

COMPARATIVE STUDY OF THE FRAMEWORKS RUBY ON RAILS AND DJANGO FOR THE IMPLEMENTATION OF A COMPUTER SYSTEM CONTROL AND MANAGEMENT NETWORK MARKETING.

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Abstract. *The present application is to implement an administrative system of network marketing.*

Sections that this article is formed are described to continuation:br section 1 contains the background and problems that has the company or entity in this moment and what will be the solution to this fact.

Section II consists of the research of each of the tools and features which are studied according to creating convenient, this section will cover the architectures of the tools among other aspects, such as features or issues are the precise for further comparison between the frameworks.

Section III contains the evaluation of parameters which will include a comparison between tools to determine a winner, according to the Likert scale with which they worked.

Section IV contains the implementation of the system giving solution to the administration of network marketing. This section contains the development of phases of the methodology with which we designed the application.

Finally the section V contains the conclusions and recommendations also the analysis of impact that is has with this work carried out..

Keywords

Network Marketing, Likert, Framework.

1. Introducción

This section lists and reports while the area in which it will develop the application , the problem that currently exists, the background, objectives and scope or solution that will provide the project.

1.1 Problem

1.1.1 Antecedent

The existence of tools and platforms for developing web applications have evolved so that users have stayed in the best known, not realizing the advantages offered by new and sophisticated web development platforms.

1.1.2 Current Situation

Currently the company has management jobs each client entrepreneur and paper, risk taking as weakness and manipulation of information, this situation has been going on for lack of a web system that allows manage and organize information correctly.

1.1.3 Problem Statement

There is a web system that can administer an organized manner and controlled information and business customers in the company.

1.1.4 Prospective

The state in which the management unit of the company is prevented an orderly entrepreneurs and their customers control carry, therefore future this problem will be solved with the application to be developed in which entrepreneurs will be displayed and customers in a clear and orderly manner.

1.2 Objectives

1.2.1 General Objective

Establish a comparative study between the frameworks Django and Ruby On Rails to implement a system of control and management of Network Marketing.

1.2.2 Specific Objectives

- Conduct a current analysis of the management of the company
- Determine metrics comparison
- Diagnose the tool to be used for system implementation.
- Use the selected tool to proceed with the system.

1.3 Scope

The following development tools Ruby On Rails and Django software based on parameters and evaluation criteria to determine the best tool to cover all user requirements are compared.

System implementation will benefit the company Omnilife and all their employers, as they will be managers of their networks independently.

The acquired knowledge will be applied in the development of a system of management and control oriented Network Marketing (Robert Kiyosaki, 2012).

This system will have the ability to:

- Have control over customers and value their profits.
- Check the inscriptions that each of the entrepreneurs do.
- Check the level in which they are located.

The system has the following modules:

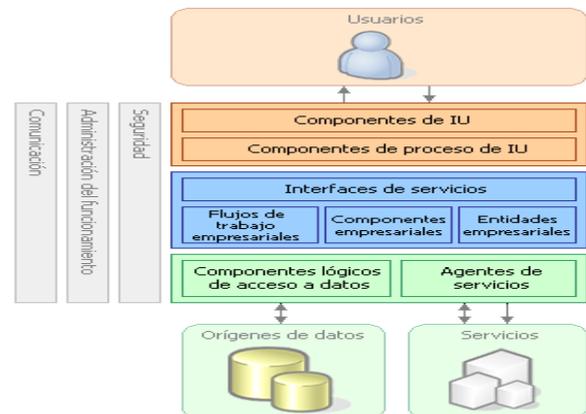
- User Management: lead creation, management positions or roles and system users.
- Catalog of projects and activities: keep a record of activities and projects to be implemented in the company.
- Log: customers will register each user register under its code or membership.
- Reports

For carrying out the computer system cascade methodology it is based on sequential or linear processes, essentially as a linear model of software development will be used. This model flows sequentially from the start point to the end point. (Aristega, 2010) (Shari Lawrence Pfleeger, 2002)



Graphic 1: Organizational system architecture Business

Source: Own



Graphic 2: Technical System Architecture.

Source: Modelo n-capas, recuperado de <http://wiki-aplidaniel.wikispaces.com/file/view/n-capas.png/251847972/n-capas.png>, 2015

1.4 Justification

Technological progress today has made the institutions or companies seek ways to automate their fields or processes to facilitate their performance. With the comparative study of the tools is to facilitate the decision to use a tool to create a system that will streamline processes control and management in the field of Network Marketing (Cabrera, 2005).

Analysis tools as a thesis project, allow to obtain a same documents that serve as a guide for teachers and students, and professionals in the field of information technology and application development ensuring excellent quality.

It will be an incentive for students to continue to conduct proper investigations of new methodologies and tools such as frameworks for better software development.

2. Theoretical Framework

This section contains topics related to the company Omnilife which will give you a brief idea of what is and what business handles or what your activity while contents of each of the tools or frameworks to be used in the next chapters for application development system.

2.1 Omnilife Company

The company Omnilife as it is known, is a company that is responsible for conducting multilevel business, related this with network marketing or business of the XXI century.



Graphic 1: Omnilife Company Logo.

Source:

https://www.omnilife.com/boletin/images/22JUL15/boletin_220715_01_c.jpg

This company is responsible for developing multivitamin products are nutritional supplements that help improve the functions of the human body, in addition to this also produces beauty products. Its headquarters is located in Guadalajara-Mexico. It has more than 6000 employees and more than 5.5 million independent businessmen also known as distributors operating in more than 19 countries.

2.2 Ruby On Rails

Ruby is a language that created the Japanese Yukihiro Matz Matsumoto on February 24 of the year 1993 and presented publicly in 1995.

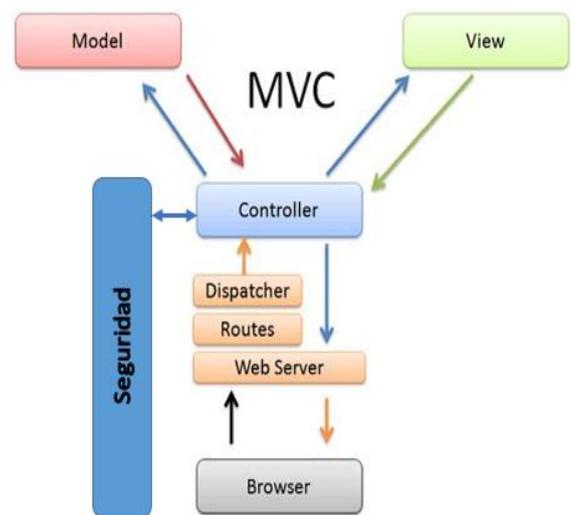


His name Ruby was given jokingly referring to language that then was called Perl. Ruby On Rails is a programming language created by David Heinemier and released to the public in 2004. Rails is a language you could say that is stubborn to say that there are better things and to achieve as programming is concerned, is has put in the hands of programmers to make your job easier because it avoids having to repeat code, as this is the philosophy of RoR (Ruby on Rails), Do not repeat Yourself.

Rails is essentially an implementation of a design pattern known as the MVC software.

This system divided into three components:

- Data model.
- The view or graphical interface.
- The controller contains the business logic.



Graphic 4: MVC architecture Ruby On Rails.

Source: Own

2.3 Django



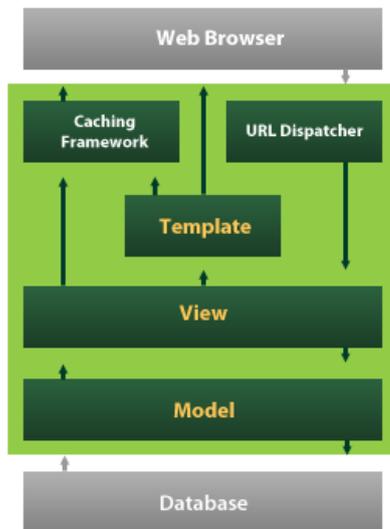
Django is a framework whose main feature facilitate the task of the programmer or software developer. This framework was worked in the administration of news pages, such is the case your design is evident because it provides a number of features that facilitate the creation or agile development oriented content pages.

Some authors mention that Django creates an administrative page or application built for managing content and pages; this page allows you to create, update and delete objects in the content, but it certainly keeps a record of every action performed, similarly provides an interface to manage users and user groups taking into account the permissions that can be assigned.

Django also has tools to provide a feedback system, tools content via RSS and Atom, also has flat pages that are used to manage content pages without the need for drivers

or views for these pages, and last but not least important to have a system redirection URLs (Uniform Resource Locator o Localizador Uniforme de Recursos).

Django follows the architecture Model View Controller (MVC), although they develop their projects with this framework emphasize that prefer not to rely on this but Django what is called driver on a true MVC framework here is called sight and view change takes the template name. Because the layers have the Django framework and foundation that are mediator, allows programmers dedicated to building only the Entity objects and logic to display or present their work and also of course to control them.



Graphic 5: MVC architecture in Django.

Source: http://blog.chattyhive.com/wp-content/uploads/2014/01/Django_mvc.png

- **Presentation Logic**

Here the interaction of the programmer or user and computer equipment is handled. (PC, Laptop). In Django framework, this task is designated template and the template loader to gather information and present it to the user.

Within this presentation layer system configuration it is also URLs.

- **Control**

In the control layer is the application logic or the program itself. In the Django framework are presented by the manipulators and the views, the presentation logic layer depends on this layer and it depends equally layer domain.

- **Mediator**

Is the main responsible for managing the interaction between subsystems Foundation and Entity. In this part of

the object-relational mapping in charge of the engine it is done Django framework.

- **Entity**

Entity or subsystem is responsible for managing business objects, also it has an advantage because the object-relational mapping allows you to write Django objects that are easily entity type and standard.

- **Foundation**

Foundation or subsystem foundation has the primary task of managing the work with databases low. There is a foundation level support BDD for some but for others it is still being tested, to know all about support.

2.4 Postgresql

PostgreSQL is a powerful database system, open source object-relational. It has more than 15 years of active development and a proven architecture that has earned a solid reputation for reliability, data integrity and correctness.

It runs on all operating systems, including Linux, UNIX (AIX, BSD, HP-UX, SGI IRIX, Mac OS X, Solaris, Tru64), and Windows. It is fully compatible with ACID, has full support for foreign keys, joins, views, triggers and stored procedures (in multiple languages). It includes over SQL: 2008 data types, including INTEGER, numeric, boolean, CHAR, VARCHAR, DATE, INTERVAL and TIMESTAMP. It also supports storage of binary large objects, including images, sounds or videos. It has native programming interfaces for C / C ++, Java, .Net, Perl, Python, Ruby, Tcl, ODBC, among others, and exceptional documentation.

A database enterprise-class, PostgreSQL boasts sophisticated features such as Multi-Version Concurrency Control (MVCC), point in time recovery, tablespaces, asynchronous replication, nested transactions (savepoints), online backup / heat, a sophisticated query planner / optimizer, and write ahead logging for fault tolerance.

3. Analysis before and after implementing the system.

At this time the company has been generating tools, it has not made for use of each of the users, but globally.

What we want to do today is an analysis tool that is able to give information to the user in a simple and dynamic way. For this you have the idea and the will to shape is that each user have a software that allows them to keep track of advertising and marketing revenue to Network company.

With this idea will make each user to create your company and take control of people who go to work in your organization, while it is an advertising tool or information, because it will contain information on the services provided and how conduct business.

3.1 Comparative study of tools

A correct comparison regarding the most important characteristics regarding the Frameworks Ruby On Rails and Django, is the key to select axis which tools will be best for the development of the application, and generate a better solution to the problem. These points should be analyzed convenient way to get positive results.

The points are taken into account should be assessed by a scale which will assume the parameters are taken according to the need that has arisen and to the satisfaction of a better development environment as programming is concerned.

3.1.1 Rating scales

A rating scale is what allows to obtain results of a particular subject matter. With this you can draw conclusions and determine results on the topic chosen. A scale always contains parameters which are the basis on which it will work or also known as conditioning, variables, etc. There are countless scales which work effectively allow for an analysis or investigation by technical or time and Likert scale is used.

Well for comparison Likert scale is used as said before, which measures and evaluates the options or items proposed to perform work on that scale the criterion of persons or information is measured to be obtained in an investigation, which can handle 4 or 5 or 7 parameters all this depending on what the user sees fit. To get an idea of the scale Likert to cites an example, which will indicate the way it has to work this scale:

Cuadro 2. Escala de evaluaciones

| Valor | Significado |
|-------|---|
| 1 | El atributo no es importante en la evaluación del desempeño del encuestado. |
| 2 | El atributo es ligeramente importante en la evaluación del desempeño del encuestado. |
| 3 | El atributo es regularmente importante en la evaluación del desempeño del encuestado. |
| 4 | El atributo es importante en la evaluación del desempeño del encuestado. |
| 5 | El atributo es muy importante en la evaluación del desempeño del encuestado. |

Graphic 2: Example of using Likert.

Source:

<http://www.scielo.org.mx/img/revistas/peredu/v34n137/a9c2.jpg>

3.1.2 Evaluation parameters

The parameters described below are the cornerstones to achieve a result which is being sought. The parameters are the following:

Learning: to be an efficient tool should be easy to use and understanding, and thus to interact in a clear or accurate saving time and avoiding problems when making an application or software.

Portability: This aspect is an important point because we need that our application can be connected to any system that is compatible with any infrastructure.

Documentation: at this point refers to the ease of finding documentation (books), web pages, sites or blogs that are very helpful with information tools that are investigated in this part.

Support: any tool or turn any application must be supported, this means that there must be documentation regarding its management, its advantages, disadvantages, blogs or books in which you talk of proper maintenance or use of the tool in this case of the frameworks to be investigated.

Templates: They are the tools that have default each of the frameworks to facilitate the user modeling websites or blogs.

Dynamic Views: This parameter is one of the options that most attention because they are useful for immediate updates on a website.

Security: the internet as we all know is a danger for safety, but the frameworks have worked hard on it to provide better protection of data and information.

Sessions: a secure site should have a screen for a user login for protection and also as this may take action according to their category. Then why it explained parameters used:

Each of these parameters are important to obtain a result of a software to help solve the problem but also have the necessary information for safe and avoid having conflicts in this part guarantees.

The following table explains the valuation and how it will work to get the final result and the winning tool.

The name of the tool, its indicator or parameter will be, its valuation which will be between the range of 1 to 5 and this will mean the following.

Chart 1: Established score Indicators.

| Nombre del framework | | |
|----------------------|--------|------------|
| Características | Puntos | Porcentaje |
| Deficiente | 1 | 20% |
| Poco eficiente | 2 | 40% |
| Limitado | 3 | 60% |
| Eficiente | 4 | 80% |
| Muy Eficiente | 5 | 100% |

Fuente: Own

Thus the indicators that determine what will be the winning tool to solve the problem that has currently obtained. These parameters will be essential when the selected frameworks qualify for study because they are the most important characteristics in both, according to research that has been done.

3.1.3 Winner determination software

Conducting an analysis of all indicators to determine the winner software, a general table of scores that contains each of the items taken as basis with their respective rating percentage is obtained, then finding the best framework or tool to implement the system according to the need currently it has, with this will be achieved provide an efficient and dynamic solution to the problem that has arisen.

Chart 2: Percentage results frameworks as indicators

| Parámetros | Ruby On Rails | Django |
|------------------|---------------|-----------|
| Aprendizaje | 80% | 100% |
| Portabilidad | 80% | 100% |
| Documentación | 80% | 100% |
| Soporte | 100% | 100% |
| Plantillas | 80% | 100% |
| Vistas Dinámicas | 100% | 100% |
| Seguridad | 100% | 100% |
| Sesiones | 100% | 100% |
| Total: | 720%=90% | 800%=100% |

Source: own

For further appreciation has taken the number of valuation given to each parameter to be greater understanding to the reader in which the value is written as estimated on the scale of 1 to 5 on the Likert scale to assess the parameters required by the author and according to the needs you have had when wanting to solve the problem currently found in the company, or the need once the user has.

To do this then the table containing such items as their rating given according to research that has been done to get the best tool the two has been taken into account for research is presented in this rating shown in settings or numbers Likert scale:

Chart 3: Results table according to the Likert scale

| Parámetros | Ruby On Rails | Django |
|------------------|---------------|---------|
| Aprendizaje | 4 | 5 |
| Portabilidad | 5 | 5 |
| Documentación | 4 | 5 |
| Soporte | 5 | 5 |
| Plantillas | 4 | 5 |
| Vistas Dinámicas | 5 | 5 |
| Seguridad | 5 | 5 |
| Sesiones | 5 | 5 |
| Total: | 37=90% | 40=100% |

Source: Own

Thus we get the result of each parameter and thus obtaining a winning tool in this case is achieved as seen winning software development Django, which gets a percentage of 100% according to items it has raised, according to the needs that refer to what is needed for the better development of a system of Network marketing.

The results must be able to be seen and understood quickly and clearly. That is why so the construction of this section must begin preparing tables and figures, and only posteriormente draft the relevant text based on them. The first paragraph of this text should be used to summarize in a concise, clara and direct sentence, the main finding of the study. This section should be written using the past tense.

Although much passive or impersonal ("found that ...") as used preferen some publishers. The text should cite all tables and figures, should be taken from other studies shall include references. All tables and figures should have their respective legend.

Regarding the format, this section can be arranged in subtitles, and each of these can not be subdivided again. For an example refer to Annexes.

4. System Implementation

Once done the appropriate analysis tools and taking into account each item that has been given to know their result against another tool we have obtained a winner and now proceed with the completion of the application.

To make the implementation of the system will use the Web methodology called OOHDM (Hypermedia Design Method Object Oriented).

This methodology is oriented to what is the design of hypermedia applications and the Web, it is becoming the method most used to design applications of different types as well as are the galleries that are interactive, web famous sites and multimedia presentations, which are in full boom in internet networks.

The OOHDM methodology is inspired by the model known as HDM (Hypermedia Design Model), which separates global and structural aspects of an application.

But it is distinguished by its object orientation, this methodology also has 4 phases or stages which are:

- **Conceptual Design**
- **Navigational Design**
- **Abstract Interfaces Design**
- **Implementation**

Each of the stages or phases define a specific model or scheme in which classes or new elements are introduced.

- **Conceptual Design.-** at this stage a construction of a conceptual scheme which is represented by objects called domain classes and relationships between these classes is performed.

At this stage most used is a model of entities and relationships called semantic data model. OOHDM model (Hypermedia Design Method Object Oriented) methodology, offers a class-based, relationships and subsystems scheme, also called conceptual scheme.

- **Navegational Design.-** at this stage all the navigational classes and are nodes and links defined. On the other hand you also have the structures and rates which visits are guided.

The links are only those derived from the relationships and nodes are the representation of each of the logical call windows or views. The designer makes a description of the navigational structure clearly and with terms called navigational context. OOHDM (Hypermedia Design Method Object Oriented), it proposes a design or model highly enriched for mastering what is the application.

The hypermedia however model defined in a level called level of abstraction and consists of two parts that are navigational classes and navigational contexts.

- **Abstracts Interfaces Design.-** as its name implies, this interface is dedicated to the specification of the abstract interface.

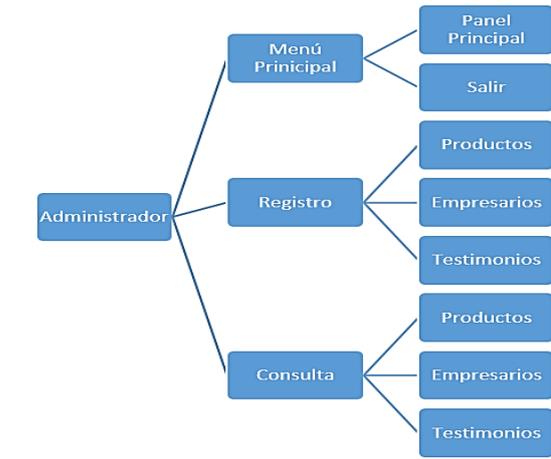
This is defined in a way which should appear called navigational contexts. At this stage a type of description of the elements or objects that have the interface or view is performed, and the objects associated with navigation of course they should go with each of the features that have each object.

If the navigational design separates and what would be the design of abstract interface allow you to build two different interfaces for navigational model.

- Implementation.-** This fourth stage is dedicated to implement all interface objects with which account application.

These would, relationships between schemes which are the conceptual, navigational and objects that are interface in the OOHDM model (Design Method Hypermedia Object Oriented), which proposes a design or model highly enriched the domain of what is the application.

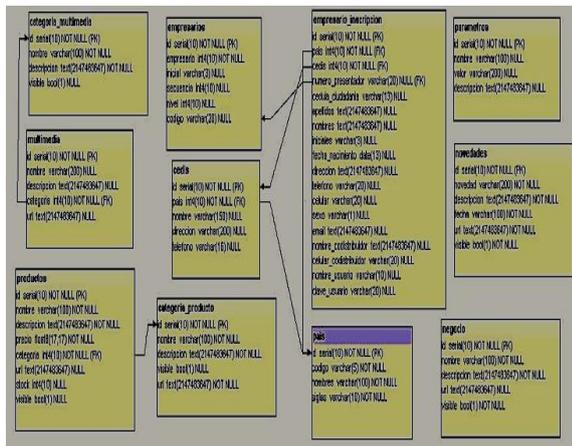
This method is an open model because models are not imposed domain support and allow specialization of classes and navigational contexts.



Graphic 8: Navigational Model Manager

Source: Own

4.1 Conceptual Design



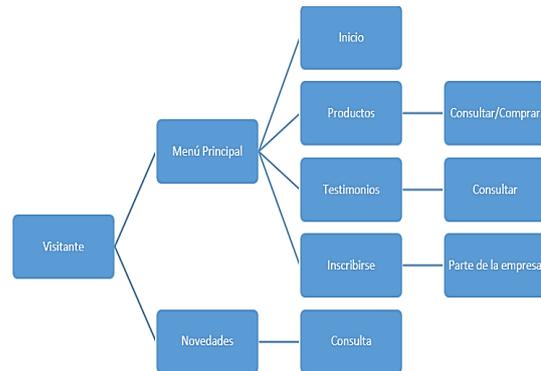
Graphic 3: Conceptual design Application

Source: Own

In the model of the database it reflects each of the classes also known as objects which interrelate to help implement the software management application or Network Marketing.

4.2 Navegational Design

Navigational model is nothing but the graphic design of the functions you can perform the administrator regarding the application. Administration, operation, modification and even eliminating it. This to a greater understanding of the user or reader in this case, so that later understand the new Web methodology.

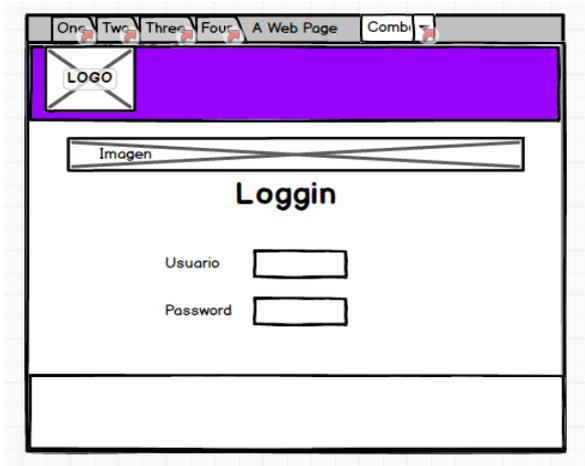


Graphic 4: Navigational model Web Client

Source: Own

Navigational model of the user or visitor explains the options that you can review, you can do it from anywhere, besides this there is the option to join the company, this is done at the option of enrolling which ask all your data and explain that is that option as well as the benefits of belonging to the company.

4.3 Abstract Interfaces Design



Graphic 5: Abstract phase interface User Entry Screen.

Source: Own

In the abstract implementation phase of a general outline of the screens to be used in the web system is created, this is an idea of how you can present the view for the user.

This will help because it must have a clear idea prior to implementation, finding the best way to reach the user and that is to your liking when visiting the website.

To do this as a presentation regarding the elements are concerned, as you can appreciate, therefore consist of a header, a context, images that serve as information and communication with the user is performed.

All this in a dynamic and entertaining way giving a better presentation of the company to users or customers.

4.4 Implementation



Graphic 6: Products view

Source: Own

Implementation is the phase where style and color is given to each of the screens made as a sketch these being a reflection of the work done previously and all the research that was achieved at work.

We have as an example the product view, it is one of the many views that will take the client or user.

The view products contain clear information of each element for better user information in this window the option once it has been informed of what each product exists also to acquire.

5. Conclusiones

- The completion and implementation of the control system of Network Marketing, you can efficiently be accurate in terms of profits obtained for further improvement of the company and also improve significantly the communication with employers who are within the network.
- Once this system and be operational on the Web, a gain in communication with the public will be obtained because it is available to all, at any time so they can inform about the benefits.
- Applying a new methodology applied to the Web allows another point of view in terms of technologies and methodologies are concerned, since it is out of the schemes to which they are accustomed. This will help to have a greater ease of understanding of Web applications and procedures.
- After the application is notable saving of certain resources such as time, money, paper and labor to reach many people. This is a way to improve both communication, orders, sales and so the company will benefit because it has the option to perform new tasks better manera. En the conclusion must respond to the problem posed in the introduction, to publicize what was the real contribution of research, know what conclusiones already arrived prácti-cas the theoretical implications that can be drawn.

Gratitude

My eternal my wife and daughters who were able to support me at all times, to carry out this work thanks.

To my family, my parents and sisters, who were able to support me when I had moments of weakness during the period of the preparation of my thesis.

Eng. Omar Lara who examine ourselves the task of documents and correct each of the weaknesses that were shown in them gave.

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