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GCAD TECH PROFILE WEBSITE USER EXPERIENCE DESIGN USING THE GOAL DIRECTED DESIGN METHOD

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Abstract

GCADTech is a company engaged in services such as CAD engineers, CNC Programming, Mold Making, 3D Printing, 3D Scanning and training regarding manufacturing. GCADTech has a desire to develop its company by creating a profile website that aims to make it easier for the public or internet users who need services in the manufacturing sector. The purpose of this writing is to produce a design for the appearance of the GCADTech website which uses the Goal-Directed Design method, which consists of six stages. The first is research to find out what needs are needed for making a website. Both modeling models the research results into the form of a user persona. The three requirements are specifications of what must be implemented. Fourth, namely the design framework, at this stage, the website interface design is carried out. The fifth is refinement, this stage is working on the user interface to become a mockup with a high-fidelity level. The six design supports that create an analysis of the results of prototype testing with the user experience questionnaire (UEQ). The results of the UEQ assessment on the website display get Above Average on all scales.

Keyword: *User Experience, UEQ, Goal Directed Design, Website, Profile Website.*

1. INTRODUCING

Currently, the development of information technology in the Industry 4.0 era requires everyone to develop new ideas and innovations in making technology-based products, especially technology in the website field. Many of the companies engaged in the service or production sector use websites to introduce their company profiles, for example companies engaged in services such as GCAD Tech [1] .

GCAD Tech is a company engaged in services such as CAD Engineers, CNC Programming, Mold Making, 3D Printing, 3D Scanning and providing training around the world of manufacturing. Currently, GCAD Tech's information delivery media is only through Instagram, while companies need to deliver fast and accurate information to customers. The website is an information provider where its existence is very much needed, information about a company is very important, therefore the way to create a company profile website is [2]. Purposeful design focuses on justifying and motivating developers on specific projects, rather than building projects around small tasks and feature details. Goal-oriented design is based on analyzing data and conducting extensive research to assess user behavior, habits, and goals. The process of designing a useful product can be divided into six stages. Refinement, modeling, requirements definition, framework definition, and finally refinement and development support.

The GCAD Tech company profile website has the aim of accommodating clients from GCAD Tech getting more complete information about the company, of course, than Instagram media. Therefore, to be able to create a good user experience from the GCAD Tech company profile website that is in line with the purpose of creating a company profile website, GCAD Tech will use the goal-directed-design (GDD) method [3]. The GDD method is a method that can be implemented into designing a GCADTech website that is centered on goals according to the needs of GCADTech and the goals of GCADTech. In using this method, it has several stages of the process such as Research, Modeling, Requirements Definition, Design Framework, Design Refinement and Design Support [4]. Because the use of this method can provide solutions that can meet the needs and goals of users, and can also deal with implications in a business or organization technically [5].

Once designed, interactive user experience measurements are carried out using the User Experience Questionnaire (UEQ). Measurements that can produce comprehensive measurements that become user experiences are called UEQ. UEQ has 6 scales namely attractiveness, efficiency, perspicuity, dependability, stimulation and novelty [6]. The writer use five previous research about UEQ or directed designed method, in the first research with the title is Virtual laboratory

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application based on virtual reality simulation as training tool of turning machine using goaldirected design method, for this Research the Goal-Directed Design (GDD) method was chosen to develop VR simulation. This method is used as a procedure to accomplish the good design of application which including research, modelling, requirements, framework, refinement, and support. The application is built using Unity 3D software and run on Oculus Quest hardware [7], in the second research with the title is Goal-Directed Design Agents: Integrating Visual Imitation With One-Step Lookahead Optimization for Generative Design, the goal-directed agents outperform the human designers used to train the network as well as the previous feedback-agnostic versions of the agent in both scenarios. This illustrates a design agent framework that can efficiently use feedback to not only enhance learned design strategies but also adapt to unseen design problems [8], in the third research with the title is Perancangan Dan Evaluasi Sistem Transaksi Online Pasar Tradisional Menggunakan Metode Goal Directed Designdan Evaluasi Heuristik in this study is the Goal Directed Design method which is a user interface design design method that fits the user's goals and needs. In this study there are five stages of experimental research, modeling, requirements, frameworks, and improvements. As well as the evaluation in this study using heuristic evaluation consisting of 10 principles [9], in the fourth research with the title is Evaluating urban environment quality (UEQ) for Class-I Indian city: an integrated RS-GIS based exploratory spatial analysis in this study, the Urban Environmental Quality Index was constructed using 15 indicators and three interconnected dimensions (eco-environment, landscape and built-up, and socio-economy). The three domains and Urban Environmental Quality Index were computed utilizing Principal Component Analysis with average aggregation techniques, in the fifth research with the title is User experience evaluation of e-report application using cognitive walkthrough (cw), heuristic evaluation (he) and user experience questionnaire (ueq) implementation of cognitive walkthrough techniques, heuristic evaluation, and users' experience questionnaire in this research aimed to find out the results of evaluating user experience from the aspects of effectiveness, efficiency, user satisfaction, and recommendations for improvement. Effectiveness and efficiency were calculated by Cognitive Walkthrough techniques (CW), user satisfaction by user experience questionnaire techniques (UEQ) and recommendations for improvement, obtained from experts who discuss aspects of usability with Heuristic Evaluation techniques and Cognitive Walkthrough data [10].

2. RESEARCH METHODS

In conducting research, a flowchart or flowchart is needed in the research so that the research can proceed according to plan and structure. Figure 1 is a flowchart from a study entitled designing the GCADTech website user experience using the goal-directed design method.

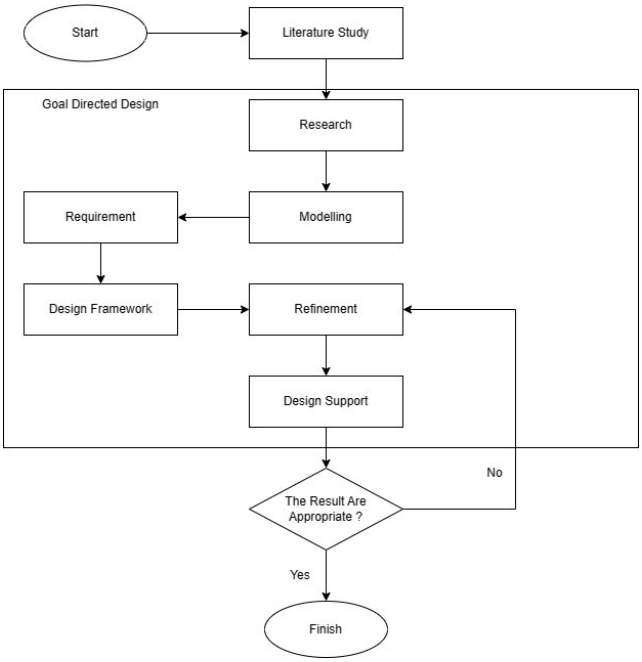

Figure 1. Research Stage

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2.1 Study Literatur

The literature study is the first stage carried out in this research. This stage looks for sources that have the correct level of validity, either from scientific journals or books.

2.2 Research

At this stage it is the stage to find what is needed in the research to fulfill the results of the literature study there are 3 work steps, namely:

a. Determine the scope
   Determining the scope or boundaries is important because it has the goal of making it easier for writers to conduct research with the object to be studied. The author uses limits by taking the population according to research objectives so that they can solve the problems found in this study by determining the stakeholders who are the owners of GCAD Tech [11].
b. Interview and Observation
   Interviews were conducted in order to fulfill the required data as a reference in the development of the GCAD Tech website interface. The interview was carried out by asking several questions such as activities, objectives, and features needed and the results of the interview will be modeled at the modeling stage [12]. Observations are made to ensure that the scope is appropriate so that it can proceed to the next stage.

2.3 Modeling

The third stage is modeling. The research results that have been carried out are collected and continued into the modeling process. Modeling, namely modeling the results of determining the scope, interviews, and observations into the user persona. The purpose of creating a user persona is used as a consideration in designing the system [12].

2.3 Requirement

The fourth stage of requirements is the specification of the implementation to be carried out. Description of how the system on the GCADTech website should work or the parts in the GCADTech website system and can be used as a limitation in the process of developing a system from the GCADTech website [13].

2.4 Design Framework

The fifth stage design framework. In this stage a website user interface design is made such as functionality and information based on needs, the results at the design framework stage are the framework, and the wireframe [14].

2.5 Refinement

The sixth stage refinement, after the wireframe has been completed then will improve the user interface of the GCADTech website to become a GCADTech website mockup that has a high-fidelity level. High fidelity is a GCADTech website mockup that has the highest level of similarity with the GCADTech website that will be made later [15]. And complete the user interface such as giving color, and adding information to the user interface so that it is detailed and can provide interaction in accordance with the GCADTech website that will be made. Usually, this kind of thing can be called a prototype, then if a prototype has been completed then the next stage will be evaluated by stakeholders [16].

2.6 Design Support

The seventh stage is Design support, at this stage, it is the stage that becomes a supporter by carrying out the pen exam. Evaluation carried out on the work of the GCADTech website user interface design which has received approval for the correct value can later be continued into a GCADTech website development stage[17].

3. RESULT AND DISCUSSIONS

3.1 Design Support

At this stage, it contains the results of interviews and observations of the owner of GCADTech, several people in the GCADTech company, and clients or non-clients whose goal is to find out the needs that exist on the GCADTech company website.

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3.2 Modelling

Modeling stages with making a persona as a role model for general user groupslikeGCADTech clients and non-clients. Personas were created based on results that have been conducted from GCADTech owner interviews. Personas have information in the general user description namely demographics, goals, motivations, priorities, and technical with additional photos and names that can represent the general user. Below is an image of the persona that was created..

Persona	Pengguna Umum
Foto	
Nama Fiksi	Bagus
Pekerjaan	Drafter
Demografi	Laki - laki 24 Tahun Sarjana Teknik Mesin
Tujuan	Mencari informasi layanan yang tersedia di GCADTech Mengenalsi profil GCADTech Melihat kontak yang dapat dihubungi
Motivasi	Mendapatkan jasa design yang tepat Mendapatkan pelayanan yang maksimal dari GCADTech
Prioritas	Mengetahui layanan yang diberikan GCADTech Melihat profil perusahaan yang menarik Melihat dan menghubungi kontak yang tertera pada website
Teknikal	Website dapat diakses sewaktu - waktu Membandingkannya dengan website lain Menggunakan komputer atau laptop

Figure 2. Personas

3.3 Requirements

This stage determines the list of website that needs to be based on the results of the modeling stage. Requirements that have been described then an analysis is carried out to make it into content which will later be compiled as a series of websites. Below is a list of website requirements:

a. Company profile
   Explains GCADTech and service guarantees as well as profiles of employees at GCADTech
b. Company Services
   Displays existing services at GCADTech
c. Corporate Partners
   Featuring partners from GCADTech
d. Company Testimonials
   Displays testimonials from clients who have used GCADTech services
e. Gallery
   The result of the design that was made by GCADTech
f. Contact
   Displays form fields to use GCADTech services

3.4 Framework Definition

The framework definition is processing the data that has been collected at the research, modeling, and requirements stages by defining it into sketches and designing the user interface on the GCADTech website. From the framework definition stage, it produces a wireframe that has several layouts, for example, information that will be used later, and the initial interactions resulting from work steps.

3.5 Refinement

Refinement is a detailed development of each component of the previous GCADTech website interface from the framework definition stage. This stage will later produce a GCADTech website mockup. There are several GCADTech website mockup displays as below.

a. Dashboard
   The dashboard is the main page on the GCAD profile website. Inside the dashboard there are several main menus on the GCAD profile website as shown in Figure 3.

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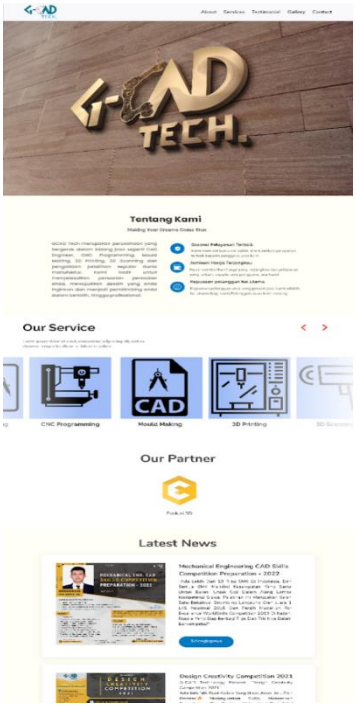

Figure 3. Dashboard

b. About Us Page
On this page there is a company profile for the visitors website that wants to know the company profile GCADTech contained in the Figure 4.

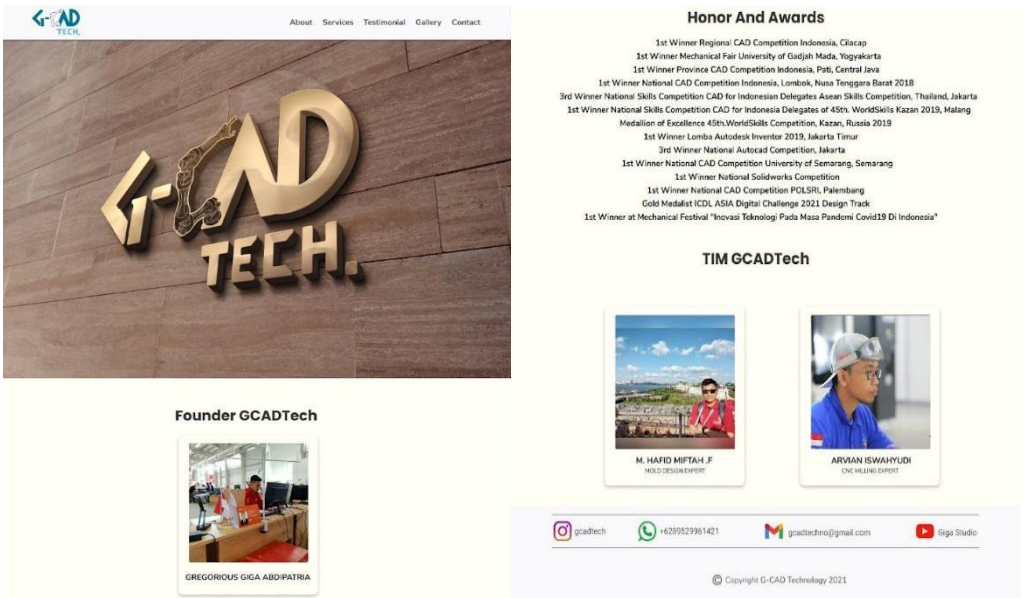

Figure 4. About Us Page

c. Service Page
The service page is a service that has been provided for customers to choose what service they want, the service page is located at Figure 5.

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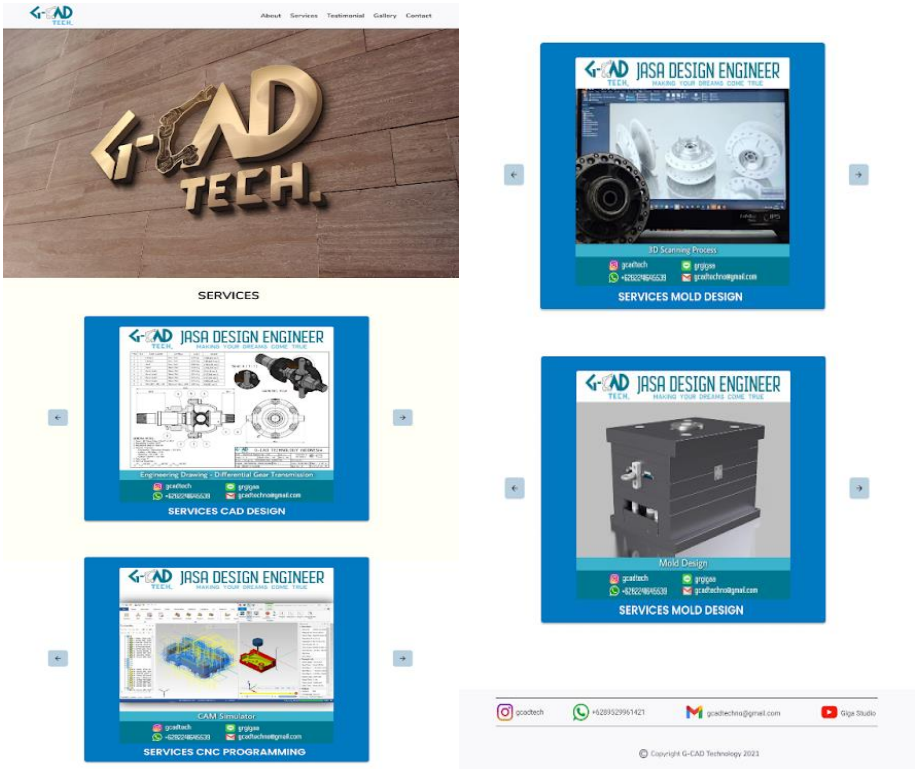

Figure 5. Service Page

d. Our Partner Page
This partner page is-connection cooperation from the GCAD TECH company with other companies, our partner page there is in Figure 6.

Figure 6. Our Partners

e. News Page
This news page provides the latest information from the company, a mockup in Figure 7.

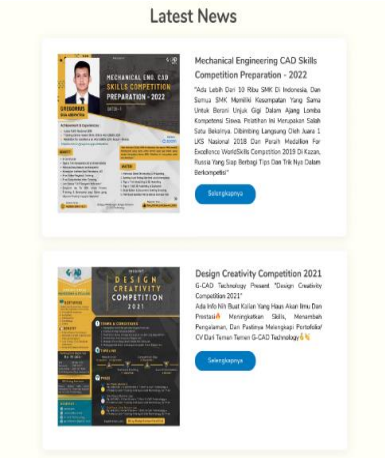

Figure 7. News Page

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f. Feedback Page
The feedback page is a collection of input from customers in the form of satisfaction or dissatisfaction with the services that have been worked onn, the mockupin Figure 8.

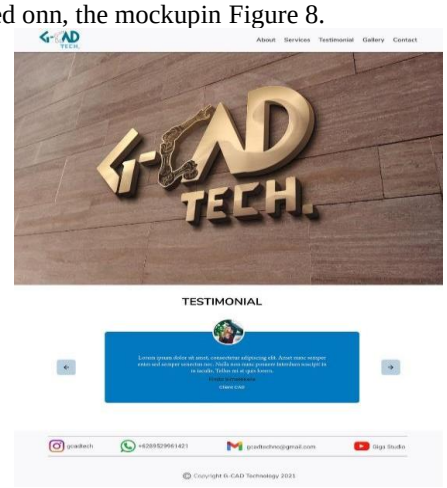

Figure 8. Feedback Page

g. Gallery Page
The Gallery page is a collection of documentation of our work, the mockup is in Figure 9.

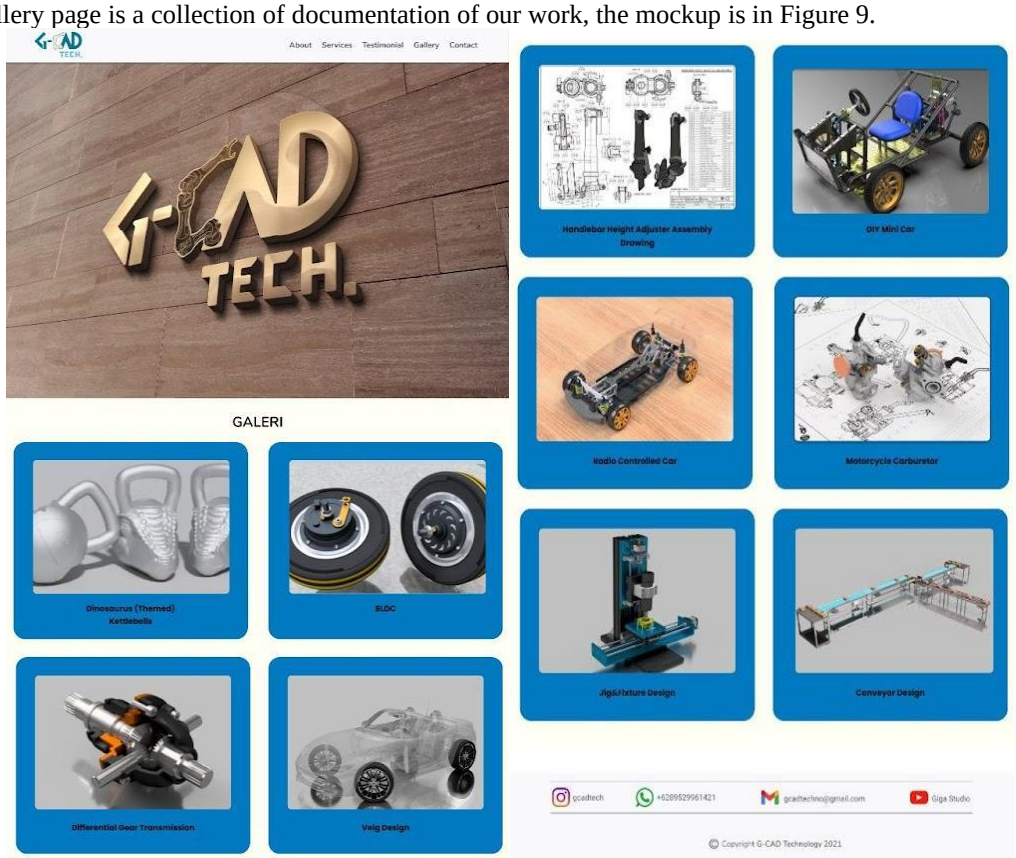

Figure 9. Gallery Page

h. Contact Page
The contact page is a page for making reservations or ordering our services, mockupsit in Figure 10.

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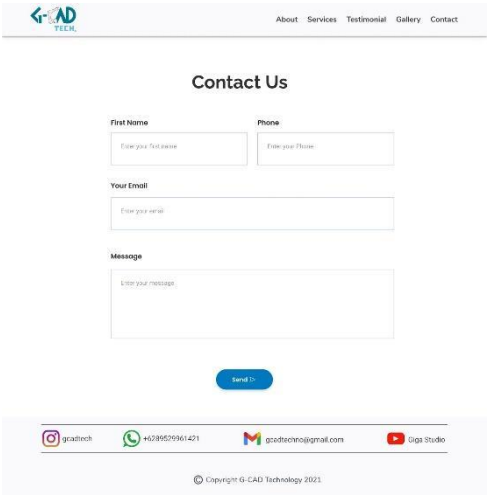

Figure 10. Contact Page

3.5 Development Support

The evaluation aims to suit the needs of the GCADTech company, user experience, and satisfaction with the interface. This evaluation was carried out using the User Experience Questionnaire (UEQ) system. The researcher evaluates 20 respondents. Questionnaire UEQ is used to get the level of user experience at scale attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty.

Tests on users provide good input results, in the form of a generally good appearance, easy-to-understand content, and easy-to-find layout navigation. There are also negative inputs like the display being less responsive, and the display looking stiff and monotonous.

Scale	Mean	Comparisson to benchmark	Interpretation
Attractiveness	1.42	Above average	25% of results better, 50% of results worse
Perspicuity	1.26	Above Average	25% of results better, 50% of results worse
Efficiency	1.42	Above Average	25% of results better, 50% of results worse
Dependability	1.16	Above Average	25% of results better, 50% of results worse
Stimulation	1.16	Above Average	25% of results better, 50% of results worse
Novelty	0.79	Above Average	25% of results better, 50% of results worse

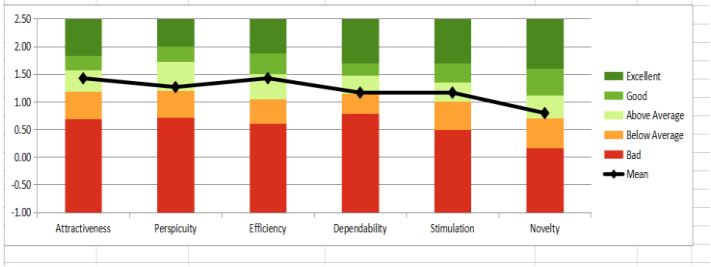

Figure 11. Graph of UEQ Result

Implementation of the UEQ Questionnaire yielded results category Above Average. Scale Attractiveness generates value1.42, perspicuity 1.26, efficiency 1.42, dependability 1.16, stimulation 1.16, and novelty 0.7.

4. CONCLUSION

In this study, we draw conclusions from this study that analyzing the requirements for designing a user experience website for the GCADTech profile has several steps, namely research, modeling, requirements, and development support from the Goal-Directed Design method. In the research phase, interviews were conducted with the GCADTech owner, several people from the GCADTech company, as well as several GCADTech clients and non-clients who produced a document. Then at the Modeling stage, it produces a persona from several clients and non-clients from GCADTech. Then at the requirements stage, it produces a process where needs have been described and then analyzed and makes it an overview for compiling a series of websites..

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At the stage of developing the User Experience from the GCAD Tech Profile Website, there are stages of framework definition and refinement of the Goal-Directed Design method. Next is the framework definition stage itself is the process of processing the results of the three previous stages. The results at this stage are in the form of wireframes and prototypes. Then on stage, this refinement is a continuation of the stage framework definition with artificial design details on the GCAD Tech profile website design. Type The resulting prototype is included in the high-fidelity category.

The evaluation and analysis stage of designing the user experience for the GCAD Tech Profile Website includes the Development support stage. At this stage, a valid value on the Profile Website has been designed. Evaluation this time using User Testing using a Prototype as part of a qualitative evaluation. Besides that quantitative evaluation was also carried out by using the User Experience Questionnaire (UEQ) questionnaire to 20 sources person to users. The implementation of UEQ gave the results of the Above Average category on the six scales of the UEQ.

The suggestions from this research aim for further research, namely to develop the GCADTech website so that it becomes a website that is ready to use. This method uses software development in accordance with the user experience. The GCADTech website can also be re-evaluated on the user interface with various methods of usability testing. In this study, the perspicuity scale and dependability scale have lower values compared to other scales contained in the User Experience Questionnaire.

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