

Threat Analysis of Readers' Unit in Ibrahim Babangida Library of Modibbo Adama University of Technology, Yola , Analytic Hierarchy Process (AHP) Approach

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Abstract: This paper identified four human threats affecting Readers' unit of Ibrahim Babangida Library (IBL) of Modibbo Adama University of Technology (MAUTECH), Yola. Data on threats were obtained using questionnaire and personal interview; the data obtained were analyzed using Analytic hierarchy Process (AHP). The results obtained revealed that reshuffle reshuffles is the severest threat with the weight ($W_{SR} = 0.289$), stealing with the weight ($W_{SA} = 0.282$), mutilation ($W_{SC} = 0.263$), and damage with the weight ($W_{SD} = 0.143$) is last. The result also shows that the most frequent threat is damage of material with the weight ($W_{FD} = 0.358$), next to it is reshuffle with weight ($W_{FB} = 0.337$), mutilation with weight ($W_{FC} = 0.220$) and lastly stealing with weight ($W_{FA} = 0.085$). We recommended that management should implore more strict security measures and also orient library users on threats to library materials and resources.

Keywords: Threat analysis; Stealing; Mutilation; Analytic Hierarchy Process (AHP)

1. Introduction

This research paper is focused toward addressing some threat challenges in the readers unit of Ibrahim Babangida Library (IBL) of Modibboadama University of Technology (MAUTECH), Yola.

A library (from French "librairie"; Latin "liber" = book) is an organized collection of resources made accessible to a defined community for reference or borrowing. It provides physical or digital access to material, and may be a physical building or room, or a virtual space, or both. A library's collection can include books, periodicals, newspapers, manuscripts, films, maps, prints, documents, microform, CDs, cassettes, videotapes, DVDs, e-books, audiobooks, databases, and other formats. Libraries range in size from a few shelves of books to several million items. In Latin and Greek, the idea of bookcase is represented by *Bibliotheca* and *Bibliothēkē*.

Nina-okpousung, (2002) assert that colleges are waking up to the fact that the work of many researchers depend on the library, because it is the place where students can learn to move beyond lectures and investigate for themselves. Changes in teaching methods require the academic library to supplement textbooks and enrich the curriculum. Okoro and Udoumoh (1998) states that the library has more vital relationship to the academic community, because books and other resources do not merely accompany academic activities, but are the fabric of activities. In addition, the library is a multipurpose establishment and a driving force in the realization of the aims and objectives of any higher institution of learning. It can be regarded not only as a reading centre but also a teaching and service agency. The library is the central laboratory of the whole academic institution of learning. Academic libraries are regarded as fundamental and integral to higher educational systems.

Despite all the benefits and academic advantage of the library, there exists threat to intellectual property. Mutilation is the defacement or damage of library materials. Mutilation of academic library collections has been reported by many researchers (Bello 1998; Lorenzen 1996). Mutilation or vandalism occurs when users knowingly tear, mark, or otherwise damage or destroy materials. Lorenzen (1996), observes that collection mutilation takes many forms, ranging from underlining and highlighting text, tearing and or removing pages, and tampering with the content. Lorenzen identifies several causes for theft and mutilation, including:

Students' dissatisfaction or unfamiliarity with library services , a lack of knowledge of replacement costs and time, a lack of concern for the needs of others. Few students think of library mutilation and theft as a crime.

Jato (2005) identifies the effect of delinquent behavior on the users and the library. According to him, immoral behaviours among the users resulted to the following:

It reduces the library stock, it reduces the life span of the mutilated library materials, it leads to extra cost, time, and personnel needed to replace the stolen and mutilated library materials, it prevents users from locating needed materials, it damages the image of the library, it can lead to low performance of students in examinations and even frustration among users.

Anyaobi and Akpoma (2012) assert that the abuse of library materials through theft, mutilation and other forms of abuse has posed tremendous challenge to the library profession. According to Jackson (1991) incidents of theft, non-return of materials and mutilation of library stock are on the increase. Sornam and Shyla (1997) reported that theft and mutilation of library materials was common in many libraries and only

the magnitude of the crime differed from place to place. Ajegbomogun (2004) states that theft and mutilation of books and non-books is a common phenomenon in Nigerian university libraries and if not checked will create a serious threat to Nigerian libraries' collection and preservations.,

Senyah (2004) identifies the scarcity of needed books and selfishness as being the main cause of book theft and mutilation. His study was however not conclusive on the perpetrators of the abuse. He concluded that the absence of regular stock-taking or inventory has made it practically impossible for the libraries to quantify the extent of losses. Various writers have expressed their views on what contributes to the causes of different forms of abuse in the library. However, many researchers base their argument on economic depression and security as the main causes of abuse of library materials. These include Ajegbomogun (2004), Agboola (2001), Afolabi (1993), Akinfolarin(1992) among others. Some other studies reveal that theft is motivated by societal problems. Any **shife** from factors such as inadequate service staff at night and during the weekends, lack of multiple copies of library materials in high demand and inadequate photocopying facilities may cause a negative impact on users' disposition to library materials. A study conducted by Ajegbomogun (2004) reveals that the focus of abuse is predominantly on reference books and journals. The results of the study is in line with those of Bello (1997) and Luke (1991). Abuse of library materials is not confined to hardened criminals. It spans all categories of users. According to Holt (2007), every profession has its "closed areas" which are little studied and seldom discussed publicly. In librarianship, theft by staff is one of those "closed areas." He further states that staff theft is a "hot-potato" issue from a manager's perspective because any action around this issue is complicated.

According to Momodu (2002), academic libraries have been faced with varying degrees of criminal behavior in the use of their resources especially materials and to some extent manpower. The extent of this problem varies from one library to another. In some cases the dimension of the problem is so restricted that it seems non-existent, in some others the dimension is so immense that it causes for serious concern. The findings of a study conducted by Momodu (2002) on the delinquent readership in selected urban libraries in Nigeria, revealed that, every library has delinquent client problem and that there is no direct correlation between the type of library and the extent of the problem. The problem seems to be universal. A number of studies (Lorenzen, 1996; Momodu, 2002; Ajegbomogun, 2004) acknowledged that, some individual users of academic libraries display disruptive or criminal behavior within the library surroundings and this can cause security problems in the library. The problem may not necessarily be in form of mutilation or stealing of the collection alone but disruptive users may cause problem to the library staffs which can hindered their performance and other necessary duties or functions related to the library collections, as indicated by (Lorenzen, 1996). One issues that need to be addressed as regard destructive behaviour in academic libraries is collection security. Ugah (2007), considers collection security violation as formidable obstacles to information access and use. Such acts are serious problems that can

result in user dissatisfaction. He identifies major security issues in libraries to include: theft and mutilation; vandalism; damages and disaster; over borrowing or delinquent borrowers; and purposefully displacing arrangement of materials. According to Bello (1993), book theft is a major security issue in libraries, particularly in academic libraries, with special collections being the most targeted materials. A study conducted by Olorunsola (1987) on academic library security discovered a relationship between high rates of security problems and the growth of the university. Not all thefts are committed by clients. Some library staff takes materials from the library without checking them out. This kind of theft, according to Lorenzen(1996), is one of the hardest to prevent, since library employees know how to defeat the security system. Ewing (1994) describes theft as only one type of collection security breach. Others include non-return of items by borrowers, vandalism, and stock destruction. Bello (1998) conducted a study on theft and mutilation in technological university libraries in Nigeria, revealing that there is a lack of security in university libraries. Users resorted to delinquent behavior because demand outstripped the supply of library material. These results in competition for resources, which invariably tempts users to steal, mutilate, or engage in illegal borrowing.

Theft and mutilation have posed a tremendous challenge to the library culture worldwide. As a consequence there is a vast literature on a range of problems concerning library security, with emphasis being placed on theft and mutilation. Because this insecurity to the human intellectual heritage is an intractable problem, researchers are always seeking for lasting solution, but with limited success. Academic libraries have introduced traditional crime prevention measure aimed at curtailing the theft and mutilation of books.

Although Dzarma (2014) Identified and analysed three categories of threats in IBL his study was not focused on readers' unit only and he considered only the standpoint of severity, however, this research is focused specifically on the readers' unit and is based on severity and frequency of threats.

2. Methodology

This section illustrates how AHP were used to determine weights and prioritize information security threats discovered in Ibrahim Babangida Library of ModibboAdama University of Technology Yola. The information security threats in Ibrahim Babangida Library were rated using Sa'aty rating scale (1980). Sa'aty's rating scale in Table 1 was used as a guide to compare the sources of threats.

Table1: Sa'aty;s rating scale

<i>Comparison</i>	<i>Scale</i>
(a) Equally important	1
(b) Moderately more important	3
(c) Essentially more important	5
(d) Strongly more important	7
(e) Extremely more important	9
(f) Intermediate values between two adjacent judgments are	2,4,6,8
Source Saaty(1980)	

For the purpose of this study, the threats in Readers' unit Ibrahim Babangida Library were categorized into three, namely Human threats (stealing, reshuffles, damage and mutilation), Natural threat (water linkage, thunder and

storm) and Technological threat (power surge, virus infection and hacking). Figure 1 illustrates human threats functional diagram in IBL

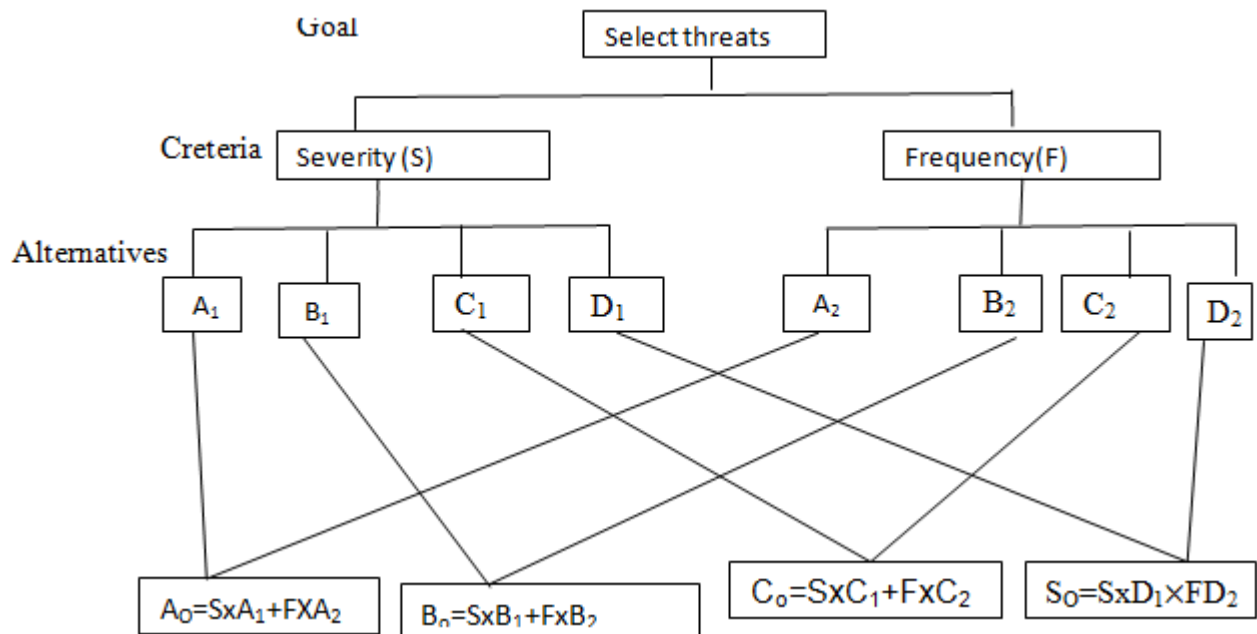


Figure 1: Human threats functional Diagram in Readers' unit of IBL

Where

A_i = Stealing, B_i = Reshuffle C_i = Mutilation and D_i = Damage ($i=1;2$)

A_o , B_o , C_o and D_o are overall priority of Stealing, Reshuffle, Mutilation and Damage respectively

Each of the alternative threat was compared with one another from stand point of severity and frequency using Sa'aty rating scale (table 1) as a guide which gave pairwise comparison matrix R.

Pairwise comparison matrix of Threats in Readers unit (R)

$$R = \begin{matrix} & \begin{matrix} A \\ B \\ C \\ D \end{matrix} \\ \begin{matrix} A \\ B \\ C \\ D \end{matrix} & \begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix} \end{matrix}$$

Where

Stealing = A, Reshuffles = B, Mutilation = C, Damage = D

a_{ij} ($i, j = 1,2,3,4$) is the ratings of threats in Readers' Unit of IBL

The weight for stealing W_{RA} , mutilation W_{RB} , reshuffles W_{RC} and damage W_{RD} were obtained by normalizing matrix R and taking the row averages. The threat that has highest weight were chosen as the most severe one. This is in line with the n method of weight determination seeTaha (2008). The consistency Ratio (CR) of Matrix A were computed as follows

$$CR = \frac{\text{Consistency Index (CI)}}{\text{Ratio Index (RI)}}$$

$$\text{Where } CI = \frac{\lambda_{\max} - n}{n} \lambda_{\max} = \sum_{i=1}^n RW$$

$$R = \begin{matrix} & \begin{matrix} A & B & C & D \end{matrix} \\ \begin{matrix} A \\ B \\ C \\ D \end{matrix} & \begin{bmatrix} a_{11} & a_{12} & a_{13} & a_{14} \\ a_{21} & a_{22} & a_{23} & a_{24} \\ a_{31} & a_{32} & a_{33} & a_{34} \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix} \end{matrix} W =$$

$$\begin{bmatrix} W_A \\ W_B \\ W_C \\ W_D \end{bmatrix} RI = \frac{1.98(n-2)}{n-1}$$

3. Analysis and Result

Table 2 summaries the pairwise comparison of security threat in Readers units of Ibrahim Babangida library MAUTECH in respect to frequency and pairwise comparison matrix R was obtained from it. Pairwise comparison Matrix of Threats in Readers Services Unit from standpoint of severity

$$S = \begin{matrix} & \begin{matrix} A & B & C & D \end{matrix} \\ \begin{matrix} A \\ B \\ C \\ D \end{matrix} & \begin{bmatrix} 1 & 1/2 & 1/2 & 5 \\ 1/2 & 1 & 2 & 2 \\ 2 & 1/2 & 1 & 1 \\ 1/5 & 1/2 & 1 & 1 \end{bmatrix} \end{matrix}$$

The weights for each threats were computed by normalizing matrix R and obtained it raw averages in line with Taha (2008) $W_{SA} = 0.282$, $W_{SB} = 0.289$, $W_{SC} = 0.263$, and $W_{SD} = 0.143$, $CR = 0.00472$ Where W_{SA} =Weight ofstealing, W_{SB} =Weight of Reshuffles, W_{SC} = Weight of mutilation, W_{SD} =Weight of damage

Threat ranking from standpoint of Severity

Reshuffle of material ($W_{SB} = 0.289$) is the most severe threat in this unit, Stealing($W_{SA} = 0.282$) is second, Mutilation ($W_{sc} = 0.263$) is third and Damage ($W_{SD} = 0.143$) is fourth.

Since the consistency ratio is less than 1 (CR < 1) the level of inconsistency in the judgment is acceptable

Table 2: Pairwise Comparison of the Four Human Threats in Readers' Unit

Pairwise comparison	More important criterion	How much more important criterion	Numerical Ratings
A-B	A and B	Equally important	1
A-D	A	Equally to Moderately more important	2
B-D	B	Equally important to moderately more important	2
C-A	C	Equally important to moderately more important	2
C-B	C	Equally important to moderately more important	2
C-D	C	Moderately more important	3

Where A= Stealing, B =Reshuffles, C= Mutilation and D = Damage

Table 3 summaries the pairwise comparison of security threat in Readers units of Ibrahim Babangida library MAUTECH and pairwise comparison matrix R was obtained from it. Pairwise comparison Matrix of Threats in Readers Services Unit from standpoint of frequency

$$F = \begin{matrix} & A & B & C & D \\ A & \begin{bmatrix} 1 & 1/3 & 1/4 & 1/4 \end{bmatrix} \\ B & \begin{bmatrix} 3 & 1 & 2 & 1 \end{bmatrix} \\ C & \begin{bmatrix} 4 & 1/2 & 1 & 1/2 \end{bmatrix} \\ D & \begin{bmatrix} 4 & 1 & 2 & 1 \end{bmatrix} \end{matrix}$$

The weights for the threats in Readers Unit by using the method explained in the methodology.

$W_{FA} = 0.085$, $W_{FB} = 0.337$, $W_{FC} = 0.220$ and $W_{FD} = 0.358$, $CR = 0.039$

Where: W_{FA} =Weight of stealing, W_{FB} =Weight of Reshuffles, W_{FC} = Weight of mutilation, W_{FD} =Weight of damage

Table 3: Pairwise Comparison of the Four Human Threats in Readers' Unit in respect to frequency

Pairwise comparison	More important criterion	How much more important criterion	Numerical Rating
B-A	B	Equally important	3
C-A	C	Moderately to essentially more important	4
B-D	B and D	Equally important to important	1
B-C	B	Equally to moderately more important	2
D-A	D	Moderately to essentially more important	4

Where A= Stealing, B =Reshuffles, C= Mutilation and D = Damage

Threat ranking from standpoint of frequency

Damage of material ($W_{FD} = 0.358$) is the most the frequent threat in this unit, reshuffle ($W_{FB} = 0.337$) is second and mutilation ($W_{FC} = 0.220$) is third and Stealing ($W_{FA} = 0.085$)

is fourth. Since the consistency ratio is less than 0.1 (CR < .0 1) the level of inconsistency in the judgment is acceptable
 The overall priority : $A_o = 0.024$ $B_o = 0.098$ $C_o = 0.058$ and $D_o = 0.052$
 Where A_o , B_o , C_o and D_o is as defined earlier.

4. Discussion

The results of the analysis indicate that Reshuffle and stealing of materials are the most severe threats in the readers' unit of library. Reshuffle which is also known as mis-shelving are caused by Scarcity of material in the library, most at time there are some materials that are limited in copies and many people want to use them because of that, those that are able to lay hands on them hide them from other users. Theft cases in the library range from library patronage to library staff because not all thefts are responsible by clients. Some library staff take materials from the library without checking them out. This kind of theft, according to Lorenzen (1996), is one of the hardest to prevent, since library employees know how to defeat the security system. Ewing (1994) describes theft as only one type of collection security breach. The cases of stealing most at time are caused by poor security systems in library. Some of the security personal doesn't take time to check out the patronages very well to avoid them going out with library material illegally.

The result of the analysis reveals that damage of material is the most frequent threat in the library. The damage of materials is possibly caused by the careless attitudes of some library users. The library staffs need to be more vigilant so as to get hold of criminals or defaulters. Reshuffle is the second frequent threat in the readers unit and the causes of reshuffle have already been discussed earlier.

5. Conclusion

In this Research we used questionnaire and personal interview to obtained data from readers' department of IBL. Analytic Hierarchy Process (AHP) was used to analysed the data and the results of the analysis shows that Reshuffle and stealing are the most severe threats while damage of materials and reshuffles are the most frequent threats.

The management is recommended to do the following so as to mitigate threats in reader' unit:
 Employ more staff and trained them on threats identification and management, introduce automated security door, increased the numbers of limited materials and educate library users on effects of threats on library

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