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## **The Impact Of A Weight Loss Program On Consumers' Lives**

Industry Case Study

Maria Madalena Cardoso de Menezes Mendes Teixeira

Master Thesis report presented as partial requirement for  
obtaining the Master's degree in Information Management

NOVA Information Management School  
Instituto Superior de Estatística e Gestão de Informação  
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by

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## **ABSTRACT**

Overweight and obesity is one of the major public health concerns and nowadays there are more overweight than underweight adults, these have increased severely over the past four decades. Consequently, there was a significant increase in morbid obesity, due to the fact that obesity being a risk factor for various health problems, such as cardiovascular diseases, diabetes, high cholesterol and some forms of cancer. A key driver of the increasing obesity epidemic is the food environment and there are some approaches to control this. A combined diet guided by a specialist and physical activity intervention is one of the most effective options. The aim of this study is to understand the key factors on the continuous intention to be in a weight loss program. For this purpose, the benefits and determinants of a Weight Loss Program (WLP) are going to be explored through specific studies and qualitative and quantitative research, as well as the others Weight Loss Programs and other types of counseling. Besides that, it will be understood the reasons why consumers search for a WLP and consequently why a specific one, what they value most and what leads to continuity. Through a Structural Equation Model and a Cause-Effect validation, a relation between the variables under study were conceived and then the results showed that the study explains 50% of the satisfaction, 42% of the continuous intention to use a WLP and 32% of the use. It is possible to see that the extrinsic and intrinsic rewards have an impact in the use of the program, on the other hand the satisfaction of the consumer is influenced by the use, perceived credibility, extrinsic rewards and by the self-esteem of the person. In turn, the continued use of a WLP is affected by the client satisfaction.

## **KEYWORDS**

Weight Loss Program; Nutrition Services; Structural Equation Modeling; Continuous Intention to Use; Consumer Satisfaction

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>WLP</b>	Weight Loss Program
<b>WHO</b>	World Health Organization
<b>SM</b>	Self-Monitoring
<b>PC</b>	Perceived Credibility
<b>PS</b>	Perceived Severity
<b>RC</b>	Response Cost
<b>SE</b>	Self-efficacy
<b>IR</b>	Intrinsic Rewards
<b>U</b>	Use
<b>S</b>	Satisfaction
<b>SET</b>	Self Esteem
<b>CU</b>	Continuous Intention of Use
<b>PLS-SEM</b>	Partial Least Squares Structural Equation Model
<b>AVE</b>	Average Variance Extracted
<b>HTMT</b>	Heterotrait-monotrait
<b>VIF</b>	Variance Inflation Factor
<b>SEM</b>	Structural Equation Model

# 1. INTRODUCTION

According to the Public Health Nutrition, Nutrition is seen as a 'life' science that interconnects global social, cultural, environmental, economic, and political all together, having a personal and population health concern. These studies between biology, people, society and the environmental is a modern practice that has been enforced over the years (Cannon & Leitzmann, 2005).

One of the big global problems nowadays is the overweight and obesity<sup>1</sup>. According to the World Health Organization, the worldwide obesity has tripled since 1975 (Susanto et al., 2022) and 39 million children under 5 years old were registered as overweight or obese in 2020. Some of the aspects that affect this increase in overweight and obesity are the changes in dietary, due to an excessive intake of calories, the increase of a sedentary lifestyle (Silva et al., 2022), proper of the lack of physical activity, such as facilitation of types of transport due to the increase urbanization, or to a various option of inactive entertainment (television, electronic games, smartphones) (Bhadoria et al., 2015) and lastly social and environmental influences, such the alcohol accessibility (Neuner-Jehle et al., 2013).

With over 60% of the population being overweight, there is a huge challenge in assisting patients in the process of recovery of overweight and obesity, being a major risk for numerous chronic diseases, such as cardiovascular diseases, chronic respiratory diseases, hypertension, cancer, diabetes and metabolic diseases (Strychar, 2006).

Along with the increase of overweight and obesity, raised the number of people struggling to lose weight (Poraj-Weder et al., 2021) and with this the need to find and develop an effective WLP. In United States of America, approximate 44% of the population try to adapt better lifestyle habits with the aim to lose weight (Ferber et al., 2022). For this reason, in 1983, Jenny Craig started a mission with the aim to help people to achieve their weight goals. The program consists of a behavioral change approach, with weekly one-on-one meetings with a trained consultant, essentially to create a healthy eating, an active lifestyle and a balanced approach to living, through behavioral strategies for long-term weight management (Finley et al., 2007).

## 1.1. STUDY OBJECTIVES

Research question: "What leads consumers to continue a specific Weight Loss Program (WLP)?"

Specific objectives:

- Understand and identify the determinants of adopting a WLP.
- Identify and analyze the perceived benefits of a weight loss program.
- Build a theoretical model that explains the adoption, the perceived benefits and the continuity of a WLP.
- Test the structural model on a specific group of people.

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<sup>1</sup> According to WHO "Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health".



This thesis is organized by chapters and steps to understand the final conclusions, in table 1 is it possible to conclude the main objectives of the work. First, there was the need to understand the topic by doing a Literature review, understanding and identifying the determinants of adopting a WLP, as well the perceived benefits (Chapter 2). To answer these questions and objectives a study to define the variables and to create the model was done in Chapter 3 (Research Model Proposal). There are two types of variables, the dependents (Use, Satisfaction, Self-esteem and Continuous intention to use) and the independents variables of the model. To determine the impact of these variables a questionnaire (Appendix A) was developed and published in WLP platforms and groups, collecting a sample of 201 responses. In Chapter 4, it is possible to see, through a structural equation modelling and the Cause-Effect validation, that the consumer satisfaction impacts continuous intention to use. During chapter 5 and 6, the conclusions and limitations of the study were described, as well as the intentions to future work.

**Table 1** - Study Objectives

Objective	Method	Instrument
Understand and identify the determinants of adopting a WLP	Literature Review	Scientific Papers
Identify and analyze the perceived benefits of a weight loss program.	Literature Review	Scientific Papers
Build a theoretical model that explains the adoption, the perceived benefits and the continuity of a WLP.	PLS - SEM (Partial Least Squares Structural Equation Model)	Survey and SmartPls3

## 2. LITERATURE REVIEW

Besides the overweight and obesity global problem, there is also the psychological aspect (O'Brien et al., 2007). When talking about diets and weight loss there is a need to be prudent in the words that are used, to the fact of being a sensitive topic. Studies on social integration and acceptance, desire to please and to be the model of society, proved that the power of social influence in relation to the amount and type of food consumed is undeniable (Pliner & Mann, 2004).

Nowadays, there is a tendency to compare ourselves with others and with society role models (Hofer et al., 2022). This stimulates negative thoughts, emotions and feelings related to body image issues, which causes eating disorders and body dissatisfaction (José et al., 2013). All these thoughts and comparisons have a strong relationship with global self-concept, being the physical self and self-presentation associated with the social accepted and having a huge impact on an individual self-esteem (Lau et al., 2008). According to several studies, there is the thought that beauty ideal is a thin and a muscular body and when achieving it, people can be happier, better, more talented and easier social accepted (Kwan, 2009). To compete this, it is crucial to increase self-esteem and be mentally strong, for these is necessary to develop self-worth, through knowledge, skills and a physical well-being (Sharma et al., 2017).

In a weight loss program, it is essential to have strategies and an open mindset, since it will be necessary a change in the lifestyle of the person with intentions of weight reductions (Mattos et al., 2022), such as behavior modification, physical activity, diet and supplements therapy. Over the years, having a mentor has become more common and noted in areas such as fitness, obesity and mental health (Newnham-Kanas & Irwin, 2010). In all methods the interaction of one professional is a crucial part of the process (Adolfsson et al., 2005), particularly in behavior change processes (Newnham-Kanas & Irwin, 2010). Besides being an expert on the subject, the specialist also interprets a paper of mentor in a person life, having an important position in motivation and emotional roles (Moreno-Murcia et al., 2019) and helping on the behavior adjustment and keeping the focus to achieve the goal (Poraj-Weder et al., 2021). The greater success rates all include the self-monitoring, the self-efficacy, an active lifestyle and a continuous high motivation in losing weight (Susanto et al., 2022).

The motivation to continue using healthier habits comes with the self-satisfaction, i.e., with the well-being, the increase of daily energy, the long-term care of the body and mind (Poraj-Weder et al., 2021), the extra good mood and the good looking (O'Brien et al., 2007). Being motivated is the guide feeling of want and desire something, defining a goal in your life, this ambition can be caused by the individual (intrinsic motivation) or by others (extrinsic motivation) (Swanson & Maltinsky, 2019). An intrinsic motivation is influenced by satisfaction and self-efficacy (Good et al., 2022) motivated by the curiosity, interest, pleasure (Fishbach & Woolley, 2022) and engagement (S & Chandra, 2023). Satisfaction is defined by an immediate self-emotional evaluation that have in consideration personal experiences, their results and the wellbeing in life (Supervía et al., 2023). Talking about self-efficacy, is the believe of self-capacity to act and respond to challenges (Varoto da Costa et al., 2019). On the other hand, the extrinsic motivations are moved by recognition (R. Li et al., 2023) and outcome benefits (Morris et al., 2022), for example a good feedback or rewards from others (Good et al., 2022) or a healthy and good body (Kwan, 2009).

Motivate and help people to change habits and behaviors is one of the major problems of health professionals (Neuner-Jehle et al., 2013), due to lifestyle and cultural factors (Ferber et al., 2022) and even psychological and hormonal changes (Susanto et al., 2022). To create healthier habits, an attitude must be taken to change a behavior that it will be transformed in habit. The starting point of creating/changing a habit is the desire to change and have the right motivation to do it, then, adopting a strong attitude is the key factor the behavior changing. However, to positively transform a behavior into a habit, it is crucial to be consistence over time, being this a long-term process (Verplanken & Orbell, 2021). To conclude, to develop a stable change it is necessary a continuous care and effort (Poraj-Weder et al., 2021) and a long-term weight management can be challenging and involves a lot of persistence and sacrifice for the intense change in behavior (being food or activity concerns) and lifestyle (Hall & Kahan, 2018).

As explained before, in order to ensure healthy, safe and long-term results it is recommended to be guided by a nutrition therapy (Poraj-Weder et al., 2021). With the “phenomena of disinformation” and the social media development, there is no judgement in the information that is read on internet (Herrero-Diz et al., 2019) and because of this, it is essential to be aware of individual needs and to be coached by an expert having evidence-based advice to lose weight (Sieczkowska et al., 2021).

There are a lot of options in the decision making of choosing a weight loss program, such as programs based on the macronutrient content (amount and type of carbohydrates, fats and protein), restriction of categorize food (for example gluten-free and vegetarian), using the control technique of time (intermittent fasting) (Freire, 2020) or even adjust the energy intake and the appetite and food preference of each consumer (Strychar, 2006). This is one of the reasons why it is important to know and be informed of the types of diets and accompaniments available and which one is more suitable for the consumer.

In agreement with Wing and Hill (2001), there are three strategies that are the most common in a WLP: eating a diet low in fat and high in carbohydrate, frequent self-monitoring (positive help to adapt the changes necessities to the success (Varkevisser et al., 2019)) and a regular physical activity (associated with long-term weight loss maintenance, which is include an active daily routine) (Wing & Hill, 2001).

Over the years, the Intermittent fasting strategy has gained fame. This suggests a period of fasting, usually 16h to 48hours, with little or non-calorie absorption, continued by periods of normal eating. This method became popular in weight loss diets because there is a significant reduction of calories intake, comparing to a daily caloric standard of an individual (Obert et al., 2017). Intermittent fasting combats the overconsumption of food, fight that way to metabolic morbidities, such excessive accumulation of visceral fat, insulin resistance and obesity. Several studies in normal and overweight human subjects, showed an expressive weight loss and recovery in multiple health indicators, such as factors for cardiovascular disease (Mattson et al., 2017).

Strychar (2006) defends that there are four types of diets: Low-calorie diets, Low-carbohydrate diets, Very-low-calorie diets and Very-low-fat diets. A Low-calorie diet helps to control the exaggerated food consumption with understanding when the body needs food or it is emotional and with this results in a quick reduction of weight (Volek et al., 2005). This diet is high in carbohydrates and fiber, is low in fat, has an energy-reduced diet and a low glycemic index. Combined with physical activity this is a safe strategy for weight loss (Strychar, 2006). Regarding the Low-carbohydrate diets these are high in fat and protein, having metabolic advantages compared with the other strategies (Volek et al., 2005),

which result in a boost of cravings (such as snack foods). For these, a daily dose of vitamin and mineral is highly recommended and physical activity is mandatory. Physical activity has an important role in weight loss and in weight maintenance, the changes in weight are affected by the amount of energy expended versus the amount of energy consumed (Swift et al., 2014), i.e., spending a lot of energy, exceeding the intake of food results in weight reduction (Adolfsson et al., 2005). Talking about the Very-low-calorie diets, these need to be weekly followed by a nutrition therapy. The aim is to preserve lean body mass, fatty acids, vitamin and mineral supplements through proteins of high biologic value. Lastly, the Very-low-fat diets are advised to prevent heart diseases. These are very high in carbohydrate and fiber, and usually offer a vegetarian diet, however it is necessary to keep track of the levels of nutrients (Strychar, 2006).

### 3. RESEARCH MODEL PROPOSAL

After the research of the background theory, it was possible to define some research hypothesis as support for the creation of the structural equation model.

To identify and analyze the perceived benefits of a weight loss program, several constructs were included, such as, self-monitoring and perceived credibility adapted from Halttu & Oinas-Kukkonen (2021) and perceived severity and response cost from Pang et al. (2021). The use of the program is based on Aparicio et al. (2021) work, while the self-efficacy is from Kim & Han (2021). The work of Brunstein (1993) was the base line to the satisfaction construct and the continuous intention to use the program from Al-Emran et al. (2020). Lastly, the self-esteem construct is adapted from the works of SAVI ÇAKAR & KARATA (2012) and Artac & Koc (2017). However, all these constructs' definitions with the respective authors are present in Table2.

**Table 2** - Constructs definition

Constructs	Constructs definition	Authors
Self-Monitoring	Self-regulation theory assumes that self-monitoring guide the self-evaluation of the progress made regarding the goal.	(Halttu & Oinas-Kukkonen, 2021)
Perceived Credibility	The perceived credibility points out the trustworthiness, believability and reliability to evaluate the credibility of the process.	(Halttu & Oinas-Kukkonen, 2021)
Perceived Severity	Perceived severity expresses how seriously a decision would affect an individual life.	(Pang et al., 2021)
Response Cost	Response costs deal with any costs related to the program, this includes monetary and non-monetary costs, such as financial costs, effort and time taken to a particular action.	(Pang et al., 2021)
Self-Efficacy	Self-efficacy is the primary determinant of human behavior, for the reason that influences directly and indirectly through expectations and goals.	(Kim & Han, 2021)
Intrinsic Rewards	A Reward is a known strategy for supporting the formation of new habits. They can be intrinsic rewards, in other words, rewards of satisfaction through feelings.	(Luhanga et al., 2016)

Extrinsic Rewards	Extrinsic Rewards are related with external rewards, and they can be used to incentive behavior or acknowledge results and competences.	(Shaheen et al., 2020)
Use	Behavioral response of the individual to the use of the program.	(Aparicio et al., 2021)
Satisfaction	The achievement of important goals and personal efforts is what gives power to life satisfaction.	(Brunstein, 1993)
Self-Esteem	Being a psychological, social and physical aspect that expresses personal emotions of self-value, self-reliance and self-acceptance. Self-esteem is the desire to be attractive, different and confident.	(SAVİ ÇAKAR & KARATAŞ, 2012) ; (Artac & Koc, 2017)
Continuous intention of use	Continuous intention to use point out the desire that the user has to continue using the program. According to previous studies, it is possible to say that continuous intention has a direct and important effect on the actual use.	(Al-Emran et al., 2020)

After defining the constructs, the hypotheses were established:

Self-monitoring is elementary to behavior change. It is considered as an individual behavior analysis to achieve a goal by controlling and recorded the improvement along the way (Page et al., 2020). This joined with other elements of self-regulation is advised as the most effective technique to a healthier eating lifestyle combined with more physical activity (Halttu & Oinas-Kukkonen, 2021). In other words, there is a huge association between self-monitoring and weight loss found in several studies (Burke et al., 2011), due to the fact that a weight loss program is mainly focused on changing eating, exercise and lifestyle habits through behavior strategies and self-management skills (Yon et al., 2007). Hence it is hypothesized that:

**Hypothesis 1.** *The self-monitoring has a positive impact when adopting a WLP.*

Obesity can cause life-threatening diseases and people's concern about it is increasing. This led to a buzzword of "losing weight" on the internet, the volume of information correct or incorrect is huge what often cause a conflict of information. Being a major problem, people need to be well informed and feel save (Jung et al., 2016). The credibility of the source is related with the best outcome. Expert sources are considered as more trustworthy compared to the non-expert sources. The perceived credibility is defined by the expertise combined with trustworthiness (Mengmeng Tang, 2016) with it is possible to say that a service with high credibility expressed in a rise of trust level, it will increase the customer satisfaction (Masrek et al., 2018). The credibility of a service or brand is precisely linked with

the customer satisfaction. The trustworthiness of an expert brings value for the service which leads to loyalty and a commitment from the client that is convert in satisfaction (Cuong, 2020).

Hence it is hypothesized that:

**Hypothesis 2a.** *The perceived credibility has a positive impact when adopting a WLP.*

**Hypothesis 2b.** *The perceived credibility has a positive impact on customer satisfaction.*

Perceived severity is one of the strongest factors that predicted intention (Pang et al., 2021). Most successful weight-loss programs require a reasonable intensity of the restrictions, duration and cost, mostly because it implies a lifestyle modification behavior (Agne et al., 2012). One of the major limitations is the lack of focus, a better inhibitory control is linked with better results as losing weight (de Klerk et al., 2022).

Hence it is hypothesized that:

**Hypothesis 3.** *The perceived severity has a positive impact when adopting a WLP.*

Gregurec and Husic (2015), define price as "the amount of money wanted for some product or service". So, price is a key factor and a differentiation point in a purchase and it can cause a positive or negative reaction (Hustić & Gregurec, 2015). A client isn't pleased to acquire an asset if the cost overcome the benefits, however this can be influenced by the great knowledge and recognition of the product or service (Pang et al., 2021). Perceived credibility and quality have an effect on the perceived price, which influence the intention to buy (Chang & Wildt, 1994). The cost-benefit of weight loss is important for understanding people's ongoing weight control decisions (Jeffery et al., 2004).

Hence it is hypothesized that:

**Hypothesis 4.** *The response cost of a WLP is one of the decision points when choosing it.*

According to Eunhye Kim, due to a large number of research supports, it is possible to say that self-efficacy is the primary determinant of human behavior, for the reason that influences directly and indirectly through expectations, goals and socio-structural factors (Kim & Han, 2021). Perceived self-efficacy attract the beliefs of the capabilities and nature of a person (Pang et al., 2021). After these, it is possible to conclude that there is a powerful relationship between weight loss and self-efficacy, due to the fact that the level of personal efficacy is a significant predictor of weight loss during the program (Bernier & Avard, 1986). Due to the successfully results, the personal efficacy leads to an increase of self-esteem and it is high related with personal goals and its efficacy, as higher self-esteem more challenging and ambitious is the target (SAVİ ÇAKAR & KARATAŞ, 2012). The personal striving of bold challenges and the proof of its achieved is associated with life satisfaction, self-satisfaction and person' well-being (Brunstein, 1993).

Hence it is hypothesized that:

**Hypothesis 5a.** *The self-efficacy has a positive impact on the use of a WLP.*

**Hypothesis 5b.** *The self-efficacy has a positive impact in a person' self-esteem.*

Motivation is induced by rewards, both extrinsic and intrinsic. Several studies showed that rewards affect the engagement, satisfaction and intention to use (Stumpf et al., 2013). Those increase the motivation and the performance of people in get in and try a new challenge or activity (Wiechman & Gurland, 2009). It is crucial to combine both rewards, extrinsic rewards promote an individual to engage a new behavior, while the intrinsic reward will keep the person motivated to adopt it for a longest period (Luhanga et al., 2016). Regarding the two types of motivation, the intrinsic is moved by rewards of pleasure and satisfaction, in other words, non-material rewards, the action is taken for the felling of fun, excitement and self-worth (Pelletier et al., 1995). In a WLP this comes in several feelings, such as the excitement and the self-confidence of adoption a healthy behavior and feel better. Talking about the extrinsic motivation, it is drive by objectives, visible rewards and a positive external influence, such as success scales and even social motivation (Pelletier et al., 1995) (Filsecker & Hickey, 2014). External rewards are related to Weight Loss Success, one of the biggest motivations for participants to lose weight are physical and social rewards, i.e., the challenge that they achieved, the complement that other person said and the clothes fitting in a better way, all these results in satisfaction (Jeffery et al., 2004). According to a study made by Leahey et al (2017), is it possible to conclude that participants reported high levels of both extrinsic and intrinsic motivation for weight management (Leahey et al., 2017).

Hence it is hypothesized that:

**Hypothesis 6.** *The intrinsic rewards have a positive impact on the use of a WLP.*

**Hypothesis 7a.** *The extrinsic rewards have a positive impact on the use of a WLP.*

**Hypothesis 7b.** *The extrinsic rewards have a positive impact on customer satisfaction.*

The well-being of a person has a direct relationship with the amount of weight loss. Hence, customers must first evaluate the weight loss process, which allows them to be satisfied with their achievements (Taiminen et al., 2020). Self-esteem has a direct association with weight loss and healthy eating habits. According to Laporta Herrero et al (2018), Low self-esteem is a common symptom in eating disorders, self-esteem is an alliance between body dissatisfaction and restrictive eating (Laporta-Herrero et al., 2018). Several studies concluded that the self-esteem of a person is total dependent on emotions, such as sense of sufficiency and worthiness, all these factors affect a person's life. For example, the negativity in body image causes a decrease on self-esteem (Sanlier et al., 2017). The Body Image concept is a truly thought nowadays, both consciously and unconsciously. Specially for women, the good looking and the social acceptance is a huge topic (Artac & Koc, 2017).

Hence it is hypothesized that:

**Hypothesis 8a.** *The used of the WLP has a positive impact on the satisfaction of the individual.*

**Hypothesis 8b.** *The used of the WLP has a positive impact on the self-esteem of the individual.*

To a successful service is crucial to satisfy the client. We can verify this satisfaction through the enjoyment or disappointment of the client balanced with his expectations. In other words, satisfactions are reached when client's expectations are achieved or even exceeded (Liu & Leach, 2001), rising from a positive customer experience. If a client is satisfied it has all the interest to continue that way, thus satisfaction has a significant effect on continuous intention of use (Joo et al., 2016) and



an important role in repurchase and loyalty of the client (Ahrholdt et al., 2019). Because of that, it is important to analyze how the level of satisfaction influences the continuance intention of the use of the WLP.

Hence it is hypothesized that:

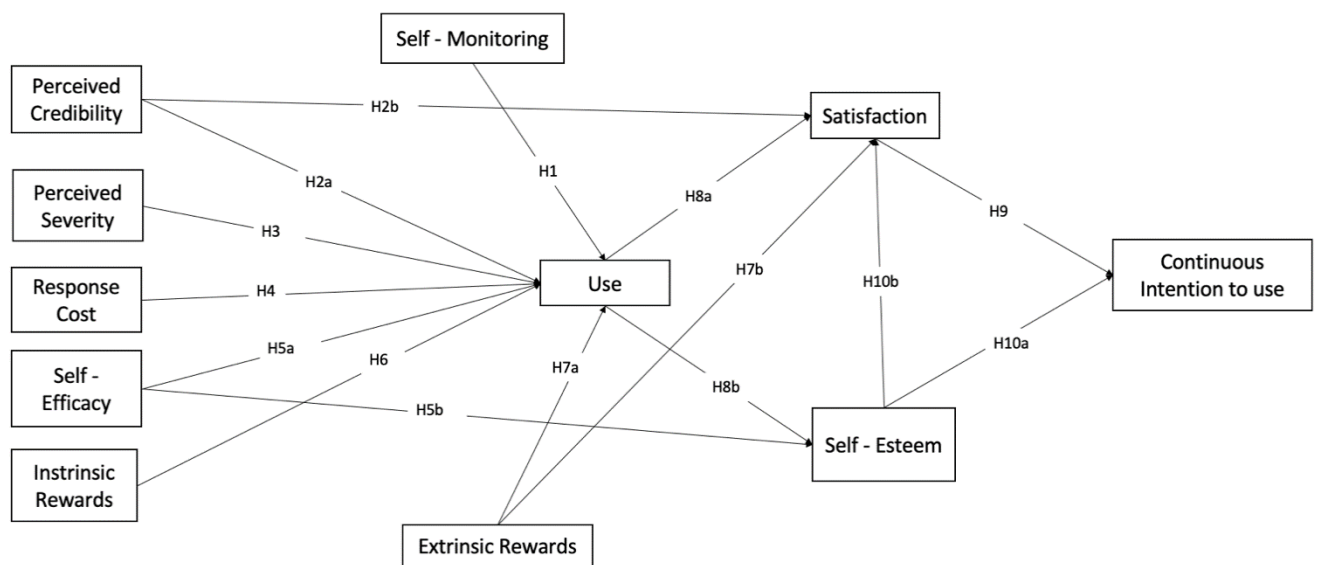
**Hypothesis 9.** *The satisfaction of the user has a positive impact on the continuous intention of the use of the program.*

Self-esteem represents an attitude, being positive or negative, towards the person himself and it is also an important pointer of psychological well-being (Clay et al., 2005). The increase of self-esteem is strongly dependent on the approval of other people opinions of their appearance. Although there are many self-esteem measures, the body esteem is one of the most relevant, which is high related with body weight (Mendelson et al., 2002). With this, we can say that weight loss will increase the body esteem, which will increase the self-esteem. Consequently, a high self-esteem tends to convert in satisfaction through happiness, success and a mental and social well-being (SAVİ ÇAKAR & KARATAŞ, 2012). The self-evaluation and satisfaction of several behaviors will keep the individual to continue to adapt them (French et al., 1995).

Hence it is hypothesized that:

**Hypothesis 10a.** *The self-esteem of the user has a positive impact on the continuous intention to use the program.*

**Hypothesis 10b.** *The self-esteem of the user has a positive impact on his satisfaction.*



**Figure 1 – Structural Equation Model**

## 4. RESULTS

To test the hypothesis and validate the model presented in Figure 1, a Partial Least Squares Structural Equation Model (PLS-SEM) and a Cause-Effect validation were adopted. The choose of this model is due to the flexibility of small samples size analysis and a complex model (Hair, 2014). The Structural Equation Model has become a classic choice to analyze the cause-effect relations between the constructs (Hair et al., 2011). One of the reasons of this choice is the easy-to-use visual interface, allowing several analyzes at the same time (Memon et al., 2021).

### 4.1. DATA COLLECTION

To test the hypothesis a survey (Appendix A) of a seven-point numerical scale from 1 (strongly disagree) to 7 (strongly agree) has been used. To submit the questionnaire a request to the Ethics Committee has been made and approved (Appendix B). The target population were clients or a soon to be client of a specific weight loss program. The weight loss program in study includes a personalized and adapted nutrition plan according to the needs of each customer, as well as a weekly evaluation made by a qualified nutritionist. The strategy of this WLP includes a Catabolism Induction (metabolism is speeded up and the body is educated to use fat as its main source of energy), Metabolic Adaption (eating habits that promote weight loss are created) and Weight Management (maintain and manage the goal weight with a healthy, varied and balanced diet), through a low carb and high protein diet. After 2 months of collecting all the possible responses and clean the data, the survey counted with a sample of 201 participants, the majority are Female (79%) and the other 21% Male, with ages between 17 years to 71 years old, being 46-50 the crowded age group. In table 3 is possible to see a more detailed profile of each participant.

**Table 3** - Demographic data of responses (n=201)

		Frequency	Percentage
<b>Gender</b>	Female	158	79%
	Male	43	21%
<b>Age</b>	<20	6	3%
	21-25	27	13%
	26-30	24	12%
	31-35	34	17%
	36-40	13	6%
	41-45	30	15%
	46-50	44	22%
	51-55	8	4%
	56-60	4	2%
	>60	11	5%

## 4.2. MEASUREMENT MODEL

The measurement model allows analyzing the relationship between each indicator with the relative construct (Halttu & Oinas-Kukkonen, 2021). After inspected all the indicator loadings and verify their reliability, a second stage started with assessing the constructs' reliability, as higher the values, higher the levels of reliability (Hair et al., 2019). Composite reliability is a measure of internal consistency reliability, where the item is based on construct indicator's individual loading, being with this higher than Cronbach's alpha (Hair et al., 2019). Average Variance Extract (AVE) defines the average amount of variance that a construct explains in relevant indicators variables (Henseler et al., 2015), being an acceptable AVE 0.5 or higher (Hair et al., 2019). With this, it is possible to conclude in table 4, that none of the constructs is lower than 0.5. Meanwhile, the discriminate validity begun. The cross-loading were evaluated (Appendix C), all having high values loading regarding the respective construct than any other construct, corresponding to the imperative requirements to all be approved (Ab Hamid et al., 2017).

**Table 4 - Construct Reliability**

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Continuous Intention to use	0.917	0.928	0.948	0.859
Extrinsic Rewards	0.787	0.797	0.86	0.606
Intrinsic Rewards	0.881	0.896	0.926	0.807
Perceived Severity	0.874	0.894	0.912	0.723
Perceived credibility	0.958	0.962	0.967	0.856
Satisfaction	0.964	0.964	0.976	0.932
Self-Esteem	0.856	0.867	0.932	0.874
Self-Efficacy	0.795	0.805	0.881	0.712
Self-Monitoring	0.963	0.964	0.973	0.9

After that, a discriminate validity through the Fornell & Larcker criterion (table 5) and Heterotrait-monotrait (HTMT) ratio of correlation (table 6) was done. Fornell and Larcker method compares each construct's AVE with the squared inter-construct correlation of that exact construct (Hair et al., 2019), being crucial that the square of each construct should not be higher than the correlations with other constructs (Ab Hamid et al., 2017). Due to the low sensitivity of the method described before, an HTMT correlation has been analyzed (Henseler et al., 2015). The HTMT is the ration of the arithmetic mean of the item correlations across constructs and the geometric mean of the average correlations for the items measuring the same construct (Roemer et al., 2021). As HTMT values are usually high, values above 0.90 consider that discriminant validity isn't present (Hair et al., 2019). In the present study

(table 6) is it possible to conclude that all values are lower than 0.90 and with that the discriminant validity is showed.

**Table 5 - Discriminant validity – Fornel Larker**

	Continuous Intention to use	Extrinsic Rewards	Intrinsic Rewards	Perceived Severity	Perceived credibility	Response Cost	Satisfaction	Self esteem	Self-Efficacy	SelfMonitoring	Use
Continuous Intention to use	<b>0.927</b>										
Extrinsic Rewards	0.51	<b>0.778</b>									
Intrinsic Rewards	0.61	0.538	<b>0.898</b>								
Perceived Severity	0.068	0.094	0.239	<b>0.851</b>							
Perceived credibility	0.43	0.295	0.639	0.385	<b>0.925</b>						
Response Cost	0.173	0.22	0.249	0.25	0.196	<b>1</b>					
Satisfaction	0.642	0.442	0.625	0.187	0.47	0.172	<b>0.966</b>				
Self-Esteem	0.374	0.169	0.286	0.19	0.302	0.078	0.437	<b>0.935</b>			
Self-Efficacy	0.53	0.434	0.697	0.198	0.511	0.217	0.547	0.294	<b>0.844</b>		
Self-Monitoring	0.339	0.191	0.557	0.346	0.825	0.156	0.368	0.254	0.456	<b>0.949</b>	
Use	0.604	0.467	0.504	0.111	0.33	0.222	0.584	0.267	0.436	0.276	<b>1</b>

**Table 6 - Discriminant validity - HTMT**

	Continuous Intention to use	Extrinsic Rewards	Intrinsic Rewards	Perceived Severity	Perceived credibility	Response Cost	Satisfaction	Self esteem	Self-Efficacy	SelfMonitoring	Use
Continuous Intention to use											
Extrinsic Rewards	0.578										
Intrinsic Rewards	0.676	0.608									
Perceived Severity	0.078	0.132	0.277								
Perceived credibility	0.453	0.306	0.699	0.438							
Response Cost	0.18	0.248	0.261	0.267	0.197						
Satisfaction	0.68	0.49	0.683	0.204	0.488	0.176					
Self-Esteem	0.422	0.204	0.334	0.239	0.334	0.084	0.479				
Self-Efficacy	0.616	0.511	0.841	0.241	0.592	0.243	0.628	0.356			
Self-Monitoring	0.357	0.201	0.609	0.392	0.857	0.159	0.382	0.282	0.529		
Use	0.63	0.514	0.531	0.113	0.336	0.222	0.595	0.287	0.487	0.281	

To characterize the level of collinearity, the Variance Inflation factor (VIF) was used. The collinearity is measure through the level of correlation between the independent variables (Becker et al., 2015). To prevent collinearity issues, VIF values should be lower than 5 (Hair et al., 2019). As showed in table 7, there are no VIF values higher or close to 5.

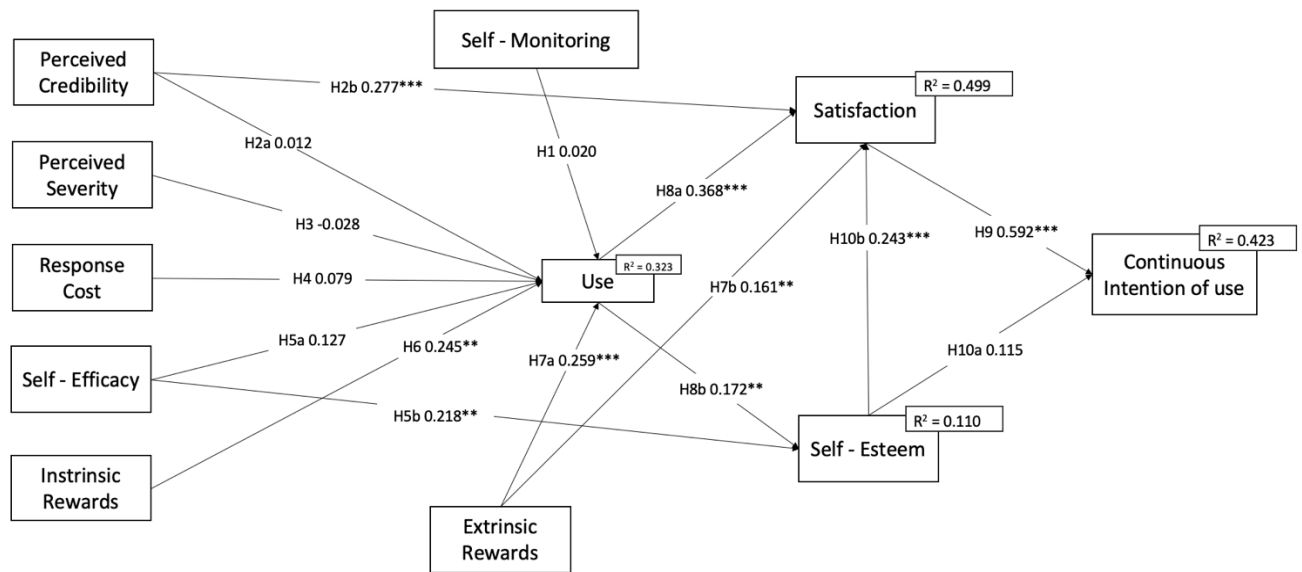
**Table 7 - VIF**

	Continuous Intention to use	Extrinsic Rewards	Intrinsic Rewards	Perceived Severity	Perceived credibility	Response Cost	Satisfaction	Self esteem	Self-Efficacy	SelfMonitoring	Use
Continuous Intention to use											
Extrinsic Rewards							1.317				1.484
Intrinsic Rewards											2.874
Perceived Severity											1.228
Perceived credibility							1.219				3.802
Response Cost											1.13
Satisfaction	1.236										
Self-Esteem	1.236						1.14				
Self-Efficacy								1.235			2.004
Self-Monitoring											3.23
Use							1.388	1.235			

### 4.3. STRUCTURAL EQUATION MODEL

Structural equation modeling (SEM) allows a complete and simultaneous interpretation of a different relationships between several independent variables and one or more dependent variables. A line

between the variables indicates a hypothesis of the relationship of those variables, Figure 2, (Ullman & Bentler, 2012).



**Figure 2 – Structural Model Results**

The first evaluation was the  $R^2$  values, measuring the level of significance endogenous constructs (Hair et al., 2011). Satisfaction, continuous intention of use and Use show the highest values of  $R^2$  (Table 8). The model explains 50% of the variance of satisfaction. Extrinsic Reward ( $B = 0.161$ ,  $p = 0.005$ ), Perceived credibility ( $B = 0.227$ ,  $p = 0$ ), Self-Esteem ( $B = 0.243$ ,  $p = 0$ ) and Use ( $B = 0.368$ ,  $p = 0$ ) have a positive impact on the Satisfaction of the consumer. Being 42% variance of Continuous Intention to Use explained by the model. Satisfaction ( $B = 0.592$ ,  $p = 0$ ) has a positive impact on the Continuous intention to use, however the Self-esteem ( $B = 0.115$ ,  $p = 0.105$ ) doesn't have an impact on the continuous intention to use the program. Regarding the variables that influences the use of the WLP, the model explains 32% of the variance of use, the Extrinsic Rewards has a big impact on the Use ( $B = 0.259$ ,  $p = 0.001$ ), as well as the Intrinsic Rewards ( $B = 0.245$ ,  $p = 0.018$ ). On the other hand, the Perceived Severity ( $B = 0.028$ ,  $p = 0.662$ ), the Perceived Credibility ( $B = 0.012$ ,  $p = 0.909$ ), the Response Cost ( $B = 0.079$ ,  $p = 0.233$ ), the Self-efficacy ( $B = 0.127$ ,  $p = 0.166$ ) and Self-Monitoring ( $B = 0.02$ ,  $p = 0.813$ ) don't have an impact in the use of the program. In table 9 is it possible to see a more detailed results of the test hypothesis.

**Table 8 - Variance explained**

	$R^2$
Use	0.323
Satisfaction	0.499
Self-Esteem	0.22
Continuous intention to use	0.423

**Table 9** - Structural model hypothesis results

Hypothesis	Original sample	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	p value	Impact
H1 Self-Monitoring -> Use	0.02	0.026	0.085	0.237	0.813	NS
H2a Perceived Credibility -> Use	0.012	0.005	0.102	0.114	0.909	NS
H2b Perceived Credibility -> Satisfaction	0.227	0.229	0.062	3.656	0	***
H3 Perceived Severity -> Use	-0.028	-0.015	0.064	0.437	0.662	NS
H4 Response Cost -> Use	0.079	0.074	0.066	1.192	0.233	NS
H5a Self-Efficacy -> Use	0.127	0.13	0.092	1.386	0.166	NS
H5b Self-Efficacy -> Self-Esteem	0.218	0.226	0.081	2.693	0.007	**
H6 Intrinsic Rewards -> Use	0.245	0.242	0.103	2.37	0.018	**
H7a Extrinsic Rewards -> Use	0.259	0.263	0.077	3.363	0.001	***
H7b Extrinsic Rewards -> Satisfaction	0.161	0.163	0.057	2.839	0.005	**
H8a Use -> Satisfaction	0.368	0.364	0.07	5.234	0	***
H8b Use -> Self-Esteem	0.172	0.167	0.071	2.438	0.015	**
H9 Satisfaction -> Continuous Intention to use	0.592	0.592	0.07	8.405	0	***
H10a Self-Esteem -> Continuous Intention to use	0.115	0.117	0.071	1.622	0.105	NS
H10b Self-Esteem-> Satisfaction	0.243	0.244	0.069	3.507	0	***

## 5. DISCUSSION

The object of the study was to understand the reasons that lead consumers to continue a specific weight loss program.

For this, the main values of using a WLP were investigated. The self-monitoring was expected to have an impact in the decision making of a WLP (H1) due to studies that evidence that self-monitoring of weight helps to maintain and predictive weight loss (Varkevisser et al., 2019), however, with the model in study, it was concluded that the self-monitoring doesn't impact the choose of a weight loss program. The perceived credibility was also investigated if it has an impact in embracing WLP or not (H2a). The lack of professional knowledge is the major quality data concern, specially being that world spread information an easily influence of behaviors changes (Soroya et al., 2022). Unlike the assumptions, the study shows that for the consumer it is not mandatory the credibility of the source. However, it has a big significance for the client satisfaction (H2b). After adopting the program, comes the satisfaction or dissatisfaction of the consumer, the perceived credibility has a saying point on that because it does ensure the loyalty and the repeat purchase of the program (Hsieh & Li, 2020). It is expected that severity and rules bring results and consequently having an effect on the decision making (H3). After all, in table 9, it is possible to believe that perceived severity doesn't impact the consumer choice.

Keeping with the analyze of the main decision points of choosing a WLP. The self-efficacy was thought of having an impact on the use of a WLP (H5a), yet it was proven the opposite. On the other hand, the self-efficacy and the use of a WLP do influence the self-esteem (H5b and H8b). Self-efficacy is the belief that an individual has of their own skills and potential and accomplishing that belief and goals empower the person self-esteem (Williams, 2020). Self-esteem is an affective interpretation of the person himself, taking in consideration the self-acceptance and self-respect and being the major factor of satisfaction (Marcionetti & Rossier, 2021). Because of that, the hypothesis of the impact of the self-esteem on consumer satisfaction was investigated (H10b) and resulted in a positive outcome.

Regarding rewards, in this study during the Literature Review and at the time to define the hypothesis were explained all thoughts about rewards and in the model were measured the impact of intrinsic rewards when adopting a WLP (H6) and the influence of extrinsic rewards in the use of a WLP (H7a) and the impact of it on consumer satisfaction (H7b), all the three hypotheses were positive and we can affirm that all that relationships were true. Intrinsic and extrinsic rewards are the main factor when talking about motivation, performance and focus on achieving the desired results (Manzoor et al., 2021).

After investigated the use of a WLP, the satisfaction of the consumer took place. Customer satisfaction is an evaluation between the use of service and the expectations, these meaning that if the service exceeds the expectations the client is satisfy. The client satisfaction is crucial in the repurchase and continuous intention to use (Dam & Dam, 2021). As already explained, the satisfaction is affected by the perceived credibility (H2b), the extrinsic rewards (H7b), the self-esteem (H10b) and by using the program (H8a).

Consequently, the final conclusion was taken and proved that the satisfaction of the costumer leads to the continuous use of the program (H9). The decision of whether continue or not the program depends on the satisfaction, there is a direct relationship with the consumer satisfaction and the desire to continue the program (repurchase)(Li & Shang, 2020).

## 6. CONCLUSIONS, IMPLICATIONS AND FUTURE WORK

This study shows the importance of customer satisfaction and the impact that a WLP has on a consumer life.

The research will help to understand what consumers value the most in adopting a weight loss program, their perceived benefits and what keeps them satisfied and loyal to a WLP. As discussed in this thesis and aligned with other studies, losing weight is a big challenge of behavior change, it brings lifestyle implications and efforts that involve a continuous commitment and motivation. Having an expert as adviser and coach it will help to follow the correct procedure and keeping the incentive high, that is the main reason for people to adopt a WLP and not doing by themselves, however, to maintain the clients it is necessary to satisfy them and keep them loyal. To validate these thoughts, some hypotheses were study, and a Structural Equation Model was created, followed by a survey directed to clients of a specific WLP. With the survey results, the hypotheses were tested, analyzed and a cause and effect validated, it is possible to say that the model explains 50% of the satisfaction, 42% of the continuous to use a WLP, 32% of the use and 22% of the self-esteem. Concluding that when using the program with rewards and credibility and achieving a higher self-esteem (caused by self-efficacy) an increase of satisfaction is noted. Consequently, as greater the satisfaction, higher the intention of extend the program. Also, the investigation will help the understanding of the importance of having a credible person that motivate and helps the client to lose weight, making the results appearing continuously, and the continuous need of using extrinsic rewards to give a short-time goals inside a long-term aim.

Although, this research contributes to literature and practice of a Weight Loss Program, it has some limitations. First, as the results are based in a specific group (clients of a particular WLP) and that can influence the statistics. Second, the lack of time to develop this paper have an impact on the research of the variables that influence the use of the program and the ones that effect the satisfaction could be more explored. For that, in future works, the research will be extended for individuals that never adopted a WLP, but they want to, so we can understand the consumer needs, the expectations and then connect it with satisfaction and loyalty.



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## APPENDIX

### Appendix A

#### Survey

Construct	Question	Adapted question based in the source	References
Self-Monitoring	SM1	<i>"The 3 Steps Method program helps me to set goals."</i>	(Halttu & Oinas-Kukkonen, 2021)
	SM2	<i>"The 3 Steps Method program helps me in keeping track of my progress."</i>	
	SM3	<i>"The 3 Steps Method program helps me to see how I progress towards my goals."</i>	
	SM4	<i>"The 3 Steps Method program helps me to understand where I am and where I want to be."</i>	
Perceived Credibility	PC1	<i>"Overall, information that the 3 Steps Method program presents to me is accurate."</i>	(Halttu & Oinas-Kukkonen, 2021)
	PC2	<i>"I consider the 3 Steps Method program trustworthy."</i>	
	PC3	<i>"Generally speaking, the measurements the 3 Steps Method shows are believable."</i>	
	PC4	<i>"The information presented to me instils confidence."</i>	
	PC5	<i>"The 3 Steps Method program is created by professionals."</i>	
Perceived Severity	PS1	<i>"Overweight is a serious issue."</i>	(Pang et al., 2021)
	PS2	<i>"Overweight will have negatives consequences in a person's life."</i>	
	PS3	<i>"Overweight impact is severe."</i>	
	PS4	<i>"The thought of obesity scares me."</i>	
Response Cost	RC1	<i>"I usually compare prices of weight loss programs and will only try when the price is reasonable to me."</i>	(Pang et al., 2021)
	RC2	<i>"The 3 Step Method program is relatively expensive to purchase."</i>	
	RC3	<i>"The 3 Step Method program has limited choices for me."</i>	
	RC4	<i>"Following the 3 Step Method would require too much of an adjustment in my lifestyle."</i>	
	RC5	<i>"There is not enough certainty about the safety of 3 Steps Method program."</i>	
Self-efficacy	SE1	<i>"It is easy for me to follow the 3 Step Method."</i>	(Pang et al., 2021)
	SE2	<i>"If I wanted to, I could easily follow the 3 Step Method."</i>	
	SE3	<i>"It is mostly up to me whether I would like to follow the 3 Step Method program."</i>	

Intrinsic Rewards	IR1	<i>"I feel comfortable being a 3 Step Method program' client."</i>	(Pang et al., 2021)
	IR2	<i>"If I follow the 3 Steps Method, I will be healthier."</i>	
	IR3	<i>"If I follow the 3 Steps Method, I will be more confident."</i>	
	IR4	<i>"If I follow the 3 Steps Method, I will be happier."</i>	
Extrinsic Rewards	ER1	<i>"The 3 Step Method is easily available."</i>	(Pang et al., 2021)
	ER2	<i>"If I follow the 3 Steps Method, I will save time."</i>	
	ER3	<i>"If I follow the 3 Steps Method, I will save money."</i>	
	ER4	<i>"If I follow the 3 Steps Method, I will get more acceptances from my peers."</i>	
	ER5	<i>"If I follow the 3 Steps Method, I will be more popular among my peers."</i>	
Use	U1	<i>"I frequently follow the 3 Step Method."</i>	(Aparicio et al., 2021)
Satisfaction	S1	<i>"I have achieved the goals that I set for the 3 Step Method."</i>	(Taiminen et al., 2020)
	S2	<i>"I am satisfied with the attained results."</i>	
	S3	<i>"I obtained the desired outcomes from the 3 Step Method program."</i>	
Self-esteem	SET1	<i>"On the whole, I am satisfied with myself."</i>	(Rosenberg, M., 1979)
	SET2	<i>"I feel I do not have much to be proud of."</i>	
	SET3	<i>"I take a positive attitude toward myself."</i>	
Continuos intention of use	CU1	<i>"I intend to continue follow the 3 Step Method program."</i>	(Sharma et al., 2017)
	CU2	<i>"I plan to follow the 3 Step Method program continuously in future."</i>	
	CU3	<i>"I do not think to quit of the 3 Step Method program."</i>	

## Appendix B

Project No.: **OTHER2023-2-87119**

Project Title: **The Impact Of A Weight Loss Program On Consumers' Lives**

Principal Researcher: **Maria Madalena Teixeira**

according to the regulations of the Ethics Committee of NOVA IMS and MagIC Research Center this project was considered to meet the requirements of the NOVA IMS Internal Review Board, being considered **APPROVED** on 2/11/2023.

It is the Principal Researcher's responsibility to ensure that all researchers and stakeholders associated with this project are aware of the conditions of approval and which documents have been approved.

The Principal Researcher is required to notify the Ethics Committee, via amendment or progress report, of

- Any significant change to the project and the reason for that change;
- Any unforeseen events or unexpected developments that merit notification;
- The inability of the Principal Researcher to continue in that role or any other change in research personnel involved in the project.

## Appendix C

### Cross-Loadings

	Continuous Intention to use Extrinsic Rewards	Intrinsic Rewards	Perceived Severity	Perceived credibility	Response Cost	Satisfaction	Self esteem	Self-Efficacy	SelfMonitoring	Use	
CU1	0,962	0,491	0,62	0,087	0,45	0,171	0,639	0,362	0,548	0,358	0,572
CU2	0,943	0,541	0,583	0,058	0,416	0,179	0,621	0,324	0,511	0,336	0,594
CU3	0,873	0,373	0,484	0,04	0,32	0,129	0,518	0,357	0,404	0,239	0,51
ER2	0,482	0,776	0,589	0,166	0,418	0,181	0,423	0,223	0,51	0,313	0,434
ER3	0,464	0,778	0,463	0,106	0,282	0,115	0,382	0,244	0,371	0,199	0,301
ER4	0,293	0,757	0,261	-0,02	0,064	0,189	0,24	-0,011	0,176	-0,008	0,299
ER5	0,305	0,801	0,289	-0,002	0,072	0,201	0,29	0,019	0,218	0,017	0,391
IR2	0,556	0,409	0,866	0,216	0,602	0,169	0,587	0,322	0,662	0,532	0,384
IR3	0,543	0,495	0,932	0,256	0,587	0,246	0,597	0,266	0,61	0,53	0,451
IR4	0,549	0,53	0,895	0,177	0,544	0,247	0,513	0,2	0,614	0,452	0,507
PC1	0,332	0,194	0,55	0,361	0,876	0,11	0,392	0,232	0,422	0,703	0,245
PC2	0,432	0,312	0,599	0,362	0,934	0,235	0,462	0,331	0,509	0,768	0,335
PC3	0,386	0,269	0,588	0,329	0,939	0,153	0,422	0,273	0,468	0,771	0,309
PC4	0,448	0,304	0,611	0,339	0,962	0,182	0,46	0,297	0,5	0,805	0,315
PC5	0,381	0,272	0,605	0,392	0,913	0,213	0,431	0,253	0,455	0,763	0,317
PS1	0,041	0,061	0,253	0,836	0,438	0,233	0,179	0,133	0,214	0,375	0,064
PS2	0,05	0,032	0,165	0,888	0,359	0,207	0,153	0,256	0,159	0,342	0,08
PS3	0,029	0,056	0,201	0,904	0,351	0,191	0,157	0,243	0,188	0,329	0,102
PS4	0,098	0,144	0,199	0,768	0,215	0,221	0,151	0,036	0,129	0,179	0,114
RC1	0,173	0,22	0,249	0,25	0,196	1	0,172	0,078	0,217	0,156	0,222
S1	0,623	0,451	0,59	0,152	0,428	0,137	0,961	0,439	0,528	0,336	0,581
S2	0,609	0,393	0,589	0,177	0,458	0,198	0,963	0,431	0,522	0,343	0,552
S3	0,628	0,435	0,632	0,212	0,476	0,166	0,973	0,396	0,533	0,388	0,558
SE1	0,455	0,39	0,566	0,202	0,348	0,227	0,466	0,234	0,857	0,304	0,413
SE2	0,479	0,429	0,592	0,166	0,439	0,136	0,443	0,261	0,906	0,393	0,374
SE3	0,404	0,268	0,613	0,128	0,523	0,184	0,48	0,25	0,763	0,474	0,31
SET1	0,366	0,183	0,298	0,115	0,254	0,078	0,434	0,944	0,294	0,214	0,277
SET3	0,331	0,13	0,232	0,25	0,314	0,067	0,38	0,925	0,252	0,265	0,219
SM1	0,344	0,193	0,531	0,308	0,79	0,161	0,388	0,231	0,458	0,935	0,274
SM2	0,308	0,168	0,545	0,341	0,795	0,155	0,335	0,256	0,434	0,956	0,265
SM3	0,314	0,182	0,517	0,328	0,776	0,14	0,328	0,248	0,429	0,964	0,25
SM4	0,319	0,181	0,519	0,338	0,766	0,136	0,343	0,23	0,407	0,938	0,256
U1	0,604	0,467	0,504	0,111	0,33	0,222	0,584	0,267	0,436	0,276	1