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Airport Service Quality and Passengers Satisfaction

(A case Study Khartoum International Airport (KIA))

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الآية

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صدق الله العظيم

Dedication

To sprit of my father.

To source of hope, my mother.

To my family.

To who made my life is meaningful Waad Abd Elrahim.

Acknowledgement

I must say, first and foremost, this thesis is devoted to *my belovedfamily*. *My parents* gave me a marvelous opportunity to complete a part of my education abroad. I am so grateful for their trust in me and priceless countenance throughout my life.

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Abstract

The purpose of this study was to measure the service quality at Khartoum international airport by using Fodness and Murray's (2007: 492-506) methodology for measuring service quality with focus on passenger perceived service quality. The study focused on Sudanese and Foreigner passengers at Khartoum International Airport, and considered the influence of demographics by focusing on purpose of travel, trip orientation, and frequency of travel. This study was developed to provide insights into the process of service quality measurement at Khartoum International Airport.. In this study the researcher used quantitative method to test an objective approach to measure passengers' perception and satisfaction of airport service quality at Khartoum International Airport, Sudan. Questionnaire collected from 100 passengers who has traveled by departure and arrival at Khartoum International Airport. The results of factor analysis identified three factors: 1) Function or Services cape, 2) Interaction or Personnel and Passengers' Relationship, and 3) Services or Diversion of services. The findings of this study indicated that the passengers' satisfaction perceptions of the airport service quality has positive influence on overall passenger satisfaction. In comparing the perception of airport service quality attributes and passengers' demographic profiles (purpose of travel, trip orientation, and frequency of travel) among Sudanese and foreigner passengers, the results showed that there is no significant difference in airport service quality attributes among Sudanese and foreigner passengers.

المستخلص

الغرض من هذه الدراسه هو قياس جودة الخدمه بمطار الخرطوم الدولي بإستخدام نموذج فودنس و موراي (٢٠٠٧) لقياس جودة الخدمه المدركه للركاب. الدراسه ركزت على المسافرين الأجانب و السودانيين بمطار الخرطوم الدولي و تم تقسيم المسافرين لأغراض التحليل حسب الغرضمن السفر و وجهة السفر و عدد مرات إستخدام مطار الخرطوم الدولي. في هذه الدراسه تم إستخدام بيانات كميه لقياس جودة الخدمه بمطار الخرطوم الدولي، السودان. و تم جمع البيانات من خلال إستبيان وزع لمائة راكب (وصول و مغادره) بمطار الخرطوم الدولي. النتائج أسفرت عن أن العوامل التاليه: (١) البيئه الماديه للخدمه، (٢) العلاقه بين العميل و مقدم الخدمه، (٣) التنوع في الخدمات المقدمه. كان لها تأثير كبير على رضاء الراكب. و كذلك أظهرت النتائج أنه ليس هناك فرق معنوي في تقديم الخدمه للراكب السوداني و الراكب الأجنبي مما إنعكس على رضأهم حيث لم يكن هناك فرق بين رضاء المسافر السوداني و المسافر الأجنبي.

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CHAPTER I

INTRODUCTION

CHAPTER I

INTRODUCTION

1.1 Introduction

The airport industry is changing rapidly. Today's air travelers have meaningful choices among airports and there is an increasing urgency among airport marketers to differentiate themselves by meeting the needs of customers better than the competition. While passengers' perception of airport service quality is only one of several variables (e.g. routes, scheduling, location and prices) that contribute to overall airport attractiveness, it is nevertheless an important variable because of the increasing importance of a customer orientation to competitive advantage in this industry.

Aviation trade publications and airport press releases provide evidence that managers in the airport industry clearly understand the importance of their customers' perceptions of service quality. Academic and industry researchers regularly measure passenger perceptions of airport services quality to benchmark performance metrics directly from the "voice" of the customer (Chen, 2002), to identify opportunities for service improvement (Yeh and Kuo, 2002) and to avoid losing valuable passenger traffic (Rhoades et al., 2000). In addition, airport marketer's research passenger needs and wants for the purposes of enhancing non-aviation related revenues from restaurant and retail offerings (Danyliew and Cohen, 1997; Harrison, 1996).

The nature of the expectations underlying airport service quality perceptions is unclear. Unlike the more widely accepted gap-theory model for measuring service quality (i.e. subtracting a customer's perceived level of service received from what was expected), both academic and commercial airport researchers are more likely to measure service quality by establishing and monitoring service performance measures which may or may not be informed by direct customer input (Yeh and Kuo, 2002). Often, these measures are internal (e.g. number of complaints, wait/service time for baggage delivery or check-in). Internal measures of service performance are useful for benchmarking processes, but at the same time suspect because these measures are typically derived from managers rather than from

passengers, thus lacking a true customer perspective. Even when service performance measures are external intended to measure the attitudes and opinions of customers directly the lack of a systematic understanding of airport customers' expectations makes it likely that what is measured will be those attributes that are the most obvious and easy to operationalize.

The net result can be a misguided effort to improve service quality in ways that are unimportant to customers, thus failing to offer the value that drives customer choice among alternatives. Not only has the airport research tradition largely ignored the gap-theory method of service quality measurement, the marketing and services literatures (the major proponents of gap-theory method service quality research) have focused little attention on airports or on passengers, a remarkably diverse group who consume in transit as they spend extended periods of time in elaborate services cape where they find themselves as the result of a highly limited process of decision making. As a result, while it is possible to describe passenger preferences on issues ranging from airport signage to restroom cleanliness, there is no generally accepted theory-based model of airport service quality nor is there a comprehensive profile of the experiences, expectations and perceptual influences of passengers in this setting. We believe that the airport industry could benefit from the collective insights and the best practices of other service industries that have faced similar issues, and that the mainstream service quality literature could learn from the extension of established and emergent theory to the airport's unique service environment. Therefore, the purpose of our study is to contribute to the development of a conceptual model of perceived service quality in airports by conducting an empirical investigation of the nature and role of expectations in this understudied service category. We proceed as follows. First, although airports are familiar to many, we begin with a brief industry overview. Second, we review the limited literature specific to airport quality management and passenger satisfaction. Third, we use a review of relevant literatures informed by qualitative research to categorize expectations of frequent airport users. Next, we describe the methods used to test our preliminary model, along with the results. Finally, we discuss interpretations of our findings, explore managerial implications and suggest directions for future research.

1.2 Khartoum international airport overview

Khartoum international airport was established after Second World War in 1947 and has expanded to accommodate air traffic in the seventies and eighties. It was rehabilitated in 2000 to 2010 in the different aspects of the airport and still rehabilitation operations to keep pace with global developments until the establishment of the new airport.

The airport is located in the middle of Khartoum and away from the downtown about 3 kilometers latitude 25-15 north and longitude 23-30 east, and at a height of 1260 feet. The airport has international departure terminal capable of handling (950) passengers per hour and is divided into areas for check-in, customs procedures, first-class passengers lounge, and boarding gates. The terminal is equipped with modern facilities for public address (flight information), Computer Reservation System, a Civil Defense unit, four passenger exits, and quarantine and service offices such as duty-free shops, exchange agencies and communications service providers (Zain, MTN and Sudani). Also the airport arrival terminal it accommodates 1,200 passengers per hour, and equipped with the six baggage conveyer belts, flat-screen displayers for flights meeters halls, customs and immigration counters, agricultural and health quarantine offices and service offices for the duty-free shops, exchange, and offices for telecommunications companies (Zain, MTN and Sudani). Also there domestic terminal it accommodates 460 passengers per hour, with the boarding lounges, customs counters, and other services. in addition to hajj terminal it capable of handling 900 passengers per hour, and is divided into areas for 12 check-in desks, customs, immigration, greeters', passenger boarding lounges It has a well-equipped health unit, a civil defense facility and two passenger gates. Khartoum international airport has asphalt runway with a length of 3000 meters and a width of 45 (6) and aircraft gate. Also there aircraft parking area (Tarmac) to 45 aircraft of all sizes and has a push back service. The tarmac is divided into the main aircraft parking zone, the presidential zone, and the isolated area (about 100 meters distant from the maneuvering areas).

New Khartoum international airport is an international airport under construction in Khartoum Sudan. It is to replace the current Khartoum International airport located in the heart of the city. The new airport will be located 40 km from

Khartoum's city Centre. It is planned to have an 86,000 square metre passenger terminal capable of handling 7.5 million passenger annually. It will also has two 4,000 metre runway capable of handling large aircraft like the Airbus A380. The airport will have an additional 300 room international hotel.

1.3 The research problem

Continuous attempts had been deployed from time to time through the use of technology and innovation and several other strategies to help service industries especially for airport service to remain in top ranking, maintaining the current position remained a challenge to the management and it need continuous efforts to be at that stage. Even though Khartoum international airport already being an international airport for several years ago but still it is difficult for them to compete with the other airport within the same categories such Cairo airport, Addis Ababa airport. Moreover, despite of the great effort initiated by the management, Khartoum international airport is absent from list of airport ranking, the problem to be discussed here is absence of Khartoum airport from top list of airports ranking and how to increase efficiency of performance and reduce the delay of procedures and how to increase efficiency and effectiveness of airport operation and what is the level of satisfaction from passenger perspective.

1.4 The significance and scope of the study

The main focus of this study aims to examine the internationalization of service quality in KIA, it is very important to some related parties such as KIA and also to Sudan government. Hence, through this investigation it is expected to provide new evidence that may be useful towards improving the KIA in order for them to be one of the top airport world-class ranking while ensuring that the service deliveries are well perceived. In terms of the unit of analysis, the investigation will focus on the passenger who uses the KIA services.

1.5 The objectives of the study

The main objectives of this study are:

- To measure the service quality in Khartoum airport and addressing areas that need improvement.
- To examine the passengers' perception of airport service quality in different

airport service sectors.

- To determine which attributes of airport service quality have influenced and affected passengers' satisfaction at Khartoum International Airport.
- To determine the level of passengers' satisfaction toward airport service quality.

1.7. The research questions

Upon completion of this research, we can find answers to the following questions:

- What is the level of satisfaction from the passenger perspective toward service quality factors at Khartoum international airport?
- What is the relation between airport service quality factors and overall satisfaction?
- Does perceived service quality difference based on passenger demographic profile?

1.8. Previous studies

There researches and studies done to develop and improve the airport service quality, the following researches and studies are taken by the researcher as a guide to achieve the research objective:

1-Magri and Alves (2005: 9-17) made a study of passenger perceptions of service quality at six Brazilian Airports. This research conducted a service quality survey by the Airports Council International (ACI), they defined 36 attributes involving not just services, but also the airport installations that most affect passengers, making for quite a sound data set. Researchers calculated 36 attributes including: availability of luggage carts, thermal comfort, acoustic comfort etc. The results showed that the perception of quality was fragmented, offered managers a poor view of how improving any given attribute will impact passengers' overall perception of airport quality.

2-Sohail and Al-Gahtani (2005: 482-493) studied the King Fahd International Airport in Dammam, Saudi Arabia. This study reviewed the development of King Fahd International Airport in Saudi Arabia and its efforts at increasing customer satisfaction and operational efficiency. This survey was conducted by using a

questionnaire to measure the travelers' evaluation of airport services. This study used the instrument of Rhoade et al. (2000: 257-262) as a guideline, twelve broad factors that mostly affect the quality of airport operations were identified in designing a quantitative index of characteristics and factors that comprise quality in airport facilities. These factors included parking, capacity, ground transportation, shopping and restaurant services and operations.

Empirical research was used to determine the factors that influence travelers' evaluation of service quality. With data collected from 188 respondents, the study evaluated the satisfaction level of travelers on 25 variables. The items were recorded on a seven-point scale where 1 = much less than expected and 7 = much better than expected. The second part of the questionnaire was designed to get the age, the gender, nationality, and income of respondents only for classification purposes. The results of this study indicated that travelers are generally satisfied with the KFIA. Frequent travelers have expressed a higher degree of satisfaction as compared to less frequent travelers in all the examined dimensions. It also pointed out that the airport has scored below expectation values for services relating to flight information, guidance in the airport, cleanliness, parking space, and check-in facilities.

3- Martin-Cejas (2006: 874-877) analyzed the level of service of Gran Canaria Airport facilities as an approximation to evaluate the quality of tourism services. Researcher used a linear programming model to determine the level of service established in a check-in service at airport. The first and last perception of quality in a tourist destination take placed at the airport. Average waiting time and crowding level for airport facilities are two relevant aspects in quality perception of tourists when arriving at their destination. The results showed that Gran Canaria airport facilities service quality improvement was crucial for the health of the touristic sector in the island. It had at least two relevant consequences. First, tourists should have enough time to do last-minute shopping in a commercial area of the airport. Second, developing leisure and commercial areas at airports creates opportunities to generate enough commercial revenue to cross-subsidize operation cost.

4- Park (2006: 1-17) investigated how in-flight service, reservation and ticketing, airport service, reliability, employee service, flight availability, passenger

satisfaction, pricing (value), and airline image determine passengers' future behavior intentions. The researcher developed airline service quality measures, in-depth interviews and focus group interviews were held with airline staff, airline passengers, and academics in the aviation field. During the in-depth interviews, participants were asked to express their views on airline service quality-especially what comprises airline service quality, what kind of service airlines provide, and how airline service quality differed from service quality in other service industries. This study tested structural equation modeling was applied to data collected from Australian domestic air passengers.

The findings presented a model of individual dimensions of airline service quality which based on the proposed conceptual framework of the linkages between constructs. All hypotheses relationships appeared to be statistically significant, except for four casual paths. These results indicated that there were significant relationships between in-flight service, employee service, passenger satisfaction, airline image, value, and behavioral intentions. These variables were directly or indirectly related to passengers' repurchase intentions and word-of-mouth communications. The results from a study of Australian domestic passengers implied that airlines should recognized the relative importance of individual service dimension and developed various strategies to guarantee providing quality services to passengers. Airlines should realize that improvements in important airline service dimensions should enhance passengers' repurchase intention and their recommendation to other passengers through increased passenger satisfaction. Failure to provide quality services to passengers may cause lowered passenger satisfaction and airline image and may cause negative impact on passengers' future behavioral intentions.

5-SomkiatNaiwikul (2007: 1-69) investigated the satisfaction of the airport users on the service of UbonRatchathani International Airport, and compare the satisfaction of the airport users categorized by the users' gender, age, occupation, income, educational level, and the users' service using. The samples used in this study consisted of 384 subjects altogether gained by using the simple random sampling technique. Likert five-point scale was used in questionnaires with Cronbach's alpha reliability of 0.95. Descriptive statistics (percentage, mean, standard deviation) and t-test were employed for data analysis. The results showed that the overall and individual aspect satisfaction of the users of the

UbonRatchathani International Airport was found at high level. The comparison of the users' satisfaction by demographic profile (gender, occupation, and educational level) was not different significant. But the users' overall satisfaction by income was different significant.

6-Kitrungruang (2009: 1-83) studied Thai passengers' satisfactions with services at Suvarnabhumi Airport, Samutprakan Province. The objectives of this research were studied the satisfaction of Thai passengers and compare their satisfaction with demographic profiles. The researcher used questionnaires and collected data from 400 airport customers. The statistics used in data analysis were frequency, percentage, means, standard deviation, t-test, and analysis of variance.
The findings revealed that the level of Thai passengers' overall satisfaction with Suvarnabhumi Airport's services, Samutprakan Province was high. The aspects that received high satisfaction aspects were car park lots, facilities within passenger terminal building, shops inside building, and securities and immigration inspection. The satisfaction aspects rated at medium level were arrival process, departure process, and cleanliness of inside and outside of passenger terminal building. The results of compare Thai passengers' satisfaction with services of Suvarnabhumi Airport's , Samutprakan province with demographic profiles (gender, , age, education level, occupation and salary) showed that there were not significantly different in their satisfaction with Suvarnabhumi Airport's services, Samutprakan Province.

7-Anakamaneekul (abstract: 2010) studied the attitudes of Thai passengers toward the services at Suvarnabhumi Airport. The objectives of this research were: (1) the personal factors of respondents, (2) the attitudes of Thai passengers toward the services at Suvarnabhumi Airport, (3) the problems of using the services at Suvarnbhumi Airport, and (4) the comparison of the personal factors and the attitudes of Thai passengers toward the services at Suvarnbhumi Airport. This research instrument used was questionnaires. The research population was the Thai passengers who used the services at Suvarnabhumi Airport. The sample size of 400 passengers was calculated using Taro Yamane's formula. The data was processed and analyzed by using statistical application program. Statistics used in analyzing the data are percentage, means, standard deviations, and Chi-Square and Eta values.

The findings showed that: (1) For personal factors of respondents: the majority of respondents were female, aged between 45-54 years, held bachelor's degree, worked in the low-level managerial positions in governmental agencies or state enterprises, traveled for tourism purpose; (2) For the attitudes of Thai passengers toward the services: the overall levels of attitudes were at a moderate level with the importance levels from high to low as: food and beverages, parking space and airport traffic, weapons and illegal items search, seat reservation, ground service personnel, boarding pass service, communications facilitation, passenger baggage management, and passenger waiting rooms; (3) For the problems of using the services: the results show that seat reservation was the most serious problem, followed by communication facilitation, and the least problem was weapons and illegal items search; (4) For the comparison of the personal factors and the attitudes of Thai passengers toward the services; it was found that passengers with different gender, age, position, educational level occupation and purposes of travel had no differences in attitudes toward the services at Suvarnbhumi international airport.

CHAPTER II

LITERATURE REVIEW

CHAPTER II

LITERATURE REVIEW

There are several models that have been presented in the literature regarding service quality at the airports. Tsai et al. (2011) developed a multi-criteria evaluation model to perform gap analysis between the customer perception and airport service quality and to diagnose managerial strategies of gap reduction. Ziethmal, Parasurman, and berry (1988) they develop servQual model to measure the quality of the services based on five dimensions to determine the gap between the customers' expectations and their perceptions. Chang et al. (2008) presented an empirical study on the ways the complaints are dealt with at the airports and the degree to which unsatisfactory experiences are reported and handled. They concluded the following: solving passengers' problems immediately leads to much higher customer satisfaction, passengers care a lot about the interactions and policy of the airlines and the airport, service quality influences customer satisfaction, and interactional and procedural justice directly affect the complaint intentions. The model provides a service performance index which can be used as a benchmarking tool for airports to improve their performance. Fodness and Murray (2007) developed a conceptual model of service quality in airports and concluded that the passengers' expectation of airport service quality is multidimensional and hierarchical which includes three key dimensions: services cape, service personnel and services, considering those dimensions will cover all aspects of service in the airports.

There are several reasons make airport managers and governments measure airport performance to measure efficiency from a financial and operational perspective. Airport efficiency and productivity studies have received considerable emphasis in academic circles. Oum et al. (2003) have conducted a global airport benchmarking research which measures and compares the productive efficiency of a relative sample of airports located on the Asia Pacific, Europe and North America. Benchmarking will help governments and airport managers by providing them with a required information in order to enable them to identify areas that are performing well and appropriate corrective action needs to take place and to

regulate airport activity. From all of the above we note that there are big efforts made by researchers and airports management to measure the quality of the services to bridge the gaps between the customers' expectations and their perceptions, and to make them satisfied; because the airport customers will also be interested in assessing the airport performance, it is important to recognize that airlines are the key customers of airports and that the airlines act as an intermediary between the airport and passengers or freight shippers. Thus the different stakeholders will have varying performance information requirements, in the end we have to meet these requirements. The review of literature is organized in four sections, first one airport service quality; second one the development of airport service quality model, and third one passenger satisfaction, and finally the safety and security in airports, it had to be dealt with safety; because it is play important role in provide services with high quality also it's may create integration with customer service processes, particularly it cannot be separated it in any way on service quality.

2.1. Airport service quality

Airport service quality literature and research is distinguished from the mainstream service quality perspective (e.g. the gap theory model) by its focus on quality at the attribute level. Researchers attempting to measure airport service quality typically proceed from a list of objective indicators of service that are developed from discussions with airport stakeholders rather than passengers, including airport and airline operators, consultants, regulators and travel industry managers.

Service are more challenging to be visualized by the service provider and customer and it's difficult for customer to display their confidence of the service unless they experience the service by themselves by comparing standard and perceptions of result performance. Services also involved tangibility features such as facilities, service personnel and service ambient that help the service provider to perform their service. Physical quality relates to the tangible aspects of a service. Thus presentation of service not only involved intangibility aspects but also complemented by the tangible elements to help the service provider executing their work. In ensuring the efficiency of its delivery, service orientations requires the need to provide a good service quality in term of many aspects such as service provider, facilities, service ambient or environment, technology and many other

aspects in order to attract customers to use the service offered and make them satisfied or may be more than satisfied.The benchmark of whether service quality delivery considered been excellent or superior service are very much related to customer expectations. With the nature of airport services, the association between service qualities as to the performance, therefore always remain importance.

Service quality is customer's long term cognitive evaluations of any institutions' service delivery. Customers will usually compare the service that they expect to receive from the service provider during the pre-purchase stage and compare it after they have experience the service which is during post purchase stage. After buying and consuming the service, customers compare its expected quality with what they actually received. A better quality of service will increase in the expectations of customers towards the service. Higher levels of service quality lead to higher levels of customer satisfaction. At the airports, service provider and all facilities will help the airport to perform the good quality services in a quality manner and thus obtaining a good feedback or perception from the customer towards our service. In order to become an international airport it is important to provide an attractive and good service quality either from the staff at the airport or even the facilities use at the airport beside schedule or service route provided, with these efforts it will increase the chance for sustaining competitive advantage in the industry. Thus, the need to enhance service quality requires new generation of ideas, enhance learning experiences, explore issues, identify conflict and focus action to enhance understanding about why, what, how, where, and when to pursue the best practicable environmental options. In addition, cross-functional teams involving employees at all levels may be particularly helpful in achieving operational safety improvement across departments. Benefits of such teams include collective knowledge to develop comprehensive solutions, avoiding duplication of efforts, accomplishing many tasks simultaneously and empower employees. In fact, the service quality may need to consider individual airport's characteristics, such as cultural differences, which could affect the perception of service quality. Similarly, other demographic factors and trip purpose could also influence the perceptions of the traveler too.

To measure the airport service quality and user satisfaction, a list of 14 factors is determined according to the framework described and review of previous studies on airport satisfaction study (Table 2-1). These quality measurement items form

the basis of data collection process in the satisfaction survey and the resultant analysis and assessment.

Table (2-1): Airport service quality factors

1. Ground transport
2. Baggage carts condition
3. Processing time at airport counter
4. Ease of finding way
5. Flight information display
6. Shopping/retails service
7. Restaurants
8. Internet access
9. Restrooms/Toilets
10. Cleanliness
11. Speed of baggage delivery
12. Security level
13. Children play area
14. Art display

Source: fondness and Murray's model (2007)

Airports management needs to focus on activities will add value to airport's customers related to factors above in order to ensure the efficiency and effectiveness of the service delivery.

2.1.1. Construction of airport service quality model

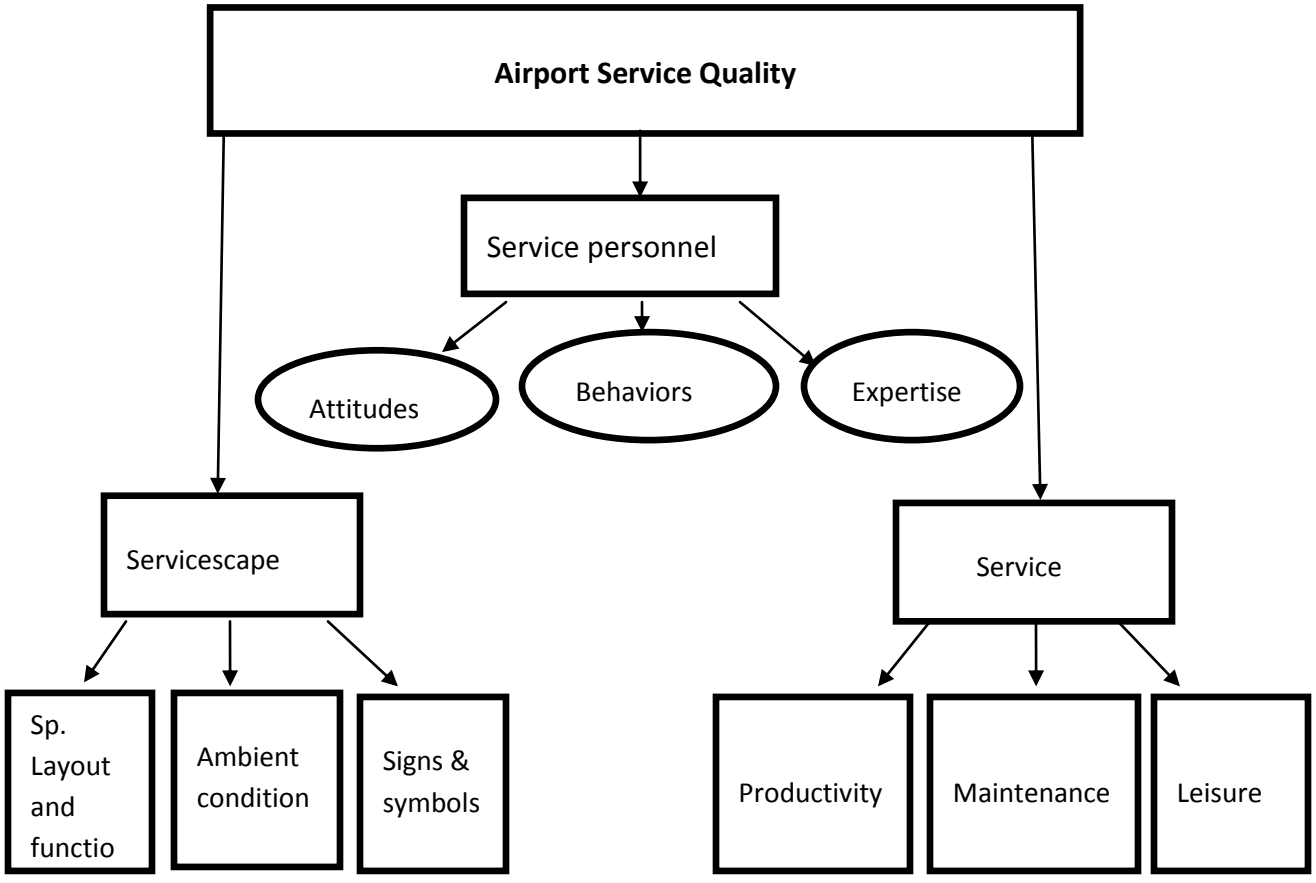
Fondness and Murray constructed out preliminary conceptual model of the expectations of the airport experience using data obtained from the passengers in our qualitative research and from the proscriptions provided by relevant literatures. The marketing and services literatures were chosen as appropriate; they also selected motivational psychology for its insights into how individuals allocate their waiting time, which passengers at airports often have in excess. This combination yielded both preliminary dimensions of airport service quality expectations and an approach for developing a survey instrument. This approach is well documented in

qualitative research in service quality. It also resulted in the exclusion of some items from the original master list of airport service quality themes.

2.1.2. The conceptual model of airport service quality expectations

The resulting model of airport service quality expectations is composed of three primary dimensions services cape, service personnel and services (see Figure 2). Further, the model suggests that each dimension has three sub dimensions.

Figure (2-1): Airport Service Quality Model



Source: (Fodness and Murray model (2007)

Dimension 1:

1. Services cape

Services cape is a concept that was developed by booms and binter (1981) to emphasize the impact of the physical environment in which a service process takes place. It includes the facility's exterior (landscape, exterior design, signage, parking, surrounding) and interior (interior design, decor, equipment, signage, layout, air quality, temperature and ambiance).

Booms and Binter (1981) defined a services cape as "the environment in which the service is assembled and in which the seller and customer interact, combined with tangible commodities that facilitate performance or communication of the service".

a. Sub dimensions of services cape:

- **Ambient conditions**

  Several authors have identified ambient conditions as a factor that affects perceptions of and human responses to the environment (Baker 1987), ambient conditions include background characteristics of the environment such as temperature, lighting, noise, music, and scent. As a general rule, ambient conditions affect the five senses. However, sometimes such dimensions may be totally imperceptible (gases, chemicals, infra-sound), yet may have profound effects particularly on employees who spend long hours in the environment.

- **Spatial layout and functionality**

  Because service encounter environments are purposeful environments (i.e., they exist to fulfill specific needs of consumers, often through the successful completion of employee actions), spatial layout and functionality of the physical surroundings are particularly important. Spatial layout refers to the ways in which machinery, equipment, and furnishings are arranged, the size and shape of those items, and the spatial relationships among them. Functionality refers to the ability of the same items to facilitate performance and the accomplishment of goals. Much of

the empirical research in organizational behavior and psychology has illustrated effects of the spatial layout and functionality dimension,

- **Signs and symbols**

Many items in the physical environment serve as explicit or implicit signals that communicate about the place to its users (Becker 1977). Signs displayed on the exterior and interior of a structure are examples of explicit communicators. They can be used as labels (e.g., name of company, name of department), for directional purposes (e.g., entrances, exits), and to communicate rules of behavior (e.g., no smoking, children must be accompanied by an adult). Signage can play an important part in communicating firm image. Signs have even been found to reduce perceived crowding and stress in a jail lobby setting, the services cape is not only about affecting the service quality but also represents a firm's intangible asset. Using an airport as an example, signs and symbols, coupled with other facilities and general ambience of the terminal together create a services cape. This environment has been intentionally designed to attract and engage passengers who are in transit or about to board a flight and streamline the functions of the airport. Lin (2004) classified three major groups of 'cues' of Services cape: Visual cues: color, lighting, space and function, personal artifacts, layout and design, Auditory cues: music and noise; and Olfactory cues: odors and scents.

b. Types of Services cape

Depending on the nature of service encounter, the complexity of services cape varies and it can have influence on employee behavior or consumer behavior or their interaction behaviors. Based on the complexity and usage of services cape, services cape can be one of three possible types (see table 2-2):

- **Self-Service Services cape**: This service is designed such a way where customer helps self with the service and performs most of the activities. In case of ATMs, cinema halls, gyms and self service restaurants, the role of service employees is limited or nil. Therefore, the service provider must plan the services cape exclusively with the customer in mind. Also, the facility design can attempt to position it for the desired market segment.

- **Interpersonal Services cape** – This represents service situations where a close interaction between the customer and employees is required as in case of hotels, restaurants, hospitals, schools, and banks. In these situations services cape affects both employees and customers, so it must be carefully designed to attract and satisfy and facilitate their activities as well as conducive to the interaction between the two.
- **Remote Services cape**There are certain service settings where there is little or no customer involvement in the services cape such as telecommunications, insurance and call centers, etc. These must be designed to keep employee's motivation and morale high. The services cape should premeditate ergonomically to facilitate teamwork, supervision and operational efficiency.

  Each of these Services capes can be either elaborate or lean based on complexity of the design:
- **Lean Services cape** is simple with lesser services cape elements like simple layout, little equipment, lesser space and fewer interactions. ATM and dry cleaner are examples of lean services capes.
- **Elaborate Services cape** in contrast is complicated with many elements and forms, a five star hotel or resort or theme park or an airport or a fine dining restaurant are examples of elaborate services capes with complex and dynamic interactions between customer and employee.

Dimension 2:

2. Service personnel

Understanding the role of service provider as a core part of the product, the service firm and also the brand is relatively essential to most businesses. It is a representative of the firm and if the service delivered by the service provider is poor, than the perception of customer towards the firm will be below expectation. Service provider is a person who directly or indirectly meets with the customer and delivers the service through physically, possession or mental stimulus. It is very much necessary for call centers and delivery outlets to commonly script

employees' verbal interactions with customers. Hence, it is important to have good service personnel that can efficiently undertake the role in the delivering process.

Service personnel act as ambassador in creating image of the organization, by enhancing their delivery effort through Customer Relationship Management (CRM), it allows employees to instantly extract the information from the customer related to any transactions involved by extracting the first hand information through proper investigation or asking them directly. With CRM it allows a business process to leverage the relationship with customers as well as other market place entities. It is a strategy that are concerned with customer values, driven by customer focus and integrating technology-based system for building relationship between the company and its customers. It is through an efficient service given the passengers will judge the airport service quality of the airport staff. In the airport, the staff can be classified into three categories which are high contact services which is frontline employees, low contact services are very low contact services person. All those categories are important even they are not directly interacting with the passenger. Thus the participation of employees need to be promoted by involving them in planning and to some extent get them involved in decision making. High contact services which are frontline employees such as ticketing counter and information counter formed the first impression whether the services performed able to meet the expectations of the customers. If their service is poor then the airport will be label as poor too or otherwise.There are many components of quality which can be used to evaluate service personnel in order to provide good service quality such as tangible, reliability, responsiveness, assurance and empathy. For example, the tangibility of airport staff such as their physical appearance must represent the company and it can be recognize by the passenger.In term of responsiveness, they must be helpfulness and provide a prompt service to passenger when it's needed. Besides that, the element of courtesy is very important where the airport staff must use a proper body language, voice tone whenever they give their service to the passenger, soft skills has tended to concentrate on aspects such as social and interpersonal skills which are largely concerned with ensuring employees are responsive, courteous and understanding with customers or in simple terms can demonstrate emotional labor.The most widely known and discussed means used to measure consumer perceptions of service interaction quality is SERVQUAL. The SERVQUAL measurement tool

suggested that a consumer's perception of service quality involved the difference between his or her expectations about the performance of a general class of service providers and his or her assessment of the actual performance of specific firm within that class. Zeithaml, Parasuraman, and Berry (1988) suggested SERVQUAL's five dimensions framework of service quality (tangibles, reliability, responsiveness, assurance, and empathy) analyzed service quality.

Table (2-2): Typology of Service Organizations Based on Variations in Form and Usage of the Services cape

Types of service organization based on who perform action within the services cape	**Physical complexity of the services cape**	
	Elaborate	**Lean**
Self-service (customer only)	Gulf land	ATM Post office kiosk Movie theater Express mail drop-off
Interpersonal services (both customer and employee)	Hotels Restraints Health clinic Bank Airline School	Dry cleaner Hot dog stand Hair salon
Remote service (employee only)	Telephone company Insurance company Utility Many professional services	Telephone mail order desk Automated voice-messaging based services

Source: handbook on human service (1988)

The dimension of service personnel is mainly related to problem solving behaviors of airport service personnel. Thus, where the customer's physical presence is required for service delivery, the interaction a passenger has with service provider influence the passenger's quality perceptions.

Dimension 3

3. Diversion of Services

The necessity for passengers to be physically presented in the airport emphasizes issued of time and of how time was spent. SERVEQUAL focused on time spent waiting. Services cape theory addressed in terms of spatial layout and functionality. Research showed that a passenger has entered the terminal his or her average wait can exceed one hour (Darko, 1999). Factors such as flight delays and cancellations due to security, breakdowns and weather, can prolong time spent at the airport. Research also has highlighted the importance of time spent waiting at airports (Darko, 1999), especially to business travelers. Given the value of time spent waiting to many passengers, more favorable perceptions of airport service quality may be associated with airport options that provide them with greater control over how they experience their waiting time. This raises the question, "What would passengers choose to do with the time they spend waiting in airports?" The passengers at the airport have the potential for actively seeking to achieve goals and objectives related to work, related to keeping their body and possessions functioning properly and related to whatever they do with their free time.

Larson and Richards, 1994 documents that what people do with their time can be divided into three major activities: productive, maintenance and leisure. Depending on their stage in the life cycle and employment status, many people spend much of their time engaged in productive activities such as job-related work or education-related study. Another significant chunk of time is taken up by maintenance activities directed at both people's bodies (e.g. eating, resting, grooming) and their possessions (e.g. housework, shopping). Discretionary time left over from productive or maintenance activities, is available for leisure pursuits. Three primary forms are: media consumption such as watching television, listening to

music or reading; conversation; and more active leisure including hobbies, sports, and going out to restaurants, movies and the mall. Thus, research suggests that passengers at the airport have the potential for actively seeking to achieve goals and objectives related to work, related to keeping their body and possessions functioning properly and related to whatever they do with their free time. It is within these three domains of activity that the airport experience can facilitate or frustrate how passengers choose to use their precious time spent waiting. How well it does at either can have a significant influence on perceptions of the overall quality of the airport service encounter. Thus, the third dimension in our model of airport service quality expectations is the services offered by the airport.

Fodness and Murray's model as depicted in figure (2-1) is used as the conceptual framework to evaluate whether Khartoum international airport was achieving its goals in meeting expectation regarding the service.

2.2. Passenger satisfaction

Passenger satisfaction is a key performance indicator for the operation of an airport. International airports located at different regions or countries by and large do not compete with one another. Passengers often do not have a choice between airports, regardless of price and quality levels of airports services. In other words, passenger demand for airport services is likely to be relatively inelastic (Doganis, 1992). Thus, the evaluation of passenger satisfaction levels on airport services has become an important issue for airport management. The evaluation of the airport's passenger service is an on-going process and requires continuous monitoring to maintain high levels of service quality across a number of distinctive service areas (attributes). The service literature has been contributed to the confusion over the relationship between passenger satisfaction and service quality. The most important that service providers need to know are how their objectives meet or exceed the passengers' satisfaction with their performance. The importance of this issue has been led to several recent efforts to clarify the relationship between satisfaction and service quality. Some authors suggested that service quality was a vital antecedent of customer satisfaction and concretely, some relevant aspects of quality perception as promptness of service and on-time programming (Getz et al., 2001). Airport infrastructures are the first contact point for passengers when they arrive at their destination. Therefore, airport facilities give them the first

impression they will have about the expected quality of their airport. When passengers are processed by airports they use several services such as, check-in, passport and security controls in departure, and baggage claim service and passport control when arriving. If an airport cannot attend to all these services efficiently, airport service quality will be low and passenger perception of the airport facilities becomes negative.

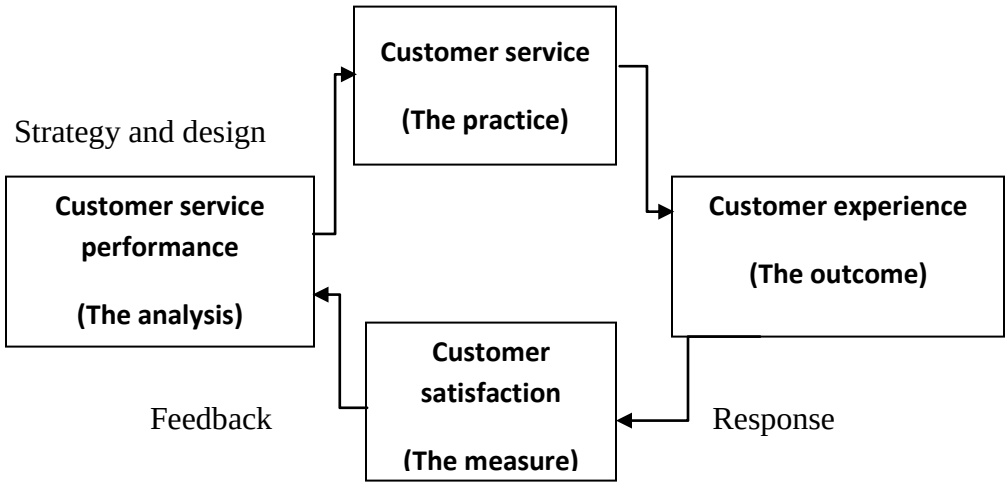
Satisfaction can be defined as "the consumer's fulfillment response. It has been a judgment that a product or service feature, or the product or service itself, provides a pleasurable level of consumption related fulfillment, including levels of under fulfillment or over fulfillment" (Oliver, 1996: 14). The concept of consumer satisfaction occupies a central position in marketing thought and practice. Conceptually, satisfaction is an outcome of purchase and use results from the buyer's comparison of the rewards and costs of the purchase in relation to the anticipated consequences. Operationally, satisfaction is similar to attitude in that it can be assessed as the sum of the satisfactions with the various attributes of the product or service.

Consumer satisfaction with service quality is a significant aspect that the airport's management must consider to generate competitiveness, increased income and sustainable growth. In current competitive environment, the high quality service and resulting increased consumer satisfaction create an important advantage of increased loyalty and positive word of mouth. It is generally believed that higher satisfaction with services can significantly boost customer loyalty and lead to repeated purchases. Thus customer satisfaction does have a positive outcome on company's profitability. To reach the goals, airport managements need to recognize passenger expectations for services provided.

The services may meet the needs of the passengers partially, completely or exceedingly. Therefore, it is expected that airport administrations are continuously seeking for new services, developments and innovations to differentiate themselves from the competing airports. There is a variety of options to expand services, and doing that better serve existing, but attract more passengers. Having exceptional experience could even make the passenger to pick a particular airport among the rest for the leisure purposes or even as a preferred point for a transfer in future. On contrary, in case the passenger is not satisfied with the time spent at a particular

airport, let us say due to lack of choice or quality of services, the passenger may possibly reconsider his decision to arrive there in favor of another airport with better suitable profile. Plus, "an intention to return to the same airport" and "readiness to recommend it to others" positively affect airport's development (Fernandes&Pacheco, 2002). Thus, the excellent passenger satisfaction is one of the best assets for airport business in competitive environment. Marketing theory suggests that increasing customer loyalty and its retention is a chief key to the ability of a company to generate profit (Gandomi&Zolfaghar, 2013). Recognition of the determinants affecting passenger satisfaction and a correlation between the one and loyalty are of utmost importance. There are many factors that can help an airport to form its customer base, where passengers' satisfaction can become the determining factor in evaluation of achievements of an entire operation. Airport passenger satisfaction has been studied by many researchers around the world for decades. Studies related to the service quality and customer satisfaction in the given field have been growing an interest for the previous ten years. A number of researchers have solely elaborated on related theories), methods and models related to service quality throughout the industry. Most of previously conducted studies rely mainly on passenger satisfaction with airport services. The concept of synergy puts the airport and the customer in a dynamic situation in which the airport operator strives to meet the needs of its customers and exceed their expectations. Figure (2-2) describes this process and provides a useful framework to discuss the different elements of customer service. In the graphic, the airport operator creates an environment directed at meeting customer needs and expectations (the practice). The customer's experience while in the airport is the outcome. Through various methods of data collection, airports determine whether customers are satisfied (the measure). Evaluation of customer satisfaction data (the analysis) results in continuous improvements to customer service.

Figure (2-2) Elements and process of excellent customer service.



Source: journal of marketing services, KRAMER aerotek.

Customer service has become an integral part of most airport functions and today is an important component of strategic planning, communications, facility improvements, design, and interactions with the various customer groups.

Airports should strive to monitor, respond, and improve customer experience in many functional areas of the airport, including:

- Passenger processing (airport access, parking, check in, way finding, passport control and customs, security, and baggage handling).
- Airport facilities (lounges, waiting areas, restrooms, walk ways, elevators, ambiance, uniqueness, sense of place).
- Concessions (retail, food and beverage).
- Customer services (wheelchairs, baggage carts, internet access, information and help desks).

Airports collect information about their customers through their employees and volunteers and through mystery shopper programs, surveys, letters, e-mails, comment cards, and social media. What is done with this information represents the full spectrum of customer service initiatives at airports. Many airports have formalized these data collection processes and are using the information to set

priorities, improve operations, track improvements, and make comparisons with peer airports. Measuring airport customer satisfaction also provides data to discuss customer service priorities with staff, business partners, contractors, and airport sponsors.

2.2.1. Importance of satisfied customers

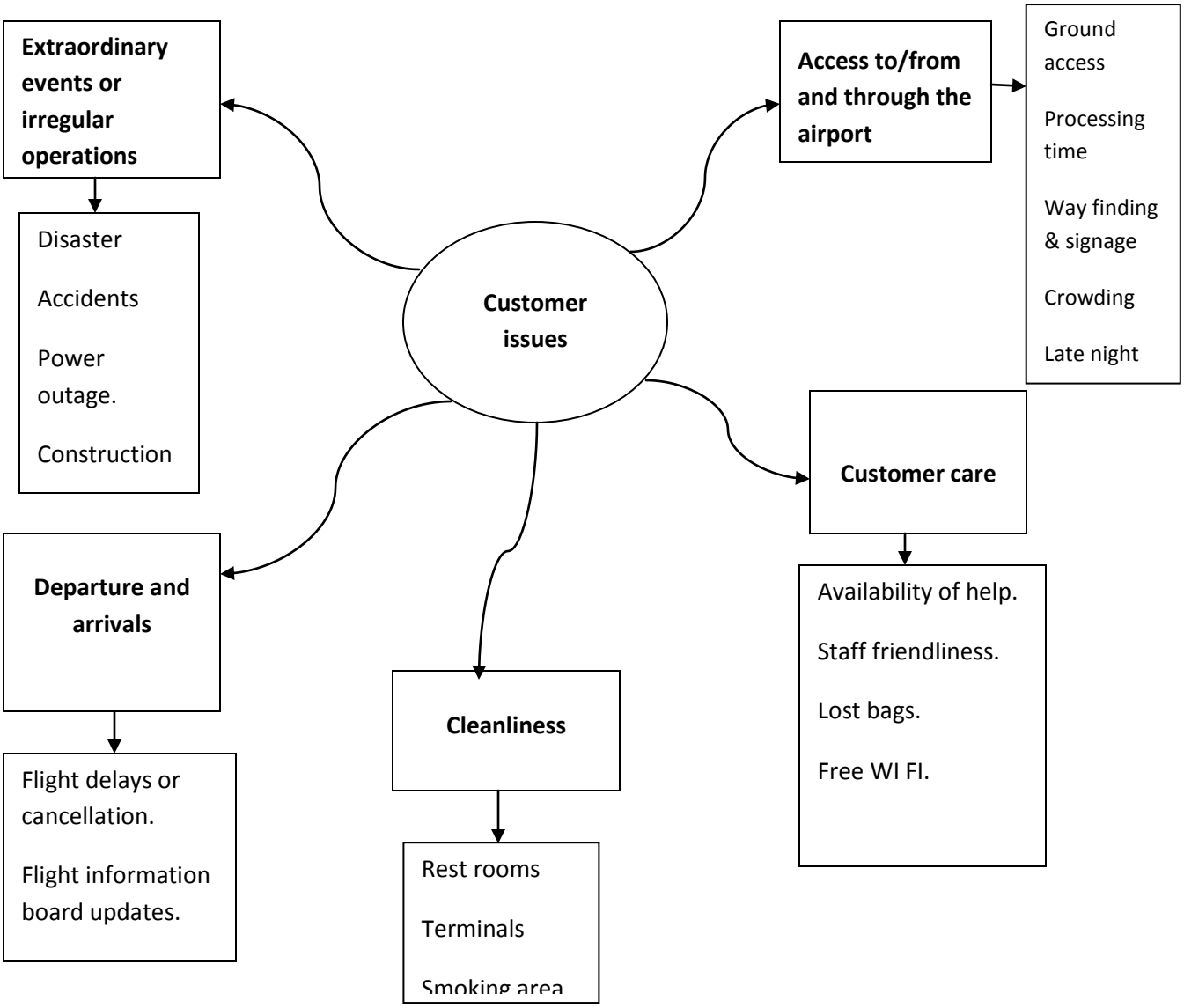
Airports managers interviewed described three reasons why customer satisfaction has become a priority:

1. Measuring and tracking the customer experience will lead to a better understanding of needed airport improvements from the user's perspective.
2. Good customer service helps the passenger feel more at ease and relaxed, which translates to repeat business, higher spending rates at the concessions, and ultimately greater net revenues to the airport sponsor.
3. Airports that exceed their customers' expectations will have a competitive edge, especially in regions where fliers can select among multiple airports.

Whether an airport has a formal or informal system to process and respond to customer complaints, compliments, and questions, airports identify a similar list of top issues that impact customer satisfaction:

- Speed through the airport.
- Cleanliness.
- Gate experience.
- Concessions.
- Courtesy of the staff.

Figure (2-3): Frequent customer issues at airport



Source**:** journal of marketing services, KRAMER (2012)

CHAPTER III

THEORETICAL FRAMEWORK AND METHODOLOGY

CHAPTER III

THEORETICAL FRAMEWORK, HYPOTHESES, AND METHODOLOGY

The purpose of this quantitative study to design, implement and test an objective approach to measuring passengers' perception and satisfaction of airport service quality at Khartoum International Airport, Sudan. This chapter provided a discussion on the research methodology used to conduct the study. It has been organized in the following manner: 1)airport service quality theoretical framework**,** 2)the research hypotheses, 3) Population and Sample Size, 4) Instruments and Reliability, 5) Data Collection, and 6) Data Analysis7) descriptive statistics.

3.1. Airport Service Quality Theoretical Framework

Fodness and Murray conducted qualitative research on the passenger airport experience to gain an understanding of the dimensions of passengers' expectations of airport service quality. These studies were designed to develop rather than to test hypotheses because the airport quality management and passenger satisfaction literatures lack established theory suggesting formal relationships among the variables of interest. In addition, neither SERVQUAL nor any of its related operationalization of the gap-theory model for measuring service quality have been suggested for or adapted to airport. Thus, the qualitative studies sought insights by collecting and analyzing observations about personal airport experiences and expectations from passengers. The approach of this qualitative research was to investigate quality factors the air traveler expects from an airport service encounter, to explore air traveler experiences and problems and to identify the importance of airport service expectations that might contribute to perceived service quality or to preferences for one airport over another. The research probed service quality outcomes, satisfaction and other intangible aspects from airports customers' perspective, along with facilities and more tangible aspects of airports' physical setting to providing the data for development of preliminary conceptual bases for passengers' expectations of airport service quality, this phase of the research generated an approach to construct model to measure airport service quality. Fondness and Murray (2007) constructed out preliminary conceptual

model of the expectations of the airport experience using data obtained from the passengers in qualitative research and from the proscriptions provided by relevant literatures, in addition to providing the data for development of preliminary conceptual bases for passengers' expectations of airport service quality.

3.2. The research hypotheses

The hypothesis proposed at this research are:

H1:Passengers' satisfaction perceptions of the airport service quality have positive influence on overall passenger satisfaction.

H2: There is a significant difference in passenger's overall satisfaction based on passenger demographic profile (purpose, travel, trip orientation and frequency of travel).

H3: There is a significant difference in overall satisfaction between types of passenger (Sudanese and foreigner passenger).

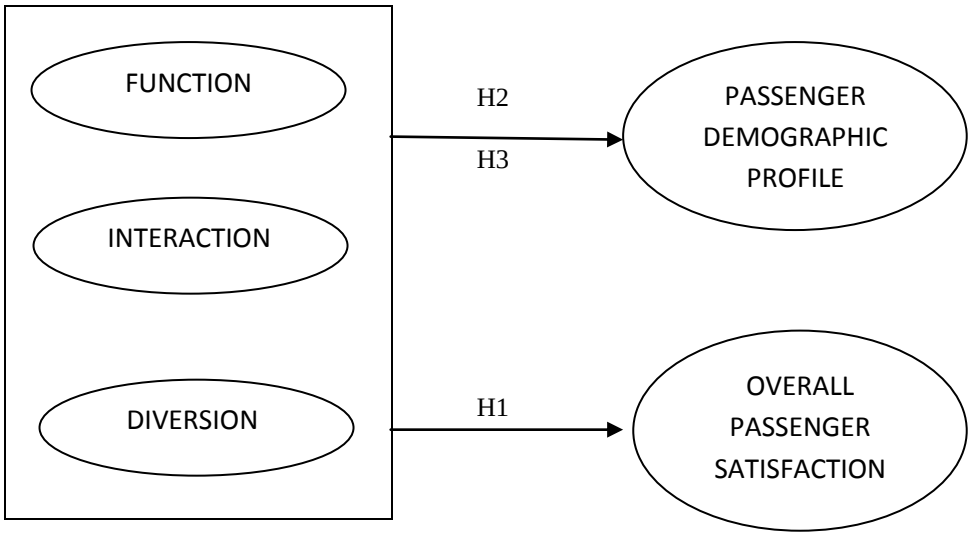


Figure (3-1): Conceptual Model of Airport Service Quality

3.3. Population and Sample Size

Population was the total number of passengers both Sudanese and foreigner who had travel by departure, arrival at Khartoum International Airport. The researcher used the convenience sampling method to collect the data. The sample population in the study is 100 passengers (Sudanese and foreigner) who had travel at Khartoum International Airport for departure, arrival during the month of

November 2016. The sample size for the study was 100 for ensuring statistical power as suggested by Hair, Anderson, Tatham, and Black, (1998).

3.4. Instruments and reliability

A self-administered questionnaire was developed from Fodness and Murray (2007). The data collection instrument consisted of five-point Likert scale. The relevant literatures and survey instruments developed by past researchers provided the basis for developing the questionnaire for this study. The questions asked reflect Fodness and Murray's multi- dimensional scale to assess passengers' perception for both satisfaction and importance of airport service quality at Khartoum International Airport, Sudan. The questionnaire had three parts: 1) demographic profile, 2) the satisfaction of airport service quality, and 3) overall service quality. The first part of the questionnaire was asked about the respondent's demographic profile consisted of five questions. The second part of the questionnaire was to assess the respondents' perception of satisfaction of airport service quality attributes, consisted of 28 items related to airport service quality. The third part of the questionnaire was to assess the respondents' perception of overall service quality of each dimension of airport service quality. All the statements in the second and third part were rated on five-point Likert scale, ranging from 1 = very unsatisfied, 2 = unsatisfied, 3 = neutral, 4 = satisfied, and 5 = very satisfied.

A pilot test was conducted to assess how well the instrument captures the constructs it was supposed to measure and to test the internal consistency and the comprehension of the questionnaire items (Appendix A and B). A pilot test was conducted with a convenience sampling of 10 passengers who had travel by departure, arrival at Khartoum International Airport in the period of November 2016.

3.5. Data Collection

For the data collection process, this research used a self-administered questionnaire to ask the passengers who had travel by departure, arrival at Khartoum International Airport in November 2016. The respondents completed the questionnaire in three main parts: 1) Demographic Profile, 2) Passengers' satisfaction perception of airport service quality, and 3) Overall Service Quality.

The respondents were asked to indicate each statement on a five-point Likert scale. In order to get good results the data collected in different circumstances, in other words the data collected every day during one week from passengers arrived and left onboard morning, afternoon and the evening flights.

3.6. Data Analysis

A formal coding sheet was designed and used to code all the questions in a systematic way. In order to achieve the stated objectives and to test the hypotheses, various kinds of statistical techniques were employed. Data were entered into the Statistical Package for Social Sciences Windows Version 13.0 (SPSS) program to analyze the findings. The linear regression model isemployed to test the research hypothesis because; according to the research hypothesisand data collected we need to predict the impact of independent variables (services cape, interaction and diversion) on dependent variable (passenger satisfaction). Also analysis of variance (ANOVA) is used to test the variance between more than two variables, and independent sample t-test is used to test the difference between two independent variables.

3.7. Descriptive statistics

The data frequencies were analyzed to detect any discrepancy due to data entry errors or missing value. Basic descriptive statistics of means, standard deviations, and frequency examined the distribution of responses. All the hypotheses tested with 95% confidence (α=0.05).

CHAPTER IV

DATA ANALYSIS AND FINDINGS

CHAPTER IV

DATA ANALYSIS AND FINDINGS

The purpose of this study is to contribute to the development of a conceptual model of perceived service quality at Khartoum International Airport. This chapter presents an analysis and interpretation of the data and a discussion of the results. For this chapter is comprised of five sections: 1) Description of the Subjects and Passengers' demographics profile, 2) Reliability of the collected data, 3) descriptive analysis and 4) Results of Hypotheses Testing.

4.1. Description of the Subjects and passengers' demographic profile

A total of 100 questionnaires were distributed to passengers who had travel by departure, arrival at Khartoum International Airport in November 2016. The 100 questionnaires were returned completed and usable.

As shown in Table (4-1), the respondents consisted of 47 female (47%) and 53 male (53%). Among the 100 respondents, 61 respondents came from Sudan (61%), 39 respondents came from Europe (39%). The purpose of travel of respondents were 3 respondents (3%) for vacation/pleasure, 16 respondents (16%) for work, 6 respondents (6%) for visit friends/relatives, 15 respondents (15%) for education and 60 respondents (60%) for others purposes. The trip orientation of Khartoum International Airport consisted of 50 respondents (50%) were arrival, 50 respondents (50%) were departure. The respondents used Khartoum International Airport to travel in: one time with 12 respondents (12%), two times with 13 respondents (13%), three times with 18 respondents (18%), four times with 13 respondents (13%), 5 times with 10 respondents (10%), and more than five times with 34 respondents (34%).

Table (4-1) demographic characteristics of respondents

	Frequency	Percentage
Gender		
Male	53	53%
Female	47	47%
Nationality		
Sudanese	61	61%
Other	39	39%
Trip orientation		
Departure	50	50%
Arrival	50	50%
Purpose of travel		
Education	15	15%
Work	16	16%
Vacation	3	3%
Visit	6	6%
Others	60	60%
Times of using Khartoum International Airport		
One time	12	12%
Two times	13	13%
Three times	18	18%
Four times	13	13%
Five times	10	10%
More than five times	34	34%

Source: adapted by researcher (2016)

4.2. Reliability of collected data

A reliability analysis (Cronbach's alpha) was performed to test the reliability and internal consistency of the airport service quality dimensions. From the questionnaire data the alpha for the overall construct was estimated at 0.922 and for the second-order constructs at 0.753 (function), 0.856 (interaction) and 0.845 (diversion). This illustrated that all data is reliable because; all values of Cronbach's alpha are more than 0.5 closed from one. Based on this statistics we have been dealt with the data taken from the Khartoum international airport (population) and it gave confidence we can get a reliable results. The reliability coefficients for the scales utilized in this study were reported in Table (4-2).

Table (4-2) Reliability of Airport Service Quality factors

Factor	***Number of items***	**Cronbach's alpha**
Function	10	0.753
Interaction	4	0.856
Diversion	10	0.845

Source: researcher questionnaire data analysis

4.3. Descriptive analysis

To describe the data collected statistically we calculate the mean and the standard deviation for passenger's demographic profile, the following table illustrate those statistics.

Table (4-3): descriptive statistics of the passenger's demographic profile

	N	Mean	Std. Deviation
Gender	100	1.47	.502
Nationality	100	1.39	.490
travel purpose	100	3.80	1.614
trip orientation	100	1.50	.503
frequency of using KIA	100	3.98	1.809
Valid N (list wise)	100		

4.4. Results of Hypotheses Testing

Multiple Regression Analysis

H1: Passengers' satisfaction perceptions of the airport service quality have positive influence on overall passenger satisfaction.

As shown in table (4-4), the regression model considered overall passenger satisfaction to be the dependent variable and the three factors of airport service quality to be independent variables. The standard, all independent variables (three factors of airport service quality) entered and utilized for the 500 respondents. The result of hypothesis1 indicated that the airport service quality factors had a positive influence on overall passenger satisfaction. The results of the regression model indicated that the regression model was statistically significant (F (3, 496) = 65.624, p = .000). The coefficient of determination (R^2) of 0.284 showed that 28% of the overall passenger satisfaction was explained by the three factors of airport service quality. All of the three underlying factors; 1) Environment Service Provider, 2) Personnel and Passengers' Relationship and 3) Servicescape all appeared to be significant independent variables that influence on overall passenger satisfaction. The coefficients indicated that factor 1 – Environment

Service Provider (Beta = 0.423) had the most positive impact on overall passenger satisfaction, followed by factor 3 – Services cape (Beta = 0.306), factor 2 – Personnel and Passengers' Relationship (Beta = 0.110). Therefore, hypothesis 1 "Passengers' satisfaction perceptions of the airport service quality have positive influence on overall passenger satisfaction" was supported.

Regression Model of Hypothesis 1

H1: Passengers' satisfaction perceptions of the airport service quality have positive influence on overall passenger satisfaction.

Equation:

Y_ (OCS) = a + B1X1 + B2X2 + B3X3 + e
Y_ (OCS) = 3.970 + .423X1 + .110X2 + .306X3 +.597
Y_ = the predicted criterion score (overall passenger satisfaction)
X1 = factor 1 – Services cape
X2 = factor 2 – interaction
X3 = factor 3 – diversion
e = standard error
a = a constant calculated from the scores of all participants
B= a coefficient that indicates the contribution of the predictor variable to the criterion variable
Dependent variable: Overall Passenger Satisfaction
Independent variables: Three Factors of Airport Service Quality (services cape, interaction, diversion)
Multiple R = 0.533
R2 = 0.284
Adjusted R2 = 0.280
Standard Error = 0.597
F = 65.624
*p = 0.000**

Table (4-4): Regression data for the passenger's overall satisfaction.

	Unstandardized coefficient		Standardized coefficient	
variable	B	Std. error	Beta	P
Constant	3.970	.027		.000*
Services cape	.297	.027	.423	.000*
Interaction	.077	.027	.110	.004*
Diversion	.215	.027	.306	.000*

H2: There is a significant difference in overall passenger satisfaction based on passenger demographic profile (purpose of travel, trip orientation and frequency of travel).

One-way ANOVA was used to determine whether there were statistically significant differences in overall passenger satisfaction based on passengers' demographic variables (purpose of travel, trip orientation, and frequency of travel). Passengers' demographic (purpose of travel, trip orientation, and frequency of travel) were treated as independent variables and overall passenger satisfaction as dependent variable.

ANOVA

Overall satisfaction (travel purpose)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.663	4	.166	1.117	.353
Within Groups	14.088	95	.148		
Total	14.750	99			

Table (4-5): analysis of variance for passenger overall satisfaction related to their travel purpose.

From the table below we found that, sig. value was .797 it is more than .05 then the null hypothesis has been accepted, and then there is no difference in passenger's perceptions for satisfaction regardless of their trip orientation.

ANOVA

Overall satisfaction (trip orientation)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.010	1	.010	.066	.797
Within Groups	14.740	98	.150		
Total	14.750	99			

Table (4-6): analysis of variance for passenger overall satisfaction related to their trip orientation

ANOVA

Overall satisfaction (frequency of using Khartoum airport)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.756	5	.151	1.015	.413
Within Groups	13.994	94	.149		
Total	14.750	99			

Table (4-7): analysis of variance for passenger overall satisfaction related to their frequency of using KIA.

H3: Is there significant difference in overall passenger satisfaction between types of passenger (Sudanese and foreign)

Independent-samples t test was used to compare the means among Sudanese and foreign passengers. In order to compare the responses of Sudanese and foreign passengers relative to overall passenger satisfaction. The results showed that the test for homogenously of variance was achieved through. The use of Levene's test for equality of variance. Since the test is significant p= .342 (more than 0.05), then the null hypothesis has been accepted and the alternative hypothesis was rejected. Then the variances are equal table (4-8).

For Levene's test:

	F	Sig
Overall passenger satisfaction ***Equal variances assumed*** ***Equal variances not assumed***	.912	.342

Table (4-8): levene's test for equality of variances.

For equal assumed variances:

df: 98

Sig. (2 tailed): .654

Means difference: .036

Std. error difference: .079

CHAPTER V

DISCUSSION AND CONCLUSION

CHAPTER V

DISCUSSION AND CONCLUSION

Based on results of the research, it clearly states that the independent variables influenced the airport service quality at Khartoum International Airport. The purpose of this study was to measure the service quality at Khartoum international airport by using Fodness and Murray's (2007: 492-506) methodology for measuring service quality with focus on passenger perceived service quality. The study focused on Sudanese and Foreigner passengers at Khartoum International Airport, and considered the influence of demographics by focusing on purpose of travel, trip orientation, and frequency of travel. This study was developed to provide insights into the process of service quality measurement at Khartoum International Airport. This research explores existing practitioner and academic perspectives on airport service quality; develops and proposes a conceptual model of passengers' perceptions of airport service quality from passengers who had travel by departure and arrival at Khartoum International Airport; discusses the implications of the study results for airport service quality theory and practice, and offers managerial implication for management of airport service quality at airports. This chapter consists of three sections: 1) the research discussion, 2) implications of the study, 3) limitation of the study, 4) suggestions of the study, and 5) the conclusion.

5.1. The Research Discussion

The data was collected from 100 passengers who had travel by departure, arrival at Khartoum International Airport, which 61 Sudanese passengers (61%) and 39 foreigners' passengers (39%). The questionnaires were used in this study, and consisted of 3 parts: 1) Demographic Profile. 2) Passengers' satisfaction perception of airport service quality, and 3) Overall Service Quality.

As the results of descriptive statistics of demographic profiles, gender distribution was 47 female (47%) and 53 male (53%). The major purpose of travel of respondents were 3 respondents (3%) for vacation/pleasure, 16 respondents (16%) for work, 6 respondents (6%) for visit friends/relatives, 15 respondents (15%) for

education, and 60 respondents (60%) for others purposes. The trip orientation of Khartoum International Airport consisted of 50 respondents (50%) were arrival and50 respondents (50%) were departure. The frequency of using Khartoum International Airport by respondents to travel were: 1 time with 12 respondents (12%), 2 times with 13 respondents (13%), 3 times with 18 respondents (18%), 4 times with 13 respondents (13%), 5 times with 10 respondents (10%), and more than 5 times with 34 respondents (34%).

There 25 attributes of airport service quality at Khartoum International Airport were grouped into three factors. The first factor was labeled as "function or services cape," consisted of ten variables. The second factor was labeled as "interaction or personnel and passengers' Relationship," consisted of four variables. Finally, the third factor was labeled as "diversion", consisted of ten variables.

The findings of this study indicated that the of Cornbach's alpha coefficients three factors of passengers' satisfaction perception were: function (α= 0.753), interaction (α = 0.856), and diversion (α = 0.845). Since all Cornbach's alpha coefficients for the scales were greater than 0.60, the scales were deemed acceptable (Fodness and Murray, 2007: 501).

Discussion of Hypotheses Test

H1: Passengers' satisfaction perceptions of the airport service quality have positive influence on overall passenger satisfaction.

To test hypothesis 1, a linear multiple regression analysis was performed to identify the positive impact of airport service quality factors and overall passenger satisfaction. The result of hypothesis 1 indicated that passengers' satisfaction perceptions of the airport service quality have positive influence on overall passenger satisfaction. The coefficients indicated that factor 1. Environment Service Provider had the most positive impact on overall passenger satisfaction, followed by factor 3. Services cape, factor 2. Personnel and Passengers' Relationship. Therefore, hypothesis 1 "Passengers' satisfaction perceptions of the airport service quality have positive influence on overall passenger satisfaction" was supported. This result agreed with Dr.ArisaraSeyanontwho made study in

passengers' perspective toward airport service quality at suvarnabhumi international airport, also agreed with Magri and Alves who made a study of passenger perceptions of service quality at six Brazilian Airports. And it differ partially with Sohail and Al-Gahtani who measured the travelers' evaluation of airport services at the King Fahd International Airport in Dammam, Saudi Arabia, where they found services cape didn't impact on the passenger satisfaction.

H2: There is a significant difference in overall passenger satisfaction based on passenger demographic profile (purpose of travel, trip orientation and frequency of travel).

From the table (4-5), we note that the sig. value is more than 0.05 then the null hypotheses was accepted, that means there is no difference in the overall satisfaction based on passenger demographic profile. This result agreed with Dr.ArisaraSeyanontwho made study in passengers' perspective toward airport service quality at suvarnabhumi international airport also agreed with Kitrungruang who studied Thai passengers' satisfactions with services at Suvarnabhumi Airport.

H3: Is there significant difference in overall passenger satisfaction between types of passenger (Sudanese and foreign)

From table (4-8) the sig. value is more than 0.05 then the null hypotheses was accepted, in other word there is no difference between Sudanese and foreign passengers regard to their satisfaction toward service quality at Khartoum International Airport. There is no previous studies made to measure the satisfaction level at Khartoum International Airport to compare with, but as general when we compare it with researches made at another airports, we will find that this result will agree with Dr.ArisaraSeyanontwho made study in passengers' perspective toward airport service quality at suvarnabhumi international airport also with SomkiatNaiwikul who investigated the satisfaction of the airport users of the service on UbonRatchathani International Airport.

5.2. Implication of the study

Managerial Implication

Understanding the relationship between airport service quality and management is important. However, it is perhaps more useful managerially to identify specific variables of airport service quality that most relate to the passengers as appropriate intervention strategies can be formulated. This study has clear implications for service quality measurement and management at airports. The most obvious is that in order for airport service quality strategies and tactics to yield the desired results, service quality of airports must be defined by and measured from passengers themselves.

Airport worldwide have been pressured to significantly change their management technique in maintaining service standards and competing globally. In this age, an essential item for final analysis customer satisfaction, which truly defines the true meaning of present economic activity (Chien et al., 2003). While airports have been driven by profit, and motivated to develop services and products to their customers, they also face challenges in security and other political concerns.

This study offers direction for managers who seek to use service quality as a critical component of their airport's competitive strategy. Customer-driven service quality enhancements affect not only passengers' perceptions, but also the overall attractiveness of the airport relative to its competitors. Thus, allocating an appropriate amount of resources to thekey factors of airport service quality can increase the likelihood of being perceived by a passenger as the best choice, relative to the alternatives available.

5.2. Implications of the study

5.2.1. Managerial implications

This study has clear implications for service quality measurement and management at airports. The most obvious is that in order for airport service quality strategies and tactics to yield the desired results, service quality of airports must be defined by and measured from passengers themselves and not by or from others. More specifically, researchers in this industry have sometimes relied on airport and travel professionals for specifying and even for measuring airport service quality "from a passengers' perspective". This article recommends studying service quality

perceptions in a customer-focused manner in order to best determine where and how airport service quality initiatives can make a significant difference to the customer. Thus, a key managerial implication of this study is a passenger-driven framework for the airport manager on how to enhance the quality of the service quality management process thereby improving service quality in the airport in ways that really do matter to the passenger.

The study offers direction for managers who seek to use service quality as a critical component of their airport's competitive strategy. Customer-driven service quality enhancements affect not only passengers' perceptions, but also the overall attractiveness of the airport relative to its competitors. Thus, allocating an appropriate amount of resources to the key factors of airport service quality can increase the likelihood of being perceived by a passenger as the best choice, relative to the alternatives available.

5.2.2. Implications for future work

Implications for future research this study holds implications for further research in the services, service quality and airport quality and passenger satisfaction domains. Significant contributions could result from additional study of the relationships among service quality, servicescape and Csikszentmihalyi's typology of how individuals use their time. Several authors have already added valuable insights into the role of the servicescape in service quality (Brady and Cronin, 2001; Dabholkar et al., 1996). A more explicit and systematic investigation of how theServicescape facilitates or frustrates customers' activity goals (productivity, maintenance and leisure) should be of interest to researchers of service quality in servicescapes where customers spend extended periods of time and to services marketers who focus on waiting time and queuing issues (e.g. bus terminals, train stations and cruise ships).

Given that prior academic research in airport service quality is limited and primarily focused on service performance measure methodologies, that literature could benefit from further application of gap theory methodology for analyzing service quality. Two critical investigations needed are further study of the relationships between airport service quality and other important airport performance measures. The relative importance of service quality in the passengers' airport choice decision is currently the subject of speculation requiring

empirical inquiry and specification. In a related area, the influence of passenger preferences for airports on airline choice of airports requires further study.

5.3. Limitations of the study

There limitations and constraints faced this research listed as follow:

- The number of respondents (sample size) were not enough, because the population is very large.
- The research was not target all the airport customers.
- The research questionnaire distributed to international flights only and the internal flights were not take in account.

5.4. Suggestions of the study

This study dealt with the passengers to measure the service quality at Khartoum international airport, actually to measure the service quality at Khartoum international airport properly should deal with other airport customers (airlines companies, greeters, meeters, tenants…etc.) to measure the service from perspective of them, also further studies needed to assess the relation between airport service quality and other important airport performance measures in order to create integration between service measures and other airport's performance measures at Khartoum international airport.

The fluctuation of customers' demands in different seasons and occasions make their needs and wants and then their expectations are change subsequently, so further researches needed to measure airport service quality at Khartoum international airport by collecting data from airports customers in different seasons and occasions.

This study focused on the arrivals and departure passengers, domestic passengers are not taken in account in this research, so we recommend to measure the service quality also from domestic passenger's perspectives, given that the service at airport should not change and the service should provide to all passengers with high quality either arrival and departure or domestic passengers.

5.5. The Conclusion

This study was developed to provide insights into the process of service quality measurement at airports and to contribute to the knowledge base in services quality theory and practice. To that end, this article:

- Explores existing practitioner and academic perspectives on airport service quality.
- Develops and proposes a conceptual model of passengers' expectations of airport service quality from a juxtaposition of services, marketing and operational psychology literature against qualitative research on passengers.
- Empirically investigates the model using a sample of 100 frequent airport users.
- Discusses the implications of the study results for service quality theory and practice.
- Offers implications and a set of recommendations for the measurement and management of service quality at airports.

The findings of this study indicated that the passengers' satisfaction perceptions of the airport service quality has positive influence on overall passenger satisfaction. In comparing the perception of airport service quality attributes and passengers' demographic profiles (purpose of travel, trip orientation, and frequency of travel) among Sudanese and foreigner passengers, the results showed that there is no significant difference in airport service quality attributes among Sudanese and foreigner passengers. All this findings should take in account to improve the efficiency and effectiveness of Khartoum International Airport. To make all passengers at Khartoum International Airport satisfied and to find position among top airports in the annual ranking.

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Appendix

Appendix (A)

Questionnaire

Researcher name: Mohilam Osman Malik Shamaoun.

Supervisor: Dr.AbdElrahimSaad Omer.

In the context of completion study about **Airport Service Qualityand Passenger Satisfaction (ACase Study of Khartoum International Airport).**And for purpose of collecting data to prepare this study, we present this questionnaire and we hope to answer all its questions accurately and objectively in order to improve the service quality in Khartoum International Airport. So we are honor to help us in achieving this work, we inform you that all information within this questionnaire will use only for the purpose of purely scientific. So please put the right answer in the place dedicated to, by mark (×) in the box that best fits your answer.

Part I: ***Demographic Profile***

1. What is your gender?
   ☐ Female ☐ Male
2. Where are you from?
   ☐ Sudan ☐ Others
3. What is your purpose of travel?

   ☐ Education ☐ Work ☐ Vacation/Pleasure

   ☐ Visit friends/relatives ☐ others

4. What is your typical usage of this airport in this time? (Trip orientation)

   ☐ Departure ☐ Arrival

5. How many times have you used this airport to travel?

   ☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5 times
   ☐ more than 5 times

Part*II*: Satisfaction of Airport Service Quality

*Directions: The following set of statement relates to your perception of airport service quality at Khartoum International Airport. For each statement following, please mark (×)in the boxbased on a scale from **1 = Very Unsatisfied, 2= Unsatisfied, 3 = Neutral, 4 = Satisfied, and 5 = Very Satisfied.***

Function

ITEM	1	2	3	4	5
1. The airport's external signs clearly direct me to airport services such as parking, car rentals, terminals, etc.					
2. Internal signs throughout the airport clearly directing me to airport facilities (baggage, ticket counters, security, restrooms, rental cars, transportation services… etc.)					
3. Airport's physical layout make it easy to you to find what you need (i.e. restaurants, restrooms, gates, etc.)					
4. Flight information screens are available.					
5. Baggage carts are conveniently located.					
6. Your bags and luggage are secure from theft and loss.					
7. Baggage delivery time is acceptable.					
8. Arrival/Departure processes and procedures take short time.					
9. You can enter/exit the airplane within suitable time.					
10. Always feel you are safe and secure at airport.					

Interaction

11. Your complaints are responded to immediately at an airport.					
12. Employees at an airport available to offer you individualized attention.					
13. Employees at an airport are not busy to respond to your requests promptly.					
14. Airport staff are courteous.					
15. Airport staff they dressed neat and attractive uniform.					

Diversion

ITEM	1	2	3	4	5
16. Airport has business centers, which provides personal computers, phones, and faxes.					
17. An airport should have quiet areas in which to nap, read, or do business.					
18. The airport display artand current décor is attractive.					
19. Nationally known retail outlets are available.					
20. National chain restaurants are available at airports.					
21. Availability of banks/ATM Services/money exchange.					
22. Availability of washrooms/toilets.					
23. Cleanliness of washrooms/toilets.					
24. Enough seats at waiting area.					
25. Waiting area is comfortable.					
26. Always, There high quality medical services at the airport.					
27. Always, there services for people with special needs.					

Overall Satisfaction

28. Overall, I am satisfied with Khartoum airport service quality.					

Appendix(B)

إسم الباحث: مهيلم عثمان مالك شمعون.

إسم المشرف: أ.د. عبد الرحيم سعد عمر.

إستبيان

في إطار إجراء دراسة حول جودة خدمة المطارات و رضاء الركاب (دراسة حاله مطار الخرطوم الدولي). ولغرض جمع بيانات لإعداد الدراسة ، نضع بين ايديك هذا الإستبيان آملين الإجابة علي بنوده بدقه وموضوعيه لتحسين الخدمة بمطار الخرطوم .

لذا نتشرف بمساعدتكم لنا في إنجاز هذا العمل، علما بأن كل المعلومات داخل هذا الإستبيان فقط لأغراض علمية بحتة، عليه نرجو التكرم بوضع علامة (X) في الصندوق المناسب:

الجزء الاول:

١- الجنس: ذكر ☐ انثى ☐

٢- بلد المنشأ : السودان ☐ أخري ☐

٣- الغرض من السفر/ الزيارة: دراسة ☐ عمل ☐ إجازة ☐

زيارة أصدقاء/أقارب ☐ أخري ☐

٤- ماهي طبيعة إستخدامك للمطار في الوقت الحالي؟

مغادرة ☐ وصول ☐

٥- عدد المرات التي إستخدمت فيها المطار؟

مره واحده ☐ مرتين ☐ ثلاث مرات ☐

اربعه مرات ☐ خمس مرات ☐ من خمس مرات ☐

الجزء الثاني

العبارات أدناه متعلقة بإدراكك لجودة الخدمة بمطار الخرطوم الدولي. فضلا ضع علامة (×) في المكان المخصص اعتمادا على القياس من **١=غير راضي جدا، ٢=غير راضي، ٣= محايد، ٤= راضي، ٥=راضي جدا.**

(أ)

العبارة	١	٢	٣	٤	٥
هنالك علامات خارجية تقود بوضوح للجراج، الصالات.... الخ					
هناك علامات داخلية تقود وضوح لمنشأة المطار والخدمات وإجراءات السفر وتسهل الحركة داخل المطار					
البيئة المادية للمطار تسهل إيجاد كل ما تريد (مطاعم، دورات مياه، الخ)					
هناك شاشات تعرض معلومات الرحلات					
عربات نقل الامتعة موزعة بطريقة ملائمة					
الحقائب و الأمتعه خاصتك مؤمنه من السرقه و الفقدان					
تسليم الامتعة يتم بدقه و خلال زمن معقول					
عمليات وإجراءات الوصول/ المغادرة تأخذ زمن وجيز					
الدخول/خروج من الطائرة يأخذ زمن مناسب					
دائما ما تشعر بالأمن والسلامة داخل المطار					

(ب)

العبارة	١	٢	٣	٤	٥
دائما يتم الاستجابة فورا للشكاوى بالمطار					
كل الموظفين بالمطار متاحين ويقدمون انتباه لكل معاملاتك					
كل الموظفين بالمطار يستجيبون فورا لطلباتك					
كل الموظفين بالمطار يتعاملون بلطف ولباقة					
الموظفين بالمطار يرتدون زي موحد انيق وجذاب					

(ج)

العبارة	١	٢	٣	٤	٥
المطار يحتوي على مراكز لإنجاز الأعمال الخاصة					

ويوفر كل المعينات مثل الهواتف، فاكس، .... إلخ.					
المطار يحتوي على مكان مخصص للاسترخاء والقراءة وإنجاز الأعمال.					
تصميم المطار يعرض فن والديكور الحالي جميل.					
هناك متاجر عالميه متاحه للبيع بالتجزئة					
هناك سلسلة مطاعم عالميه متاحه داخل المطار.					
المطار يوفر الخدمات البنكية/الصراف الآلي/تبديل العملة.					
توفر دورات المياه.					
دورات المياه المتوفرة نظيفة.					
مقاعد كافيه في اماكن الانتظار.					
أماكن الانتظار مريحه.					
دائما هناك خدمات طبيه بجودة عالية.					
دائما توجد رعايه بذوي الإحتياجات الخاصه بالمطار.					

(د)

العبارة	١	٢	٣	٤	٥
إجمالا، أنا راض عن مستوى الخدمة بمطار الخرطوم					