

DOKUZ EYLÜL UNIVERSITY
GRADUATE SCHOOL OF NATURAL AND APPLIED
SCIENCES

REGIONAL EFFECTS ON USABILITY TEST

by
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İZMİR

REGIONAL EFFECTS ON USABILITY TEST

**A Thesis Submitted to the
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In Partial Fulfillment of the Requirements for the Degree of Master of Science
in Computer Engineering, Software Engineering Program**

**by
Emrah BOZ**

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İZMİR**

M.Sc THESIS EXAMINATION RESULT FORM

We have read the thesis entitled “**REGIONAL EFFECTS ON USABILITY TEST**” completed by **EMRAH BOZ** under supervision of **Assist. Prof. Dr. DERYA BİRANT** and we certify that in our opinion it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Science.

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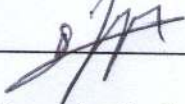
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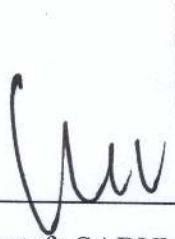


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REGIONAL EFFECTS ON USABILITY TEST

ABSTRACT

Usability has gained more importance with the growing use of computers. The relationship between people and computers is increasing rapidly. This increase is proportional with the increase of the operations carried out on computers every day.

Applications are available to users in various sizes and sectors. Previously, application developers have developed the application giving more importance to developing the functionality. However, in this process the users had to adapt the standards determined by the developers.

With the production of many products that have the same functionality due to growing market share, the users started to prefer user-friendliness together with the functionality. Therefore, manufacturers should test the usability of the systems in order to deliver the applications they developed to greater markets.

With the spread of usability engineering in the world some major usability theories have emerged. Some certain processes have been defined for the usability of a system similar to the software development process.

Within this scope, this study aims at providing certain check lists based on habitual behaviors and preferences of Turkish people to use in usability tests. As a result, the thesis aims at developing a Turkish usability check list for Turkish users.

Keywords: Human computer interaction, software, software engineering, usability, usability engineering, usability testing, usability checklist.

KULLANILABİLİRLİK TESTLERİNDE BÖLGESEL ETKİLER

ÖZ

Kullanılabilirlik gelişen bilgisayar kullanımı ile daha fazla önem kazanmıştır. İnsanların bilgisayarla olan ilişkisi çok hızlı bir şekilde artmaktadır. Bu artış ile doğru orantılı olarak bilgisayarlar üzerinde yapılmakta olan işlemler de gün geçtikçe artık göstermektedir.

Kullanıcıların kullanımı için çeşitli boyut ve sektörlerde uygulamalar mevcuttur. Uygulama geliştiricileri ilk zamanlarda geliştirdikleri uygulamalarda özelliklere daha fazla önem vermektedir. Ancak bu süreçte de geliştiricilerin koymuş olduğu standartlar kullanıcılar uyum sağlamak zorundaydı.

Büyüyen pazar payı ile aynı özelliklere sahip çok fazla ürün olduğundan ötürü kullanıcılar özellik ile birlikte daha rahat kullanabileceği ürünleri tercih eder hale gelmiştir. Bu sebeple de üreticiler geliştirdikleri uygulamaları daha büyük çevrelere iletmek için sistemlerinin kullanılabilirliğini de sınamaları gerekmektedir.

Dünya üzerinde kullanılabilirlik mühendisliğinin yayılması ile birlikte belli başlı kullanılabilirlik teorileri ortaya çıkmıştır. Yazılım geliştirme süreci gibi bir sistemin kullanılabilir olması içinde belirli süreçler tanımlanmıştır.

Bu noktada bizim tezimizde hedeflediğimiz ise; kullanılabilirlik testlerinde kullanılmakta olan bazı kontrol listelerinin Türk alışkanlıklarına göre belirlenmesini sağlamaktır. Bunun sonucunda, Türk kullanıcıların kullanabileceği bir Türk kullanılabilirlik kontrol listesi elde etmiş olacağız.

Anahtar Sözcükler: İnsan bilgisayar etkileşimi, yazılım, yazılım mühendisliği, kullanılabilirlik, kullanılabilirlik mühendisliği, kullanılabilirlik testi, kullanılabilirlik kontrol listesi.

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CHAPTER ONE

INTRODUCTION

1.1 Human Computer Interaction

Computers have become, for better or worse, complementary parts of our lives in every compliment. People use computers to share anything else with others, to write down everything, to watch over the departure or arrival of planes from a control center, and to play any kind of games, to select but a few of their many uses. Each of these uses requires us, as people, to communicate with these machines. This interaction requires a mode of communication that was usually not well known at the introduction of machines into our society. Actually, this type of communication was almost wholly nonexistent before the introduction of the Graphical User Interface (GUI), made famous by the Macintosh computer (Levy 1994).

The GUI works by using a representational form of interaction to notify the user about the position of the computer and to let the people to explain the computer which processes to enforce. Like Steven Levy (1994) said: “Metaphor, it turns out, is the key to making computers comprehensible.” The truth of this expression is presentation by the truth that many people, that use computer, benefit from this concept of metaphorical thinking without questioning its working truth. Just requirements to listen to human discussing how computer software works to realize this:

“How can I open my mail box?”

“Open the browser, type your mail domain, login with your user name and logged in.”

Clearly humans, that use computer, are discussing a definite action to be taken at a computer .Although, their interview doesn't datum point on the actual motions relevant: When we talk about using a computer, we talk metaphorically: “my mail” is not the mail itself, but rather the icon on the screen that represents the mail. Opening it encapsulates the action of moving the cursor over the icon that says “my mail” and clicking the mouse button the computer equivalent of opening mail content.

1.2 Usability Engineering

Many software development projects do not succeed the task of creating an efficient user interface on time and within cost. They might meet cost and time constraint, but they have not always provided a well analysis to the user interface designs. Then this is the point of the “Usability Engineering” comes. With regard to Wikipedia, “Usability engineering is a subset of human factors that is specific to computer science and is concerned with the question of how to design software that is easy to use. It is closely related to the field of human-computer interaction and industrial design.”

1.3 Usability Testing

Usability testing is in the field of usability engineering. Usability tests produced by the manufacturer due to the success of the systems can be used as measures by the target audience. This product has been delivered so much less to repair after the last user request, and so companies will gain both prestige and material gain.

1.4 Regional Analysis on Usability

We thought that local variances are important for usability. As the result of researches, we decide that we should find previous works about our subject in Turkey. Finally, we developed a questionnaire.

We had some answers which show there are already some works about usability. Our observations are as below.

CHAPTER TWO

HUMAN COMPUTER INTERACTION

2.1 The Historical background of Human-Computer Interaction

The first light of personal computing in the early 1980s was the beginning of a quickly improving technology repression on all days of people's life. The technological world of typists, devoted word processors and adding machines were quickly left in a wake of microchips.

The good news is that people can use more than it; the bad news is people can be captured in a marsh of complex and usually-confusing computer-based facilities.

The study of Human-Computer Interaction (HCI) finally took center stage in the mid-1990s as the World Wide Web, Mailing Systems, and Windows burst upon the scene.

Over the years, computers and software have become easy. Computer software has become more user friendly, taking advantage of "point and click" design. Mouse clicks are only part of the picture to advance the computing practice.

2.2 Definition of Human Computer Interaction

Human Computer Interaction has to do with the space that is design for you to work with technology. Space does not in the conventional meaning of "floor space." It is referring to the space that mails you the minute you start concentrating. That space is what you become "clandestine" in when you interact with a computer.

Think about all those flashing “16:18” digits on VCRs when they became a part of our lives in the 1980s. Humans rapidly arrange how to press the red record button on the VCR to record a program “on air” But it was a little different history when it came to showing such tasks as programming the VCR and setting channels. The ordinary subject for the futility many people felt while trying to use a VCR was puzzling or insufficient written instructions.

The identical is true for digital clocks. Setting an alarm on a digital clock can be hard. And, it really all comes back to HCI. The steps to accomplish tasks with electronic outfit have become more heuristic, because the designers of the products now look very closely at HCI and the space they are creating for you to work in.

2.3 Affordance of Human Computer Interaction

Affordance is the principal of HCI. Simply put, affordance is the knowhow and skills set you bring to any new position. Let’s define it with an example: Think about you rent a car from rental car. Although you never driven this model of car ever, when you climb into the rental car you absolutely know how to open or close electric window with a button. Truly, the affordance you “bring to the table” in such a situation isn’t going to do you much good if, instead of using button open or close, you need to pull up on the button to make the window open or close. Then another example: There’s a very good reason that most rental car companies do not suggest cars with manual transmissions. Anyone who has a license has the skill necessary to drive a car with an automatic transmission. But your driving skills would do you no good if you couldn’t use a clutch or shift.

On that score lies the mystery for HCI. Because there is no one specific standard way to create products, there is no magic way to create user-friendly design. The goal that HCI succeed is to create something the user can work with a great score. A person must be able to work within an interface (or space) heuristic. Affordance is something you keep adding to with time.

You have most likely interacted with technology in different ways, which positive or negative. A good experience, where you can succeed what needs to be done with minimum heartache, isn't something that can be listed in "10 easy steps" for product design. HCI developing this technology in daily living spaces is an important force leading to a better working experience.

2.4 Link with Other Disciplines

2.4.1 Nearly Related Disciplines

HCI in MIS disciplines with the most closely related to human factors and ergonomics in the field of Industrial Engineering often can be, and computer-human interaction (CHI) which is academics and practitioners in human computer interaction in a field called name of an association, in the early 1980s, scientists from computer science and psychology.

Taking a historical perspective, Grudin compared three closely related disciplines that all have a real interest in HCI issues: human factors and ergonomics, computer-human interaction (CHI), and management information systems (MIS) (Grudin 2005; Grudin 2006). He is a rich examination of historical events for each discipline. One disappointment Grudin talk over is the terminologies used by MIS scholars are occasionally incoherent with those of CHI scholars.

On the surface, confusing different uses of terms seems to be overwhelming to do the same, as noted by Grudin repeatedly (Grudin 1993). Yet, they may indicate some fundamental differences among the different disciplines, or the differences in shifting emphases among the different disciplines. A good example is the level of analysis in MIS and CHI: MIS emphasizes the macro level of IT development and use that is relevant and meaningful at the organizational level (Zhang 2002); CHI, on the other hand, emphasizes the micro level of humans directly interacting with technology, with limited consideration of organizational meaningfulness (Zhang 2006a).

Historically, CHI research did include some explicit consideration of organizational issues, especially with respect to administration a project for greatest usability. Failed to gain such an understanding can lead to unfortunate design problems, offering this kind of dialog boxes or prompts the use of terminology, foreign users, or users who want to follow the steps if it cannot find any documentation or training materials. Equally as sad, designers sometimes make a mistake by providing detailed instructions for fulfill well-known tasks such as selecting File-Delete to delete a file or File-Open to open a document. Abundant in the middle of clear instructions, it might be difficult key aspect of the necessary help can be hard to find.

Such a focus on systems analysis and design of the study was to have for a long time in the field of MIS. Organizational context for practical problems is usually provided by the business analyst. A business analyst is an attractive candidate for a user experience design. He represented the task more accurately and quickly gain the user's job to speak the language. He is rich with organizational information, people can develop an effective design features. Test objectives and criteria that are meaningful to the organization can produce. He can identify if usability is of enough quality for release to users. Analysis of organizational needs more clearly point to, the right decision to expand the overall productivity and save millions of dollars. Further, additional analysis of customer satisfaction, company image, and IT strategy might provide crucial input to the decision as well (Galletta 2006y). HCI research in the field of MIS with all these decision points can be informed.

2.4.2 Cooperation with Related Disciplines

With so many shared concerns among several related disciplines, these disciplines to talk with each other and work together to move forward understanding of HCI-related events in our logical. MIS of the main academic association, the Association for Information Systems (AIS), is participating in the dialog and movement (Galletta 2005). Other professionals include ergonomists, graphic designers, business analysts, product designers, engineers, and health professionals from both academia and

industry (Zhang 2006y).

Efforts to pool resources while continuing to work, disciplines remain separate. Ergonomists business will continue to emphasize the physical effects of human factors, graphic designers will focus on layout and presentation, and mechanical engineers will go on analyzing materials that will go into a physical product. All the users' experience and usability of their products is noteworthy that significant resources are spent. All camps and training needs of the users by minimizing the product to behave as you expect it all to attempt to maximize user understanding of all attempts to ensure that product appeal. In the same way, these concerns are shared by all system designers in the field of MIS. What distinguishes MIS researchers is the organizational context (Galletta 2006y).

The organizational context provides researchers and practitioners alike a notion of an organization's strategic targets and therefore serves as a driver for users' tasks. For researchers, the organizational context helps us select research problems and plans of actions. Similarly, for practitioners, the organizational context is examined approaches to solve problems and lead to the borders of. The differentiating factor is that researchers are most often interested in acquiring generalizable knowledge, while designers are focused on providing a solution to the organization, with systems that have improved usability or enjoyment (Galletta 2006y).

2.5 Theoretical Basics of HCI Research

2.5.1 Disciplinary Side

HCI began as an interdisciplinary field, has stayed interdisciplinary, and continues to be more predictable multi-disciplinary. This is because no single discipline can entirely cover the complex, broad issues involved; as Dillon states: "There is no one field that can cover all the issues worthy of study" (Dillon 2006). Many aspects of our lives and communities in their own interest, given the HCI issues from very different backgrounds, researchers, educators and practitioners have attracted.

Interdisciplinary tension, as Carroll calls it, “have always been a resource to HCI and an important factor to its success” (Carroll 2006). The key to success so that the unique perspective of each discipline and the strength and the best way to keep open-minded attitude to facilitate the dialogue between the various relevant disciplines.

MIS as a discipline of information and role information plays in making business decisions and organizational effectiveness has a long and strong interest in. For instance, Banville and Landry (1989) concluded that the management, information systems or a combination of these unique perspective based MIS. MIS disciplines such as HCI, and a number of information science, information sharing, this intense interest. Therefore, the information can be used as a bridge between these related disciplines such as. Information in the MIS and other disciplines, an emphasis on the common concerns, common approaches and to examine the potential for cooperation should allow.

We showed that, as a large number of MIS scholars from different disciplines, its own built-in HCI research. Accordingly, the HCI problems inherited from the analytical point of view the stunning variety of disciplines were. MIS researchers Kutzschan and Webster, their big-picture perspective, strong theories, methods and rigorous, is positioned in a different way to resolve issues argued HCI. Businesses and markets due to increased sensitivity to the problems for the HCI, HCI is now a great opportunity to study the benefits of MIS. Therefore, MIS is a natural home for HCI research (Kutzschan 2006).

2.5.2 User Side

Human, HCI studies discipline is an important component in the perspective of an independent investigator. Based on studies of people as users of ideas about human psychology, because both the HCI and MIS has been able to connect directly with a basic science, in this context, the research provides depth and reliability. Historically, MIS research in two phases of IT life in humans studied: the IT development stage and the IT use and impact stage (Zhang 2005c). Examine the direct impact of IT

development and use of MIS people to work in different roles-as developers, analysts and IT developers and managers, and stakeholders.

2.5.3 Theories for Singular and Team Work

User-centered design, promote joint technology to support group work within the scope of Olson and Olson have now identified the different design approaches (Olson 1991).

Olson and Olson, a user-centered design strategy, user tasks, and features a design begins with a note that detailed assessments: Who are the potential users? How varied re they? What is their current work like? Which aspects of their work are difficult? What are their needs? There are three key aspects to this design strategy: involving users, iterative design, and the role of theory about users (Olson 1991).

MIS literature, the theoretical understanding is important to use information systems to support designers in the development of individuals and groups. We are here to show the importance of this type of design theories that several theoretical studies.

Decision-makers to help you make a particular decision or course of action to choose a specific decision support systems (DSS) Given the long history of development, decision quality, decision-makers' confidence in making the issue an important. Kasper and Andoh-Baidoo offered a lengthening of DSS design theory for user calibration, which is described as the correspondence between one's prediction of the quality of a decision and the real quality of the decision (Kasper 2006). In a related paper, silver broadened theoretical work published a decade ago on how a DSS enlightens or sways its users as they choose among and use the system's functional capabilities (Silver 2006). The expanded theoretical work can be used to study not only DSS but a variety of other interactive information systems (Silver 2006).

In a group environment, become an important event to ensure the success of coordination group. Coordination activities relate to organizing and allocating group activities, during all parts of project. They include such activities as goal stating, agenda setting, history keeping, floor control, activity tracking, and project management (Olson 1991). Coordination theory (Malone 1994) provides a detailed theoretical understanding of the dependencies between the tasks the different group members are carrying out and how the group coordinates its work. Built on research in several different disciplines, such as economics, organizational theory, and computer science, coordination theory has influenced many studies since its initial publication in 1994. Crowston and his colleagues provided a ten-year retrospective on the development, use and impact of coordination theory (Crowston 2006).

2.5.4 Design and Development

Theoretical studies in this section, individuals, groups and organizations continue to benefit from light to develop effective information systems.

Two important models of MIS: cognitive fit by Iris Vessey and task-technology fit by Dale Goodhue have been recently expanded. Cognitive fit (CF) theory (Vessey 1991; Vessey 1991) previously, graphics and tables, knowledge acquisition and knowledge assessment tasks where information is used to support the presentation to explain the inconsistent results presented in. Vessey recently surveyed the broad applications of CF, discusses the fundamental theoretical framework of CF theory, and points out future directions (Vessey 2006).

Task-technology fit (TTF) studies the causal chain connecting information technology with its performance impact (Goodhue 1995). TTF supported the idea and the key task is sleeping may be a technology that only a positive performance impact. TTF also analyzes the impact of the fit on other factors, such as system utilization, user attitude, and user performance—where users can be both individuals and groups (Zigurs 1998). Technology acceptance or use of the technology moves beyond the focus of the TTF to analyze how it affects the performance of the actual

task. Despite the obvious importance of this construct, Goodhue argued that it is often neglected in major MIS models on information systems and performance (Goodhue 2006).

Organizational information support system does more than just productivity. Expanding the cognitive-affective model of organizational communication with IT support (Te'eni 2001), and cognitive task-technology fit and proper building, Te'eni presented a well-rounded and broad concept of fit that has to do with physical, cognitive, and affective fit between human and computer (Te'eni 2006).

Recently, motivating the design of a new information theoretical point of view and communication technology has been suggested (Zhang 2007). The perspective to meet the varied needs of their people is one of the main reasons for using technology to support their well-being suggests that. Taking this motivational perspective, Zhang suggested that the purposes and utilities of information and communication technology should support various human needs. She then proposed ten design principles to guide the design of motivating technology (Zhang 2007).

2.5.5 Development and Testing

Consistent with the majority of studies in the MIS, due to HCI research is a powerful theoretical. Theories, which can be tested or verified and applied, advanced. Theories by researchers and practitioners are addressed with different eyes. The researchers attempt to develop and test the theory, while practitioners will use systems theory to design or evaluate products.

Researchers in many areas, but this work has given the theory is not complete and there is room for the next period. Likewise, the theory developed in the potential has not been. The second reason for lack of sheer numbers; HCI theories, frameworks and principles have to be an endless array of application areas. Not only can broad types or categories of systems be investigated, but a bewildering array of highly detailed aspects of those systems can be studied too (Galletta 2006y). Researchers

must be related to some basic questions: The development made “Where” and “How”.

2.5.5.1 The Development: Where

Categories of systems were investigated at different levels. The categories are mutually exclusive and have a tendency to include more of the shortlists. For example, the HCI field in a dialog with the user to manage the graphics, menu, and command-based interfaces as a way to read out three general. In the menu-based systems, researchers have categorized as static and dynamic menus. Within static menus, researchers have investigated different arrangements of menu items, such as alphabetical order, functional or categorical order, frequency order, temporal order, and even random order (Galletta 2006y).

Systems detailed directions, have served to define our understanding of the system have been studied very, very interesting, but only in some areas have been covered. These thoughts are not as well defined or detailed categories. Perhaps inspired by the categories, they represent events that have been observed by researchers. Study the menu-based systems, for example, various researchers and the response time is significantly different between the different systems at different times of day when the difference between using a particular system. When studying graphical interfaces, some researchers noted that reading speed and comprehension differed when comparing paper against CRT screens of the 1980s (Galletta 2006y).

2.5.5.2 The Development: How

Without the expectation of early researchers to explore the options and effectively combines a large set of results. In the early days (e.g., see Dickson 1977), researchers listed options for presentation of information such as summarized versus detailed, or paper versus screen. They also examined outcomes such as “confidence” and “accuracy.” As time passed, the MIS discipline began to mature. Researchers began to apply theory by “borrowing” and adapting theoretical developments from other fields, or even by developing new ones from previous studies (Galletta 2006y).

UTAUT (Venkatesh 2003) is an example of a perspective adapted from outside the field. Its predecessor model TAM (the technology acceptance model) (Davis 1989) was derived from the theory of reasoned action (Fishbein 1975) from social psychology. Many other models have been imported and adapted in this manner (Galletta 2006y).

2.6 HCI Applied Fields

In addition to being multidisciplinary and theoretically grounded, HCI in MIS is in the area of strong and practical for implementation. Applications that require interaction with human users, can be found everywhere in our environment, and therefore a major concern for researchers and practitioners in a wide range of disciplines. Long-term efforts are under way to pull these researchers and practitioners under a single metaphorical umbrella where duplication of effort can be avoided and synergies can be exploited (DevCon 2005; Galletta 2005; Instone 2005).

Researchers and practitioners can benefit from the application of the theory. Researchers can improve and apply theory to generalize to other conditions. They both develop and test applications of the theory are derived from the models, or a new theory that lead. Practitioners can use it to solve problems, often for evaluation of new software or hardware (Galletta 2006b).

Many applications can be found in the Theory of literature. In these areas, interesting, different, and both are important for researchers and practitioners who have direct or indirect interest in. Representative of the articles mentioned in this section with the various private spaces. These issues; in a long time or a set of studies is on the long-evolved. The application areas of electronic commerce, team collaboration, culture and globalization, the user learning and training, system development and health, include. Most of these fields can be developed to a unique built-in literature.

2.6.1 E - Commerce

Internet access is more and more people's lives every day. From this perspective, most companies no longer want to reach customers in ads, conducts business over the internet ads. Turned over most of the internet has become the habits of this current. E-commerce is the main example of this flow.

People make their shopping over the internet now. Considering the size of the Internet, there are sites that do the same job in a different one. For this reason, as people will use the first criterion for site selection will be more comfortable using a site. E-commerce site, the user must consider audience. This will be much more successful.

Users can easily walk around with a site to be entered. Shopping cart, account, had given the order to easily be able to reach. For this reason, only the functionality to the system within the system is designed with the team, but also easily accessible by the user of this functionality to ensure that. At this point, the task starts with HCI.

Evaluate the usability of the system as a professional he expected the system to ensure that higher level of success. Users a more convenient interface, a faster system, presenting a more reliable infrastructure will provide long-and short-term profits in the system of authorities.

2.6.2 Knowledge Based System

By the end of the last century has experienced great changes in every subject in the world compared to the past. In this context, material and technological developments in plastics, electronics, computers and many in the industry revealed. In parallel, increased competition and developments in the field of information technology has opened new horizons. All of these factors, different product specifications and high quality demands have led companies seeking to develop new manufacturing strategies.

Appropriate manufacturing strategies and organizational structures for firms of different structures of the difficulties in determining, for the solution of the problem makes it necessary to take advantage of the different methods. The use of the knowledge-based system, this solution is one way of. These systems, manufacturing managers can obtain information from the computer experts provide the possibility of providing. These systems require considerable expertise in solving difficult problems in intelligent computer program that uses knowledge and inference procedures.

Use of consistency and continuity, reproducibility, easy modification and use them in different places, such as controllability, and these systems have many advantages, not yet widely used in Turkey. The biggest obstacle for the development of knowledge-based systems cost problem in our country. In addition, the possibilities offered by these technologies to be known a good reason, knowledge-based system development process is long and the other obstacles in the software sector, lack of infrastructure. Given the importance of the knowledge-based systems in providing competitive advantage, without delay the necessary steps should be discarded as soon as possible.

Decision Support Systems can provide great benefits for Turkish businesses. For this reason, is spreading in Turkey, Decision Support Systems. Decision Support Systems for the users to spread more quickly adapt to the system must be fast. For this reason, usability is an important factor in the Decision Support Systems.

2.6.3 Cultural Affects

Global interfaces for users have always been difficult design. This challenge led to the same product to different users so the current trend of globalization, is even greater today. Software and information technology products are for global audiences are in different countries, different religions, speaking different languages, and different life styles, with different cultures and different perceptions and expectations of the same product. Indeed, as a global product is a natural order to be effective and

successful, this diversity is necessary to meet. User interfaces are a major obstacle to understanding the role of culture is inadequate and how they are constructed so that. Lack of understanding of even very few empirical studies exist on the role of culture in usability testing is compounded by the fact that. The purpose of this research and study experimentally the effects of structured interviews to establish the culture of usability evaluation techniques are.

Indian participants in a study using structured interviews; usability testing was conducted to determine the effects of culture. Indian participants by two interviewers to test the usability test consisted of two independent groups, one belonging to the Anglo-American culture and Indian culture, the other. The research results clearly show the effects of culture in structured interviews during international user testing. Participants found more usability problems and their own culture in a foreign culture than the interviewer, the interviewer was more recommendations. Results of the study prove that culture affects the effectiveness of structured interviews during international use test.

CHAPTER THREE

USABILITY

3.1 Definition of Usability

“Usability is a quality attribute that assesses how easy user interfaces are to use. The word "usability" also refers to methods for improving ease-of-use during the design process.” (Nielsen 2003)

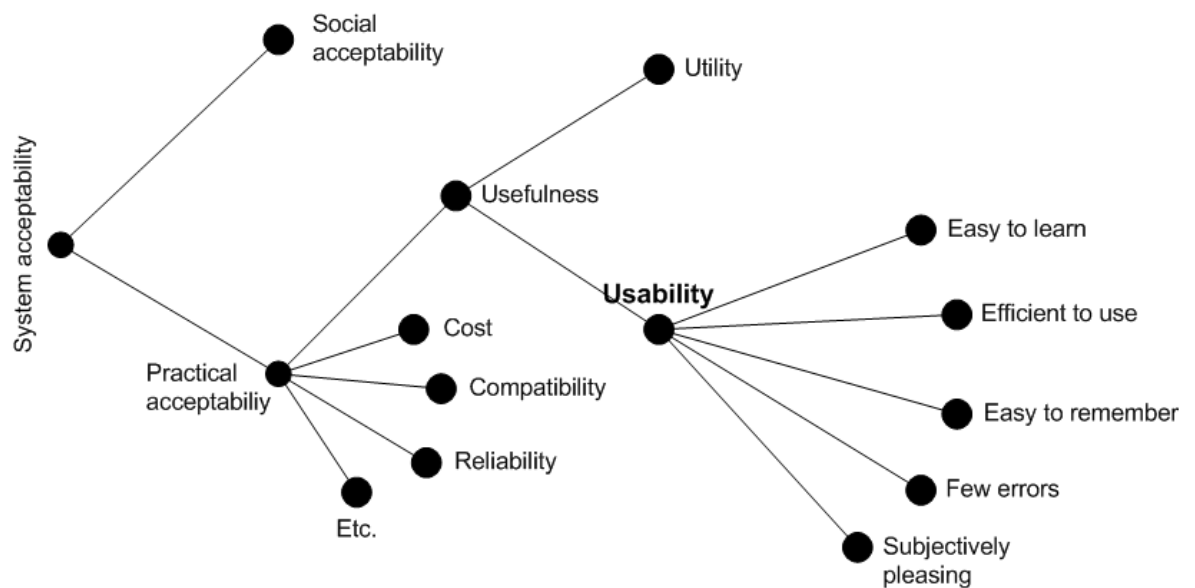


Figure 3.1 A model of the attributes of system acceptability, (Nielsen 1993)

Usability has five quality components (Nielsen 2003):

- **Learnability:** How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficiency:** Once users have learned the design, how quickly can they perform tasks?
- **Memorability:** When users return to the design after a period of not using it, how easily can they reestablish proficiency?

- Errors: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- Satisfaction: How pleasant is it to use the design?

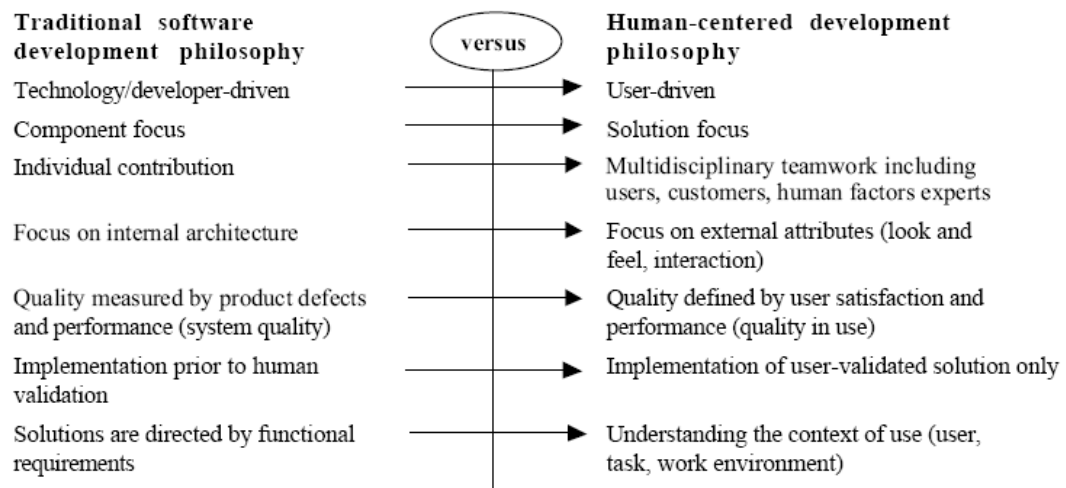


Figure 3.2 Traditional software developments vs. human-centered development, (Gulliksen 2001)

3.1.1 Usability Engineering in Interface Design

User Interface Design is an interactive system interface design, all kinds, and also non-interactive systems (such as subway map), information design, are described. Thus User Interface Design is a subset of Usability Engineering.

3.1.2 Why Usability Engineering

The importance and availability of computers are changed radically according to the past years. Not only the computer experts', not just systems, but also each persons' daily life have been effected profoundly. Under these circumstances, computer, software and interactive systems, as a whole, being easy to learn and use, is very important. Software is becoming more complex, more complex with each new version of a software product features. At the same time, the software is becoming more interactive, graphical user interfaces of the line and the mask-

oriented software has been a shift in the last decade. In addition, special software training users in the past the typical high-after and had a custom-made computer experts using special software, user groups, there is a change. The target group of a software product today is not much larger and heterogeneous; users usually are not very experienced using computers. In addition, often there is no time or motivation for the training of special software.

3.1.3 Usability Engineering Benefits

Improved reliability and efficiency of the system by reducing user support costs and economic effects of investments in education will be time-consuming. Usability engineering technology will reduce development time and costs: the late discovery of serious defects in the system re-engineering required to be made time and cost-intensive.

Layers (data layer, business logic and presentation layer separation, etc.) will make a proper allocation changes are easy to apply. In the Web development business logic and presentation layer is usually clear so that later changes (such as availability features) are not separated expensive.

- Every \$1 invested in user centered design returns between \$2 and \$100 (Pressman 1992)
- Users will
 - Experience satisfaction instead of frustration
 - Achieve goals more effectively and efficiently
 - Not waste time and energy
 - Easily learn to handle the system
- Providers/producers/developers will benefit from
 - Reduced financial costs
 - Efficient design that adds value, not frills
 - Fewer revisions
 - Reduction of support costs
 - Increased productivity

- Increased accessibility to maximize the potential audience
- Increase in use
- Happy and loyal customers
- Reduced development times
- Avoidance of unnecessary features

3.2 Usability Process Parts

3.2.1 Software Engineering Life Cycle

Software engineering methods and processes have a variety of ideas, methods, and application development process including the steps described below:

- Requirements Analysis
- Development of a Concept
- Implementation of the Concept
- Testing and Debugging
- Installation
- Maintenance

This iteration will start a software engineering life-cycle engineering processes, iterative process that is finished a new review of this software, since most updated version of a product or a product, will lead to.

3.2.2 Usability Engineering Life Cycle

Similar to the software engineering life, goes hand in hand with Usability Engineering Life Cycle software being developed and there are many different models such as software engineering methods and process, it also has a variety of usability engineering life cycle.

- Requirements Analysis

- Who is the end user, who will use the product? User profiles are conceived.
- The Task analysis reveals task requirements and the current workflow as well as specific conditions of use.
- Platform capabilities and constraints are recognized at this phase.
- Conceptual Model Design includes reengineering the workflow and writing down the application structure.
- Testing and Debugging in Human Computer Interaction means designing rapid prototypes and users test them.
- Implementation of the "final" system, delivery and installation.
- Evaluation and refinement of the requirements lead to an update of the product, repeating the usability engineering life cycle.

(The HCI Space 1999)

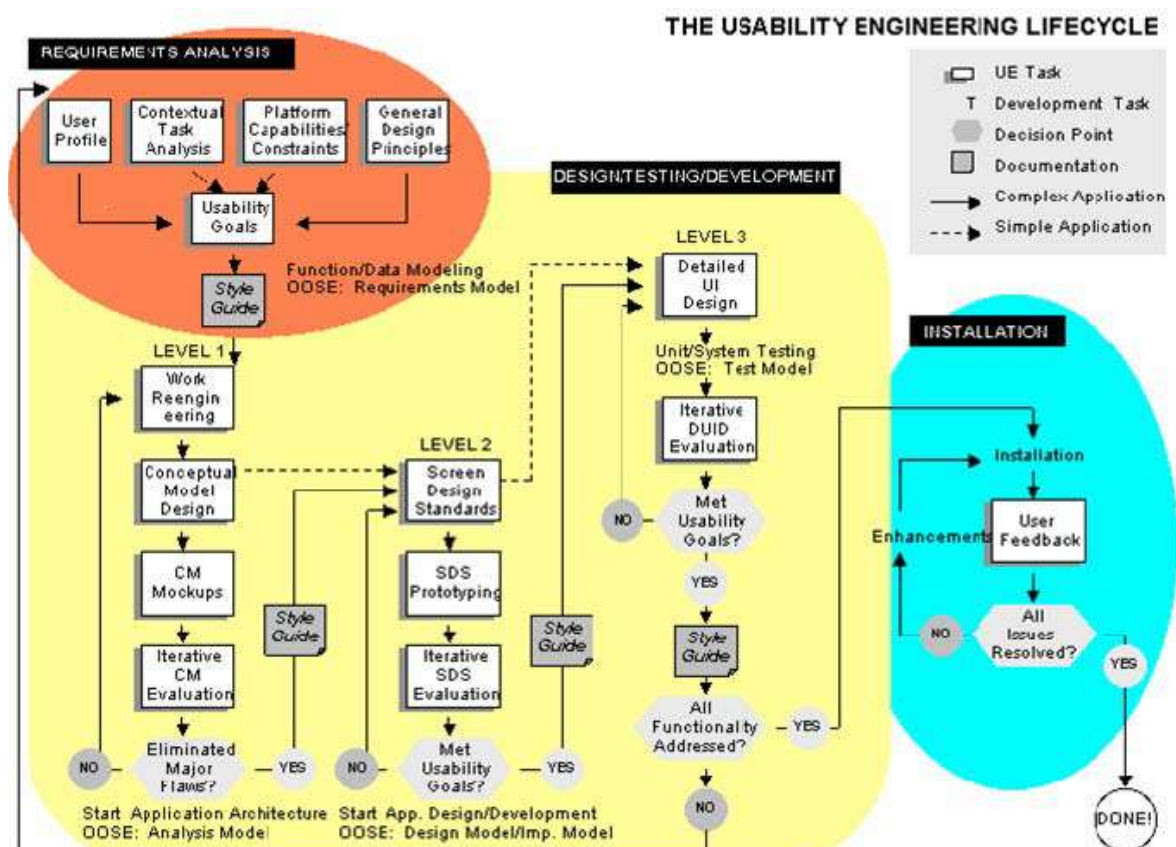


Figure 3.3 The usability engineering lifecycle, (Mayhew 2004)

A less complex model of a usability engineering lifecycle is the model of Manhartberger, The evaluation of the user interface starts in a very early stage of the development process (paper prototypes...). This model is also incremental.

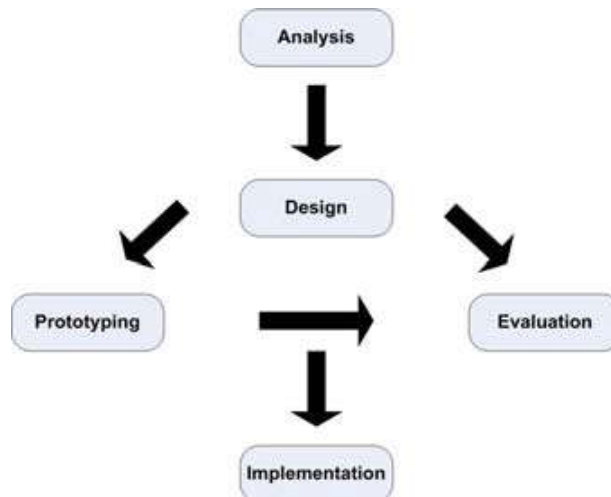


Figure 3.4 Usability engineering lifecycle, (Mannhartsberger 2001)

3.3 Usability Methods

3.3.1 User Profiling

User profiling is described as “...a process of gathering all known information about the audience of a specific product, and then breaking them into specific ‘profiles’.” (Usability 2010)

For example a site selling books and writing tools may attract three main types of visitor - resellers, students, and general members of the public.

A document is then created for each of these groups, and is built up to including information such as:

- Technology used by these users
- Population characteristics (age, gender, socio-economic breakdown, etc.)

- Relevant experience (in the industry, with the technology, etc.)

As well as gathering information on each profile as a sub-section of the audience, each profile document also includes a “persona”.

3.3.2 *User Persona*

A persona is a profile of a particular user is people fitting the central line which represents the opinion. This demographic profile needs preferences, giving biographical information, a target user of a system which is designed a specific person and a description of a photograph or illustration. Usually more than one target audience personas developed in the early stages of the design spectrum represented. Personas a "scenario" are one piece and the other part is a description of how to interact with this person is usually the system is designed.

For example a site that sells books over the Internet may have a user profile of a “student”. Some of the characteristics of the student who uses the site (together with many other users) might be:

- Age range: 18-30, average age 23.
- 48% male, 52% female.
- Average income per month in EUR:
 - Small, less than 300 - 62%.
 - Medium, between 300 and 1000 - 31%.
 - Large, more than 1000 - 7%.

Using that information and more, a persona can be created that represents this profile; “Carl is a 24 year old student with a monthly income of 500 EUR. Carl is interested in books about computer science in general, but his favorite topic is Linux. “.

3.3.3 User Scenarios

“A scenario is an encapsulated description of an individual user, using a specific set of computer facilities to achieve a specific outcome under specified circumstances over a certain time interval (this in contrast to simple static collection of screens and menus: The scenario explicitly includes a time dimension of what happens when).”(Nielsen 1993)

With the data collected by user profiling and the so created persona it is possible to play different scenarios. This software uses scenarios to achieve a specific goal of a persona. User testing is better when the test is a real person to develop a scenario with a possible alternative. It takes a long time, but of course a tradeoff between the quality of testing time and remarkable.

3.3.3.1 Daily use scenario

Duties of the users are often called the conducting daily tasks. Thus, the main focus of software development is targeted on these scenarios. Simple and quick to address need for access to daily scenarios. Example: Customer wants to order a book about the Apache server.

3.3.3.2 Necessary Use Scenario

These are important actions, which are somewhat necessary to complete the user's tasks but are not used most of the time. Example: Customer changes his credit card information, because his old card expired.

3.3.3.3 Edge Case Scenario

Tasks executed infrequently are named edge case scenarios. Although these tasks are seldom they should still be considered in software development and usability testing. Example: Customer wants to order a book which is not listed in the catalog.

3.3.4 Task Analysis

How people think about the tasks and determine how to complete them so-called business process analysis. Purpose-designed interface, users can quickly and easily see what to do at every point, so closely that the same task, make sure that users' mental models. For example: A book store wants to sell goods online store, and then pass the task analysis of the process used to identify the people deciding to buy. What concerns them at every step and at every point, and what information needs to be used to define the options used?

3.3.5 Prototyping

Prototype testing and allow a lower price and effort in the early development stages to test different concepts. Prototypes cut down either on the number of features or the depth of functionality of features to perform usability evaluation as early as possible in the design cycle. Realism, interaction and production of prototypes with different levels of effort can be used according to the current test.

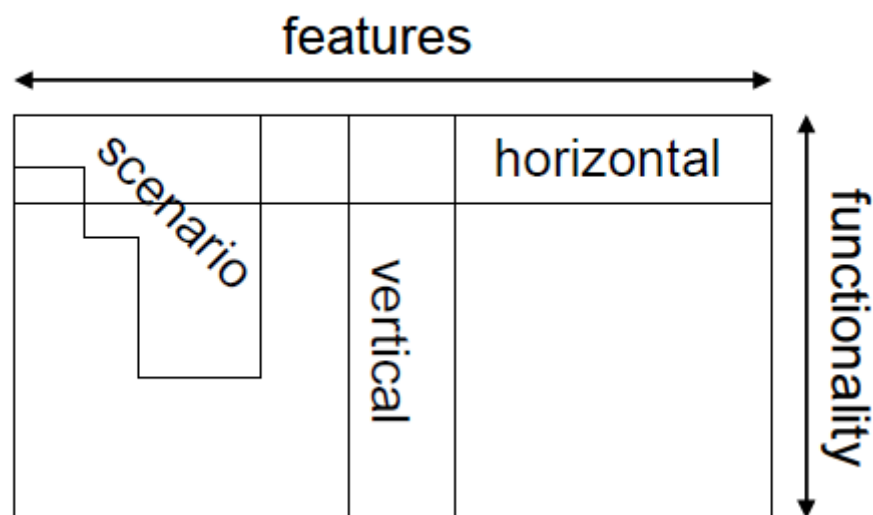


Figure 3.5 Different levels of realism, (Farmer 2003)

3.3.5.1 Vertical Prototype

“Cutting down on the number of features is called vertical prototyping since the

result is a narrow system that does include in-depth functionality, but only for a few selected features”. (Nielsen 1993)

Thus, a vertical prototype for a product, but only a small fraction of the entire product has full functionality. For example, the spelling of a word processor, a vertical prototype all the functions, but none can show formatting or text input functions. Simulate as real as possible all the functions of prototype vertical counterparts.

3.3.5.2 Horizontal Prototype

“Reducing the level of functionality is called horizontal prototyping since the result is a surface layer that includes the entire user interface to a full-featured system but with no underlying functionality. “(Nielsen 1993)

Horizontal prototype broad functionality behind each function, but without the features of the product shows a broad spectrum. Horizontal prototype yet to implement most of the actual work functions, yet user interfaces, user preferences is used for testing. Actually need something to work with these prototypes, the interface design, evaluation, and so provides feature placement, and accessibility.

3.3.5.3 Scenario Prototype

One scenario is a mix between vertical and horizontal prototypes. One scenario, the task of a particular user will be shown as real as possible.

3.3.6 Competitive Analysis

Competitive analysis, user interface design through reverse engineering to get the logic, making the idea of competition to determine a common user interface conventions, may be fixed or set of methods for finding the usability problems. The results of a competitive analysis, product by demonstrating superior usability, marketing can be used, or design, product development, taking ideas for ways.

3.3.7 Style Guide

A style guide-and-clear standards and set a specific user interface conventions that define a user interface is a reference to feel. Style guides generally guide interface, graphics, layout grids, the full space size and interface design elements, font, color, interactive behavior, a standard text message (such as error messages), and labeling standards include these principles. Excellent style guides are available for most major operating systems. Special style guides generally, organizations and developers to establish consistency in the visual standards and in the future may be running on the same project design for other designers to assist in communicating the user interface designer or web sites created for individual applications.

3.3.8 Design Workshops

When a design studio, the developers and customers come together in order to increase the availability. Scenarios, design prototypes and demonstration development team and discuss with the client. This is especially important in the early stages of development provide valuable feedback, and workshops.

3.4 Usability Testing

3.4.1 *The Aim of Testing*

"Usability testing" a representative user interface design is an empirical test. He should explore the availability of a process that, if targets are met. How users interact with the target audience is a review of a system includes a number of methods. Fast user errors in their solutions to what they were, confused, what to do, how would a typical approach, a user performing each task tasks with a variety of user notes on how well the application performs an observer records how many learning trials, and so on.

“Usability testing is a means for measuring how well people can actually use something (such as a web page, a computer interface, a document, or a device) for its intended purpose. If users, or test subjects, have difficulty understanding instructions, manipulating parts, or interpreting feedback, then the developers must go back to the drawing board, improve the design, and test it again. During usability testing, developers are not expected to explain their product to the user, or argue about its merits.” (Wikimedia 2004)

3.4.2 *Testers*

Testers should be selected adequate to the target group of the tested product. No driver's license and vehicle design and testing of controls so that no personal interest and experience in a cars cockpit by car, the evaluation has no meaning. In this age, education, and cultural history, and recommended dividing the test into several groups due - computing experience - the computer-related product is. A test on the 'opinion of his own personal history and experience is always considered within the framework of product should.

The test users and to provide more motivation for empathy is the probability of a person using the test program, we recommend developing user scenarios. What he wants to do with the application allow the user must have the desired result. Than a

real user scenario can be simulated in real life the situation is better.

3.4.3 Test methods

3.4.3.1 Thinking Aloud Method

Thinking Aloud method used during the usability popular (and inexpensive) technique. User when interacting with the product as part of a scenario is a test to do a job, during the course of the user's own thoughts, feelings and thoughts vocalizes. One of the main benefits of the thinking aloud protocol is a better understanding of the user's mental model and interaction with the product. Other benefits of the user's understanding of the terminology with an idea or function, may result in a better product design, or at least use a better expression of documentation.

3.4.3.2 Observation

Them to go to the user's workplace, the availability of engineers and representatives of users using the system to perform the duties of their own mental model of how and what types of users to understand about the system, we see working with the product. After observing the results of the following should be: How many errors made that how long it takes to fulfill a mission...

3.4.3.3 Query Techniques, Interviews and Focus Groups

Directly about their experiences using the techniques of query evaluation under the system includes a user query. This is like an interview to be done, for example, a survey in writing or face to face.

Interviews and focus groups of users are queried about their experiences and preferences with a particular product. Studies and surveys with the opposite, interaction and questions raised by developers to facilitate discussion on various topics may be present. Present the user with more than one focus group, the interaction between users, many people experience additional problems or joint problems, determine the increase.

3.4.3.4 *Eye tracking*

Eye tracking allows testers to identify what participants look at during the course of a usability test. Several different technologies, including skin electrodes, used in contact lenses, image processing, cameras, and became followers of the reflector. This is the user's eye / eye socket does not require physical contact, as with the last type, probably the most effective. Instead, a light beam is reflected onto the eye, a sophisticated user of a camera looking at the student to determine; what is the difference between a snack and known reference point.

3.4.3.5 *Paper-and-Pencil Test*

In this test a group or individual evaluation of a design that is not yet prototyped or otherwise developed is being tested to gain user feedback on an emerging design at the very earliest stages.

3.5 Usability Testing in Our Region

For usability tests, studies are undertaken with international standards. Our thesis that, these studies have made on the usability checklist. We asked what happened to Turkish companies have set the objective sections of the checklist. In this way, we thought to bring usability checklists and regional approaches.

This study tried to identify areas that may be different from the regional lists of usability. This Commission, recognizing the country-based analysis conducted. This analysis will lead the way for Turkey to deliver a standard checklist. Thanks to this analysis, I realized the importance of Turkey's leading companies, availability.

CHAPTER FOUR

TURKISH STANDARDS ANALYSIS IN USABILITY

Usability checklists are used to test the usability of the system. For these lists, some of the objective areas were detected as a result of investigations carried out. The analysis of these areas was done. As a result of this analysis, some assumptions were obtained with respect to Turkey.

The aim of this study is to analyze the level of usability in Turkey. We want to create a checklist of regional sub-structure of this analysis. Turkey's leading companies, the key agenda questions, check lists, locality searched. We checked the results proved to be a country-based usability studies on behalf of the particular. At the same time, regional approaches in these studies received. Provisions of this section, sub-headings in this analysis will be.

4.1 Registered User Information

In analysis period, at firstly, we asked companies. User information is stored in the system, was the availability to other users. When presenting this information, including the limited amount of information shared, we concluded that a large extent.

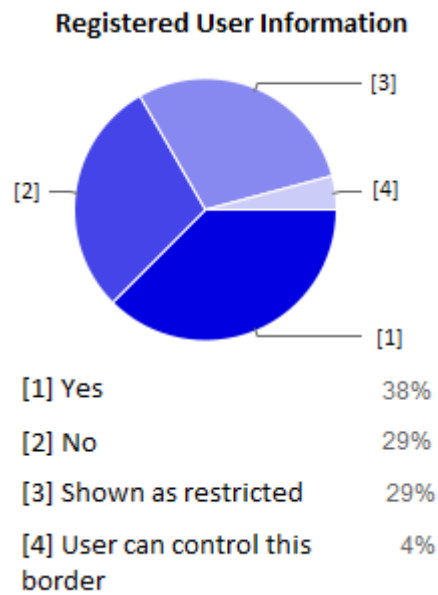


Figure 4.1 Registered user information is shown

4.2 Data Entry Form Standard

In our analysis; the other question posed to users, data entry forms was whether the other forms that separate standards. As we have seen rates close to each other. However, there is not a standard output with a higher rate.

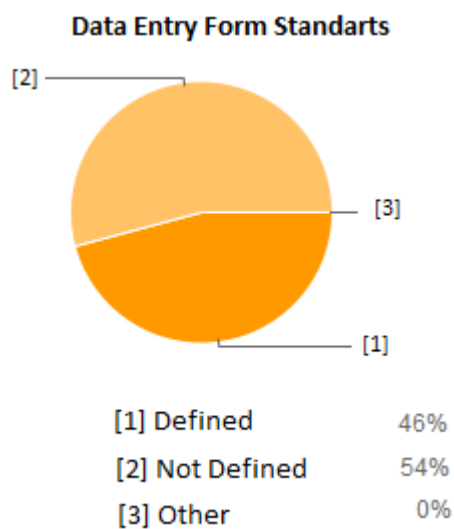


Figure 4.2 There is data entry form standard

4.3 User Can Use Own Registered Information

The user can use their saved information in the system, so we asked, the result was completely yes.

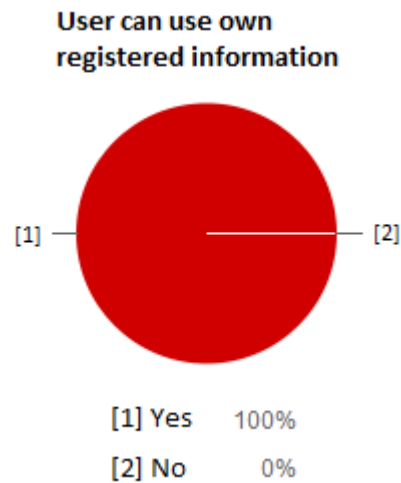


Figure 4.3 Can users use their own information

4.4 Data Request Duplicate

We asked our participants that, does the same questions are duplicated. Most of the participants gave no answer. However, even though very few applications that renews the same data available

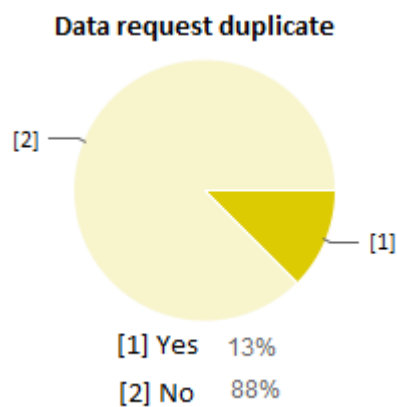


Figure 4.4 Data request duplicate

4.5 Data Entry Form Alignment

We asked to participants is they have a alignment standard while entering group of data. Most of the participants use vertical field alignment for group of data.

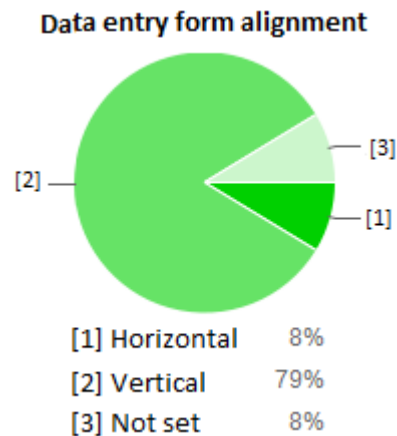


Figure 4.5 Data entry form alignment

4.6 Structured Language in Warnings

Inside the system reviewed and examined, asked with a grammar planned alerts. Review of grammar, is doing a great majority.

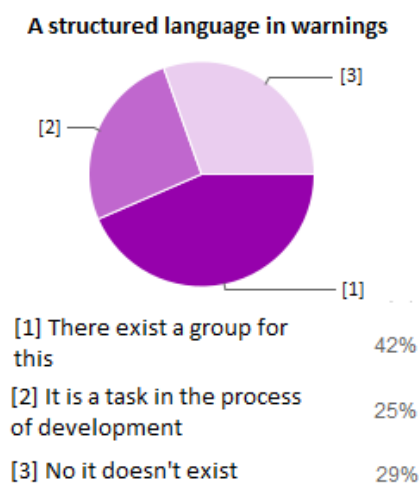


Figure 4.6 Structured languages in warnings

4.7 Requires Area Indicates

Data entry section, the standards used to display the required fields, is important. Participants observed that they are all present a method that is used. However, the majority of participants, data entry required in the field as well as the phrase suggests.

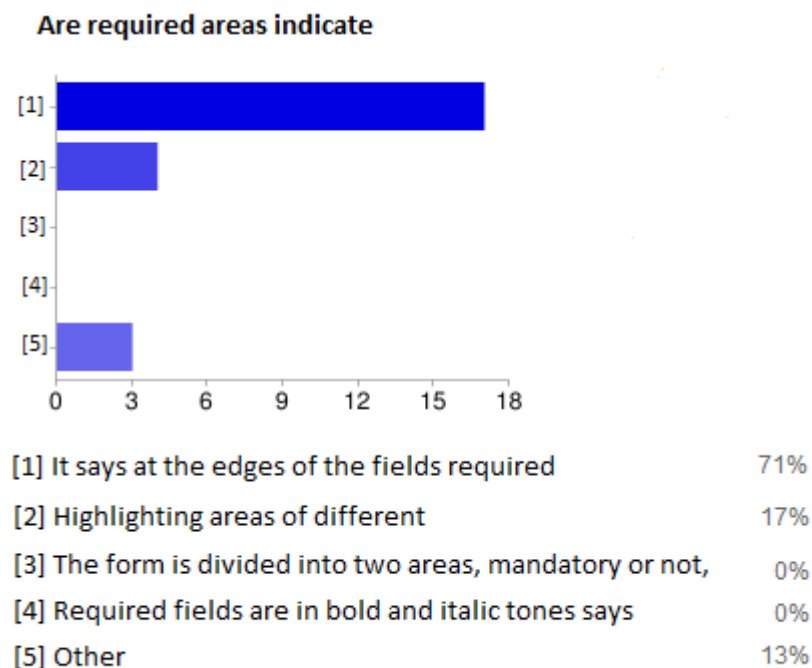


Figure 4.7 Are required areas indicate

4.8 Data Entry Fields Identified

We asked do you define the data entry fields. The majority of the participants are using a particular method. In the most prominent method, the data entry fields to explain them with labels.

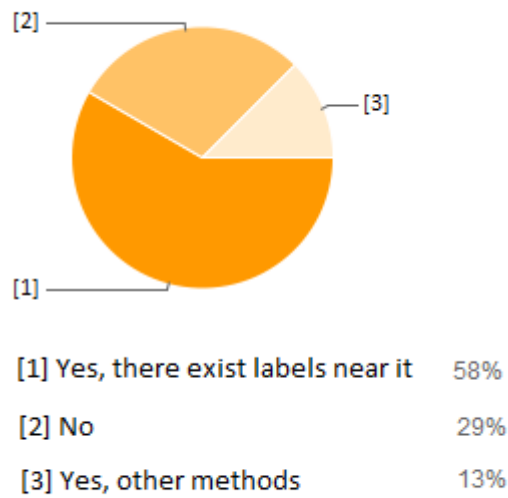
Is the data entry fields are identified

Figure 4.8 Data entry field identified

4.9 Data Input Size Explained

Users can enter data; do not have to know the exact dimensions of the fields. For this reason, the size of these areas should be the decisive factors. For this reason, most of our participants, data entry fields do not cover standard. For this reason, participants are using different sizes according to the size of the data entry fields.

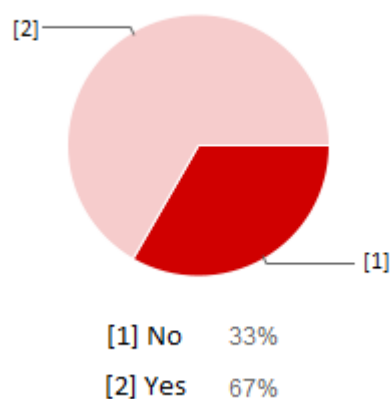
Does the data input size is explained

Figure 4.9 Data input size explained

4.10 Default Data Suggestions

Systems for some areas in the default values can be given. At this point, participants asked, do you offer the user the values of the fields? Submitted a proposal, said that a considerable majority.

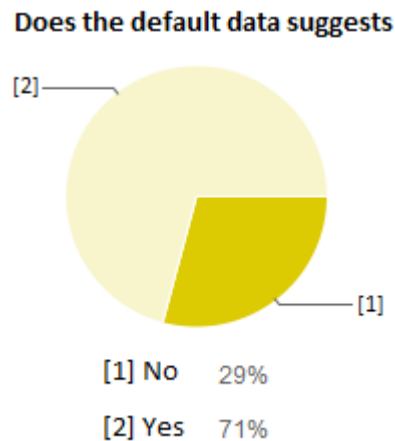


Figure 4.10 Default data suggestions

4.11 Using Pilot Productions

Systems prior to use by the customer, the pilot can be used by customers. We asked, during the development system, available to the pilot testing process. The majority said that such a test phase. Participants for the pilot test should be below 10% of the amount of use of the normal predicted.

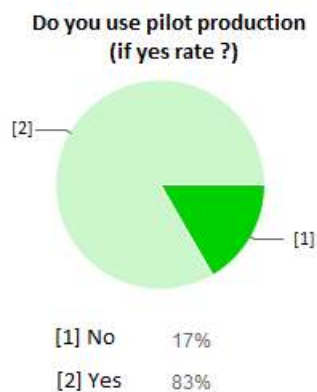


Figure 4.11 Using pilot productions

4.12 Stage of process

Systems operations are completed in a few steps. For this reason, the user should be informed that the step in which the transaction. The majority of participants involved in our analysis, indicated that this disclosure be made.

Does user see what stage of the process

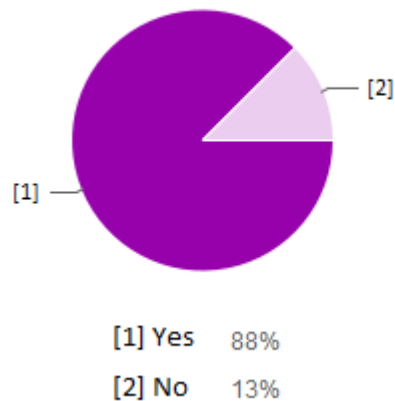


Figure 4.12 Stage of process

4.13 Return the Main Page

User to whom, in all parts of the system may return to the main menu. Should there be a system that can be used in this criterion? This option indicates that the vast majority of our participants.

There exist return to main page for all point

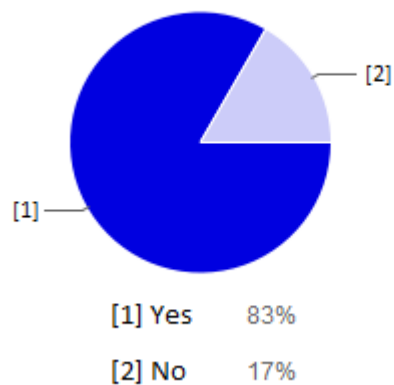


Figure 4.13 Return the main page

4.14 External Links Work

Routed connections to external systems may be present in the system. Are all the links in this way is working? A considerable majority, states that all external links should be running.

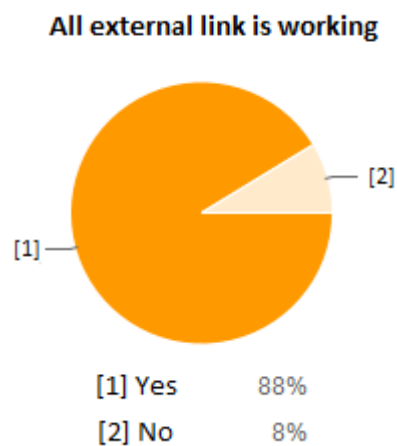


Figure 4.14 External links work

4.15 System Search Mechanism

Systems are also increasing in developing and growing volume of transactions. Users can, in advanced systems; they will experience slowness in accessing procedures. For this reason, the structure of systems is an indisputable fact in the search.

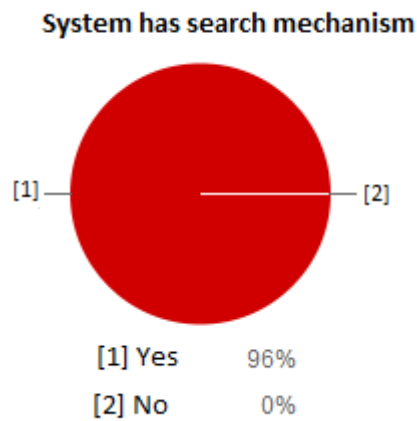


Figure 4.15 System search mechanism

4.16 Search Type

Agree in the fact that the structure of the search systems. Yet the search structures can be very different. When asked about which one to choose as the two main building, reply to topic-based search is more often.

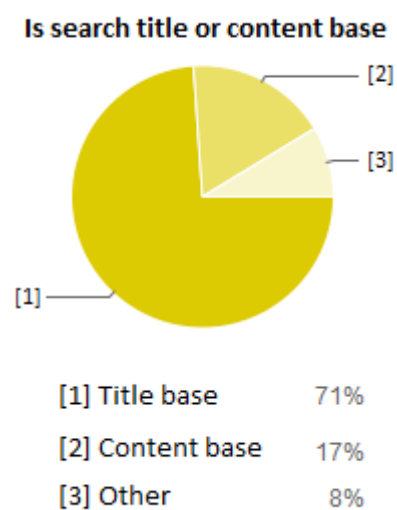


Figure 4.16 Search type

4.17 Special Terms in the System

System-specific terms in the system or the legal criteria may be. Is the system expected to be known by the user during the use of these terms or in the system described in these terms? Since the announcement is in the proportional majority system.

There exist special terms with the law or system

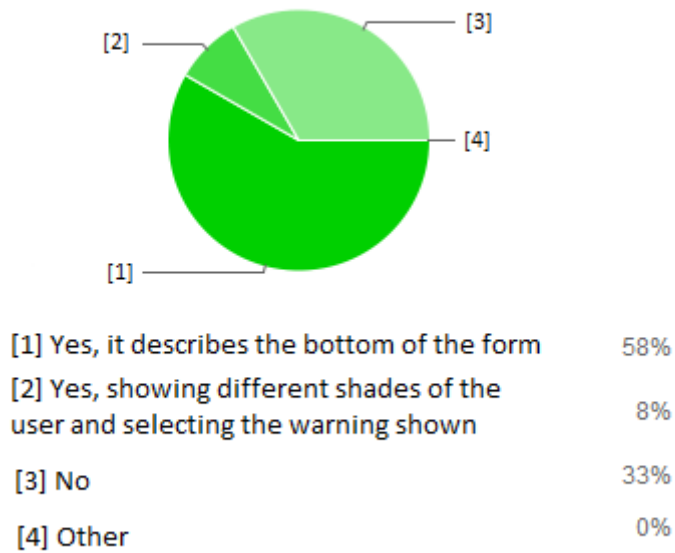


Figure 4.17 Special terms in the system

4.18 Link Style Standard

Have links in the system with common standards? What seems the naked eye, all links must be of the same standard.

There exist link style standard

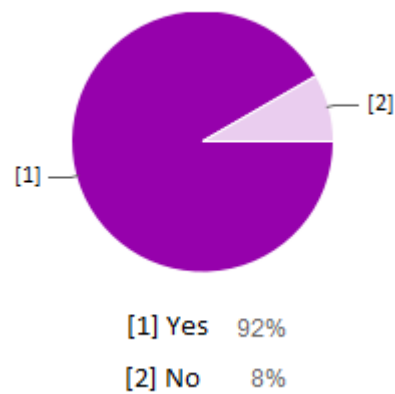


Figure 4.18 Link style standards

4.19 Button Style Standard

When we ask the same question for the buttons, the answers seemed to vary. In general, said in a structured way using different formats.

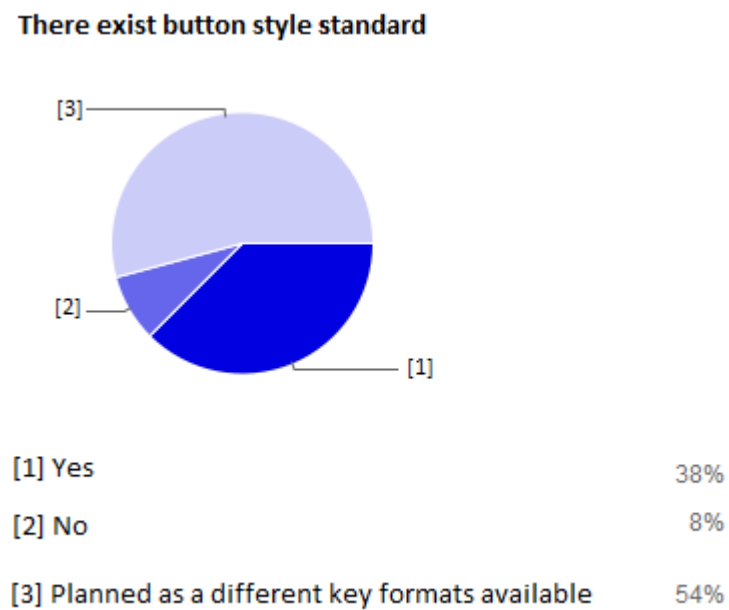


Figure 4.19 Button style standards

4.20 Title and Label Alignment Standard

Again the same question, asked for the title and labels. This time, the vast majority opted to use the same standards.

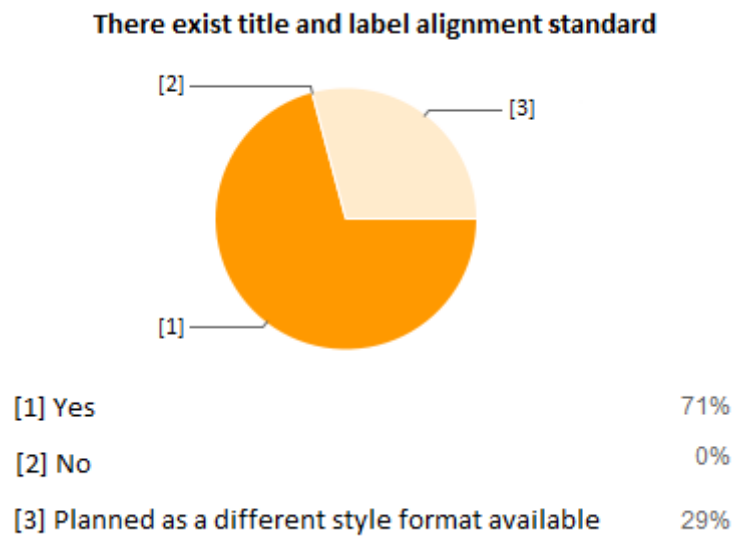


Figure 4.20 Title and label alignment standard

4.21 User Entered Data Grammar

A grammar control check available within the system. So, does this control the user enters the data are also available? The general belief says no this time.

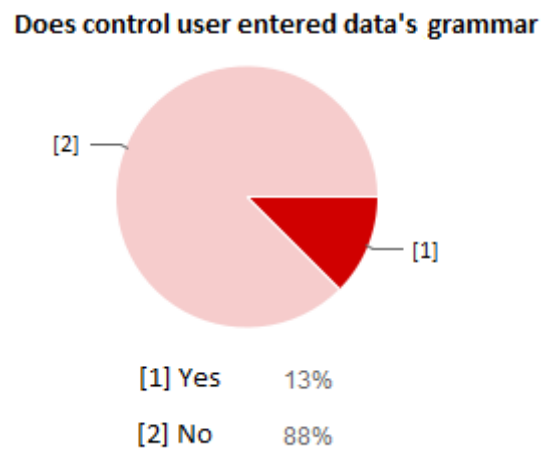


Figure 4.21 User entered data grammar

4.22 Image Alignment Standard

Systems also host images. We asked, is there an image alignment standard. Most of the participants use an image alignment standard.

There exist image alignment standard

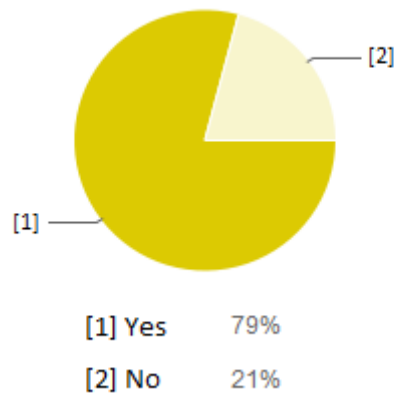


Figure 4.22 Image alignment standards

4.23 Downloadable Images

Is visual content downloadable? Most of the participant said that, only allowed content is downloadable.

User can download images

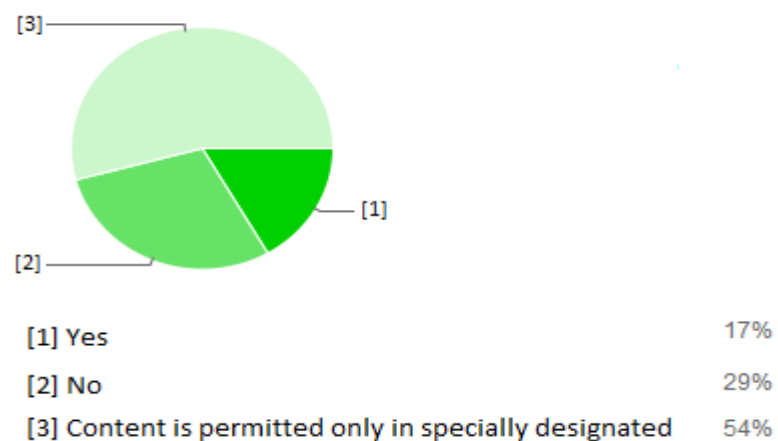
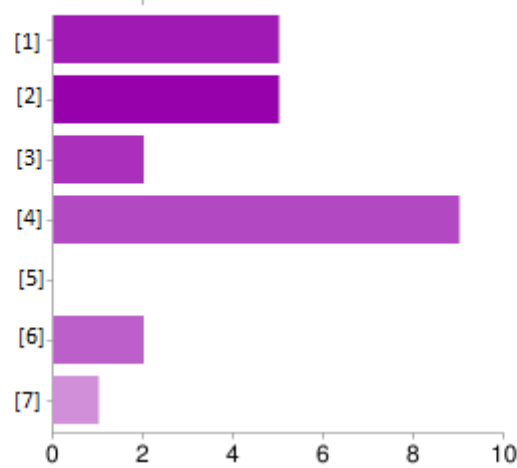


Figure 4.23 Downloadable images

4.24 Language Selection

Within the system of language must be a certain jargon. The selection of this jargon, how the methods are used in companies? The majority of companies, doing studies to be determine the jargon. However, the vast majority method, similar to the systems is that assemblies.

Language selection is that the target audience jargon



[1] A special study is not made	21%
[2] By the personnel system is developing, including the target user profile	21%
[3] The target user profile is included in the testing of potential users	8%
[4] Similar systems are compiling	38%
[5] Including the target user profile, the potential user survey carried out	0%
[6] Law defined terms are used	8%
[7] Other	4%

Figure 4.24 Language selection

4.25 Content-Telling

Within the system, the content can be shared partitions. What methods are used for narrative content? Large majority, the logic of the article uses while content-telling.

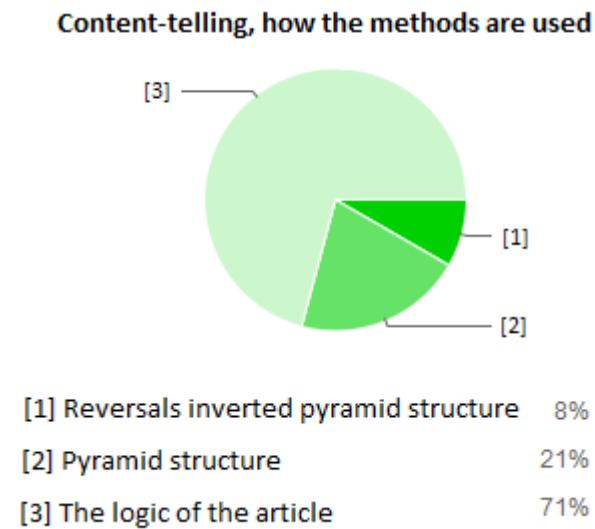


Figure 4.25 Content-telling

4.26 Efficient File Types

Serves the majority of systems are on the internet. Given Turkey's internet connection, the file types used in file types is efficient? A considerable majority, effectively uses the type of files.

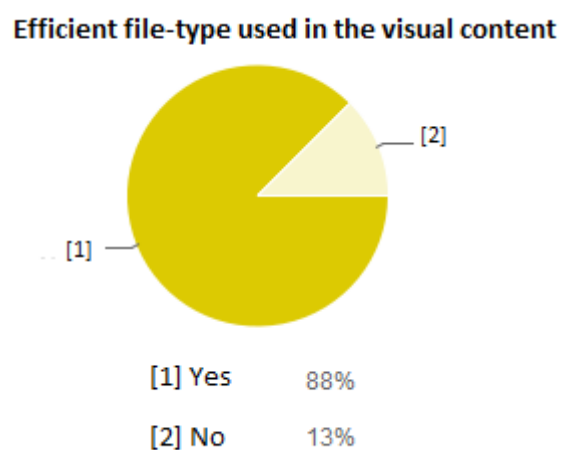


Figure 4.26 Efficient file types

4.27 Error Message Classification

Errors may occur in the system. Errors in system-based, logic-based, the user may

be based. For these reasons, is a particular representation of the errors of classification available? Most of our participants, asserted the errors classified different images.

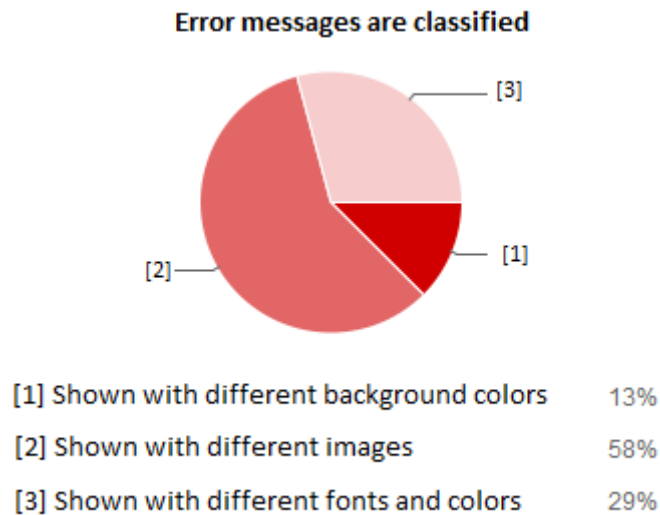


Figure 4.27 Error message classifications

4.28 Analysis for Reduce Entry Fields

Systems may be in the non-mandatory fields. These areas may also be used in general, no. Reduction or increase in the areas of analysis for the system performed? Half of our participants, in order to reduce the unused areas, are doing analysis.

Analysis is done to reduce the data entry fields

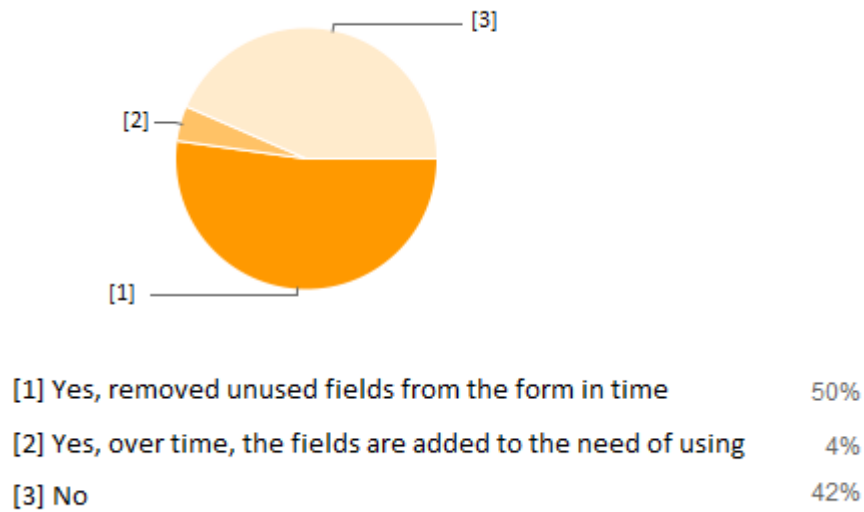


Figure 4.28 Analysis for reduce entry fields

4.29 Approval Level

Data entry fields in the system, all necessary? Large majority, not all areas, some would argue that the mandatory fields.

What are the approval levels

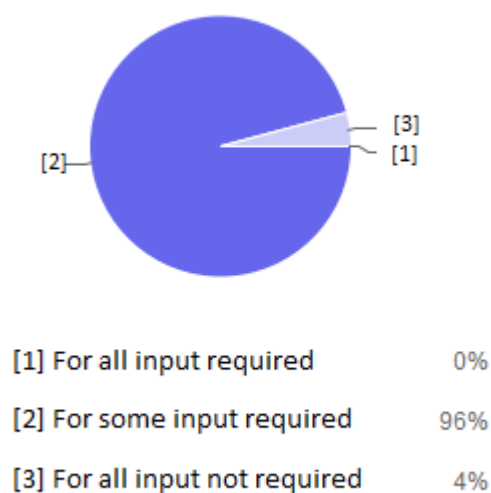


Figure 4.29 Approval level

4.30 Shortcut Keys

More common in older systems use a keyboard. For this reason, users might be more likely to use keyboard shortcuts. We asked the new system is using the keyboard shortcuts. We've found that when we look at as a proportional decrease in the use of shortcuts.

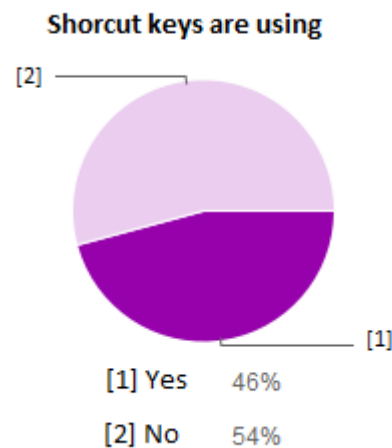


Figure 4.30 Shortcut keys

4.31 Selection Wrong Inputs after Error Message

The user can enter incorrect in some areas. For this reason, the user is warned by showing warning messages to systems. After a screening of the warning message, as selected in the coming is it wrong? The general population is selected as the faulty area.

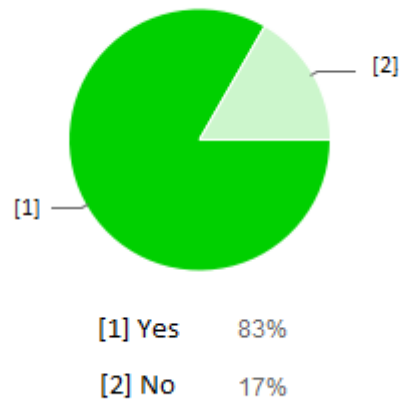
After the error message, which has been incorrectly input is selected

Figure 4.31 Selection wrong inputs after error message

4.32 First Input Comes Selected

A page is opened in the system; the first field of data entry is possible, as selected coming? The general belief, the answer is yes to this question.

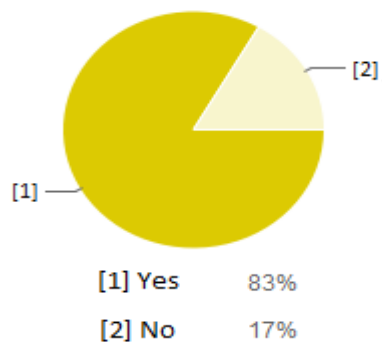
When page opened, first input comes selected

Figure 4.32 First input comes selected

4.33 Scroll Usage

Systems within the data entry fields may be too much to do. Are the pages will grow with the increase in these areas or using scroll in pages? Dominated by

different opinions is on this subject.

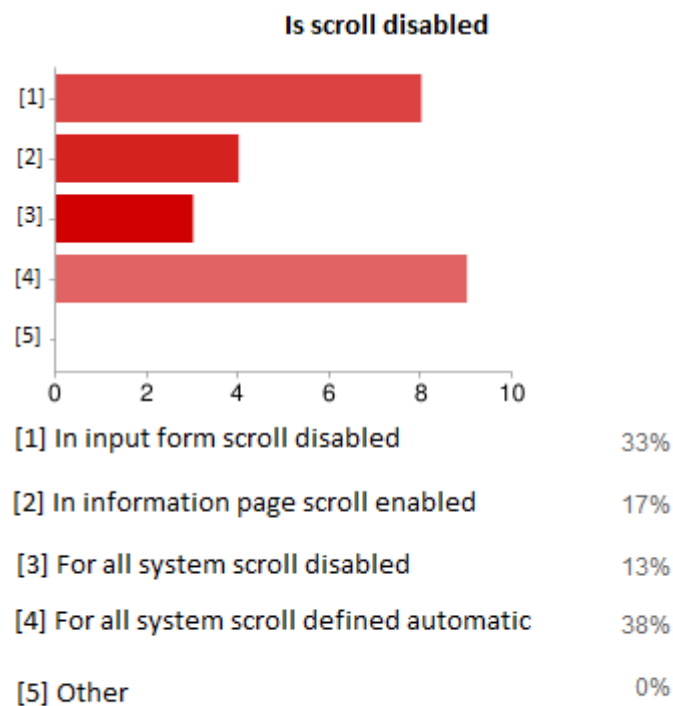


Figure 4.33 Scroll usage

4.34 Disable Tab Selection

Within the system, as the case may be perfectly split some of the tabs disabled. In these cases, tapping the transitions to be blocked? The general opinion is the transitions in the direction of prevention.

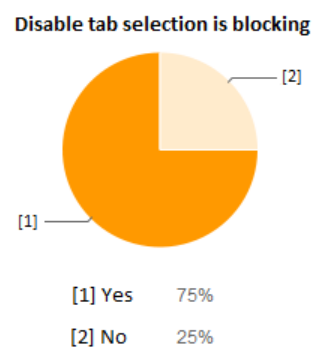


Figure 4.34 Disable tab selection

4.35 Operation is Performed Warning

Some processing transactions are takes time. For this reason, we asked whether there is warning informing the user during the process of realization. The general belief, the answer is yes to this question.

Operation is performed, a warning is shown

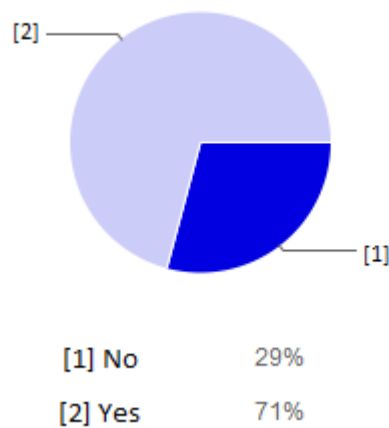


Figure 4.35 Operation is performed warning

4.36 Help Content

Systems grows, users are required to inform about the processes. From this perspective, systems that "help content" should there be? The general belief, the answer is yes to this question.

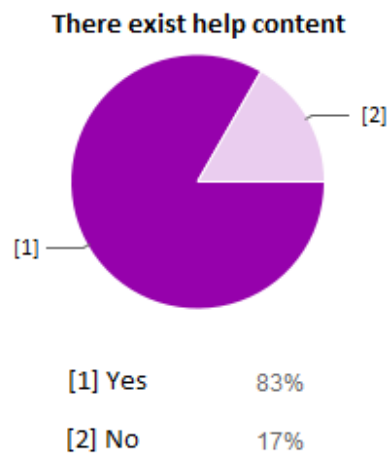


Figure 4.36 Help content

4.37 System Fonts Standard

Last question is whether a standard was used in the text fonts. Overall, the impression was that all the operating systems use a standard font.

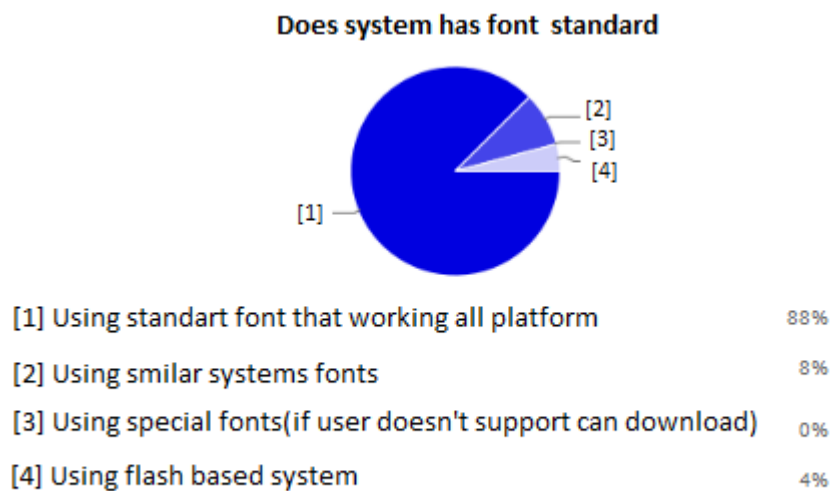


Figure 4.37 System fonts standard

4.38 Analysis Results

4.38.1 Interface Results

In our analysis, two different types of questions asked our participants. One of

these was the work done in the name of usability as an interface. Many questions we have received results for the relatively sharp; however, due to differences in industrial companies, a number of questions concerning the results were close to each other.

The results certainly appear as results of our research are as follows.

- Systems in a common font for all systems should be standard fonts.
- Should help to explain parts of the texts in the system.
- The user process to wait to happen, the process is taking place shown warning the user.
- Disable tabs cannot be selectable by user.
- First input in the form comes selected.
- When some input entered wrong entry, after wrong entry warning, wrong input should come selected.
- All input area in the system not required, only some of them can be required.
- Error messages also classifying with different images.
- All image alignment must be in a standard.
- In common title and label have standard alignment; also it can be different according to a plan.
- Buttons have not common standard, they have planned categorize.
- Links generally have common standard.
- System-specific terms or law specific terms explained under the pages.
- All external links in the system must work.
- User can return the main page all pages of the system.
- User can see which stage of process hi/she doing.
- Before publish system to production environment, system should publish to pilot production environment.
- If some input area have default value, the present to user.
- Input size should be defined.
- Data entry fields, indicating that the markers used in data entry.
- Near the required field should be a label that defines this area is required.

- Input form alignment should be vertical.
- Users can use their registered information in their operations.
- User can show other user limited information.

Some issues cannot come to the final judgments.

- In the system scroll usage differ from sectorial position.
- Some sectors use keyboard shortcut, but some not.

4.38.2 Background Results

We observed what do companies about the background to increase efficiency of usability. We saw that some companies already interest about this subject.

We had some results as below.

- When internet connection speed is considered, efficient file types should be selected.
- While explaining concepts, there are used textual as papers.
- While collecting the glossary of a system, there are used same methods by different companies.
- Users can download visual concepts which are allowed to download according to authorization.
- User inputs are never controlled grammatically.
- All systems have search module.
- Search process is done only for subjects.
- There should be grammar checking periodically.
- Same input never should be entered.

We have also some unstable results as below.

- We aren't sure about updating the system according to most used areas. We think there isn't any analysis period about it.
- Input areas haven't got any standard which differs these ones from the others.

CHAPTER FIVE

CONCLUSION

Systems have been changed continuously. However, number of system users depends on the usability of that system. Because of this, international works are done to get aimed user profile in this subject.

Our aim is to observe what will be happened in Turkey when some practices are performed. Our second aim is to change some international standards to acceptable form for Turkish companies. By evaluating our work, there is prepared a check list for Turkey.

To be able to get this information, we did questionnaires to some of Turkish most known companies. These companies are leading companies in finance and communications industries. We have received a return of 10% of our survey. Thirty people who had a total return. Some of these companies are; DenizBank, Turkcell and Garanti Bank. The responses differed according to the customer structure. We observe the periods of software development for each company. We saw that each company interests in usability and the results are classified according to the sectorial differences.

This work is done to get a usability test which is available for our national companies. There is also developed a check list for control your software. People, who try to define Turkish Usability Checklist, can use this information for analyze.

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APPENDICES

We made a questionnaire for identify usability parts in software project. Then we served it Turkish companies over the Internet. Companies saw a questionnaire like below.

Sistem Kullanılabilirlik Ölçütleri

Merhabalar, Aşağıda sorularını görmüş olduğunuz anket, Dokuz Eylül Üniversitesi Bilgisayar Mühendisliği Bölümü'nde üzerinde çalıştığımız Yüksek Lisans tezi çalışmamıza katkı verecektir. Bu anketle temel amacımız, Türk geliştiriciler tarafından geliştirilmiş ve özellikle Türk kullanıcılar tarafından kullanılması planlanan sistemlerin Kullanılabilirliğe yönelik ortak özelliklerinin belirlenmesi ve uluslararası kurallara benzerliklerinin ortaya konulmasıdır. Bu anketten elde ettiğimiz veriler ve Uluslararası standartlar ışığında Türk kullanıcı hedefli sistemlerin sınanmasında kullanılabilecek bir "Kullanılabilirlik Kontrol Listesi" (ing.Usability Checklist) oluşturmuş olacağız. Bu araştırmaya vermiş olduğunuz katkıdan dolayı teşekkür ederiz... Hazırlayanlar; DR. KÖKTEN ULAŞ BİRANT EMRAH BOZ Not: Toplanan bilgiler bireysel sonuçlar almak amacıyla kullanılmayacak, sadece istatistiki sonuçlar elde edilmesinde kullanılacaktır. Çalışmakta olduğunuz kurum

Kurumdaki pozisyonunuz

Sistem Kullanılabilirlik Kontrol Listesi (ing. Usability Checklist)

Aşağıdaki soruları genel olarak üzerinde hala çalışmakta olduğunuz proje üzerinden ya da son çalışmış olduğunuz proje üzerinden cevaplandırabilirsiniz. Gerçekleştirmiş olduğunuz proje Web tabanlı olup olmasa da yine de projelerinizi göz önünde bulundurarak cevaplayabilirsiniz.

Sisteminizde kayıtlı kullanıcıya / potansiyel kullanıcılara kayıtlı kullanıcılar ile ilgili bilgi verilmekte midir?

- ☐ Evet
- ☐ Hayır
- ☐ Kısıtlı olarak (İstatistik düzeyinde) gösterilmekte
- ☐ Kullanıcı kendi bu kontrolleri yapabilmelidir

Veri giriş bölümlerini diğer bölümlerden ayıran tanımlamalarınız var mıdır, varsa nelerdir? Ör: Başlık, Renk, Yazı tipi

- ☐ Tanımlamıştır.
- ☐ Tanımlanmamıştır.
- ☐ Diğer

Bir önceki soru için detay açıklaması belirtebilirsiniz

Veri giriş bölümünde sisteminizde kullanıcıya ait kayıtlı olan veriler kullanıcıya sunuluyor mu? Ör: Fatura Adres, Kullanıcı Adres Bilgisi vb.

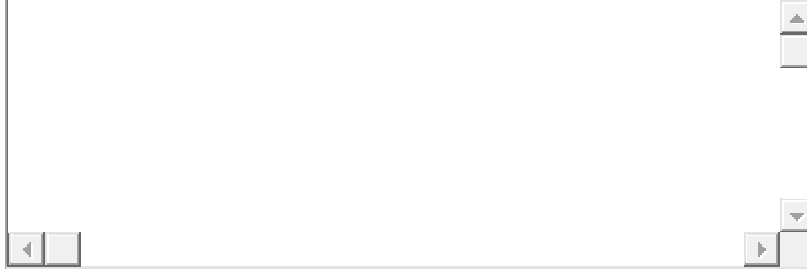
Veri giriş sayfalarının sonunda işlemi tamamlama ya da iptal etme seçeneği var mı?

- ☐ Evet
- ☐ Hayır

Birden fazla adımda tamamlanan sayfalarda aynı bilgi tekrar soruluyor mu?

- ☐ Evet
- ☐ Hayır

Veri alışında belirlemiş olduğunuz metin standartları mevcut mu? Ör: Büyük harf ve noktalama işaretleri zorunludur?



Grup veri girişinde hizalama olarak hangisini kullanmaktasınız?

- ☐ Yatay
- ☐ Dikey
- ☐ Hizalama kullanılmıyor

Bir önceki soru için detay açıklaması belirtebilirsiniz



Gösterilen uyarılarda planlı bir dil bilgisi inceleme aşaması var mıdır?

- ☐ Bunu yapan özel bir grup mevcut
- ☐ Sürecin içerisinde planlı bir adımda dil bilgisi incelemesi yapılıyor
- ☐ Hayır

Bir önceki soru için detay açıklaması belirtebilirsiniz

Veri girişi zorunlu alanlar belirtiliyor mu, belirtilirken nasıl yöntemler kullanılmaktadır?

- ☐ Yanlarına gerekli ibaresi ya da neden gerekli olduğu ibaresi bulunuyor
- ☐ Alanların renklendirmesi farklı seçiliyor.
- ☐ Formu iki parçaya bölüp doldurulması zorunlu olan ve olmayan şeklinde iki farklı giriş bölümü mevcuttur.
- ☐ Kalın ve italik tonlarla gerekli alanlar belirtiliyor
- ☐ Diğer

Bir önceki soru için detay açıklaması belirtebilirsiniz

Veri girişi yapılan alanlar detaylı tanımlanmakta mıdır?

- ☐ Evet, giriş alanlarının etrafında açıklayıcı etiketler mevcut
- ☐ Hayır
- ☐ Evet, (Diğer yöntem)

Bir önceki soru için detay açıklaması belirtebilirsiniz

Veri girişi yapılan alanlarda veri boyutları kullanıcıya belirtilmekte midir? Evet ise Türü?

- ☐ Hayır
- ☐ Evet

Bir önceki soru için detay açıklaması belirtebilirsiniz

Varsayılan verileri kullanıcıya gereksiz veri girmesini önlemek amacıyla sunuyor musunuz? Evet ise Türü?

- ☐ Hayır
- ☐ Evet

Bir önceki soru için detay açıklaması belirtebilirsiniz

Formlar gerçek kullanıcı kullanımına çıkmadan önce pilot gerçek kullanıcı kitlesi ile test ediliyor mu? Ediliyorsa bunun oranı nedir?

- ☐ Hayır
- ☐ Evet , Oran (.../100)

Bir önceki soru için detay açıklaması belirtebilirsiniz

Kullanıcının sürecin hangi aşamasında olduğunu belirtiyor musunuz? Ör: “Şu anda Sipariş Onay Sayfasındasınız”.

- ☐ Evet
- ☐ Hayır

Her noktadan sisteminizin ana girişine (ana sayfaya) dönüş seçeneği bulunuyor mu?

- ☐ Evet
- ☐ Hayır

Sisteminizde bulunan tüm dışarıya erişim gerektiren dış bağlantılar (linkler) çalışır durumda mı?

- ☐ Evet
- ☐ Hayır

Site içerisinde arama yapısı bulunduruyor musunuz?

- ☐ Evet
- ☐ Hayır

Arama başlık bazlı yada içerik bazlı mı?

- ☐ Başlık bazlı arama
- ☐ İçerik bazlı arama
- ☐ Diğer

Bir önceki soru için detay açıklaması belirtebilirsiniz

Sisteminiz içerisinde sisteme özel ya da mevcut sistemin yasalarla olan bağlantısı doğrultusunda kullanılan terimler mevcut mu, mevcut ise bunları ayrı ya da açıklama olarak belirtmekte misiniz ?

- ☐ Evet, formların alt tarafında açıklamaktayız.
- ☐ Evet, farklı tonlarda gösterip kullanıcının seçmesi durumunda uyarı olarak ayrı bir sayfada göstermekteyiz
- ☐ Hayır
- ☐ Diğer

Bir önceki soru için detay açıklaması belirtebilirsiniz

Tüm bağlantıların (linklerin) renklendirmesi ve vurgulandırılması aynı standartlar içerisinde mi?

- ☐ Evet
- ☐ Hayır

Bir önceki soru için detay açıklaması belirtebilirsiniz

Sisteminiz dahilinde TUM Tuş format ve boyutları eş değer mi?

- ☐ Evet
- ☐ Hayır
- ☐ Planlı olarak farklı tuş ve formatları mevcut

Bir önceki soru için detay açıklaması belirtebilirsiniz

Sisteminizdeki tüm ekranların başlık ve etiketlerinde hizalamaları standart mı?

- ☐ Evet
- ☐ Hayır
- ☐ Planlı olarak farklı formatlar uygulanmaktadır

Bir önceki soru için detay açıklaması belirtebilirsiniz

Sistem içerisinde kullanıcının girmiş olduğu verilerde dil bilgisi kontrolü yapılmakta mıdır?

- ☐ Evet
- ☐ Hayır

Bir önceki soru için detay açıklaması belirtebilirsiniz

İçerik içerisindeki resimlerin hizaları standart mı?

- ☐ Evet
- ☐ Hayır

Sayfa içerisindeki görsel içeriğin indirilmesi sağlanmakta mıdır?

- ☐ Evet
- ☐ Hayır
- ☐ Sadece özel belirlenmiş içeriğe, özel durumlarda izin verilmektedir

İçerik için yardım metinleri mevcut mu?

- ☐ Evet
- ☐ Hayır

İşlem gerçekleştirme sırasında gösterilmekte olan “İşlem Gerçekleştiriliyor” benzeri uyarı standartlarınız var mıdır? Nelerdir? Ör: 10 saniyeden az olan işlemler için uyarı gösterilmemektedir. Daha fazla süre için uyarı verilmektedir.

- ☐ Hayır
- ☐ Evet

Bir önceki soru için detay açıklaması belirtebilirsiniz

Veri girişine kapatılmış alanlara sekme (tab) geçişi engelleniyor mu?

- ☐ Evet
- ☐ Hayır

Kaydırma yönlendiricisi (scroll) kullanımı engellenmekte midir?

- ☐ Veri giriş sayfalarında kaydırma yönlendiricisi (scroll) engellenmektedir.
- ☐ Bilgi sayfalarında kaydırma yönlendiricisine (scroll) izin verilmektedir.
- ☐ Tüm sistem içerisinde kaydırma yönlendiricisi (scroll) engellenmektedir.
- ☐ Tüm sistem içerisinde kaydırma yönlendiricisi (scroll) otomatik olarak bırakılmıştır.
- ☐ Diğer

Bir önceki soru için detay açıklaması belirtebilirsiniz

Site içerisinde bulunan menü konumu nedir ?

Açılan formda değiştirilebilecek ilk alan seçili geliyor mu?

- ☐ Evet
- ☐ Hayır

Hatalı giriş yapılmış içerik hata mesajının ardından seçili olarak geliyor mu?

- ☐ Evet
- ☐ Hayır

Komut tuşlarında kısaltmalar kullanılmakta mıdır?

- ☐ Evet
- ☐ Hayır

Onaylama seviyeleriniz nelerdir?

- ☐ Veri girişi yapılan alanlarda tüm verilerin girişi zorunludur.
- ☐ Veri girişi yapılan alanlarda bir takım verilerin girişi zorunludur.
- ☐ Veri girişi yapılan alanlarda tüm verilerin girişi zorunlu değildir.

Bir önceki soru için detay açıklaması belirtebilirsiniz

Veri giriş bölümlerinde giriş yapılan alanların arttırılması ya da azaltılmasına yönelik kullanıcı davranışlarının analizi yapılmakta mıdır?

- ☐ Evet, kullanıcıların kullanmadığı alanlar zamanla tespit edilip formdan kaldırılmaktadır.
- ☐ Evet, kullanıcının alanlar içerisine girmiş olduğu veriler analiz edilip belli aralıklarla yeni alanlar eklenmektedir.
- ☐ Hayır.

Bir önceki soru için detay açıklaması belirtebilirsiniz

Hata mesajlarının ortaya çıkış nedenlerini ayrıştırıcı özellikleriniz mevcut mudur?

- ☐ Hata mesajlarını sebeplerine göre farklı arka plan rengiyle göstermekteyiz
- ☐ Hata mesajlarını sebeplerine göre farklı görsellerle göstermekteyiz.
- ☐ Hata mesajlarını sebeplerine göre farklı yazı tipi ve rengi ile göstermekteyiz.

Bir önceki soru için detay açıklaması belirtebilirsiniz

Kullanılan görsel içerik, verimli dosya tiplerinde midir? Ör; internet hızı göz önünde bulundurulduğunda kolay indirilebilir mi?

- ☐ Evet
- ☐ Hayır

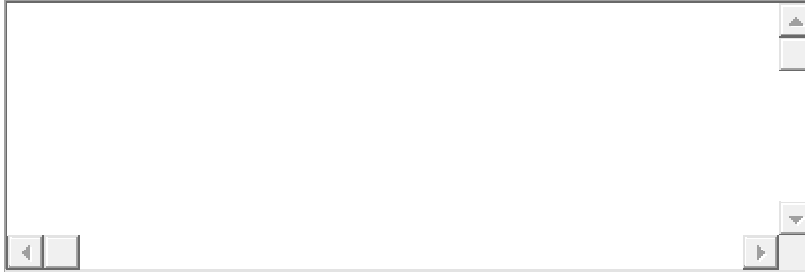
İçerik anlatımında kullanılan yapı ne şekildedir?

- ☐ Ters çevrilmiş piramit mantığında önemli konular en yukarda çıkacak şekilde
- ☐ Piramit mantığı ile olayları oluş sırasına göre sıralamak
- ☐ Makale mantığı ile açıklamak, giriş-gelişme-sonuç,

Dil seçiminde hedef kitle jargonuna dikkat edilmekte midir? Belirlenmiş bir yönteminiz var mı?

- ☐ Özel bir çalışma yapılmamaktadır.
- ☐ Hedef kullanıcı profiline dâhil personel tarafından geliştirilmektedir.
- ☐ Hedef kullanıcı profiline dâhil potansiyel kullanıcılara sınaama yaptırılmaktadır.
- ☐ Benzer sistemlerden derleme yapılmaktadır.
- ☐ Hedef kullanıcı profiline dâhil potansiyel kullanıcılar üzerinde anket yapılmaktadır.
- ☐ Yasalarca belirlenmiş terimler kullanılmaktadır.
- ☐ Diğer

Bir önceki soru için detay açıklaması belirtebilirsiniz

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Kullanılan yazı tipi seçiminde kullanıcı yazı tipi desteği de göz önünde bulundurduğunuz kriterler nelerdir?

- ☐ Tüm platformlarda çalışabilecek ortak bir yazı tipi kullanılmaktadır.
- ☐ Benzer sistemlerde kullanılan yazı tipi kullanılmaktadır.
- ☐ Sistemimiz için özel olarak karar verilen yazı tipi kullanılmaktadır. Kullanıcı sisteme girdiğinde bu yazı tipi kullanıcı bilgisayarına otomatik olarak yüklenmektedir.
- ☐ Animasyon tabanlı (flash) bir sistem kullanıldığı için kullanıcının yazı tipi desteği gözetilmemektedir.

Bir önceki soru için detay açıklaması belirtebilirsiniz

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