

# **THE DETERMINANTS OF CUSTOMER CO-PRODUCTION AND SATISFACTION IN A COMPLIANCE DEPENDANT SERVICE**

BY

**ERIC HEATH**

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Eric Heath

## **ABSTRACT**

### **THE DETERMINANTS OF CUSTOMER CO-PRODUCTION AND SATISFACTION IN A COMPLIANCE DEPENDENT SERVICE**

By

Eric Heath

Supervisor: Mr. T.G. Kotzé

Department: Marketing Management

Degree: Magister Commercii (Marketing Management)

Customer compliance has become a pivotal consideration in the marketing strategies of lifestyle management programmes. Previous research has shown that the better customers comply with the directives of service providers, the higher their levels of customer satisfaction (Dellande, 1999).

There are numerous lifestyle management programmes available on the market today. Many of these programmes have been linked to the usage of a nutritional product range as a pre-requisite for entering the programme. The investigation of customer compliance in lifestyle management programmes is very important because many of the major societal problems of today, such as high-fat diets, poor physical fitness, substance abuse and smoking, exist because people make poor health choices. Most of the leading causes of death could be reduced substantially if people at risk change five behaviours, namely non-compliance with beneficial health behaviours, poor diet, lack of exercise, smoking and alcohol and drug abuse. The many societal ills related to non-compliance with the aforementioned five behaviours and the dearth of knowledge about the determinants of customer compliance were the main motivations for this study.

Another important goal, underlying the motivation for this study, was to understand the relationship between role clarity, role ability, motivation, customer satisfaction and goal attainment. Motivation, which for the purpose of this study has been divided into intrinsic and extrinsic motivation, proved to be the strongest predictor of customer compliance.

An online self-administered questionnaire was used to gather quantitative data from 155 respondents who have successfully completed a lifestyle management programme.

The results of the first regression model indicated that two of the four independent variables, namely “customers’ role ability” and “intrinsic motivation”, are statistically significant, positive predictors of the dependent variable “customer compliance”. The other two independent variables, “customer role clarity” and “extrinsic motivation”, are not statistically significant predictors of “customer compliance”. The results of the second regression model indicated that “customer compliance” and “customer goal attainment” are statistically significant positive predictors of the dependent variable “customer satisfaction”

The most important construct of the study, highlighted in Chapter 6 as well as in the study by Dellande (1999), is customer motivation. If a customer is not motivated, compliance levels will not be sufficient to generate high levels of customer satisfaction. Customer motivation was divided into extrinsic motivation and intrinsic motivation with intrinsic motivation proving to have a stronger correlation with customer compliance than extrinsic motivation. The study was conducted across three different organisations.

Research has also suggested that more than half of the customers who commence with a lifestyle management programme never complete the programme or revert to the original lifestyle they followed prior to commencement of the programme. This could have a negative effect on their satisfaction levels. It is, therefore, imperative to ensure that all customers who join a lifestyle management programme are motivated and are able to comply with the directives of the programme to ensure the successful completion thereof.

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# **CHAPTER 1: INTRODUCTION, OBJECTIVES AND CONTEXT OF THE STUDY**

## **1.1 INTRODUCTION**

The level of customer compliance with the instructions of a service provider is an important determinant of customer satisfaction in many service contexts. Services that require high levels of customer compliance include education and training services, retirement planning, tax consulting, most health care services, debt management programmes and weight loss as well as exercise programmes. These so-called “compliance dependent services” all require customers to actively participate as “co-producers” in the creation of service outcomes by complying with a certain regimen once away from the service provider. This requirement is necessary in order to ensure positive service outcomes and high levels of customer satisfaction (Haynes, McDonald & Garg, 2002:2881).

Customer compliance is especially important in “lifestyle management programmes”, such as Weight Watchers, Weigh-Less, Run/Walk for Life and the Ultimate Sports Nutrition (USN) Body and Lifestyle Challenges, which are aimed at ensuring sustained weight management and fitness levels for participants. Lifestyle management programmes offer a combination of treatment strategies that focus on all aspects of weight loss, such as diet and physical activity. The idea behind lifestyle management is that individuals make gradual changes in diet and physical activity with the use of behavioural strategies. The result is a progressive reduction in weight over time. Usually, the goal of this approach is an initial weight loss of approximately 10% (Medscape Today, 2007).

Research on very low calorie diet programmes and lifestyle management programmes has shown that patients who complete commercial weight loss programmes lose approximately 15 percent to 25 percent of their initial weight. However, these losses are associated with high costs, high attrition rates and a high likelihood of regaining 50 percent or more of the lost weight within one to two years (NUTRA USA ingredients.com, 2005). Most consumers who start out with a lifestyle management programme drop out prematurely and regain all

the weight lost within six months. The key to success and overall sustainability in lifestyle management programmes lies in an understanding of the reasons for customer non-compliance and the factors that affect compliance levels (Dellande, Gilly & Graham, 2004:79). The main reason as to why customers drop out prematurely and are not happy with their results in lifestyle management programmes has not yet been established. The study by Dellande *et al.* (2004:78-91) is partially replicated in the current study.

Although extensive research has been carried out on customer compliance in lifestyle management programmes (Mckenna & Kuchera, 2004:10; Saltus, 1997:3), the dropout rate for these programmes is still unacceptably high. The tendency to continue promoting weight loss in the name of health, even in the absence of long-term outcome data, reflects what is called the “weight-centred approach toward health” (Cogan & Ernsberger, 1999:187). The focus on the elimination of obesity through weight loss has led to a high incidence of dieting and other weight loss behaviours that are of concern to many health care professionals. Scientific evidence continues to accumulate and demonstrate that weight loss through restrictive dieting and other methods does not cure obesity in a significant portion of participants. This evidence also shows that restrictive dieting is unsuccessful in producing even minimal permanent weight loss in the majority of cases and is not critical for improving the health of those considered obese, relative to exercise and healthful diet choices (Cogan & Ernsberger, 1999:188).

Dellande *et al.* (2004:81) established that motivation is the most important antecedent of customer compliance in a lifestyle management programme. If the customer is not motivated enough towards achieving his or her goal, it is more likely that the customer will not succeed. The motivational construct is sub-divided into two constructs, namely, intrinsic and extrinsic motivation which, for the purpose of this study, have been added to the existing framework by Dellande *et al.* (2004:82).

## **1.2 PROBLEM STATEMENT**

The current study is a partial replication and extension of the study conducted by Dellande *et al.* (2004) with the focus on the direct antecedents and consequences of customer compliance identified by Dellande *et al.* (2004). As far as could be determined, no previous research has tested the conceptual model proposed by Dellande *et al.* (2004) or sub-components thereof in a South-African context and in the context of a lifestyle management programme which entails more than just weight loss. The current study will specifically include two dimensions of customer motivation, namely intrinsic and extrinsic motivation while the previous study by Dellande *et al.* (2004) focussed on customer motivation as a unidimensional construct.

## **1.3 PURPOSE STATEMENT AND OBJECTIVES**

The current study involves a partial replication of the study conducted by Dellande *et al.* (2004). The primary objective and overall goal of the current study was to investigate the relationship between customer compliance and its four antecedents, namely, role clarity, ability, intrinsic and extrinsic motivation. In addition, the study also investigates the relationship between customer compliance, customer goal attainment and customer satisfaction in the context of a specific lifestyle management programme.

### **1.3.1 Secondary research objectives**

The study is guided by the following specific research objectives:

- To determine whether increased (a) role clarity, (b) ability, (c) intrinsic motivation and (d) extrinsic motivation leads to greater customer compliance with the directives of the service provider in a lifestyle management programme.
- To determine whether increased compliance with the directives of service providers leads to greater levels of customer goal attainment in a lifestyle management programme.

- To determine whether higher levels of goal attainment leads to greater levels of customer satisfaction in a lifestyle management programme.
- To determine whether increased compliance with the directives of service providers leads to greater levels of customer satisfaction in a lifestyle management programme.

### **1.3.2 Hypothesis**

The following seven hypotheses were tested in the study:

- H<sub>1</sub>: There is a positive relationship between customers' role clarity and their compliance with the service providers' directives.
- H<sub>2</sub>: There is a positive relationship between the role ability of customers and their compliance with the service providers' directives.
- H<sub>3</sub>: There is a positive relationship between the intrinsic motivation of customers and their compliance with the directives of the service provider.
- H<sub>4</sub>: There is a positive relationship between the extrinsic motivation of customers and their compliance with the directives of the service provider.
- H<sub>5</sub>: There is a positive relationship between customer compliance with the directives of the service provider and customer goal attainment.
- H<sub>6</sub>: There is a positive relationship between customer goal attainment and customer satisfaction.
- H<sub>7</sub>: There is a positive relationship between customer compliance with the directives of the service provider and customer satisfaction.

These hypotheses are discussed in more detail in Chapter 3.



## **1.4 DEFINITION OF KEY TERMS USED IN THE STUDY**

### **1.4.1 Customer role clarity**

Customer role clarity refers to whether consumers are clear about what is expected of them in the lifestyle management programme. Role clarity refers to the clearness or lucidity regarding a perception or an understanding free from indistinctness or ambiguity (Dellande *et al.*, 2004:81).

### **1.4.2 Customer ability**

Customer ability refers to whether the client is able to complete certain of the activities in the lifestyle management programme. For example, will the client be able to exercise four to five times per week or is there a gymnasium nearby? Customer ability refers to the power or capacity of the client to do or act competently, whether physically, mentally, legally, morally or financially, in an activity or occupation on grounds of his or her skill, training or other qualification such as the ability to sing well (Dellande *et al.*, 2004:81).

### **1.4.3 Customer compliance**

Customer compliance is the central construct in the study and the focal point of the literature review. All four constructs, namely role clarity, ability, intrinsic and extrinsic motivation serve as predictors of customer compliance (Dellande *et al.*, 2004:81).

### **1.4.4 Customer motivation**

Customer motivation is an internal state, which drives people to identify and buy products or services that fulfil conscious and unconscious needs or desires. The fulfilment of these needs can then motivate them to make a repeat purchase or to find different goods and services to better fulfil these needs. Customer motivation is the construct that has the

largest bearing on the customer compliance construct. For the purposes of this study, customer motivation is comprised of both intrinsic and extrinsic motivation (Dellande *et al.*, 2004:81).

#### **1.4.5 Intrinsic motivation**

Intrinsic motivation refers to engaging in an activity purely for the pleasure and satisfaction derived from doing the activity. When customers are intrinsically motivated, they perform the behaviour voluntarily, in the absence of material rewards or external constraints. Intrinsic motivation occurs when customers decide from within that it is a good idea to join a lifestyle management programme. The customer assumes total responsibility for making the decision (Pelletier, Tuson, Vallerand & Briere, 1995:36).

#### **1.4.6 Extrinsic motivation**

Extrinsic motivation occurs when a customer is motivated by means of social support. The motivation originates from external sources. Extrinsic motivation pertains to a wide variety of behaviours that serve as a means to an end and not as ends in themselves (Pelletier *et al.*, 1995:37).

#### **1.4.7 Customer satisfaction**

This is also a very important construct as the customer must be satisfied with the lifestyle management programme upon completion of the experience. Customer satisfaction is, therefore, an act of satisfying a need, a feeling of fulfilment and gratification (Dellande *et al.*, 2004:82).

### **1.4.8 Customer goal attainment**

Customer goal attainment refers to whether the customer reaches his or her goal or not, be it losing weight, gaining muscle or just maintaining an overall sense of well-being (Dellande *et al.*, 2004:82).

### **1.4.9 Lifestyle management programme**

A lifestyle management programme is also known as a health promotion or health behaviour change programme, a lifestyle improvement programme or a wellness programme. The programme constitutes an intervention designed to promote positive lifestyle and behaviour change and is widely used in the field of health promotion (Medscape, 2007).

### **1.4.10 Service provider**

The service provider refers to the entity that provides the lifestyle management programme to customers. Three companies were included in this study. The companies requested that their details remain anonymous and will be referred to as Company X, Company Y and Company Z.

## **1.5 IMPORTANCE AND BENEFITS OF THE STUDY**

The primary benefit from the current study is that it would be the first scientific contribution that investigates customer compliance from a South African perspective. The study by Dellande *et al.* (2004) included three antecedents of customer compliance namely role clarity, role ability and motivation. Motivation was the strongest statistically significant predictor of customer compliance in the study conducted by Dellande *et al.* (2004:85). The motivation construct in this study was split into two constructs, namely, intrinsic and extrinsic motivation in order to gain a deeper understanding of the factors influencing customer motivation within a lifestyle management programme. As the motivational

construct is the strongest predictor of customer compliance, further analyses of the motivational construct will, therefore, add to the existing body of knowledge. The broader concept of service marketing will also provide further background to the role that services marketing plays in the broader context of lifestyle management programmes. Customer co-production, as discussed in the services marketing literature, provides a solid base from which future researchers can gain insight into the antecedents and consequences of customer compliance.

The study included three different companies whose customers successfully completed a lifestyle management programme. The custodians of the three programmes stated that their primary goal is to have healthier customers, which, in turn, would lead to improved productivity in the workplace. The programme custodians considered the results to be of immense potential benefit to them as they would then be able to assess whether their programmes are indeed achieving the desired results.

## **1.6 THE CONTEXT OF THE STUDY**

Customer compliance in lifestyle management programmes forms the context of the study. Lifestyle management programmes have been in South Africa for many years with limited long-term success. Body for Life® provided the base for future similar programmes in South Africa. The main features of a lifestyle management programme comprise of a healthy eating plan and exercise regime. The current model by Dellande *et al.* (2004:8) provides a solid basis for the study and the evaluation of lifestyle management programmes.

## **1.7 SUMMARY OF RESEARCH DESIGN AND METHODOLOGY**

The study utilised an online self-administered questionnaire, which was administered by SurveyMonkey. The online self-administered questionnaire surveys were ideal for describing the characteristics of the large population represented in this study. The objective was to assess the determinants and consequences of customer compliance within the context of lifestyle management programmes.

The current study involved the testing of two multiple regression models. The first model contains one dependant variable, customer compliance and four independent variables, role clarity, role ability, intrinsic motivation and extrinsic motivation. The second model contains one dependant variable, customer satisfaction and two independent variables, customer goal attainment and customer compliance. The minimum sample size was calculated based on the regression model with the most independent variables based on the formula by Pallant (2005). The formula used to determine the sample size for multiple regression analysis is  $[N \geq 104 + m]$  (where  $m$  is the number of independent variables). Therefore, the minimum required sample size for the current study will be  $N \geq 104 + 4 = 108$  observations. The sample size obtained in the current study was 155 respondents.

All respondents were required to sign the informed consent form included in Appendix A. The Research Ethics Committee of the University of Pretoria also approved the study on 26 November 2008. The target population of this study consisted of customers who successfully completed a lifestyle management programme with Company X, Y or Z. The study utilised a non-probability convenience sampling method. The management of Company X, Y and Z provided written permission to sanction distribution of the questionnaire amongst their customers.

Multiple item rating scales (i.e. a 7-point Likert scale) were established as the measurement approach of choice. Specific multiple item rating scales were identified from the literature to measure the constructs necessary to test specific hypotheses through multiple regression analysis. The theoretical constructs, that were investigated, targeted customer attributes of clarity, ability, intrinsic motivation and extrinsic motivation, and the associated outcome variables of customer compliance, goal attainment and satisfaction.

The questionnaire was pre-tested in two phases. During the first phase; the questionnaire was provided to the various programme leaders of the three companies who approved the questionnaire and the content after consulting with members whom have successfully completed the lifestyle management programme. In depth interviews were conducted during phase two with two customers who have successfully completed a lifestyle management programme with Company Y. Each interview was a minimum of one and a

half hours and all the responses were recorded in writing. The cognitive pre-testing method was applied during phase two.

Cronbach's alpha was utilised as the reliability measure for the multiple-item rating scales used in this study. Cronbach's alpha is a measure of the internal consistency reliability of the items in a multiple-rating scale. Cronbach's alpha measures the degree to which responses across a set of multiple measures of a construct are consistent (Hair, Black, Babin, Anderson & Tatham, 2006:137).

The hypotheses in this study was tested through both multiple regression analysis and Pearson's product moment correlations. Multiple regression analysis is a statistical tool used to develop a self-weighting estimating equation that predicts values for a dependant variable from the values of independent variables and controls confounding variables to evaluate the contribution of other variables better. The objective of multiple regression analysis is to predict the value of a single dependant variable using the values of observed independent variables (Cooper & Schindler, 2006:576). The objective of the study was to investigate the relationships between the dependant and independent variables contained in the two multiple regression models.

## **1.8 STRUCTURE OF THE DISSERTATION**

Chapter 1 presents an introduction to the study, its problem statement and objectives, followed by a definition of the key terms used in the study. Thereafter, a short discussion on the importance and benefits of the study, context of the study, summary of the research design and methodology is presented, followed by an overview of the structure of the dissertation.

Chapter 2 discusses the importance of customer co-production in services, followed by examples of lifestyle management programmes as compliance dependent services.

Chapter 3 focuses on the antecedents and consequences of customer compliance in lifestyle management programmes.

Chapter 4 describes the research methodology used in the study. Firstly, the research design is reviewed and followed by an overview of the sampling approach adopted, that is, the target population and sample size. Secondly, the data collection is discussed. This includes a description of the survey method used as well as a discussion on the questionnaire design and measurements. Finally, the data analysis approach is described.

Chapter 5 provides an overview of the empirical findings of the study.

Chapter 6 outlines the limitations of the study and presents recommendations for future research. The conclusions of the study are also presented in this chapter.

## **CHAPTER 2: CUSTOMER CO-PRODUCTION IN SERVICES**

### **2.1 INTRODUCTION**

This chapter aims to define the components and levels of customer co-production from a services marketing point of view. The importance of customer co-production in services marketing is also elaborated upon, because lifestyle management programmes, which require high levels of customer co-production, constitute the context of this study. It is essential to provide a comprehensive discussion on customer co-production in the broader context of service marketing in order to provide an overview of the exact requirements expected from the customer. Customer compliance with the service provider's directives is the central construct in this study and it is imperative to discuss lifestyle management programmes as examples of compliance dependant services combined with a definition of compliance dependant services. Current and future trends in the weight loss and lifestyle management industry are also discussed. The final part of the chapter focuses on customer compliance as a problem in most lifestyle management programmes.

#### **2.1.1 Consumer co-production defined**

Co-production means engaging customers as active participants in the work of the organisation or treating customers as partial employees. The extent to which organisational work is dependent on direct contributions from customers varies with the setting and with the discretionary policies of the firm. In human service settings (e.g., weight loss, exercise and smoking cessation programmes), because the primary work is producing human change, co-production is unavoidable and, therefore, customers invariably have a substantial, direct influence on service outcomes. This gives customers the opportunity to shape the service encounter (Lengnick-Hall, Claycomb & Inks, 2000:364).

Customers actively seek out the appropriate service organisation in order to have an experience. Customers are even willing to compensate organisations to successfully



manage them in such a way that they get the quality of experience they desire. Whether dealing with a for-profit (e.g., retail, financial, hospitality) or a non-profit (e.g., healthcare, philanthropy, spiritual) service, the organisation must deliver what the customer expects, otherwise customers seek other alternatives. Service experiences usually involve co-production whereby customers must successfully perform some task or group of tasks. For example, patients must describe their symptoms (i.e., tell the doctor what is wrong) for healing to occur. Likewise, students must actively listen in order to gain the knowledge teachers have to offer. Co-production adds value to customers in a number of ways including saving time, adding convenience, enhancing customisation, increasing times of access to services and providing an enjoyable opportunity to show affirmation of the skill and an ability to perform a task (Ford & Dickson, 2012:179).

The customer has become the focal point of more and more services in today's economy as the focus on co-production increases. The traditional school of thought about customer marketing used to be fully entrenched in a goods dominant logic. Goods dominant logic is based on ideas originating primarily from the 19<sup>th</sup> century, which was reliant on the exchange of goods where goods could be exported. Services were viewed as a special type of goods for which there was no inventoriability or tangibility. The focus has shifted from the original goods dominant logic to a services dominated logic. Service is what is always exchanged (Vargo & Lusch, 2006:45). Goods are a special case, a special method of service provision. A table outlining the differences between a goods- versus a service-dominant view (Vargo & Lusch, 2006:46) is presented below:

**Table 2.1: A goods- versus service-dominant view of marketing**

	<b>Goods-dominant view</b>	<b>Service-dominant view</b>
Primary unit of exchange	Tangible products	Specialised competencies (knowledge and skills)
Role of goods	End products	Goods enable service provision
Role of customer	Recipient of goods	Co-producer of services
Determination and meaning of value	Determined by producers, embedded in products	Determined by customers through "value in use"
Source of economic growth	Producing, owning, controlling goods	Application and exchange of knowledge and skills

Source: Vargo & Lusch (2006:46).

An analysis of current trends in the business world suggests that the focus of business development is gradually moving away from products and factories. Instead, the interest is much more concentrated on the various processes taking place around the consumer. This orientation is not new. Concepts such as “customer orientation”, “close to the customer”, “customer segmentation” and “niche marketing” are well known and much tested, along with various ideas about “direct marketing” and “database marketing”. The common denominator in all the above-mentioned concepts is a larger focus on the customer. Taking the concepts a step forward, is the conception of the customer as a co-producer (Wikstrom, 1996:7).

Co-production has become a tenet of the proposed service-dominant logic for marketing and could be the next frontier in competitive effectiveness. The major shift towards customer co-production means that the focus is no longer on customers creating value for firms, but that firms sell products and services that customers use to create value-in-use for themselves. In order to be more effective value providers, firms need to work with customers to understand how they produce value-in-use for themselves and to tailor their offerings in this regard. Modern organisations will find that they have no option but to embrace co-production to organise their service delivery. Increasingly, empowered customers can choose which components, and how much of a service, they want to produce for themselves. This shift demonstrates that the previously clear-cut producer-customer divide is becoming much more blurred. It has become evident that in a post-modern marketing age, the “product” is likely to become less and less of a finished object and more and more a process into which “customers” can immerse themselves and provide inputs (Auh, Bell, Mcleod & Shih, 2007:359).

Customer participation is defined as “... the degree to which the customer is involved in producing and delivering the service” (Dabholkar, 1990:484). Extending this construct, Meuter and Bitner (1998:13) distinguish between three types of service production based on customer participation, namely, firm production, joint production and customer production. Firm production is a situation in which the product is produced entirely by the firm and its employees, without any customer participation. Joint production is a situation in which both the customer and the contact employees of the firm interact and participate in the production. Customer production is a situation in which the customer produces the

product in its entirety, without any participation by the firm or its employees (Bendapudi & Leone, 2003:20). Service experience requires a certain level of customer participation.

Table 2.2 below captures the three levels of participation that is required of service customers and provides several examples of each type for both end consumers and business-business consumers. The effectiveness of customer involvement at all of the levels will affect organisational productivity and, ultimately, service quality and customer satisfaction.

**Table 2.2: Levels of customer participation across different services**

<b>Low: Firm production</b> Customer presence required during delivery	<b>Moderate: Joint production</b> Customer inputs required for service creation	<b>High: Customer production</b> Customer co-creates the service product
Products are standardised	Client inputs customise a standard service	Active client participation guides the customised service
Service is provided regardless of any individual purchase	Provision of service requires customer purchase	Service cannot be created apart from the customer's purchase active participation
Payment may be the only required customer input	Customer inputs (information materials) are necessary for an adequate outcome, but the service firm provides the service	Customer inputs are mandatory and co-create the outcome
<i>Examples</i>  Airline travel Motel stay Fast food restaurant	<i>Examples</i>  Haircut Annual medical examination Full service restaurant	<i>Examples</i>  Marriage counselling Personal training Weight reduction programme

Source: Bitner *et al.* (1997:18)

Table 2.2 clearly demonstrates variations in the level of participation that is required across different services. In a low-level participation service, all that is required is for the customer to be physically present while the workforce of the firm carries out all of the service production work, as in the case of a symphony concert. Customers attending a symphony concert must only be present to receive the entertainment service, but little else is required once they take their seats.

In moderate levels of participation, customer inputs are required to aid the service organisation in creating the service. Inputs usually include information, effort or physical possessions. For example, all three of these inputs are required from a Chartered Accountant to prepare a client's tax return effectively. The accountant requires information in the form of a tax history, marital status and number of dependants as well as effort from the client in putting the information together in a useful format together with physical evidence, such as receipts and past tax returns (Bitner, Faranda, Hubbert & Zeithaml, 1997:10-15).

Customers are involved in co-creating the service in high-level participation situations. Customers have certain essential production roles to fulfil which, if not fulfilled, will negatively affect the nature of the service outcome. All forms of education, training and health maintenance fit the high-level involvement profile. Unless the customer does something, for example, studies, engages in physical exercise or eats the right foods, the service provider cannot effectively deliver the service outcome (Bitner *et al.*, 1997:17).

### 2.1.2 Principles of customer co-production

The principles mentioned below are applicable to all service industries. To design highly satisfying co-production experiences, all service industries where co-production is important, for example, hotels, airlines, car insurance and computer networking services, must integrate the four design principles into the service experience, in full recognition that a different level of emphasis is placed on each of the co-production experience principles in every industry. The principles are as follows:

- **Vision** defines the goals, expectations, plans and feedback associated with a service experience. It is of paramount importance to be very clear when communicating the expectations of both employees and customers in order to set the desired conditions for the experience (Honebein, 2006).
- **Access** describes the physical environment in which the service experience occurs. The physical environment should be conducive to delivering a satisfactory outcome for both customers and employees (Honebein, 2006).

- **Incentive** reflects how the company motivates customers to perform their co-production roles. Rewards are a key tactic. For example, offering a guaranteed wake-up call is the incentive for motivating customers to try all the resources that a hotel offers. Reward is the most important principle in delivering a successful customer experience (Honebein, 2006).
- **Expertise** specifies the knowledge and skills that customers must possess to perform well. Companies must ensure that customers have the necessary skills, abilities and knowledge to perform the necessary tasks, otherwise, the experience will not have the desired outcome for both parties (Honebein, 2006).

### 2.1.3 The importance of customer co-production in services marketing

Customer co-production has two primary benefits. Firstly, co-production can lower costs for organisations, and to the extent that customers partake in the production of goods, for example, assembling furniture from IKEA or services, such as arranging airplane tickets over the Internet, the consumer can expect a reduction in price. In the previously mentioned contexts, co-production can lead to dramatic increases in productivity. Although this viewpoint has received some criticism, the consensus is that increased co-production leads to productivity gains for organisations (Auh *et al.*, 2007:362).

Secondly, co-production enables the firm to customise its offerings to the needs of the customer. The personal interface between the customer and the firm, therefore, represents a critical component of any service delivery process in which the customer has a direct input into the production of the final service (Honebein, 2006).

Customer experiences are the foundation for competitive differentiation, value creation and brand identity. While some companies produce emotion-driven customer experiences that leave an impact on shoppers, like those of Jenna Clifford or Victoria's Secret, other companies, such as Kulula airlines, nikelD.com and Crowne Plaza Hotels, create experiences in which customers are active co-producers. In other words, customers are the co-creators of the value that results from the experience (Honebein, 2006).

The kinds of emotion-driven customer experiences mentioned above are referred to as "co-production experiences". Both company and customer contribute towards achieving a desirable and valuable goal. When well designed, such experiences are the foundation for increased levels of customer satisfaction, trust, loyalty and lifetime value (Honebein, 2006).

In an age of online banking, self-checkout and other self-service business transactions, companies are asking customers to do more work. In some ways, customers are the substitute employees of many companies. Like employees, customers who are more efficient and effective with goods and services generate greater value for both themselves and the company. Competitive advantage, therefore, relies on companies designing co-production experiences that enhance customer performance (Honebein, 2006).

When a customer is seen as a co-producer, the interaction between the parties should generate more value than a traditional transaction process during which the buyer and seller meet briefly, exchange finished products and services and then go their separate ways. The new business logic surrounding customer co-production presupposes a much longer relationship between the buyer and seller and a more sophisticated distribution of roles. This creates greater value for both parties in several ways. The deeper relationship between buyer and seller generates more opportunities for acquiring more knowledge, thus making the company better able to satisfy the customer and provide a higher quality service. The sequential transaction process (idea creation → production → marketing → consumption) can move more quickly, thereby assuming a new form and shape (Auh *et al.*, 2007:363).

Furthermore, the more involved interaction between buyer and seller improves the level of creativity for both parties that, in turn, generate new ideas and new ways of doing business. In other words, co-production may also be seen as a way of acquiring knowledge (Wikstrom, 1996:8-11).

Customers are increasingly being encouraged to perform a more active role in the production of various goods and services. Customers enter photography stores and use the relevant machines to crop, enlarge, correct or enhance photographs themselves. They check themselves in and out of hotels and even routinely scan and bag their own groceries

at certain supermarkets. What is new is recognition of the fact that customers are encouraged to become “co-producers” and this, in turn, becomes the next frontier in competitive effectiveness. The shift in perspective of companies to view customers as active co-producers rather than as a passive audience is captured in the move from “What can we do for you?” to “What can you do with us?” (Prahalad & Ramaswamy, 2000:80).

#### **2.1.4 Compliance dependent services defined**

Compliance dependant services are services in which customers participate in the co-creation of a service and one in which they must continue to comply with a certain regimen once they have left the service provider. This is necessary to ensure a positive outcome and customer satisfaction with the process. Compliance dependant services normally entail a service delivery that is of longer duration, thereby requiring long-term interactions between the customer and the provider. As mentioned previously, examples of compliance dependant services include retirement planning, tax planning services, weight loss programmes, exercise programmes, prenatal care, auto maintenance programmes and debt management programmes (Dellande & Saporoschenko, 2004:279).

For certain services, customer behaviour before entering and/or after leaving the service organisation directly affects the service outcomes. For these services, customer compliance is therefore vital. Patients must comply with directives from doctors to become well. Dieters must comply with the food regimens of nutritionists to lose weight. Clients must comply with the instructions from tax consultants to save money and organise receipts to minimise their tax liability. Compliance usually occurs when individuals accept the influence of another person or of a group because they hope to achieve a favourable reaction from others. They may be interested in attaining certain specific rewards or in avoiding certain specific punishments that the influencing agent controls. The influencing agent is the service provider. It is imperative that the customer complies with service regimens so that goals are realised and customer satisfaction is attained. Although the influencing agent controls rewards and punishments, such as approval and disapproval, not all outcomes are under the direct control of the agent (e.g., actual weight loss or the cure of disease) (Dellande & Gilly, 1998:266).

An examination of compliance dependant services is important because many of the problems in society (e.g., high-fat diets, poor levels of physical fitness, lack of exercise, poor prenatal health, smoking, drinking and driving) exist because of the poor choices people make. Within the context of health care, the rate of non-compliance of patients with the therapeutic regimens of the provider is, on average, 50 percent. As such, Petty and Cacioppo (1996:2) suggest the need for a greater focus on maladaptive consumer behaviour and remediation. The majority of the leading causes of death in the United States could be reduced if people at risk change only five behaviours, namely, non-compliance, poor diets, lack of exercise, smoking and alcohol and drug abuse. The solution to the problem of maladaptive consumer behaviour does not lie in scientific breakthroughs in medicine, but in establishing how to gain consumer compliance with the directives given by the providers of lifestyle management programmes (Dellande & Gilly, 1998:267).

### **2.1.5 The antecedents of customer co-production**

To the extent that co-production proves desirable for a firm, the firm must come to an understanding of the factors that facilitate the process. Once an opportunity to be a co-producer has been recognised, three factors are of paramount importance for effective co-production (Lengnick-Hall *et al.*, 2000:364). These are, firstly, customer role clarity, secondly, customer ability and thirdly, customer motivation.

- **Customer role clarity**

The first factor, role clarity, means that customers know exactly what work is required from them. The rationale is that if customers know what to do and how they are expected to perform, they are more likely to do what is required. Organisational socialisation and formal communication are two ways of increasing role clarity. Formal communication is very important in lifestyle management programmes, as it not only assists customers to establish their own service expectations, but it also shapes their self-perceptions and knowledge of what the firm expects of them. Explicit communication clarifies tasks (Lengnick-Hall *et al.*, 2000:365).



An initial role expectation of the on-site service customer is to, "... go to the right spot or person" (Dellande & Gilly, 1998:269). In other words, the customer ought to receive an appropriate "orientation" to the setting. Disorientation of customers results in employees spending more time answering directional questions than in actually providing a service and the attention of customers is distracted from the original goals established on entering the site. If the customer is not presented with a relevant orientation session, customer disorientation may occur which, in turn, may eventually lead to customer dissatisfaction (Dellande & Gilly, 1998:269).

Customers must receive a proper orientation concerning the setting if they are to perform correctly. Customers require two kinds of orientation, namely, place orientation and function orientation. Place orientation deals with the questions, "Where am I?" or "How do I get from here to there?" Function orientation answers the question, "How does this organisation work?" Customers rely on several sources for answers to these types of questions. One source of clarity is the kind of experience they bring to the setting. Repeat customers and customers of equivalent services need less orientation than first time users of an unfamiliar service. Consumers who have previous experience in gymnasium environments understand the equipment more easily than a consumer who has never used the equipment before. The same applies to healthy nutrition, where experienced consumers, who have been in the routine of living a healthy lifestyle, find it easier to adapt than new consumers do. Another source of the inherent legibility of the system is the service facility design, which, in itself, may be comprehensible or maze-like (Dellande & Gilly, 1998:269).

Thirdly, customers turn to "orientation aids" provided by the service firm. Airports can hire guides to direct passengers to proper terminals or gates and banks can use floor managers to direct customers to the proper windows and officers. Orientation may also take the form of rules governing customer behaviour in respect of, for example, safety (airlines), dress code (restaurants) or noise levels (hotels). Furthermore, service organisations face the challenge of providing orientation not only for their employees, but also for their on-site customers. Some do this superbly. McDonald's, with its highly visible multiple trash cans and tray racks, ensures that customers quickly "learn the ropes" about

clearing their own tables after finishing their meal. Several orthodontic offices show prospective patients video presentations illustrating what it is like to have braces inserted. This provides the patient with a realistic service preview of his or her role in service production and delivery. These are all examples that ensure customers are in the right place, at the right time, doing all the right things (Bowen, 1986:379).

It is imperative for the customer to be clear about the particular role that needs to be performed in the service delivery process in order to be more likely to adhere to the role expectations and be satisfied with the outcome. When companies preview customer roles in the service process, customers can self-select into, or out of, the relationship. It is, therefore, very important to make sure that consumers understand exactly what is expected from them to make sure that the correct decision is made when they embark on the service. Customers who are not clear, about what their role is in the process will be unable to acquire the skills needed to participate appropriately (Dellande & Gilly, 1998:270).

- **Customer ability**

The second requirement for effective co-production is the ability of customers to perform the required tasks. Customer ability refers to the quality of the input the customer provides to the service production process. Useful and timely customer contributions lead to a higher quality in the outputs produced. Effective co-production requires customers who are capable of making useful and timely contributions to the activities of the organisation. Effective co-production is focused on the direct contributions customers make to the work accomplished by the firm (Lengnick-Hall *et al.*, 2000:365).

Consumers make better choices if they are better informed and educated. With the current proliferation of products and services and the rapid expansion of the Internet, the choices consumers face are increasing dramatically. It is, therefore, of the utmost importance to make sure that the consumer is aware of all the facts before engaging in any service or using any product (Dellande & Gilly, 1998:270).

In addition to trying to select the “right type” of performing customer, customers can be trained to perform as expected. For example, when self-service alternatives are introduced, service employees need to demonstrate the equipment and answer questions, particularly as there is the potential for resistance to change on the part of the customer. This resistance may stem from customers having learned, over the years, how to behave as a consumer in the service encounter, but not as a producer. Research on how customers acquire perceptions regarding their roles in consumption and production may benefit managers trying to develop able partial employees (Bowen, 1986:379).

- **Customer motivation**

The third requirement for effective co-production is the motivation of the customer to contribute to the production process. Co-producers must not only know what to do and be able to perform useful tasks, they must also be willing to make direct contributions to the various organisational activities. The motivation of customers to participate in these activities is critical for effective co-production. In addition to being able to contribute, customers must be willing to get involved (Lengnick-Hall *et al.*, 2000:365).

Bowen (1986:375) suggests that models of customer motivation are useful in energising customers and rewarding them for performing as expected. Such models employ two key efforts. One is to offer rewards based on the customer performing as expected and to make the connection between the reward and performance visible. When customers participate in service creation, they acquire benefits such as increased control over the terms of delivery, saving time and money as well as gaining psychological and physical benefits. Companies should make the benefits of partaking in services visible through marketing strategies; otherwise, consumers tend to lose interest in the programme or service and do not complete it. In other words, service managers need to clarify the performance-contingent rewards for their customers.

The second key effort is to offer rewards that are of value to customers. Lovelock and Young (1979:10) indicate that if providers want customers to carry out new behaviours to bring about successful service delivery, the provider must offer incentives (monetary or

otherwise) which are sufficient to make any hardship experienced by the customer worth enduring. If service providers want to change customer behaviour, which makes savings possible, they must be willing to pass on some of these savings to the customer. Customers are required to comply with specific conditions in order to attain certain specific rewards or to avoid certain specific punishment that the influencing agent or service providers control.

Consider the following example of a performance-contingent reward. Some accounting firms provide clients with elaborate forms to complete prior to meeting with the accountant. This may not be essential, but if the forms are not filled in, more billable time is required and the service becomes more expensive, which, in turn, influences customer perceptions of the service transaction. Deciding what rewards customers value should take into account that customers satisfy diverse needs through participating in the activities of the organisation. Customers are not driven exclusively by economic needs. For example, they may value interaction with the employees involved in the service or the sheer enjoyment of the experience. Therefore, it is very important that customers are both intrinsically as well as extrinsically motivated (Dellande & Gilly, 1998:271).

Companies, too often, have a *Theory X* view of consumers as being sneaky, troublesome and motivated exclusively by self-interest. A more positive view, *Theory Y*, sees consumers as trustworthy collaborators who are able to fashion their own service roles to a degree and be internally motivated to perform well in the service creation process (Bowen, 1986:375).

Productivity improvements require that customers view planned customer behaviour as a fulfilling activity. By participating more actively in service transactions, customers become more content. In so doing, the customer naturally becomes accountable for the performance of the activities involved in the service delivery process. Customers are not only involved in their own goal achievement, but also accept responsibility for their personal satisfaction with the ensuing results. These trends are especially evident in professional services, such as education, health care, consulting and legal services, as well as in weight training and weight loss programmes (Dellande & Gilly, 1998:271).

## 2.1.6 The consequences of customer co-production

Customer satisfaction and customer goal attainment are the two consequences of customer co-production. Both these constructs are evaluated after the customers have completed their experience with the service. Determining the factors associated with patient satisfaction is a significant issue for health care providers. It is also important to understand that which is of value to customers in order to know where and how service changes can be made. Customer compliance has a direct impact on customer satisfaction especially in health care services where a high level of involvement is required from the customer (Tucker, 2002:48). The above-mentioned constructs that are of relevance to health care services, which include lifestyle management programmes, are now discussed in detail:

- **Customer satisfaction**

Satisfaction is thought to be the result of a comparison between the pre-use expectations that a customer has about a service and the post-use perceptions of the customer regarding service performance. Customers participating in the service delivery process become empowered and, in effect, accept some responsibility for their own satisfaction. A customer may achieve satisfaction as a direct result of participating in service production while in the service factory or may achieve satisfaction indirectly through compliance. For example, customers who participate in a lifestyle management programme do so outside the service factory where they are expected to comply with the directives of the service provider (Dellande & Gilly, 1998:287).

Satisfaction is both a cognitive and an affective evaluation of the service experience. The cognitive process of assessing goal attainment influences satisfaction directly. For example, the cognitive evaluation of the health care experience associated with compliance may enhance satisfaction with medical care. Patient satisfaction is not only determined by cognitive expectations and perceptions of quality regarding a set of dimensions, but also by the memories of the emotions experienced during the service process. Satisfaction is associated with several customer behaviours and is a result of

customers contributing to their personal service quality. Compliance thus influences satisfaction directly, because achievement of the immediate goals may be satisfying even when the ultimate service goals are not attained. Consumers may experience enjoyment in the consumption process that leads to satisfaction independent of disconfirmation (Dellande *et al.*, 2004:82).

- **Customer goal attainment**

When service customers take accountability for their service outcomes, there is a greater possibility that they will accomplish their goals. As an outcome of complying or partaking in the service delivery process, customers become empowered. In so doing, the customer naturally becomes responsible for the performance of the activities involved in the service delivery process. Customers are not only involved in personal goal achievement, but also accept some responsibility for the fulfilment of the consequent results. Because customers are expected to comply with their role outside of the service organisation and to make progress with their own goals, their satisfaction with the service delivery process is influenced. Although individual customers may have medical conditions that interfere with weight loss, when the customer complies with the guidelines from the service provider, he or she is more likely to attain the goal. The difference between what is anticipated and what is received (i.e., disconfirmation) has been shown to predict satisfaction. Therefore, the closer the outcome to the desired goal, the more likely it is that the customer will be satisfied (Dellande *et al.*, 2004:82).

Although individuals are less likely to assume responsibility for unfavourable outcomes, when the target (or customer) does comply with guidelines from the source, it is more likely that the target will attain his or her goal. In addition, since outcomes affect attitudes directly and favourable outcomes are generally associated with a positive attitude towards the service provider (or influencer), it is reasonable that targets who comply with the influencer are all the more likely to be satisfied with the service. This is particularly true since the influencer is viewed as the service (Dellande & Gilly, 1998:287).

## **2.2 LIFESTYLE MANAGEMENT PROGRAMMES AS EXAMPLES OF COMPLIANCE DEPENDANT SERVICES**

Compliance dependant services are defined as those services in which compliance on the part of the customer is necessary to ensure a positive outcome and customer satisfaction. Thus, a significant portion of the service is either created or produced by the customer and, to a lesser extent, by the service provider. Within the context of a lifestyle management programme, as a compliance dependant service, lifestyle change is required (Dellande & Gilly, 1998:287).

Obesity is one of the leading causes of avoidable deaths in the world. Several approaches are used to manage the obesity epidemic without much success. A lifestyle management programme for obesity has been shown to be effective for successful weight loss and maintenance. Diet, physical activity and behaviour modification are the key strategies used in lifestyle management programmes. These three components are combined to help obese individuals achieve a gradual reduction in weight over an extended period. The components may be combined in a variety of ways to promote effective weight loss, thereby allowing for flexibility and personal preference. International lifestyle management programmes that have enjoyed huge success are EAS Body for Life and Weight Watchers International (Medscape Today, 2007).

### **2.2.1 Lifestyle management programmes defined**

Lifestyle management programmes offer a combination of treatment strategies that focus on all aspects of weight loss, such as diet and physical activity. The idea behind lifestyle management is that individuals make gradual changes in diet and increase physical activity with the use of behavioural strategies. The result is a progressive reduction in weight over time. Usually, the goal of this approach is an initial weight loss of approximately ten percent (10%). This goal is recommended because it is achievable and is associated with a decrease in obesity-related health consequences. There is no magical formula for determining the appropriate amount of diet, physical activity or behavioural change necessary to achieve weight loss. However, guidelines have been determined for

each of the components. These treatment components generally offer the most benefit when they are tailored to meet the particular lifestyle demands of the individuals being treated (Medscape Today, 2007).

Obesity is a chronic condition, meaning that a cure is unlikely. Therefore, behavioural interventions and lifestyle management programmes are required to help people change their habits and improve their quality of life and their psychological functioning. The goal of lifestyle management programmes is to help overweight people to improve their unhealthy dietary and sedentary habits (Medscape Today, 2007).

Lifestyle management approaches regarding obesity are based on two assumptions. In the first place, eating and exercise behaviours are related to body weight. Secondly, behaviours can be modified by changing the antecedents or cues in the environment that precede the behaviour and lead to its occurrence as well as the consequences, or reinforcers, that come after the behaviour and increase its frequency. Successful lifestyle management programmes are dependent on behaviour modification by the customer. Lifestyle management programmes are designed to assist customers to improve their overall health through behaviour modification (Life Clinic Health Management Systems, 2006).

Clinical obesity treatment strategies recommend the concurrent use of three components in behavioural obesity treatment programmes for individuals with a body mass index (BMI)  $> 25\text{kg/m}^2$ : (a) low-calorie diet, (b) increased physical activity and (c) behaviour therapy (Life Clinic Health Management Systems, 2006).

A review of randomised, controlled behavioural obesity treatment trials published between 1974 and 2002 suggests that during this time period, interventions produced consistent average weekly weight losses (0.4-0.5kg) while the average treatment length and attrition increased two- to fourfold. Physical activity is a critical component in lifestyle management programmes and adherence to the lifestyle management programme's directives is positively associated with health improvements (Abildso, Zizzi, Gilleland, Thomas & Bonner, 2010:279).



The following five elements are critical to any successful lifestyle management programme (Medscape Today, 2007):

- Weight management;
- Healthy eating;
- Fitness;
- Wellness;
- Nutrient intake.

## **2.2.2 Trends in the weight loss and lifestyle management industry**

Overweight and obesity have been a massive problem in the past and consumers are spending increasing amounts of money on lifestyle management programmes. In the United States of America (USA), 40% of women and 25% of men are trying to lose weight at any given time and approximately 45 million people begin a diet each year. Lifestyle management programmes started because of the problem of global obesity with consumers looking for a solution to their weight problems. Consumers in the USA spend approximately \$30 billion per year trying either to lose weight or to prevent weight gain. Approximately \$1 billion to \$2 billion of this amount is spent on medically supervised and commercial lifestyle management programmes (Dellande *et al.*, 2004:79).

Examples of successful lifestyle management programmes are Body for Life and Weight Watchers. The Body for Life programme is a challenging 12-week diet and exercise programme that promises more energy and strength and less body fat. The programme emphasises eating six small meals, six days a week. It also includes strength training for 45 minutes, three days a week, alternating with aerobic exercise for at least 20 minutes, three days a week (Philips, 2003).

Weight Watchers was founded in the 1960s and is now one of the largest and most successful lifestyle management companies in the world. The lifestyle management plan follows recommendations from the national weight loss registry and emphasises that lifelong lifestyle management is achieved through a healthy lifestyle. The Weight Watchers

programme includes a balanced diet, healthy eating decisions, daily physical activity, flexible restraint or moderate eating control and group support. In addition to the eating plans, the programme helps members develop physically active lifestyles to support long-term weight management (Weight Watchers International, not dated).

The Body for Life and Weight Watchers programmes have shown tremendous success globally and have addressed the problem areas that consumers struggle with when embarking on a lifestyle management programme. This is the reason these programmes are characterised by long-term sustainability (Philips, 2003).

### **2.2.3 Customer compliance as a problem in most lifestyle management programmes**

Increasing the compliance of participants in lifestyle management programmes to improve consumer satisfaction has become a more significant challenge for providers of lifestyle management programmes than ever before. For the purposes of this study, relevant literature concerning customer compliance in lifestyle management programmes was consulted. In the past, compliance was explained from the point of view of the provider most of the time (Tucker, 2002:49). A need has arisen whereby compliance should be assessed from the point of view of consumers. In the final analysis, consumers are ultimately partially responsible for their own level of satisfaction in lifestyle management programmes.

For many health care services, service quality as well as customer satisfaction depends on customers complying with the behaviours prescribed by health care professionals or lifestyle management consultants. Compliance rates are approximately 50 percent for set interventions, while compliance with instructions to lose weight or to stop smoking is much lower. Long-term success rates in respect of these lifestyle prescriptions are lower than 10 percent (Haynes, *et al.*, 2002:2881).

Behavioural change interventions aimed at increasing customer compliance typically include strategies such as self-monitoring, stimulus control, cognitive restructuring, stress management, social support, rewards, problem solving and physical activity as well as

prevention of relapses. These interventions make it easier for people to stay on a lifestyle management programme that entails a healthful eating plan and a regular exercise programme (Foreyt, 2006).

All the above-mentioned interventions for behavioural change have proved successful and are discussed in more detail below:

- **Self-monitoring**

The most important behavioural strategy for overweight people to follow is self-monitoring, namely, the observing and recording of personal behavioural patterns, followed by feedback regarding such behaviour. Overweight individuals need to keep a written logbook of all the food that they consume. This is best done on a regular basis with entries recorded in the logbook as soon as possible after the food is eaten. All activities associated with a lifestyle management programme are diarised in the same logbook in order for customers to track their progress correctly. In addition, a bathroom scale is used to record weight loss or gain on a daily basis. The primary goal of self-monitoring is to serve as a reminder of personal eating and exercise patterns. The results of such record keeping are clear. People who consistently monitor themselves lose more weight than those who do not. In addition, attending to weight on a consistent basis provides on-going feedback about how diet and activity are affecting any changes. Measuring weight frequently is associated with improved weight loss and weight maintenance (Foreyt, 2006).

- **Stimulus control**

Stimulus control involves identifying the major barriers associated with unhealthy eating habits and sedentary patterns. Modification of these barriers by controlling environmental stimuli can help individuals effectively manage their weight control behaviours. For example, one of the most common barriers to weight loss is a lack of time to exercise. Strategies that help people find time during the day to exercise, such as setting their alarm clock to wake them up 45 minutes earlier and laying out their exercise clothes and shoes before going to bed are, therefore, very important (Foreyt, 2006).

A daily increase in physical activity is a vital part of losing weight. Moreover, it will be a lot harder to maintain weight loss without increasing the level of exercise. Exercising can lower the risk of high blood pressure, heart disease and diabetes over and above any advantages produced by weight loss alone. Consumers need to pay attention to social cues. Certain environmental or social situations may encourage unhealthy eating or other avoidable habits. Removing high-fat foods from the home and replacing them with fruit and vegetables, is an example of stimulus control (Philips, 2003). Other examples may include re-routing a drive home to avoid fast food chains or carrying exercise clothing in a briefcase when on business trips to promote physical activity (Life Clinic Health Management Systems, 2006).

- **Cognitive restructuring**

Cognitive restructuring means changing the way people think about themselves. For example, some people think that they can lose a lot of weight in a short space of time, such as 14 kilograms in thirty days. Cognitive restructuring involves helping people set more realistic goals, such as losing about one kilogram a week and focusing on their quality of life and improved levels of health and not only on the cosmetic goal of looking more attractive. In addition, this strategy may be useful during weight maintenance when negative self-concepts arise as individuals struggle to sustain the weight losses achieved during treatment. Cognitive restructuring helps individuals take alternative views of a situation and challenge beliefs that are interfering with positive change (Foreyt, 2006).

- **Stress management**

One of the most important behavioural changes associated with lifestyle management is the development of a healthy exercise routine. Exercise routines not only burn calories, but also improve a person's overall sense of well-being. There are a number of strategies such as brisk walking, jogging and deep breathing that consumers can adopt to alleviate stress (Rejeski & Kenney, 1988:38).

- **Social support**

The realm of social support by significant others, as a tool for motivating people in lifestyle management programmes, is not adequately considered. This is disappointing given that many lifestyle management coaches feel that it is probably the single most powerful determinant of customer compliance. In this respect, two factors need to be considered. Firstly, significant others may include the family, supervisors at work and even close friends. The importance of any person will vary for any given client and, in some cases, the family or work environment may be irrelevant. Secondly, perceived support is also a concern. Spouses can manifest supportive behaviours. However, if they are not regarded as such by the customer, then no support exists (Rejeski & Kenney, 1988:45).

- **Rewards**

Rewards for behaviour change can help motivate people and reinforce healthy diets and exercise. However, there are situations when rewarding weight loss should be discouraged, because some people use unhealthy strategies such as starving or following high protein diets to achieve their goals. It is better to encourage specific behaviours, such as a certain period of exercise per day and the better option of taking a holistic approach, through a lifestyle management programme, where all facets of a healthy lifestyle have equal value (Rejeski & Kenney, 1988:46).

## **2.1 CONCLUSION**

This chapter aimed to define customer co-production from a services marketing point of view. The importance, and a definition of customer co-production were considered and previous studies focusing on customer co-production were discussed. Customer compliance with the service programme directives is imperative in lifestyle management programmes, which require high levels of customer co-production in order to achieve success. The four antecedents of customer co-production in services marketing were also reviewed, because lifestyle management programmes requiring high levels of customer co-production constitute the context of this study. The consequences of customer

compliance, namely, customer satisfaction and customer goal attainment were also discussed.

It is evident that customer co-production plays a vital part in compliance dependant services such as lifestyle management programmes.

Chapter 3 will include a discussion of the conceptual framework, the hypotheses and the multi-dimensional scales tested in the study.

## **CHAPTER 3: THE ANTECEDENTS AND CONSEQUENCES OF CUSTOMER COMPLIANCE IN LIFESTYLE MANAGEMENT PROGRAMMES**

### **3.1 INTRODUCTION**

This chapter provides the conceptual framework and definitions of the different antecedents and consequences of customer compliance in lifestyle management programmes, which is regarded as a form of medical service. This chapter also provides motivation for the seven hypotheses tested in the study based on the findings reported by Dellande (1999) and Dellande *et al.* (2004). The results of the relationship between the constructs in the study by Dellande (1999) are also discussed. The chapter concludes with an identification of the determinants of customer compliance as measured in the study.

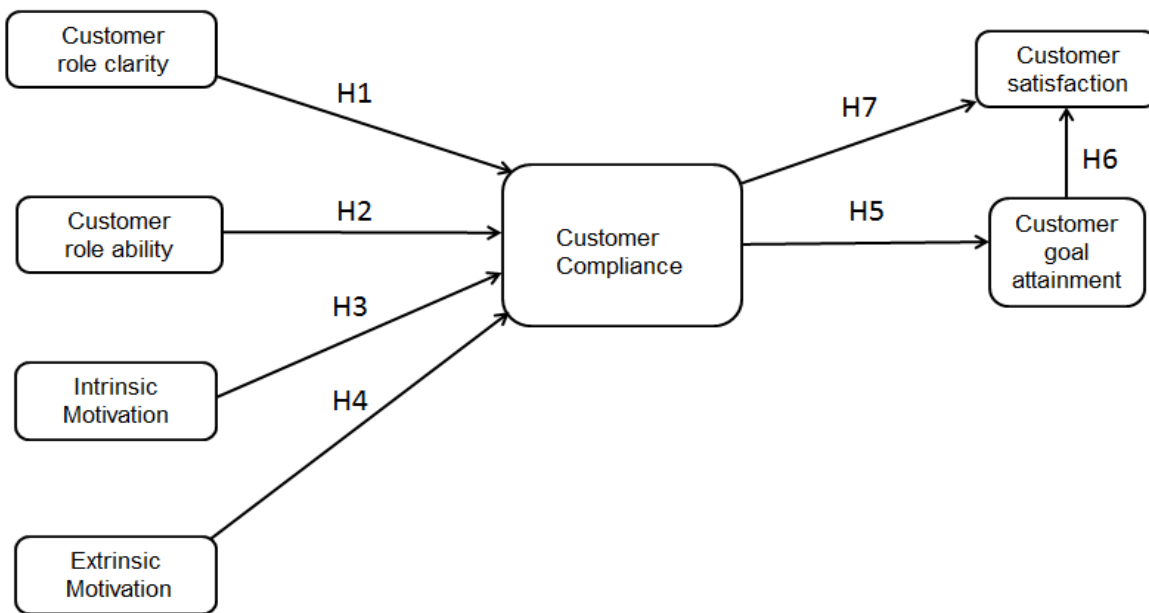
### **3.2 THE CONCEPTUAL FRAMEWORK TESTED IN THE STUDY**

The conceptual framework tested in the current study is a subset of a larger model proposed and tested by Dellande *et al.* (2004). The current study wanted to focus on the direct antecedents and consequences of customer compliance identified by Dellande *et al.* (2004). The study by Dellande *et al.* (2004) treated customer motivation as a unidimensional construct; whereas the current study made a distinction between intrinsic motivation and extrinsic motivation as antecedents of customer compliance. The conceptual model in Figure 3.1 (on pg. 36) depicts the relationships between selected antecedents and the consequences of customer compliance. Role clarity involves understanding the role to be performed, ability involves the skills needed to perform that role and motivation is the incentive customers require to carry out the role. Once customers leave the supervision of the health care provider, compliance with instructions becomes vital. The following key relationships between antecedents and outcomes are then important:

- Compliance leads to goal attainment;

- When customers attain their goal, they are more likely to be satisfied with the service; and
- Compliance itself leads to satisfaction.

**Figure 3.1: Customer compliance model**



Source: Adapted from Dellande *et al.*, (2004:79).

The four antecedents of customer compliance as depicted in Figure 3.1 above will firstly be discussed and the associated hypotheses (H<sub>1</sub> to H<sub>4</sub>) in section 3.1.1. Thereafter, the consequences of customer compliance and the associated hypotheses (H<sub>5</sub> to H<sub>7</sub>) will be discussed in section 3.1.2.

### **3.1.1 The antecedents of customer compliance in lifestyle management programmes**

A three-step approach can be used to enhance customer compliance with the service provider's programme directives:

- Step 1: Define the customer's job.
- Step 2: Train the customer to perform his or her job.
- Step 3: Retain the valuable customer by rewarding the customer for a job well done.



It is imperative to make sure that role clarity, ability and motivation are all high in order to ensure higher levels of customer compliance with the service and to ensure higher levels of customer goal attainment and satisfaction with the service (Dellande *et al.*, 2004:79).

The four antecedents of customer compliance as depicted in Figure 3.1 above are discussed in further detail (on pp. 37 - 41):

- **Role clarity**

Role clarity refers to the extent to which customers understand what is required from them in service production. The clearer the role expectations of customers are, the greater the likelihood that their contributions will lead to improved service outcomes (Auh *et al.*, 2007:363).

As was indicated earlier in section 2.1.5 (on p. 20), customer role clarity means that customers know exactly what work needs to be done. The rationale is that if customers know what to do and how they are expected to perform, they are more likely to do what is needed in order to comply successfully with the requirements of a lifestyle management programme. Self-monitoring is the most important behavioural strategy to follow for customers participating in a lifestyle management programme. Self-monitoring is the observing and recording of personal behavioural patterns, followed by feedback on the behaviour. Through correct self-monitoring mechanisms, customers enhance their role clarity by understanding more clearly, what exactly they need to accomplish. Without the requisite customer role clarity, compliance is less likely to occur (Lengnick-Hall *et al.*, 2000:365).

In all lifestyle management programmes, eating and exercise behaviours should be monitored by means of self-reporting exercises in order to improve the level of customer role clarity. It is imperative that participants understand how they are supposed to report their daily calorie intake and exercise regime. Although self-reports may underestimate intake or overestimate activity, they can be used by consumers to identify particular problem areas and to gauge progress. In order for behaviour monitoring to be accurate,

participants should have role clarity as to exactly what is expected of them in a lifestyle management programme (Wing & Tate, 2002).

Dellande *et al.* (2004:85) found that customer role clarity had a statistically significant, direct, positive effect on compliance ( $\beta = 0.12$ ). Therefore, it can be hypothesised that:

H<sub>1</sub>: There is a positive relationship between customers' role clarity and their compliance with the service providers' directives.

- **Customer ability**

Customer ability refers to the quality of input the customer provides to the service production process. Useful and timely customer contributions lead to higher quality co-produced outputs (Auh *et al.*, 2007:363).

Health researchers are developing new ways to enlist a potentially powerful player, namely, the informed and able patient, in an effort to improve the health care system of the USA. Efforts include video programmes designed to help patients choose treatments for common ailments, such as benign prostate disease, low back pain, high blood pressure and early stage breast cancer. Using a combination of scientific data and candid patient interviews, the interactive videos offer viewers detailed descriptions of the risks and benefits of treatments ranging from monitoring symptoms to surgery. The goal is to educate patients as much as possible about their conditions and encourage their participation in the treatment decisions. The patients then become more able to complete a treatment programme more successfully (Dellande, 1999:31).

Consumers are ultimately partial employees in a lifestyle management programme and their full co-operation is needed if the service is to be successful. There are many dimensions involved in a lifestyle management programme and consumers must know where they need to start and how to engage with the programme. It is of paramount importance to ensure that the consumer is able to participate effectively in these programmes. The only way to implement such a programme is to inform and educate the

consumer to ensure that the correct steps are followed. Customers without the ability to perform the required behaviours involved in a lifestyle management programme will become frustrated and lose motivation in the process (Bowen, 1986:379).

The physical environment, including the sight and smell of food can trigger feelings of hunger and influence the types of foods that are selected. Other types of environmental cues can also be important. Eating and exercise behaviours may be influenced by social cues, such as the behaviours or attitudes of others around the consumer, as well as by cognitive cues such as thoughts and feelings about eating, exercise and body weight. It is imperative that consumers are able to execute all the actions necessary to achieve their desired goal at the end of the programme. The above-mentioned three cues should be changed in accordance with the ability of the participants so that higher levels of customer compliance in a lifestyle management programme are realised. Without the requisite customer ability, customer compliance is less likely (Wing & Tate, 2002).

Dellande *et al.* (2004:85) found that customer role ability had a statistically significant, direct, positive effect on compliance ( $\beta = 0.20$ ). Therefore, it can be hypothesised that:

H<sub>2</sub>: There is a positive relationship between the role ability of customers and their compliance with the service providers' directives.

- **Intrinsic motivation**

The motivation underlying a decision by customers to participate in a lifestyle management programme is critical for effective co-production. In addition to being able to contribute to the activity, customers must be willing to get involved. Motivated customers are much more likely to respond positively to requests from the service provider (Auh *et al.*, 2007:363).

For the purpose of this study, overall motivation was divided into two separate constructs, namely, intrinsic and extrinsic motivation, both of which are related to customer compliance. Intrinsic motivation refers to the discomfort that customers associate with

excess weight, while extrinsic motivation refers to media campaigns regarding lifestyle management programmes as well as the social support obtained from friends and family members (Dellande & Gilly, 1998:268).

A lack of social support for customers manifests as aftercare non-compliance, as is evidenced by customers not taking the correct nutritional supplements and ignoring weight management treatment. A lack of customer motivation is, therefore, the most important determinant of customer non-compliance (Dellande, 1999:29).

The successful outcome of a lifestyle management programme depends on the service provider just as much as it depends on the consumer. Both parties should be motivated to make it a success and achieve a mutually beneficial outcome in the end. Everybody should be clear as to what the goal and objectives are from the outset in order to avoid confusion later on. Therefore, an appropriate needs analysis of the consumer should take place at the start of the programme to ensure that correct activities are prescribed in accordance with the needs of the consumers. Companies should conduct performance appraisals as to how customers are performing as partial employees. Regular monitoring of the progress made by consumers is needed to assess whether they are performing ably as co-producers (Bowen, 1986:378).

A high level of involvement and compliance is required in a lifestyle management programme. Therefore, it is of paramount importance to ensure that the customer is motivated. Customers with the strongest desire to change are the most successful people. In order to be successful, customers must be committed and ready to do the programme, willing to set goals, willing to follow instructions, be motivated and determined to lose weight, interested and enthusiastic (Dellande *et al.*, 2004:85).

In the context of weight loss, the health belief model suggests that three factors motivate people to lose weight: Firstly, people lose weight if they believe that weight loss will decrease their risk of contracting a life-threatening illness. Secondly, they lose weight if they have an internal locus of control and expect that behaviours such as reduced calorie intake and exercise will yield significant results and thirdly, people lose weight if they are

confident that they are able to perform the requisite behaviours (Williams, Grow, Freedman, Ryan & Deci, 1996:116).

Consumers should be taught to recognise small positive changes that take place in their behaviour and reward themselves verbally and with small tangible rewards for the progress made. Social support from other people should also be used as a reinforcer (Wing & Tate, 2002). Determining those factors that are associated with consumer satisfaction is a significant issue for providers of lifestyle management programmes. It is also important to understand what is of value to consumers and to know where and how service changes can be made. The disparity between the consumer's and the service provider's assessments of a lifestyle management programme further emphasises the need for an understanding of consumer preferences and expectations (Tucker, 2002:48).

Lifestyle management programmes are more focussed on behaviour change over a period of time. Family, friends and the social support system of the consumer offer significant contributions to compliance and, subsequently, improved levels of health. Without the necessary role clarity, ability and motivation, compliance is less likely. Between the time that consumers start a lifestyle management programme and finish it, they may experience a personal or mental health crisis and need renewed motivational connections with the lifestyle management programme. What comes into question is whether the crisis is due to a lack of clarity on the part of consumers regarding their role in the process, an inability to perform the prescribed roles and/or a lack of motivation to perform the activity when away from the exercise facility. Frequently, consumers do not focus on the result, but see the programme as an enormous task lying ahead of them (Dellande *et al.*, 2004:82).

Self-efficacy refers to internal motivation. Self-efficacy refers to the belief and confidence an individual has about performing a specific behaviour and is considered predictive of the performance of a given behaviour (Martin, O'Neil & Binks, 2002:241).

In addition, with reference to lifestyle management programmes, self-determination theory suggests that the lasting behaviour change necessary for weight loss maintenance depends not on compliance with demands for change, but rather on accepting that the regulation of change is a personal responsibility. In other words, it requires internalising the

required values and a regulation of all the behaviour relevant to the achievement of the successful outcomes inherent in the lifestyle management programme (Honebein, 2006).

Of all the antecedents of compliance, namely customer role clarity, ability and overall motivation, the relationship between intrinsic motivation and compliance is the strongest. Dellande (1999:61) also noted the importance of overall motivation in gaining compliance in the qualitative investigation. The support is evident in the following statements made by the participants:

*“Self-motivation is the number one attribute the patient must have in order to comply with the programme. People with the desire to change are the most successful people”; and*

*“Customers must be ready and committed to do the programme, willing to set goals, willing to follow instructions, motivated/determined to lose weight, interested and enthusiastic.”*

Based on the aforementioned discussion, it is hypothesised that:

H<sub>3</sub>: There is a positive relationship between the intrinsic motivation of customers and their compliance with the directives of the service provider.

- **Extrinsic motivation**

Successful weight loss and long-term maintenance does not result from dieting if the reasons for dieting are controlling (e.g., because a spouse insists or because feelings of guilt arise from non-compliance). Such controlling reasons are components of extrinsic motivation and indicate that the individual has not personally endorsed the behaviours and developed a genuine willingness to do them. Instead, it is theorised that successful, maintained weight reduction results from the customers dieting because they personally value weight loss and its related health benefits. Behaviour change can only be maintained when the reasons for action are actually owned (Williams *et al.*, 1996:116).

The area of social support has not been adequately considered as a tool for motivating people in lifestyle management programmes. This is disappointing given that providers of lifestyle management programmes feel it is the single most important determinant of customer compliance. Significant others may include the family, supervisors at work, and even close friends. The importance of any one person as a source of external motivation will vary for any given customer and in some cases, the family or work environment may be irrelevant. A spouse can manifest supportive behaviours. However, if these behaviours are not viewed as such by the customer, then no support exists. Although initially customers may not appreciate the role of social support in their lifestyle management programme, eventually its impact will surface. Exercise often requires neglecting or ignoring some commitment or extending the day if it competes with other events or personal responsibilities (Rejeski & Kenney, 1988:44).

Based on the aforementioned discussion, it is hypothesised that:

H4: There is a positive relationship between extrinsic motivation of customers and their compliance with the directives of the service provider.

### **3.1.2 The consequences of customer compliance**

- **Customer goal attainment**

Although individual customers may have medical conditions that interfere with weight loss, when customers comply with the guidelines of the service provider, they are more likely to attain the goal. The difference between what is anticipated and what is received (i.e., disconfirmation) has been shown to predict satisfaction. Therefore, the closer the outcome is to the desired goal, the more likely it is that the customer will be satisfied (Dellande *et al.*, 2004:82).

Although individuals are less likely to assume responsibility for unfavourable outcomes, when the customer does comply with the guidelines of the service provider, it is more likely that the customer will attain his or her goal. In addition, since outcomes affect attitudes

directly and since favourable outcomes are generally associated with a positive attitude towards the influencer, it is reasonable that customers who comply with the influencer are more likely to be satisfied with the service. This is particularly true since the service provider (or influencer) is viewed as the service (Dellande & Gilly, 1998:287).

Dellande *et al.* (2004:85) found that customer compliance had a statistically significant, direct, positive effect on customer goal attainment ( $\beta = 0.59$ ). Therefore, it can be hypothesised that:

H<sub>5</sub>: There is a positive relationship between customer compliance with the directives of the service provider and customer goal attainment.

- **Customer satisfaction**

Customer satisfaction is defined as the cognitive and affective reaction of the customer to a service incident. Participation by consumers in a lifestyle management programme forms part of needs satisfaction. Needs satisfaction is closely linked to the idea of motivation. It occurs when people meet or satisfy corresponding needs or motives through their participation in the programme. This conceptualisation suggests that satisfaction is evaluated against the expected outcome, and should be treated as a multi-dimensional construct (Theodorakis, Alexandris, Rodriguez & Sarmiento, 2004:45).

Satisfaction is thought to be the result of a comparison between the pre-use expectations that a customer has about a product or service and the post-use perceptions held by a customer about the product or service performance. A customer may achieve satisfaction as a direct result of participating in service production while in the service factory or indirectly through compliance. Customers partaking in a lifestyle management programme do so outside the service factory and need to comply with the directives of the service provider (Dellande & Gilly, 1998:287).



Satisfaction is both a cognitive and an affective evaluation of the service experience. The cognitive process of assessing goal attainment influences satisfaction directly. The affective evaluation of the health care experience associated with compliance may enhance satisfaction with the medical care received. Patient satisfaction is not only determined by cognitive expectations and perceptions of quality on a set of dimensions, but also by the memories patients have of the emotions experienced during the service process (Dellande *et al.*, 2004:82).

Satisfaction is associated with several customer behaviours and is a result of customers contributing to their own service quality. Compliance, thus, influences satisfaction directly, because the achievement of immediate goals may be satisfying even when the ultimate outcome of the goals is not attained. Consumers may experience enjoyment in the consumption process that leads to satisfaction independent of disconfirmation. This is very likely in lifestyle management programmes where the customers are actively involved in the service encounter (Dellande *et al.*, 2004:82).

Dellande *et al.* (2004:85) found that customer compliance had a direct effect on customer satisfaction as well as an indirect effect through customer goal attainment. These findings suggest that the fact that a customer achieved his/her goal contributes to his/her overall satisfaction with the lifestyle management programme. Dellande *et al.* (2004:85) found additional support for this in their qualitative results. As one of the patients in their study indicated:

*"Yes, I'm absolutely satisfied with the programme, because I reached my goal"*

Dellande *et al.* (2004:85) specifically found that customer goal attainment had a statistically significant, direct positive effect on customer satisfaction ( $\beta = .56$ ) Therefore, it can be hypothesised that:

H<sub>6</sub>: There is a positive relationship between customer's goal attainment and satisfaction with service providers' directives.

- **Customer compliance**

Customer compliance is the primary construct in this study. The priority research question is what factors are important in gaining customer compliance in lifestyle management programmes? Dellande (1999:53) found that role clarity, role ability, intrinsic motivation and extrinsic motivation are among the factors important in gaining customer compliance. Once customers have acquired the antecedents (role clarity, role ability, intrinsic motivation and extrinsic motivation) necessary for compliance, they are more likely to adhere to the provider's directives, which will result in higher levels of customer satisfaction.

Dellande *et al.* (2004:85) found that customer compliance had a statistically significant, direct, positive effect on customer satisfaction ( $\beta = 0.23$ ). Therefore, it can be hypothesised that:

H<sub>7</sub>: There is a positive relationship between customer compliance with the directives of the service provider and customer satisfaction.

### **3.3 CONCLUSION**

This chapter identified the seven hypotheses formulated for this study. The constructs identified includes customer role clarity, customer role ability, intrinsic motivation, extrinsic motivation, customer compliance, customer goal attainment and customer satisfaction. Each of the seven constructs measured has been discussed based on the available literature. The chapter also provided support for each construct to be included for the seven hypotheses measured in the study. This chapter also managed to explain the hypotheses tested in the study.

Chapter 4 discusses the research design and methodology used to measure the identified relationships between the antecedents and consequences of customer compliance in a lifestyle management programme. Chapter 4 also describes the multiple-item scales used to measure the antecedents and consequences of customer compliance.

## **CHAPTER 4: METHODOLOGY**

### **4.1 INTRODUCTION**

This chapter includes a discussion of the research design and methodology used in the study. The first section describes the research design based on appropriate descriptors, while section two deals with the sampling approach used in this study. The sampling approach includes a focus on the target population consisting of customers who have attended lifestyle management programmes presented by or for employees of Companies X, Y and Z as well as the sampling method and the sample size used in the study. The third section focuses on the data collection and covers the specific survey method used, as well as the questionnaire design. Section 4 includes a summary of the measurement approach used in the study followed by section 5, which describes the data analysis approach.

The final section contains a brief description of, and reference to Appendix B regarding the approval of the Research Ethics Committee at the University of Pretoria.

### **4.2 DESCRIPTION OF THE OVERALL RESEARCH DESIGN**

This study involved empirical research and is an example of non-experimental, cross-sectional survey research in which a structured questionnaire was used to collect the numeric data in order to statistically test hypotheses about the relationships between specific constructs. Since the study did not aim to directly inform managerial decision-making, it can be classified as an example of basic research. The respondents were aware of the fact that they participated in a study. As such, the study modified their normal routine. The study had an explanatory focus as it investigated the relationship between variables.

The study reveals the who, what, when, where, or how much and concerns a univariate question or hypothesis in which the research asks about or states something about the

size, form, distribution, or existence of a variable. Descriptive research involves questions such as “How many?” and “Are x and y related?” (Mouton, 2001:55). Practically all marketing research is conducted in order to understand the current market better, to find out why a strategy failed or to reduce uncertainty in management decision making. All the research conducted for this purpose is called applied research. Academics conduct basic research in order to develop and test theories and models in their respective disciplines (Page & Meyer, 2000:19).

There are three types of research designs, namely experimental, non-experimental and quasi-experimental research. Experimental research involves the definition of a theoretical hypothesis, the selection of samples of individuals from known populations, the allocation of samples to different experimental conditions, the introduction of planned change on one or more of the variables, measurement on a small number of variables and control of other variables. Experimental research is at the heart of scientific knowledge and is referred to as scientific research. Experimental research is a carefully planned process designed to manipulate influences systematically, while holding other influences constant, in order to measure and observe the outcomes in relation to theory (Page & Meyer, 2000:14).

Non-experimental research, by way of contrast, encompasses all other types of research. Non-experimental research is by far the most frequently used type of research in management and business. This study made use of a non-experimental research approach. In non-experimental research, the researcher may wish to determine which of a number of elements (e.g. temperature and noise) has the strongest or weakest correlation with a specific event (e.g. productivity). Alternatively, the researcher may wish to establish which of a range of elements has a stronger or weaker association with productivity and/or which elements are more strongly or weakly related to which of the other elements. For instance, the researcher may wish to determine the relative effect of music, lighting, wages and temperature on productivity. Research is then undertaken to establish the extent to which the key elements correlate with each other (or not) and have an effect on productivity (or not). Thus, a cause and effect relationship is not sought. This study made use of an existing model to determine the levels of customer compliance and satisfaction in a lifestyle management programme (Page & Meyer, 2000:14-15).

Exploratory questions involve questions such as “What is the case?” or “What are the key factors?” Exploratory research usually precedes descriptive research. Exploratory research involves the following process:

- collecting information to formulate or refine management, research, investigative or measurement questions;
- loosely structured studies that discover future research tasks that include developing concepts, establishing priorities, developing operational definitions and improving research design;
- a phase of a research project where the researcher expands an understanding of the management dilemma;
- looking for ways others have addressed and/or solved problems similar to the management dilemma or management question; and
- gathering background information on the topic to refine the research question.

There are three principal ways of conducting exploratory research, namely, a search of the literature, interviewing “experts” in the subject or conducting focus group interviews. An exploratory study is a valuable means of finding out “... what is happening in order to seek new insights, ask questions and to assess phenomena in a new light” (Mouton, 2001:53).

Descriptive research attempts to describe or define a subject by frequently creating a profile of a group of problems, people or events through the collection of data and the tabulation of the frequencies on research variables or their interaction.

An explanatory study attempts to explain an event, act or characteristic measured by research. Quantitative explanatory studies are usually aimed at testing a theory and often involve experimental research designs or the statistical testing of models through regression analysis or structural equation modelling (Saunders, Lewis & Thornhill 2007:133-134). This study made use of an explanatory research design, because the aim was to test a conceptual framework directed toward explaining the antecedents and consequences of customer compliance in a compliance dependant service.

The phenomenon investigated or the primary independent variable of this study is the level of customer compliance (see Figure 3.1 on p. 36). Dependent variables of interest, theorised to predict customer compliance are role ability, clarity, intrinsic and extrinsic motivation. Additionally, the relationships between customer compliance and goal attainment and between goal attainment and customer satisfaction are also examined. Essentially, the goal of this study is to discern the effects of key independent variables on the dependant variables.

This study is empirical in nature and primary data was gathered by means of self-administered questionnaires.

The survey method of research utilising self-administered questionnaires was used in this study. Survey research is a popular and common strategy in business and management research and is used most frequently to answer questions, relating to who, what, where, how much and how many, in numeric terms (Page & Meyer, 2000:114). This method was considered the most appropriate approach to realise the objectives of this study.

Surveys are popular as they allow the collection of a large amount of data from a sizeable population in a highly economical way. The survey strategy is also perceived as being authoritative by people in general and is both comparatively easy to explain and to understand. The primary reason for utilising survey research was that specific hypotheses had to be tested statistically. This required numeric data from relatively large number of respondents (Cooper & Schindler, 2006:321).

The study is empirical in nature and only primary data was used. Empirical testing is said, “to denote observations and propositions based on sensory experience and/or derived from such experience by methods of inductive logic, including mathematics and statistics” (Cooper & Schindler, 2006:31). The empirical approach was utilised in an attempt to describe, explain and make predictions by relying on information gained through the survey (Cooper & Schindler, 2006:31). Primary data is new data collected as part of a research project. The main strength of survey research, as a primary data collection approach, is its versatility. This is why primary data was collected (Cooper & Schindler,

2006:245). Only quantitative methods of research were used (Saunders *et al.*, 2007:138-139).

This study is an example of basic research, as it attempted to examine the theoretical model of customer compliance, illustrated in Figure 3.1 (on p. 36), in the context of lifestyle management programmes. While applied research is conducted with the goal of informing managerial decision-making, basic research is conducted to understand some phenomenon better for the sake of improved understanding (Page & Meyer, 2000:19).

This study is an example of cross-sectional research, because data was collected from each respondent once. The data therefore represents a “snapshot” of the respondents’ perception at a single point in time. Surveys can be used to collect both cross-sectional and longitudinal data. Studies may also be seeking to describe the incidence of a phenomenon or to explain how factors are related in different organisations. The main reason why this study utilised a cross-sectional design is due to time and budget constraints. Another reason for utilising the cross-sectional method is the fact that the respondent is only sampled once and within a certain period. The core characteristic of longitudinal research is that it aims to determine changes in respondents’ attitudes, perceptions or behaviour over time. A longitudinal study is a study that questions the same respondents at different points in time over a time span. The main benefit of longitudinal research is the capacity it has to study change and development. Observing people or events over time enables the researcher to exercise a measure of control over the variables (Saunders *et al.*, 2007:148).

## **4.3 SAMPLING**

### **4.3.1 Definition of target population**

The target population from which the sample was drawn were adults who successfully completed a lifestyle management programme spanning a period of three months at Company X, Y and Z. The names of the participating companies were removed to ensure confidentiality. The participating companies also requested not to be named.

Company X is a wellness centre located in Gauteng. The company has five principles on which they focus, namely, looking good, feeling good, thinking smart, exuding energy and living long. Company X also provides three types of packages that include personal training sessions, nutritional guidance and stress management. Company Y, launched a chronic exercise programme for its members specifically to reduce their illness levels and improve their quality of life. Company Z, a manufacturing firm, has a wellness programme for its employees. The physiological measures of the staff members were verified before they commenced with the programme. These tests include measurements of body fat percentage, cholesterol and high blood pressure. Employees then embarked on a three-month programme after which their physiological measurements were verified again. The physiological measurements were verified on a weekly basis to ensure that the employees were on track to achieve their goals.

A lifestyle management programme was an appropriate context for the study of compliance dependant services because participants are required to actively participate in service creation during contact sessions and comply with provider directives once away from the contact sessions. At Company X, Y and Z, programme participants participate in service creation during contact sessions by providing information or physical evidence, e.g., food and activity diary, blood pressure and weight. Once the contact session is over, the programme participants continue to perform by complying with the directives provided by the service provider, for example, by following the prescribed dietary and exercise regime, necessary for goal attainment. The study was conducted in a lifestyle management programme, which comprised of three phases, namely, weight loss, metabolic adjustment and lifetime maintenance.

The unit of analysis refers to the “what” of the study, namely, what “object”, “phenomenon”, “entity”, “process” or “event” the researcher is interested in investigating (Mouton, 2001:51-52). The units of analysis for this study are individual customers who are in the final stages of, or who have successfully completed a lifestyle management programme at Company X, Y or Z.



### 4.3.2 Description of the sampling plan

The actual sample used was a non-probability convenience sample of participants whom have completed a lifestyle management programme at Company X, Y or Z.

A non-probability convenience sample was used in this study for the following reasons, namely, because Dellande (1999:36) used this sampling method in her doctoral thesis and non-probability samples are convenient to collect. A non-probability convenience sample is determined by selecting participants who are readily accessible for the study. The respondent pool was small and the only logistically feasible data collection method was through an e-mail survey due to the respondents being geographically scattered across the country.

Two other non-probability sampling procedures were considered, namely, judgement sampling and quota sampling. Judgement sampling occurs when a researcher selects sample members to conform to some criterion, which in this case are customers who have successfully completed a lifestyle management programme. Quota sampling is used to improve representativeness. The logic behind quota sampling is that certain relevant characteristics describe the dimensions of the population. If a sample has the same distribution on these characteristics, then it is likely to be representative of the population regarding other variables over which the researcher has no control. All of the customers on the lifestyle management programme have the same general goal in mind, namely, to enhance their health and overall quality of life. Utilising a quota sample had too many logistical and practical considerations for this study. While a convenience sample has no controls to ensure precision and this, being a descriptive study, the convenience sampling approach was ideal for this study. Descriptive studies focus on describing the nature and strengths of the relationships between specific variables. A descriptive study also aims at testing the model presented in Figure 3.1 on page 36 (Cooper & Schindler, 2006:190-192).

Convenience samples are the least reliable but normally the cheapest and easiest sampling designs to conduct. Researchers have the freedom to choose whomever they want or need in a convenience sample, thus the name “convenience”. Examples include informal pools of friends and neighbours, people responding to an invitation from

newspapers for readers to state their positions on some public issue, intercept interviews such as “person on the street” by television reporters or the use of employees to evaluate the taste of a new snack food. While a convenience sample has no controls to ensure precision, it may still be a useful procedure. Convenience sampling involves haphazardly selecting those cases that are easiest to obtain for the required sample. In this case, all the customers interviewed were busy with or had successfully completed a lifestyle management programme. Although convenience sampling is used widely, it is prone to bias and influences that are beyond the control of the researcher as cases appear in the sample only because of the ease of obtaining them. Convenience samples are biased and based on generalisations about the target population, which are usually flawed. These problems are less important where there is little variation in the sample population and such samples often serve as pilots to studies using more structured samples. The majority of customers partaking in the lifestyle management programme have the same type of goal in mind, which is to enhance their health and quality of life. Therefore, the non-probability convenience sample is the most viable sampling method for this study (Saunders *et al.*, 2007:234).

Additional reasons for choosing non-probability over probability sampling are cost and time. Probability sampling clearly calls for more planning and repeated callbacks to ensure that each selected sample member is contacted. These activities are expensive. Carefully controlled non-probability sampling often seems to give acceptable results, so the researcher, therefore, did not even consider probability sampling. While probability sampling may be superior in theory, there are breakdowns in its application. Even carefully stated random sampling procedures may be subject to careless application by the people involved. Thus, the ideal probability sampling may be only partially achieved because of the human element. There is only one opportunity to provide questionnaires to the respondents and, therefore, non-probability convenience sampling was ideal for this study. Non-probability samples that are unrestricted are called convenience sampling, as is the case with this particular study (Cooper & Schindler, 2006:194).

The decision concerning sample size, when using multiple regression analysis in regression analysis, involves a number of issues such as the number of predictors, desired power and effect sizes. The simplest rule of thumb for testing multiple correlations is

$[N \geq 104 + m]$  (where  $m$  is the number of independent variables). Therefore, the sample size for the current study should be  $N \geq 104 + 4 = 108$  observations (Cooper & Schindler, 2006:153). Two models were tested in the study and the minimum sample size was determined based on the model with the four independent variables.

The study comprised of one sample, namely, members of the three participating lifestyle management programmes. The sample size used by Dellande (1999:52) consisted of 376 customers who completed a lifestyle management programme spanning three months. The sample selection process continued until the required sample size of 108 was reached. A total of 369 questionnaires were distributed online through SurveyMonkey to potential respondents from Company X, Y and Z in order to achieve the required sample size of 108. The questionnaire was distributed to the respondents three times to ensure a high response rate. The questionnaires were distributed as follows: Company X: 190 questionnaires (completed 67, incomplete 5), Company Y: 124 questionnaires (completed 78, incomplete 3) and Company Z: 55 questionnaires (completed 11, incomplete 2). A total of 155 questionnaires were completed out of the 369 questionnaires that were distributed. The response rate was therefore 42%.

The oversampling technique (i.e., selecting more people than you really intend to use so that you can replace dropouts easily) was used in this study in an effort to obtain a sample size large enough to make generalisations about the population in question. For example, approximately two and a half times as many surveys were distributed to customer respondents than those that were completed and returned. Dellande (1999:37) suggests that oversampling is a very useful approach to improving response rates. Dellande (1999:37) also suggests that it is worth oversampling because once the survey has started, the replacement of dropouts is administratively more complex and will probably introduce bias. Company X only distributed the questionnaires once so that it was logistically very difficult to go back to the respondents should a questionnaire not have been completed successfully. The sample size for this study was 108 customers who successfully completed a lifestyle management programme at Company X, Y and Z.

## **4.4 DATA COLLECTION**

This section discusses the survey method used in the study. In addition, the pre-testing method is also described.

### **4.4.1 Pre-testing**

Questionnaire pre-testing identifies questions that respondents may have difficulty understanding or which they interpret differently from what the researcher intended (Mouton, 2001:55). The questionnaire was pre-tested in two phases. During the first phase, the questionnaire was provided to the various programme leaders of the three companies who approved the questionnaire and the content after consulting with members whom have successfully completed the lifestyle management programme. In depth interviews were conducted during phase two with two customers who have successfully completed a lifestyle management programme with Company Y. Each interview was a minimum of one and a half hours and all the responses were recorded in writing. The cognitive pre-testing method was applied during phase two. This method allowed customers to “think aloud” while answering questions, verbalising whatever came to mind as they formulated their responses. The procedure was designed to assess the cognitive processes by which respondents answered questions, thereby providing insight into the way in which each item was comprehended and the strategies used to devise answers. Respondent confusion and misunderstandings were easily identified using this method (Krosnick, 1999:542).

### **4.4.2 Description of data collection method**

Data for the main study was collected during September 2010 using an online self-administered questionnaire, included in Appendix A. All the data was collected by means of an online survey hosted in SurveyMonkey. A link to the questionnaire for the specific company was e-mailed to the respondents, accompanied by a signed letter from senior management from the respective companies requesting their co-operation in completing the survey. All of the 155 responses in this study were collected through SurveyMonkey.

Self-administered questionnaires were used in previous studies on customer compliance (Dellande, 1999:39; Dellande *et al.*, 2004:77-79).

The major disadvantage of the self-administered questionnaire approach is that no one is present to explain questions to the respondents and clarify their responses to open-end questions. Self-administered questionnaires have numerous limitations such as a low response rates, complicated questions, incomplete questionnaires, participant anxiety and a distractive environment (Mouton, 2001:57).

Authorisation was obtained from Company X, Y and Z as well as from every participant who successfully completed a lifestyle management programme and who qualified to participate in the research. Participants had to complete the survey after they had successfully completed a lifestyle management programme at any of the three companies. Completion of the questionnaires were completed on the same day on which they were issued in order to avoid a high rate of non-response from the participants. No incentives were provided to respondents who completed the questionnaire (Cooper & Schindler, 2006:140-141).

## **4.5 MEASUREMENT**

The measures used to measure each of the constructs listed in Figure 3.1 (on p. 36) are described below.

### **4.5.1 Customer role clarity, ability and overall motivation**

Dellande's (1999:100) 7-point Likert scale was used to assess the role clarity and ability, of customers, which, in turn, are antecedents of the compliance construct. The customer attributes of role clarity, ability, intrinsic and extrinsic motivation were measured by gathering information pertinent to the role of customers during a weight loss programme. All the scale points for the seven items were labelled, ranging from 1 = "*Strongly disagree*" to 7 = "*Strongly agree*".

The scales used by Dellande (1999:100) were adapted from Bruner and Hensel (1994:1087). Customers were asked whether they had the inclination, understanding and skills to take the pre-packaged food supplements prescribed by the lifestyle management programme, determine their daily level of physical activity, calculate their daily intake of carbohydrates, keep a diary of their daily food/beverage intake and apply the skills taught to help them control their environment (Dellande, 1999:41). The role clarity construct was measured with five items in the questionnaire contained in Appendix A: 1.13, 1.30, 1.35, 1.37 and 1.38. Question 1.30 was removed in order to improve the Cronbach's alpha of the scale from 0.863 to 0.904. The Cronbach's alpha for role clarity was compared to Dellande (1999). The role ability construct was measured with four items in the questionnaire: 1.6, 1.12, 1.19 and 1.34. Question 1.19 was removed in order to improve the Cronbach's alpha of the scale from 0.716 to 0.767. The Cronbach's alpha for role ability was compared to Dellande (1999).

Intrinsic motivation and extrinsic motivation are antecedents (predictors) of overall motivation. Scales for the measurement of both intrinsic and extrinsic motivation were compared to Pelletier *et al.* (1995:53). Five items adapted from the Sport Motivation Scale developed by Pelletier *et al.* (1995:53) were used to measure intrinsic motivation, while four items also developed by Pelletier *et al.* (1995:40) were used to measure extrinsic motivation. The intrinsic motivation construct was measured with five items in the questionnaire: 1.7, 1.9, 1.10, 1.14 and 1.22. The Cronbach's alpha for the intrinsic motivation scale was 0.839. The Cronbach's alpha for intrinsic motivation was compared to (Pelletier *et al.*, 1995). The extrinsic motivation construct was measured with four items in the questionnaire: 1.25, 1.26, 1.29 and 1.32. Question 1.29 was removed in order to improve the Cronbach's alpha of the scale from 0.795 to 0.862. The Cronbach's alpha for extrinsic motivation was compared to Pelletier *et al.* (1995).

The preliminary and validation studies on the Sport Motivation Scale, which involved approximately 600 active people recruited from different sporting backgrounds, revealed that the scale has a satisfactory internal consistency reliability coefficient of 0.82. The construct validity of the scales are supported by a series of correlation analyses among the subscales, as well as between other psychological constructs relevant to the sports

domain, such as an interest in sport, sport satisfaction and positive emotions experienced during sport practice Pelletier *et al.* (1995:40).

The averaging approach was utilised to create a total or composite score to represent each of the aforementioned constructs. For each construct, this score was created by averaging each respondent's answers to the specific statements measuring the construct. SPSS for Windows version 19.0 was used to create the total (composite) scores. The same applies to the remaining three constructs namely compliance, goal attainment and satisfaction. Dellande *et al.* (2004:84) measured the face validity of these measures through the rating of expert judges in the study.

#### **4.5.2 Customer compliance, goal attainment and satisfaction**

The outcome variables investigated in this study include customer compliance, goal attainment and satisfaction.

Customer compliance was operationalised in two ways. Firstly, a 7-item Likert scale taken from Dellande (1999:41) was used to measure compliance. Scale items include surveying customers to determine whether they followed the lifestyle management programme's weight loss directives, calculated their physical level of activity, calculated their daily intake of carbohydrates and kept a journal of their weight loss programme activities. Scale items have been devised based on discussions with the custodians of the lifestyle management programme. The customer compliance construct was measured with seven items in the questionnaire: 1.5, 1.8, 1.15, 1.18, 1.21, 1.23 and 1.36. Question 1.18 was removed in order to improve the Cronbach's alpha of the scale from 0.791 to 0.797. The Cronbach's alpha coefficient for the compliance scale used by Dellande *et al.*, (2004:84) was 0.8.

A 7-item Likert scale adapted from Dellande (1999:42) was used to measure the goal attainment construct. Goal attainment was measured by asking customers whether they were attaining their weight loss goal. Customers recorded their weight loss (or gain) during each routine visit. The customer goal attainment construct was measured with one item in the questionnaire: 1.33. The Cronbach's alpha for the goal attainment scale could not be verified, as there was only one question in the questionnaire. The Cronbach's alpha

coefficient for the customer goal attainment scale used by Dellande *et. al.*, (2004:84) was 0.86.

The satisfaction variable was measured by asking patients if they were satisfied with the services offered by the lifestyle management programme as well as their intention to enrol in the maintenance programme upon completing the programme. A 7-item Likert scale adapted from Dellande (1999:43) was used to measure the goal attainment construct. The scales by Dellande (1999:43) have been adapted from Bruner and Hensel (1994:1087). A few examples from the scale include asking respondents if their choice to join the lifestyle management programme was a wise decision, whether they were satisfied with the design of the programme and if they were satisfied with the results that they achieved with the programme. The Cronbach's alpha coefficient for the satisfaction scale used by Dellande (1999:42) is 0.79, indicating that the scale has acceptable internal consistency reliability.

The customer satisfaction construct was measured with five items in the questionnaire: 1.4, 1.11, 1.16, 1.17 and 1.20. The Cronbach's alpha coefficient for the customer satisfaction scale was 0.889. The Cronbach's alpha coefficient for the customer satisfaction scale used by Dellande (2004:84) was 0.79.

## **4.6 DATA ANALYSIS**

Multiple regression analysis was used to test the hypotheses contained in two models. The multiple regression analysis technique used in this study will be discussed in detail in Chapter 5. Descriptive and correlation analyses were also conducted and the Cronbach's alpha was calculated on all the scales contained in the study.

### **4.6.1 Multiple regression analysis**

Multiple regression analysis is a statistical tool used to develop a self-weighting estimating equation that predicts values for a dependant variable from the values of independent variables and controls confounding variables to evaluate the contribution of other variables better. The objective of multiple regression analysis is to predict the value of a single



dependant variable using the values of observed independent variables (Cooper & Schindler, 2001:576). As shown in Table 4.1 below, two multiple regression models were tested in this study:

**Table 4.1: Independent and dependent variables**

<b>Independent variables (predictors) – X</b>	<b>Dependent variable – Y</b>
<b>Model 1:</b> Role clarity, role ability, intrinsic motivation and extrinsic motivation	Customer compliance
<b>Model 2:</b> Customer compliance, customer goal attainment	Customer satisfaction

In order to ensure the best possible prediction from the set of independent variables, each independent variable is weighted by the regression analysis procedure. These weights, known as regression coefficients, denote the relative contribution of the specific independent variable to the overall prediction of the independent variable, keeping the other independent variables constant. Moreover, these weights facilitate interpretation as to the influence of each independent variable in making the prediction (Cooper & Schindler, 2001:576). The generalised equation for multiple regression analysis is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \epsilon_i.$$

Where:

$\beta_0$  = A constant, the value of Y when all X values are zero.

$\beta_i$  = The slope of the regression surface or the response surface. The  $\beta$  represents the regression coefficient associated with each  $X_i$ .

$\epsilon_i$  = An error term, normally distributed about a mean of 0. For purposes of computation, the  $e$  is assumed to be 0.

The regression coefficients have been stated either in raw score units (the actual X values) or as standardised coefficients (X values restated in terms of their standard deviations) (Cooper & Schindler, 2001:577).

## **4.7 APPROVAL OF THE RESEARCH ETHICS COMMITTEE**

Formal approval for this study was obtained from the Research Ethics Committee of the Faculty of Economic and Management Sciences at the University of Pretoria on 26 November 2008. A copy of the document is contained in Appendix B.

## **4.8 CONCLUSION**

This chapter included a discussion on the research design and the methodology of this study. The chapter also covered the research design, as well as the sampling approach used. Additionally, it described and reviewed the data collection, data analysis, sampling method and the sample size of 108 used in the study, as well as a definition of the target population, with a specific focus on the survey method, the questionnaire design and the measurements. The non-probability convenience sampling method was used. The data-collection method used in this chapter was also reviewed. The focus of the next chapter is on the empirical findings of the study.

## CHAPTER 5: EMPIRICAL FINDINGS OF THE STUDY

### 5.1 INTRODUCTION

Chapter 5 presents the reader with the empirical findings of this study. The chapter consists of four main sections. The reliability of the multiple item measures used together with the item-to-total correlations are discussed in section one. Section two consists of the interpretation of univariate descriptive statistics for the composite scale scores and for the individual questions in the questionnaire. All the correlations between the various composite scores are presented in section three, which is followed by the two regression models tested in the study.

### 5.2 RELIABILITY ANALYSIS

Reliability is defined as "... the degree to which measures are free from random error and therefore provide consistent data" (McDaniel & Gates, 2001:254). A measurement shows reliability if the measurement does not show change when the concept measured remains constant in value (McDaniel & Gates, 2001:254). Three ways in which reliability is assessed are described below:

- **Test-retest reliability:** Use the same instrument a second time under as nearly the same conditions as possible (McDaniel & Gates, 2001:255).
- **Equivalent forms reliability:** Use two instruments that are as similar as possible to measure the same object during the same time period (McDaniel & Gates, 2001:255).
- **Internal consistency reliability:** Compare different samples of items that are used to measure a phenomenon within the same period of time (McDaniel & Gates, 2001:255).

The Cronbach's alpha is a measure of the internal consistency reliability of the items in a multiple rating scale that is sometimes referred to as a "scale reliability coefficient". The Cronbach's alpha measures the degree to which responses across a set of multiple

measures of a construct are consistent (i.e., highly correlated). The generally acceptable level agreed upon for the Cronbach's alpha is 0.70 (Hair *et al.*, 2006:137).

Tables 5.1 to 5.10 below provide the Cronbach's alpha values and item-total correlations for the statements measuring each of the seven constructs investigated in the study. Each table also contains the relevant Cronbach's alpha coefficient for the specific construct measured in the study. The values contained under the label "Item-to-total correlation" refer to the correlation of each item included in the scale with the summated scale score (Hair *et al.*, 2006:137). The second column labelled "Item-to-total correlation" is provided together with an indication of how the Cronbach's alpha scales will change if the particular item is removed. The most widely utilised measure of the reliability of a scale is Cronbach's alpha. The primary reason is that Cronbach's alpha is the only reliability index that does not require two administrations of the scale, or two or more raters, and so, can be determined with much less effort than test-retest or internal reliability (Streiner, 2003:99).

Seven-point Likert scales were used to measure the seven abstract constructs, namely, role clarity, role ability, extrinsic motivation, intrinsic motivation, customer compliance, customer goal attainment and customer satisfaction. Table 5.1 below shows the results of a reliability analysis conducted on the items measuring the role clarity construct.

**Table 5.1: The internal consistency reliability of the items measuring the role clarity construct**

<b>Cronbach's alpha for scale</b>	<b>0.863</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
The lifestyle management programme has NOT made it clear how to keep a diary of my daily food/beverage intake (rev)*	0.807	0.803
I have a clear vision of how I want to look and feel after completing the lifestyle management programme	0.312	0.904
The lifestyle management programme makes it clear how to determine my daily intake of carbohydrates	0.827	0.795
The lifestyle management programme clearly indicates the number of food portions to consume each day	0.839	0.791
The lifestyle management programme makes it clear how to determine my daily level of physical activity	0.661	0.843

(rev)\*: Reverse scored.

The first item in the scale is reversed scored in order to improve the reliability of the scale. The abbreviation (rev)\* refers to reverse scoring. The Cronbach's alpha reliability coefficient for the scale measuring role clarity is 0.863, which is higher than the accepted minimum value of 0.70. The Cronbach's alpha can be improved by deleting Item 2 (Question 30). The internal consistency will increase to 0.904 if Item 2 (Question 30) is removed, thereby improving the internal consistency of the scale. In order to improve the overall internal consistency of the scale, a decision was taken to remove Item 2 (Question 30) from the calculation.

Not all the values stated under Item-to-total correlation reported in column two are above 0.50. According to Hair *et al.* (2006:137), a rule of thumb suggests that the value of an "Item-to-total correlation", which refers to the correlation of the item to the summated scale score, should exceed 0.50. Item 2 (Question 30) has been removed from the calculation in order to ensure that the "Item-to-total correlation" exceeds 0.50.

Table 5.2 below shows the results of the internal consistency reliability of the items measuring the role clarity construct with Item 2 (Question 30) removed from the calculation.

**Table 5.2: The internal consistency reliability of the items measuring the role clarity construct with Item 2 (Question 30) removed**

<b>Cronbach's alpha for scale</b>	<b>0.904</b>	
<b>Item</b>	<b>Item- to- total correlation</b>	<b>Cronbach's alpha if item deleted</b>
The lifestyle management programme has NOT made it clear how to keep a diary of my daily food/beverage intake (rev)*	0.806	0.871
The lifestyle management programme makes it clear how to determine my daily intake of carbohydrates	0.850	0.852
The lifestyle management programme clearly indicates the number of food portions to consume each day	0.869	0.844
The lifestyle management programme makes it clear how to determine my daily level of physical activity	0.647	0.923

(rev)\*: Reverse scored.

The revised Cronbach's alpha of the scale measuring role clarity is 0.904, which is significantly higher than the previous value of 0.863 indicated in Table 5.1. All the values stated under the "Item-to-total correlation" reported in column two of Table 5.2 are above 0.50. The revised scale measuring role clarity, therefore, has an acceptable level of internal consistency reliability.

Table 5.3 below shows the results of the internal consistency of all the items measuring the role ability construct.

**Table 5.3: The internal consistency reliability of the items measuring the role ability construct**

<b>Cronbach's alpha for scale</b>	<b>0.716</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
I am NOT able to determine how to follow the nutritional guidelines outlined in the lifestyle management programme (rev)*	0.511	0.650
I am able to determine the number of food portions to consume throughout the day	0.612	0.588
I am able to determine my daily level of physical activity	0.281	0.767
I am able to determine my daily intake of carbohydrates whilst on the lifestyle management programme	0.630	0.569

(rev)\*: Reverse scored.

The Cronbach's alpha reliability coefficient for the scale measuring role ability is 0.716, which is larger than the accepted minimum value of 0.70. The Cronbach's alpha can be substantially improved to 0.767 by deleting Item 3 (Question 19), thereby improving the internal consistency reliability of the scale. Item 3 (Question 19) has, therefore, been removed in order to realise an acceptable level of internal consistency reliability.

All the values stated under "Item-to-total correlation" reported in column two of Table 5.3 are above 0.50 except for Item 3 (Question 19). The scale measuring role ability, therefore, has an acceptable level of internal consistency reliability

Table 5.4 below shows the results of the internal consistency reliability of the items measuring the role ability construct with Item 3 (Question 19) removed from the calculation.

**Table 5.4: The internal consistency reliability of the items measuring the role ability construct with Item 3 (Question 19) removed**

<b>Cronbach's alpha for scale</b>		<b>0.767</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>	
I am NOT able to determine how to follow the nutritional guidelines outlined in the lifestyle management programme (rev)*	0.518	0.777	
I am able to determine the number of food portions to consume throughout the day	0.624	0.664	
I am able to determine my daily intake of carbohydrates whilst on the lifestyle management programme	0.668	0.607	

(rev)\*: Reverse scored.

The revised Cronbach's Alpha is 0.767 is significantly higher than the value of 0.716 indicated in Table 5.4. All the values stated under "Item-to-total correlation" reported in column two of Table 5.4 are above 0.50. The scale measuring role ability, therefore, has an acceptable level of internal consistency reliability.

Table 5.5 below shows the results of the internal consistency reliability of all the items measuring the customer compliance construct.

**Table 5.5: The internal consistency reliability of the items measuring the customer compliance construct**

<b>Cronbach's alpha for scale</b>		<b>0.791</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>	
I followed all the guidelines exactly the way that the lifestyle management programme suggested	0.594	0.756	
I visit the lifestyle management contact sessions as I have been instructed to do	0.344	0.797	
I apply the skills taught to me by the lifestyle management programme to help control my environment	0.438	0.779	

<b>Cronbach's alpha for scale</b>	<b>0.791</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
I do NOT follow all the guidelines that the lifestyle management programme suggests (rev)*	0.484	0.774
I follow all the nutritional guidelines in the lifestyle management programme as I have been instructed to do	0.685	0.739
I calculate my daily intake of carbohydrates as I have been instructed to do	0.627	0.742
I keep a daily journal of my weekly activities whilst on the lifestyle management programme	0.544	0.762

(rev)\*: Reverse scored.

The Cronbach's alpha reliability coefficient for the scale measuring customer compliance is 0.791, which is higher than the accepted minimum value of 0.70. The Cronbach's alpha can be improved by deleting Item 2 (Question 8). The internal consistency will increase to 0.797 when Item 2 (Question 8) is removed, thereby improving the internal consistency of the scale and ensuring that the scale measuring customer compliance has an acceptable level of internal consistency reliability.

Not all the values stated under "Item-to-total correlation" reported in column two are above 0.50. According to Hair *et al.* (2006:137), a rule of thumb suggests that the value of an "Item-to-total correlation" should exceed 0.50. Items 2, 3 and 4 are all under 0.5 and, therefore, fail to meet this criterion.

Table 5.6 below shows the results of the internal consistency reliability of all the items measuring the customer compliance construct with Item 2 (Question 8) removed.

**Table 5.6: The internal consistency reliability of the items measuring the customer compliance construct with Item 2 (Question 8) removed**

<b>Cronbach's alpha for scale</b>	<b>0.797</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
I followed all the guidelines exactly the way that the lifestyle management programme suggested	0.562	0.767
I apply the skills taught to me by the lifestyle management programme to help control my environment	0.474	0.782



<b>Cronbach's alpha for scale</b>	<b>0.797</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
I do NOT follow all the guidelines that the lifestyle management programme suggests (rev)*	0.502	0.780
I follow all the nutritional guidelines in the lifestyle management programme as I have been instructed to do	0.677	0.742
I calculate my daily intake of carbohydrates as I have been instructed to do	0.623	0.747
I keep a daily journal of my weekly activities whilst on the lifestyle management programme	0.538	0.773

(rev)\*: Reverse scored.

The above table indicates the values with Item 2 (Question 8) removed. The revised Cronbach's alpha is 0.797 is marginally higher than the 0.791 from Table 5.5. One of the values stated under "Item-to-total correlation" reported in column two of Table 5.6 is below the accepted value of 0.50. Item 2 has an "Item-to-total correlation" of 0.474, which is negligible and does not affect the level of internal consistency reliability of the scale.

Table 5.7 below shows the results of internal consistency of the items measuring the customer satisfaction construct.

**Table 5.7: The internal consistency reliability of the items measuring the customer satisfaction construct**

<b>Cronbach's alpha for scale</b>	<b>0.889</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
My choice to have joined the lifestyle management programme was a wise decision	0.733	0.871
I am satisfied with the design of the lifestyle management programme	0.681	0.877
I am satisfied with my decision to join the lifestyle management programme	0.786	0.860
I am satisfied with the results that I have achieved with the lifestyle management programme	0.752	0.865
If I had to choose all over again, I would join the lifestyle management programme	0.790	0.852

Cronbach's alpha reliability coefficient for the scale measuring customer satisfaction is 0.889, which is greater than the accepted minimum value of 0.70. None of the values listed in the third column labelled "Cronbach's alpha if item deleted" is larger than 0.889. As a result, the internal consistency reliability of the scale will not be improved by the removal of any of the items.

As the "Item-to-total correlation" values reported in column two are all greater 0.50, the scale measuring customer satisfaction, therefore, has an acceptable level of internal consistency reliability.

Table 5.8 below shows the results of internal consistency reliability of the items measuring the intrinsic motivation construct.

**Table 5.8: The internal consistency reliability of the items measuring the intrinsic motivation construct**

<b>Cronbach's alpha for scale</b>	<b>0.839</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
I did NOT feel motivated to follow the nutritional guidelines that are suggested by the lifestyle management programme (rev)*	0.666	0.800
I feel motivated to calculate my daily intake of carbohydrates	0.719	0.784
I feel motivated to follow the nutritional guidelines outlined in the lifestyle management programme	0.694	0.797
I do NOT feel motivated to keep a diary of my daily food/beverage intake (rev)*	0.624	0.819
I feel motivated to determine my daily level of physical activity	0.559	0.829

(rev)\*: Reverse scored.

The Cronbach's alpha reliability coefficient for the scale measuring customer satisfaction is 0.839, which is greater than the accepted minimum value of 0.70. None of the values listed in the third column labelled "Cronbach's alpha if item deleted" is larger than 0.839. As a result, the internal consistency reliability of the scale will not be improved by deleting any of the items. Therefore, the scale measuring customer satisfaction has an acceptable level of internal consistency reliability.

Table 5.9 below shows the results of the internal consistency of all the items measuring the extrinsic motivation construct.

**Table 5.9: The internal consistency reliability of the items measuring the extrinsic motivation construct**

<b>Cronbach's alpha for scale</b>	<b>0.795</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
The lifestyle management programme is one of the best ways to maintain good relationships with my friends	0.764	0.656
In my opinion, the lifestyle management programme is one of the best ways to meet people	0.749	0.664
The lifestyle management programme allows me to be well regarded by people I know	0.639	0.726
People around me think it is important to be in shape	0.297	0.862

The Cronbach's alpha reliability coefficient for the scale measuring role clarity is 0.795, which is higher than the accepted minimum value of 0.70. Not all the values stated under the "Item-to-total correlation" reported in column two are above the value of 0.50. The Cronbach's alpha can be by increased to 0.862 if Item 4 is deleted, as Item 4 is below the level of 0.50. Item 4 has been deleted to improve the level of internal consistency reliability.

Table 5.10 below shows the results of the internal consistency reliability of the items measuring the extrinsic motivation construct with item 4 removed from the calculation.

**Table 5.10: The internal consistency reliability of the items measuring the extrinsic motivation construct with Item 4 (Question 29) removed**

<b>Cronbach's alpha for scale:</b>	<b>0.862</b>	
<b>Item</b>	<b>Item-to-total correlation</b>	<b>Cronbach's alpha if item deleted</b>
The lifestyle management programme is one of the best ways to maintain good relationships with my friends	0.764	0.656
In my opinion, the lifestyle management programme is one of the best ways to meet people	0.749	0.664
The lifestyle management programme allows me to be well regarded by people I know	0.639	0.726

Table 5.10 (on p. 71) indicates the values with Item 4 removed from the calculation. The revised Cronbach's alpha is 0.862, which is significantly higher than the 0.795 reflected in Table 5.9. All the values stated under "Item-to-total correlation" reported in column two of table 5.10 are above 0.50. The scale measuring extrinsic motivation, therefore, has an acceptable level of internal consistency reliability.

## 5.3 UNIVARIATE DESCRIPTIVE STATISTICS

### 5.3.1 Univariate descriptive statistics for the composite scale scores and for the individual questions in the questionnaire

The constructs investigated in this study were all measured using a 7-point Likert scale anchored by 1 = "*Strongly disagree*" and 7 = "*Strongly agree*".

The composite (total) score for each construct was calculated in two stages. The first stage entailed calculating the mean of the answers given by each respondent across all the items in the scale that measured a specific construct. The second stage involved calculating the mean of these "mean scores" across all the respondents. For example, the construct applicable to *customer role clarity* was measured in accordance with the four items identified in Table 5.11 (on p. 73). The means (*M*) of these items are 5.06, 5.17, 5.59 and 4.96 respectively. In order to calculate the composite score for the *customer role clarity* construct, the mean (*M*) of the four items are added together and divided by the number of items in the scale ( $20.78 / 4 = 5.20$ ).

Table 5.11 (on p. 73) illustrates all the determinants and characteristics of customer co-production and satisfaction in a compliance dependant service. The table also lists the seven constructs in the study and provides *M* and *SD* for each of the scale items.

**Table 5.11: Descriptive statistics for the constructs and items measured in the questionnaire**

<b>Constructs and items measured in the study</b>	<b><i>n</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
<b>Role clarity</b>	155	5.20	1.501
Daily level of physical activity	155	5.59	1.352
Number of food portions per day	155	5.17	1.799
Daily intake of carbohydrates	155	5.06	1.693
NOT determine daily intake of food/beverage (rev)*	155	4.96	1.922
<b>Role ability</b>	155	5.24	1.277
Number of food portions per day	155	5.48	1.456
NOT determine how to follow nutritional guidelines (rev)	155	5.27	1.55
Daily intake of carbohydrates	155	4.97	1.623
<b>Customer compliance</b>	155	4.78	1.340
Follow all the program guidelines	155	5.36	1.243
Apply the skills to control the environment	155	5.27	1.08
Follow all the nutritional guidelines as instructed	155	5.17	1.325
Calculate daily intake of carbohydrates	155	4.48	1.733
NOT follow all the program guidelines (rev)	155	4.42	1.77
Keep a daily journal of weekly activities	155	3.99	1.88
<b>Intrinsic motivation</b>	155	5.27	1.151
Follow required nutritional guidelines	155	5.74	1.264
Determine daily level of physical activity	155	5.74	1.17
NOT motivated to follow nutritional guidelines (rev)	155	5.44	1.473
Calculate daily intake of carbohydrates	155	4.92	1.602
NOT motivated to diarise food/beverage intake (rev)	155	4.5	1.79
<b>Extrinsic motivation</b>	155	4.29	1.386
Well regarded by people I know	155	4.59	1.515
Maintain good relationships with my friends	155	4.32	1.570
One of the best ways to meet new people	155	3.98	1.610
<b>Customer satisfaction</b>	155	6.15	0.914
Wise decision to have joined the programme	155	6.43	0.837
Satisfied with decision to join	155	6.35	0.881
Would join the program again	155	6.29	1.243
Satisfied with design	155	5.92	1.137
Satisfied with results	155	5.75	1.311

<b>Constructs and items measured in the study</b>	<b><i>n</i></b>	<b><i>M</i></b>	<b><i>SD</i></b>
<b>Customer goal attainment</b>	155	4.3	1.703
Desired goal for the programme has been attained	155	4.3	1.703

Notes:

Scales values range from 1 = *Strongly disagree* to 7 = *Strongly agree*. The higher the mean score, the higher the level of agreement associated with a specific statement or construct.

*M* = mean, *SD* = standard deviation.

(rev)\*: Reverse scored.

The sample size ( $n = 155$ ) was consistent across all the constructs. The total scores for all the constructs differ slightly. The highest total score ( $M = 6.15$ ,  $SD = 0.914$ ) is associated with customer satisfaction, while the lowest total score is associated with extrinsic motivation ( $M = 4.29$ ,  $SD = 1.386$ ).

### 5.3.2 Correlations between the total scale scores

Two multiple regression models were investigated in this study. The first regression model included one dependent variable, *customer compliance*, which was predicted by four independent variables, namely *role clarity*, *role ability*, *intrinsic motivation* and *extrinsic motivation*. The second regression model included one dependent variable, *customer satisfaction*, which was predicted by two independent variables, namely, *customer compliance* and *customer goal attainment*.

Table 5.12 (on p. 75) shows that there is a positive correlation between the independent variables and the dependent variable of the first regression model. Each cell in Table 5.12 represents the results of a correlation between two of the variables included in the first regression model.

**Table 5.12: Pearson's product moment correlations between the total scores of the constructs measured in the study included in the first regression model (n = 155)**

	<b>Compliance</b>	<b>Clarity</b>	<b>Ability</b>	<b>Intrinsic motivation</b>
<b>Clarity</b>	0.648 <.001 155			
<b>Ability</b>	0.651 <.001 155	0.820 <.001 155		
<b>Intrinsic motivation</b>	0.775 <.001 155	0.676 <.001 155	0.665 <0.001 155	
<b>Extrinsic motivation</b>	0.515 <.001 155	0.384 <.001 155	0.431 <.001 155	0.583 <.001 155

Note: The value <.001 indicates that the  $p$ -values associated with all the correlation coefficients are statistically significant and smaller than 0.001.

For the purpose of interpreting the results of a correlation analysis, it is important to explain the meaning of a  $p$ -value. Hypothesis tests produce  $p$ -values. A  $p$ -value is defined as the probability of obtaining results no more supportive of the null hypothesis than those found in the sample, when the null hypothesis is true. If the  $p$ -value is less than 5 percent or 0.05, then it is most unlikely that the null hypothesis is true. Therefore, the null hypothesis is rejected. This is called a statistically significant test result. If the  $p$ -value is more than 5 percent (or 0.05), the null hypothesis is not unlikely. Therefore, the null hypothesis should not be rejected. This is called a non-significant test result (Page & Meyer, 2000:167).

The values in the third column of the third row of Table 5.12, for example, illustrate the results of a correlation between the composite score for *role clarity* and the composite score for *role ability*. These three values are interpreted as follows:

- The top value in this cell (0.820) is the value of the Pearson's correlation coefficient, which indicates a positive correlation of 0.82 between *role clarity* and *role ability*. The Pearson's correlation coefficient offers a numerical index of the direction and strength of the linear relationship between two variables. It can vary from -1 to +1 (Pallant, 2005:114);

- The middle value in the cell (<.001) indicates that the  $p$ -value of this correlation is smaller than 0.001;
- The bottom value (155) indicates the sample size on which the correlation was calculated.

The values recorded in the other cells of Table 5.12 can be interpreted in a similar manner.

Table 5.13 below illustrates the correlations between the total scores of the constructs included in the second regression model.

**Table 5.13: Pearson's product moment correlations between the total scores of the constructs included in the second regression model**

	<b>Compliance</b>	<b>Goal attainment</b>
<b>Goal attainment</b>	0.487 <.0001 155	
<b>Satisfaction</b>	0.528 <.0001 155	0.523 <.0001 155

As depicted in Table 5.13, there is no multicollinearity between these variables. Multicollinearity occurs when the independent variables are highly correlated, which is the case if the Pearson's correlation coefficient is 0.9 or larger (Pallant, 2005:142). Multicollinearity is discussed in more detail under Section 5.4.1 below.

The three strongest correlations between the independent variables are between:

- the *role clarity* construct and the *role ability* construct (0.82);
- the *role clarity* construct and the *intrinsic motivation* construct (0.68); and
- the *intrinsic motivation* construct and the *role ability* construct (0.67).

According to Hair *et al.* (2006:530), a rule of thumb is that if the Pearson correlation coefficient value is less than 0.70, then the correlation cannot explain at least 50 percent of the variation between the two variables being correlated. Therefore, the correlation value of 0.58 does not appear to be problematic, because any correlation value under 0.70 does not indicate that any of the variables, within these two pairs (i.e. either intrinsic motivation



and extrinsic motivation or ability and intrinsic motivation), serve as a predictor for the other. Thus, the value of 0.58, which is less than 0.70, suggests neither a high collinearity nor a perfect multicollinearity between both the emotional response and satisfaction or the perceived value and behavioural intentions.

The correlations between customer compliance and its four predictors are relatively high. This result has also been found in the correlations between overall customer satisfaction and its two predictors. There are, however, exceptions between extrinsic motivation and clarity (0.38), as well as ability and extrinsic motivation (0.43). Consequently, the correlation between customer satisfaction and all the other constructs have been found to be acceptable. The guidelines, provided by Pallant (2005:126), suggest that if the Pearson correlation coefficient value is between 0.50 and 1.0, the relationship between the two variables is described as strong. If the value is less than 0.50 and more than 0.29, the strength of the relationship is regarded as medium, and, if less than 0.29, then the strength of the relationship is considered small.

## 5.4 INFERENCE STATISTICS

### 5.4.1 An introduction to multiple regression analysis

Multiple regression analysis comprises of the techniques used to explore the relationship between one continuous dependent variable and a number of independent variables or predictors (Pallant, 2005:140). Each individual independent variable is weighted by the regression analysis in order to determine the relative contribution of the specific independent variable to the overall prediction of the dependent variable (Hair *et al.*, 2006:176). This analysis can be used to determine how well a set of variables is able to predict a particular outcome as well as to provide information about the regression model as a whole (Pallant, 2005:140).

The applicable calculation for multiple regression is as follows:

$$Y = (\beta_0 + \beta_1 + \beta_2 X_2 + \dots + \beta_n X_n) + \epsilon_i.$$

In this calculation,  $Y$  is the dependent variable;  $\beta_1$  is the regression coefficient of the first independent variable ( $X_1$ );  $\beta_2$  is the regression coefficient of the second independent variable ( $X_2$ ) and so on; and  $\epsilon_i$  is the difference between the predicted and the observed value of  $Y$  for the  $i$ th participant (Field, 2005:157). The regression coefficients are viewed as weights ascribed to the independent variables by the regression analysis procedure (Hair *et al.*, 2006:176). The regression coefficients help to facilitate an interpretation as to the influence that each independent variable has in making the prediction (Hair *et al.*, 2006:176).

Standard multiple regression is used when all the independent variables are entered into the calculation at the same time, whereas hierarchical regression is used where the independent variables are entered into the calculation in the order specified by the researcher (Pallant, 2005:141). Standard multiple regression is used in both models in this study.

Table 5.14 below summarises the two regression models tested in this study.

**Table 5.14: A summary of the two regression models tested in this study**

<b>Model</b>	<b>Independent variables</b>	<b>Dependent variable</b>
Model 1	Role ability, role clarity, intrinsic motivation, extrinsic motivation	Customer compliance
Model 2	Customer goal attainment, customer compliance	Customer satisfaction

The analysis of model 1 is described in detail together with definitions of the various terms used, while the results of model 2 are presented in a more concise format in Section 5.4.4 (on p. 98).

### **5.4.2 Regression analysis of model 1**

A standard multiple regression analysis of model 1 was used to explore the relationship between customer compliance, the dependent variable in Model 1 and the four independent variables, intrinsic motivation, extrinsic motivation, role ability and role clarity.

In addition, it aimed to determine the proportion of variance in customer compliance that can be explained by the independent variables as a group.

Model 1 was tested in three separate phases. In phase 1, the model was run to obtain the necessary diagnostic information to assess whether the data satisfied the assumptions of multiple regression analysis. The diagnostic information was specifically used to identify outliers and to test the assumptions of multicollinearity, normality as well as homoscedasticity and linearity.

The diagnostic results indicated that four cases have standardised residuals with absolute values larger than 3. These four “outlier” cases were removed from the analysis and, in phase 2, the model was rerun with the four outliers excluded to confirm that the data now satisfied the aforementioned assumptions.

In phase 3, the results of the regression analyses (with the four outliers removed) were interpreted to reach conclusions about hypotheses  $H_1$ ,  $H_2$ ,  $H_3$  and  $H_4$  (see Figure 3.1 on p. 36).

Phase 1 of this process is discussed in the rest of this section, while phases 2 and 3 are discussed in section 5.4.3 (on p. 91).

The first objective of the regression analysis was to test the following assumptions to determine whether they were met in this model:

- Multicollinearity;
- Testing for outliers;
- Normality;
- Homoscedasticity and linearity.

In phase 3, the regression analysis then determined which, if any, of the independent variables, served as statistically significant predictors of customer compliance.

The analysis further determined the importance of those statistically significant predictors when compared to the other independent variables. In other words, which independent variables are the best predictors of customer compliance?

- **Evaluating multicollinearity**

Regression analysis is based on several assumptions, the first of which is the assumption of multicollinearity.

Multicollinearity exists when there is a strong correlation between two or more independent variables in a regression model. This is indicated by a correlation coefficient ( $r$ ) of 0.7 or the larger between two independent variables (Pallant, 2005:150). The relationship between two variables is described by the correlation coefficient ( $r$ ). If changes in one variable are associated with changes in the other variable, they are regarded as correlated. This association is represented by  $r$  (Hair *et al.*, 2006:179). The relevant  $r$ -values are used to calculate the regression coefficient ( $b$ ) which represents the amount of change in the dependent variable that is caused by the independent variable (Hair *et al.*, 2006:180). With reference to R squared ( $R^2$ ), the coefficient of determination measures the proportion of the variance of the dependent variable that is explained by the independent variables. The higher the value of  $R^2$ , the better the prediction of the dependent variable (Hair *et al.*, 2006:185).

In order to determine whether multicollinearity is a problem, the variance inflation factor (VIF) and tolerance values provided by SPSS should be interpreted (Field, 2005:242). Tolerance is an indicator of how much of the variability of the specified independent variable is not explained by the other independent variables in the model (Pallant, 2005:150). If the tolerance value is very small (less than 0.1), it indicates that correlation between other variables is high and, thus, the possibility of multicollinearity is high (Pallant, 2005:150). A researcher wants to avoid this result as it implies that two variables are measuring the same variance. It also makes it difficult to assess the individual contribution of each independent variable as a predictor in the model (Burns & Burns, 2008:386).

The VIF value is the inverse of the tolerance value (1 divided by tolerance:  $(VIF_i = 1 / (1 - R^2))$  (Pallant, 2005:150). Table 5.15 table below shows that in this model, the VIF values are all considerably smaller than 10. Had there been a VIF value greater than 10, it would be cause for concern and an indication that collinearity is a problem in this model. As all the independent variables have VIF values of less than 10, and most are close to 1, this confirms that collinearity is not a problem in this model (Haan, 2002:8). The tolerance statistics for each of the predictors is higher than 0.1 and 0.2, which also indicates that there is not a potential problem with multicollinearity in this model. Diagnostic information that allows for an evaluation of the assumption of multicollinearity is presented in Table 5.15 below.

**Table 5.15: VIF and tolerance values applicable to model 1**

Independent variable	Tolerance value	VIF value	Evidence of multicollinearity
Role clarity	0.295	3.387	Tolerance >0.1, VIF < 10, therefore no evidence of multicollinearity
Role ability	0.302	3.316	Tolerance >0.1, VIF < 10, therefore no evidence of multicollinearity
Intrinsic motivation	0.406	2.462	Tolerance >0.1, VIF < 10, therefore no evidence of multicollinearity
Extrinsic motivation	0.652	1.534	Tolerance >0.1, VIF < 10, therefore no evidence of multicollinearity

In conclusion, therefore, there is no evidence of multicollinearity among the independent variables included in model 1.

- **Identifying outliers**

The *assumption of outliers* is presented in Table 5.16 (on p. 82). A residual is the difference between the observed and the predicted values of the dependent variable and serves as a measure of the prediction error for the regression calculation (Hair *et al.*, 2006:205). Residuals are used to identify outliers. Outliers are inappropriate representations of the population from which the sample is drawn. In other words, an outlier is an observation that is substantially different from the other observations in the sample (Hair *et al.*, 2006:220). Outliers are cases that have a standardised residual of

more than 3.3 or less than -3.3 (Pallant, 2005:151). Cases identified as outliers can influence the results of the analysis, as they are unrepresentative of the population being investigated (Hair *et al.*, 2006:220). In order to derive a more representative result from the sample, these outliers should be removed from the model

**Table 5.16: Cases identified as outliers in model 1**

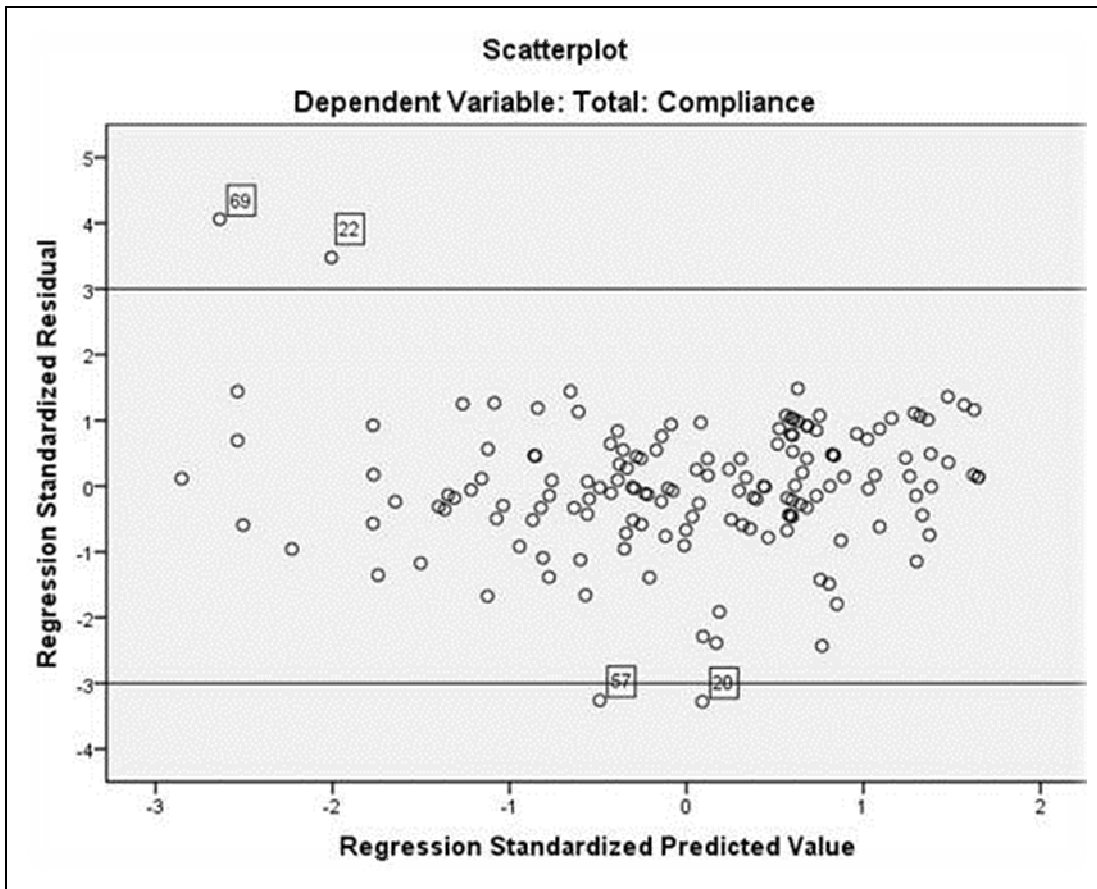
Case number	Standardised residual
20	-3.279
22	3.477
57	-3.259
69	4.062

In this model, four outlier cases are identified in the above table. It is normal to expect a sample to have 95% of cases with standardised residuals within the  $\pm 2$  range (Field, 2005:199). This model has 151 cases, four of which are shown to be outside this limit. Therefore 2.64% of the cases are outside the limit, which implies that this sample appears to conform to what is expected in a fairly accurate model (approximately 5% outside the limits). However, all four of the outlier cases have standardised residuals greater than 3 or less than -3, and, therefore, all four of these cases are identified as outliers (Field, 2005:199).

Residuals can also be presented on a scatterplot showing data points between two variables X (actual values) and Y (predicted values). Residuals should fall within 2 standard deviations from the mean, or the 0. In other words, the points on the scatterplot should be distributed between +2 and -2.

The scatterplot in Figure 5.1 (on p. 83).confirms that in this model, the four cases in the sample identified, namely, cases 69, 22, 57 and 20, are clearly outliers. Therefore, the analysis was repeated with the aforementioned four outliers removed. The results of this analysis are discussed in section 5.4.3 (on p. 91).

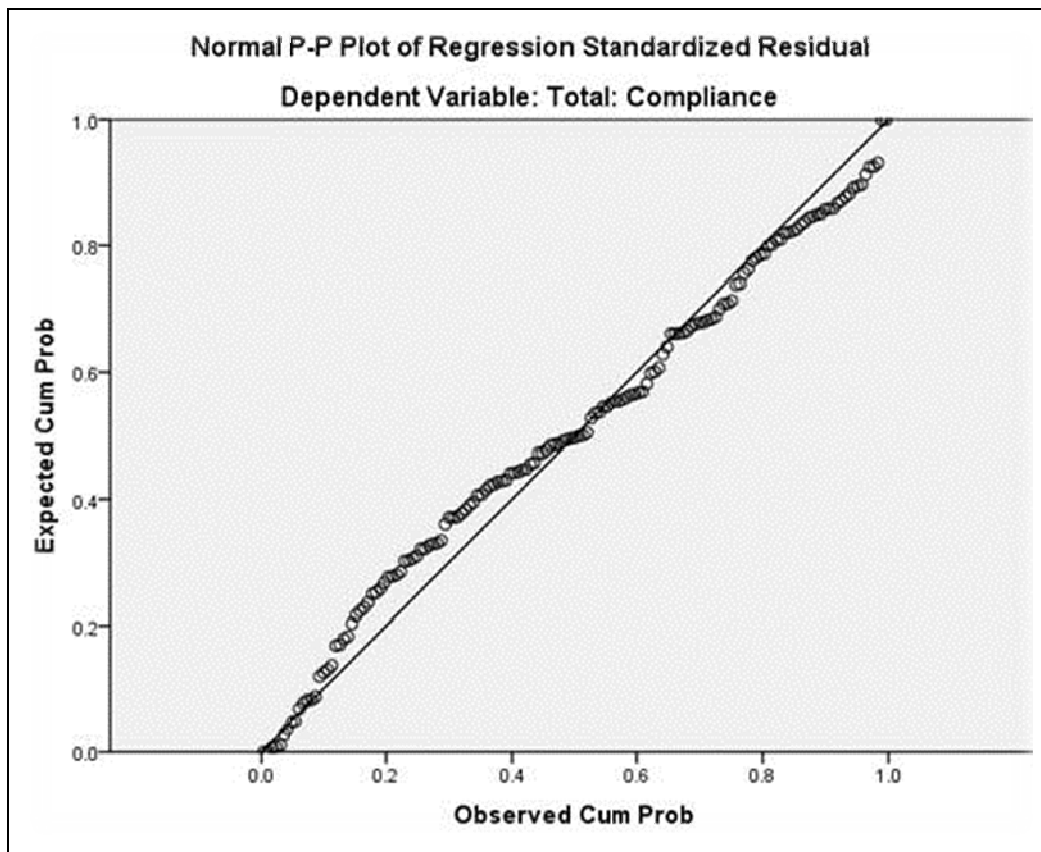
Figure 5.1: A scatterplot of the standardised residuals of model 1



- **Testing the assumption of normality**

Testing the *assumption of the normality* of residuals is tested through a *normal probability plot* of the residuals. This is a plot of the fractiles of error distribution versus the fractiles of a normal distribution having the same mean and variance. If the distribution is normal, the points on this plot should fall close to the diagonal line. A *bow-shaped* pattern of deviations from the diagonal indicates that the residuals have excessive *skewness*, that is, they are not distributed symmetrically, with too many large errors pointing in the same direction. An S-shaped pattern of deviations indicates that the residuals have excessive *kurtosis*, that is, there are either too many or too few large errors in both directions. The normal probability plot in Figure 5.2 (on p. 84) was also used to investigate and/or identify deviations from normality. The diagonal line represents normal distribution and the points represent the observed residuals. The closer the points are to the diagonal line, the closer the normality of the data (Field, 2005:204).

**Figure 5.2: A normal probability plot of the standardised residuals of model 1**



Although Figure 5.2 indicates that not all the observed points lie directly on the diagonal line, it also indicates that the points do not deviate excessively from the line, thereby illustrating that the assumption of normality of the residuals has been met.

- **Testing the assumption of homoscedasticity and linearity**

Figure 5.1 (on p. 83) shows a scatterplot with points that are dispersed randomly and evenly throughout the plot. The scatterplot can be used to evaluate *the assumption of homoscedasticity and linearity*. Homoscedasticity refers to data that has the same variance, as opposed to heteroscedasticity where the variances are different. In other words, the assumption of homoscedasticity is confirmed when the variance of residuals over the range of values of an independent variable appear constant or when there is an equality of variance or residuals (Hair *et al.*, 2006:171). If the points on the scatterplot show a funnelling pattern, it is indicative of heteroscedasticity and indicates an increasing variance across the residuals. This funnelling pattern violates the assumption of



homoscedasticity (Field, 2005:203). Linearity means that the amount of change or rate of change between scores on two variables is constant for the entire range of scores for the variables, namely assumption of linearity and data analysis. The relationship between the independent variables and the dependent variable is, therefore, linear. A scatterplot showing a curvilinear trend indicates that there is a non-linear relationship between the dependent variable and the independent variables (Field, 2005:203; Pallant, 2005:151).

Figure 5.1 (on p. 83) illustrates that neither funnelling nor a curvature pattern can be seen, thereby indicating that in this model, the assumption of linearity and homoscedasticity has been met.

Figure 5.3 (on p. 86), shows the standardised residuals. A residual or error is the difference between the actual and the predicted values of the dependent variable (Hair *et al.*, 2006:5). The standardised residual is the residual divided by the standard deviation of the residual, that is, it is a residual standardised to have a standard deviation of 1. A sign of normality in the graph is represented by a distribution that has a bell-shaped curve (Field, 2005:204).

**Figure 5.3: A histogram of the standardised residuals of model 1**

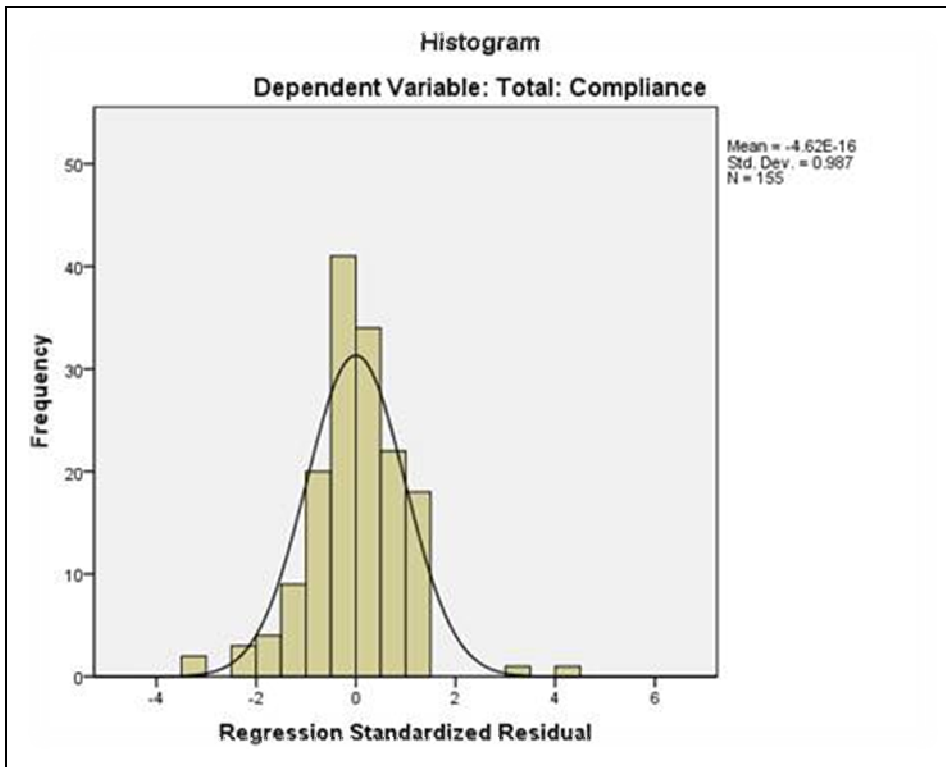


Figure 5.3 shows that the distribution of the standardised residuals is nearly bell-shaped. This indicates that the residuals have a distribution that is close to a normal distribution, which, in turn, suggests that the data meets the assumption of normally distributed errors. There does, however, seem to be a deficiency of residuals at 2, but symmetry is still reflected in the curve.

- **Interpreting the results of the regression analyses for model 1**

The findings reported on pp. 86 to 90 are based on the data with the four outliers still included. The statistical significance of the overall regression model is described below. This is followed by a discussion of the significance of the independent variables.

Determining the statistical significance of a model provides empirical data that helps in either rejecting or not rejecting a null hypothesis. If the null hypothesis is not rejected, then none of the independent variables in the model is linearly related to the dependent variable and the model is not considered to be a predictor of the dependent variable, because there

is insufficient evidence to conclude a significant relationship (Anderson, Sweeney & Williams, 2002:662). In order to determine a model's statistical significance and predictive power, the "R" value, the "F" value and the  $p$ -value have to be interpreted. These values are discussed in Table 5.17 below. The level of significance used in this study is 0.05.

**Table 5.17: A summary of regression model 1 with the outliers included (n = 155)**

Model	R	R square	Adjusted R square	F	$p$ -Value
1	0.801	0.642	0.633	67.324	0.000

The column labelled "R" in Table 5.17 above shows the value of the multiple correlation coefficient. It expresses the correlation between the observed values of the dependent variable and the values of the dependent variable predicted by the regression model (Field, 2005:187). If  $R = 1$ , then it shows that a model perfectly predicts the observed data. In other words, there is a perfect correlation between the dependent variable, which in model 1 is customer compliance, and the four independent variables, namely, extrinsic motivation, role clarity, intrinsic motivation and role ability. Therefore, the closer the value of R to 1, the larger the existing correlation becomes (Field, 2005:187). In this case  $R = 0.801$ , a large number close to the value 1, which indicates that model 1 predicted the observed data accurately. Therefore, model 1 is considered successful in predicting the dependent variable, namely customer compliance.

The " $R^2$ " is a measure of how much of the variability in the dependent variable is accounted for by the independent variables (Field, 2005:187). If expressed as a percentage by multiplying the number by 100, the  $R^2$  of 0.642 indicates that 64.2% of the variance in the dependent variable is accounted for by the independent variables. Consequently, this means that 35.8% of the variance in the dependent variable is accounted for by variables other than the four independent variables included in this model.

The Adjusted  $R^2$  examines how well the model generalises the data. The adjusted  $R^2$  should ideally be the same or very close to the value of  $R^2$ , thereby showing a very small drop in predictive power (Field, 2005:171). In this case, the difference between the two

values is very small ( $0.642 - 0.633 = 0.009$ , or 0.9%), which indicates that the cross-validity of this model is very good.

The F-ratio represents the ratio of the improvement in prediction that results from fitting the model relative to the inaccuracy that still exists in the model. The “goodness of fit” of the linear model is determined by comparing the regression line of the model with the mean line, which is a horizontal line. The residual sum of squares (SS(R)) also shows the F ratio, which in this case is high (67.324) and the  $p$ -value, which indicates that, as it is less than 0.001, there is a less than 0.1% chance of a F-ratio as high as this occurring by chance alone. Therefore, it can be concluded that regression model 1 gives a significantly better prediction result than a mean value model would have done. Thus, model 1 predicts customer compliance well and reaches a statistical significance of  $p = 0.000$  which means that  $p < 0.05$ .

Since the F ratio is high (67.324), the  $p$ -value = 0.000 and the R value is close to 1, it can be concluded that a statistically significant relationship exists between the dependent variable, customer compliance and the four independent variables. Thus, the null hypothesis is rejected.

Once the statistical significance of the regression model as a whole is established, the importance of the individual independent variables in predicting the dependent variable can be considered.

- **The statistical significance of the individual independent variables in model 1**

In order to determine the role that each independent variable plays in predicting customer compliance, the unstandardised and standardised regression coefficients of each independent variable are analysed.

Table 5.18 (on p. 89) lists the regression coefficients of each independent variable and the  $p$ -value associated with each coefficient.

**Table 5.18: The unstandardised and standardised regression coefficients of model 1 (n = 155)**

Independent Variable	Unstandardised coefficient	Standardised coefficient	p-Value
Role clarity	0.596	0.127	0.160
Role ability	0.093	0.152	0.089
Intrinsic motivation	0.514	0.536	0.000
Extrinsic motivation	0.071	0.089	0.144

Table 5.18 shows the values of the unstandardised regression coefficients for each of the independent variables. These values have not yet been standardised, meaning that they have not been converted to the same scale, and hence, cannot be compared with one another to reveal which independent variable contributed most to the prediction of customer compliance (Pallant, 2005:153). However, the unstandardised coefficient values can reveal whether the independent variables have a positive or negative relationship with the dependent variable (Field, 2005:192). In addition, the estimated unstandardised coefficients reflect the magnitude of change in the dependent variable for a one-unit change in the independent variable when the other independent variables are held constant (Hair *et al.*, 2006:174). These coefficients are used to calculate the estimated regression calculation. The unstandardised regression coefficient of each of the independent variables is shown to be positive in this model. This indicates that a positive relationship exists between each of the independent variables and customer compliance as long as the effects of the other independent variables are held constant.

The standardised coefficient can now be used to compare the contribution of each of the independent variables in the prediction of customer compliance. The largest beta value indicates the independent variable that makes the strongest unique contribution to customer compliance (Pallant, 2005:153). In addition, the *p*-value indicates whether an independent variable makes a statistically significant contribution or not (Pallant, 2005:153). A value of less than 0.05 indicates statistical significance.

Based on the information in Table 5.18, it can be concluded that intrinsic motivation is a statistically significant predictor of customer compliance (as  $p < 0.001$ ). In addition, it is the most important independent variable in this model (standardised coefficient = 0.536). Role ability, role clarity and extrinsic motivation do not have large enough coefficients, neither

are their  $p$ -values  $< 0.05$ . Hence, we can conclude that, based on the size of the study sample, these independent variables do not show statistically significant predictive relationships with customer compliance.

The interpretation of these findings, in terms of each particular hypothesis for this model, is as follows:

H<sub>1</sub>: There is a positive relationship between customers' role clarity and their compliance with the service providers' directives. According to the  $p$ -value in Table 5.18 ( $p = 0.160$ ), role clarity is not a statistically significant predictor of customer compliance. Therefore, H<sub>1</sub> is not accepted.

H<sub>2</sub>: There is a positive relationship between the role ability of customers and their compliance with the service providers' directives. Role ability has a  $p$ -value of 0.089, which is larger than 0.05. Therefore, it is not a statistically significant predictor of customer compliance in this model. Therefore, H<sub>2</sub> is not accepted.

H<sub>3</sub>: There is a positive relationship between the intrinsic motivation of customers and their compliance with the directives of the service provider. The  $p$ -value (0.000) associated with intrinsic motivation indicates that it is a statistically significant predictor of customer compliance. Therefore, H<sub>3</sub> is accepted.

H<sub>4</sub>: There is a positive relationship between the extrinsic motivation of customers and their compliance with the directives of the service provider. Extrinsic motivation has a  $p$ -value of 0.144, which is greater than the significance level of 0.05. Therefore, extrinsic motivation is not a statistically significant predictor of customer compliance. Therefore, H<sub>4</sub> is not accepted.

As a result, in model 1, only H<sub>3</sub> is accepted.

Model 1 clearly indicates four outliers. As a result, a regression analysis was run excluding these four cases to determine whether different results would be achieved after the

removal of these outliers. The results of this analysis, with the outliers removed, are discussed below in a more concise format.

### **5.4.3 Regression analysis of model 1 with outliers removed**

Figure 5.1 (on p. 83) identified four cases with large standardised residuals. As mentioned under the sub-section "Identifying outliers" (on p. 81), outliers are cases that differ substantially from the main trend in the data and, as such, can have a dramatic effect on the regression model. If an outlier is present, the regression gradient of the model is reduced and the intercept increases, which then affects the fit to the data (Field, 2005:199). Predictors that have standardised residuals with an absolute value greater than 3 can be detected by outliers (Field, 2005:199; Pallant, 2005:151). As is shown in Table 5.16 (on p. 82), cases 22 and 69 both have standardised residuals greater than 3.29 and cases 20 and 57 have residuals with an absolute value greater than 3. In order to investigate these outliers further and to determine their influence on the model, the following regression analysis was done excluding the four outliers. This can help determine whether the regression model is stable across the samples or if it is biased by these four cases (Field, 2005:199).

Model 1, with the outliers removed, explores the relationship between the dependent variable, customer compliance and the four independent variables, namely intrinsic motivation, extrinsic motivation, role ability and role clarity. This analysis examines the assumption diagnostics and aims at determining whether this model is a better fit of the observed data than model 1.

- **Testing for the assumptions of multicollinearity, normality, linearity, homoscedasticity and outliers**

Table 5.19 (on p. 92) shows the VIF and tolerance values of each independent variable in this model when the outliers are removed from the calculation.

**Table 5.19: The VIF and tolerance values of model 1 with the outliers removed**

Independent variable	Tolerance value	VIF value	Evidence of multicollinearity
Role clarity	0.276	3.627	Tolerance > 0.1, VIF < 10, therefore no evidence of multicollinearity
Role ability	0.302	3.311	Tolerance > 0.1, VIF < 10, therefore no evidence of multicollinearity
Intrinsic motivation	0.409	2.442	Tolerance > 0.1, VIF < 10, therefore no evidence of multicollinearity
Extrinsic motivation	0.664	1.506	Tolerance > 0.1, VIF < 10, therefore no evidence of multicollinearity

As can be seen from Table 5.19, the VIF values of each independent variable remain well below 10 and all are closer to the value 1, thereby indicating that collinearity is not a problem in this model. Additionally, the tolerance values for all the independent variables remain above 0.1 and 0.2, which reinforces the fact that there is not a potential problem with multicollinearity in this model.

Figure 5.4 (on p. 93) shows a histogram of the distribution of the standardised residuals and, once again, a curve very similar to a bell-shape is observed. In this model, there are residuals present at 2. The model, therefore, also shows that the data has met the assumption of normally distributed errors based on the bell-shape curve.



**Figure 5.4: A histogram of the standardised residuals of model 1 with the outliers removed**

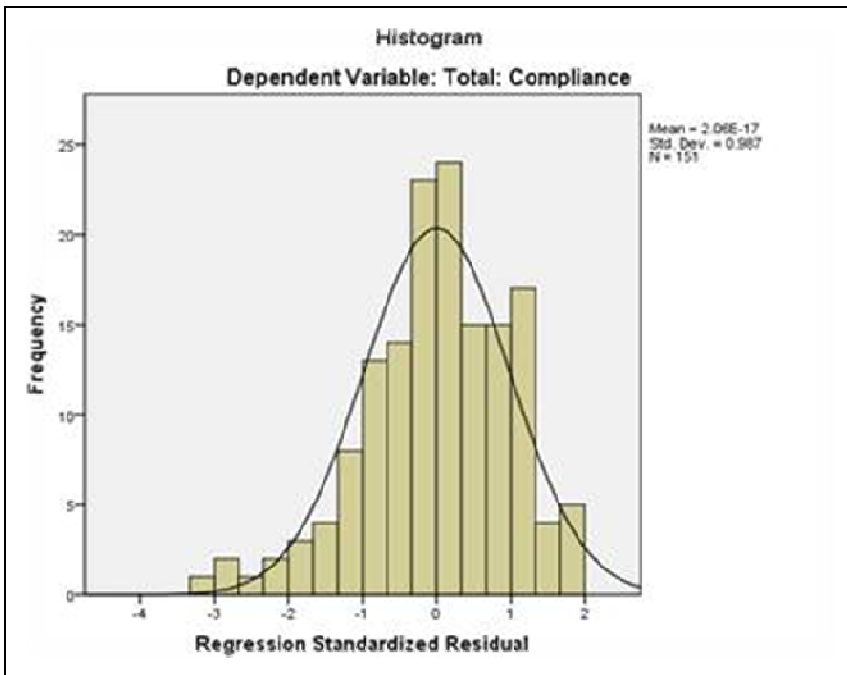


Figure 5.5 below displays the normal probability plot relative to this model. It illustrates that the observed residual points deviate less from the solid line than the previous model, thereby indicating that this model provides a closer to normal distribution of errors.

**Figure 5.5: A normal probability plot of the standardised residuals of model 1 with the outliers removed**

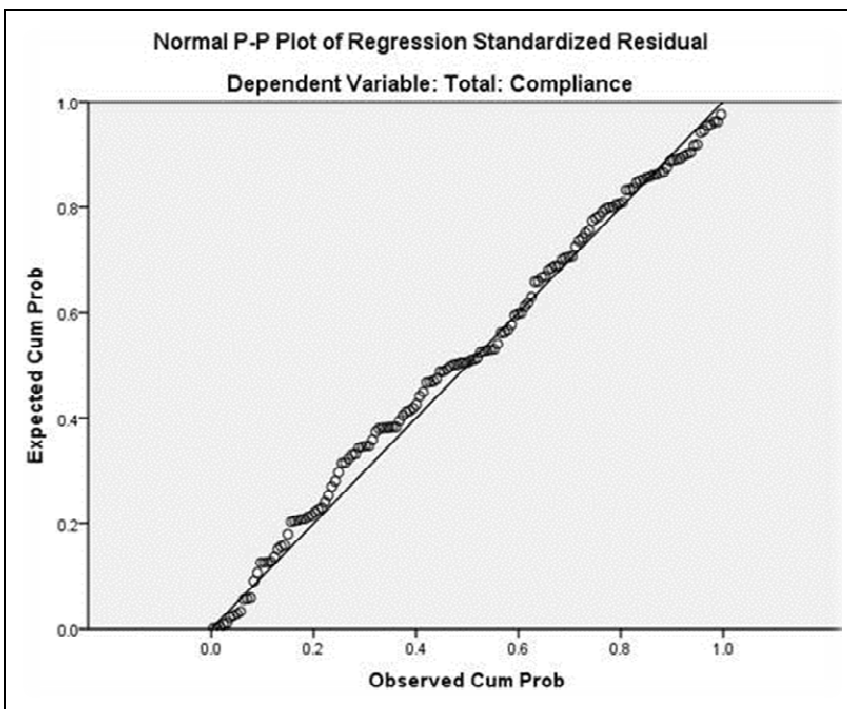


Figure 5.6 below shows a scatterplot with a random distribution of points around zero (0). This model, as in model 1, shows no funnelling or curvature patterns. It can, therefore, be concluded that the assumptions of linearity and homoscedasticity have been met. In this model, not one case can be seen lying below -3 which is indicative of an outlier. Four cases below -2 can be observed and viewed as extreme cases.

**Figure 5.6: A scatterplot of the standardised residuals of model 1 with the outliers removed**

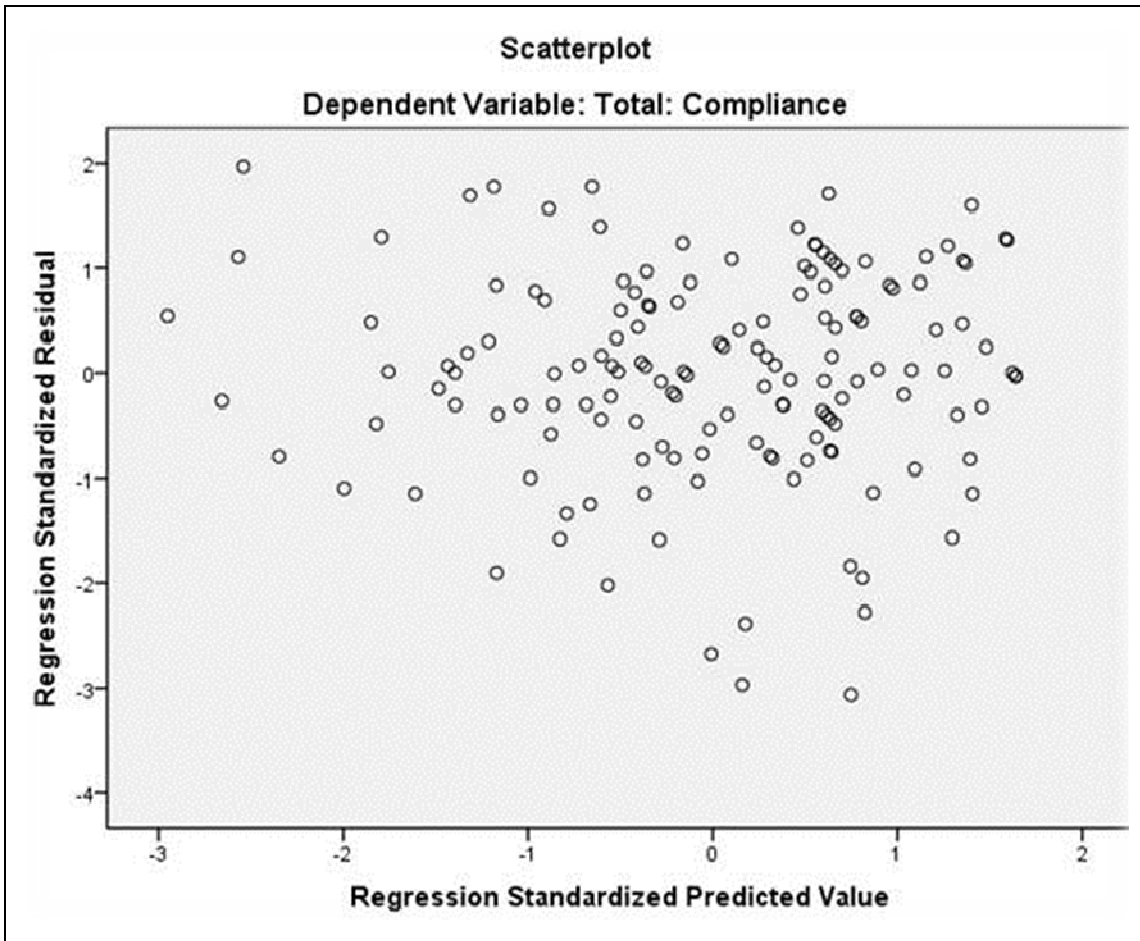


Table 5.20 (on p. 95) shows that after the four outliers are removed from the calculation in this model, only one extreme case is isolated with a standard residual of -3.063 as opposed to model 1, which showed four cases that could have potentially biased the model.

**Table 5.20: Cases identified as outliers in model one with the initial outliers removed**

Case number	Standardised residual
116	-3.063

This extreme case was retained in order to prevent over-fitting of the model to the data.

- **Interpreting the results of the regression analysis for model 1 with the outliers removed**

Table 5.21 summarises the results of model 1 with the outliers removed from the calculation.

**Table 5.21: A summary of model 1 with the outliers removed (n = 155)**

Model	R	R square	Adjusted R square	F	p-value
Model 1 with outliers removed	0.867	0.751	0.745	110.336	0.000

With the four outliers removed, model 1 shows a higher R-value (0.867 compared to 0.801), which indicates that the model predicts the observed data better than when the four outliers are included. The  $R^2$  also shows that 75% of the variance in the dependent variable is now accounted for by the independent variables when compared to the previous 64%. The Adjusted  $R^2$  value in this model remains close to the  $R^2$  value ( $0.751 - 0.745 = 0.006$ ) indicating that the cross-validity of this model is good. The F value is higher in this model compared to model 1 where the outliers are included (110.336 compared to 67.324). This indicates that the ratio of the improvement in prediction that results from fitting the model, relative to the inaccuracy that still exists in the model, is now better. This model continues to show statistical significance ( $p = 0.000$ ) and thus predicts customer compliance significantly well.

- **The significance of individual independent variables**

Table 5.22 below lists the unstandardised and standardised regression coefficients of the independent variables for model 1 in which the outliers were removed, as well as their associated  $p$ -values.

**Table 5.22: Unstandardised and standardised coefficients for model 1 with outliers removed (n =155)**

<b>Independent Variable</b>	<b>Unstandardised coefficient</b>	<b>Standardised coefficient</b>	<b><math>p</math>-Value</b>
Role clarity	0.068	0.094	0.233
Role ability	0.182	0.209	0.006
Intrinsic motivation	0.582	0.601	0.000
Extrinsic motivation	0.052	0.066	0.196

The results reported in Table 5.22 confirm that intrinsic motivation is a statistically significant positive predictor of customer compliance ( $p = 0.000$ ).

In this model, in which the outliers have been removed, role ability also achieves statistical significance ( $p = 0.006$ ) and thus serves as a statistically significant positive predictor of customer compliance.

Therefore, each hypothesis for the independent variables in this model can be interpreted as follows:

H<sub>1</sub>: There is a positive relationship between customers' role clarity and their compliance with the service providers' directives. Role clarity has a  $p$ -value of 0.223, which is larger than 0.05. Role clarity is still not a statistically significant predictor of customer compliance. H<sub>1</sub> is, therefore, not accepted.

H<sub>2</sub>: There is a positive relationship between the role ability of customers and their compliance with the service providers' directives. Role ability achieved a  $p$ -value of 0.006, which is less than 0.05. It is, therefore, a statistically significant predictor of customer compliance in this model. H<sub>2</sub> is, therefore, accepted.

H<sub>3</sub>: There is a positive relationship between the intrinsic motivation of customers and their compliance with the directives of the service provider. The p-value of 0.000 indicates an actual p-value < 0.001. This indicates that intrinsic motivation is a statistically significant predictor of customer compliance. H<sub>3</sub> is, therefore, accepted.

H<sub>4</sub>: There is a positive relationship between the extrinsic motivation of customers and their compliance with the directives of the service provider. Extrinsic motivation obtained a p-value of 0.196, which is larger than the significance level of 0.05, thus extrinsic motivation is still not a statistically significant predictor of customer compliance. H<sub>4</sub> is, therefore, not accepted.

- **Conclusion regarding Model 1 with the outliers removed**

Model 1 with the four outliers removed is a better predictor of the observed data when compared to the original model in which the four outliers were included. Additionally, greater variance is accounted for by the independent variables in this model and customer compliance is statistically well predicted.

This model identified intrinsic motivation as the most important predictor of customer compliance. Role ability is also shown to be statistically significant and, hence, is a positive predictor of customer compliance. This model still satisfies the assumption of multicollinearity. The revised version of model 1 only includes one potential outlier case (116), as compared to four in the original version, and the standardised residual of this case, although greater than -2.5, is still less than -3.29, suggesting that it does not pose an unacceptable threat. This model meets the assumption of normally distributed errors and shows a closer to normal distribution than the original version of model 1. This model meets the assumptions of linearity and homoscedasticity.

This revised model predicts customer compliance better than the original model in which the four outliers were included.

From this model, it can be deduced that the role ability and intrinsic motivation of customers improves their level of compliance with the directives from a service provider.

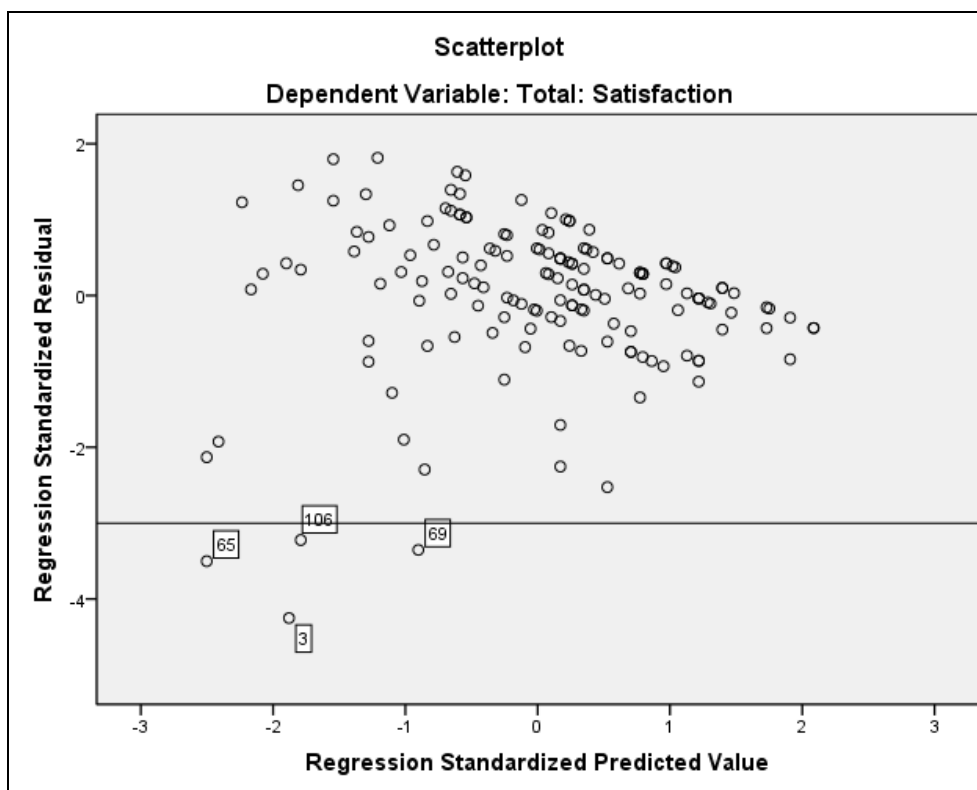
It can also be concluded that customer role clarity and extrinsic motivation do not have a statistically significant positive relationship with compliance to the directives from service providers.

### 5.4.4 Regression analysis of model 2

The format of the regression analysis of model 2 is presented more concisely than in Model 1. Model 2 examines the relationship between two independent variables, namely, customer goal attainment and customer compliance, and the dependent variable customer satisfaction. Assumptions have been examined and the significance of the model determined by the regression analysis.

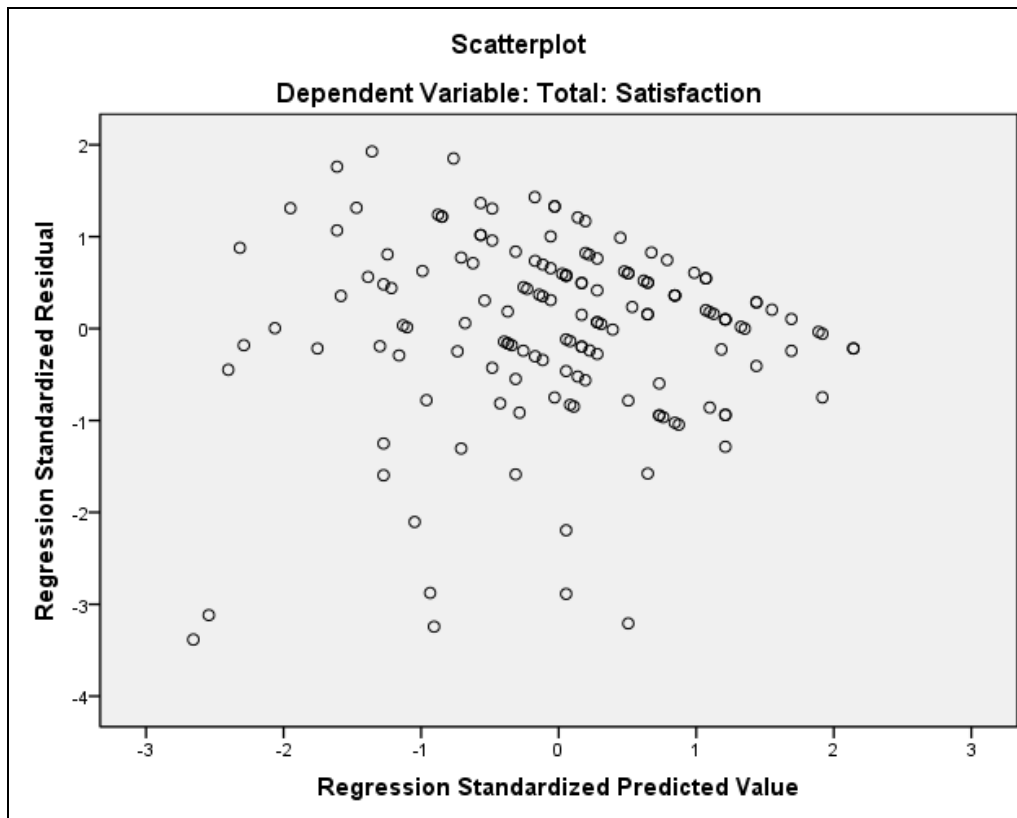
The results emerging from the evaluation of assumptions show three cases to be definite outliers with standard residuals smaller than -3.3. The scatterplot below shows definite funnelling indicating the violation of the assumption of homoscedasticity.

**Figure 5.7: A scatterplot of the standardised residuals of model 2**



The regression was repeated without these four cases in order to reduce the number of outliers and improve the normality and homoscedasticity of the residuals. However, even when these four cases were removed from the calculation, the regression analysis showed another four cases to be extreme, all with residuals smaller than -3, and identified one other case as a definite outlier (-3.384).

**Figure 5.8: A scatterplot of model 2 with the outliers removed**



This model identified at least eight cases in the sample with standardised residuals that have an absolute value of more than 3. In other words, more than 1% of this sample have standardised residuals with absolute values of more than 2.58. This indicates that the level of error within this model is unacceptable (Field, 2005:164). Additionally, the scatterplot continues to show funnelling and, therefore, violates the assumption of homoscedasticity.

Model 2, with the four outliers removed, meets the assumption of multicollinearity (tolerance values for both customer goal attainment and customer compliance = 0.783 and the VIF values for both = 1.277).

Table 5.23 below summarises the overall results of model 2.

**Table 5.23: A summary of model 2**

Model	R	R square	Adjusted R square	F	<i>p</i> -value
2	0.582	0.339	0.330	37.938	0.000

The adjusted model 2, with the initial outliers removed from the calculation, shows a relatively poor fit of the sample data ( $R = 0.582$ ) and indicates that only 34% of the variance in the dependent variable can be accounted for by customer goal attainment and customer compliance. Although the model displays statistical significance ( $p < 0.001$ ), it is a relatively poor predictor of customer satisfaction because it fails to explain 66% of the variance in customer satisfaction. It is important to note that many other variables may predict the dependent variable.

The significance of the individual independent variables in predicting the dependent variable is indicated in Table 5.24 below.

**Table 5.24: The unstandardised and standardised regression coefficients of model 2**

Independent variable	Unstandardised coefficient	Standardised coefficient	<i>p</i> -value
Customer goal attainment	0.104	0.242	0.002
Customer compliance	0.278	0.428	0.000

Table 5.24 demonstrates that both customer goal attainment and customer compliance are statistically significant predictors of customer satisfaction with  $p = 0.002$  and  $p < 0.001$  respectively. Both these  $p$ -values are smaller than the level of significance 0.05. Between the two, customer compliance is the more important predictor of customer satisfaction.

Hypothesis significance is shown below as follows:

H<sub>6</sub>: There is a positive relationship between customer goal attainment and customer satisfaction. Customer goal attainment has a  $p$ -value of 0.002, which is less than the



significance level of this study (0.05) and thus, customer goal attainment is a significant predictor of customer satisfaction. H<sub>6</sub>: is, therefore, accepted.

H<sub>7</sub>: There is a positive relationship between customer compliance with the directives of the service provider and customer satisfaction. Customer compliance has a *p*-value of 0.000, which is greater than the significance level of 0.05. Therefore, it is a significant positive predictor of customer satisfaction. H<sub>7</sub>: is, therefore, accepted.

## 5.5 THE TESTING OF H<sub>5</sub>

H<sub>5</sub>: There is a positive relationship between customer compliance with the directives of the service provider and customer goal attainment. The correlation between customer compliance and customer goal attainment is  $r=0.487$ ,  $p>0.001$ . There is a statistically significant positive relationship between customer compliance and goal attainment. The two constructs have an  $r^2$  (shared variance) of  $0.487^2 * 100 = 23.7\%$ . The results for H<sub>5</sub> is contained in Table 5.13 (on p.76). H<sub>5</sub>: is, therefore, accepted.

The next chapter will discuss the implications of the current study's findings and compare these findings with those of previous studies.

## **CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS OF THE STUDY**

### **6.1 INTRODUCTION**

This final chapter contains seven key sections and commences by restating the main purpose of the current study, followed by the importance of the study. Section three provides a summary of the findings of the current study. Thereafter, the empirical findings of the study are related to the findings of previous research. The chapter also discusses the managerial implications of the findings. Thereafter, the limitations of the study are highlighted. The chapter concludes with suggestions for future research.

### **6.2 THE MAIN PURPOSE OF THE STUDY**

This study had two objectives. The first objective was to investigate the relationship between customer compliance and the four potential predictors thereof, namely role clarity, role ability, intrinsic motivation and extrinsic motivation. The second objective was to investigate the relationship between customer satisfaction and two of its predictors, goal attainment and customer compliance. The key focus of the study was to investigate the extent to which specific independent variables predict specific dependant variables. In lifestyle management settings, it is expected that customers should continue to execute the required eating and exercise habits after they leave the lifestyle management programme. Therefore, it is crucial that the service provider understand the various factors that influence customers so that they continue with the prescribed activities after they complete the lifestyle management programme.

### 6.3 THE IMPORTANCE OF THE STUDY

Empirically, this study is important for three reasons. Firstly, it contributes to the limited body of empirical knowledge about the role that service providers play in ensuring customer compliance in lifestyle management programmes in a South African context.

Secondly, it contributes to efforts made to assess the relationships that exist between the four customer attributes of customer role clarity, customer ability, customer intrinsic motivation and customer extrinsic motivation and the three customer outcomes, namely customer compliance, customer goal attainment and customer satisfaction.

Thirdly, it is vital for the service provider to understand which construct has the most influence on customer compliance and, therefore, to ensure that the lifestyle management programme is specifically designed according to the needs of customers. Customer compliance has become a pivotal point in the marketing strategies of lifestyle management programmes. Dellande (1999:41) indicates that the higher customer compliance is with service provider directives, the higher the level of customer satisfaction.

There are numerous lifestyle management programmes available on the market today. Many of these programmes require the use of a specific nutritional product range as a prerequisite for entering the programme. The investigation of customer compliance in lifestyle management programmes is very important, because many of the major societal problems of today, such as high fat diets, poor physical fitness and smoking, exist because of the poor health choices people make. Petty and Cacioppo (1996:4) indicate that most of the leading causes of death in the USA can be reduced substantially if people at risk change five behaviours, namely, non-compliance with recommendations regarding healthy behaviour, a poor diet, lack of exercise, smoking, alcohol and drug abuse.

Many of the societal ills associated with the five aforementioned behaviours and the dearth of knowledge about the subject matter constitute the main reasons for this study. The solution to the problem of maladaptive consumer behaviour in lifestyle management programmes does not lie in scientific breakthroughs in medicine, but in finding ways to gain consumer compliance with the directives associated with these programmes. As

Jayanti and Burns (1998:6) state: “The marketing challenge is considerable in that unhealthy habits and routines are firmly entrenched in consumers.”

The purpose of the study was to provide a conceptualisation of and an empirical investigation into the service delivery process for health care services where customer/patient compliance, external to the lifestyle management programme is a necessary condition for a successful health outcome. In many lifestyle management programmes, it is expected that patients continue to engage in certain behaviours for their long-term health once they leave the programme (Bowen, 1986; Bowman, Heilman & Seetharaman, 2002). Therefore, it is crucial that the providers of lifestyle management programmes understand the factors that influence customers to continue practising the prescribed behaviours.

## **6.4 A SUMMARY OF THE FINDINGS OF THE CURRENT STUDY**

This section summarises the findings of the current study with reference to the hypotheses that were tested. These findings are, subsequently related to the literature in the next section.

This study tested seven hypotheses, using two multiple regression models and a Pearson’s correlation for H<sub>5</sub>. The first four hypotheses (H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub>, H<sub>4</sub>) were tested by means of multiple regression model 1, while hypothesis H<sub>5</sub> was tested using a Pearson correlation coefficient. H<sub>6</sub> and H<sub>7</sub> were tested by means of multiple regression model 2. The results of these tests are summarised below.

The results of the first four hypotheses tested through regression model 1 are summarised in Table 6.1 (on p. 105).

### 6.4.1 The results of regression model 1

**Table 6.1: The results of the four hypotheses tested through regression model 1**

<b>Wording of the alternative hypothesis</b>	<b>Summary of result</b>
H <sub>1</sub> : There is a positive relationship between customers' role clarity and their compliance with the service providers' directives	H <sub>1</sub> was not accepted
H <sub>2</sub> : There is a positive relationship between the role ability of customers and their compliance with the service providers' directives	H <sub>2</sub> was accepted
H <sub>3</sub> : There is a positive relationship between the intrinsic motivation of customers and their compliance with the directives of the service provider	H <sub>3</sub> was accepted
H <sub>4</sub> : There is a positive relationship between the extrinsic motivation of customers and their compliance with the directives of the service provider	H <sub>4</sub> was not accepted

The results of regression model 1 indicate that two of the four independent variables in model 1, namely, "customer role ability" and "intrinsic motivation", are statistically significant positive predictors of the dependent variable "customer compliance". The other two independent variables, namely "customer role clarity" and "extrinsic motivation", are not statistically significant predictors of "customer compliance". The results presented in Table 5.22 (on p. 96) in the model summary indicate that the coefficient of determination ( $R^2$ ) was 0.751. This means that 75% of the variance in the dependent variable, "customer compliance", is explained by the variance in the four independent variables: "role clarity", "role ability", "extrinsic motivation" and "intrinsic motivation".

The results of the aforementioned four hypotheses are in accordance with the findings of Dellande (1999:90), which indicated that customer motivation is the most important predictor of customer compliance. This study differs from that of Dellande (1999:90) as she did not split the motivation construct into two components, namely, intrinsic and extrinsic motivation as was done in this study. While all four of the bivariate relationships between customer compliance and its antecedents - role ability, role clarity, internal motivation and external motivation – are statistically significant, the strongest correlation is between customer compliance and intrinsic motivation. This suggests that while customers must be able to carry out their roles and must be clear about their roles, neither will matter if the customer is not sufficiently motivated to perform as expected.

## 6.4.2 The results of regression model 2

The second regression model tested the relationships between customer satisfaction and two of its predictors, namely, customer compliance and customer goal attainment. The results of the two hypotheses tested through regression model 2 are summarised in Table 6.2 below.

**Table 6.2: The results of the two hypotheses tested through regression model 2**

Wording of the alternative hypothesis	Summary of result
H <sub>6</sub> : There is a positive relationship between customer goal attainment and customer satisfaction	H <sub>6</sub> was accepted.
H <sub>7</sub> : There is a positive relationship between customer compliance with the directives of the service provider and customer satisfaction	H <sub>7</sub> was accepted.

Table 6.2 indicates that both customer goal attainment and customer compliance are statistically significant predictors of customer satisfaction. Between the two, customer compliance is depicted as the more important predictor of customer satisfaction in Tables 5.13 (on p. 76).

## 6.4.3 The testing of H<sub>5</sub>

The relationship between customer compliance and customer goal attainment (H<sub>5</sub>) was tested through a Pearson correlation. The Pearson correlation in Table 5.13 (on p. 76) for H<sub>5</sub> indicates that there is a positive relationship between customer compliance with the directives of the service provider and customer goal attainment. The correlation between customer compliance and customer goal attainment is  $r=0.487$ ,  $p>0.001$ . There is a statistically significant positive relationship between customer compliance and goal attainment. The two constructs have an  $r^2$  (shared variance) of  $0.487^2 \times 100 = 23.7\%$ . The results presented in Table 5.23 (on p. 100) in the model summary indicate that the coefficient of determination ( $R^2$ ) was 0.339. This means that 39% of the variance in the dependent variable, “customer satisfaction”, is explained by the variance in the two independent variables: “customer compliance” and “customer goal attainment”.

## 6.5 RELATING THE FINDINGS TO THE LITERATURE

The following section compares the predictors included in regression models 1 and 2, with the same predictors used in previous studies.

### 6.5.1 Ability, role clarity and motivation

Bowen (1986:375) argued that customer participation in the service process is facilitated when customers have the ability to carry out their role, are clear about their role and are motivated to perform as expected. Bowen (1986:375) indicates that customer participation occurs when the customer is inside the service organisation. Dellande (1999:60) and the current study examined the three attributes, ability, role clarity and motivation, in the context of compliance rather than participation. Compliance must occur when the customer is away from the service organisation. Because no factor analysis were conducted in the current study, it is not possible to make statements about the relative importance of the indicators in the current study. However, the factor analysis results of Dellande indicate: Of the items measuring ability used by Dellande (1999:60) the most important were the skills of customers, which helped them control their environment and the ability to keep a diary of their daily food and beverage intake. The current study correlates with the findings of Dellande (1999:60). Of the items measuring ability used by Dellande (1999:60), were customer clarity about determining daily levels of physical activity, daily intake of carbohydrates and the application of skills to control the environment.

Consistently important across all three attributes was the ability to understand and be motivated to apply the skills that were taught to help patients control their environment. The findings of this study indicate that the greater customer ability, role clarity and motivation, the greater customer compliance is when away from the service provider. While all three relationships, namely, ability and compliance, role clarity and compliance, motivation and compliance are significant, the strongest relationship is between motivation and compliance. This suggests that while customers must be able to carry out their roles

and be clear about their roles, neither will matter if the customer is not sufficiently motivated to perform as expected.

### **6.5.2 Customer compliance**

Compliance is the primary dependent variable in the study. It contains four antecedents and three consequences. Dellande (1999:62) contained an eight-item scale pertaining to the visits of customers to the service provider, which was not included in this study. The current study consists of a six-item scale.

### **6.5.3 Goal attainment**

The relationship tested in Dellande (1999:63) as well as the current study hypothesised that the greater customer compliance is with service provider directives, the greater the support for customer goal attainment. This was the second strongest relationship recorded in the study by Dellande (1999:63) and the third strongest found in the current study.

### **6.5.4 Customer satisfaction**

Customer compliance is depicted as the most important predictor of customer satisfaction over and above goal attainment. Support for the relationship between goal attainment and satisfaction was as predicted. It was also the strongest in the model for both Dellande (1999:64) and the current study.

## **6.6 MANAGERIAL IMPLICATIONS OF THE STUDY**

This section focuses on the benefits that managers can gain through an evaluation of the empirical results of this study. To date, little research has been conducted into an understanding of the role customers play once they leave or are away from the service provider. This is especially true of compliance dependant services. Unless the customers carry out their role after leaving the service provider, service production is not possible.



This is also the case in lifestyle management programmes where large amounts of money are spent on creating a demand for products that are linked to a particular lifestyle programme. Should the customer not be clear, able or motivated to complete the programme, this may lead to customer dissatisfaction with the outcome of the lifestyle management programme. In addition, the services literature has focused, for the most part, on the participatory role of customers in service delivery when the customer is within the service organisation and less on customer compliance when the customer is away from the service organisation.

The provider of a compliance dependant service, who does not understand the factors that impact customer compliance with the essential peripheral service roles, carries the risk of displeased customers who feel that their needs have not been met. This, in turn, may result in a possible loss of income. The average duration of a lifestyle management programme is 12 weeks (3 months). In comparison with the average service offered, this is a long time. As the duration of a lifestyle management programme increases, the likelihood of compliance decreases making it imperative for managers and providers of compliance dependant services to recognise those factors that impact compliance once the customer is away from the service provider. Other managerial challenges exist in relation to customer attributes of ability, role clarity and motivation. Customers who are unable to execute their responsibilities due to some restraint, for example, being unable to participate in the required exercise regime make it practically impossible for compliance to occur. Although the customer may have clarity of the required role to be performed, the lack of ability to perform the role makes compliance unachievable. In such instances, selecting the right customer becomes imperative. Similarly, screening customers for intrinsic and extrinsic motivation will increase the likelihood of success for them and for the organisation.

Firms that care about their longevity and customer satisfaction must hire or provide managers with the expertise necessary for successful delivery of the compliance dependant service.

## 6.7 LIMITATIONS OF THE STUDY

The main limitations of the study were as follows:

- The study was limited to a relatively small sample of participants in three specific lifestyle management programmes. This may jeopardise the generalisability of the findings. A total of 155 participants completed the survey and a total of 369 questionnaires were distributed. The response rate to the survey was low (42%) and the results may, therefore, be subject to non-response bias.
- The study was limited to a specific type of compliance dependent service, namely lifestyle management programmes that comprised of a combination of healthy eating, exercise and, in some instances, utilising a certain nutritional supplement product.
- Factor analysis was not used to confirm the dimensionality of the scales used in the study. The dimensionality of the scales was confirmed in previous studies because Dellande (1999:41) conducted a factor analysis and it was assumed that the scales would have the same factor structure in this study.
- Response categories 3, 4 and 5 in question 3 in the questionnaire contained in Appendix A are not mutually exclusive, they overlap.

The data collection was conducted through an online survey with three separate companies. The online survey was the only available option due to the customers being geographically scattered across the country. The response rate for online surveys is generally low so letters of recommendation from the senior management of these three companies were obtained in order to enhance the response rates from the various companies. It should be noted that customers receive large amounts of “spam” e-mail and, in some instances; certain customers questioned the authenticity of the questionnaire.

## 6.8 RECOMMENDATIONS FOR FUTURE RESEARCH

The most important construct of the study is customer motivation, which was highlighted in this chapter as well as the study by Dellande (1999). If the customer is not motivated, compliance levels will be insufficient to generate high levels of customer satisfaction. Customer compliance was divided between extrinsic motivation and intrinsic motivation with intrinsic motivation proving to have a stronger correlation with customer compliance than extrinsic motivation. Therefore, it is a consideration as to whether extrinsic motivation should be included in future studies as the results were very low. Due to the high level of customer involvement in a compliance dependant service, carrying out in-depth interviews with customers should be investigated in order to provide a deeper understanding of the needs of the customer. One of the three companies in this study indicated that it was a prerequisite for the customers to visit a fitness facility once every two weeks for “check-ups” to ensure that they are on the right track. The three provider characteristics included the study by Dellande *et al.*, (2004:91), namely, provider expertise, demographic homophily and attitudinal homophily can be included in future compliance dependant studies. Future studies should investigate the relative importance of the predictors of customer compliance and satisfaction across different forms of compliance dependent services such as stop smoking, retirement planning, tax consulting and debt management programmes.

Table 5.12 (on p. 75) indicate the relationships between the four antecedents of customer compliance (role clarity, ability, intrinsic motivation and extrinsic motivation) with the strongest relationship between the role clarity and role ability construct (0.820). Future studies should investigate the interrelationships between these four antecedents of customer compliance.

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# **APPENDIX A**

## **- Lifestyle Management Questionnaire -**



## **Informed consent for participation in an academic research study**

### **Dept. of Marketing Management**

#### **The determinants of customer co-production and satisfaction in a compliance dependant service**

Research conducted by:

Mr. E.E. Heath (20277009)

Cell: 082 927 5884

Dear Respondent

You are invited to participate in an academic research study conducted by Eric Ernie Heath, a Masters student from the Department of Marketing Management at the University of Pretoria.

The purpose of the study is to investigate the relationship between customer compliance and its three antecedents, namely role clarity, ability and customer motivation. In addition, the study will also investigate the relationship between customer compliance, customer goal attainment and customer satisfaction in the context of a specific lifestyle management programme.

Please note the following:

- This study involves an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 5 minutes of your time
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my study leader, Mr. T. Kotzé, contact number: 012-420 4844, e-mail: tkotze@up.ac.za if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis.

---

**Respondent's signature**

---

**Date**

Respondent number

For office use only V1

1	2	3	4

**- Determinants of Customer Co-Production and Satisfaction -**

Dear respondent

Thank you for your willingness to complete this survey. The purpose of the survey is to determine your level of compliance and satisfaction in a lifestyle management programme. The survey should not take more than 10 minutes to complete. This is an anonymous and confidential survey. You cannot be identified and the answers you provide will be used for research purposes only.

**Please answer all the questions.** There are no right or wrong answers. We are interested in understanding your satisfaction and compliance levels with the lifestyle management programme. The first section contains questions regarding age and gender followed by the compliance and satisfaction levels.

Q1 Customers have different thoughts and perceptions regarding dieting and nutrition in a lifestyle management programme. Please circle the number that best reflects your views on the statements below. Please read each statement **carefully** and then **circle** an appropriate number to indicate the extent to which you agree or disagree with each statement. Choose 1 if you 'strongly disagree' with the statement, 2 if you 'disagree' with the statement, 3 if you 'neither agree nor disagree' with the statement, 4 if you 'agree' with the statement, or 5 if you 'strongly agree' with the statement.

	Disagree Strongly	Disagree	Disagree Somewhat	Neither disagree nor agree	Agree Somewhat	Agree	Agree Strongly
1. Exercise and nutrition are extremely important to me.	1	2	3	4	5	6	7
2. Dieting alone is sufficient to manage weight.	1	2	3	4	5	6	7
3. It is necessary to include exercising along with dieting to manage weight.	1	2	3	4	5	6	7
4. My choice to have joined the lifestyle management programme was a wise decision.	1	2	3	4	5	6	7
5. I followed the all the guidelines exactly the way that the lifestyle programme suggested.	1	2	3	4	5	6	7
6. I am <b>not</b> able to determine how to follow the nutritional guidelines outlined in the lifestyle management programme.	1	2	3	4	5	6	7
7. I feel motivated to follow the nutritional guidelines outlined in the lifestyle management programme.	1	2	3	4	5	6	7
8. I visit the contact sessions as I have been instructed to do.	1	2	3	4	5	6	7

	Disagree Strongly	Disagree	Disagree Somewhat	Neither disagree nor agree	Agree Somewhat	Agree	Agree Strongly
9. I feel motivated to determine my daily level of physical activity.	1	2	3	4	5	6	7
10. I feel motivated to calculate my daily intake of carbohydrates.	1	2	3	4	5	6	7
11. I am satisfied with the design of the lifestyle management programme.	1	2	3	4	5	6	7
12. I am able to determine the number of food portions to consume throughout the day.	1	2	3	4	5	6	7
13. The lifestyle management programme has <b>not</b> made it clear how to keep a diary of my daily food/beverage intake.	1	2	3	4	5	6	7
14. I do <b>not</b> feel motivated to follow the nutritional guidelines that are suggested by the lifestyle management programme.	1	2	3	4	5	6	7
15. I apply the skills taught to me by the programme to help control my environment.	1	2	3	4	5	6	7
16. I am satisfied with my decision to join the lifestyle management programme.	1	2	3	4	5	6	7
17. I am satisfied with the results that I have achieved with the lifestyle management programme.	1	2	3	4	5	6	7
18. I do <b>not</b> follow all the guidelines that the programme suggests.	1	2	3	4	5	6	7
19. I am able to determine my daily level of physical activity.	1	2	3	4	5	6	7
20. If I had to choose all over again, I would join the lifestyle management programme again.	1	2	3	4	5	6	7
21. I follow the nutritional guidelines in the programme as I have been instructed to do.	1	2	3	4	5	6	7
22. I do <b>not</b> feel motivated to keep a diary of my daily food/beverage intake.	1	2	3	4	5	6	7
23. I calculate my daily intake of carbohydrates as I have been instructed to do.	1	2	3	4	5	6	7
24. I feel a lot of personal satisfaction while mastering certain difficult exercise techniques in the programme.	1	2	3	4	5	6	7

	Disagree Strongly	Disagree	Disagree Somewhat	Neither disagree nor agree	Agree Somewhat	Agree	Agree Strongly
25. The programme is one of the best ways to maintain good relationships with my friends.	1	2	3	4	5	6	7
26. In my opinion, the lifestyle management programme is one of the best ways to meet people.	1	2	3	4	5	6	7
27. The programme makes me feel good about myself.	1	2	3	4	5	6	7
28. The programme provides me with a lot of personal satisfaction when I am making progress.	1	2	3	4	5	6	7
29. People around me think it is important to be in shape.	1	2	3	4	5	6	7
30. I have a clear vision of how I want to look and feel after completing the lifestyle management programme	1	2	3	4	5	6	7
31. My self-confidence is negatively affected by my feelings about my body	1	2	3	4	5	6	7
32. The lifestyle management programme allows me to be well regarded by people I know.	1	2	3	4	5	6	7
33. I have attained my goal in the lifestyle management programme.	1	2	3	4	5	6	7
34. I was able to determine my daily intake of carbohydrates whilst on the lifestyle management programme.	1	2	3	4	5	6	7
35. The lifestyle management programme has made it clear how to determine my daily intake of carbohydrates.	1	2	3	4	5	6	7
36. I kept a daily journal of my weekly activities whilst on the lifestyle management programme.	1	2	3	4	5	6	7
37. The lifestyle management programme clearly indicated the number of food portions to consume each day.	1	2	3	4	5	6	7
38. The lifestyle management programme has made it clear how to determine my daily level of physical activity.	1	2	3	4	5	6	7

Q2. On the average, how frequently did you exercise while participating in the lifestyle management programme?

Never/almost never	1
Less than once a month	2
A few times a month	3
A few times a week	4
About once a day	5
Several times a day	6

Q3. On average, how long did it take you to complete an exercise session?

I don't exercise	1
Less than ½ hour	2
From ½ hour to 1 hour	3
1-2 hours	4
2-3 hours	5
More than 3 hours	6

Q4. What was your primary goal for the lifestyle management programme?

Weight loss	1
Muscle gain	2
Healthy living	3

Q5. Please indicate your race?

African	1
Indian	2
Coloured	3
White	4

Q6. Please circle your gender:

Male	1
Female	2

Q7. Please circle your highest level of education:

Matric	1
Undergraduate degree	2
Postgraduate degree	3



Q8. What is your age?

18-30	1
31-45	2
46-55	3
56-65	4

**Thank you for completing the survey.  
We appreciate your assistance.**

**APPENDIX B**  
**- Approval by the Research Ethics Committee -**

**100**  
1908 - 2008



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

**FACULTY OF ECONOMIC AND  
MANAGEMENT SCIENCES**

**COMMITTEE FOR RESEARCH ETHICS**

**Tel: +27 12 420-2306**

**E-mail: anske.grobler@up.ac.za**

28 November 2008

Dear Mr Kotzé

**Project:** *The determinants of customer co-production and satisfaction in a compliance dependent service*  
**Researcher:** EE Heath  
**Supervisor:** T Kotzé  
**Department:** Marketing and Communication Management  
**Reference No:** 20277009

Thank you for the application you submitted to the Committee for Research Ethics, Faculty of Economic and Management Sciences.

I have pleasure in informing you that the Committee formally approved the above study on 26 November 2008. The approval is subject to the candidate abiding by the principles and parameters set out in his application and research proposal in the actual execution of the research.

The Committee requests you to convey this approval to Mr Heath.

We wish you success with the project.

Sincerely

**PROF AF GROBLER**  
**CHAIR: COMMITTEE FOR RESEARCH ETHICS**

**cc: Prof G Puth**

**Members:**

Prof AF Grobler (Chair); Prof HE Brand; Prof D Gouws (Vice Chair); Prof B Lubbe; Prof M Mabugu; Mr T Steyn; Prof C Thornhill; Prof DB van der Schyf; Prof R van Eyden; Prof J van Vuuren

**Ex officio members:**

Chair: Research Committee; Prof SR van Jaarsveld, Faculty of Law