MODELLING AN EMPIRICALLY DERIVED MEASURE FOR CUSTOMER CONTACT IN SERVICE OPERATION ENVIRONMENTS: A CASE STUDY OF UNIVERSITY OF NAIROBI ENTERPRISES AND SERVICES' ARZIKI RESTAURANTS

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PREFACE

*"Even if we achieve gigantic successes in our work, there is no reason whatsoever to feel conceited and arrogant. Modesty helps one to go forward, whereas conceit makes one lag behind. This is a truth we must always bear in mind."- **Chairman Mao Tsetung**, (September 15, 1956)*

DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

Signed ..... (Date) 05th November 2009

Paul G. Misati

D61/71342/2007

This research project has been submitted for examination with my approval as University Supervisor.

Signed ..... (Date) 09/11/09

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DEDICATION

I express my deepest gratitude to the Almighty God for His help to me in the course of my life's journey. It is from Him that all good things come and to Him all honour, glory, majesty and power are due. I dedicate "*whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, and whatsoever things of good report*" that I ever achieve to Him.

I also dedicate this work to all the members of my family who have stood by me and given me steadfast support always. I appreciate your deep generosity and sacrifices. May God bless you!

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ABSTRACT

The importance of Customer Contact as an important component of service operations is widely acknowledged by operations management practitioners and researchers. Various approaches have been undertaken aimed at defining and linking, in a scientific way, the relationship between customer contact and service quality for various service episodes.

This study used the Multiple Linear Regression model to establish a model for Customer Contact in the context of a restaurant setting. It considered three main variables of total Communication Time between the Service Worker and the Customer, the degree to which the service received is judged to be Intimate, and the Feedback Time elapsing between the giving of the service order and receiving of the response.

The study found that total Communication Time is the most significant dimensionalizing variable in deriving a measure of Customer Contact. The other two variables were not significant. The study established a model for Customer Contact which practitioners can use as a diagnostic tool for various service environments. The derived model can also be used to benchmark various service metrics and thereby achieve organizational strategic objectives and goals.

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION

1.1 Background

The role of services in Operations Management has grown steadily over the years and now comprises a larger percentage of total value produced compared to manufacturing. Indeed, even for those organizations involved in production of physical goods, the service component takes a disproportionately large part of the total basket value. Because of this, service quality management has become a major subject occupying much of managerial time and attention, arising from both the increased contribution to profits and the unique challenges of managing services. Stevenson (2007), for example, has observed that the management of services poses a variety of unique managerial challenges, which are either much less or non-existent in the manufacturing environment.

Management of services in organizations raises unique challenges which must be properly understood and addressed. Some of these challenges include the fact that jobs in service environments are often less structured than in manufacturing, customer contact is usually much higher, worker skill levels are typically lower than in manufacturing and employee turnover is often higher than in manufacturing. Others include the fact that input variability tends to be higher in many service environments than in manufacturing and also that service performance can be adversely affected by workers' emotions, distractions, customers' attitudes, and other factors, many of which are beyond managerial control. Because of these factors, quality and costs are more

difficult to control, productivity tends to be lower, the risk of customer satisfaction is greater, and employee motivation is more difficult in service operations than in manufacturing (*ibid.*).

Kellog and Chase (1995) have recommended that given the increased importance of services, it is necessary that service management be defined and subjected to precise measurements. One of the most visible variables in service management which can be measured is customer contact. They note that though some practitioners have tended to differ on just how to measure the amount of customer contact, there is little dispute among them that customer contact is an important aspect in the study of service industries (*ibid.*). Stevenson (2007) has defined customer contact as that "moment of truth" in which service quality is instantly judged. It is the episode in which the customer, on the one hand, and the service provider, on the other personally meet.

This study used the Multiple Linear Regression technique to empirically derive a measurement model for Customer Contact, which is a widely used construct in service management. It follows on the research done by Kellog and Chase (1995) in which they demonstrate how the Multiple Regression technique is used to obtain a model for measuring the level of contact on the normalized values of communication time, information richness, and level of intimacy. This study's measurement model was based on the three key dimensions of Communication Time, Intimacy, and Feedback Time, which Kellog and Chase found to be most significant in their model (1995).

This research used, as its case study, the Arziki Restaurant located at the University of Nairobi's Main Campus. Multiple Regression Analysis outputs were used to obtain goodness of fit measures, product moment correlations for dimensions and variables, and ANOVA results for the contact variables.

1.2 Statement of the Problem

Over the years, the global economy has continued to witness the rise of the services sector at the same time that the importance of the manufacturing sector has been declining. Because of this, challenges which did not previously exist (or whose impact was not severe because of the small contribution of services) have arisen regarding the management of services and how to maintain acceptable standards of quality. Many companies have now realized that they must successfully manage quality if they are to remain competitive in the dynamic business environment. And it is important that successful management of quality is seen from the perspective of customers. Successful management of quality requires that managers have insights on various aspects of quality. These include defining quality in operational terms, understanding the costs and benefits of quality, recognizing the consequences of poor quality, and recognizing the need for ethical behaviour (Stevenson, 2007).

The realization that successful management of service quality is a competitive imperative has seen companies place the role and value of the customer in a central place. For it is only the customer who is best positioned to say whether the service he is receiving is of an acceptable quality or not and to judge it in comparison with the service provided by

other competing organizations. Management's role is rearranged to reflect the increased power of the customer, who has the power to vote with his wallet. Managers must, therefore, define service quality in the terms of the customer. Performance measures, such as those proposed by Slack and Lewis (2008) are aggregative in nature. They include broad aspects of performance such as customer satisfaction, operations agility, and productivity. These are used to give a higher-level picture of what the market requires and what performance the operation is achieving. Other measures are singular in nature. One such measure is the amount of customer contact.

With most researchers now agreed that customer contact is a major component of effective service quality management, a number of models have been developed to measure it. Using a customer-contact centred model, however, raises an important concern for managers of service quality, namely: the increased potential for a negative perception of quality which comes about as a result of customers' participating in a service system (i.e. self-service). Further, as von Hippel (1988) has observed, a problem of objective assessment of what level of service quality is suitable arises when customers are both familiar and relatively satisfied with existing products and services as they find it difficult to articulate their needs for novel products or services. Slack and Lewis (2008) have also pointed out that customers often develop an enhanced understanding of their own needs only when they come into direct contact with the product or service and start to use it. They give the example of many software companies which talk about the "I don't know what I want but I'll know when I see it" syndrome, meaning that only when customers use the software are they in a position to articulate what they do or

don't require. Consequently, it is important that both the model for customer contact and the service design itself be approached with adequate care. Of particular importance is the need to build error prevention in the service design so as to ensure that necessary customer acts are simple and safe so as to promote reliability, validity, and objectivity of whatever model is created from customer information.

Whereas there has been little or no study of this nature in Kenya, this study attempted to see how a model, such as that proposed by Kellog and Chase (*ibid.*) could be developed for the case of service operations in a restaurant setting. The contingency model thus obtained can be refined further for use in other service industries.

With a scientific measure of customer contact in place, managers would have a model to help them classify service encounters along a continuum of high, medium, or low contact and in turn appraise the meaning of quality in different service settings, establish what the acceptable measures of quality should be, what employee skills are best in given situations, and how service delivery systems can be designed to provide effectiveness and efficiency (Kellog and Chase, 1995).

1.3 Objective of the Study

The study's objective was to model an empirically derived measure of customer contact in a restaurant setting.

The study also tested the following hypotheses:

- Communication (that is, the richness of information exchange) is a significant factor for dimensionalizing customer contact.
- The extent to which the service episode can be described as being intimate is significant in dimensionalizing customer contact.
- Feedback time is a significant factor in dimensionalizing customer contact.

These hypotheses are set mathematically as follows:

H_o: $\beta_1 = \beta_2 = \beta_3 = 0$ (There is no linear relationship between Customer Contact Duration and the explanatory variables of Communication Time, Level of Intimacy, and Feedback time)

H_1: $\beta_j \neq 0$ (At least one regression coefficient is not equal to 0)

The study tested these hypotheses for their significance and results are presented in Chapter Four of this document.

1.4 Importance of the Study

This study is important in understanding the changing environment surrounding quality management in the service sector. Specifically, the study is important to practitioners, academicians, and managers in the service environment. The study has important applications for developing contingency models for various service environments. A measurement model for the customer contact construct has direct implications for both service researchers and the managers of service firms. On the research side, the model can be used to validate existing theory on customer contact. For example, the theory

by Chase and Tansik (1983) holds that firms can register increased sales opportunities with increased levels of customer contact.

Service quality managers can also use results of this study to construct hypotheses about capacity, location, technology, information and network requirements in a way that optimizes their service quality objectives. The study is helpful in providing managers with diagnostic tools to clarify their strategic focus with respect to the management of the ever increasing role of operations management organizations. Modeling customer contact can play a constructive role in defining strategic focus and customization for service firms. For example, a service firm that specializes in one type of contact may be more successful than those that have a range of contact levels. Alternatively, in environments where it is necessary to offer a wide range of contact levels, it may be possible to study the effects of segregating facilities and personnel by contact level instead of incorporating all contact levels into one facility.

The study also provides insights into customer contact variables, which practitioners can use to facilitate new types of service system designs. For example, new organizational forms such as the "flat organization" often call for more points of contact with the customer. Results of this study can provide some information on how such new forms of organizations can configure their services to achieve best operating and strategic results.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Modern Operations Management considers the customer to be central in firms' drive towards competitiveness. Schonberger and Knod (1997), for example, have observed that "for want of a close customer-provider linkage, operations flounder and customer service falters". Kellog and Chase (1995) are of the view that if the role and place of customers in service quality management is to be properly recognized, it is important that the differentiating variables relating to customer management be precisely defined and measured. In their opinion, customer contact, a major variable in service operations is an important metric in any study that considers the role of customers as it is a prominently visible variable. They observe that while there has been controversy surrounding the definition and measurement of the degree of customer contact, there has been little or no disagreement that customer contact is an important aspect in the study of service operations.

It is important that the customer contact variable, as a measure of service quality, be studied in a scientific way. Kellog and Chase (1995) have applied the Linear Regression Model for modeling the variable of customer contact. Other researchers, notably Zeithhaml *et al* (1990) have proposed the Service Quality (SERVQUAL) model for assessing service quality. Their model is designed to obtain feedback on an organization's ability to provide quality service to customers by focusing on five service dimensions that, in their opinion, influence customers' perceptions of service quality. The five

dimensions are: tangibles, reliability, responsiveness, assurance, and empathy. The results of the SERVQUAL model are used to identify service strengths and weaknesses, identify gaps and thereby relate the deficiencies to other service quality dimensions.

A measure of customer contact is useful in classifying service encounters along a continuum of high, medium, or low contact. With such a classification, it is possible to appraise what quality means in different service settings, develop measurement criteria for quality, and even define what employee skills will be needed in given situations. The model for customer contact also helps service managers design service delivery systems which provide both effectiveness and efficiency. The model can also be used as a contingency model for other service industries.

2.2 Customer Contact and the Service Operations Environment

Interest in obtaining an objective measure for customer contact begun in 1946 with Whyte's publication of his article, "*When Workers and Customers Meet*". The article proposed that the element that makes services different from manufacturing firms is the relationship between the customer and the service worker. Fuchs (1968) reported on the transition from an industrial to a service economy. His study identified the many differences in each sector and proposed how each of the two sectors needed to measure and evaluate its dimensions. Chase and Aquilano (1977) were among the first researchers to move away from a product-oriented thinking to a service setting thinking. Their decision was based on the realization that service systems differ from manufacturing systems on the basis of the extent to which the customer is in direct

contact with the provider. They concluded that high contact, pure service types required different operations management strategies and that maximizing efficiency was not necessarily the correct goal.

The movement away from the product-oriented thinking to a service-setting thinking continued over the years leading to the seminal work by Mills and Turk (1986) which proposed an empirical customer contact model. Mills and Turk's research showed that customer/firm interaction is an important dimension. Chase (1978) for the first time, introduced the term "customer contact" and in 1981 suggested its theoretical basis and gave its first operational definition as "the time in the system relative to the total time of service creation". Stevenson (2007), more recently, has defined customer contact as that "*moment of truth*" in which service quality is instantly judged. It is the episode in which the customer, on the one hand, and the service provider, on the other personally meet.

In 1983 Chase and Tansik proposed a Customer Contact Model which seeks to incorporate several dimensions of service production and demonstrates the tradeoffs that might exist when selecting service design options. Stevenson (2007) has also made the same observation regarding the issue of tradeoffs. He notes that in most instances, some quality dimensions of a service will be more important than others making it necessary to have some kind of tradeoffs based on previously identified customer priorities.

Time is frequently seen as a factor when dimensionalizing customer contact. Mills (1985) used Time as one of the dimensions involved in the interface between the client

and the service organization. Chase (1985), however, observed that time alone is not a sufficient dimension and identified contact modes that were far richer. These included face-to-face loose specifications and face-to-face tight specifications. He noted that it is not only the time in the system that is important but also the ability to react and customize the service offering. Schonberger and Knod (1997) have pointed out that quick response (or speed), a variable directly related to time, is one of the six things that the customers want from service providers. They note that customers want a delay-free service and quick response to changing requirements which means that the provider must aim at satisfying customer demands by shortening cycle times and quickly introducing attractive new goods and services.

The SERVQUAL model proposed by Zeithhaml *et al* (1990) also emphasizes the role of time in service quality. Time (that is, the speed with which service is delivered) along with assurance (the knowledge exhibited by personnel who come into contact with a customer and their ability to convey trust and confidence), reliability, responsiveness, and tangibles, are some of the other variables in their model. Maister and Lovelock (1982) tried to incorporate Chase's ideas and in turn suggested a framework that incorporates both the degree of contact and the amount of customization. Their framework was in turn used by Lovelock (1983) while Wemmerlov (1990) went on to incorporate notions of high and low customer contact as a means of operationalizing the customer model.

Daft and Lengel (1984) introduced the concept of information richness (or communication). Their model characterizes the value of information that passes

between the customer and the service provider. The concept of information richness provides a clear way to evaluate the value of the resource exchanged. Granovetter (1973) had earlier proposed that the strength of customer contact was probably a linear combination of the amount of time, the emotional intensity, the intimacy, and the reciprocal services which characterize the contact. Schonberger and Knod (1997) have also identified high levels of service, which have an element of humanity, as an important consideration that customers look for in the firms with which they do business while Zeithhaml *et al* (1990) have identified this as responsiveness, being one of their five dimensions of service quality. They define responsiveness as the willingness of service providers to help customers in unusual situations and to deal with problems. The importance of contact may also be captured by the dimension of assurance which refers to the knowledge exhibited by personnel who come into contact with a customer and their ability to convey trust and confidence (*ibid.*)

Schonberger and Knod (1997), in highlighting the role of customers in achieving competitiveness, state that the major aim of operations management is to please customers. Pleasing customers gains their allegiance and brings in revenue. If the firm does better than the competition it will gain market share. The combination of market share, revenue growth, and return on equity contributes to organizational competitiveness.

Clearly, the issue of service quality is central to the effective management of customers. Firms operating in the competitive dynamic environment must commit themselves to meeting and exceeding customer expectations because the great variety of choice

available to customers and the power of technology (particularly information and communication technology whose most important tool is the Internet) to make information about product and service offerings available at very low prices, among other factors have radically altered the competitive landscape. Customers now look for high levels of quality, a high degree of flexibility, low costs, and little or no variability in the offerings from their service providers (*ibid.*). Indeed, no effective operations strategy can be crafted that does not recognize the central role of customers in business operations.

Linking the concepts of Information richness (or Communication), Intimacy, and Feedback Time provides the basis for developing a Customer Contact Measure, which is the focus of this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

This study took place in a single restaurant service facility. Various reasons informed the decision to select a single service facility, including the following: A restaurant provides an ideal site in which to study contact episodes- whether long or short. It also provides a setting in which both intensive and superficial relationships can take place. Further, the restaurant is a set up which finds similarities in most service industries. For example, restaurants have a variety of services such as on-site food services, outside catering, meeting room facilities, and so on, all of which are sold as services. These varieties of services utilize a wide range of contact modes, from face-to-face to highly formalized telephone contacts (for example, ordering for one's meals through the telephone).

3.2 Population and Sampling

This study took place at the Arziki Restaurant, operated by the University of Nairobi Enterprises and Services (UNES) Ltd, a wholly-owned commercial-operations company of the University of Nairobi. UNES Ltd leverages the University's diverse resources into commercial opportunities and contributes to the University's revenues. Restaurants operation is one of the business lines that UNES Ltd is involved in.

Respondents were drawn from customers visiting the restaurant in a typical day. The researcher attempted to obtain data from a sample that approaches normality, in line

with the law of large numbers and was guided by Kellog and Chase's (1995) sample which had 33 respondents. Respondents were selected using the convenience sampling method. As the study was empirical in nature, the researcher's interest was on obtaining objective data that would be utilized in developing a model for measuring Customer Contact.

3.3 Data Collection

The Customer Contact Data Capture tool (see Appendix) was used to collect raw data from customers visiting the Arziki Restaurant in a typical day. Data collection was spread over a period of two weeks in order to iron out any possible seasonal effects which would have had a destabilizing effect on the validity of the data. The data capture tool was purposively designed to be simple and easy to understand to customers since the customers themselves were responsible for recording variable ratings for the dimensions under study. The researcher deliberately avoided adding unnecessary inconveniences to customers' main objective of visiting the restaurant, namely, that of enjoying a meal. Simple data collection tools also increase response rates. The data obtained was cleaned preparatory to advanced statistical processing.

3.4 Data Analysis

The first step in the data analysis involved undertaking Exploratory Data Analysis to satisfy the researcher that the data met the criteria for normality. In addition, the exploratory stage of data analysis included a scatter plot of the dimensions to obtain a visual impression of the distribution of these service dimensions. Thereafter,

correlations and linear regression and multiple R-squared were generated and subsequently used to establish the relationships among the identified dimensions. Least squares were used to obtain the betas in the following equation:

$$\textit{Contact Duration} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + e$$

The betas represent the dimensions for Communication time, Intimacy, and Feedback time respectively, that is, x_1 = Communication time, x_2= Intimacy, x_3= Feedback time. R-squares and Multiple R-squares greater than 0.60 (+ or -) would be classified as representing important factors for dimensionalizing contact.

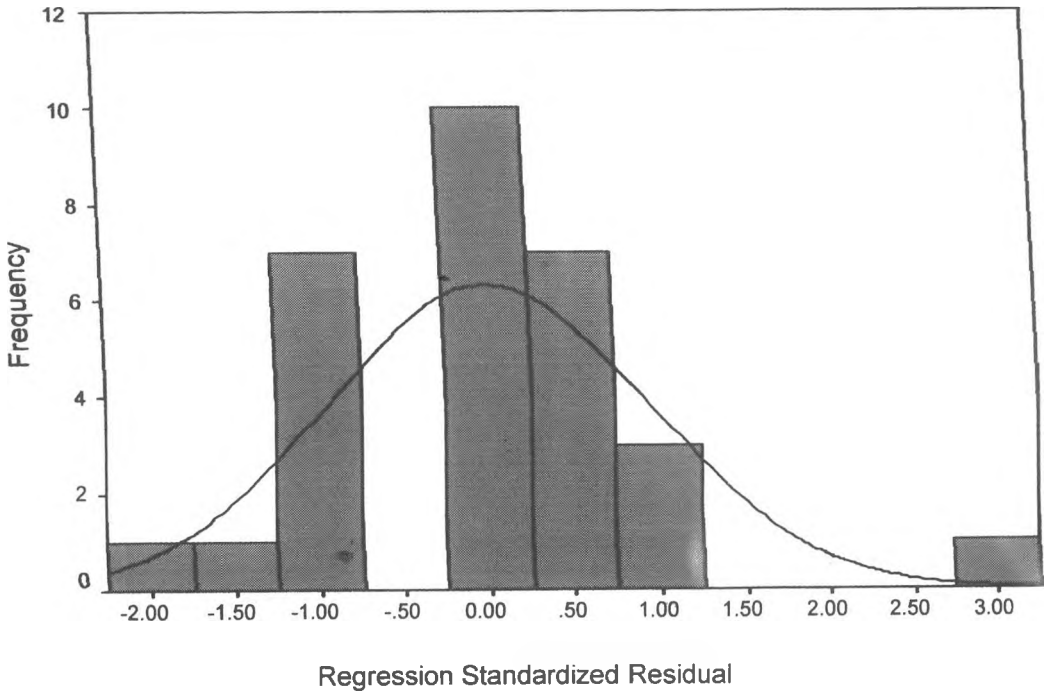
The null hypothesis for the significance of the regression model was tested with an F test obtainable from the ANOVA table and the *p*-value used for this purpose.

CHAPTER FOUR: RESULTS, FINDINGS AND INTERPRETATIONS

4.0 Introduction

This chapter presents the results and findings of the study. Specifically, it captures the key findings for results of Correlation analysis, the hypotheses tests for the dimensionalizing variables, and also presents the model for Customer Contact, which was the major objective of this study. The study assumed that the data from which the model was constructed met the basic assumptions of the Multiple Linear Regression analytical technique, among them normality as proved in Chart 4.1.

Chart 4.1: Histogram to explore normality in sample data



4.1 Assumptions of the Linear Regression Model

The Customer Contact model assumes that for each value of the Contact Duration (dependent variable), the distribution of the various independent variables is normal. This is demonstrated in Chart 4.1 above. The independent variables are given as: Communication time, degree of Intimacy, and Feedback time.

It is also assumed that, for all the independent variables, the variance of the distribution of the Customer Contact Duration (i.e. the dependent variable) is constant. The model further assumes that the relationship between the Contact Duration and Communication time, degree of Intimacy, and Feedback time is linear, and that all observations are independent.

4.2 Summary Measures for the Dimensionalizing Variables

Respondents were asked to record their actual duration of contact in minutes, the time in seconds that the service worker was speaking, their own time spent in speaking to the service worker, the total communication time, and the degree to which they considered the service episode to be intimate. Intimacy was described as mutual confiding trust. They were also asked to evaluate the service received on a scale for Feedback Time ranging from very slow to very fast.

The analysis of the customer data found that the mean actual duration of contact at the restaurant was 18.81 minutes with a standard deviation of 15.72 minutes, which represents a wide variation (coefficient of variation is 83.57%). This variation may be

explained by the fact that the restaurant serves various types of meals, services are offered (or consumed) at different times of the day, and there also varying categories of customers, all of which require different contact durations. The variation therefore arises from differences in actual duration of contact episodes dependent on these varied service requirements.

The mean time of total communication (that is, time service worker takes to speak and time customer takes to speak) was 72.07 seconds with a standard deviation, *s*, of 114.60 seconds. This again shows a very large dispersion in communication time (coefficient of variation is 159.01%) which may be explained by such factors as: degree of complexity of meal ordered, time available to customers/service workers, number of customers on the queue, number of service workers available, propensity of customers and/or service workers to talk, among others.

Respondents rated the degree of intimacy at 3.57 on a scale of 5.00 which translated to average intimacy on the given scale of No intimacy (1) to Very high intimacy (5). The speed with which feedback was received (i.e. feedback time) had a mean score of 3.13 on a scale of 5.00 and indicates that feedback was rated as average on the given scale of Very slow (1) to Very fast (5).

4.3 Correlations of Contact Duration and the Dimensionalizing Variables

The study sought to establish the relationship between the contact duration and the dimensionalizing variables of communication time, degree of intimacy, and feedback time

using correlation analysis. This was necessary to investigate the degree of association between contact duration and the variables that define contact duration as propounded by various researchers. Daft and Lengel (1984), for example, introduced the concept of information richness in communication between the service worker and the customer and theorized that information richness can model contact duration.

The study found that the correlation between Contact Duration and total Communication Time was significant. However, correlation between contact duration and Intimacy and Feedback time was not significant. This supports Daft and Lengel's (1984) theory that the value of information that passes between the customer and the service provider is an important dimensionalizing variable. This is also the view that Granovetter (1973) had earlier proposed. The results of the correlation analysis are shown in Table 4.1 next.

Table 4.1: Correlations for dimensionalizing variables

Variable description	*Communication Time*	*Degree of intimacy*	*Feedback time*
Duration of Contact	0.366	0.126	-0.005
Significance (one-tailed)	0.023*	0.254	0.489

(significant at the 95% significance level for one tail)*

From table 4.1, the actual duration of Customer Contact is significantly positively correlated with total time of communication ($r = 0.366$, p-value = 0.023). It is also positively correlated with Intimacy (degree to which the service episode is perceived to

be intimate), albeit with a low correlation (r = 0.126). The study did not, however, find any meaningful correlation between actual duration of contact and feedback time (r= -0.005).

These results, therefore, indicate that whereas a close and significant relationship exists between Customer Contact and total Communication time, the relationship between Contact and the degree to which the service is considered Intimate is not close. There was virtually no correlation between Contact and Feedback Time.

4.4 Significance Test for the Regression Model

The study investigated the extent to which the independent variables explained the dependent variable of Customer Contact duration so as to determine whether the model was significant. Results from analysis did not find the Customer Contact Model to be strongly explained by the dimensionalizing variables of Communication time, Intimacy of service episode, and feedback time. This is shown by the relatively low R coefficient (of 0.395) which is lower than the threshold R value of 0.60 (+ or -) which would be classified as representing important factors for dimensionalizing contact. Thus, it is concluded that the three dimensionalizing variables are not very strong in summarizing the model for customer contact when considered together. This is shown in the model summary in table 4.2 next:

Table 4.2 Model summary for dimensionalizing customer contact variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.395[a]	.156	.058	15.25636

a. Predictors: (Constant), Speed in which feedback between service worker and customer is received, Time in seconds of total communication, Degree to which service episode is intimate

The overall regression model for Customer Contact is also not significant at the 95% significance level (p-value is 0.213) as shown in the ANOVA output in Table 4.3 next. Thus, it is concluded that the three dimensionalizing variables are not significantly adequate in explaining the Contact model.

Table 4.3 ANOVA for dimensionalizing variables for the Contact model

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1117.293	3	372.431	1.600	.213[a]
	Residual	6051.667	26	232.756		
	Total	7168.960	29			

a. Predictors: (Constant), Speed in which feedback between service worker and customer is received, Time in seconds of total communication, Degree to which service episode is intimate

b. Dependent Variable: Actual duration of contact in minutes

From the results the three independent variables, collectively, do not significantly explain customer contact. This is may call for enriching of the model with additional variables such as those proposed by Chase (1985) when he pointed out that time alone

is not a sufficient dimension. He proposed that variables such as the ability of service workers to react and customize service offering should also be input into the customer contact model. Schonberger and Knod (1997) also pointed out that quick response (a variable directly related to time) is only of the several things that customers want from service providers.

4.5 The Contact Model and Significance Tests for Dimensionalizing Variables

The overall model for Customer Contact is derived from the Coefficients table (Table 4.4) and is given as: Contact Duration = $\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + e$. Substituting with the coefficients from Table 4.4, we have:

$$\textit{Contact Duration} = 14.357 + 0.0511\, x_1 + 0.635\, x_2 - 0.478\, x_3$$

Where the variables x_{js} represent, respectively, total communication time, degree of intimacy, and speed with which feedback is received. From the model, there is a positive relationship between customer contact duration and total communication time and also between contact duration and intimacy. The relationship is, however, negative with respect to feedback, as shown next :

Table 4.4 Unstandardized and Standardized Model Coefficients Outputs

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.357	7.044		2.038	.052
	Time in seconds of total communication	5.111E-02	.025	.373	2.066	.049
	Degree to which service episode is intimate	.635	.773	.153	.822	.418
	Speed in which feedback between service worker and customer is received	-.478	2.012	-.044	-.238	.814

a. Dependent Variable: Actual duration of contact in minutes

The table also shows that it is total communication time that is significant in the model (p-value = 0.049). The other two dimensionalizing variables (of degree of intimacy and feedback time) are not significant as their p-values are, respectively, 0.418 and 0.814.

4.6 Significant Customer Contact dimensionalizing Variables

This study shows that out of the three dimensionalizing variables of Communication Time, Intimacy, and Feedback Time, only Communication Time is significant in the construction of the Customer Contact model. Intimacy, though not significant, is important while feedback time is the least important and also has little correlation to the contact duration. The implication of this finding is that managers of service operations should focus on aspects of service design that deal with the speaking time of service workers as well as that of customers if their objective in services management is to meet the key usefulness of the contact model.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

Successful management of service quality requires that managers work with insights gained from measuring and applying significant performance aspects of quality. This includes defining quality in operational terms, understanding the costs and benefits of quality, and recognizing the consequences of poor quality (Stevenson, 2007). One way to obtain reliable insights into service quality is to use scientific models to establish standards of quality. One such model is the Customer Contact model, which has been discussed and developed in the previous Chapters of this study.

5.1 Conclusions from the Study

This study found that total communication time (which is the summation of service worker's and customer's speaking time) was the most important factor in dimensionalizing customer contact duration. Thus, effective communication appears to be the most important variable when designing service operation systems to take advantage of a scientific model of customer contact for service operations management. Although communication time was found to be the most significant dimensionalizing variable, it may not be sufficient to depend exclusively on it since service management is a complex issue requiring a consideration of tradeoffs. Thus, managers may accept a lower level of communication if they want to meet other service imperatives, such as short cycle times.

The study therefore calls for the need to carefully balance the various trade-offs, which is in line with the findings in the literature of Customer Contact model development. Chase and Tansik (1983), for example, proposed that the Customer Contact Model should incorporate several dimensions of service production to take cognizance of the various tradeoffs that practitioners have to contend with. This is also the approach taken by Stevenson (2007) who indicated that tradeoffs are necessary in situations where some quality dimensions are more important than others based on previously identified customer priorities.

This study considered the three important dimensionalizing variables of communication time, intimacy, and feedback and related them to customer contact as the dependent variable. The results of the study showed that though the overall Customer Contact model was not robust enough, Communication Time was highly significant in the overall model. This means that the components that make up communication time, namely: service worker speaking time and customer speaking time, are very important in constructing a model for customer contact.

Next in importance, though not significant, was Intimacy. The study did not find feedback time to be significantly correlated to contact duration. Thus, from the perspective of service providers, management of communication time is the most important operations issue. This means that operations managers should occupy themselves with management of their worker's time as well as ensuring that there is effective communication between their workers and the customers. They should also

carefully manage customer time so as not to waste it while at the same time being careful not to appear that they are in haste to get rid of the customer. This requires that managers determine the optimal customer time.

The study succeeded in deriving a model for customer contact, which is given as,

$$\textit{Contact Duration} = 14.357 + 0.0511\ x_1 + 0.635\ x_2 - 0.478\ x_3$$

Where the variables x_{is} represent, respectively, total communication time, degree of intimacy, and speed with which feedback is received.

Practitioners can use this derived model to refine current research designs. For example, they could use the model to examine efficiency enhancing actions based on the degree of customer contact, and specifically on the dimensions of Communication, Intimacy, and Feedback Time. Because the study found communication time to be the only significant variable in this model, practitioners could use this model to weight the communication variable with higher loadings in order to reach management's desired efficiency levels. The other variables of intimacy and feedback time could then be given lower loadings and a new model developed to be used to meet certain strategic and operational benchmarks.

This model can also be used as a contingency tool in other service settings and to construct hypotheses about issues of capacity, location, technology, information and technology requirements, and strategic focus. For example, from this particular study,

service managers could develop hypotheses on the number of service workers to employ and the minimum, average, and maximum time (in seconds) that each should spend communicating with customers who visit their facility. This may also have implications on issues of technology (for example, is more or less technology required?), information and technology requirements (to extend or reduce service worker speaking time), as well as customer speaking time management.

The findings of the study pose challenges to the service provider regarding establishment of strategic goals on how best to manage customers. For example, should the organization invest in lengthening customer speaking time (as this has a positive correlation with contact duration) or should the focus be on reducing customer speaking time? All these issues should be considered from the perspective of the tradeoffs that Stevenson (2007), among other practitioners, has pointed out. These may include: organizational culture, resources availability, ability to change, and the changing market dynamics.

The derived model can also be used to furnish practitioners with a clearer understanding of customer contact for the purposes of designing service systems. For example, managers can manipulate the various variables in order to obtain their desired degree of customer contact and relate this with their established benchmarks.

5.2 Recommendations for Action

This study recommends that Arziki restaurant's managers focus more on creating an environment which fosters effective communication between their workers and customers. This is because communication time was found to be the most significant dimensionalizing variable in establishing a model for customer contact. Increasing effectiveness in communication time might call for changes in facilities layout, among other possibilities.

Depending on the contact duration the restaurant managers would want to achieve, more weight loading of total communication time should be attempted compared to the loading on the other two variables of intimacy and feedback time. This will help them achieve better results in line with their organization's stated service quality standards and the overall strategic focus.

5.3 Limitations

This study had two main limitations. One, because the study provided measurement for a single service episode, it was difficult for the practitioner to determine how to aggregate scores across service episodes to the job or even at the firm level. Secondly, the model relied on obtaining the evaluation of customers but did not use perceptions of service workers. Thus, a further understanding of the Customer Contact model may have to be extended to a replicated study of service workers themselves and perhaps to their managers. These two limitations have not included the obvious considerations of

choice and use of the analytical technique, the ethical issues surrounding multiple regression technique, and interpretive considerations.

5.4 Challenges of Using the Customer Contact Model to Manage Services

The challenges of managing service quality are great. For example, practitioners have found that information on customer wants can sometimes be difficult to define, creating challenges for designing and managing service quality. This is because customer wants change rapidly yet customer management efforts take time to implement. Thus, by the time customers' revealed wants have been captured, understood and internalized, it is often found that customers have moved on to other expectations, considering satisfied wants as merely baseline standards. Service improvement initiatives, therefore, are characterized by inherent time lags (between discovering customer wants and addressing them), which may have serious consequences on the organization.

In some cases, customer wants are often industry-specific meaning that expectations would be quite different for various industry settings. Because of this, the model in this research may not be satisfactory for use in certain types of industry settings. This would then require that service managers embark on construction of other appropriate models. The multiplicity of models, particularly where the manager is in charge of several diversified companies, complicates managerial functions and introduces too much complexity.

A third challenge in using this model is that it may fail to be appropriate when customer complaints are due, in part, to unrelated factors (such as customers' moods, or general health). It is also possible that different customers tend to have different expectations so that a generic model fails to capture these expectations. For example, some key customers (who may be few in number yet highly influential) may demand more intimacy or feedback yet this model finds that these two variables are not significant. There is a possibility, therefore, that service operators may end up ignoring the unique demands of these key customers in their pursuit of attending to the significant dimensionalizing variable of communication time. This may have an adverse impact on the business. All these challenges point to the difficulties of managing service operations (Stevenson, 2007) which increase when a mathematical model is used.

5.5 Suggestions for Further Research

The researcher suggests that future studies of customer contact inquire into how customers evaluate a given level of service on certain dimensions of quality given various ranges of contact duration (such as high contact, medium contact, and low contact). The customers can, for example, then, evaluate quality on the dimension of how long they consider the effect of the service will last on the basis of this continuum of contact duration. Thus, customer can be asked to evaluate the service on a scale of: effects of service will not last, effects will last for a short time, effects will last for a reasonable time, effects will last for a long time, and effects of service will last for a very long time. The scaling should be non-directional in nature, that is, effects considered may be those which are negative or positive.

This proposed study will link the customer contact duration with customer service quality evaluation thereby introducing an important feedback element on the effectiveness of the empirically derived model.

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APPENDIX: CUSTOMER CONTACT DATA CAPTURE TOOL

Table 1: Customer Contact Variables

Serial no.	Actual duration of contact	Service worker time	Customer time	Communication time	Intimacy	Feedback	Customer Service evaluation
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

Legend:

- *Actual duration of contact* = actual duration of contact episode, measured in minutes
- *Service worker time* = Time, in seconds, that service worker was speaking
- *Customer time* = Time, in seconds, that customer was speaking
- *Communication time* = Time, in seconds, of total communication
- *Intimacy* = The degree to which the service episode can be described as being intimate. Intimacy is described as mutual confiding and trust. Use the key: 1= No intimacy; 2= Low intimacy; 3= Average intimacy; 4= High intimacy; 5= Very high intimacy

- *Feedback*= The speed in which feedback between the service worker and customer is received: 1= Very slow; 2= Slow; 3= Average; 4= Fast; 5= Very fast
- *Customer service evaluation*= How customer evaluates service:

1= Effects of service will not last; 2= Effects will last for a short time, 3= Effects will last for a reasonable time, 4= Effects will last for a long time; 5= Effects of service will last for a very long time