

Original Article

A Web-Based Computerized System for Effective Baby Gender Validation

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Received: 21 April 2022

Revised: 30 May 2022

Accepted: 05 June 2022

Published: 21 June 2022

Abstract - This research focuses on: "A Web-Based Computerized System for Effective Baby Gender Validation." To most couples, the gender of the baby is paramount to them. Frequently, not having the desired gender of the baby in the family is associated with using an inappropriate baby gender validation system, which can result in malice, infidelity, abortion, polygamy, divorce, and untimely death. These problems, as mentioned above, can be solved by adopting the computerized baby gender validation system such as Tenas Baby Gender (TBG) web-based computerized validation system proposed for this research. This study aims to develop and implement a Web-Based Computerized System for Effective Baby Gender Validation. The study's objectives include; designing the Tenas Baby Gender Guide system using Object-Oriented Analysis and Design (OOAD) methodology. The system's backend was implemented using Hypertext Preprocessor (PHP) programming language and my structured query language (MySQL) as the database software. The result of the system indicates that the accuracy of the gender of the baby's validation before and within the first trimester of conception had a higher degree of accuracy of 92%. At the same time, the existing system had an accuracy of 54%, thereby showing higher accuracy of the baby gender validation. Therefore, by implication, the inappropriate baby gender validation system results not only in invalid baby gender authentication but can also exacerbate lingering crises among expectant couples.

Keywords - Baby gender, Computerized system, Effective, Validation and web-based.

1. Introduction

Gender confers certain responsibilities on an individual; it is referred to as a socially constructed set of roles and responsibilities which is associated with being a girl or a boy, which subsequently transforms into being a woman or a man, respectively; it is also seen as the properties that distinguish organisms based on their reproductive roles of being classified as either a male or female. Their gender can influence an individual's lifestyle and interaction pattern, thereby ensuring that they follow a precept or norm as designed and generally accepted by society, such that any contrary behavior is seen as deviation or revolt [13, 22].

The preference for a particular gender could be an afterthought, especially if the sorted-after gender is more important or needed in the family. A particular gender could be the most sorted after; depending on the preferential need of the family for such gender of the baby if it is for a couple that desires to have a particular gender of baby haven gotten the other gender to their fullest satisfaction or just for any other reason such as for ego, social security or as culture demands. In the past, there were cultural biases against women relating to problems of family inheritance, lineage, or descent; in addition to the stated fact, farming and other labor-intensive activities were the predominant occupations. Therefore, having many male children was seen as a source of blessing to a family because it was presumed that as most

male children grow up, they get married, their spouse and progeny become a readily available source of cheap labour for farming to their forefather; thereby increasing the chances of the forefather becoming wealthy and acquire chieftaincy title and other prominent positions in the society. Therefore, having many male children greatly attracted most of our forefathers [3, 17].

However, with modernity and civilization, such factors and considerations are no more relevant because recent events have proven that, ultimately, proper training, good upbringing, and education matter most in determining the level of success achieved or attained by any child, irrespective of the gender, male or female. It is true that when given the same opportunities, females now compete favorably with their male counterparts in every sphere of human endeavors. Similarly, most cultural barriers and biases have been broken as opportunities exist for male and female children to inherit from their parents. In contrast, even females, through compound names, can now carry on their parents' lineage or family names [15].

[22] stated that during the gestational period, no suspense can be compared to that usually experienced by pregnant couples, and it often lasts for about seven or nine months. Especially after the confirmation of the mother being pregnant soon afterwards. [8] stated that the suspense



becomes more distressing if the couple is desirous of having a particular gender of baby haven gotten the other gender to their fullest satisfaction or may need a particular gender of the baby for any other reasons, such as for societal ego or cultural demands. Whenever the relatives and friends of the couple usually tease either one or both spouses that they have been defeated by the other or they have both failed in their responsibility of procreating the most wanted or desired gender needed in the family or society, the couple may react favourably or otherwise depending on their heart desires.

Most fears and worries could have been overcome if the couples had adopted the appropriate gender determination method with an appropriate baby gender guide tool to guide the couples before and during conception. This study developed a baby gender guide system by critically combining two gender determination methods, the biological baby gender determination method and the Chinese baby gender determination method. [19] stated that the biological baby gender determination method is dependent on the fact that the male counterpart is solely responsible for determining the gender of the baby. In contrast, the Chinese baby gender determination method depends on using a Chinese chart consisting of a spread of the mother's age and her month of conception as the major requirements for determining the gender of a baby.

Success in most homes is incomplete without the presence of the desired gender of the baby, irrespective of the availability of other variables for measuring success in any home; such other variables may include: financial sufficiency, proper job placement, improved status in society, etc. amid financial sufficiency, proper job placement most couples still pray to have at least a child of a specific gender to inherit and manage their wealth properly. Therefore, not having the desired gender of the baby in the family can be associated with the usage of an improper baby gender guide prediction system which often can result in family problems such as insecurity, anger, infidelity, abortion, loss of the womb, foetal deformity, polygamy, divorce and untimely death [15, 21].

This study aims to develop a web-based computerized system for effective Baby gender validation. In contrast, the objectives are to design the system using object-oriented analysis and design methodology with a comparative analysis of both the proposed and existing systems.

This research work will benefit Couples immensely; it will help in validating precisely the gender of the baby and the gender of the couples' baby before conception based on their age and choice of month for conception. It will also guide couples in the prevention of problems such as insecurity, acrimony, infidelity, abortion, loss of the womb, foetal deformity, polygamy, divorce, and untimely death; the

government: will guide decision-makers in the promulgation of gender equality laws and will also serve as a basis for the provision of facilities that will minimize the casualties associated with maternal and neonatal health; public and private health service providers: the desirous search for missing gender of the baby in the family could be stressful, this work will help in minimizing loss of person-hour associated with stress-related diseases whose impact is on the employees' healthy state of mind; also, it will help in improving the employees' input to production, profit level of the organization when used to educate, disseminate adequate information that will guide the employees on how to procreate and get the desired baby gender to help reduce the divorce rate and hatred in the family. Students of Medical and Para-Medical Studies: it can be used as a study guide in the following fields of human endeavors: Medicine and Surgery, Nursing, Human Physiology, Human Anatomy, and Environmental health.

2. Related Works

This research study focuses on: "developing a web-based computerized system for effective Baby Gender Validation." The level of divinity has no significant effect on couples craving for a desired gender of baby, and some commence their search before wedlock. In contrast, others may be patient after wedlock but before the baby's conception. This demand is usually seen as a curiosity that must be satisfied; such demand from the couple is characterized by ongoing thoughts, talks, and actions aligned to the desired gender of the baby needed in the family [8].

[14] stated that a great deal of research had been carried out on predictive systems, with more recent successful developments of a predictive system for real-world applications becoming more apparent, only a few of the researchers focused on a baby gender guide predictive system, which also is a deviation from the baby gender guide predictive system. The literature review in this research will begin with the nitty-gritties of a predictive system before juxtaposing the related work done by other researchers in chronological order, thereby serving as a springboard and framework for the new baby gender guide predictive system that will be built. A predictive system aims to provide its users with tools capable of discovering and analyzing patterns in data so that available data can be used to forecast likely future outcomes for further recommendations. Various predictive system techniques have been proposed since the mid- 1990s, and various sorts of predictive system software have been developed recently for a variety of applications; also, researchers and managers recognize that predictive systems offer great opportunities for resolving challenges for health, education, business, government and other domains [10].

[15] embarked on the study: "Ultrasound measurement learning of foetal sex during the first trimester: does the experience matter?" The first method adopted was using the sagittal section and the relation between the angle formed by the genital tubercle and spinal column. A cohort study method was also performed from March 2012 to April 2013. Although they were able to correctly determine the probability of diagnosing foetal sex during the first trimester by ultrasound using crown-rump length (CRL) and previous ultrasound experience, the success rate in the male foetus was significantly higher than in female fetuses. Whereas [12] embarked on a study, "Comparative efficacy of two-dimensional mode and color Doppler sonography in predicting gender of the equine foetus." The methodology adopted was two sexing techniques: a two-dimensional (2D) model and color Doppler ultrasonography using the ultrasonic model device (Medison Sono Ace Pico, South Korea). Although, the accuracy of sex determination was increased using Doppler mode compared to 2D mode. Still, it is higher in males than in females sex, especially in the early period between 57 and 70 days.

[6] researched Gender prediction on a real-life blog data set using LSI and KNN; the methodology adopted was the combination of the Latent Semantic Indexing (LSI) method and KNN was adopted. Although it was effective in processing large-scale and high-dimensional data, it was computationally costly due to its lazy learning pattern; it does not perform well when the feature space dimension is high.

[2] Modeling of Users' Age and Gender, Adaptation, and Personalization. The method adopted was human-computer interaction activities about user clues. However, the study tried to predict users' age and gender by taking into account appropriate responses by focusing on unintentional traces that were left behind using standard input devices such as a keyboard and mouse but were unable to predict the gender of a baby.

[5] carried out a study on Human Age and Gender Prediction Based on Neural Networks and Three Sigma Control Limits. The methodology adopted was a propagation of neural networks at a coarser level, with further final classification done using 3-sigma control limits at a finer level. Although they achieved efficiency in their classification based on age and gender, which the system demonstrated through the experimental results using benchmark database images, they could not determine the gender of a baby before conception.

3. Materials and Methods

[12] defined a system development methodology is an outline used to formulate, plan, and manage the procedure of

developing an information system. Various outlines have evolved over the years, each with its own recognized merits and demerits. The Object-oriented analysis and design methodology (OOAD) was considered most suitable for this research because it encourages continuous usage of the system, fewer problems with validation, a seamless development process, clearer division, and increased consistency between analysis and design implementation. In an object-oriented approach, we organize requirements around objects, which integrate behaviors (processes) and states (data) modeled after real-world objects that the system interacts with, unlike other methodologies where processes and data are considered separately. The new system developed for this research provides an innovative solution to baby gender validation by handling both small and high-dimensional data. The New System relieves the medical practitioners and couples of the burdens associated with the cumbersomeness of insecurity in the existing system by providing some form of security solution using a secured login technique. Finally, the New System can be accessed online or offline. Based on the benefits mentioned earlier associated with using the New System over the existing system; therefore, the need to adopt the new system cannot be overemphasized [5, 11].

4. Results and Discussion

This section discusses the prediction of the baby's gender using the system developed by inputting the mother's age and month of conception. The New System was tested and found to be free of bugs when used by couples, with an accuracy of 92.0% achieved in the baby gender guide prediction against the 54% in the existing system. Test data were inputted into the system. The result is in line with the expected result as they compare favorably with decisions human domain experts would take in similar situations.

Admin Module: The New System is designed to determine the gender of the baby. When the system is launched, the first screen is the admin page, where the dataset, profile, and other pages are followed by the logon page cum registration page.

The Registration Page: This page is accessed by clicking 'Register' on the main menu. It presents a registration form to the visitor with text boxes for required information. On submission, the system verifies that the email and phone number specified by the user have not been previously used by someone else and that all required information is supplied. The authenticity of their claim needs to be confirmed by the systems administrators before they will be approved.

- Profile
- Dataset
- Accounts
- Check Gender
- Book Antenatal
- Logout

Check Gender

Age

Month

Vote

{Age - 19 years} {Concieved - June} {using 3-Nearest Neighbour}

Age	Month of Conception	Distance	Class
19	June	0.00	MALE
18	June	1.00	MALE
20	June	1.00	MALE

Fig. 1 Baby gender checker validation

- Profile
- Dataset
- Accounts
- Check Gender
- Book Antenatal
- Logout

User Profile

Surname Other names

Phone Email

Home Address

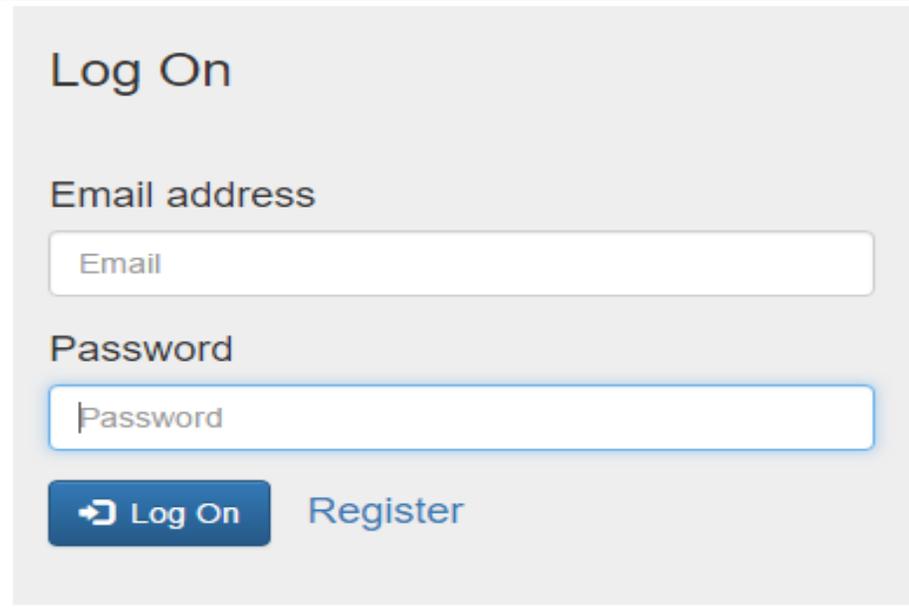
Next-of-Kin Data

Fullname Phone Number

Current Password New Password

Confirm Password

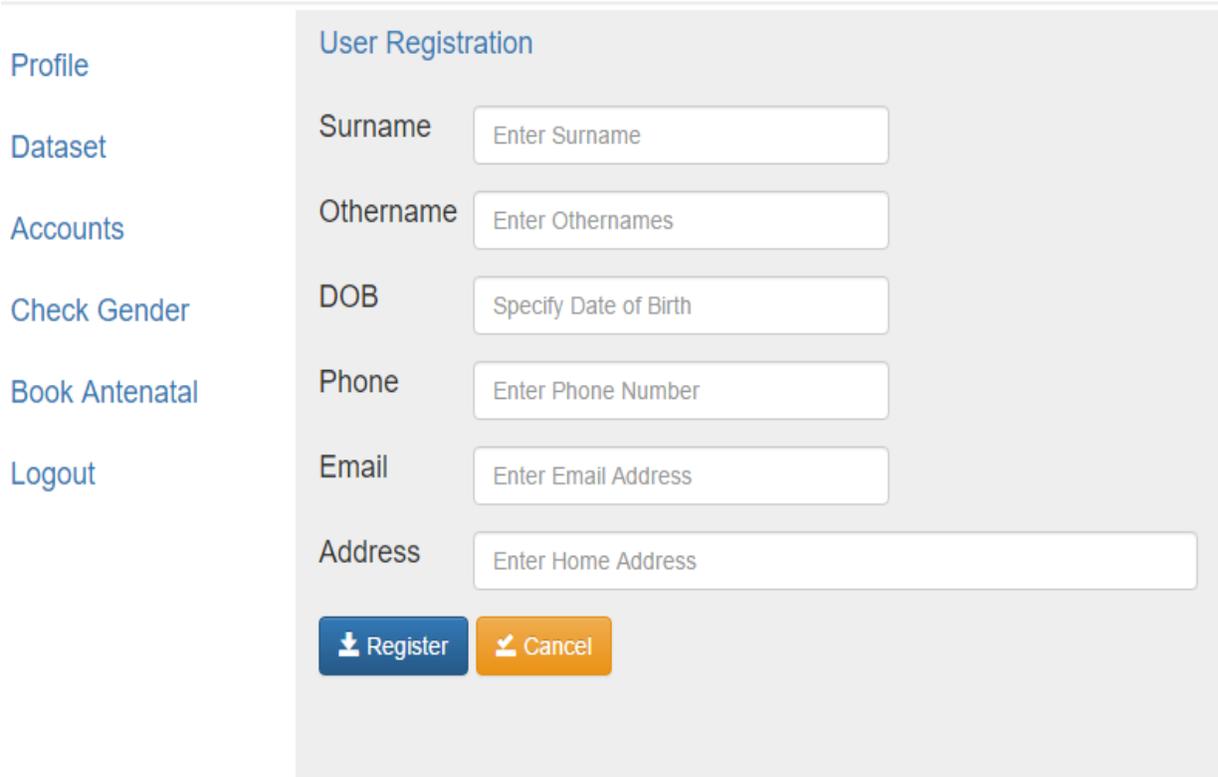
Fig. 2 Admin module page



The image shows a 'Log On' form with a light gray background. At the top, the text 'Log On' is displayed in a large, bold, black font. Below this, the label 'Email address' is followed by a white input field containing the placeholder text 'Email'. Underneath, the label 'Password' is followed by a white input field containing the placeholder text 'Password'. At the bottom of the form, there are two buttons: a blue button with a white right-pointing arrow and the text 'Log On', and a plain text link 'Register'.

By God'swill Tenas

Fig. 3 Logon page of TBGG page



The image displays a 'User Registration' page. On the left side, there is a vertical navigation menu with the following items: 'Profile', 'Dataset', 'Accounts', 'Check Gender', 'Book Antenatal', and 'Logout'. The main content area is titled 'User Registration' and contains several input fields: 'Surname' (placeholder: 'Enter Surname'), 'Othername' (placeholder: 'Enter Othernames'), 'DOB' (placeholder: 'Specify Date of Birth'), 'Phone' (placeholder: 'Enter Phone Number'), 'Email' (placeholder: 'Enter Email Address'), and 'Address' (placeholder: 'Enter Home Address'). At the bottom of the registration form, there are two buttons: a blue 'Register' button with a white arrow icon and an orange 'Cancel' button with a white arrow icon.

Fig. 4 Patient user registration page

Fig. 5 Data set record page

Fig. 6 Gender validation page for TBG system

4.1 Comparative Analysis between the Existing System and the New System

It is worthy and very important to note that both the existing system, which is called ultrasonography, and the new system, called the Tenas Baby gender validation

System, are not deterministic systems whose efficiency is approximately 54% and 92%, respectively; rather, both the existing and the New System are validation system whose efficiencies are not expected to be 100% (one hundred percent).

Table 1. Comparative Analysis of the Existing System and the New System

S/No.	Existing System	New System
1	It can be used for the prediction of the gender of a baby after the first twelve weeks of conception	It can be used for the prediction of the gender of a baby before and after conception
2	The existing system operates with the principle of high-frequency ultraviolet radiation for gender prediction	The operable functionality of the New System is enhanced using the K-Nearest Neighbour algorithm
3	The output of the existing system can be understood and interpreted only by medical experts with a speciality as sonographers	The output of the New System can also be understood and interpreted by non-experts, such as couples, among others

4	Provides a visual representation of the foetus only	Provides both visual and interactive interfaces for its users
5	Its usage is tedious, time-consuming, and stressful, which may expose the pregnant mother to some level of hazards	Its usage is neither tedious, time-consuming, nor stressful; therefore, it minimizes the risk and exposure of the pregnant mother to hazards in the form of radiation
6	High cost of deploying the existing system.	Low cost of deploying the New System.
7	The enormous size of the existing system results in the loss of useful space	Miniaturized size of the New System, which allows it to be installed in palmtops, laptops, and other mobile devices
8	The cost of developing the existing baby gender guide predictive system tool commercially is very high because each interface is segregated and designed to be domiciled in departments where its relevance is high in the health facilities	The New System is inexpensive when compared to the cost of developing the existing baby gender guide predictive system
9	Requires the mother to have a full bladder for the technician to get a clear image of the fetus and the reproductive system when scheduled for an ultrasound	Does not require the mother to have a full bladder before it is used for predicting the gender of a baby.
10	Does not enforce the privacy of user's information	Provides different privilege levels to its users through access control mechanisms

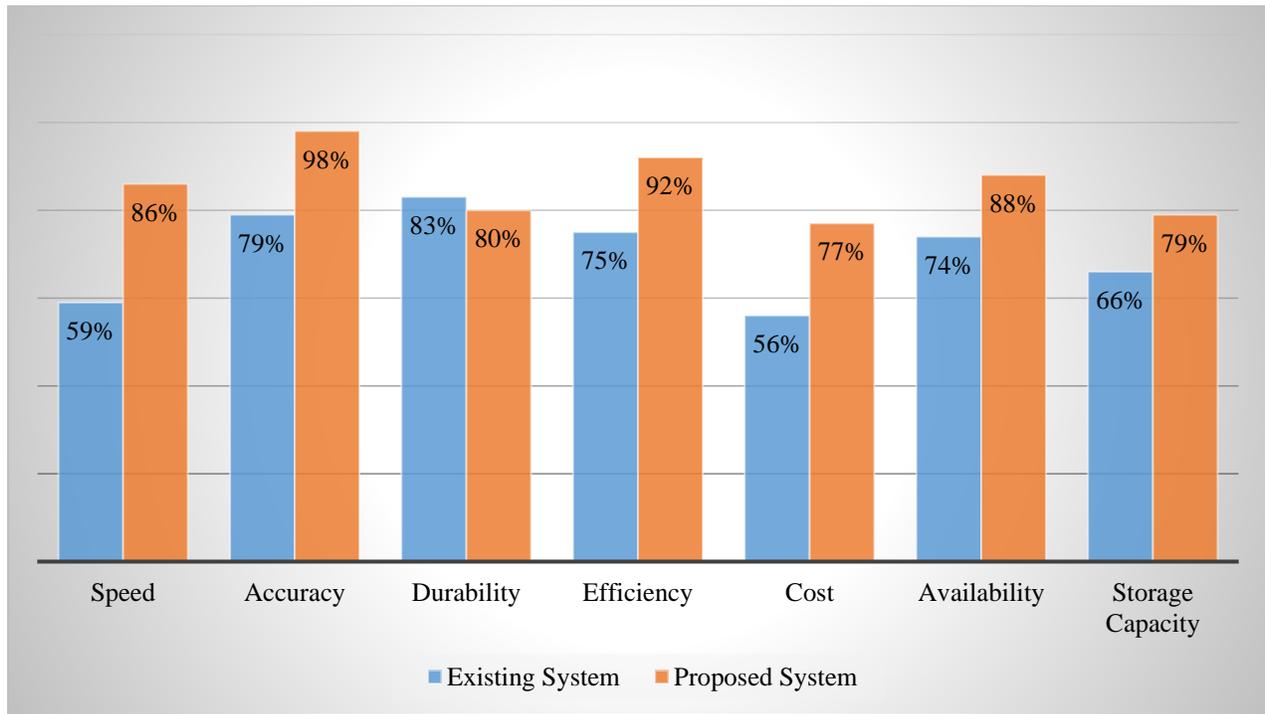


Fig. 7 Bar chart showing the comparative analysis between the existing and the new system

5. Conclusion

In this work, the researchers developed a Web-Based Computerized System for Effective Baby Gender Validation which was achieved using Tenas web-based system. Baby gender validation was achieved based on the knowledge of the mother's age and month of conception as required for baby gender validations. This knowledge base was gathered from Chinese medical gender charts and medical journals. The system was then implemented using a combination of web technologies that enforced the system's operation,

therefore showing accuracy in the validation of the gender of the baby.

The conclusion deduced from the findings of this research shows that most couples either allow fate to determine the gender of their baby or use an improper baby gender guide prediction system in their quest to have the desired gender of the baby in the family. This has resulted in the couple's inability to determine the gender of their baby before conception, which could have saved them from family

problems such as insecurity, acrimony, infidelity, abortion, loss of the womb, foetal deformity, polygamy, divorce, and untimely death which are associated with inaccurate technique(s) baby gender predictive system. This research work will immensely benefit Couples: it will help in validating precisely the gender of the baby before and during the first trimester of the gestational period based on the mother's age and choice of month for conception. It will also

guide couples to be knowledgeable on appropriate gender validation, which will help prevent problems associated with not having the desired gender of the baby in the family.

Funding Statement

This research study and its publication were self-funded by the researchers without any financial grant.

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