Web Development System Providing E-Services using HCI Principles

Pinaki Babar¹, Suvarna Pawar²

¹Founder of Vyominnova, Software Engineer, dhayari, Pune- 411041, Maharashtra, India.
²Associate Professor, Sinhgad College of Engineering, Vadgaon, Pune- 411041, Maharashtra, India.

---***---

Abstract - The aim of this project is to study the role of Human-computer interaction (HCI) in providing e-services in different areas of human lives and provide a web application system for it. The e-services chosen target the problem of social interaction that has been hampered during the pandemic. Ranging from the professional to personal reasons where these communications which were performed through paper products conventionally, the digitization has been introduced to these products to enable safer, cheaper and more user-friendly and personalized experiences to the people using the system. The users get customized interactive digital cards like business cards, wedding cards, invitation cards, greeting cards, brochures, marriage biodatas, and CVs. The aim of the system is to provide a more sustainable digitalized alternative to traditional practices of communication prevalent in society for ages.

Key Words: Human-computer interaction, e-services, e-commerce, web application development system, digital marketing, e-branding, UI/UX, social interactions, data visualization

1. INTRODUCTION

During the pandemic when everybody was locked down in their houses, the economy collapsed. The businesses especially those which were direct B2C or some of the B2B as well collapsed mainly due to lack of a man to man communication. Producers could not reach their customers and vice versa. During this time, the world saw a drastic shift from direct physical modes of communication to digitalized ones in all sectors ranging from entertainment, education to healthcare, and another day to day facilities. Though the world was sure of breaking into the complete digital ecosystem in the future, the pandemic accelerated the process. The people communicated through virtual meetings, used online transactions, followed online distance learning methods, or preferred OTT platforms for entertainment. During this time, however, the places which lacked the facility of internet faced lots of issues. Spreading digital awareness hence was necessary among the unprivileged sections of the society. The small businesses which had absolutely no digital presence suffered initially however, those who transitioned into the new digital market were able to cope up to a lot more extent than they had previously thought of. The digital presence enables you to reach target audiences across boundaries which physical marketing would lack in. People could sell their products throughout the world through e-commerce.

Data visualization plays a vital role in digitalization. Usually, digitalization is considered for professional and work-related purposes. Hence, instead of work-related and analytically driven information visualization, we also propose casual information visualization as a complement to more traditional information visual domains. Traditional systems, techniques, and methods do not easily lend themselves to the broad range of user populations, from expert to novices, or from work tasks to more everyday situations. Taking the potential of digitalization into consideration, this web application development system has been designed.

The principles of human-computer interaction or human-centred designing play a huge role because the whole system is built around humans and they considered to be the epicentre. How humans interact socially and professionally are observed deeply and thus a model around that has been developed here according to the user needs in those areas of study. HCI is about what appears after users and computers system gets together to achieve something. The paper will offer the idea of involving people with HCI by making change in their life. Social interaction and social media are addressed. Also, the paper discusses the changes in daily life with technology. The paper shows the impact of technology on people, the way they communicate and change in work and social habits. The target users are of different age groups, social backgrounds, economic statuses, and professional inclinations. Each type of service or module of the system deals with a specific sector of the target users. Hence, each module is aimed at providing a different set of user experiences. However, all have many common points to form a complete system.

The system mainly aims at reducing the human effort that the user puts in normally by performing them separately- by bringing all the functionalities under one roof thus giving an easier user journey while using the system. Along with these functionalities, aesthetics and visual representation plays a vital role in the system. Hence, a strong and appealing user interface is expected in the system. The principles and skills of designing have a major role to play. As long as the interface is attractive, users will enjoy the journey. Thus visual narration of the data is an important factor here. Data visualization always

---

encourages for its ability to reveal stories within data, yet these "data stories" differ in important ways from traditional forms of storytelling. Our framework suggests design strategies for narrative visualization, including promising under-explored approaches to personal storytelling and professional branding.

The pandemic has redefined our ways of associating with each other culturally as well. Hence a safer means of communication during the meetings is expected while especially during organizing a social event or function which starts right from the invitations sent to the guests. The traditional physical invitation cards pose a threat for the ones who are at the receiving end majorly because of the lack of knowledge of how safe they would have been before falling into the receiver's hands. Thus a digital invitation card would be a lot safer option here. The business cards and brochures are a must go for the businesses for them to keep in contact with their network. However, exchanging business cards has become very risky. Hence, the exchanging of cards without physical contact would reduce the risks they carry all along with them. The ways of sharing those cards in this system can be via digital platforms, social media, or by scanning through the codes.

1.1 Literature Survey

Literature review:

Project review:

Human-computer Interaction (HCI)

Human computer Interaction deals with the users, computers, and how those users deal and interact with the computers and the technologies they are exposed to. In HCI usability is redefined depending on the design aims. Safety and functionality are always comes first, but there are other things that need consider, which includes effectiveness, efficiency, and, in some cases, enjoyability. And HCI design can be the difference between success and failure in today's competitive digital markets, HCI is more combined into our daily lives. In fact, it's pretty much everywhere. We can use hci to find related information, manage finances, to make new friends, advance our careers or studies, and find new forms of entertainment. It has become such an essential part that some of us struggle to imagine living without our devices.

This project aims at bringing the principles of HCI together to build a system that is empathetic towards user needs. The user interfaces of each module will have aesthetic and user accessibility as their primary goals. The functionalities are chosen to improve the users involvement and therefore the user can experience being the primary goal of the whole system.

UI/UX:

The system is essentially a web application used for providing a better digital identity for the user components. The social acceptance of this digital identity will play a vital role. Hence, the interfaces designed for the users are customized completely according to their needs. The user interfaces are responsive web designs that will be viewed on different screens. The rich multimedia like photos, videos, audio, and animations will enhance the user experience. The gap between physical and virtual communication can be bridged by including these multimedia options thus giving a more involved user experience. The initial motive for this project was to understand how the design process, and the visual methods used through it, could be applied to prompt a cultural change within the society.

Users:

There are three types of end-users that will be handling the system.

i) The clients who want to buy the products - who will pay the developers for getting those products, which they can share among their target recipients.

ii) The recipients with whom these products are shared by the above users and thus expected to act accordingly.

iii) The developers and designers who will be handling the system and the user demands and provide them the required products and services.

The system:

The system is essentially a web application consisting of modules that aim at providing and handling the following products and services to the clients.

i) Business cards

ii) Wedding cards

iii) Invitation cards

iv) Greeting cards

v) Marriage biodatas

vi) CVs / Resumes

vii) Brochures

viii) And a special service of converting already existing paper product to digitalized ones.

The system aims at providing these services on a subscription basis. Hence, the clients will have to pay monthly and yearly charges for continuing the services.

My profile:

The system has a login page that will guide the user to this page once the user has signed or logged in. The users can create their own profile and order the products and services they wish for. They can keep track of their services which are currently been developed and ones

Which they have ordered and yet to be completely developed into the final product. They will get the mock-ups and the information about the progress of their ordered products on their profile where they can give feedback and changes they wish for. These changes will help the designers and developers to understand their users better and thus providing the required products. These iterations will be available on the portal until the final product is approved by both parties. Once the product is finally done then the iterations are removed from the system and the product can be viewed on the 'share' module interface.

Thus the system focuses on having direct one-to-one communication between the developers and the clients giving the real experience of getting the necessary work done. A user can have more than one wall for n number of products they wish for.

In case the user wishes to cancel the order, he/ she can inform the system by clicking on the cancel my order option. If the order falls under the terms and conditions of the service providers, then the order can be aborted and money can be refunded.

Share:

Once the products are final and ready to be shared outside, they appear on the shared wall. The share interface has options of sharing that page via social media or any other digital platforms. If the user wants to remove a certain product from the wall they can inform the system by clicking the off button.

Scan :

An option of scanning the QR code is also present for sending and receiving the products. This option is on the home page of the system. The user can scan and get the product in his library.

Library :

The products that the user has received are stored here. The library divides the files into two categories. The first category contains important files that the user wants to save and keep handy and the other category contains

those cards which the user doesn't find important enough to be kept in the star marked category however he/she can search them and find them in the library if in case he/she needs them in the future.

The library contains a search bar to find the required card through the keywords typed. Providing rsvp service so that the information on the cards can be saved on the device.

Create:

This module has a list of all products and services provided by the system, the catalog of sample cards, rates, subscription details, terms and policies of the system, blogs, the latest trends and news about the application, etc. Thus this interface has e-commerce feel to it. The users can select and place an order of the product they wish for. This window contains an 'add to cart' option which further opens the payment getaway window. Once the order is placed then it is transferred to my profile window for further developments.

Digitalization:

Upload the image of an already existing paper product and place an order of adding interactivity to it and thus moving towards digitalization. This will reduce the usage of paper products and thus provide a paperless interactive product against it.

Databases:

There are two kinds of database in the system.

The user database contains user information which includes their login information, their library data, information, and details of the products they have asked for, and the progress of those products.

The developer database contains the data of the company, the products and services on the system, the progress, and details of the orders- which are cancelled, which are in process, and which are dispatched.

Things the user will get in the products:

Design:

Fully customized aesthetically appealing designs along with multimedia options like images, videos, audios, animations, and illustrations.

Functionalities:

Clickable links of websites or social media etc. and thumbnails, and you can also make direct calls from the card and some of the product-specific functionalities as follows:

i) Business cards- appointment planner,

ii) Wedding cards- add the event to the calendar, map navigations to the venue forms filling guests willing to come along with the number of guests who would attend the wedding, navigation to attend the wedding virtually, the storytelling of the couple,

iii) Invitation cards- add the event to the calendar, map navigations to the venue forms filling guests willing to come along with the number of guests who would attend the wedding, navigation to attend the wedding virtually, the storytelling of the couple,

iv) Greeting cards- visually appealing demonstrations, making them personalized

v) Marriage biodatas- an option to send approval or a disapproval message to the user whose biodata has been shared with the other party.

vi) CVs- additional work that needs to be attached like research papers, YouTube channels, social media accounts, blogs, etc.

vii) Brochures- the products and services provided, rating, reviews.

Limitations:

This system is a web development application thus needs an active internet connection to work on it.

The system is based on one-to-one service exchange between clients and designers & developers thus it is a relatively slower process during the developing phase.

2. Future Scope:

Providing the service of using the services by the user and creating their own cards on it.

Community building within the system will improve the social interactions of the users.

Making native apps for this system which will be connected to this web app. This will solve the problem of an active internet connection.

3. Conclusion:

The proposed system will thus provide a refined user experience against the ongoing paper products for the same.

4. Advantages:

The system provides a safe- germ-free alternative for the already existing conventional ways of communicating socially.

The system aims to target all sections of society and is easy to access by anyone.

They provide an improved user experience than paper products by their functionalities and designs and inclusion of multimedia options making the overall experience elevated.

The products are updatable and thus are dynamic in nature. The products are sustainable. They aim at reducing paper usage.

They are completely customizable according to the user needs hence they don't confine to a particular UI template. There is scope for individualism in every card delivered.

Since the cards are digital they can be shared and used via all digital platforms within seconds unlimitedly, unlike paper cards which are limited in number.

References:

[1]   "Business   Card   Statistics", www.statisticsbrain.com, 2017. [Online]. Available: http://www.statisticbrain.com/business-card   statistics/.

[2] Brown, J. S., & Duguid, P. (1994). Borderline Issues: Social   and   Material   Aspects   of   Design. Human   Computer   Interaction,   9(1),   3–36. doi:10.1207/s15327051hci0901_2

[3] Lazar, J., Feng, J. H., & Hochheiser, H. (2010). Research Methods in Human-Computer Interaction (3rd ed.). West Sussex: John Wiley & Sons Ltd.

[4] Rogers, Y., Sharp, H., & Preece, J. (2011). Interaction   Design,   beyond   human-computer interaction (3rd ed.). West Sussex: John Wiley & Sons Ltd.

[5] **Towards a Standardization of On-line Business Cards.** https://researchgate.net/publication/

[6] HTML5 Web Application Development by Example, J. M Gustafson.