misery indices. Human development is an important component of any economic development. Indicators in human development in the country are relatively weak (Aliyu, 2013). Education for instance, is a very important component of economic development focus. This why the United Nations Organization (UNO) recommended 26% of nation's budget to education. Nigeria, with its booming and fast growing economy, only allocates 3% of its national budget yearly to education which is highly insufficient (Aliyu, 2013).

Debt Management Office (DMO), reports that the federal government in 2013, borrowed an estimated N2.49 trillion to finance its operation, representing 54.13 percent of the budget estimates of N4.6 trillion for that year. This was even happening when there was oil boom. That is, the benchmark of $79 per barrel in the budget was exceeded to about $110. But these excesses have not translated to a tangible financial boost to the economic growth. However, despite the impressive growth rates in Nigeria's economic indicators, the status of the Africa's biggest economy in 2014 was not only rated low but as one of the Africa's poorest with more than 100 million of its population living on less than $1 per day, those who cannot afford to bare essentials of food, shelter and clothing – rose to 60.9% in 2010 compared with 54.7% in 2004 and overtaken by smaller

countries like Niger, Benin and Cameroon in a prosperity survey by UK based Legatum Institute (Premium Times, 2014; NBS, 2011 in Okoroafor and Nwaeze 2013).

Although, the nation's economy was projected to be growing at about 6-8% between 2011 and 2014, poverty and unemployment is likely to get worse because there is widening gap between the rich and the poor as a result of entrench deep gap of wealth disparity. This is a paradox because even when Nigeria's economy has continued to grow at appreciable rates, the proportion of people living in poverty has continued to increase unabated every year (Kale, 2012). However, the economy of the country is now projected by International Monetary Fund (IMF) to be growing at 5% in 2015 because of the slump in oil prices which the country is deeply affected (Thisday Newspaper, December, 2014) . In an update released in 2004, the UN found that Nigeria was making progress toward achieving several goals but was falling short on others. Specifically, Nigeria had advanced efforts to provide universal primary education, protect the environment, and develop a global development partnership. However, the country lagged behind on the goals of eliminating extreme poverty and hunger, reducing child and maternal mortality, and combating diseases such as human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) and malaria (Odularu, 2008).

One of the most harmful effects of natural resources abundance to the Nigeria economy is related to the extinction of non-resource sector. In relation to this, the so-called Dutch Disease concept is evident in Nigeria as our situation is such that the manufacturing sector is crowded out by resource sector.

Manufacturing is one of the most important causes of economic development as it brings the innovations and creates global trade. Manufacturing provides a complex division of labor (Ross 1999) and a higher standard of living (Sachs and Warner 2001): thereby, boom in resource sector leads to a decline in the amount of manufactured goods, causing higher unemployment and crowding out working places. "The expansion of the natural-resource sector is not enough to offset the negative effect of deindustrialization on economic growth" (Torres et al. 2013), that is to say, a development of manufacturing sector is essential for the economy. Moreover, a boom of natural resource sector might be harmful for public and private investments in human capital and education (Gylfason 2001), and entrepreneurship (Sachs and Warner 2001). In Nigeria as a resource abundant economy, innovation and technology are usually far behind the resource sector, which slows down a transition towards market-based economy (Goorha 2006).

Budget formulation and implementation in Nigeria has rather become a yearly "rituals" because of its poor implementation and underperformance occasioned by fiscal indiscipline and corruption. Breach in budgetary implementation is a constitutional offence but not really applicable in Nigeria because of the weak institutions of the political system as well as weak economic institutions. Many observers, citizens, stakeholders and economic experts in the country usually described the component, structure and process of budgeting in the country as not beneficial to sustainable growth as well as effective utilization of productive capacities for development. The government unnecessary expenditure coupled with high level of corruption has further exacerbated the already crippling and crumbling economy. The failure of government to prosecute corrupt officials further compounded the situation, as people continue to loot public funds with recklessness and impunity as public officials continue in draining public treasury since they know that they are less likely to punished (Soludo, 2015).

The average Nigerian is not interested in the exaggerated estimates presented to the National Assembly for approval, elegant speeches, incomprehensible economic jargons and nomenclature undertone by political coloration, economic indices, but how such will positively impact on his or her life. The ordinary Nigerian is rather interested in essential basic necessities of life, shelter daily food on his or her table, education for his or her children, affordable basic healthcare, security as well as other basic social amenities that will make life better for him or her. Achieving viable, productive and sustainable socio-economic cum political development can never be attained without diligent, concerted and deliberated attention to the basic human needs as well as social wishes of the people. The central meaning or scope of any meaning development anchors on the enhancement of people's standard of living on a sustainable basis (Edet, 2015).

With the positive impact of non-oil sector on the GDP relatively rendered useless because of treasury lootings and unnecessary wastages. The continuous pressure on naira (domestic currency) as well as unprecedented depreciation of the exchange rate against naira have further worsen the current depressed economic indicators, as inflation has risen to double digits again. These further worsen the existing situation as food prices has sky rocketed thereby worsening the already complicated situation of high poverty and unemployment profile of the nation. With Nigeria ranked low in areas of education, health, safety and security, etc. This study therefore is concern with paradox of economic growth without development in Nigeria as a resource abundance country.

2. LITERATURE REVIEW

2.1 Theoretical Framework

The investigation of this work is based on three theoretical underpinnings namely the vent-for-surplus development theory and resource abundance and growth theory. The innovations hypothesis is developed by Hayami and Ruttan (1971). According to this hypothesis, countries with abundant natural resources can easily increase output by increasing the exploitation of its natural resources, such as aggressive exploration for oil deposits as was the case of Nigeria in the 1970s. This inhibits the tendency for such countries to develop new technologies for other economic activities through education and research.

2.1.1 The vent-for-surplus development theory

The vent-for-surplus development theory was developed by Myint and Hla (1965, 1971). According to this theory, a resource abundant country's participation in international trade based on the sale of natural resources cannot lead to sustainable development, unless natural resource rents are effectively mobilized for physical and institutional infrastructure including education. In fact, effective use of natural resource rents has been identified as the bases for the successful shift in the economic growth momentum of Canada and the United States from exploitation to agricultural intensification and industrialization (Myint and Hla 1965).

2.1.2 The Benign Perspective Theory (Resource Abundance and Growth Theory)

The traditional wisdom before the late 80s was that natural resources had positive effect on development (Baghebo, 2012; Rosser, 2006). This view was shared by many development theorists and neo-liberal economists until the resurgence of new view in the 80s that claimed that natural resource abundant was not a blessing to the developing countries. The basic argument of the benign perspective is that natural resource endowments would assist the developing countries to transit from the stage of underdevelopment to that of industrial 'take-off', as obtained in such countries as Britain, the United States and Australia.

According to Akinlo (2012), the various channels through which abundance of natural resources like oil sector could contribute to the economies of the oil producers have been identified in the literature. One, the huge revenues from oil enables the governments of the oil producing countries to spend and invest massively without recourse to taxation. Revenues from oil, if properly utilized, could serve as a "big push" for development. This channel is especially important for developing countries where paucity of capital often constitutes a major hindrance to growth and development. Moreover, the huge foreign exchange earnings from oil exports, apart from being used for importing raw material, intermediate and capital goods for production in the non oil sectors could equally assist in boosting the foreign reserves of the oil exporting countries. The accumulation of foreign reserves can be seen as collateral which the oil producing economies can use in attracting foreign investment (Dooley, Folkerts-Landu, and Garber, 2003). Also, such holding can be seen as a costly self-insurance strategy to smoothened vulnerability impacts of domestic and foreign shocks and to intervene in the foreign exchange market.

Oil sector can also contribute to development in the oil rich economies through provision of intermediate inputs to the rest of the economy. These intermediate inputs include crude oil, gas and liquid feed stocks, as well as oil and gas into the refining, petrochemical and electricity and energy intensive industries respectively (Al-Moneef, 2006). This channel is critical to growth and development in the developing

countries (Ogbonna and Ebimobowei, 2012). For instance, many outputs of the petrochemical industries are crucial to the development of the manufacturing industries. Likewise, provision of electricity and other basic utilities at favourable prices is of considerable importance in the process of growing and nurturing the service and manufacturing subsectors. Growth and development in the oil rich economies could be enhanced through the market contribution from oil. The market contribution relates to the demand by oil sector for various inputs of goods and services provided by local sources.

Generally, as a result of oil production, refining and distribution, there is tendency for oil sector-related services to spring up. These oil sector-related services will not only provide opportunity for employment but also serve as sources of earnings for the operators. Asides the market contribution, the foreign direct investment (FDI) effect is very important. Oil activity often leads to inflow of foreign resources such as FDI and portfolio investment. Indeed, the bulk of FDI into majority of the countries that export oil are concentrated in the oil sector. The various channels through which FDI impacts growth and development in the recipient countries have been extensively discussed in the literature. Specifically, FDI inflows to developing countries not only help in increasing their stock of capital but may also assist in boosting labour productivity and incomes in the host country. Consequently, the levels of output, employment creation, and potential tax revenues are enhanced in the host countries (Ramirez, 2006).

2.1.3 The Resource Curse Theory

Resource curse also known as the "paradox of plenty" is a paradoxical situation in which countries with an abundance of non-renewable resources experience stagnant growth or even negative economic growth. The resource curse occurs as a country begins to focus all of its energies on a single industry, such as mining, and neglects other major sectors. As a result, the nation becomes overly dependent on the price of commodities, and overall gross domestic product becomes extremely volatile. Additionally, official corruption often results when proper resource rights and an income distribution frame- work is not established in the society, resulting in unfair regulation of the industry. Richard Auty first introduced the resource curse theory in his 1993 book "Sustaining Development in Mineral Economies: The Resource Curse Thesis". The opening sentences in that book read: "However, a growing body of evidence suggests that a favourable natural resource endowment may be less beneficial to countries at low-and mid-income levels of development than the conventional wisdom might suppose. Two important pieces of evidence are the developing countries' post-war industrialization efforts and the performance of the mineral-rich developing countries since 1960s. The new evidence suggests that not only many resource-rich developing countries fail to benefit from a favourable endowment; they may actually perform worse than less well-endowed countries. This counter-intuitive outcome is the basis of the resource curse thesis".

Though it seems that for countries endowed with larger quantities of natural resources has an advantage and has grown faster than resource poor countries, but this is not exactly the case. Between 1960 and 1990 the per capita incomes of resource poor countries grew two to three times faster than the per capita income of resource abundant countries, and the gap in the growth rates appears to widen with time (Auty, 2001). A large number of studies have been published in recent years supporting the "resource curse" theory and effects that may inhibit growth in resource rich economies.

Many African countries such as Angola, Nigeria, Sudan, and the Congo are rich in oil, diamonds, or other minerals, and yet their people continue to experience low per capita income and low quality of life. Meanwhile, the East Asian economies Japan, Korea, Taiwan, Singapore and Hong Kong have achieved western level standards of living despite being rocky islands (or peninsulas) with virtually no exportable natural resources.

Recently the so called resource curse has gained attention largely. Firstly it was established by Sachs and Warner in 1995. Later evidence and further refinement by Sachs and Warner (2001), Gylfason (2001) and Kroneberg (2004) has confirmed the existence of a negative relationship between natural resource abundance and economic growth. The issue, however, remains in dispute. Some researchers have analyzed the

universality of these results to alternative econometric techniques while others have focused on explaining the factors underlying this negative relationship (Rodriguez & Sachs, 1999; Leite & Weidman, 2002; Lederman & Maloney, 2002; Haussmann & Rigobon 2003; Mehlum et al., 2006; Hodler, 2005). Several recent studies, however (Alexeev & Conrad, 2009; Stiglitz, 2005; Brunnschweiler, 2006), question the mere existence of the "resource curse" and make it necessary to reconsider the hypotheses about the impact of resource abundance on economic growth.

2.2 Empirical Review

Boschini et al (2007) used data for 80 nations from 1975 to 1998 and tested models with different measures of natural resources such as value of primary export; value of export of ores, metals and fuels; value of mineral production of gold, silver and diamond all as a percentage of GNP or GDP. The findings are that abundance of natural resources has a negative impact on economic growth while institutional quality positively affects growth. However, an interaction effect between natural resources and institutional quality was positive and significant, implying that good institutions can turn natural resources into a blessing. The result also showed that gold, silver and diamonds have stronger negative impact on economic growth. The results did not change significantly, even when a two- stage, least square model was adopted to account for endogenous nature of institutions using latitude as an exogenous instrument.

Similarly, Mehlum et al (2006) used only developing nations with 1984 data on property right, rule of law, risk of expropriation in repudiation of contracts and combined polity score of different measures of institutional quality from those of earlier studies. The result did not change significantly in that abundance of natural resources has a negative impact on economic growth while institutional quality positively and significantly economic affects growth.

Brunnshweller and Bulte (2008) used crossed sectional data from 1970 – 2006, for 59 countries to examine the impact of natural resources on institutions, resource dependence and economic growth. First, they investigated the impact of resource abundance (measured as the log of total capital per – capita in 1994 and log of sub soil assets per capita in 1994), resource dependence (natural resource exports as a percentage of GDP from 1970 – 1980 and mineral exports as a percentage of GDP from 1970 to 1980), regional dummies, and latitude on institutions (measured as the rule of law in 1996 and quality of bureaucracy in 1996). Then they examined the impact of resource abundance, 'durable' institutions (rule of law and quality bureaucracy) and trade openness on resource dependence. Dependence upon resources was measured in three equation; export of agricultural raw materials, exports of minerals, and export of natural resources, all as a percentage of GDP from 1970 to 1980. Their result was that, resource abundance has a positive impact on the quality of institutions; resource dependence does not. Resource abundance, openness and type of regime have a positive impact on the resource dependence; quality institutions have negative impact on resource dependence.

3. METHODOLOGY

This study employed quarterly time series secondary data spanning from 1980 to 2015 collected from the Central Bank of Nigeria Statistical Bulletin, 2015 edition and energy information administration (EIA).

In order to establish the relationship between economic growth arising majorly from natural resources and economic development in Nigeria this study adopted the ordinary least square (OLS) technique. The Phillips-Perron unit root tests were utilized to test for stationarity and the order of integration of the variables. Since the evaluation considers long-run relationship among the variables the Johansen cointegration test is conducted and we further conducted the Error Correction Model (ECM). The granger causality test was also conducted to determine the causal relationship among the variable and the direction of causality.

3.1 Model Specification

For the purpose of analyzing, forecasting macroeconomic activities, and tracing the impact of economic growth (GDP) on economic development (HDI) in Nigeria. This study specifically employ multiple regression analysis with OLS econometric technique for data analysis to empirically verify whether a significant relationship exists between the dependent variables (economic development, using human development index as proxy), and the independent variables (gross domestic product, real exchange rate and inflation) in

Nigerian. This study in order to establish the relationship between economic growth arising majorly from natural resources and economic development in Nigeria we formulate a model as follows:

$ED = f(GDP, REXCHR, INFL)$ ..... (3.1)

Equation (3.1) can be rewritten in Econometric linear form thus:

$ED = \phi_0 + \phi_1 GDP + \phi_2 REXCHR + \phi_3 INFL + \varepsilon_t$ ..... (3.2)

Where: ED= Economic Development using Human Development Index as a proxy; GDP = Economic Growth using gross domestic product as a proxy; REXCHR=Real Exchange Rate; INFL=Inflation Rate

ϕ_0 = Autonomous ED when the independent variables are held constant.

$\phi_1 - \phi_3$ = Coefficient of the independent variables, ε_t = Stocastic term.

4. RESULT AND DISCUSSION

This study in order to examine if Nigeria's economic growth arising majorly from natural resources has significant impact on economic development in Nigeria The Phillips-Perron unit root tests, the Johansen cointegration test is conducted, the Error Correction Model (ECM) and the granger causality test was also conducted. The empirical results are presented and discussed in this section:

A spurious regression describes a situation where no linear relationship actually exists between a dependent variable and an independent or a set of independent variables with high R-squared or adjusted R-squared and few statistical significant t-ratios. Thus, the Phillip-Perron unit root test is conducted to examine the unit root property of the variables in the model with the inclusion of trend and intercepts components in the test equations at both levels and first difference so as to avoid the estimated regression being spurious.

The stationarity test of Phillip-Perron employed in this study as evident in ***table 4.1*** shows that, real exchange rate has no unit root problem as its significant at level while human development index as a proxy for economic development, gross domestic product and inflation rate has unit root problem at level as such are all non-stationary at level. But became stationary at first difference (stationary at 1%, 5%, 10% level respectively.

We shall seek to establish whether or not there exists a long run relationship among the variables integrated at the same order (i.e. 1(1)), in their linear combination by employing Johansen Co-integration Rank test to determine the number of co-integrating equations as well as to ascertain if the variables employed in this study are co-integrated

The cointegrating result in ***table 2***: shows that the trace statistic indicates two Co-integrating equations at 5% level. This shows that there is a long-run or equilibrium relationship among the variables employed in the model specifically those integrated at the order.

Having confirmed that all the 1(1) variables are co-integrated we proceed to estimate the error correction model result as presented in ***table 4.3***. The error correction term which tells us the speed with which our model returns to equilibrium indicates that there is a significant adjustment of economic development using human development index as proxy one period later to equilibrium. Thus disequilibrium in the value of ED is eliminated each period with an adjustment or level of convergence speed of 58.14 percent. The ECM (-1) coefficient conforms to a priori expectation as its sign is negative and it is statistically significant, thus the use of the error correction model in this study is justified. The adjusted R^2 0.420 of reveals that the explanatory variable employed in this study explained the variations in the dependent variable by 42.00% and the remaining 58.00% were explained by other variables outside the model, which is taken care of by the stochastic or error term. The results, showed that: using the coefficients, ED is a positive of constant 0.000960, this implies that when all variables are held constant, there will be a positive changes up to the tune of 0.000960 units in economic development (ED). The result also shows that economic growth (GDP) is

negative and statistically significant with a coefficient of -0.000889 and t-Statistic greater than two in absolute terms with a statistically significant probability value of 0.0156; the implication of this is that if gross domestic product as a proxy for economic growth increases by 1 unit, economic development will fall by 0.000839 percent; thus economic growth in Nigeria has a statistically significant negative impact on economic development in Nigeria. The result in ***table 4.3*** also shows that real exchange rate (REXCHR) is negative and statistically significant with a coefficient of -0.000839 and t-Statistic less than two in absolute terms with a statistically insignificant probability value of 0.0568; this implies that if real exchange rate (REXCHR) increases by 1 unit, economic development will fall by 0.000889 percent. Analyzing the relationship between inflation (INFL) and economic development (ED) the result showed that inflation rate (INFL) has a negative though not significant impact on economic development (ED) in the error correction model with -0.000881 as its coefficient value and an absolute t-statistics value 0.765107 as well as a non-significant probability value of 0.4457 at 5% significant level, this implies that inflation (INFL) impacts negatively on economic development in Nigeria. The F statistics of 21.36495, with a highly significant probability value of 0.000000. This means that the dependent and independent variables in the model (GDP, REXCHR and INFL) fits well in the model as such the entire model is adjudged statistically significant. The result shows that the Akaike info criterion and Schwarz information criteria are within the acceptable limit and therefore shows correct specification of the model. The model passes both the diagnostic and the normality test. The S. E of Regression with numerical value 0.000743 shows that in exactly two-third of the time the explanatory variable predict the dependent variable by 0.073 percent. The Durbin Watson statistic of 1.9586091 reveals the absence of autocorrelation in the model.

5. CONCLUSION AND RECOMMENDATIONS

This study in concerned with the impact of the increase in the economic growth of Nigeria on the development of the country. From the empirical analysis; this study concludes that the impressive growth rates in Nigeria's economic indicators, which gave the status of the Africa's biggest economy in 2014 has not translated into development. This is seen by very high rates of unemployment, poverty of almost 70% and low Human Development Index. The continuous pressure on naira (domestic currency) as well as unprecedented depreciation of the exchange rate against naira have further worsen the current depressed economic indicators, as inflation has risen to double digits again. These further worsen the existing situation as food prices has sky rocketed thereby worsening the already complicated situation of high poverty and unemployment profile of the nation. With Nigeria ranked low in areas of education, health, safety and security amongst others. The resultant effects of sustainable and effectively managed economy will result in reduction in inflation ration rates; stabilize exchange rates, price stability, and reduction in unemployment and poverty incidence in the country amongst others.

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Table 1: Phillip-Perron Unit Root Test

Variable	Level	First difference	Lag(s)	Model	Order of integration
GDP	-2.997511	-12.71390***	1	Trend & Intercept	I(1)
ED	-0.442418	-5.527392***	1	Trend & Intercept	I(1)
REXCHR	-3.667714**	-18.59231***	1	Trend & Intercept	I(1)
INFL	-1.769795	-11.95752***	1	Trend & Intercept	I(1)
ECM (-1)	-5.689563***		0	None	I(0)

Source: Author's computation.

Note: *(**)*** denotes statistically significant at 1%, 5% and 10% level respectively.

Table 1: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.191325	68.92835	63.87610	0.0177
At most 1 *	0.176104	43.65778	42.91525	0.0420
At most 2	0.102375	20.60619	25.87211	0.1967
At most 3	0.063080	7.753791	12.51798	0.2724

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's computation.

Table 4.3 Estimated Regression Result

Dependent Variable: D(ED)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000960	8.83E-05	10.87189	0.0000
D(GDP)	-0.000889	0.000362	-2.453617	0.0156
D(REXCHR)	-0.000839	0.000436	-1.923718	0.0568
D(INFL)	-0.000881	0.001152	-0.765107	0.4457
ECM(-1)	-0.581408	0.073859	-7.871903	0.0000

R-squared	0.420033	Mean dependent var	0.000854
Adjusted R-squared	0.400373	S.D. dependent var	0.000959
S.E. of regression	0.000743	Akaike info criterion	-11.53295
Sum squared resid	6.51E-05	Schwarz criterion	-11.41863

Log likelihood	714.2764	Hannan-Quinn criter.	-11.48652
F-statistic	21.36495	Durbin-Watson stat	1.986091
Prob(F-statistic)	0.000000		

Source: Author's computation.