

Cross Relative User-Interfaces Design and Enterprise Business Decision System

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Abstract

This paper presents recent developments in computer software that can not only perform routine operational tasks but also conduct user-interface design comparisons to assist in future enterprise product design decisions. We assert that we have made significant changes to recent software designs by proposing an upgrade that is user-friendly, low-cost, secure, and customizable. The paper will address a comparative analysis of new design changes for a new generation of application designs, followed by a discussion on the ideal functional features of two distinct chronological design examples, bearing in mind the design modifications. In this paper, both old and new versions of computer design methodologies are compared for expert and non-expert users alike. A detailed discussion of user-interface design has been conducted for business decisions, encompassing areas such as business analysis, procurement planning, customer support, and sales expectations. Through this cross-comparison, the changing trends in product design and the rise of customer-centered design will be demonstrated, which will assist in driving business operations in the near future.

Keywords: User-friendly design, Business decision, Human-computer interface, Decision support

JEL: O30

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Acknowledgments: This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. NRF-2020R1F1A1073479). The author is gratefully acknowledged for a valuable discussion and advice with Mr. D. Lim at 153Creators, and Ms. J. Son who was an undergraduate student of Prof. Jeong's Applied Intelligence Research (AIR) Lab.

Conflicts of Interest: The authors declare no conflict of interest.

1. Introduction

For small-scale businesses, typically with no more than 1,000 employees, the engagement often involves non-expert level skilled professionals. In this context, we introduce user-friendly software design comparison tools and utilities that relate to their business operations. One tool is a software application based on a non-graphical command-line operating system (i.e., DOS), which primarily displays a basic black screen with white text. Although this design has been in use for the past few decades, it requires considerable computer knowledge to navigate effectively. The other tool is an application based on a modern graphical operating system (i.e., Windows), typically featuring touch-screen functionality for easy access, such as smart devices. However, many of these existing systems are overloaded with functionalities, technical challenges, and additional accessories that most users find useless, as they rarely exploit those features [1].

Due to this lack of appreciation and satisfaction, we decided to analyze and develop a new user-friendly software design that is efficient, simple to use, and offers flexibility. Sometimes, users unintentionally disregard new functions due to their complex operating processes. Furthermore, studies in multidisciplinary research have investigated the effect of usability, emotional engineering [2], and sociological studies [3] on human-computer interactions.

This paper discusses the design and creation of user-friendly software based on old and new designs of operating applications (i.e., DOS and Windows) that aren't overly sophisticated to use. Additionally, we will present computer design and cross-relative analysis using a regularly updated and reliable database.

To illustrate this, we utilize computer programming via Visual Basic and Java programming to design the user interfaces (in conjunction with MS Access and MySQL databases) through their data access features [4, 5]. This comparison aims to assist small to medium-sized business owners/customers. Presenting a graphical user interface (GUI) helps customize each application, incorporate existing functionalities, share programs across applications, and increase efficiency. Basic functions, such as regular graphical menus, are usually provided to two different user groups: non-experts (laypeople) and computer experts. Ultimately, we describe the significance of smartphone programming alongside user-friendly design for efficient business planning.

The remainder of this paper is organized as follows. Section II explains about the computer software is presented user-friendly design methodology, in Section III, we discussed about the user-interface requirement and results that how influenced by the GUI environment. Section IV, cross relative analysis and discussion part using simulation and compares with the different parameters. Section V is the conclusion of the paper.

2. Design Methodology

In our pursuit of a user-friendly design, we focus on an old-fashioned design paradigm, using two case studies - a dry-cleaning business and a franchise coffee reward program - as the basis for interviews to identify the system's objectives and operational requirements, among other things. Furthermore, we organized sessions with customers to explore real-life cases and obtain detailed information that would otherwise be unavailable. We also gathered information from actual business websites [4, 6] and conducted business decision analyses.

We've developed a reliable, searchable computer database that can assist store managers in operating stores more efficiently, boosting sales through higher service volumes, adapting to customer base changes, and dramatically reducing paperwork. The system enables business owners to conduct various business functions more easily, such as dealing with customers, managing properties, maintaining records, and generating forms and reports. The

expected benefit of this software design is the ability to predict business strategy since current usage and information are closely related to future business activities.

This is a design scenario; when the customer comes to the business, the customer representative (*CR*) at the business usually asks and types the customer’s telephone number, the invoice number, if available, or his or her name into the computer system to identify the customer and bring out his or her file [5, 7]. In this case, if he or she is a new customer, *CR* should create his or her personal file, first. Once created, the customer’s file will be shown on the main menu that contains such sub-menus as pick up, drop off, inventory, system controls, and others. Then, *CR* should choose one of the sub-menus based on the customer’s request. If pick-up menu is chosen, the computer monitor shows the processed garments of the customer with their prices. If drop-off menu is chosen, the computer monitor shows types of colors, garments and textile with their prices. Once customer requests are entered, the customer’s file will be updated, automatically and the computer monitor shows a summary report with the price and the expected due date. Finally, the computer system will print an invoice for the customer. Inventory and others menus are mostly for management control purposes. We concisely summarized some menus, *e.g.*, price control, access control, inventory control, customer activity analyses, and generations of various managerial reports, etc.

Considering the above-addressed typical functions of the business system, we designed the entity relationship (*ER*) diagram that is a detailed, logical representation of the data for a small-medium size business, as specialized less than 10,000 employees are engaged [8]. The relationship among each entity is shown. For example, one customer gets many *INVOICES* and one *INVOICE* includes many *INV_DETAILS* as shown in Figure 1.

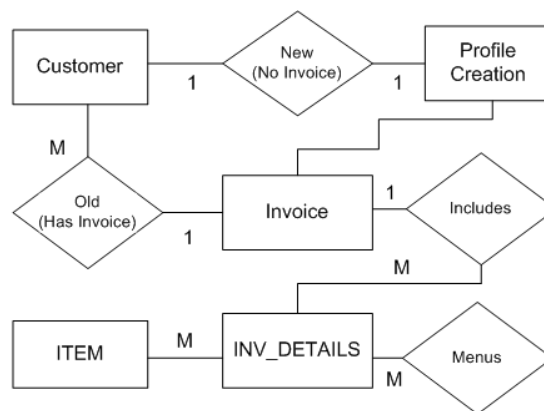


Figure 1. Entity Relation Diagram

The database reflects the principal information system of basic functionalities. The tables are accessed by the primary keys, and they are interconnected by foreign keys from other tables. The *ITEM* table is special in itself because its existence is justified by its purpose, which is providing the unit cost for each kind of garment according to the type of handling or service required. This makes it possible to complete data processing and reflect information via functions, given that an item which is only pressed costs less than the same item for laundry [9-11].

TABLE 1. PSEUDO-CODE OF INITIAL CUSTOMER ACTIVITY

Customer Check-In
If Customer has Invoice Then

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Input Customer Data

Data = Name or Invoice Number or Telephone

Search Database

Show Customer Invoices

Display Invoice Details ( INV_DETAILS)

ITEM

If Customer has NO Invoice Then

Input Customer Detail Data

Data = Name and Address and Telephone

Create customer Profile

Create Customer Invoice (INV_DETAILS)

ITEM

Change or Modify ITEM ( )

Pickup

Drop off

Inventory
    
```

The pseudo-code in relation to the Entity Relationship diagram of Figure 1 is shown above. As indicated in Table 1, when a customer enters the shop, if they have an invoice, the CR can use the invoice or details provided by the customer to retrieve the customer's record from the database and display the *Invoice's* details.

If the customer is new, a new profile can be created along with *Invoice* details. At the same time, other Menus can be used to change or modify the order base on the customer's request and the completed task. We also designed normalization processes, which involve decomposing relations with anomalies to produce smaller, well-structured relations. This process reduces data redundancies and helps eliminate data anomalies that result from those redundancies, promoting cleaner business operations. Each normal relation below has a distinct primary key, underlined, for each row in Table 2. The attribute which serves as the primary key in one table, when used in another, acts as a foreign key and signifies the relationship between the tables.

TABLE 2. NORMALIZED RELATIONAL DATABASE

No.	Attribute	Primary Keys
1	CUSTOMER	<u>CustId</u> , CustLastName, CustFirstName, CustStreet, CustCity, CustState, CustZip, CustPhone
2	INVOICE	InvNumber, InvoiceDate, PU_DateSch, <u>InvAmntDue</u> , TotalPieces, Starch
	INVOICE-DETAIL	InvNumber DetailLine#, ItemQty, ItemDescrip, Hand_Code, Hand_Descrp, UnitCost
3	PREVIOUS-INVOICE	InvNumber InvDate+CustId, PUDateSch, ActPu_Date, InvAmtDue
4	ITEM	ItemID <u>HandID</u> , ItemDesc, Handling

3. Previous User-friendly Design

Here are following an old graphical user-interface (GUI), which means not recent software design that created in DOS format [12]. Although this GUI may seem archaic by modern standards, it was once considered a user-friendly and innovative solution. It efficiently bridged the gap between non-expert users and those more acquainted with computers, allowing for effortless involvement in all tasks. The connectivity established between these two user categories plays a crucial role in future business decisions, a topic discussed later in Section V. Each GUI screen provides detailed comments that describe the design behavior, including event-triggered actions in their specific sequences.



Figure 2. Logging Page of Old User-Interface

For a security reason, the business owner sets up a login information such as usernames and passwords for all employees that he/she allows to access to the computer software as shown on Figure 2. In this case, an ideal number of users is not exceeding 99,999 employees. Database and software runtime is optimized, not affordable database design for above than 100,000 [13]. Access to the main computer system, especially when connected to a cash register, should be stringently controlled to prevent potential fraud. While remote access through the Internet can be convenient, it necessitates a secure network to protect against attacks from unanticipated sources such as wireless or cloud computing.

Moreover, the main server's first screen after the login information, the main screen (See in Figure 3) offers the following seven-options that users can choose from (i) Drop leading to invoice emission, (ii) Pick-up and payment, (iii) Customer management, (iv) Statistics, (v) Reports, (vi) Marketing, and (vii) Set-up that takes to the utilities screens that enable users to assist them. Figure 3 displays the main screenshot of this older version of a user-friendly design.

From this main screen, all databases and information are interconnected, making this initial setup vital since all business operations commence from these main screen options. Leveraging this user-friendly interface is an excellent way to predict business profits and manage other resources. We expect a percentage increase in sales when a user-friendly design is employed, with simulation results discussed in greater detail in Section V.



Figure 3. Main Screenshot of Old User-Interface

This design offered five different ways for the customer identification *i.e.*, (i) *Customer ID*, (ii) *Last Name*, (iii) *First Name*, (iv) *Phone Number*, and (v) *Invoice Number* as shown on Figure 4. This search function is also finding the customer once these five keys are identified.

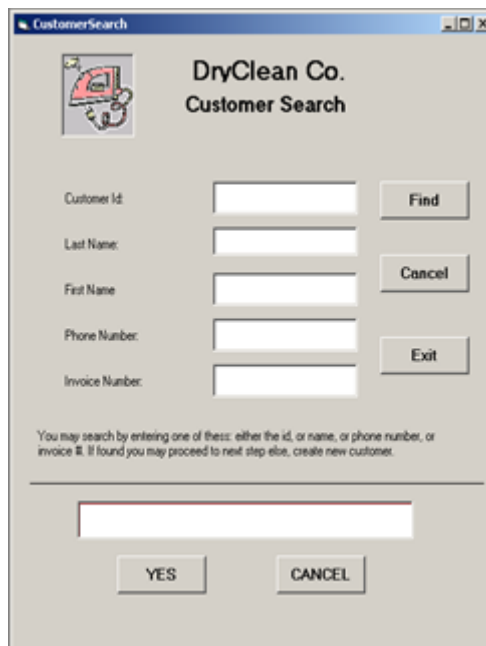


Figure 4. Customer Search Screenshot of Old User-Interface

Another notable scenario that serves as a good example involves a large number of customers visiting during rush hour. This situation necessitates the design of a new data entry system, *i.e.*, a creation of new database. Assume that the customer is new; the computer system needs creating customer record as shown on Figure 5. The data was encrypted and stored securely within a firewall.

The process of entering and archiving new data is an integral part of business initiation [14]. It's important to ensure a quick data entry process to avoid long customer wait times. Moreover, identifying customer demands before proceeding with any service is crucial. Thus,

certain functions were designed for ease of use, such as adding customers, dropping items, picking items, etc. Archiving data is a critical task for both business owners and customers.

Figure 5. Add New Customer Information of Old User-friendly Design

For existing customers, once identified, the customer information will appear in the screen. (See in Figure 6) When the customer changes address, phone number, or last name, first name, the user should choose “*Up-Date*” menu to modify the customer’s file. Using a mix of the hash table and quick sorting method from computer’s search algorithm [15, 16], we easily implemented a data updating service that is modified. A significant change in customer information often impacts business profits.

Moreover, the user can proceed to the next step: “*Drop*” or “*Pick-up*”. For “*Drop*”, the garment descriptions along with the customer information are displayed on the screen. In this case, we assume that some abbreviations are used in the description. If the customer may want different amount of starch for each garment by choosing the amount from the scroll down list: “*NS for no-starch*”, “*LS for light-starch*”, “*MS for medium-starch*” and “*HS for heavy-starch*”, in sequentially. Also, the type of garments (*e.g.*, men’s, lady’s, children’s, household, accessories, and linen) and the type of services (*e.g.*, laundry, dry clean, alterations, press only, dry clean and alterations) can also be chosen from another scroll down list in the “*Drop*” screen in Figure 7.

Then the full description of the item, and more importantly the “*Unit Price*” and hence the “*Total per line*” will automatically appear. Simultaneously, the subtotal for the invoice, the total number of garments and invoice total will appear. Up charge, same as a current charge is optional and depends on any additional work or input required. Figure 7 shows that a screenshot of sub-menu (Drop Invoice) from Figure 6, which can be easily managed by a business owner in the software-related business domain.



Figure 6. Customer Information Display of Old User-friendly Design

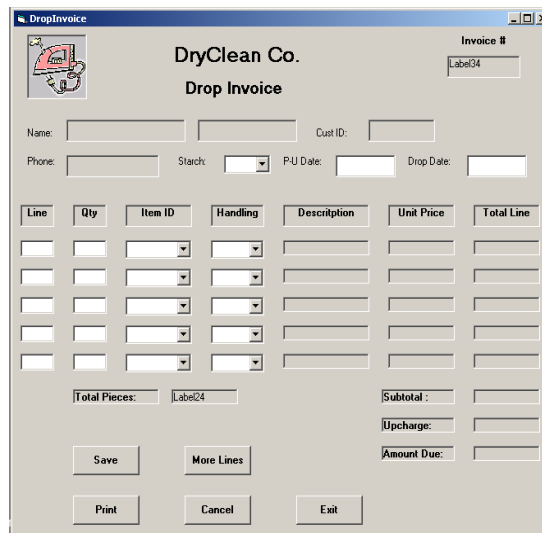


Figure 7. Sub-menu (Drop Invoice) Screenshot from Figure 6

For “Pick-up”, the screen of sub-menu, as shown on Figure 8 displays customer information with the list of all the pending invoices from which the customer can select the ones he or she wants to pick-up and pay for. The information available on each pending invoice includes the invoice number, total pieces, amount due, drop date, and scheduled pick-up date.

It's worth noting that implementing this GUI was not an easy task due to its graphical complexity [17, 18]. Nevertheless, this older user-friendly design fostered an easy-to-use interface between non-expert users and computer-savvy workers. Moreover, it offers reliable statistical data that can guide future business designs.

Figure 8. Screenshot of Sun-menu (Pick-Up Invoice) from Figure 6

4. Recent User-friendly Design

With the recent shift towards a mobile-centric social paradigm and a preference for two-way communication, we have experienced cutting-edge technologies such as smartphones and smart-pads [19]. Our new user-friendly design will implement more fashionable and convenient interaction functions, capable of offering benefits such as frequent buyer mileage, akin to airline mileage programs or business rewards programs.

To implement a user-friendly design, we present a new mobile GUI along with a rewards program, referred to here as 'stamps'. This creates an environment where users find hand-held designs comfortable and easy to use [22]. Customers collect these virtual stamps, accumulating points that can be exchanged for different products or purchasing privileges [23].

As a management tool, the new user-friendly mobile interface is applicable to both customers and business owners, promoting interactive engagement. This suggests that small businesses have more opportunities to expand their customer databases [24]. More than just databases, a user-friendly design is a key method for future business development and can be analyzed using new design technology [25].

At the onset of business, the business owner can access customer information by designing an MS-SQL table structure of RDBMS (e.g., Relational Database Management System). Figure 9 illustrates the customer's status in terms of accumulated sales, categorized products, customer visits, and rewards earned (e.g., stamps) over a certain period.

No.	Phone Number	Name	Gender	Birthday	Enrollment date	Stamp	Cumulative stamp
1	010-3300-6226	Do	Female	1994-01-01	2014-08-20	18	30
2	010-9505-1500		Female	1981-1-1	2014-10-01	14	77
3	010-2222-2222				2014-08-20	12	99
4	017-5598-4263				2014-09-15	10	10
5	010-8282-7979				2014-08-20	5	6
6	010-2472-1042	asdf	Male	1992-6-22	2014-12-22	4	43
7	010-1234-1234				2014-10-01	3	16
8	010-3300-6258				2014-08-20	1	1
9	010-6855-8183		Male	1984-11-29	2014-12-22	1	21
10	010-3333-3333				2014-08-26	0	0
11	010-5153-1500		Female	1980-3-6	2014-12-18	0	0
12	010-5555-4444		Male	1980-1-1	2014-10-17	0	0
13	010-6858-6666	Zoe	Male	1980-02-06	2014-09-30	0	0

Figure 9. Screenshot of Customer’s Rank by Reward Program in New Design Way

Figure 10 shows that a business statistical report for business owner’s administrator page that can be referenced at the close of each day or month.

Report	Sales	Years	Gender	Notice	December, 2014	
					TODAY	THIS MONTH
Saved amount	0				0	82
Used amount	0				0	59
Number of user	0				0	4
Number of New user	0				0	3
User Stats						
					Male	Female
10's					0 (0.0%)	0 (0.0%)
20's					1 (7.7%)	1 (7.7%)
30's					3 (23.1%)	2 (15.4%)
40's					0 (0.0%)	0 (0.0%)
50's					0 (0.0%)	0 (0.0%)
60's					0 (0.0%)	0 (0.0%)
Total					4 (30.8%)	3 (23.1%)
Black					6 (46.2%)	
Total user					13	
Last 3 months						
	Saved amount	Used amount	Number of user	Number of New user		
November, 2014	85	40	4	0		
October, 2014	112	101	3	3		
September, 2014	72	40	5	2		

Figure 10. Administrator’s Page shown as User Statistics per day and month in New Design Way

On the other hands, in the customer’s side, we also designed a new interface for more convenient and effective relationship. Figure 11 displays the initial enrollment screen for earning rewards, where we've divided the input fields into required and optional for customers.

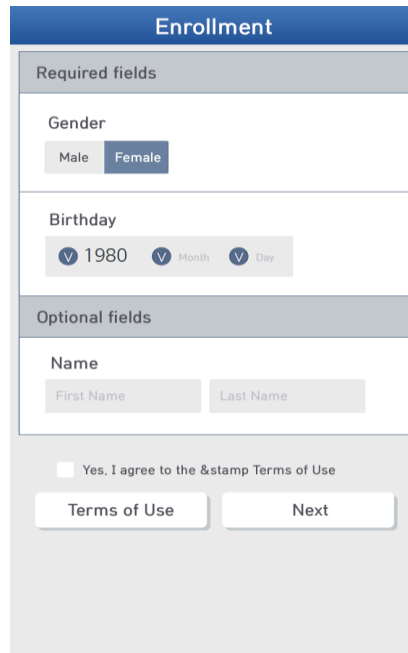


Figure 11. Screen-shot of Customer’s Enrollment Status in New Design Way

Figure 12 offers a real-life example of what customers may see on their mobile devices. In this scenario, they can physically touch or pay (if they wish to use it for another purchase) and interact intuitively. These visual cues are quite effective, particularly given the popularity of social media in recent times [26].

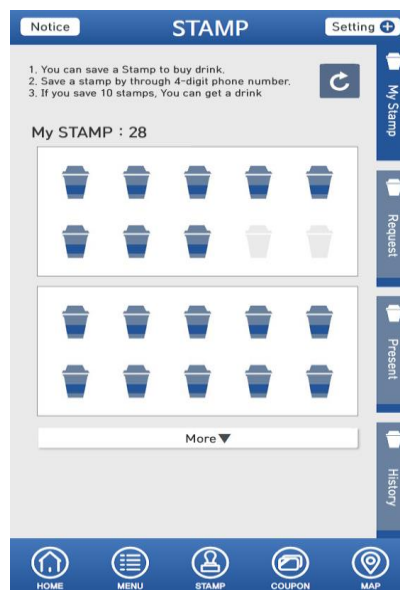


Figure 12. Customer’s Mileages Screenshot (in this case, Rewards that they earned)

On the other hands, we also aim to provide business owners with more convenient access and simple calculations. A user-friendly graphical interface was a priority in our design process, allowing business owners to scan, as shown in Figure 13. This figure presents a real graphical view from the customer's perspective, allowing customers to easily present their barcode (in this case, a Stamp/Reward) to the business owner.

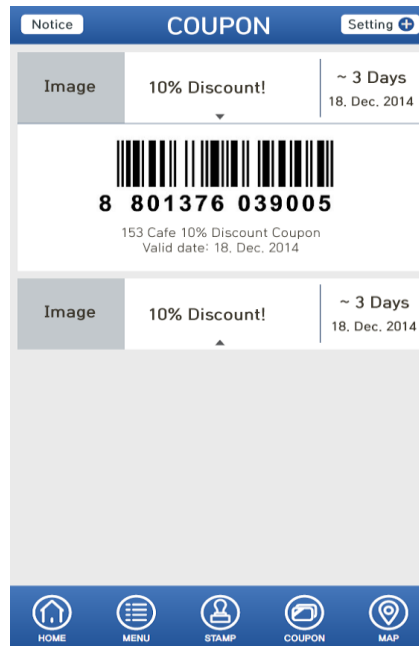


Figure 13. Screenshot of Customer’s Barcode (in this case, Stamps with discount rate (10%))

5. Comparison Results

We analyze that two different user-friendly designs which is useful for non-expert person and computer skilled people. In short, we can define the user-friendly design and cross relative comparison between old and new version that we are created in DOS and Windows.

Crucially, design parameters such as comparison results from each design, and the frequency of use over a specific period, will provide valuable information. We have analyzed and predicted results through both operating systems. As depicted in Figure 9, there is an indicated increase in profit from the data derived from businesses after implementing the new user-friendly design for a quarter, compared to the manual sales method. This data allows us to anticipate (i) how the business workload is currently progressing, and (ii) adjust or maximize profit-generating activities such as marketing efforts or advertisements. All businesses saw an increase in profit after adopting the new user-friendly design. It should be noted that past and current business data, including changes in profit, will impact future business decisions and corrections.

Our experimental results only span 3 months [27, 28], but these findings can help forecast future business trends and their influence on the market.

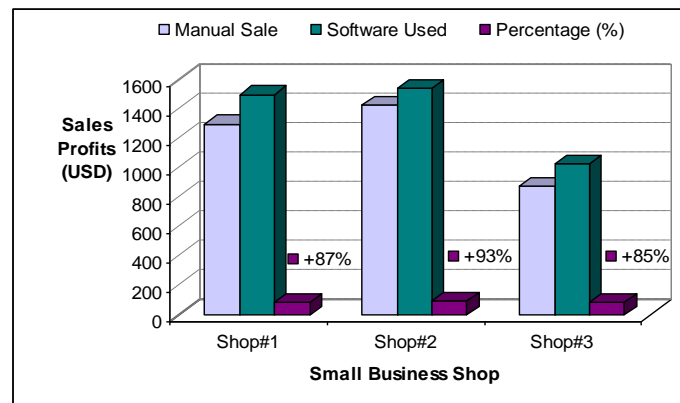


Figure 14. Profits Changes after Use of the Software for 3 Months

Figure 15 shows the time measurement from each menu during the software's operation. Key parameters are as follows: primary keys include invoice, CustomerID, previous_invoice, and itemID, respectively [26]. Each dot represents a single parameter, and the y-axis signifies access time in seconds. Even though the total manual measurement was 150 trials per day, the graph clearly shows the access time needed to serve a customer was significantly reduced compared to the manual operation system. This system will enhance efficiency and save time for both the customer and customer representative.

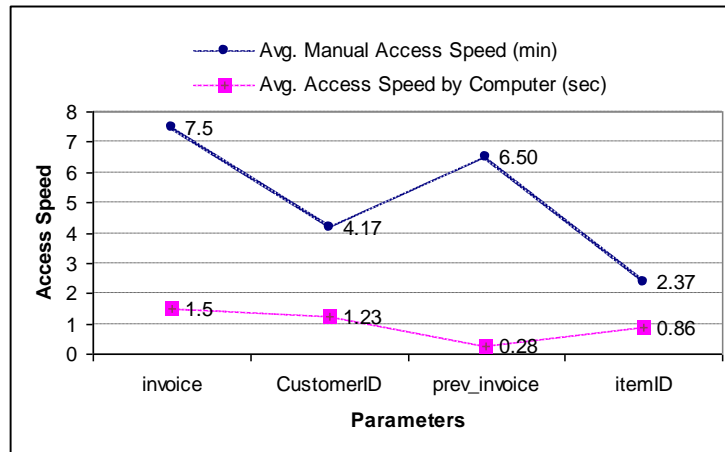


Figure 15. Access Speed by Computer (sec) and Manual access speed (min). Total manual measurement was 150 trials per day.

Moreover, Figure 16 shows the normalized access speed (sec) for each parameter. If tasks are performed in a dependent manner, the time taken will be consistent with Figure 15, which is less than manual and convenient for both the customer and customer representative.

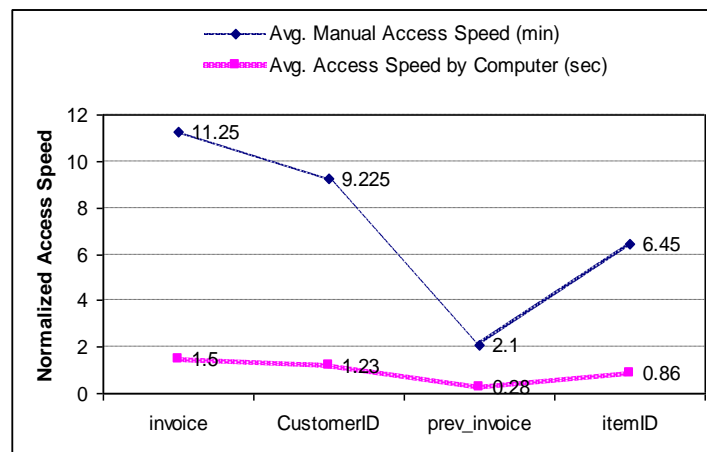


Figure 16. Normalized Avg. Access Speed by Computer (sec) and Manual Access Speed (min). Total manual measurement was same as in Figure 10.

Predicting future business trends is not a simple task, applicable to both computer-skilled individuals and non-experts. However, this statistical data and analysis results demonstrate how these profits are likely to impact the business field. Although our data only focuses on the normalized access speed for each parameter in Figure 16, this interactive user-friendly design and its results benefit all individuals, including both laypeople and computer-skilled workers.

6. Conclusion

We have developed a user-friendly design and conducted a cross-relative comparison for both non-experts and computer-skilled individuals. Facilitating the connection between computers and non-experts to make the systems easier to use is a vital prerequisite. This user convenience should be evaluated from the perspective of a user-friendly process for non-experts, not from a content management viewpoint.

In conclusion, our distinctive user-friendly design is likely to attract business interest, meaning it can enhance profits. This comparative study of user-friendly designs could raise awareness among people about the innovative and beneficial applications of computer systems, along with their current role in shaping the lifestyle of modern society.

References

- [1] [Online access available] NIST Guide to Industrial Control Systems (ICS) Security, <http://csrc.nist.gov/publications/nistpubs/800-82/SP800-82-final.pdf>
- [2] J. Nielsen, *Usability Engineering*, Academic Press, ISBN: 0-12-518406-9, 1994
- [3] B. Wellman, "For a social network analysis of computer networks: a sociological perspective on collaborative work and virtual community," *In Proceeding SIGCPR '96 Proceedings of the 1996 ACM SIGCPR/SIGMIS conference on Computer personnel research*, pp. 1-11, 1996
- [4] N. Elmasri, *Fundamentals of Database System*, New York, Addison-Wesley. 2002
- [5] [Online access available] Clean Touch Screen, <http://www.kojoy.net>
- [6] K. Bryant, J. Campbell, and D. Kerr, "Impact of web based flexible learning on academic performance in information systems," *Journal of Information Systems Education*, vol. 14, no. 1, pp.41, 2003
- [7] P. Spasov, *Programming for Technology Students Using Visual Basic*, New Jersey, Prentice Hall. 2002
- [8] [Online access available] U.S. Census Bureau, <http://www.census.gov>
- [9] [Online access available] Microsoft Developers Networks, <http://www.msdn.microsoft.com>
- [10] J. Winterholler, J.Böhle, K. Chmara, and T. Maier, "Information Coding by Means of Adaptive Controlling Torques," University of Stuttgart, Germany, *In Proceedings of HCI International 2014*, Crete, Greece, June. 2014
- [11] S. Yoo, J. Kang, J. Lee, T. Jeong, "Special Investigation of Variable Star Delta Cephei via Neural Network," *In Proceedings of International Conference Hybrid Information Technology, ICHIT 2008*. Aug. 28-30, Daejeon, Korea, 2008
- [12] H. Jabbar, T. Jeong, J. Hwang, and G. Park, "Viewer Identification and Authentication in IPTV using RFID Technique," *IEEE Trans. on Consumer Electronics*, pp. 105-110, vol. 45, no. 1. 2008
- [13] T. Beck, and A. Demirguc-Kunt, "Small and medium-size enterprises: Access to finance as a growth constraint," *Journal of Banking and Finance*, vol. 30, no. 11, pp. 2931–2943, November 2006
- [14] International Records Management Trust, Tanzania Case Study, "Fostering Trust and Transparency in Governance, Investigating and Addressing the Requirements for Building Integrity in Public Sector Information Systems in the ICT Environment," [Online] [access available http://www.irmt.org/documents/building_integrity/case_studies/IRMT_Case_Study_Tanzania.pdf](http://www.irmt.org/documents/building_integrity/case_studies/IRMT_Case_Study_Tanzania.pdf), January 2007
- [15] J. L. Bentley and R. Sedgewick, "Fast algorithms for sorting and searching strings," *In Proceeding of SODA '97, Proceedings of the eighth annual ACM-SIAM symposium on discrete algorithms*, pp. 360-369, 1997
- [16] B. Tan, D. Szafron, J. Schaeffer, J. Anvik, and S. MacDonald, "Using generative design patterns to generate parallel code for a distributed memory environment," *In Proceedings of the ACM SIGPLAN symposium on principles and practice of parallel programming (PPoPP 2003) and workshop on partial evaluation and semantics-based program manipulation (PEPM 2003)*, vol. 38 no. 10, pp. 203 – 215, October 2003
- [17] V. Sridhara, J. Kim, and S. Bohacek, "Performance of Urban Mesh Networks," *In Proceedings of the 8th ACM International symposium on Modeling, analysis and*

- simulation of wireless and mobile systems*, pp.269 - 277 , Montréal, Quebec, Canada, 2005
- [18] H. Jabbar, Y. S. Song, T. Jeong, “RF Energy Harvesting system and circuits for charging of mobile devices,” *IEEE Transactions on Consumer Electronics*, vol. 56, no. 1, pp. 247-253, Feb 2010
- [19] D.-Y. Park, “Research about Customer Value of Loyalty Programs” *Korea University, A Doctoral Thesis*, 2014
- [20] M.-S. Yeo, “Research For Precedence Factor affects Stamp Coupon Redemption : With Coffee shop as the central figure”, *Korea University, A Master's Thesis*, 2010
- [21] [Online] &Stamp <http://www.153creators.co.kr/Portfolio/>
- [22] Punukollu, M., & Marques, M. (2019). Use of mobile apps and technologies in child and adolescent mental health: a systematic review. *Evidence-based mental health*, 22(4), 161-166.
- [23] W.-J. Jeong, “Design and Implementation of Hybrid Mobile App Framework”, Hanyang University, 2013
- [24] Y.-D. Hwang, “A Study on Design of Secure POS SYSTEM”, Soonchunhyang University, A Master's Thesis, 2000.
- [25] Y. Ping, T. Jeong, F. Chen, H. Wu, R. Nitzsche, and G. Gao, “A Study of the On-chip Interconnection Network for the IBM Cyclops64 Multi-core Architecture,” *In Proceedings of the IPDPS 2006, International Parallel and Distributed Processing Symposium*, April 25-29, 2006
- [26] E. Lee, and J. Macgregor, “Minimizing User Search Time in Menu Retrieval Systems,” *Human Factors: The Journal of the Human Factors and Ergonomics Society*, vol. 27 no. 2 pp. 157-162, April 1985
- [27] Y. Song, and T. Jeong, “Electromagnetic Characterization of a Computational Asymmetric Analysis for Wireless Networks,” *Microsystem Technologies*, Elsevier, vol. 20, no. 4-5, Apr. 2014
- [28] Jeong, T. (2020). Time-series Data Classification and Analysis associated with Machine Learning Algorithms for Cognitive Perception and Phenomenon. *IEEE Access*, 8, 222417-222428.