

**EXPLORING ADOPTION OF
SMART GLASSES: APPLICATIONS
IN MEDICAL INDUSTRY**

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ABSTRACT

EXPLORING ADOPTION OF SMART GLASSES: APPLICATIONS IN MEDICAL INDUSTRY

This research is a study exploring the utilization of smart glasses by physicians and their adoption to these products in medical industry. Although different smart glasses were examined in the process by literature review, in whole work, M100 was used as a physical product. In this research study, three research methods were preferred. These are semi-structured in-depth interview, expert focus group work and experimental study. 95 constructs were extracted from literature review and interviews by physicians. 15 most significant constructs were selected by physicians in the expert focus group work. At the end, 75 physicians answered a survey related with 30 constructs. These constructs include the most significant design inputs of smart glasses for the expert group. The survey included approximately 50 questions. According to survey, screen ergonomic was the most preferred design input of smart glasses for physicians. The other four significant design inputs are technical support, privacy, adjustability and ease of monitoring medical data in order. To sum up, this study states that designers of smart glasses should consider these five significant design factors at the first stage of smart glasses product development.

Keywords: *Smart Glasses, Medical Applications, Design Factors, Product Development, Innovation Adoption*

ÖZET

AKILLI GÖZLÜKLERİN BENİMSENMESİNİN KEŞFEDİLMESİ: SAĞLIK ENDÜSTRİSİNDEKİ UYGULAMALAR

Bu çalışma, doktorların sağlık endüstrisinde akıllı gözlüğü kullanımını ve bu ürüne olan adaptasyonlarını araştıran bir çalışmadır. Bu süreçte farklı akıllı gözlüklerle ilgili makaleler incelense de, genel olarak tüm çalışmada fiziksel ürün olarak Vuzix M100 marka akıllı gözlük kullanılmıştır. Bu araştırmada, derinlemesine röportaj, uzman grup fokus grup çalışması ve deneysel çalışma yöntemleri kullanılmıştır. Makale analizleri ve röportajlar sonucunda 95 adet kavram incelenmiştir. Fokus grup çalışmasında doktorlardan 95 kavramdan onlar için önemli 15 kavramı seçmeleri istenmiştir. Fokus grup çalışmasının sonucunda en önemli 30 tasarım girdisi belirlenmiştir. Deneysel çalışmada; 75 hekime bu 30 kavramı ölçen yaklaşık 50 soru sorulmuştur. Bu çalışmanın sonucunda hekimlerin akıllı gözlüğün geliştirilmesi ile ilgili en çok tercih ettikleri tasarım ögesi ekran ergonomisinin geliştirilmesi olmuştur. Diğer dört tercihleri ise sırayla; teknik destek, gizlilik hakkı, kişiye göre ayarlanabilirlik ve medikal bilgilerin ekranda görüntülenebilmesi olmuştur. Sonuç olarak; tasarımcıların hekimler için geliştirecekleri akıllı gözlük tasarımında öncelikli olarak bu beş kavramı dikkate almaları önerilmektedir.

Anahtar Kelimeler: *Akıllı Gözlük, Sağlık Uygulamaları, Tasarım faktörleri, Ürün Geliştirme*

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CHAPTER 1

INTRODUCTION

Wearable technology is one of the exciting and trendy topics that many people follow closely on the world. Day by day, these products become usual items in our environment although in nineties they have only placed in some scientific films.

Today, they are in daily lives and developing quickly. Especially, smart glasses became very popular in the last few years on the world as from Google Inc. launched the explorer edition of Google glass in 2013. After that, many smart glasses have begun to be launched.

These kinds of devices create new opportunities and new experience for human beings. Healthcare and fitness are some of the hot topics for the smart glasses' developers.

According to Due (2014), there are generally three types of initial applications for smart glasses: 1) specific job-related applications, 2) task-related and professional, contextual applications and 3) lifestyle applications for so-called self-trackers. However, in this study, we will only focus on specific job-related applications and one determined job; medical industry and doctors.

Although there are lots of research field about smart glasses, the research topic of this research is exploring adoption of smart glasses: applications in medical industry.

1.1. Definition of Problems

Firstly, smart glasses still have design problems to enter the market and to be successful in the market. Such as Google Glass has connectivity and voice control problems. Vuzix has ergonomic problems about focusing eyes onto the screen (Brusie et al., 2015).

Muensterer et al. (2014) explained that Glass has some clear utility in the clinical setting; however, before it can be recommended universally for physicians and surgeons, substantial improvements to the hardware are required, issues of data

protection must be solved, and specialized medical applications (apps) need to be developed.

On the other hand, physicians have original working style differently from other people in different professions. They need to manage data more accurately. Smart glasses have a potential usage in this field. Many academicians are searching smart glasses in medical industry due to this technology have abilities to solve many problems in medical industry.

1.2. Aim of Study

The aim of the study is to examine significant design parameters of smart glasses for physicians in depth.

Furthermore, the order of importance is essential for the research and product development of this innovative product.

The last purpose of the study is to examine the constructs that designers, engineers, R&D workers should focus on.

1.3. Research Questions

There are many research questions in the research. These are;

- 1-Which design parameters of smart glasses are significant for doctors?
- 2-What is the order of importance of design parameters of smart glasses for physicians?
- 3-What should designers, R&D workers, engineers and R&D managers should focus on when designing smart glasses for medical industry?

1.4. Methodology

In the research, three research methods will be used. First one is semi structured in-depth interview. The other one is expert focus group work and the last one is experimental study. We have interviewed with 13 people; worked with approximately 30 people in the expert focus group work and done questionnaire with 75 people.

Table 1.1 Numbers and expertise of participants of the research.

Method	Number of participants	Expertise
Pilot In-depth interview	5	Trainer, Pharmacia, Chief of Restaurant, Interior Designer
In-depth interview	8	Physicians
Pilot Expert Focus Group Work	23	Students (Industrial designers, computer engineers, engineering managers)
Expert Focus Group Work	7	Physicians
Pilot Experimental Study	4	Students (Industrial designers, architects)
Experimental Study	75	Physicians

1.5. Structure of Study

In Chapter One, (Introduction), the aim and the structure of the study is mentioned. In Chapter Two, (Literature Review), a summary of literature between 2005 and 2015 about the research's topic is written. In Chapter Three, (Framework), taxonomy and hypotheses about the research results are presented. In Chapter Four, (Methodology) the process which we trace is stated. In Chapter Five, (Findings) discovery is showed. In Chapter Six, (Conclusion) meanings of our discovery are explained.

CHAPTER 2

LITERATURE REVIEW

2.1. Wearable Technologies

Wright and Keith (2014) defined the wearable's as “Wearable technology” and “wearable devices” are phrases that describe electronics and computers that are integrated into clothing and other accessories that can be worn comfortably on the body.



Figure 2.1 Timeline for the development of the computer.

(Source: Due, 2014)

2.2. Technology of Smart Glasses

Smart glass is the one of the well-known wearable technology on the world. It simply records and monitoring environment. In general, it has a camera, monitor and speaker.

It is also an emerging market. Some brands in the market are Google Glass, Vuzix M100, Epson Moverio, Optivent Ora, Atheer Dev Kit, Atheer One, Meta One, Star 1200, and Glass Up.

These products have many common and dissimilar features that can be compared. One of most common features are Wi-Fi connectivity and camera. On the other hand; price, field of view, control mechanisms, display resolution, weight, ect... are dissimilar (Table 2.1.).

Table 2.1. Comparing alternatives of smart glasses on the market.

BRANDS	Price	Field of View	Gestures	Binocular	Display Resolution	Connectivity	Stand Alone Device	Camera	Camera Resolution	Weight
Vuzix M100	\$1000	14°	✓	X	400x240	BT/Wi-Fi	No	Yes	720P	
Epson Moverio BT-200	\$700	23°	X	✓	(2)960x540	Wi-Fi	Yes	Yes	N/A	
Optivent Ora 1	\$950	24°	X	X	640x480			Yes		80g
Google Glass	\$1,500	12°	X	X	640x360	BT/Wi-Fi	Yes	Yes	720P	
Recon Jet	\$600	14°	X	X	400x240	BT/Wi-Fi	Yes	No	720P	
Atheer Dev Kit	\$850	36°	✓	✓	(2)1074x768	BT/Wi-Fi	Yes		2x5 MP stereo	135g
Atheer One	\$350	65°	✓	✓	(2)1074x769	Slim port/MHL	No-Android		2x8 MP stereo	70g
Meta One	\$667	23°	✓	✓	(2)960x540	USB	No-PC		720P	
Star 1200	\$5000	35°	X	✓	(2)852x480	USB	No-PC		1080P	
Glass Up	\$300	12°	X	X	320x240	BT	No		N/A	

Price of smart glasses depends on the Brand. Vuzix M100 was launched by 1000\$. **Field of view** refers to size of screen's monitors. For instance, Google Glass has 12 degree field of view. **Gesture** means that controlling the glasses by hand movements. It can be an alternative control mechanism to voice and touch controls. **Binocular** means that smart glasses have two glasses. **Display Resolution** is the resolution of screen. **Connectivity** refers to type of internet connection that glass has. **Stand alone device** refers to smart glasses does not requires any external device to work. **Camera** refers to if the product has a camera or not. **Camera** resolution is the

resolution of recording of the camera. Lastly, **weight** means the weight of the smart glasses.

2.2.1. Google Glass

The most popular one is Google Glass among smart glasses. The popular functions of Google Glass are taking picture, recording video, getting directions, sending messages, phone calls, Google-hangouts, Google.

It has a smooth and minimalist design. The designer of Google Glass is Isabelle Olsson. She is a Swedish Industrial Designer based in California.



Figure 2.2. Google Glass

Google Glasses look like an interactive pair of eyeglasses with smart phone-like display and natural language voice command support as well as Blue-tooth and Wi-Fi connectivity. Google Glass is compatible with both Android and Apple iOS mobile devices (Abbasi, 2015).

Other features of Glass are as follow:

- Display: High resolution with a 25 inch screen from eight feet away.
- Camera: capturing rate for photos 5 MP and Videos 720p
- Audio: Bone Conduction Transducer
- Connectivity: Wi-Fi - 802.11 b/g 2.4GHz and Blue-tooth
- Storage: 16 GB Flash. 12 GB of usable memory, synced with Google cloud.

- Battery: For one day of typical use (more battery intensive for video recording). (Abbasi, 2015)

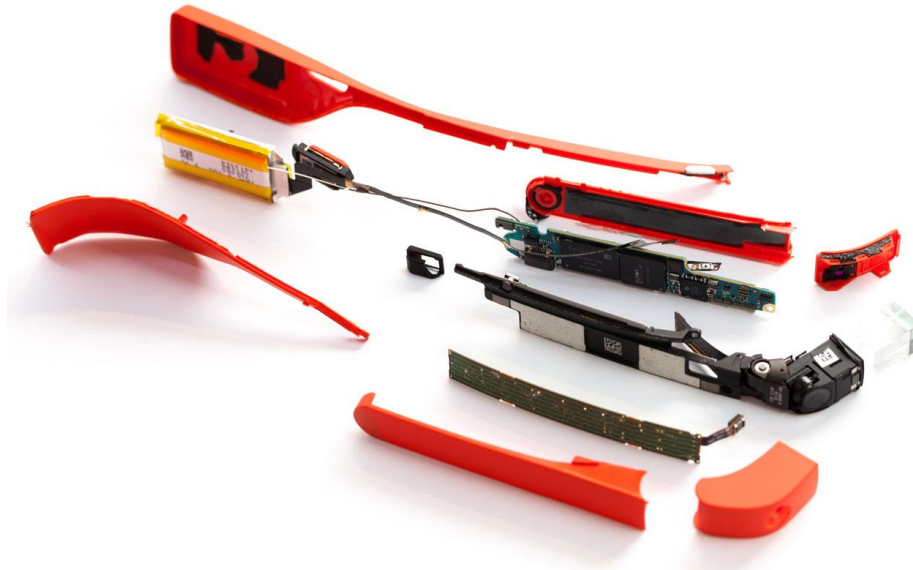


Figure 2.3. Exploded view of Google Glass

2.2.2. Vuzix M100

The other well-known smart glasses are Vuzix M100. Its main functions are recording video, taking photograph, internet searching, sending e-mail, and scanning barcodes, listening to the music, recording audio, telephoning, clock, calendar, and weather forecast.



Figure 2.4. Vuzix M100

Some of the other smart glasses are Glass Up, Ora Optivent, Recon Jet...



Figure 2.5. Samples of smart glasses in the market

2.3. Design Factors of Smart Glasses

2.3.1. Privacy

In a hospital, it is significant for a patient that his/her personal information is being protected and kept confidential. One of the most important features of the smart glasses design is that it has a camera. This means that medical records can be created in a very fast and simple manner. To ensure privacy, a couple of protection have been provided in the current versions of the product. For instance, on the Vuzix M100 product, a red light is on during the recording. By this way, people can be aware that they are being recorded. Studies and design developments to improve the privacy on the smart glasses are currently in progress.

Safavi et al. (2014) proposed six issues to solve privacy problems of google glass. These are User Authentication, Locking Mechanism, Notifications, Physical Security, Governmental Security and Firewall. They stated that PIN authentication is an example of user authentication. They also claimed that locking mechanism can be solved a simple voice control such as “OK GLASS LOCK”. Moreover, they propose that LED notification that can stay on for 5 seconds after taking picture or video with Glass.

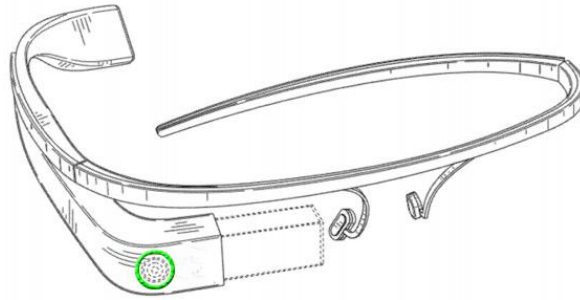


Figure 2.6. An illustration of Google Glass about data protection.

(Source: Safavi et al, 2014).

2.3.2. Hands free

Hands free means that the product can be used without use of hands. It is a concept often encountered regarding the smart glasses' articles. Voice and motion-controlled smart glasses can be used hands free. The hands being free means that the hygiene conditions are being protected.

Pillai (2014) stated that touching, or even nearly touching, a sensor to interact with the system would sharply curtail the device's utility in any procedural environment.



Figure 2.7. An example of using smart glasses by a surgeon.

2.3.3. Voice control

Voice control refers that smart glass is controlled by voice. Brusie et al. (2015) explain that voice recognition of Google Glass initiated by saying “O.K. Glass”. They mention that Google Glass includes extensive library of “approved commands”. On the other hand, they state that voice recognition of Vuzix M100 is running continuously and it has a lack of an expansive library for voice recognition in their research.

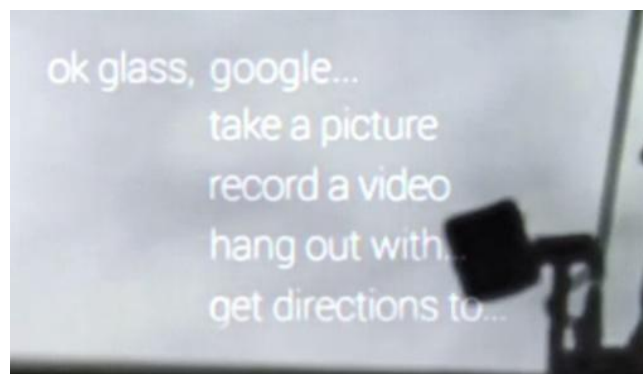


Figure 2.8. A sample of voice orders of smart glasses

2.3.4. Battery Life

Almost many electronic devices generally need longer battery life. It is also essential for smart glasses in medical industry because any doctors have a chance to stop or take a break in the middle of the surgery or any significant operation.

Vorraber et al. (2014) state that low battery capacity is one of the shortcomings of Google Glass. They explain that in case of computational intensive tasks running on Glass, the battery life is relatively short (i.e. approximately 2 h).

2.3.5. Screen's ergonomics

The ergonomics of screen is one of the significant problems that should be solved in the product development process. In the research, Vuzix M100 was used in usability tests. It is observed that it still has problems related with ergonomics that will be shown in the findings part of the research.

Furthermore, Bruise et al. (2015) also claim that neither Glass nor the M100 is ready for "prime time" in the research related with usability of Google Glass and Vuzix M100. One of the problems that they found about M100 is it has obstruction of view in the display eye.

2.4. Smart Glasses in Medical Industry

Researches show that smart glasses are developing most quickly in medical industry. Moreover, it is shown that smart glasses will be essential part of several medical fields. For example: surgery, telementoring, EHR and etc...

2.4.1 Surgery

Surgery is one of the significant medical fields which smart glasses will be placed in. The most important reason why it has a potential usage in surgery rooms is its visual recording abilities by its camera. This camera located near the eyes. Therefore, it is easy to record the surgery by these glasses.

The other major reason why this product will be able to be used by surgeons is related with their own health status. The surgeon who uses these smart glasses can look at the vital data of patient without turning his/her head onto other screens.

Vorraber et al. (2014) state that Google Glass improved concentration on the task in hand by reducing head and neck movements (which would be needed to view several remote monitors) in medical applications of near-eye display devices research as one of a result.

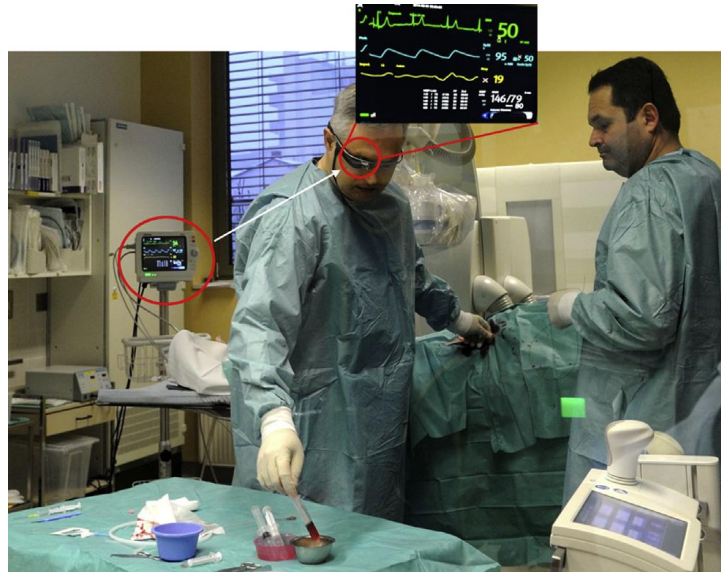


Figure 2.9. A usage of smart glasses by a surgeon in a surgery.

(Source: Vorraber et al., 2014)

2.4.2. Telementoring

Hashimoto et al. (2015) mention that telementoring is defined as the remote guidance of an inexperienced individual during an operation or procedure involving live, two-way audiovisual communication. They explain as a result of their original research that while Google Glass provides a great breadth of functionality as a wearable device with two-way communication capabilities, current hardware limitations prevent its use as a telementoring device in surgery as the video quality is inadequate for safe telementoring. Moreover, they state that as the device is still in initial phases of development, future iterations or competitor devices may provide a better telementoring application for wearable devices.

2.4.3. EHR

Pillai (2014) stated in his the conference paper that a doctor could walk into a patient's room and begin talking to the patient while looking at the key data from an EHR on Google Glass. Furthermore, he mentioned that this could reduce the barrier that

arises between doctor and patient when the doctor has to look at a computer screen to get this information.

2.4.4. Medical Education

Smart glasses have potential related with application in medical education. It will be easier to watch surgery outside the operating room for medical students. Vallurupalli et al. (2013) state that wearable technology has the potential to enhance medical education.

Tully et al. (2015) state that Google Glass can be used to record students during SP encounters, and it provides a unique perspective for the analysis and evaluation of their interpersonal communication skills and nonverbal behaviors. Next generation technologies, such as Google Glass, may hold tremendous promise in advancing medical student education in the 21st century.



Figure 2.10. Medical students who watch the surgery which is being recorded by smart glasses.

2.5. Adoption Theories

Well-known adoption theories are theory of reasoned action, theory of planned behavior, technology acceptance model, technology acceptance model 2 and unified theory of acceptance and use of technology.

2.5.1. Theory of Reasoned Action (TRA)

During the past decades, many theoretical models were developed by researchers to explain the human behaviors in the adoption process. (Topacan, 2009) Theory of Reasoned Action (TRA), shown in Fig. 1, (Fishbein & Ajzen, 1975) which has been used to predict wide range of behaviors is one of the well known models. Fishbein and Ajzen (1975) used two main constructs, namely attitude toward behavior and subjective norm, to predict the behaviors. Attitude defined as “the person’s beliefs that the behavior leads to certain outcomes and his/her evaluations of these outcomes”. Beliefs that a person builds up over his lifetime influence attitude. An attitude, then, is a person's belief about whether the outcome of his action will be positive or negative. If the person has positive beliefs about the outcome of his behavior then he is said to have a positive attitude about the behavior, or vice-versa. Subjective norms defined as “the person’s beliefs that specific individuals or groups think he/she should or should not perform the behavior and his/her motivation to comply with the specific referents” (Fishbein & Ajzen, 1975). Subjective Norms are perceptions about how family and friends will perceive the outcome of the behavior (Ajzen & Fishbein, 1980).

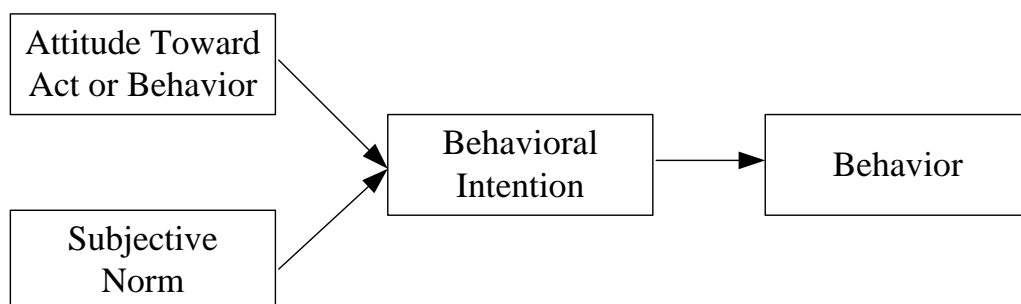


Figure 2.11. Theory of reasoned action

(Source: Fishbein & Ajzen, 1975)

2.5.2. Theory of Planned Behavior (TPB)

Theory of Planned Behavior (TPB) (Ajzen, 1991) is the successor of the TRA. Fig. 2 illustrates the model. Ajzen (1991) developed it by adding perceived behavioral control, defined as “the perceived ease or difficulty of performing the behavior”, to the TRA. These are the beliefs that may assist, or may obstruct the performance of the behavior.

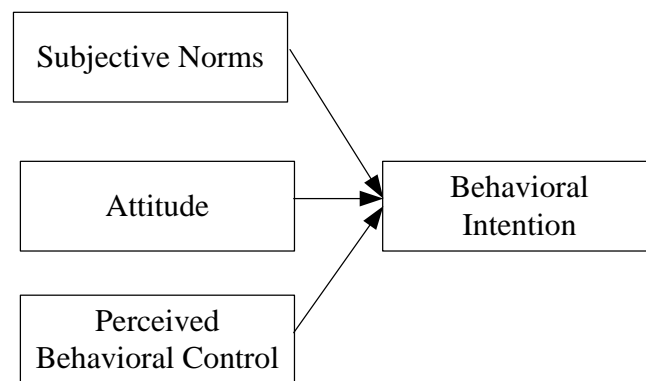


Figure 2.12 Theory of Planned Behavior

(Source: Ajzen, 1991)

2.5.3. Technology Acceptance Model (TAM)

Following the TRA model, many researchers attempted to expand it by adding new constructs or by applying it in different contexts (Topacan, 2009). Technology Acceptance Model (TAM) (Davis, 1989) was applied in the IS context to predict technology acceptance.

According to Davis, users' intention toward system use is significantly correlated with both of perceived usefulness, defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” and perceived ease of use, defined as “the degree to which a person believes that using a particular system would be free of effort”. Fig. 3 shows technology acceptance model.

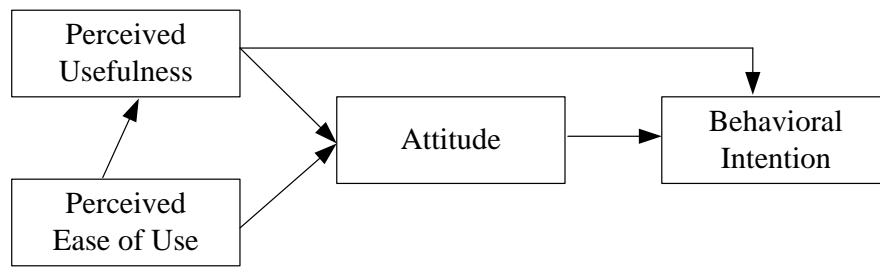


Figure 2.13 Technology Acceptance Model

(Source: Davis, 1989)

Although TPB is a general model of human behavior, TAM focuses on specific behavior to predict information technology acceptance (Topacan, 2009).

2.5.4. Technology Acceptance Model 2 (TAM2)

Venkatesh and Davis (2000) concluded that TAM explains 40% of usage intention and behavior. They extended the model (TAM) by including additional key determinants namely social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (job relevance, output quality, and result demonstrability) to the base constructs of TAM. Definitions of these variables are as follows;

Subjective Norms – “person’s perception that most people who are important to him think he should or should not perform the behavior in question” (Fishbein & Ajzen, 1975).

Voluntariness – “the extent to which potential adopters perceive the adoption decision to be non-mandatory” (Moore & Benbasat, 1991).

Image – “the degree to which use of an innovation is perceived to enhance one’s image or status in one’s social system” (Moore & Benbasat, 1991)

Job Relevance – “an individual’s perception regarding the degree to which the target system is applicable to his or her job” (Venkatesh & Davis, 2000).

Output Quality – “how well the system performs tasks” (Venkatesh & Davis, 2000).

Result Demonstrability – “tangibility of the results of using the innovation” (Moore & Benbasat, 1991).

Venkatesh & Davis (2000) found that all of these variables significantly influence user acceptance of information technology and proposed Technology Acceptance Model 2 (TAM2), shown in Fig. 4.

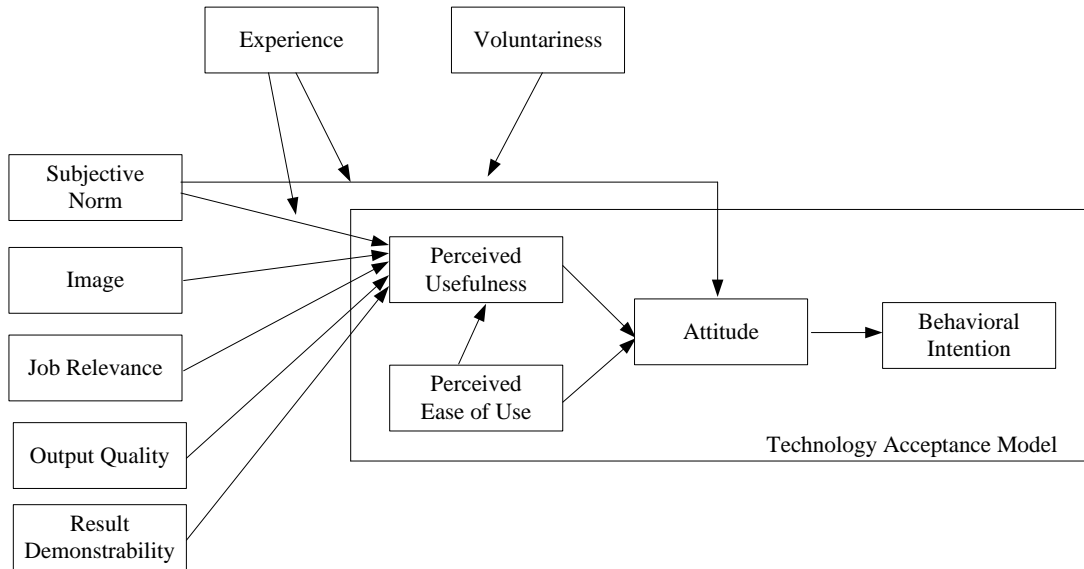


Figure 2.14. Technology Acceptance Model 2

(Source: Venkatesh & Davis, 2000)

CHAPTER 3

FRAMEWORK

3.1. Smart Glasses Adoption Taxonomy

Before proposing the models and the hypothesis, smart glasses health adoption taxonomy was created by using the variables collected from literature survey, qualitative studies, and expert focus group study. Table 3.1. shows the proposed taxonomy.

In Table 3.1. letters shown near the variables indicates source of the variable. Letter “L” represents literature survey, letter “I” refers to interview, and letter “E” denotes expert focus groups. For instance-, (L) (E) means that the variable was mentioned in both of literature survey and expert focus group.

Smart glasses health adoption taxonomy was divided into six categories, as follows “user health”, “product characteristics”, “user characteristics”, “facilitating conditions”, “social-organizational”, “medical functions”, and “intermediary”. Product characteristics also contain four more sub-categories, like “hardware”, “software”, “mechanical”, and “general”. All of these categories include specific variables.

Table 3.1. Taxonomy of smart glasses' adoption in medical industry

<p>Software (Product Characteristics) resolution of screen (L) speech recognition (Speech to text program) (L) (I) facial recognition (L) voice control (L) (E) gesture control (L) wireless connectivity (L) (E) zoom (L) (I) type of operating system (L) AR (L) medical applications (L) quality of connectivity (L) privacy (L)</p>	<p>Mechanical (Product Characteristics) hands free (L) (I) screen size (L) touch controls (L) view of screen (L) screen's ergonomic (L) (I) (E) switch controls (L) camera's ergonomic (L) (I) head fixing with screw system (I)</p>	<p>General (Product Characteristics) cost (L) (I) heating problem (L) (E) readability (L) security (L) safety (L) time factor (L) weight (L) (E) sterile (L) synchronized with the hospital's IT system (I) Practicality (I) adjustability (L) Personalization (I) appearance (L) (I) brand (L) cost, investment (L) interface design (L)</p>	<p>medical communication (Medical Function) ease of hands free calling (L) ease of sending email (L) ease of telemedicine (L) ease of tele mentoring (L) (E) ease of patient doctor communication (L) medical recording ((Medical Function) ease of hands free documentation (L) ease of hands free taking photos (L) (E) ease of recording medical data (L) (E) medical control ((Medical Function) ease of health management (L) medical tracing ((Medical Function) ease of monitoring medical data (L) ease of medical education (L) (E) ease of real time video (L) medical sharing ((Medical Function) ease of streaming video (L) ease of sharing medical data (L) medical searching ((Medical Function) ease of searching medical data (L) (I) ease of facilitating diagnosis (L) (I) (E) smart medical ((Medical Function) ease of translating (L) ease of scanning (L) ease of reminding (L) (I) (E) surgery ((Medical Function) ease of surgical education (L) ease of surgery (L)</p>	<p>Intermediary ease of use (L) (I) usefulness (L) (I) ease of learning (L) understandability (L)</p>
<p>Hardware (Product Characteristics) battery life (L) (I) (E) bone conduction speaker (L) Camera (L) (I) LED flash (L) memory size (L) microphone (L) navigation (L) quality of sound (L) type of screen (L) system's speed (L) (E) projectors (I)</p>	<p>Individual (User Characteristics) extraverted (L) innovativeness (L) awareness (L) personal concern (L) self-efficacy (L) anxiety (L) risk (L) complexity (L) enjoyment (L)</p>	<p>Demographic (User characteristics) age (L) gender (L) income (L) expertise use of spectacle wearers (L) user of smartphone (L) (I)</p>	<p>facilitating conditions technical support (L) organizational support (L) official endorsement (I) (E)</p>	<p>social-organizational social factors (L) internal influence (L) external influence (L)</p>
<p>user health (User Health) eye health (L) (E)</p>				

3.2. Research Framework and Hypothesis

There are two research models in the thesis. They are based on literature review, taxonomy and interviews. First one is related with user intention of smart glasses depends on features of product. The other one is user intention of smart glasses about usage areas in medical industry.

3.2.1. User Intention of Smart Glasses

Fig 3.2. shows smart glasses adoption framework in medical industry. With respect to the framework, determinants of intention are attitude, usefulness, ease of use, voice control screen's ergonomic, battery life, system speed, heating problem, official endorsement, wireless connectivity, eye health, weight, speech recognition (Speech to text program), synchronized with the hospital's system and privacy. These significant constructs were chosen by 7 doctors in an expert focus group work.

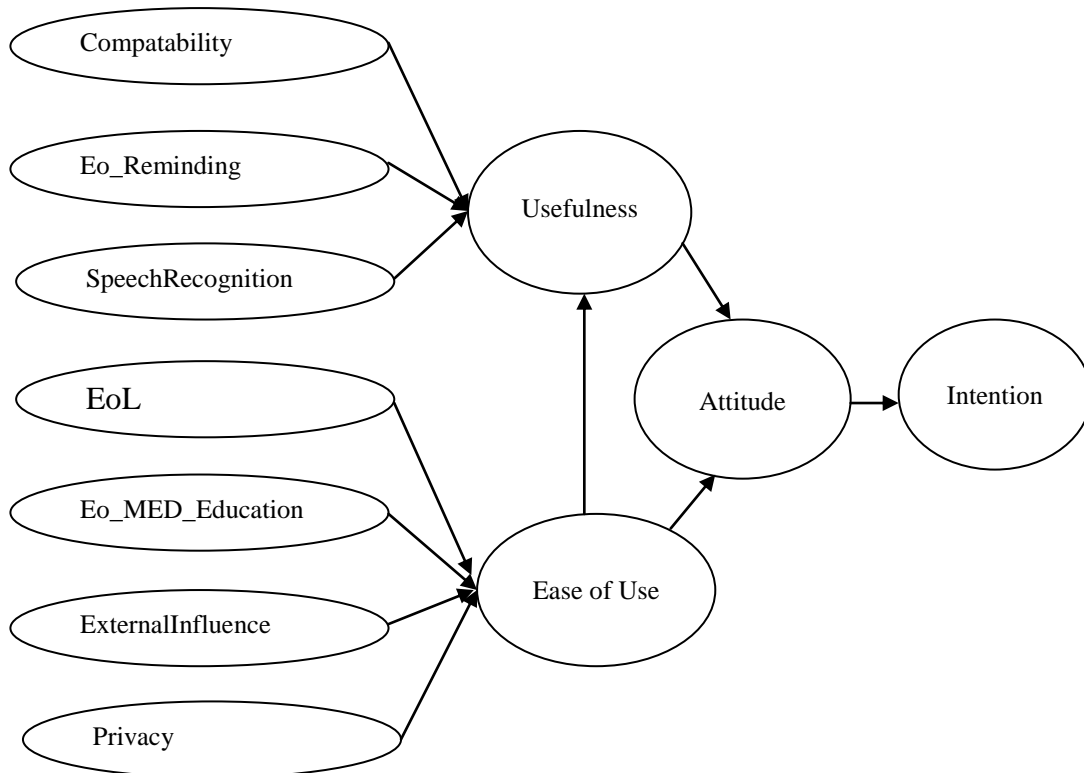


Figure 3.1 Smart glasses adoption framework

H1: Attitude significantly and positively affects user intention.

H2: Usefulness significantly and positively affects attitude.

H3: Ease of Use significantly and positively affects attitude.

H4: Ease of Use significantly and positively affects usefulness.

H5: Compatability significantly and positively affects usefulness.

H6: Ease of Reminding significantly and positively affects usefulness.

H7: Speech Recognition significantly and positively affects usefulness.

H8: Ease of Learning significantly and positively affects ease of use.

H9: Ease of Medical Education significantly and negatively affects ease of use.

H10: External Influence significantly and positively affects ease of use.

H11: Privacy significantly and positively affects ease of use.

Table 3.2. Determinants of smart glasses intention framework

Hypothesis	Dependent Variable	Independent Variable	Relationship
H1	Intention	Attitude	Positive
H2	Attitude	Usefulness	Positive
H3	Attitude	Ease of Use	Positive
H4	Usefulness	Ease of Use	Positive
H5	Usefulness	Compatibility	Positive
H6	Usefulness	Ease of Reminding	Positive
H7	Usefulness	Speech Recognition	Positive
H8	Ease of Use	Ease of Learning	Positive
H9	Ease of Use	Ease of Medical Education	Positive
H10	Ease of Use	External Influence	Positive
H11	Ease of Use	Privacy	Positive

Figure 3.2. shows that the user intention of smart glasses in medical industry. Determinants of intention are attitude, usefulness, ease of use, compatibility, ease of reminding, speech recognition, and ease of learning, ease of medical education, external influence and privacy.

These constructs were also chosen by 7 doctors in expert group work study.

CHAPTER 4

METHODOLOGY

The study began in October 2014 by the presentation of 50 ideas. Afterwards, by surveying the literature and doing brainstorming related with these ideas, the main topic of the research have been chosen. The research study lasted for one and a half year. Moreover, in this research qualitative and quantitative methods were used. Table 4.1. summarizes this study.

Table 4.1. Summary of Research Studies

Study	Date	Description
Pilot Prototype Design & Development	May.2015	Four interfaces are designed for four professions. The interfaces were well-matched with Vuzix M100 smart glasses.
Pilot Usability Testing & Interview	Jun.2015	The pilot interview was conducted by asking 5 participants in different professions, namely, instructor, pharmacist, interior designer, restaurant service personnel 12 questions.
Prototype Design & Development	July.2015	One presentation about smart glasses for EHR was designed. It has 23 slights. It was presented in the interview process.
Usability Testing & Interviews	Agus.2015	The interview was conducted by asking 8 participants who are physicians 12 questions.
Expert Focus Group Study	Sep-Nov.2015	There was a survey among 23 students as a pilot study. Then 7 physicians answered the questions in the expert focus group study.
Experimental Study	Nov.2015	The questionnaire is prepared for 35 constructs. Then, 68 physicians will answer the questionnaires.

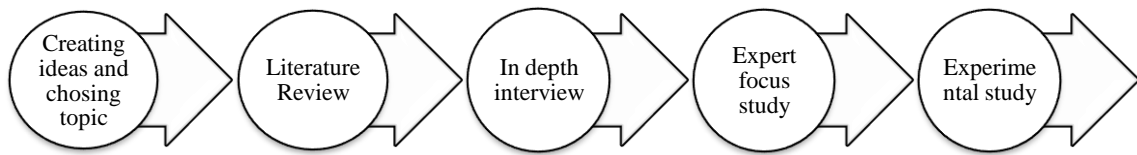


Figure 4.1. The relationship between the research studies.

According to Figure 4.1., the research has started by creating ideas about research topic. 50 new ideas including innovation about technology have been discussed. Then, the literature review have started and continued up to the end of the study. After that, brainstorming session was held for the topic of the thesis and the topic was determined. Later, semi-structured in-depth interview have been started to realize. In the first stage, in depth interview was done by 5 people in different professions and then by 8 people in the same professions. Then, the research continued up with expert focus study.

4.1 In-Depth Interview

In the first step, a pilot study was realized before starting a study about medical industry. First of all, a questionnaire draft was prepared for few people in different professions by doing brainstorming. Afterwards, the questions were sorted according to their scope, functions and product specifications. At the end, questionnaires were completed by adding demographic questions.

Table 4.2. Sample of questionnaire concerning the use of smart glasses for babysitters

Age, gender, education, occupation, work experience (years), task in the workplace
BABY SITTERS
1. What are your thoughts about these glasses?
2. Do you use your smartphone? Would you evaluate your use of technology?
3. What are the problems you are experiencing with your job?

(cont. on next page)

Table 4.2 (cont.).

4. Do you think that smart glasses can solve any of these problems?
5. If you think would solve, can you describe the solution?
6. Does this product make childcare easy?
7. Do you think that the controls on the product are simple enough?
8. Is this instant recordings would be useful for parents to be able to follow their children?
9. Can this product be used for the safety of the child?
10. Are you satisfied with the product's working by gesture?
11. Do you prefer to use smart glasses with smartphone or without it?
12. The item price is 899 Euros. Could you evaluate?

Questions between 1 and 5, 10 and 12 are asked to all five participants. However, 6 to 9 questions were prepared for different professions. For these various occupations, a study of brainstorming was realized. These occupations are babysitter, interior designers, pharmacists, trainers, clothes salesmen, restaurant employees, booksellers, librarians, couriers, painters, guides, sports instructors, doctors.

After that, a table that includes potential usage scenarios of smart glasses by different professions was prepared. The professions were scored by brainstorming and four professions were selected according to these ranks. These professions are **interior designers, trainers, pharmacies and restaurant stuffs.**

Table 4.3. Potential usage scenarios of smart glasses by different professions

Professions	Scenarios	Scores
Babysitter	<ul style="list-style-type: none">• As the camera is constantly recording, families can regularly check on their children through the eyes of their sitters.• It can warn the sitter to organize the activities of the child such as eating, drinking and sleeping.	7
Pharmacist	<ul style="list-style-type: none">• It can be used for informational purposes while placing the medicine on the shelves.• It can read the prescription written by the doctor through the glasses, while maintaining communication with the patient.• The system can make recommendations for similar drugs.	9

(cont. on next page)

Table 4.3 (cont.).

Instructor	<ul style="list-style-type: none"> • The instructor can see the presentation material on the glasses. It will help them remember. • The audience can join the conference with the voting system. 	9
Interior Designer	<ul style="list-style-type: none"> • It can be actively used while presenting the design to the client. • It can be used for inspection purposes on the work site. 	9
Book Sales People	<ul style="list-style-type: none"> • It can be actively used while placing books on shelves. • It can be used for searching the books. 	3
Clothing store officials	<ul style="list-style-type: none"> • It can provide information about trends. • They can watch it without changing clothes. 	6
Courier	<ul style="list-style-type: none"> • It can be used for finding an address. • It can give approval after delivery. 	8
Librarian	<ul style="list-style-type: none"> • It can be actively used while placing books on shelves. • It can be used for searching the books. 	7
Market Officials	<ul style="list-style-type: none"> • It can be helpful in locating the products on shelves. 	5
Tourists Guide	<ul style="list-style-type: none"> • It can be used to remind information about the places that have been toured. • Video can be used actively. 	8
Painters	<ul style="list-style-type: none"> • With videos, it can record the entire drawing and design process. • These videos can be used later for instructional purposes. 	4
Restaurant Stuffs	<ul style="list-style-type: none"> • It can receive meal orders digitally. • It can answer questions from the database while maintaining communication with the customer. • It can follow a recipe and cook a meal without using hands. 	9
Fitness Instructors	<ul style="list-style-type: none"> • It can count how many activities a student has done with its video recording feature. 	8
Doctors	<ul style="list-style-type: none"> • They can access patient information. • They can see the lab results. 	9

After the professions were chosen, four prototypes were prepared for the future interviews (Appendix B). These prototypes are the parts of new applications for smart glasses. Also new interfaces were designed for these applications for four professions according to the usage scenarios of the smart glasses.

Before the interviews, these graphics were loaded to the gallery part of the smart glasses as jpeg files. At last, interviews have started with determined people by interview questions and sample prototypes.

The semi-structured in depth interviews were done with trainers in 28.05.2015 and 04.06.2015; with an interior designer in 26.05.2015; with a pharmacies in 10.06.2015 and with a restaurant chief in 10.06.2015. After the interviews, the transcripts were written (Appendix B). Thus, the first part of the interviews is over.

After the ending of the pilot interview section, the main interviews were done with doctors. Interviews were conducted with eight doctors in many health centers in Izmir. The doctors' interviews started in 11.08.2015 and finished in 27.08.2015.

Before the interviews, doctors watched two videos and a presentation which are related with the usage of smart glasses in doctors' examining process (Appendix B). At the end of the interviews, the transcripts were written (Appendix B).

Table 4.4. Sample of questionnaire concerning the use of smart glasses for physicians.

Age Range: Expertise: Place: Date, beginning and ending time:
Physicians 1-What are the difficulties that you experience with your job? 2-Will you use this product for stated purpose? 3-What are the properties of the product which you like? 4- What are the properties of the product which you do not like or be forced? 5- Do you think doctors use this product? Why? 6- Does the product provide a benefit to you in your job? What are your recommendations for developing if the product is not adequate? 7-Can you benefit from smart phones in the same way like this product? 8-How much do you pay for this product? 9-What are the other issues that you can use this product for? 10-Is there anything else you want to say about the product?

These in-depth interview studies were used to narrow down the topic and gather significant constructs to structure the research work. After in depth interview, experimental focus group study was started. The description of the process is placed Methods 4.2.

Table 4.5. The interview history of physicians about smart glasses

Participant	Age	Town	Gender	Health Center	Date	Time	Hours
1	50-60	Urla	Man	1. ASM	11.08.2015	15.45-16.45	1 hour
2	40-50	Urla	Man	1. ASM	12.08.2015	14.45-15.30	45 min.
3	40-45	Bornova	Woman	9. AÇSAP	19.08.2015	16.10-16.40	30 min.
4	40-45	Bornova	Woman	9. AÇSAP	19.08.2015	16.10-16.40	30 min.
5	40-45	Bayraklı	Man	6. ASM	21.08.2015	10.15-11.00	45 min.
6	30-40	Bayraklı	Woman	6. ASM	21.08.2015	11.00-11.15	15 min.
7	40-45	Bayraklı	Woman	7. ASM	26.08.2015	14.20-15.00	40 min.
8	40-45	Bayraklı	Man	7. ASM	27.08.2015	11.50-13.00	1 hour 10 min.

4.2 Expert Focus Group

95 different variables were selected from the literature survey and the interview. An expert focus group was conducted to reduce the number of constructs. In this study, the participants are requested for choosing most significant 15 constructs out of 95.

Table 4.6. Constructs studied in expert focus group

eye health	time factor
ease of use	weight
usefulness	sterile
ease of learning	synchronized with the hospital's IT system
understandability	practicality
technical support	adjustability
organizational support	personalization
official endorsement	appearance
social factors	brand
internal influence	cost, investment
external influence	interface design
hands free	extraverted
screen size	innovativeness
touch controls	awareness
view of screen	personal concern

(cont. on next page)

Table 4.6 (cont.).

screen's ergonomic	self-efficacy
switch controls	anxiety
camera's ergonomic	risk
head fixing with screw system	complexity
battery life	enjoyment
bone conduction speaker	age
camera	gender
LED flash	income
memory size	expertise
microphone	use of spectacle wearers
navigation	user of smartphone
quality of sound	ease of hands free calling
type of screen	ease of sending email
system's speed	ease of telemedicine
projectors	ease of tele mentoring
remote control	ease of patient doctor communication
resolution of screen	ease of hands free documentation
speech recognition (Speech to text program)	ease of hands free taking photos
facial recognition	ease of recording medical data
voice control	ease of health management
gesture control	ease of monitoring medical data
wireless connectivity	ease of medical education
zoom	ease of real time video
type of operating system	ease of streaming video
AR	ease of sharing medical data
medical applications	ease of searching medical data
quality of connectivity	ease of facilitating diagnosis
privacy	ease of translating
cost	ease of scanning
heating problem	ease of reminding
readability	ease of surgical education
security	ease of surgery
safety	

Firstly, 23 students have chosen most significant constructs according to them as a pilot study. After that the study was carried out by 7 physicians working in public hospitals. The average age of the expert group was 38. Three of them were male and four of them were female. Descriptions of the constructs have been shown in the Appendix C. In Findings chapter, the outcomes of the expert focus group study will be stated.

4.3 Experimental Study

The purpose of the experimental study is to explore the factors that affect physicians' adoption on smart glasses. A web-based data collection instrument containing two main parts namely videos and questionnaire for regression analysis, and questionnaire for descriptive analysis was developed to collect data from participants. Survey monkey was used for data collection.

In the survey, there were three videos about smart glasses' usage in medical industry. The first one is related with emergency, the second one is about examining process of physicians and the last one is about surgery. The names and links of videos are;

Google Glass enables emergency services for the 21st century:
<https://www.youtube.com/watch?v=QIXzSP0UvNI>;

Restoring the Connection Between Doctor and Patient:
<https://www.youtube.com/watch?v=umjICxg4Z-0>

Google Glass Delivers New Insight During Surgery:
<https://www.youtube.com/watch?v=4HhmUaFj5-E>

The survey continued with regression and descriptive analyses.

Regression questionnaire form of the study was designed to test hypotheses of smart glasses intention framework. It consists of 4 questions to collect demographic information of the participants, and 50 five point Likert-scale questions to assess attitude of participant toward smart glasses.

Participants answered the questions by considering the videos.

The first part of the regression questionnaire form included questions to collect demographic information of the participants. Table 4.7. lists demographic constructs, question items, and options of the question.

Table 4.7. Demographic questionnaire

Construct	Question Item	Options
Gender	Select your gender	Female, Male
Age	Select your age	24 and below, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55 and above

(cont. on next page)

Table 4.7 (cont.).

Education Level	Select your education level	University student, Undergraduate degree, Graduate degree, Doctora Graduate degree
Expertise	Select your expertise	Surgical, Internal medicine Eye diseases, Peditry, Other

Second part of the questionnaire includes items for regression analysis. Table 4.8. covers regression constructs and question items. All of the questions were five points Likert-scale questions. In the question form, 1 represents strongly disagree, 3 means neither agrees nor disagrees, and 5 equals strongly agree. Respondents specify their level of agreement to the question items by selection corresponding item level.

Table 4.8. Questionnaire constructs and items

Constructs	Items
Innovativeness	I am usually cautious about adopting new ideas
Self efficacy	I can use technological devices myself easily
Battery life	I care about it has a battery which has long life
Weight	I do not want it over weight
CPU speed (computer speed)	I do not cared high system speed
Memory size	I would like to this product has high memory capacity
Heating problem	I do not care about this product is warming
Wireless connectivity	I would like wireless connectivity
View of screen	I prefer screen will have wide viewing angle
Resolution of screen	I care about the high resolution screen
Adjustability	I would like it to be adjusted according to my face
Screen's ergonomic	I would like the display will be in accordance with the rules of ergonomics
Interface design	I would like the improved interface design
Eye health	The possibility of damaging the eye make me uncomfortable
Hands free	I prefer to use hands free
Voice control	I would like to control by voice
Gesture control	I would like to control by gesture
Speech recognition	I would like to use speech to text program
Synchronized with the hospital's system	I prefer to it would work synchronized with the hospital IT system
Ease of reminding	I would like to use it to remind

(cont. on next page)

Table 4.8 (cont.).

Ease of hands free taking photos	I would like to take photos hands free
Ease of recording surgery	I would like to use it in surgeries
Ease of recording medical data	I would like to record medical data
Ease of monitoring medical data	I would like to monitor the medical data by this product
Ease of sharing medical data	I would like to share the medical data by this product
Ease of hands free documentation	I would like to do documentation hands free
Ease of facilitating diagnosis	I would like to use it as a assisting device for facilitating diagnosis
Ease of telemedicine	I would like to use it in telemedicine
Ease of medical education	I would like to use it in medical education
Ease of patient doctor communication	I would like to use it for improving doctor-patient communication
Technical Support	I care about technical support when I am using it
Privacy	I would like it to pay attention to patient privacy
Compatibility	It is suitable to my professional understanding to use such kind of technological devices
Internal Influence	My friends say this kind of technological devices are important
External Influence	I came across a lot of articles that has positive approach to technological devices
Ease of learning	I think that it needs effort to learn the use of it
Ease of use	It is difficult to use
Ease of use	I can do my work by this product easily
Usefulness	It is useful
Usefulness	It will give me time
Usefulness	To use it let me do my job easier
Usefulness	To use it increase the quality of work that I have done
Usefulness	I think that it is useful for my work
Attitude	I advice the other workers to use it
Attitude	I would like to use it
Intention	I plan to use it in one year
Comment	Other opinions that you want to convey

Analysis including regression, and descriptive were applied in the experimental study. Findings and results of these analyses will be explained in findings chapter.

CHAPTER 5

FINDINGS

5.1. Findings of In-Depth Interview

8 individuals were participated in this study. 4 of them were female and 4 of them were male. Table 5.1. shows the profile of interviewees.

Table 5.1. Participants profile of qualitative research

Professions	Gender	Number	Average Age
Physician	Women	4	40-45
Physician	Men	4	40-45

In the analysis part of qualitative research the following steps have been carried out.

1. Interviews' audio-records were deciphered and written in a file sentence by sentence.
2. These transcripts were used in framework chapter.
3. Many constructs were conducted from these interviews (Table 5.2).
4. These constructs were added into the other constructs which would be conducted from articles related with smart glasses and medical industry.

Table 5.2. Selection frequencies of the constructs

Constructs	#	Constructs	#	Constructs	#
Speech to text program	5	Use in surgeries	3	Voice control	2
Screen ergonomic	5	Documentation	2	Zoom	2
Institutional purchasing	3	Observing lab results		Online searching	2
Personalization	3	Observing medical history of patient	2	Doctor patient communication	2

In the interview study, almost all participants were family physicians. Therefore, in this process we generally focused on smart glasses usage in examining process. They were all too busy and have had many patients in a single day.

Table 5.2. shows that the frequencies of the constructs that they have selected. The most desirable construct was speech to text program. They spend many time for electronic health recording. It means that they write the patients' problems and the proposals in a computer program at the same time by the examining process. They stated that it has been difficult and taken time. They said that smart glasses should record the examining conversations and Speech to Text program transform it to the text , this product will be suitable for us. Therefore, they said they could use these glasses for documentation by this way.

The second most mentioned construct is screen ergonomics. As it was mentioned, Vuzix M100 smart glasses were used in the interviews. Almost all participants stated that they have not see the screen easily and it is difficult to adjust it. Related this situation they stated that they prefer smart glasses if screen ergonomic problem can be solved.

They did not prefer to purchase smart glasses themselves. They stated the institution that they work in should purchase the smart glasses for them.

Moreover, most of them claimed that the smart glasses should be personalized. It means that you should reflect your personality by the help of this smart glasses. Maybe it can be different for women and men in basic.

In addition, although the interviews were not in the hospitals, them explained that they felt this product should be used in surgeries. Also, they expressed that zoom function could be added especially for usage in surgeries.

They also explained that they could view laboratory results and medical history of the patients in the examining process by the screen of smart glasses.

These smart glasses have opportunity to remove computers while doctors are examining the patient. Therefore, period of face to face communication would be increased. Because of this situation, they explained that smart glasses would assist patient and doctor communication and make it better in the examining process.

Due to its wireless connectivity, one of the most preferred function was online searching. They wanted to search disease, anatomy, any question that needs in the examining process.

Lastly, the feeling about voice control and being hands free of smart glasses was positive. Because of hygiene construct is significant for them, they preferred to use this product by voice commands.

To sum up, physicians generally liked the product and emphasized it would have potential usage in medical industry. However, they agreed that it needs many ergonomically development and additional features and software.

5.2. Findings of Expert Focus Group

Expert focus group study was conducted with 7 physicians, 4 of them were male, and 3 were female. Average age of the participants is 35-40. These are mentioned at Table 5.3.

Table 5.3. Participants profile of expert focus group

Professions	Gender	Number	Average Age
Physician	Women	3	35-40
Physician	Men	4	35-40

Participants were assigned to select the most important 15 constructs out of 95 (See Appendix C for detail list of constructs).

Table 5.4. Selection frequencies of the constructs

Constructs	#	Constructs	#	Constructs	#
ease of medical education	5	wireless connectivity	3	cost, investment	3
voice control	4	eye health	3	ease of scanning	3
screen's ergonomic	4	ease of facilitating diagnosis	3	ease of translating	3
battery life	4	weight	3	ease of use	2
ease of hands free taking photos	4	ease of reminding	3	hands free	2
ease of recording medical data	4	ease of searching medical data	3	usefulness	2

(cont. on next page)

Table 5.4 (cont.).

system speed	4	speech recognition (Speech to text program)	3	ease of real time video	2
ease of telementoring	4	ease of monitoring medical data	3	ease of surgery	2
heating problem	4	ease of hands free documentation	3	view of screen	2
official endorsement	4	synchronized with HIS	3	medical applications	2
privacy	2	ease of learning	2	ease of sending email	1
sterile	2	head fixing with screw system	2	ease of telemedicine	1
zoom	2	organizational support	2	gesture control	1
camera	2	self efficacy	2	practicality	1
quality of connectivity	2	use of spectacle wearers	2	expertise	1
security	2	adjustability	1	time factor	1
ease of streaming video	2	ease of patient doctor communication	1	ease of surgical education	1
enjoyment	2	ease of sharing medical data	1	innovativeness	1
personalization	2	resolution of screen	1	ease of hands free calling	1
technical support	2	memory size	1	social factors	1
bone conduction speaker	2	readability	1	user of smartphone	1

According to Table 5.4., most of the participants agreed on smart glasses would be used in medical education. They thought that the most significant features of the smart glasses are voice control, battery life, system speed, ergonomic screen and do no warming. Beside features of the product, most of the participants thought that smart glasses would be used in hands free taking photos about medicine, recording medical data and telementoring. Lastly, they preferred official endorsement.

5.3. Findings of Experimental Study

Table 5.5. Participants profile of qualitative research

Professions	Gender	Number	Average Age
Physician	Women	19	40-45
Physician	Men	57	40-45

5.3.1. Results of ANOVA

ANOVA analysis has been conducted on demographic values including gender, age and education.

Significant results for ANOVA analysis based on gender construct can be found on Table 5.6.

It can be seen that men found smart glasses easier than women for learning. Moreover, men stated that they would like to use smart glasses in surgeries, monitor and record medical data by smart glasses more than women.

Table 5.6. ANOVA Analyses (Gender)

ANOVA-GENDER					
Constructs	F	Sig.	Woman 18	Men 53	Questions
Self_efficacy	10,59	,002	3,61	4,43	I can use technological devices myself easily
EoL	7,39	,008	2,89	2,13	I think that it needs effort to learn use of it
Eo_REC_Surgery	6,41	,014	4,06	4,56	I would like to use it in surgeries
Eo_MON_MedicalData	6,36	,014	4,39	4,77	I would like to monitor the medical data by this product

(cont. on next page)

Table 5.6 (cont.).

Eo_REC_MedicalData	6,01	,017	4,39	4,74	I would like to record medical data
Compatibility	4,13	,046	4,33	4,67	It is suitable to my professional understanding to use such kind of technological devices
Usefulness1	3,15	,080	4,06	4,40	It is useful
Usefulness2	2,98	,089	4,24	4,57	It will give me time

Significant results for ANOVA analysis based on age construct can be found on Table 5.8. Participants are grouped under 8 different age categories: 24 and below, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55 and above.

Physicians in the age of 50-54 stated that they could do their work by smart glasses easier than the other age groups. Furthermore, this group found the product more useful. According to table, it can be seen that in the age of 25-29 would like to share medical data by this product less than the other age groups.

On the other hand, in the age of 55 and above would not like to do documentation hands free as much as the other age groups. In the age of 55-54 stated that smart glasses is totally useful product for them. Lastly, according to table it can be seen that in the age of 25-29 were not cautious about adopting new ideas than other age groups.

Table 5.7. ANOVA Analyses (Age)

ANOVA-AGE											
Constructs	F	Sig.	24 and below	25-29	30-34	35-39	40-44	45-49	50-54	55 and above	Questions
			5	12	13	11	12	9	3	6	
EoU2	4,75	,000	4,80	4,42	4,62	4,18	3,67	4,44	5,00	3,83	I can do my work by this product easily
Usefulness1	3,68	,002	4,40	4,42	4,69	4,55	3,83	4,11	5,00	3,60	It is useful

(cont. on next page)

Table 5.7 (cont.).

Attitude	3,40	,004	4,44	4,55	4,71	4,55	3,77	4,42	5,00	4,13	Attitude
EoU	3,39	,004	4,60	4,54	4,31	4,32	3,71	4,39	4,67	3,58	EoU
Usefulness3	3,07	,008	4,80	4,58	4,62	4,64	3,83	4,44	5,00	4,00	To use it let me do my job easier
Eo_SHARE_MedicalData	2,94	,010	4,80	3,42	4,85	4,18	3,58	4,33	5,00	3,83	I would like to share the medical data by this product
Attitude1	2,93	,010	4,40	4,50	4,77	4,55	3,58	4,56	5,00	4,20	I advice the other workers to use it
Usefulness4	2,91	,011	4,80	4,50	4,69	4,36	3,50	4,56	5,00	4,17	To use it increase the quality of work that I have done
Eo_HF_Documentation	2,72	,016	4,80	4,42	4,85	4,55	4,33	4,56	5,00	3,50	I would like to do documentati on hands free
Usefulness	2,71	,016	4,60	4,63	4,85	4,64	3,92	4,61	5,00	4,17	Usefulness
Usefulness2	2,61	,020	4,40	4,67	4,77	4,64	3,92	4,56	5,00	4,00	It will give me time
Usefulness5	2,56	,022	3,80	4,58	4,77	4,55	3,75	4,44	5,00	4,33	I think that it is useful for my work
Innovativeness	2,17	,049	2,20	2,08	2,54	2,64	3,17	2,67	4,67	2,50	I am usually cautious about adopting new ideas
EoU1	2,14	,052	4,40	4,67	4,00	4,45	3,75	4,33	4,33	3,33	It is easy (R) to use
Eo_MON_MedicalData	2,09	,057	5,00	4,83	4,92	4,64	4,42	4,56	5,00	4,17	I would like to monitor the medical data by this product
Eo_Telemedicine	2,03	,065	4,80	3,67	4,77	4,18	4,17	4,33	5,00	4,50	I would like to use it in telemedicine
Compatibility	2,01	,067	4,80	4,67	4,92	4,64	4,25	4,33	5,00	4,20	It is suitable to my professional understanding to use such kind of technological devices
Eo_PatientCommunication	1,89	,087	4,80	4,08	4,85	4,09	4,08	4,22	5,00	3,83	I would like to use it for improving doctorpatient com.

ANOVA results for education types shows that (Table 5.8.), PhD did not prefer smart glasses to be heavy. In addition, students did not care smart glasses' being heavy as much as the other education groups such as graduate, master and PhD.

5.8. ANOVA Analyses (Education)

ANOVA-EDUCATION							
Constructs	F	Sig.	Student 5	Graduate 14	Master Degree 14	Doctoral Degree 37	Questions
Weight	2,623	,058	3,80	4,29	4,57	4,70	I do not want it over weight

5.3.2. Results of Descriptive Statistics

Number of respondents, mean, standard deviation, minimum, and maximum values of the constructs were summarized in Table 5.10.

The results of descriptive statistics reveal that participants thought that screen of smart glasses should be in accordance with the rules of ergonomics. They also preferred technical support when they are using it. Furthermore, most of participants state that smart glasses should pay attention to patient privacy. Besides, they expressed that the product should be adjusted according to their faces. Moreover, most of the participants would like to monitor medical data by smart glasses.

Table 5.9 The most preferred constructs according to descriptive analyses

<ul style="list-style-type: none"> 1. Screen ergonomic 2. Technical Support 3. Privacy 4. Adjustability 5. Ease of monitoring medical data 	<ul style="list-style-type: none"> 6. Ease of recording medical 7. Hands Free 8. Wireless connectivity 9. Ease of medical education 10. Synchronized with hospital
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Table 5.10. Results of Descriptive Statistics Analyses

Descriptive Statistics						
Sorted by Mean						
Constructs	N	Min	Max	Mean	Std. Deviation	Questions
ScreenErgonomic	70	3	5	4,73	,479	I would like the display will be in accordance with the rules of ergonomics
TechnicalSupport	71	2	5	4,72	,565	I care about technical support when I am using it
Privacy	71	2	5	4,70	,595	I think that it should pay attention to patient privacy
Adjustability	70	3	5	4,69	,498	I would like it to be adjusted according to my face
Eo_MON_MedicalData	71	2	5	4,68	,580	I would like to monitor the medical data by this product
Eo_REC_MedicalData	71	3	5	4,65	,537	I would like to record medical data
HandsFree	71	2	5	4,65	,657	I prefer to use hands free
WirelessConnectivity	71	3	5	4,65	,588	I would like wireless connectivity
Attitude2	70	2	5	4,64	,660	I would like to use it
Eo_MED_Education	71	1	5	4,59	,729	I would like to use it in medical education

5.3.3. Results of Cluster Analyses

Cluster analysis was conducted in order to identify market segments of the smart glasses. SPSS Statistics software, version 20, is used to group the participants in different segments whose members show similar behavioral in some sense. More than one cluster analysis containing two, three, and four clusters was applied based on the participants' preferences, and constructs studied in the regression.

There are two cluster typologies with cluster analyses:

Cluster-Typology 1:

As shown in Table 5.11, three groups were constructed from the data. Groups were given the names “unwilling”, “tenderer”, and “controlling”. Groups have four, forty five and twenty two members, respectively.

Table 5.11. Cluster-Typology 1

Construct	Unwilling (4)	Tenderer (45)	Controlling (22)
EoU	3,25	4,52	3,82
EoL	4,00	1,67	3,36
Usefulness	2,63	4,77	4,36
Attitude	2,90	4,59	4,30
Intention	1,75	3,40	4,00

Cluster-Unwilling: First group has relatively high values on ease of use and attitude constructs. Although ease of learning construct shows that it has high value, because of its reverse question type, it has low value. This means that this group need extra effort to learn. Furthermore, they have relatively low value on intention construct. This situation explain that they have not so much tendency to use this smart glasses.

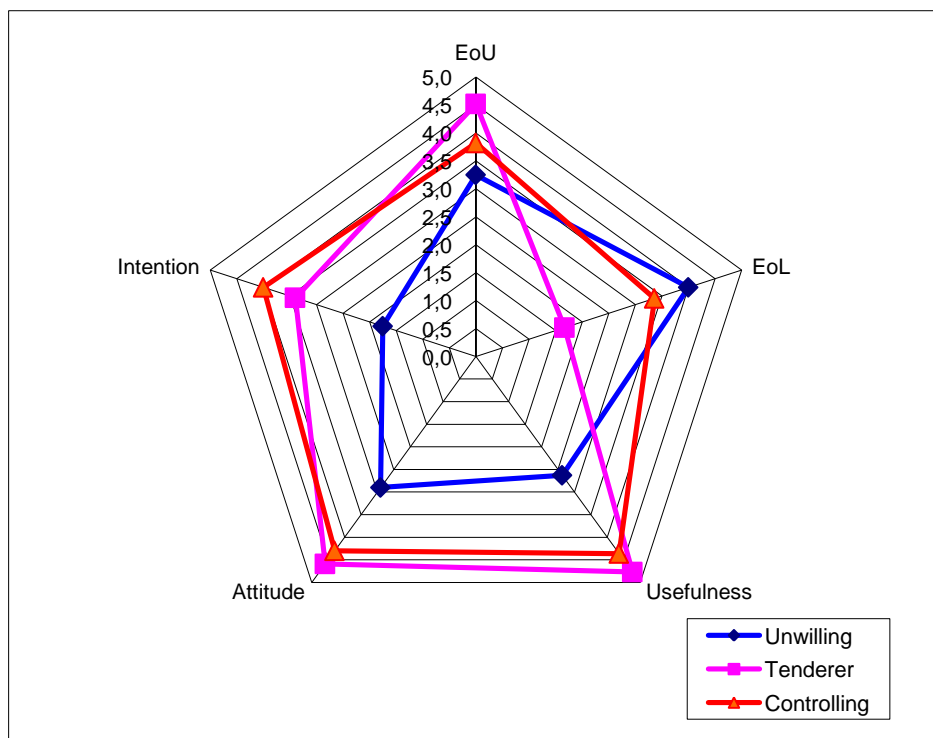


Figure 5.1 Cluster-Typology 1

Cluster-Tenderer: The highest values for the second group are usefulness, attitude and ease of use. This group finds the product useful. They think it is easy to use and easy to learn. According to them, they do not need so much effort to use smart glasses. Their intention value of using this product is also high. However, this value is lower than controlling group's intention value.

Cluster-Controlling: Controlling group has a relatively high value on intention construct than the other two groups. This group intent to use smart glasses highly. On the other hand, they think that they need extra effort to use this product. This group has high values on usefulness, ease of use and attitude constructs.

Cluster-Typology 2:

As shown in Table 5.12., three groups were constructed from the data. Groups were given the names “introverted”, “extroverted”, and “creator”. Groups have four, forty five and twenty two members, correspondingly.

Table 5.12. Cluster-Typology 2

Construct	Introverted (11)	Extroverted (35)	Creator (22)
Innovativeness	3,55	2,91	1,82
Self_efficacy	3,00	4,54	4,59
Adjustability	4,45	4,83	4,59
ScreenErgonomic	4,64	4,86	4,59
Interface	4,18	4,71	4,45
EyeHealth	3,91	4,43	2,73
Eo_PatientCommunication	3,45	4,71	4,23
TechnicalSupport	4,64	4,83	4,55
Privacy	4,55	4,80	4,64
Compatibility	3,64	4,91	4,59
InternalInfluence	3,36	4,20	3,50
ExternalInfluence	3,36	4,49	4,00

Details of the second cluster typology’s analysis can be seen in Fig. 5.2.

Cluster-Introverted: The main difference of the first group is having the lowest values of internal and external influence constructs. However, still these values are high. They can be affected from other people's ideas and articles, etc... about smart glasses however lower than other groups. Furthermore, they do not think that smart glasses would develop patient-doctor communication as much as the other groups.

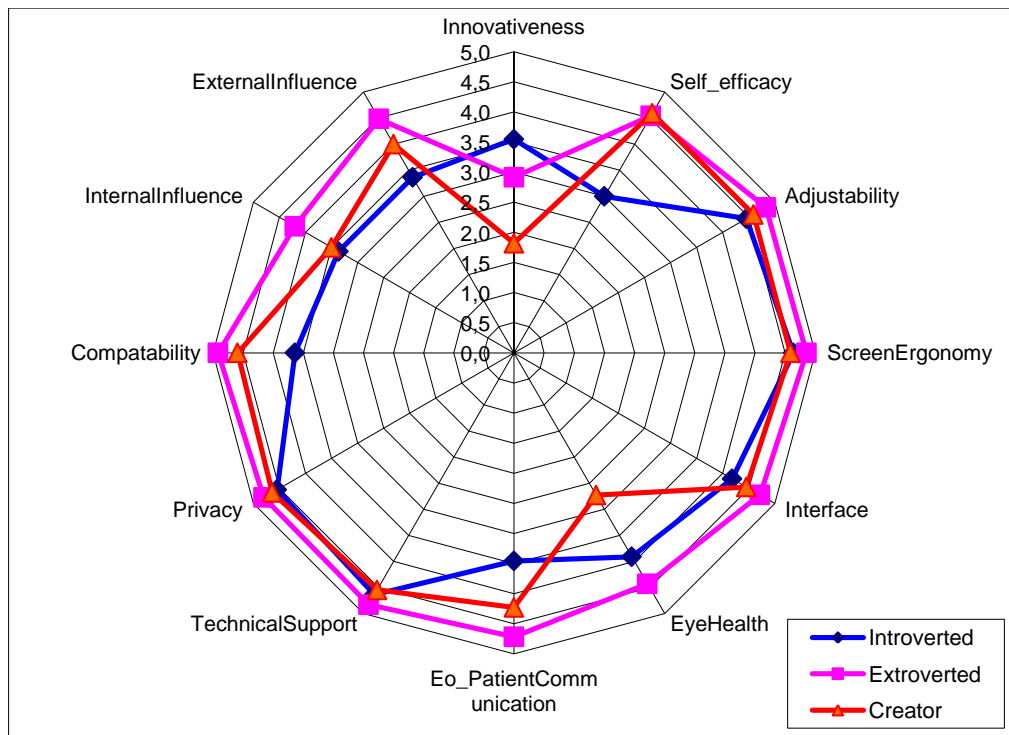


Figure 5.2. Cluster-Typology 2

Cluster-Extroverted: Extroverted group has the highest values on almost every constructs. However, the biggest differences are on internal and external influence constructs. This means that they are affected by other people's ideas and articles, etc.. highly. Moreover, they believe that this product will develop patient-doctor communication.

Cluster-Creator: The last group includes innovative people. They claim that they are adopting new ideas easily. Furthermore, the possibility of damaging eye of smart glasses make them uncomfortable much more than other groups. They are also affected by articles,etc... about smart glasses similarly extroverted group.

5.3.4. Results of Regression Analyses

Regression analysis was used to examine relationships among constructs in the smart glasses' adoption taxonomy. Regression model were executed in SPSS Statistics 20 software. Table 5.13. summarizes the results of regression analysis.

Table 5.13 Results of regression analyses

R ²	Dependent Variable	Independent Variables	B	Std. Error	Beta	t	Sig	
0,089	Intention	(Constant)	1,278	0,863		1,480	,143	
		Attitude	,503	,194	,298	2,594	,012	Attitude
0,712	Attitude	(Constant)	,543	,311		1,744	,086	
		Usefulness	,692	,075	,730	9,249	,000	Usefulness
		EoU	,173	,076	,179	2,269	,026	EoU
0,691	Usefulness	(Constant)	-,504	,448		-1,126	,265	
		Compatibi lity	,456	,089	,435	5,143	,000	It is suitable to my professional understanding to use such kind of technological devices
		EoU	,352	,083	,339	4,228	,000	EoU
		Eo_Remind ing	,162	,064	,209	2,530	,014	I would like to use it to remind
		SpeechRec ognition	,169	,068	,211	2,496	,015	I would like to use speech to text program on this device
0,502	EoU	(Constant)	3,770	,644		5,856	,000	
		EoL	-,258	,056	-,435	-4,645	,000	I think that it needs effort to learn using of it
		Eo_MED_ Education	,281	,083	,322	3,382	,001	I would like to use it in medical education
		ExternalIn fluence	,221	,066	,321	3,323	,002	I came across a lot of articles that has positive approach to technological devices
		Privacy	-,234	,105	-,210	-2,221	,030	I would like it to pay attention into patient privacy

Based on the regression results, Fig. 5.3. illustrates smart glasses' adoption framework.

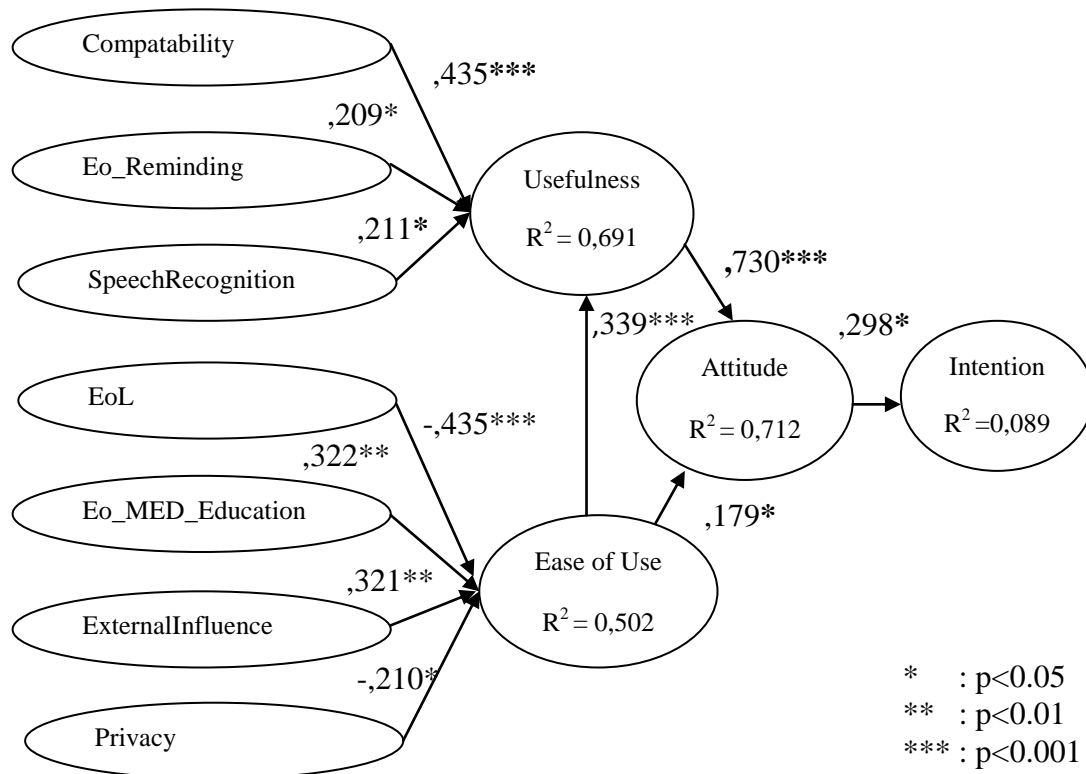


Fig. 5.3. Results of smart glasses adoption framework

The results show that attitude is a direct determinant of users' intention toward the smart glasses with a coefficient of .298 ($p < .05$). This relationship was also found significant in the previous studies (Fishbein & Ajzen, 1975; Chau & Hu, 2002).

Attitude is directly affected by usefulness and ease of use with the coefficients ,730 ($p < 0.001$) and ,179 ($p < .05$), respectively. These variables explain .712 of the attitude. Moreover, ease of use is significantly correlated with usefulness ($b = .114$, $p < .05$). These findings are parallel with what Davis found in TAM model (Davis, 1989).

The model reveals that compatability ($b = ,435$, $p < .001$), ease of reminding ($b = ,209$, $p < .05$), speech recognition ($b = ,211$, $p < .05$) are direct determinants of usefulness.

Besides, the effect of ease of learning, ease of medical education, external influence and privacy on ease of use are sustained with $-,435$, $,322$, $,321$ and $-,210$ beta coefficients and $<.001$, $<.001$, $<.001$, <0.05 significant values, respectively.

According to regression analysis findings, eleven hypotheses are accepted. Table 5.14 summarizes proposed hypotheses and results with significant values.

Table 5.14. Results of Hypothesis

Hypothesis	Dependent Variable	Independent Variable	Supported	Sig.
H1	Intention	Attitude	Supported	0,012
H2	Attitude	Usefulness	Supported	0,00
H3	Attitude	Ease of Use	Supported	0,026
H4	Usefulness	Ease of Use	Supported	0,00
H5	Usefulness	Compatibility	Supported	0,00
H6	Usefulness	Ease of Reminding	Supported	0,014
H7	Usefulness	Speech Recognition	Supported	0,015
H8	Ease of Use	Ease of Learning	Supported	0,00
H9	Ease of Use	Ease of Medical Education	Supported	0,01
H10	Ease of Use	External Influence	Supported	0,02
H11	Ease of Use	Privacy	Supported	0,30

5.3.5. Results of Correlation Analyses

Correlation analysis was conducted to show the relationship between constructs. Table 5.15. summarizes the correlation results of intermediary variables. Full list of the analysis was attached in Appendix K.

Table 5.15. Correlation Results

	Ease of Use	Usefulness	Attitude	Intention
Ease of Use	1	,566**	,592**	,134
Usefulness	,566**	1	,831**	,263*
Attitude	,592**	,831**	1	,298*
Intention	,134	,263*	,298*	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

5.3.6. Results of Reliability Analyses

Reliability analysis is used to test the reliability of the measurement instrument. Attitude, usefulness, ease of use constructs contain more than one question items. The internal consistency of these constructs is tested with Cronbach's Alpha coefficient. Threshold value of the reliability statistics was selected as 0.6. Reliability analysis is summarized in Table 5.16. and most of the alpha values are above the threshold value.

Table 5.16. Reliability Analyses

	Number of Question Items	Cronbach's Alpha
EoU	2	0,59
Usefulness	5	0,91
Attitude	2	0,82

CHAPTER 6

CONCLUSION

Smart glasses as a wearable technology have begun to be used in medical industry recently. According to literature, it seems that it will become widespread rapidly. In this study, the importance of smart glasses' design inputs in medical field has been searched. Moreover, design factors that affect physicians' adoption on smart glasses in their works have been examined. During the study, both qualitative and quantitative studies have been applied in order to construct smart glasses adoption taxonomy in medical industry.

6.1. Implications

The target audience of this research study is the designers who develop applications, interface and smart glasses as a product. In this research, priorities of design inputs have been searched for physicians. First of all, in depth interviews and expert focus group works were conducted After that the experimental study was done by a internet-based survey. At the end, many analysis were performed. These are; descriptive analysis, regression analysis, ANOVA analysis, cluster analysis, correlation analysis and reliability-factor analysis.

According to descriptive analysis; designers should focus on screen ergonomics firstly. It means that they should design the screen according to ergonomic rules. Secondly, they should provide user technical support. It should be more understandable for user technically. Thirdly, they should solve privacy issues of smart glasses.

Moreover, product can be adjustable for different people. It should provide medical data monitoring and recording for physicians. In addition, it should be hands free. It means that it could be controlled by voice. Wireless connectivity is the one the most significant issue of smart glasses. It will be better if the problems of wi-fi is solved. Furthermore, engineers should design this product compatible with hospitals' sub units such as laboratory.

In the descriptive analyses, approximately 40 constructs were examined. There are many essential constructs that may affect adoption too. However, the most significant 10 construct which are mentioned above should be taken in considering in the first stages of smart glasses development.

According to regression analysis; usefulness of smart glasses was affected compatibility, ease of reminding and speech recognition. Designers should develop new applications for ease of reminding for physicians. For instance, reminding of name of a patient can be essential for physicians. Moreover, to transfer speech to text by a program should be used in smart glasses. It can be significant for smart glasses adoption of physicians.

Regression analysis show that ease of use was affected by ease of learning, ease of medical education, external influence and privacy. Smart glasses should have designed that do not need extra effort to learn. In addition, designers should create new smart glasses applications for medical education. There should be many articles, videos, etc... that introduce smart glasses to users. Lastly but not least, designers should solve privacy problems related with smart glasses especially which are stem from camera.

Parallel to previous research findings (Davis, 1989; Yu et al., 2009; Venkatesh et al., 2003), usefulness and ease of use were found significant determinants of attitude toward smart glasses usage. Moreover, like Davis's findings (Davis, 1989), the results showed that compared to ease of use, usefulness had a significantly greater correlation with attitude (Topacan, 2009). In addition, it was found in this research and previous studies (Davis, 1989; Dishaw et al., 1999; Mathieson et al., 2001) that ease of use significantly influences the usefulness.

In addition, this research concluded that compatibility, ease of reminding, speech recognition and ease of use are significant determinants of usefulness and ease of learning, ease of medical education, external influences and privacy are significant antecedents of ease of use in the smart glasses adoption context.

To sum up, in this research, many constructs that affect adoption of smart glasses especially for physicians were examined. Moreover, the relationship between these constructs were investigated. According to research, it is seen that many medical applications should be designed for smart glasses to increase adoption of physicians. Furthermore, it is seen that many product development can be done according to the results of study.

6.1. Limitations

One limitation of this study is about sample size, which is 75. Furthermore, it would be beneficial to improve the respondent size in order to generalize findings.

In the study, only physicians were asked questions related to the main topic "smart glasses adoption in medical industry". However, in the process, for pilot studies, many people in different professions such as interior designer, students were asked.

Moreover, the experiment was conducted in Turkey, so it is difficult to generalize the findings for people live in other countries. Cultural differences should be considered while examining the research results.

6.2. Further Works

Although ninety five constructs were derived from the literature survey, qualitative and quantitative studies, only some of them were used in the smart glasses adoption framework. Therefore, extracted constructs or new constructs from the literature can be added to the proposed taxonomy and validity test can be carried out.

Moreover, the study can be conducted in different professions such as traffic polices or architects. By this way, results of the study can be expanded in different parts of the society.

Furthermore, the study can be conducted only in ordinary people for their daily usage such as taking photograph of the moment or daily notifications.

APPENDIX A

ALTERNATIVES OF RESEARCH TOPICS

A.1. Selection of Topic

Table A.1 The ideas about the topic of the thesis

TOPIC	AREA
1. Children's usage of smart musical instruments	EDUCATION
2. How can the virtual reality be used in children's development?	EDUCATION
3. Language learning tool for the hearing impaired	EDUCATION
4. Studying the 3d modeling skills of design students	EDUCATION
5. Electronic student desk design	EDUCATION
6. Smart homework checking device for children	EDUCATION
7. A device teaching the children about traffic signs.3d	EDU-VIS. REAL.
8. Recycling projects from electronic devices	GREEN
9. The importance of the selection of material in design	MATERIAL
10. Studying the usage of composite materials in design award-winning products	MATERIAL
11. Home office design: (Along with electronic components)	OFFICE
12. Sustainable office design	OFFICE
13. Studying interaction designs in fairgrounds	OFFICE
14. Application of virtual reality in medicine	HEALTH-VR
15. A device securing the data of your medical tests. (Blood, urine, electrocardiogram...) ages 7-77	HEALTH
16. Diagnostics kit design (for children-measles, flu, fever, mumps...)	HEALTH
17. Devices measuring your daily consumption of proteins, carbohydrates and fat	HEALTH
18. Systems that will allow elder people to take baths.	HEALTH
19. Skin cleaning tool	HEALTH
20. Electronic toothbrush redesign	HEALTH
21. A device that can detect your blood type at home	HEALTH

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Table A.1 (cont.).

22. A device analyzing your weight monthly	HEALTH
23. Usage of visualization tools for design students	SOFTWARE
24. A device design that can reduce traffic issues	TRAFIC
25. Redesign of ATM interfaces for the elderly	UI
26. Efficiency comparison of ATM interfaces	UI
27. Successful interface designs in telecommunication	UI
28. Interface design comparison in CAD programs	UI
29. Simplified electronic TV remote design	UI
30. Explaining the importance of usability in design with bad examples	UX
31. Interface comparison between university web pages	WEB
32. Integration of the coffee grinder with the coffee maker	FOOD
33. How can the human-computer interaction at groceries be increased?	FOOD
34. Electronic salad maker	FOOD
35. For which product type the 3d printing technology will be used at home first.	3D
36. Considering sustainability, for which types of products can the 3d printer be used?	3D
37. Recording of people's 3d memories- for personal development purposes- via photos	VIRTUAL REALITY
38. 3d historical development of buildings- for museums	VR
39. The areas of usage for virtual reality 20 years from now	VR
40. Cartoon and virtual reality	VR
41. Use of virtual reality in everyday life	VR
42. Icon designs for internet banking	
43. Design elements as the underlying reason for the people's preference of the social media;	
44. Analyzing the duration of daily computer use for students in Turkey	
45. Studying the reasons for the increase in promoting web sites in commercials	
46. Studying modern and cultural object designs in Turkey: example firm: hiref	
47. Studying technological developments in watch design.	
48. Evaluating the successful design criteria in the red dot awards	
49. Color of choice in products by country	
50. Shell design projects for newly patented mechanisms	

APPENDIX B

INTERVIEW STUDY

B.1.Pilot Study for Interviews

B.1.1. Restaurant Service Application

The reason to use this product in a restaurant is to allow the service personnel to check the digital information about the restaurant while their hands are full. For instance, the service personnel can always read the information about the respective orders of each table even when their hands are full. They will always be in contact with the kitchen. It is envisaged that such orders are given by digital tools located on each table. The orders will then come to the glasses. In addition, when a customer asks about the contents of a particular dish, the service personnel can share this information with the customer by using the glasses. The restaurant personnel can always monitor the menu, the prices and special offers thanks to these glasses.

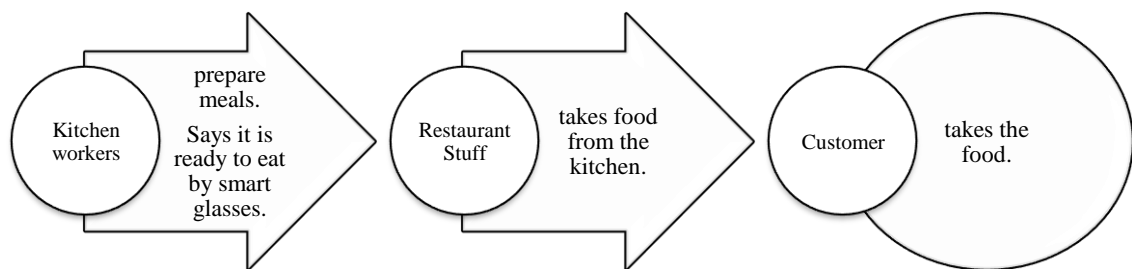


Figure B.1. Preparation and serving of the foods

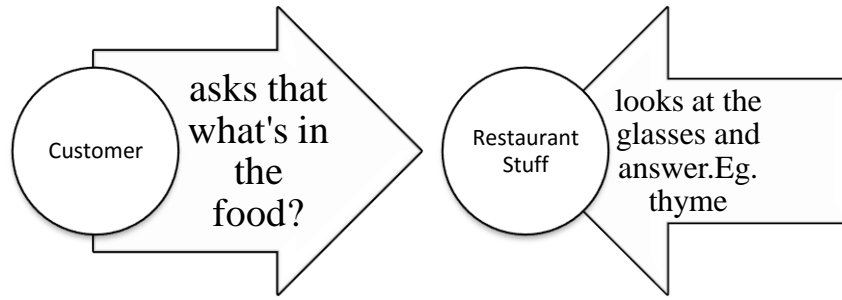


Figure B.2. Restaurant stuff replies the questions of customer

Table B.1. Scenario of restaurant stuff's usage smart glasses

FUNCTION	SCENARIO	DEMO SCENARIO
Taking orders	After customer entering the order on the digital display, information comes to the service and kitchen personnel. (smart glasses)	Ali Bey in fourth table orders 2 Kebab Adana 1 Lemonade 1 Buttermilk
Service personnel is noticing the order	Smart Glass shows who wants what kind of meal.	Fourth table wants 2 Kebab Adana 1 Lemonade 1 Buttermilk
After preparing food in the kitchen, the kitchen personnel are sending status report to service personnel	Chief in the kitchen send the information about meal is ready to the service personnel (smart glasses)	2 Kebab Adana 1 Lemonade 1 Buttermilk Fourth table wait for service.
Service personnel is serving food to the customer	A Service personnel takes the food from the kitchen and serves to the tables.	2 Kebab Adana 1 Lemonade 1 Buttermilk are served to fourth table

(cont. on next page)

Table B.1 (cont.).

Customer is asking to service personnel	Customer asks to the service personnel with smart glasses.	What's in the food? What is the chef's menu?
Service personnel is answering	Service personnel searches by smart glasses and answer.	Adana Kebab includes beef tenderloin, lamb, tail fat, pepper, isot, salt, onion, parsley. The dishes of the day are grilled meatballs and leyla dessert.

This application has been designed to deal with tables for restaurant workers.

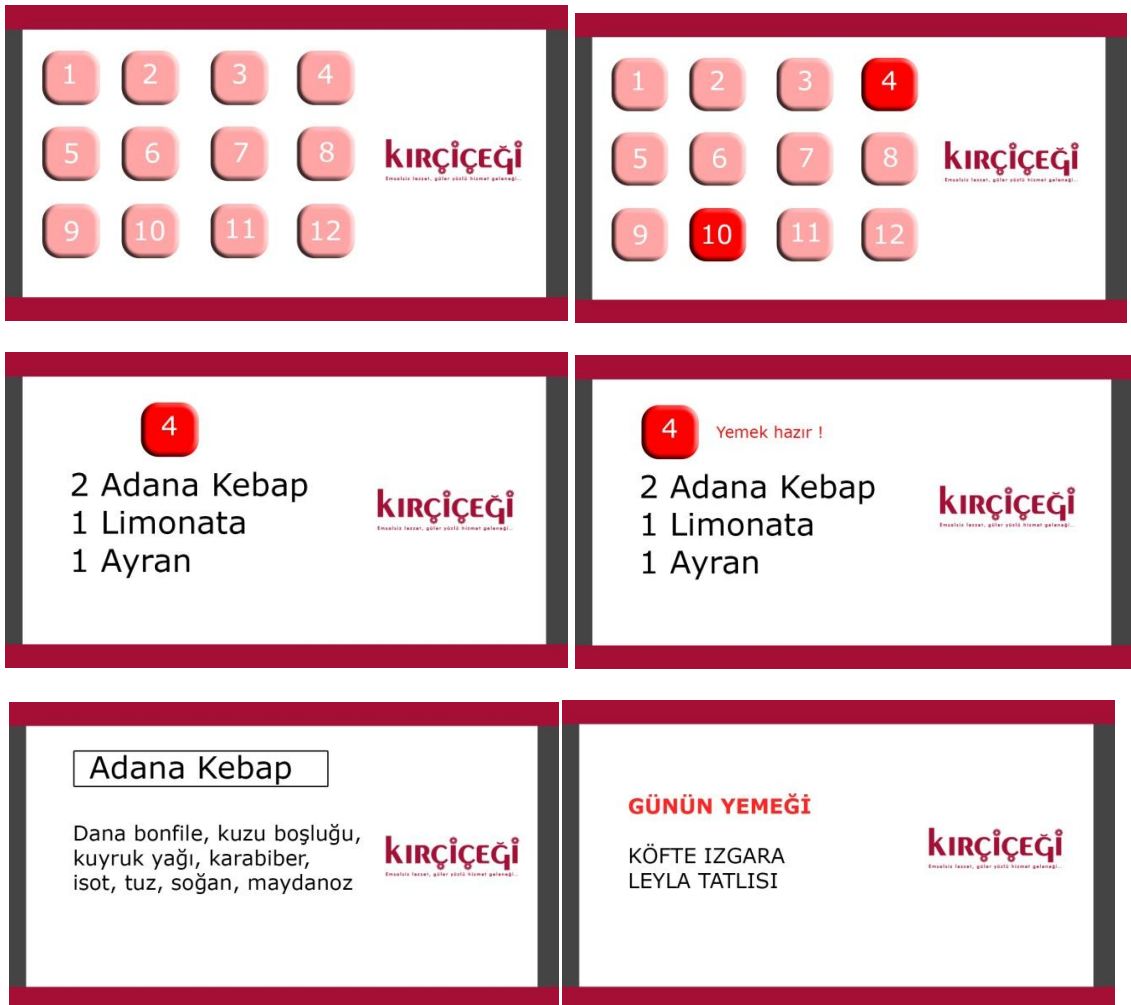


Figure B.3. Application of restaurant service scenes

B.1.2. Pharmacy Application

One of the developments in Turkey regarding medicine is that the prescriptions are being written on electronic media and entered into the system by the family physician. The patients receive the number of the prescription from the doctor, instead of the prescription itself, they give this number to the pharmacy and get their medicine. The pharmacy employees can see the patient's prescription via the smart glasses, while conversing with the patient, without having the need check it from the computer, then take the medicine from the shelf behind and give it to the patient. Furthermore, if the medicines themselves are not present, thanks to the internet connection, they can search for and find equivalent drugs and recommend them to the patient. The pharmacy personnel can also utilize the skills of the smart glasses in shelf placement. It can make a live connection with the physician who issued the prescription.

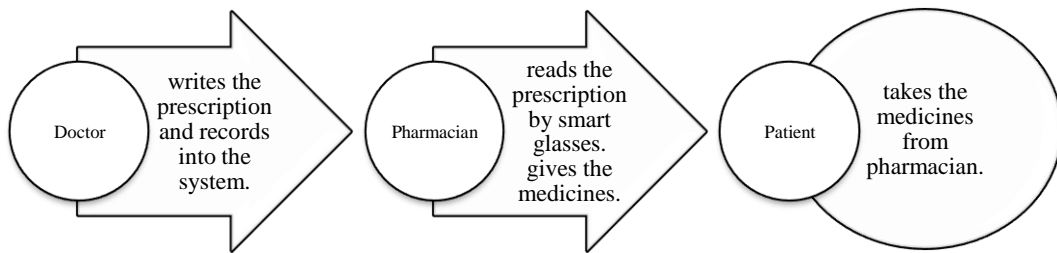


Figure B.4. The road that prescription follow until the pharmacy get

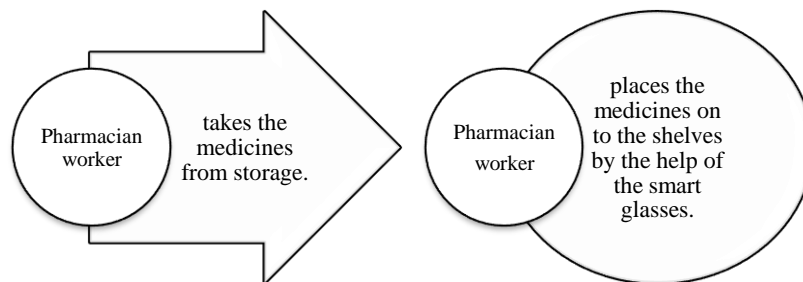


Figure B.5. The placement of the drugs from storage to shelves by smart glasses

Table B.2. Scenario of pharmacist's usage smart glasses

FUNCTION	SCENARIO	DEMO SCENARIO
Doctor prescribing	Doctor prescribes and save it on to the system.	Doctor prescribes Nurofen (Morning, afternoon, evening) Supradyn (Morning, evening) Fastjel Renin on the computer.
Prescription reading by smart glasses	A pharmacy worker opens the prescription by T.C. numbers of the patient.	On smart glasses, Nurofen Supradyn Fastjel Renin are shown.
Research of equivalent medicine by smart glasses	Because of pharmacy worker could not find Nurofen cold, he searches for the equivalent medicine by smart glasses	Instead of Nurofen cold, he recommends Benical cold by reading on smart glasses.
Delivery of medicines	Pharmacy worker gives the medicines to the patient	Pharmacy workers take Benical cold, Supradyn Fastjel, Renin off the shelves and give them to the patient.
Taking the medicine from storage	When pharmacy worker doing placement, he takes the medicines from storage of pharmacy	Rennie and Benical Cold medicines are taken from storage.
Placing the medicines to the shelves	Smart glasses inform pharmacy worker about the place of the medicines.	Rennie -K7 Benical Cold- A2
Reading the prospectus	Pharmacy worker writes the name of the medicine and read the prospectus.	Rennie prospectus is read via right-left and up-down buttons.

This application has been designed for the process of giving medicine in the pharmacy.

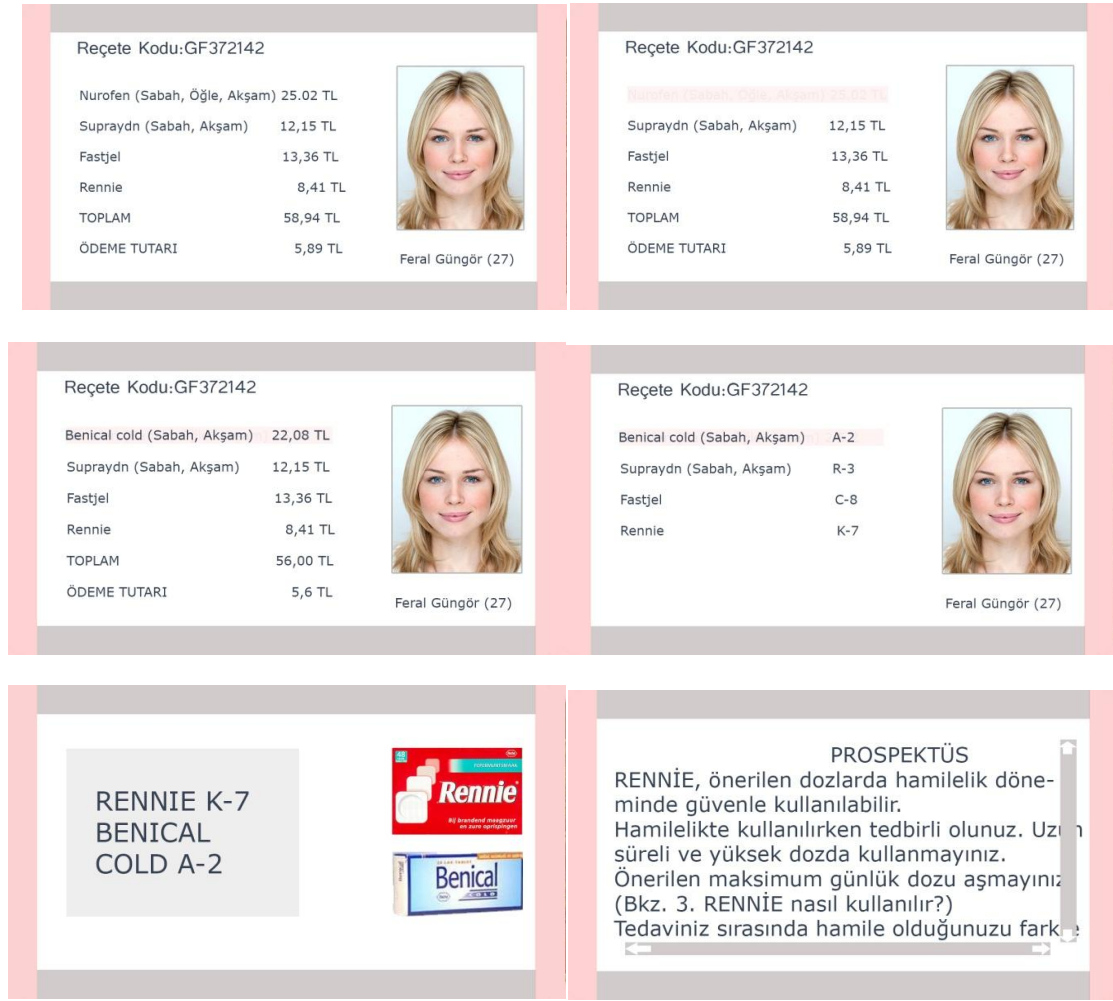


Figure B.6. Application of pharmacy scenes

B.3. Instructor Application

The smart glasses will allow the instructors to read their notes or the PowerPoint screen during their presentations. It can record their lectures and activities. It will provide the opportunity of recording the laboratory processes through their own eyes. It will be used as evidence in writing dissertations. It will be used for the students' development.

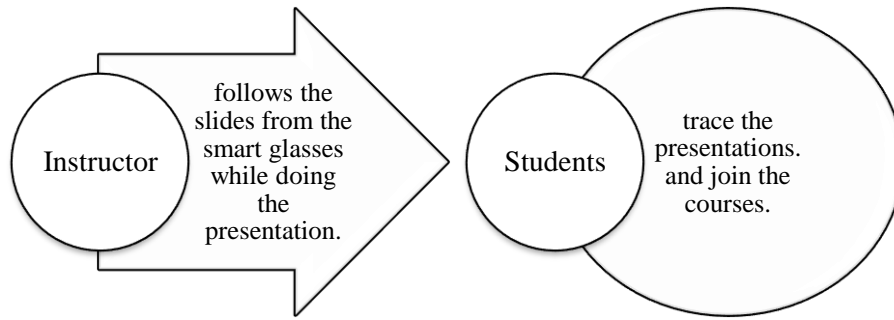


Figure B.7. Using smart glasses during the presentation of the instructors

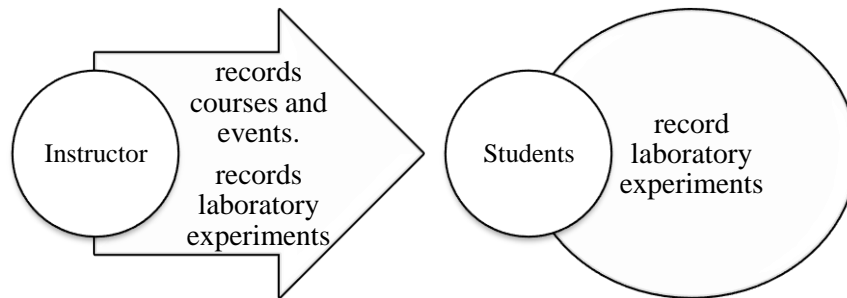


Figure B.8. Instructors' and students' making records of laboratory experiments, courses and events.

Table B.3 Scenario of instructor's usage smart glasses

FUNCTION	SCENARIO	DEMO SCENARIO
Entering the system's memory of glasses	Instructor opens the "files" documents	Furniture Fair Images Furniture Design Presentation History of Furniture Presentation
Searching for and finding related files	Instructor opens the presentation documents.	Furniture Design Presentation is opened.
Forwarding presentation to the projector	The presentation is transferred from glass to projector.	The furniture design presentation is transferred from glass to projector.
Performing presentation	Instructor do the presentation.	Instructor do the furniture design presentation.
Recording workshops	Instructor records the process of sculpture, painting, model by smart glasses in the workshops.	Instructor records the process of students' doing ceramic bowl in ceramic studio.

This application has been designed to be used during training and presentations for instructors.

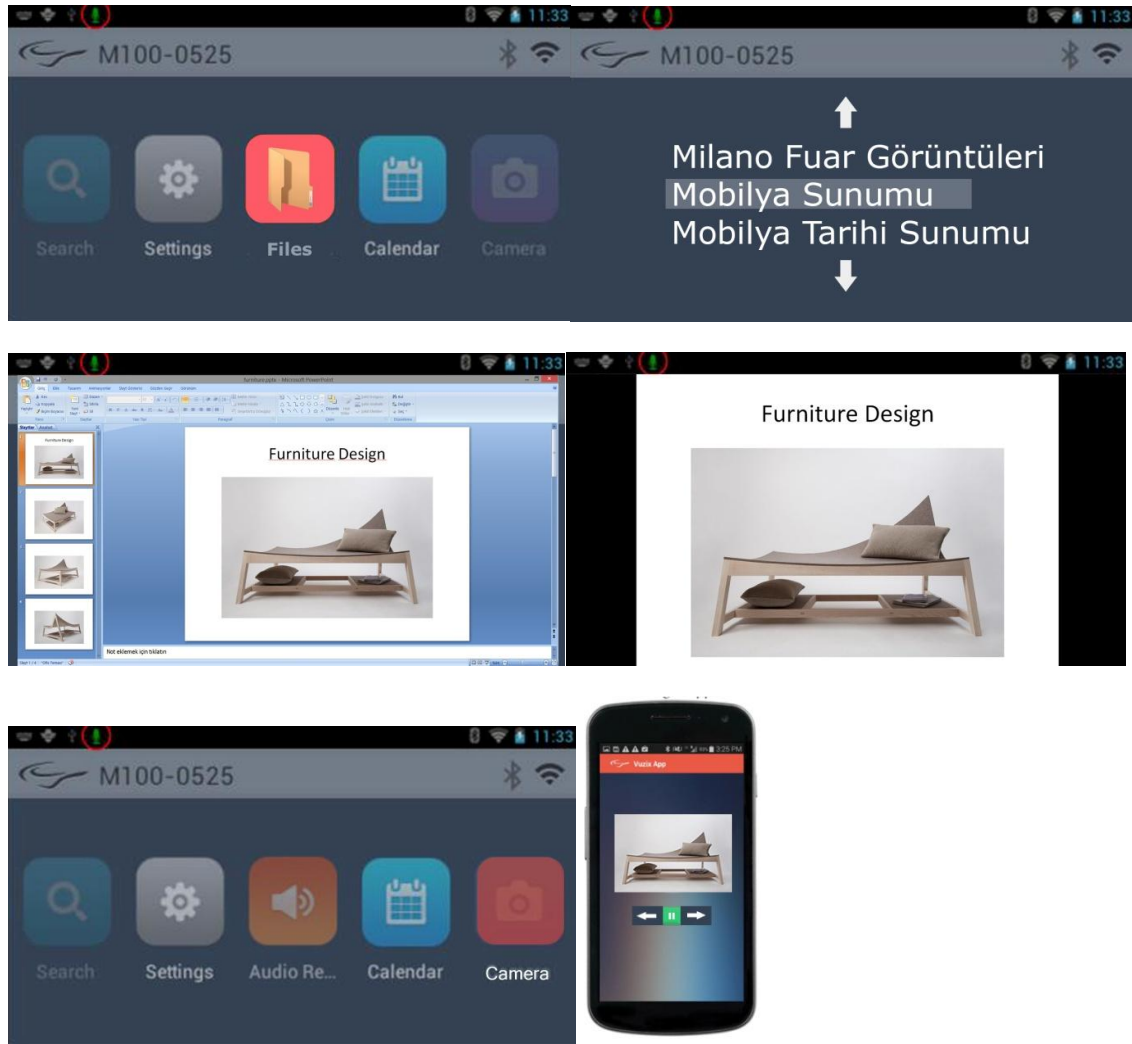


Figure B.9. Application of instructor scenes

B.4. Interior Design Application

It is anticipated to be utilized during the design process of the interior architects. It allows them to quickly take the pictures of the place while conducting surveys. In addition, thanks to special software, it may facilitate the measurement taking procedures. Also, by using Wi-Fi, the design presentations on their glasses can be shared with other screens and other customers. It can record the visual and verbal briefs of the customers with its recording and photo-taking features. During the manufacturing stage, the telephone connections with the site can be made with the glasses.

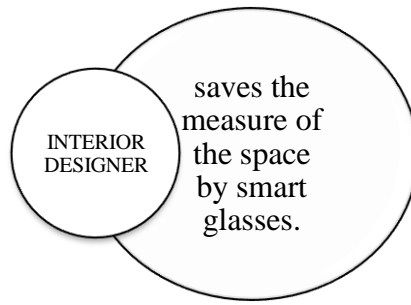


Figure B.10. Interior designer's taking measure by the help of smart glasses

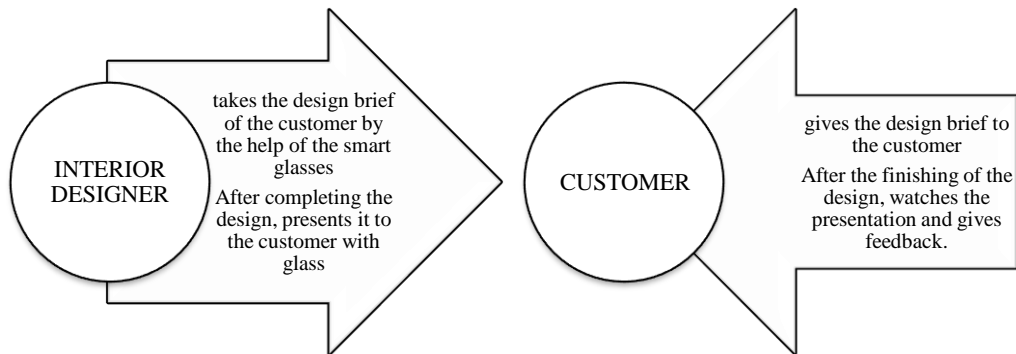


Figure B.11. Interior designers' taking briefs and presenting the design by the help of the smart glasses.

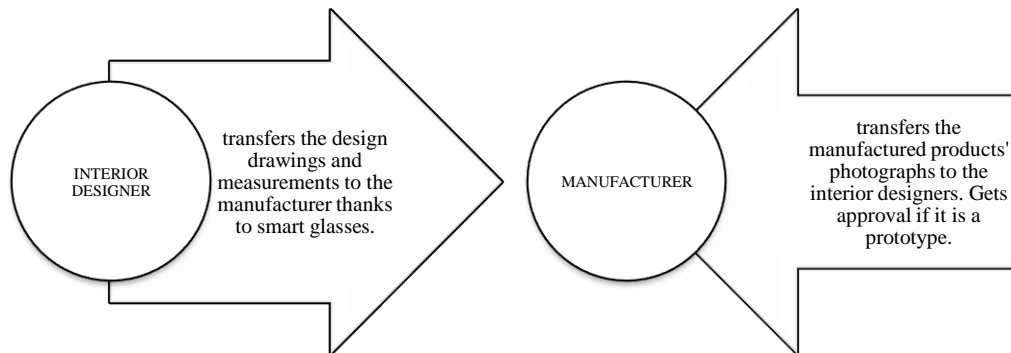


Figure B.12. Interior designer's starting manufacturing works by the help of smart glasses.

Table B.4 Scenario of interior designers' usage smart glasses

FUNCTION	SCENARIO	DEMO SCENARIO
Taking measurements of a space	When taking measurements of a space, designer use the smart glasses.	Designers takes photographs of the space and the measurements with smart glasses.

(cont. on next page)

Table B.4 (cont.).

Receiving the design brief	While the customer is giving the design brief, designer can record it with smart glasses.	The tables should be massive wood. The walls would be painted with sand beige coloring. The floors should be marble. Central heating should be used. The doors should be wood.
Communicating with the customers	Designer can talk with customer for some revisions or design brief with the help of smart glasses.	Designer can talk with customer about the color of the walls, the materials, the types of the objects, etc. with the smart glasses.
Presenting design to the customer	Designer can present interior designs, CAD drawings, renderings or layouts to the customers with smart glasses	The offices last images can be presented by smart glasses and PC screen or phone connected to the smart glasses.
Communicating with the manufacturers	Designer can talk with manufacturers with phone on smart glasses	Designer can transfer CAD data to the manufacturer and the manufacturer can share the outputs of the design with the designer on the smart glasses.

This application has been designed to be used during professional activity for interior designers.

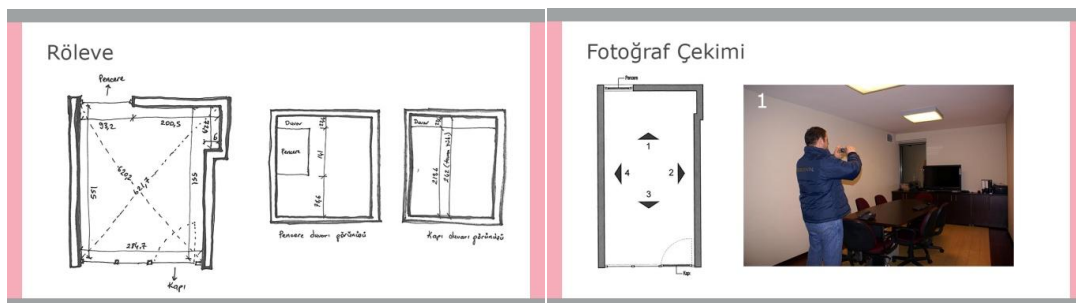


Figure B.13 Application of interior designer scene

(cont. on next page)

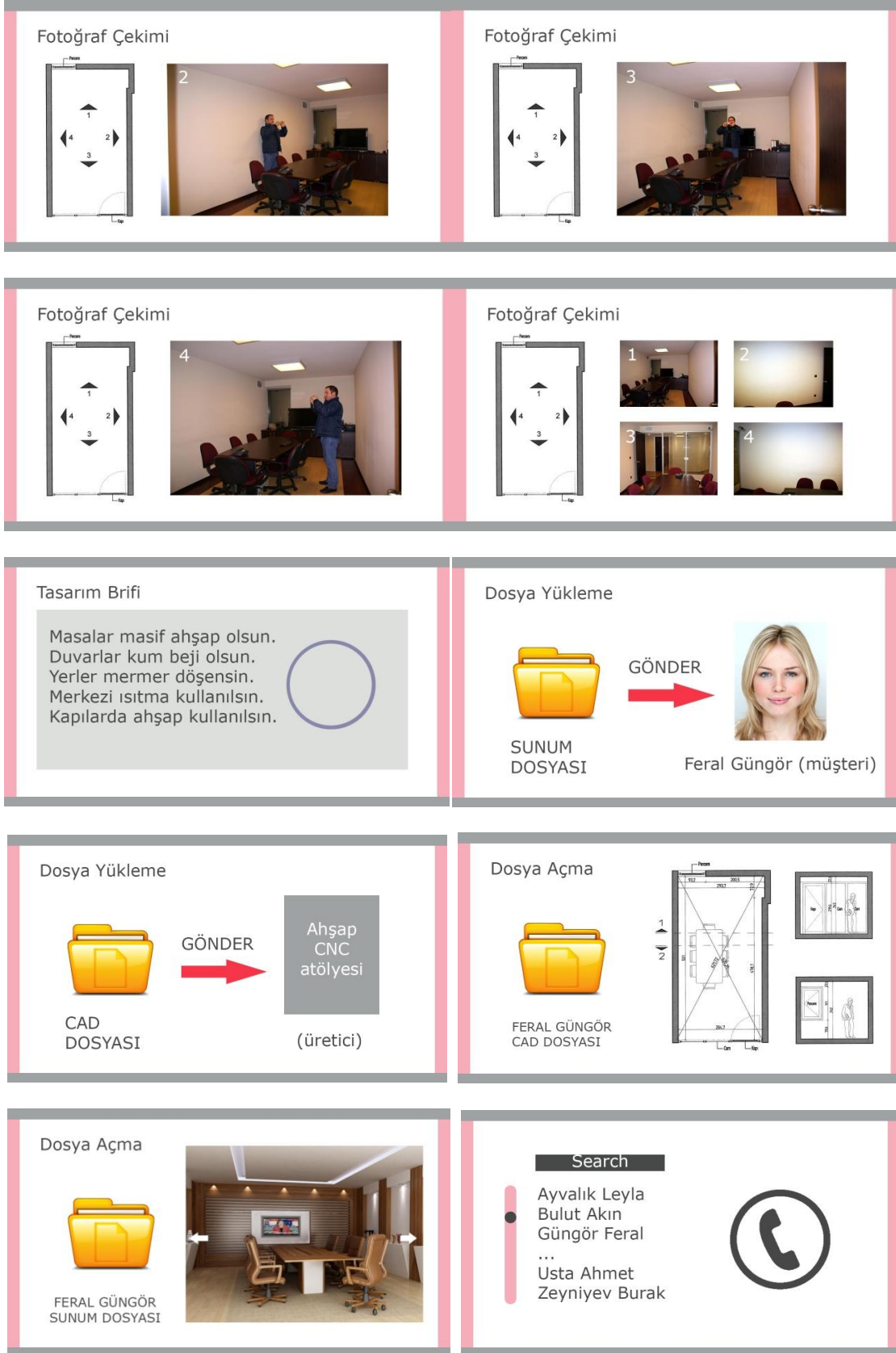


Figure B.13 (cont.)

B.2. Transcripts of Pilot Interviews

B.2.1. Transcript 1

Meslek: İç Mimar

Eğitim: Yüksek Lisans

İş deneyimi: 22 yıl

Yaş:44

Cinsiyet: Erkek

Tarih:26.05.2015

Ortam:

Üniversite, bilgisayar laboratuvarında görüşme yapıldı. Öğrenciler de vardı.

Kullanıcı Notları:

Yemek tariflerinde kullanılabilir. Çünkü izlediğin videoyu birebir fiziksel olarak, aynı anda tekrar edebiliyorsun.

Tek göze uygulandığı için sol-sağ dengesini bozuyor. Fizyolojik olarak sizi rahatsız edebilir. İki lensli olsa daha başarılı olur.

Aynı anda bir şeyleri yaratma hissi uyandırıyor.

Telefon görüşmesi yapılır.

Gözlemci notları:

Sol gözünü arada kısıtı.

Kullanımını hızlı bir şekilde kavradı.

Öğrenmeye ilgili ve meraklıydı.

Video kaydetme, galeri, fotoğraf çekme, ayarlar bölümlerini kullandı.

1. Bu gözlükle ilgili düşünceleriniz nelerdir?

Optik olarak yararlanma sıkıntısı var.

Ürün daha küçük ve titreşimli olmalı.

Ergonomi ve optik ayarlama sıkıntısı var.

Titreşince ikili görüyorum.

Sabitken bir problem yok.

Cep telefonundan ana farkı elin ve vücudun serbest oluşudur. Gözüm meşgulken de el çizimi yapabiliyorum.

Gözlüğe ve kağıda aynı zaman diliminde bakabiliyorum. Hem görüyorum hem çizebiliyorum. Bunu laptop'la yapamayız. Kopya çeker gibi gördüğümü çizebiliyorum.

Serbestlik yaratıyor.

Sen hareket halindeyken "video" senle birlikte geliyor. *Bu çığır açabilir.*

Cep telefonu bu etkiyi vermez. Onu kullanırken dikkatin dağınmak olur.

Akıllı gözlüğü kullanırken dış ilişkilerin devam ediyor. Ama aynı zamanda dijital bilgileri görebiliyorum.

Bir müze gezerken, bir tanıtım olurken hem geziyorsun hem gözlükten bilgi ediniyorsun. Bilgi ve görüntü ilişkisini ayarlayıp yapabiliyorsun.

Fiziksel anlarla dijital olaylar arasındaki senkronizasyonu sağlıyor.

Artılar:

En büyük artısı görsel, işitsel video gibi dijital bilgileri izlerken vücudun özellikle ellerin serbest oluşudur. Aynı zamanda vücudun hareket kabiliyeti de var. Yürüyebiliyorsun, eller serbest, vücut serbest. Elleri serbest bırakması tercih etme nedenimin başında geliyor. (Vücuda giyilebiliyor.)

Ayrıca izlediğini taklit etme ve öğrenme becerisi sağlıyor. İzleme özelliği sayesinde **çorba yapabilirsiniz**, uzmanlık gerektiren el serbestliği gerektiren her şeyde kullanabilirsiniz. Ameliyatlarda bile bilgi amaçlı kullanılabilir.

Eksiler:

Uzun süre bu ürünü kullanamazsınız.

Ergonomik ve fizyolojik olarak rahatsız edecektir.

Çözülmemiş problemleri var.

Bütünsel değil.

Cihaz gözlüğün içinde olmalı.

Oynama ve titreme var.

Ağırlık merkezi tek tarafta. Optik olarak tek lens olması gözü bozabilir.

2. Akıllı telefon kullanıyor musunuz? Teknoloji kullanımınızı değerlendirir misiniz?

Akıllı telefon kullanıyorum. Teknoloji ile aram iyidir.

3. Mesleğinizle ilgili karşılaştığınız sorunlar nelerdir?(3-4-5 beraber soruldu ve cevaplandı.)

4. Akıllı gözlüğün bu sorunlardan birini ya da bir kaçını çözebileceğinizi düşünüyor musunuz?

5. Çözeceğini düşünüyorsanız çözümü tarif edebilir misiniz?

Eğitim ve öğrenimde, spontane bilgi transferi sağlar. Not tutmayı ortadan kaldırabilir.

Yeni bir ürün tasarlarken, gözlüğü veri bankası olarak kullanıp, tasarım girdilerini, görselleri açıklamaları örnekleri bu gözlükte görü, eller serbestken çizim yapabilirsiniz.

Var olan ürünlerde çizgisel değişiklikleri, yeniden tasarımları gözlükteki görsele bakarak da yapabilirsiniz.

Derste Inventor'ın yüzey modellemesini öğreniyorum. Bu ders süresince bu ürünü kullanmak isterim.

Eğitmen eğer izin verirse hem anlattıklarını hem kendimin derste neler yaptığımı kayda almak isterim.

Öğrenme sırasında bu kaydı kullanmak isterim. Özetle öğrenci eğitim amaçlı kullanılabilir.

Dersimi de kamera özelliği sayesinde kayıt altına alabilirim.

E-learning'te faydalı olabilir. Trende veya başka yerde iken eğitim verebilir. Konferansa katılabilir.

Bir **laboratuarda deney yaparken** hem deneyin girdilerini öğrenme hem de süreci kaydetme amaçlı kullanılabilir.

6. Röleve alırken bu ürünü kullanır mısınız?

Röleve alırken fotoğraf çekebilirsin. Ayrıca bu ürüne ek bir yazılımla ölçme aleti eklenebilir. Dijital metre. Ürünün hafızasında plan aktif olur. Lazer ölçümü sayesinde ilgili alanlara ölçüm yapılıp rakam kendiliğinden girilir. Düğmeye basarak ölçüm sağlanır. Böyle bir fonksiyon yüklenirse bu ürün iç mimarlar için vazgeçilmez bir ürün olur.

7. Şantiyede bu ürünü kullanır mısınız?

Tasarım brifi alırken eğer gittiğim yer bir fabrika veya arge merkeziyse, hızlı bir şekilde alet edevatı ve üretimi görmem ve öğrenmem gerekirse bu ürünün kamera kaydı amaçlı da kullanabilirim. Fabrikayı dolaşırken, soru cevap durumu varsa da ses kaydını kullanabilirim.

Klasik anlamda bir toplantı odasında görüşülüyorsa kullanmam. İki taraf için de rahatsız edici olabilir.

8. Çizimlerinizi müşteriye göstermek için bu ürünü kullanır mısınız?

Doğrudan müşteriye sunumu paylaşmak için kullanılmaz belki ama hafıza kartı, USB aygıtı gibi datayı yanımızda taşımamıza yardımcı olabilir. Gerektiğinde de e-mail özelliği ile data iletimi sağlanabilir.

9. Sizce gözlükteki kontroller yeterince basit mi?

Tuşlar anlaşılabilir. Zamanla alışmak gerek.

10. Ürünün el hareketiyle çalışmasından memnun musunuz?

El hareketiyle kontrolün faydalı olacağını düşünüyorum. Örneğin bu ürünü kullanırken seramik yaparken ellerim çamurlu ve kirliyse ürüne dokunmadan ürünü aktifleştirebiliriz.

11. Gözlüğü akıllı telefonla birlikte mi yoksa yalnız mı kullanmayı tercih edersiniz?

Cep telefonunu kontrol amaçlı kullanabilirim. Data transferi de yapacağı için bu ürünle birlikte kullanmayı tercih ederim.

12. Ürün fiyatı 899 Euro. Değerlendirir misiniz?

Resim sınıfında neler yapılıyor, eğitim amaçlı izleyip aynısını yapabilir.

Polisler için faydalı ve kullanışlı bir ürün olabilir.

Yemek tarifi olarak da kullanılabilir.

Bu aktiviteleri düşünürsek bu ücret bu ürün için uygun.

2700 TL bir operasyon amaçlı alınırsa makul bir ücrettir. Ama İyi bir cep telefonu aynı ücrete tercih edilecektir. ,Operasyondan kasıt çalışırken kullanılacak fonksiyonlardır: Sunum, çizim, ölçü, vs...

B.2.2. Transcript 2

Meslek: Sınıf öğretmeni

Eğitim: Lisans

İş deneyimi: 23 yıl

Yaş:55

Cinsiyet:Kadın

Tarih:28.05.2015

Ortam:

Ev ortamında görüşme yapıldı.

Kullanıcı Notları:

Öğrencilerim çalışırken kullanabilirler. İlkokuldan ziyade daha büyük öğrencilerin kullanması iyi olur. Hem öğretmenler hem de öğrenciler için faydalı olacağını düşünüyorum. Son zamanlarda karşılaştığım en yeni teknoloji.

Gözlemci Notları:

Sol gözünü kısıtı.

Yaratıcı fikirler üretti. (İlköğretimden ziyade yaşı daha büyük öğrencilerin kullanacağı fikrini sundu.)

1. Bu gözlükle ilgili düşünceleriniz nelerdir?

Bu gözlükle ders anlatımlarının kolaylaşacağını düşünüyorum.

Aradığım her türlü bilgiye ulaşmamı sağladığı için yararlı olacağını düşünüyorum.

Sınıf içi etkinliklerin anında kameraya alınması güzel. Etkin bir özellik.

2. Akıllı telefon kullanıyor musunuz? Teknoloji ile aranız nasıldır?

Akıllı telefon kullanmıyorum. Teknolojiyi kullanmayı seviyorum.

3. Mesleğinizle ilgili karşılaştığınız sorunlar nelerdir?

(Bu soru genel bir soru olmuş.)

Öğrencilerimin değerlendirilmelerinde eksiklikler görüyorum.

4. Akıllı gözlüğün bu sorunlardan birini ya da bir kaçını çözebileceğinizi düşünüyor musunuz?

Akıllı gözlüğün bu konuda yararlı olacağını düşünüyorum.

Bu gözlük sayesinde anında geribildirim alabileceğimi düşünüyorum.

5. Çözeceğini düşünüyorsanız çözümü tarif edebilir misiniz?

Akıllı gözlüğün içindeki veri tabanı sayesinde herhangi bir konuda geriye dönüp öğrencilerimin bilgilerini sorgulayabilirim.

İçinde konu ile ilgili hazır sorular saklayabilirim.

Öğrencilerden anında geribildirim almam daha kolay.

6. Bu ürünü sunum yaparken kullanır mısınız? Sunumda hatırlama amaçlı kullanır mısınız?

Kullanabilirim. Sunum sırasında hatırlama amaçlı kullanırım.

7. Atölye ve grup çalışmaları kayıtlarında kullanılabilir mi?

Atölye ve grup çalışmalarında kayıt amaçlı kullanılabilir.

Kayıt sonrasında yapılan çalışmaları incelenerek daha fazla neler yapılabileceği düşünülebilir.

Her ders, kayda alınarak bir kaynak oluşturulabilir.

Bir veri tabanı oluşturulur. İlginç görüntülerden VTR oluşturulabilir.

Kayıtlardan tekrar tekrar faydalanılabilir.

8. Eğitim sürecini kayıt altına almak için ve kişisel gelişimde kullanılabilir mi?

(Bu soru tam anlaşılmıyor)

Kişisel gelişimde kullanılabilir. Gözlemlerin sonucunda daha verimli olunmaya çalışılabilir.**9. Sizce gözlükteki kontroller yeterince basit mi?**

Alışınca basit gelebilir. İlk aşamada zordu.

10. Ürünün el hareketiyle çalışmasından memnun musunuz?

Memnun olurum. Resim yaparken ellerimin serbest olması güzel. Ürüne dokunmadan verilere ulaşmam güzel.

11. Gözlüğü akıllı cep telefonu birlikte mi yoksa yalnız mı kullanmayı tercih edersiniz?

Yalnız kullanmayı tercih ederim.

12. Ürün fiyatı 899 Euro. Değerlendirir misiniz?

Bilgisayar gibi fiyatı var. Bu ücret verilebilir ama bu kadar pahalı olmayabilir. Biraz pahalı. Uygun fiyata olduğunda öğrencilerimin de kullanmalarını isterim.

B.2.3. Transcript 3

Meslek: Sınıf öğretmeni

Eğitim: Lisans

İş deneyimi: 36 yıl

Yaş:55

Cinsiyet:Kadın

Tarih: 04.06.2015

Ortam:

Röportaj kütüphanede koltuklarda yapıldı.

Çok kalabalık değildi.

Lise ve ilkokulun birlikte olduğu bir okuldu.

Gözlemci notları

Öğrenciler ilköğretimde oldukları için öğle yemeğinde onlarla birlikte yemek yiyor.

1. Bu gözlükle ilgili düşünceleriniz nelerdir?

İlk gördüğümde şaşırttı. İlk izlenimim bu oldu. Potansiyelini anladıktan sonra adapte oldum. Yaşayarak öğrendim. Görmeden anlatsaydın içine giremezdim.

Tek gözle bakış yoruyor. Uzun süre takılmıyor. Sunum için ideal olabilir ama kontrol elde olmalı.

2. Akıllı telefon kullanıyor musunuz? Teknoloji ile aranız nasıldır?

Evet kullanıyorum. Teknoloji ile aram iyi.

3. Mesleğinizle ilgili karşılaştığınız sorunlar nelerdir?

4. Akıllı gözlüğün bu sorunlardan birini ya da bir kaçını çözebileceğinizi düşünüyor musunuz?

5. Çözeceğini düşünüyorsanız çözümü tarif edebilir misiniz?

Sunumlarda kullanabilirim.

Sunumlarda metin okuyabilirim.

Doğal ortamı kamera ile çekebilmek güzel.

Bilgisayar ekranı gözlük camında olmalı.

Kumanda elde olmalı.

6. Bu ürünü sunum yaparken kullanır mısınız? Sunumda hatırlama amaçlı kullanır mısınız?

Kesinlikle evet.

7. Atölye ve grup çalışmaları kayıtlarında kullanılabilir mi?

Evet.

8. Eğitim sürecini kayıt altına almak için ve kişisel gelişimde kullanılabilir mi?

Öğrencilerimin çalışmalarını dijital olarak saklıyorum. Kamera ile çektiğim dersleri de saklarım.

9. Sizce gözlükteki kontroller yeterince basit mi?

Basit değil.

10. Ürünün el hareketiyle çalışmasından memnun musunuz?

El hareketleri ile çalışmasında da memnun olmam. Kontrol kumanda aleti gibi bir cihazda olmalı. (Şarj aletini örnek gösterdi. Onun gibi.)

11. Gözlüğü akıllı cep telefonu birlikte mi yoksa yalnız mı kullanmayı tercih edersiniz?

Kendine özel kumandası olsun. Cep telefonu olursa sunum sırasında çalar ve dikkatim dağılır.

12. Ürün fiyatı 899 Euro. Değerlendirir misiniz?

Bu fiyat verilir tabii ki.

B.2.4. Transcript 4

Meslek: Eczane yöneticisi

Eğitim: Lisans

İş deneyimi: 18 yıl

Yaş:41

Cinsiyet:Kadın

Tarih:10.06.2015

Ortam:

Eczanede üç çalışan ve iki üç hasta bulunuyordu.

Kullanıcı Notları:

Kamera özelliğinin burada çok kullanılabileceğini düşünmüyorum.

Bu ürünün zaman kazandıracağını ve işe yeni başlayanlar için faydalı, yönlendirici olacağını düşünüyorum.

Gözlemci Notları:

Eczanede karmaşık bilgi yükü var.

1. Bu gözlükle ilgili düşünceleriniz nelerdir?

Faydalı olacağını düşünüyorum.

2. Akıllı telefon kullanıyor musunuz? Teknoloji kullanımınızı değerlendirir misiniz?

Evet. Teknoloji ile ilişkim orta.

3. Mesleğinizle ilgili karşılaştığınız sorunlar nelerdir?3-4-5

4. Akıllı gözlüğün bu sorunlardan birini ya da bir kaçını çözebileceğinizi düşünüyor musunuz?

5. Çözeceğini düşünüyorsanız çözümü tarif edebilir misiniz?

Hasta ilişkilerinde zaman açısından hızlandırıcı olacağını düşünüyorum. İşe yeni başlayanlar için kılavuz olacaktır. Yeni eczacılar ve kalfalar için faydalı olacaktır. Reçetedeki ilaçları bulmak kolaylaşacaktır. Bence kullanılır.

6. İlaçları hastaya verirken, bu ürün size zaman kazandırır mı?

Evet

7. İlaçları yerleştirirken bu ürün size yardımcı olur mu?

Olur.

8. Hasta ile iletişiminizde bilgi bankası olarak kullanmak ister misiniz?

Olabilir. Kullanılabilir. Bilgisayardan eskiye dönük reçetelere bakıyoruz. Oradan da bakabiliriz.

9. Sizde gözlükteki kontroller yeterince basit mi?

Bence basit, güzel.

10. Ürünün el hareketiyle çalışmasından memnun musunuz?

Pratik bir özellik.

11. Gözlüğü akıllı cep telefonu birlikte mi yoksa yalnız mı kullanmayı tercih edersiniz?

Birlikte de kullanabilirim.

12. Ürün fiyatı 899 Euro. Değerlendirir misiniz?

Biraz yüksek.

B.2.5. Transcript 5

Meslek: Restoran şefi

Eğitim: İlk öğretim

İş deneyimi: 30 yıl

Yaş:40

Cinsiyet: Erkek

Tarih:10.06.2015

Ortam:

Geniş bir restorandı. İçeride ve dışarıda masalar vardı. Çok kalabalık değildi. Çok sayıda çalışan vardı.

Kullanıcı Notları:

Bizim meslekte **haberleşme** çok önemli.

Eksisi pratik olmaması.

Artısı işimizi kolaylaştırması.

Gözlemci Notları:

Ürünü doğru şekilde kullanabildi.

Ara yüzlere bakabildi.

Göz odak ayarında zorluk çekti.

1. Bu gözlükle ilgili düşünceleriniz nelerdir?

Ne kadar pratikleşirse o kadar kolaylık sağlayacaktır. Şu aşamada pratik değil.

Pratikleşirse daha iyi olur. Zaman kazanabiliriz. Birbirimizle mesela müdürle şef, şefle mutfak... arasında iletişimi sağlarsa daha iyi olur. Burada birbirimizle iletişim çok önemli.

2. Akıllı telefon kullanıyor musunuz? Teknoloji ile aranız nasıldır?

Evet. Teknoloji ile aram iyidir. Teknolojiyi sürekli geliştiriyor. Bizim de onu kullanmamız gerekli.

3. Mesleğinizle ilgili karşılaştığınız sorunlar nelerdir?

Sıkıntımız iletişim. Özellikle salon ile mutfak arasında. Çok yoğun olduğu zamanlarda sıkıntılar olabiliyor. Ya da hatalı üretim olduğunda, tekrar üretiliyor. Bunun salondakilere bildirmek gerekiyor. Salondan da mutfığa "Ustam 82'nin ürünleri gelmedi." diyebilmesi gerekiyor.

Ya da usta sorar 82 numara çorbasını bitirdi mi? Bitirdi haberini alırsa yemeğini yollar.

4. Akıllı gözlüğün bu sorunlardan birini ya da bir kaçını çözebileceğinizi düşünüyor musunuz?

Akıllı gözlük, telsiz gibi mutfakla salon arasındaki bu iletişim sorunu çözebilir. Şuan salonda iki üç dokunmatik ekran var. Mutfakla onunla iletişim kuruyoruz. El terminalleri çabuk bozulduğu ve pahalı olduğu için bıraktık.

5. Çözeceğini düşünüyorsanız çözümü tarif edebilir misiniz?

Fakat kulaklık herkese uygun değil. Diğer müzik araçlarında kullanılan kablolu kulaklı daha iyi olur bence. Makaralı olabilir.

6. Hangi masaya hangi yiyeceğin gideceği gözlüğünüzde yazılı olsa, sizin için faydalı olur mu?

Buna gerek yok. Siparişi biz alıyoruz zaten. Mutfaktan yiyeceklerin hazır olduğu bilgisini almamız yeterli.

7. Yemek siparişleri, siz masaya gitmeden gözlüğünüze gelse sizin için faydalı olur mu?

Mutfağa gitmesi önemli. Yemekleri sehpayla dağıtan kişi için olabilir.

8. Müşterilerin sorularını akıllı gözlük aracılığı ile cevaplama sizin için faydalı olur mu?

Genelde çok ilginç sorular soruyorlar. Mesela bu üründe kaç gr. et var? ya da tuz var mı? bundaki tuz oranı nedir? gibi. Genelde bilmediğim bir soru sormuyorlar. Çünkü ayda bir eğitim alıyoruz. Elemanlar için belki faydalı olabilir. Ama onlar da düzenli eğitim alıyorlar.

9. Sizce gözlükteki kontroller yeterince basit mi?

Ekran ufak geldi. Tam ayarlayamadım. Ayarlamakta sıkıntı yaşadım. Zamanla alışılır. Biraz uğraşınca olabilir.

Tuşlar iyi zararı yok. Yeri iyi. El alışınca sıkıntı olmaz.

Yanda olmasındansa üstte olması daha iyi olmuş.

10. Ürünün el hareketiyle çalışmasından memnun musunuz?

Olabilir.

11. Gözlüğü akıllı cep telefonu ile birlikte mi yoksa yalnız mı kullanmayı tercih edersiniz?

Salonda cep telefonu kullanmak yasak. Molalarda ve öğle tatilinde kullanabiliyorlar.

Servis esnasında kullanamazlar.

12. Ürün fiyatı 899 Euro. Değerlendirir misiniz?

2700TL . Ben alımda biraz zorlanırım. El terminallerinin piyasa değeri 100-1200TL dir. El terminalleri biraz pahalı. Çok arızalanıyor. Biz onun yerine dokunmatik ekran kullanıyoruz.

Olursa kullanırım. Teknolojiyi takip etmek gerekli. Fiyat düşerse daha rahat kullanırız.

B.3 Interview Questions (English)

1-What are the difficulties that you experience with your job?

2-Will you use this product for stated purpose?

3-What are the properties of the product which you like?

4- What are the properties of the product which you do not like or be forced?

5- Do you think doctors use this product? Why?

- 6- Does the product provide a benefit to you in your job? What are your recommendations for developing if the product is not adequate?
- 7-Can you benefit from smart phones in the same way like this product?
- 8-How much do you pay for this product?
- 9-What are the other issues that you can use this product for?
- 10-Is there anything else you want to say about the product?

B.4. Interview Questions (Turkish)

- 1-Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?
- 2-Bu ürünü ön görülen amaçla kullanır mısınız?
- 3-Üründe beğendiğiniz özellikler neler?
- 4-Üründe beğenmediğiniz veya zorlandığınız özellikler neler?
- 5- Sizce doktorlar bu ürünü kullanır mı? Neden?
- 6- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?
- 7-Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.
- 8-Bu ürüne ne kadar ödeme yaparsınız?
- 9-Bu ürünü başka hangi konularda kullanabilirsiniz?
- 10-Başka eklemek istediğiniz bir şey var mı?

B.5. Video's Transcript Shown in Interviews

Doctor 1(Women): The Google glass I've been using it since January of this year and it really has two purposes for me. It allows me to focus more on the patient and by taking my eyes off the computer screen and looking at the patient and it also saves me a tremendous amount of time.

Doctor 2(Men): A lot of technology that physicians used today seems to distract us from what matters most for to take care the patient. This is one of those technologies may be one of the first that has really liberated us from some other task that we have on a daily basis and has unleash the healing power the physician-patient interaction.

Doctor 1(Women): They're definitely are some aspects of medicine which I did not anticipate coming out of medical school that is the paperwork the workloads and certainly I wasn't expecting to be trained in computers and be a computer technician that's not why I got into medicine.

Patient 1(Women): Before when I've gone to doctors and you have a line of thought you have got notes and you need a connection with your doctor and they are so busy documenting and ha-ha and he is just it was kind like a hiccup in your sincerity of your communication with your doctor. This way, everything just flows so natural on the room and I don't feel like to distractions there.

Doctor 2 (Men): When I walk in the room, I don't have to worry anymore about typing into my way my computer or my m.r. Because the audio video is being streamed to the augmedix team and they are going to capture all the information for me so I just focus on my patient we have a conversation and they are able to extract the medical information from the interaction.

Patient 2(Women): It makes me feel that this is the future. It's more accurate and I feel that at some point the doctor looks at you.

Doctor 1(Women): They're used to having doctors be distracted and the time that we have patients these days are ready a brief amount of time. I actually considered getting out of medicine and since I started using it, I feel very hopeful that I can practice medicine the way I was trying to do.

Patient 3 (Women): I can walk in here and feel satisfied that is are paid attention to what I said made arrangements for what needs to be followed up and it's good because he couldn't see me all the time he feels I need and then he can go on to somebody else.

Doctor 2 (Men): Now, I am actually look forward the clinic again because I know that I'm going to be focus much more time on that patient interaction in the patient relationship.

Doctor 1(Women): They love it and I love it and it's wonderful.

Hello human kindness...

B.6. Presentation Shown in Interviews

B.6.1. Main Screens of Doctors' Examining Application



Figure B.14. Interview Presentation Slight 1: Click START to watch the animation on the applications of smart glasses designed for the health industry.



Figure B.15. Interview Presentation Slight 2: The aim of this smart glasses application which is designed for the doctors is to reduce to time the doctors spend on taking notes and avoid the distraction of computers, notebooks, tablets or notepads while talking to the patient.



Figure B.16. Interview Presentation Slight 3: First off, the doctor listens to the patient's complaints and simultaneously records it with the glasses. Then, the doctor performs a physical examination with tools and devices. These tools and devices are as follows: tongue depressor, sphygmomanometer, stethoscope, thermometer etc.



Figure B.17. Interview Presentation Slight 4: Tongue Depressor: It is used to check the patient's throat.



Figure B.18. Interview Presentation Slight 5: Sphygmomanometer: It is used to gauge the patient's blood pressure and pulse.



Figure B.19. Interview Presentation Slight 6: Stethoscope: It is a medical device that is used to hear the internal sounds of the patient's body.



Figure B.20. Interview Presentation Slight 7: Thermometer: It is used to check the patient's fever.



Figure B.21. Interview Presentation Slight 8: Smart Glasses: Provides assistance in reading the patient's information, viewing the lab results, recording the results of the physical examination and the patient's complaints, entering the diagnosis and the prescription into the system.



Figure B.22. Interview Presentation Slight 9: Data Collection Center: It is an information center that stores all the information recorded during the examination with the glasses, and the patient data contained in the center could be found by searching, when necessary.



Figure B.23. Interview Presentation Slight 10: The doctor examines the patient with the help of the smart glasses. Reads the necessary information on the glasses, and records new information with the glasses.

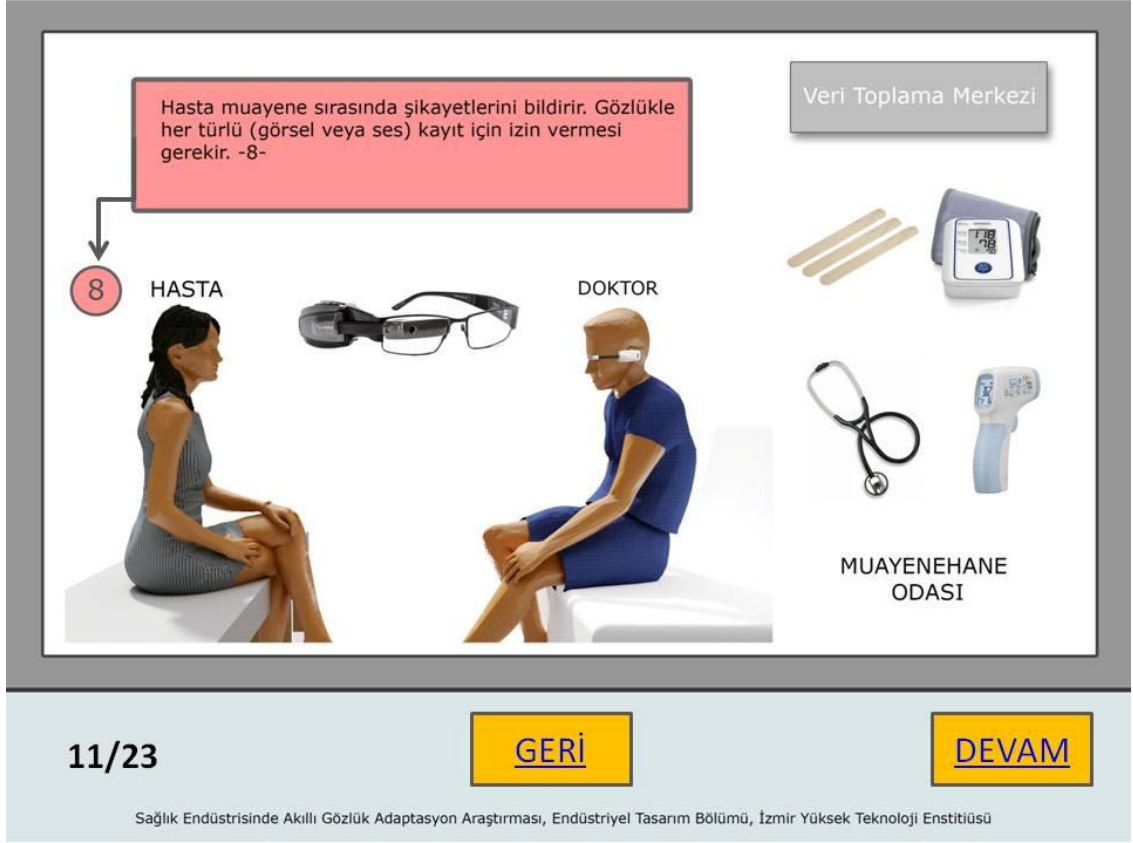


Figure B.24. Interview Presentation Slight 11: The patients state their complaints during the examination. Their consent is required for all recordings (visual or audio) to be made with the glasses.

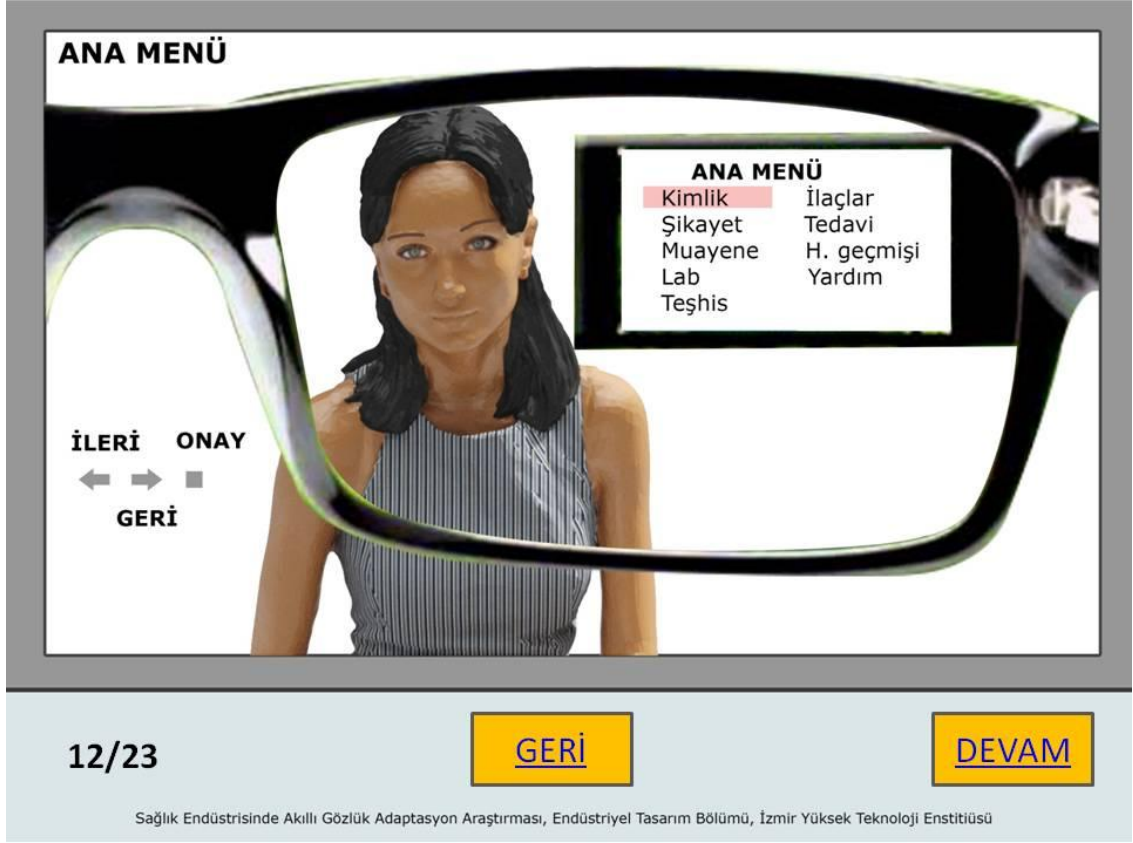


Figure B.25. Interview Presentation Slight 12: MAIN MENU



Figure B.26. Interview Presentation Slight 13: MODEL APPLICATION: VIEWING THE IDENTITY OF THE PATIENT

After the patients provide their names and identifications during registration, the doctor sees the patient's credentials on the glasses upon arriving at the examination room.



Figure B.27. Interview Presentation Slight 14: MODEL APPLICATION:
RECORDING COMPLAINTS

The patients state their complaints to the doctor, the information is firstly recorded on the smart glasses by the help of the speech-to-text application, then onto the data center.

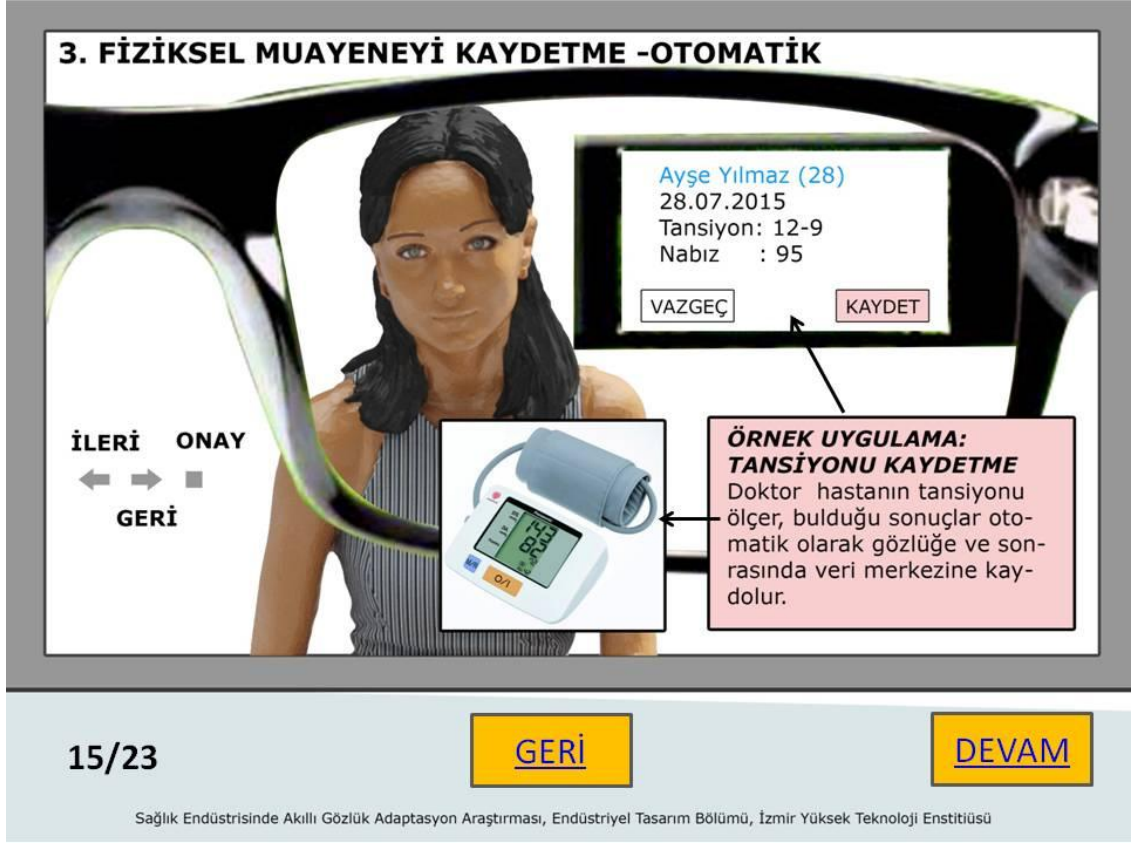


Figure B.28. Interview Presentation Slight 15: MODEL APPLICATION:
RECORDING THE BLOOD PRESSURE

The doctor gauges the patient's blood pressure, the results are automatically recorded on the glasses, then onto the data center.



Figure B.29. Interview Presentation Slight 16: MODEL APPLICATION:
RECORDING THE TONGUE DEPRESSOR FINDINGS

The doctor checks the patient's throat with the tongue depressor, records the findings on the glasses and on the data center by vocal notification.

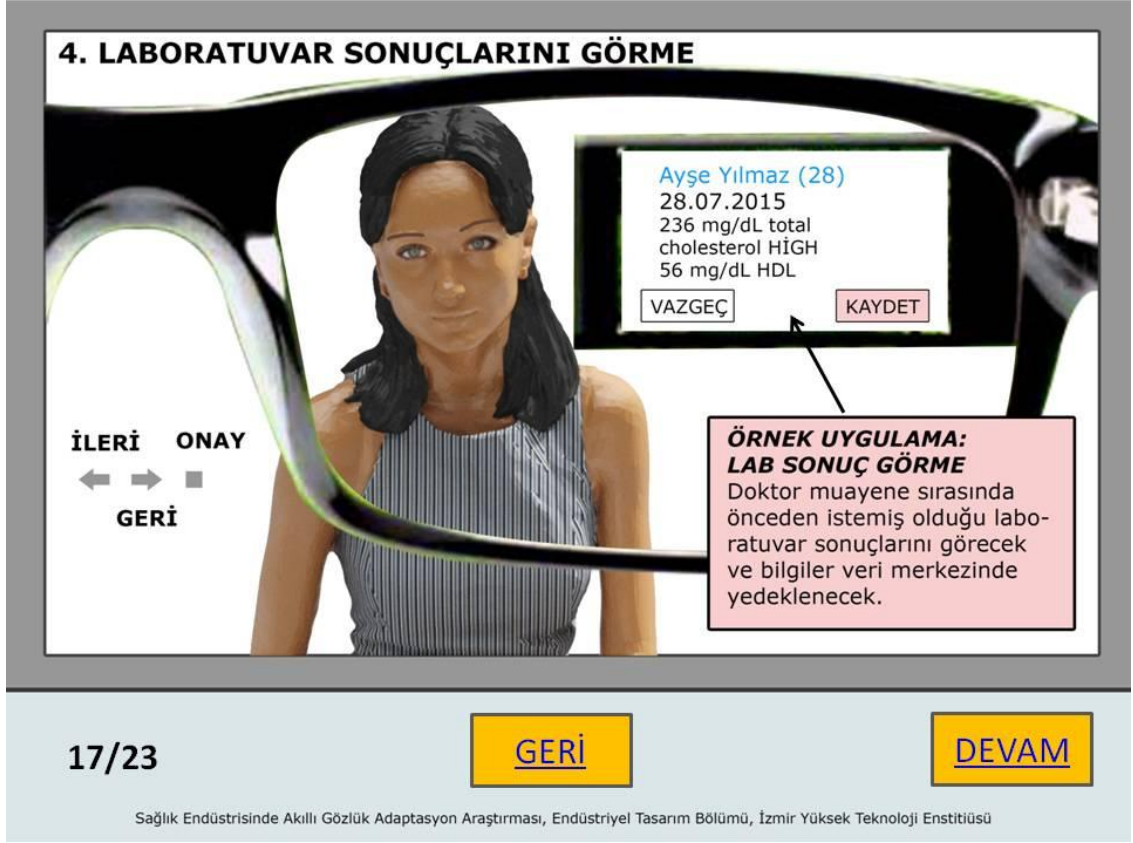


Figure B.30. Interview Presentation Slight 17: MODEL APPLICATION: VIEWING THE LAB RESULTS

During the examination, the doctor will view the lab results which he/she requested earlier, and the information will be recorded on the data center as a backup.



Figure B.31. Interview Presentation Slight 18: MODEL APPLICATION:
RECORDING THE DIAGNOSIS

The doctor evaluates all available information to diagnose the illness, and verbally records the diagnosis on the smart glasses.

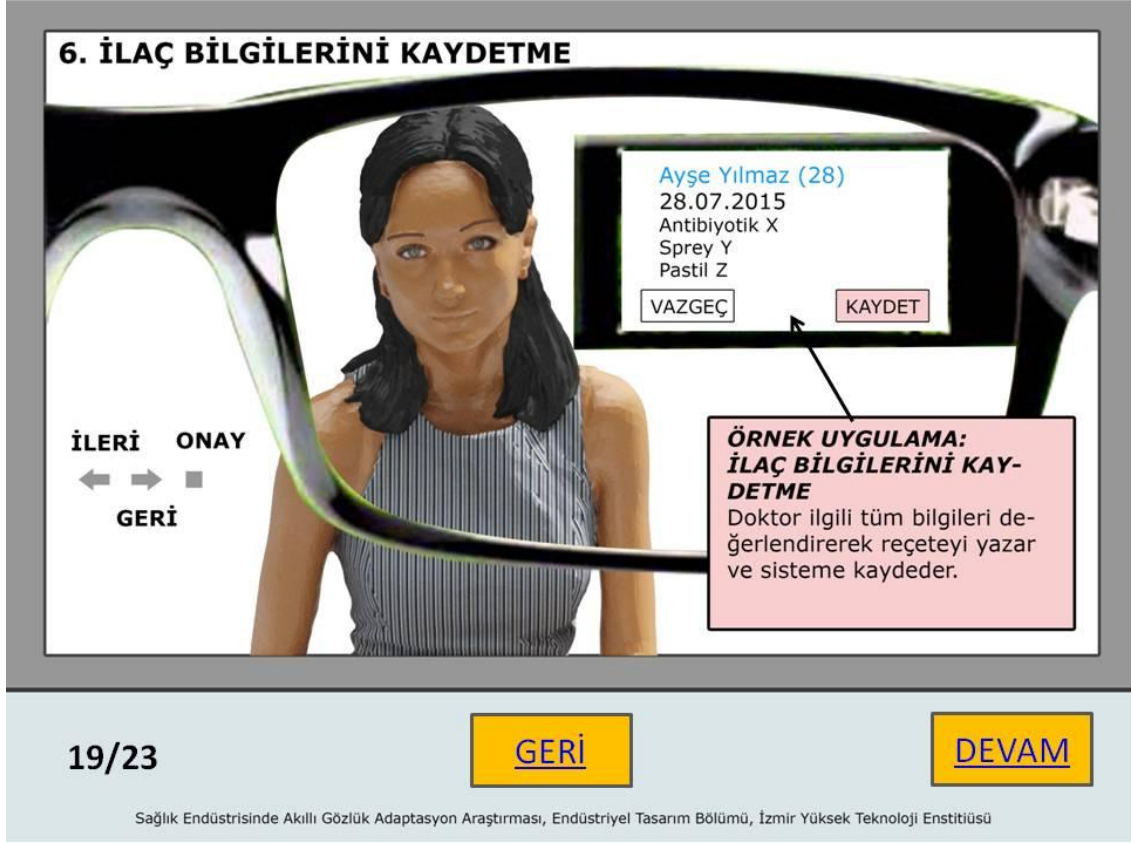


Figure B.32. Interview Presentation Slight 19: MODEL APPLICATION:
RECORDING THE DRUG INFORMATION

The doctor evaluates all relevant information, prescribes the medication and records it on the system.



Figure B.33. Interview Presentation Slight 20: MODEL APPLICATION:
RECORDING THE EXAMINATION DATA

The doctor evaluates all relevant information, writes down the points to be considered during the treatment process, and records them on the system.



Figure B.34. Interview Presentation Slight 21: MODEL APPLICATION: VIEWING THE MEDICAL HISTORY

The doctor views all illnesses and operations the patient underwent, by the help of the smart glasses.

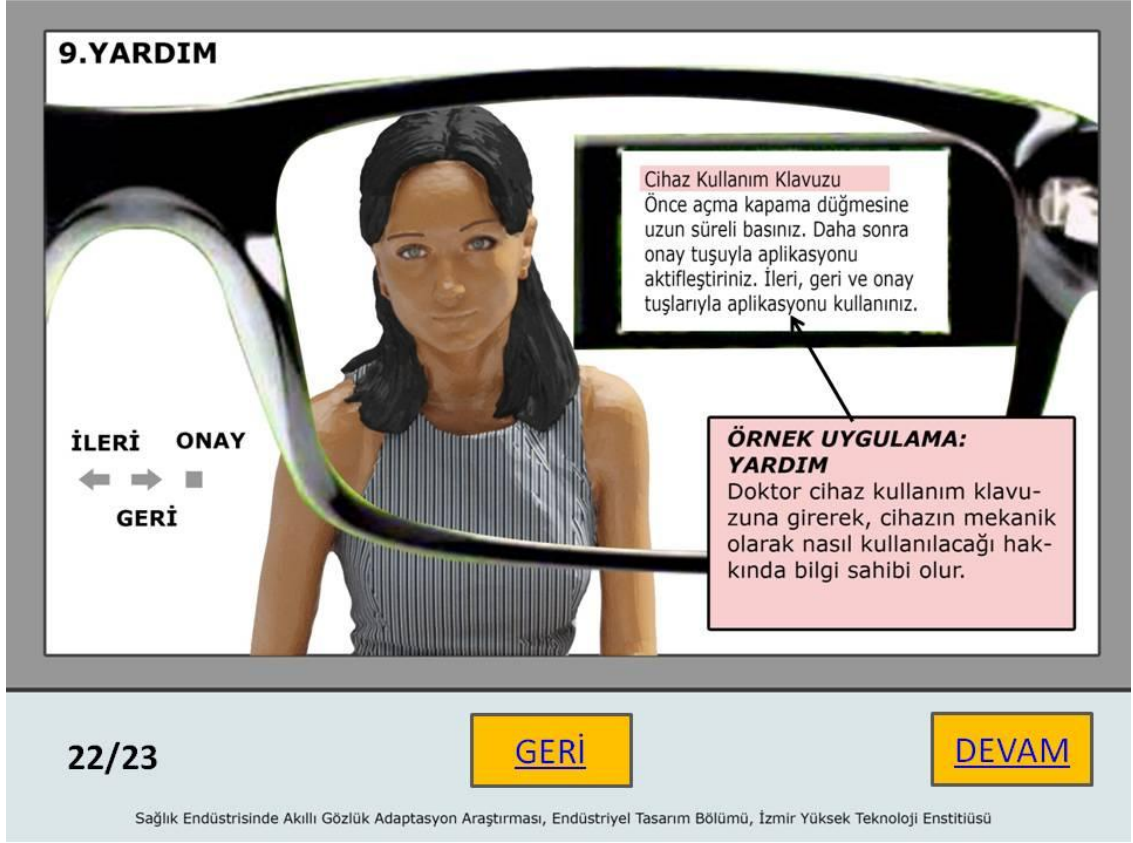


Figure B.35. Interview Presentation Slight 22: MODEL APPLICATION: HELP

The doctor accesses the device user manual and gains knowledge on how to mechanically operate the device.

VUZIX M 100 KULLANIM

1.Ön Düğme: Kısa basarsanız= İLERİ
Uzun basarsanız= STANDART MENU

KAMERA

2.Merkez Düğme: Kısa basarsanız= GERİ
Uzun basarsanız= VUZIX MENU



EKRAN

3.Arka Düğme:
Kısa basarsanız= SEÇME
Uzun basarsanız= GERİ

4.Açma/Kapama Düğmesi:
Kısa basarsanız= UYKU MODU
Uzun basarsanız= KAPATMA-UÇAK MODU
10 sn den uzun basarsanız=TAMAMEN KAPATMA

KULAKLIK

23/23

SON

Figure B.36. Interview Presentation Slight 23: THE END

B.7. TRANSCRIPTS OF DOCTORS

B.7.1. Transcript 1

Yaş aralığı: 50-60

Uzmanlık: Aile Hekimi

Tarih, başlangıç-bitiş süresi: 11.08.2015 15.45-16.45

Cinsiyet:Erkek

"Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?"

Hastanın verilerini girmek sıkıntılı oluyor. Çok hasta olunca zor oluyor.

1-Bu ürünü ön görülen amaçla kullanır mısınız?

Ahşırsak kullanılır. Faydası olur çok. Ekran sistemi düzenli olursa kullanabilirim.

2-Üründe beğendiğiniz özellikler neler?

Kayıt özelliğini beğendim.Hastayla daha rahat kontakt kurulabilir. İşimizi azaltabilir.

3-Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Ekranı ayarlamak zor. Ekranı sürekli kaçırıyor. Yasal olarak dışarıdan sekreterlik alımı planlanabilir. Sağlık personeli olursa sorun olmaması lazım.

4- Sizce doktorlar bu ürünü kullanır mı? Neden?

Bu haliyle biraz zor. Geliştirilmesi gerekiyor.

5- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

Sağlar bence. Gözümüze sabit bir ortam yaratması lazım. Hareketi küçük.

Bütün konuşmayı değil de sadece benim söylediklerimi kaydederse daha verimli olur.

6-Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Yok. Karşılayamaz.

7-Bu ürüne ne kadar ödeme yaparsınız?

\$1000 verebilirim.

8-Bu ürünü başka hangi konularda kullanabilirsiniz?

Küçük operasyonlarda o anda görmek istediğiniz bir şeyin anatomisini görebilirsiniz.

9-Başka eklemek istediğiniz bir şey var mı?

Direk sözleri kaydetse iyi olur. Öksürük, bulantı var. Mesela bu belirtilerin kodları olabilir. Gözlüğe sadece kodu söylersin. Zaten çoğu benzer nitelikte hasta geliyor. %90 aynı oluyor. %10 için farklı çalışırsın.

Kumanda aleti faydalı olabilir.

Kullandığımız sistem, yazılım Element AHBS. (Sistem doktorla birlikte 7-8 k. incelendi. Doktor kullanımını anlattı.)

En çok şikayet ve bulgular üzerinde duruyoruz. O gün çok kalabalık ise bu verileri giremiyoruz. Tam hakkıyla bu verileri girmemiz yarım saat alır. Ancak 15 hasta bakılabilir bu şekilde.

(Augmedix firmasının çalışma prensibi anlatıldı. Fikri soruldu.)
O çok güzel bir şey. Onlar bilgileri sisteme girerse güzel olur. İyi bir sistem.
Hemşireler sadece bize yardımcı olmuyor. Onların kendi görevleri de var.

B.7.2. Transcript 2

Yaş aralığı: 40-50

Uzmanlık: Aile Hekimi

Mekan: ASM

Tarih, başlangıç-bitiş süresi: 12.08.2015 14.45-15.30

Cinsiyet: Erkek

Gözlem:

Taçla ürünü kullanamadı. Hiç beğenmedi. Ürünü gözlükle kullandı. Onun aparatlarının kurulumunu daha tolere edilebilir buldu.

İlk düşünceler:

(Augmedix anlatıldı.) Bilgileri başkasına doldurtmak sıkıntılı olur. Program kullanmayı tercih ederiz.

Soru: Hastayla ilgili bir konuda araştırma yapabilecek miyiz?

Kulaklık kulağından düştü.

Ses zaman kazandırır.

Güvenli gelmedi. Hareket kabiliyetimi engelledi. Hasta ile iletişimimi engeller. Net değil. Ergonomik sıkıntıları var. Şuan bilgisayar ekranı daha iyi. Günde 80-100 hasta geliyor. O sayfadan bu sayfaya geçmek zor.

Ses kaydı ile görmek lazım.

Aile hekimliğinde iş yükü çok fazla. Element AHBS programını kullanıyoruz. Programda serileştik.

Elimiz ona alıştı. Entegre olursa daha iyi olur.

Belki bu üründe sesi yazıya çeviren program kullanılırsa, gündüz hasta bakmaya daha çok vaktimiz olur.

Akşam da son düzeltmeleri yapabiliriz.

Düğmeler yorucu. Herşey komutla olmalı.

Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?

İş yoğunluğu, zaman darlığı, iş yükü fazlalığı. 3-4 dk da bir hasta bakmamız gerekiyor. 20 yıllık doktorum. Eskiden hastanın yüzüne bakıyorduk. Şimdi ekrana bakıyoruz.

1-Bu ürünü ön görülen amaçla kullanır mısınız?

Geliştikten sonra. Sadece sesle kullanım olabilir.

2-Üründe beğendiğiniz özellikler neler?

Hastayla konuşurken aynı anda verileri görmek. Başka yere bakma ihtiyacı olmaması.

3-Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Çok iyi sabitlenmiyor. Tam oturmuyor. Göz hizası ayarlaması çok zor. Ekran küçük. Küçük bir alanı görmek zor. Düğmeleri manipüle ederken bile gözden kayıyor. (Sunumla ilgili) Her aktivite için yeni bir sayfa açılması zaman kaybı.

4- Sizce doktorlar bu ürünü kullanır mı? Neden?

Geliştirildikten sonra zaman kazanma amaçlı kullanılabilir. Muayene sırasında veri girişi unutulabiliyor. Bu ürünle, verileri tam olarak girmiş olursunuz. Bu da ciddi bir avantaj sağlar.

5- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

Ses komutu ile çalışır ve ekran göze göre sabitlenirse yarar sağlayabilir.

Element AHBS sistemiyle de entegre çalışması gerekiyor. Kablosuz internet bağlantısı olabilir.

Şuan bir sistemimiz var. Hasta sıra alınca biz de ekranda görüyoruz. Benzer bir sistem olabilir.

6-Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Uygun programla alınabilir ama hastayla ilişkide sıkıntı yaratır. Çok sıcak bakmam.

7-Bu ürüne ne kadar ödeme yaparsınız?

Şu haliyle işime yaramıyor. O yüzden 100TL diyebilirim. Sisteme entegre olunca bilmiyorum. Yatırdığım paranın geri dönüşü olmalı. Belirli bir fayda sağlamalı. Belki özelde çalışan hekimler için daha faydalı olabilir. Fiyat, kullanılabilirlik arasında bir ilişki olmalı.

8-Bu ürünü başka hangi konularda kullanabilirsiniz?

Bilgisayar oyunlarında kullanılabilir. Ses ve komutlarla devrim yapabilir. Hareketsiz obez nesil yetişiyor. Sürekli bilgisayar başındalar. Gözlükle ve el kol hareketleriyle oyun oynarlarsa belki obeziteye bir çözüm olabilir. İki gözde de ekran olmalı.

Ameliyatlarda daha önceki ameliyatlara izlenebilir. Ameliyat sırasında aynı anda sesli komutla başka hekime danışılabilir. Bölüm şefi ameliyathaneye inmeden müdahale edebilir. Cerrahi alanda çok yararlı olabilir. Zoom özelliği olabilir. Bu özellik ince cerrahide fark yaratır.

9-Başka eklemek istediğiniz bir şey var mı?

Sesle komut kesin olmalı. Büyüteç olabilir. 10 kat büyüyebilir. Göze batan bir şey çekip alınabilir. Işık verebilir. Ameliyathanelerde ışık tutuyoruz. Kendi ışığını yaysa iyi olabilir. Burada ufak müdahaleler yapıyoruz. Acil müdahalelerde bulunabiliyoruz. Dikiş atıyoruz.

B.7.3. Transcript 3

Yaş Aralığı:40-45

Uzmanlık: Pratisyen

Mekan: Sigara Bırakma Polikliniği

Tarih, başlangıç-bitiş süresi: 19.08.2015 16.10-16.40

Cinsiyet: Kadın

1- Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?

Yardım sağlık personeli edinilmesi. Hemşire ve sekreter sayısı çok az. Her işi kendimiz yapmak durumunda kalıyoruz. Memurumuz yok. İkincisi her işe bakmamız gerekiyor. Sigara bırakma, aile planlaması, obezite, askerlik muayenesi... her işi yapmamız isteniyor. Sürekli aynı işi yapsak daha koordine, daha uzmanlaş ılır. Böyle yıllardır başkası yapmış ama izne ayrılmış, başka yerine verecek

kimse yok. Pazartesi bana geldi.Bana böyle bir iş geleceği de söylenmedi.Askerlik kodlarından haberim yok.Teşhisten sonra kod yazın deyip geri gönderiyorlar. Başka başka iş yükleri mevcut.

2-Bu ürünü ön görülen amaçla kullanır mısınız?

Evet kullanırız.

3-Üründe beğendiğiniz özellikler neler?

Bu üründe beğendiğim özellik diğer sistemlerle senkronize ya da organize olabilmesi. Laboratuara ya da kayıtlarımıza bağlanabiliyor olması. Sesli komutla çalışıyor olması.

Kayıt özelliğinin olması güzel. Envanterleri kaydedebiliyor olması güzel. Bilgilere ulaşabiliyor olması iyi.

4-Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Ergonomik olmadığını düşünüyorum. Ekran uygun değil.

Çok ergonomik bulmadık. O ekranı görmek zor. Gözlük kullanmayanlar için kart şeklinde olabilir.Yakaya takılan olabilir, yakada da olabilir. Vücut teması az olursa daha iyi olabilir.

5- Sizce doktorlar bu ürünü kullanır mı? Neden?

Kullanırlar. İşlerini kolaylaştırdığı için.

6- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

İşte diğer sistemlere uyum sağlamalı. Verilere kolay ulaşabilmeli. Sesli komut almalı. Dokunmatik de olabilir. Kayıt özelliğinin olması güzel. Kayıt özelliği en önemli özelliği bence.

7-Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Alabiliriz. Ama almak istemeyiz. Çünkü bu mesleki bir şey. Akıllı telefonu yanımda taşıyorum. Mesleki işleri yanımda taşımak istemem.

8-Bu ürüne ne kadar ödeme yaparsınız?

Kurumsal olsun. Kurum sağlasın. Ödeme yapmak istemem. Tıbbi aletlerin hepsi çok pahalı aletler. Biz satın almaya kalkarsak bütçemiz yetmez.

9-Bu ürünü başka hangi konularda kullanabilirsiniz?

Eğitim materyali olarak kullanabiliriz.

Okullarda aşılarda kullanılabilir.

Çevre sağlığı denetimlerine çıkılıyor. Orada mesela. İşe yarayabilir.

10-Başka eklemek istediğiniz bir şey var mı?

İşimizin zorlukları diyoruz ya. Randevulu çalışıyoruz biz. Bekleyen kişinin randevusu yok mesela.

Geliyor ama beklemek de istemiyor. İnsan faktörü çok önemli. İsteddiği zaman geliyor randevusunu kaçırıyor ama geldiğinde beklemek istemiyor. Yani insani şeyler çok var. Teknolojik destek gerekiyor.

Bu bilgileri girmem gerekiyor ya da hemşirenin girmesi gerekiyor. Ama hemşire yok. Tasarruf etmek için hemşire vermiyorlar. Hem teknolojik zorluk var hem de insani faktörler çok fazla.

Notlar: Birilerinin hasta görüşmesini eş zamanlı aktarması yerine , **sesten yazıya** programıyla yazıya dökülmesini tercih ederiz. Böylelikle hata payı daha az olur. Zaten biri olsa bu alete gerek kalmaz.

B.7.4. Transcript 4

Yaş Aralığı:45

Uzmanlık:Pretisyen Hekim

Mekan: AÇSAP

Tarih, başlangıç-bitiş süresi:19.08.2015 16.10-16.40

Cinsiyet: Kadın

1-Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?

İş yoğunluğu, yardımcı sağlık personeli sayısı yetersiz.

2-Bu ürünü ön görülen amaçla kullanır mısınız?

Tabii ki.

3-Üründe beğendiğiniz özellikler neler?

Hastanın bilgilerine kolayca ulaşabilmek güzel. Ses özelliği güzel. Başka beğendiğim özellik kolaylık sağlaması. Sesle kullanılsa daha iyi olur.

4-Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Daha ergonomik olabilir. Gözlüğe uyum sağlaması daha iyi olacaktır.

Ben gözlük kullanıyorum. Benim gözlüğüme uyum sağlasaydı hemen daha iyi olurdu. Gözlük kullananlar için illa ki gözlükle kullanımı zor.

5- Sizce doktorlar bu ürünü kullanır mı? Neden?

Kullanırlar. İşlerine yarar. Çok kısa sürede kayıt yapıyor. O yönden avantajlı.

6- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

Kullanırsak sağlar. Ama değişikliklere ihtiyaç var. Her türlü gözlüğe uyum sağlarsa daha iyi olur. Daha hafif olabilir. Şeffaf olmasını isterim.

7-Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Kayıt yapabilir anlamında mı? Görüntü alamaz. Aynı etkiyi cep telefonundan alamayız.

8-Bu ürüne ne kadar ödeme yaparsınız?

Kurumsal olsun. Kurum sağlasın. Ödeme yapmak istemem.

9-Bu ürünü başka hangi konularda kullanabilirsiniz?

Eğitim veriyoruz. Gebe eğitimleri sırasında kullanabilir. Sahada kullanılabilir. Saha çalışmalarında.Çok kolaylık sağlar. Saha eğitimlerinde.

10-Başka eklemek istediğiniz bir şey var mı?

Yok.

Notlar: Birilerinin hasta görüşmesini eş zamanlı aktarması yerine , **sesten yazıya** programıyla yazıya dökülmesini tercih ederiz. Böylelikle hata payı daha az olur. Zaten biri olsa bu alete gerek kalmaz.

B.7.5. Transcript 5

Yaş Aralığı:45

Uzmanlık:Aile Hekimliği

Mekan: ASM

Tarih, başlangıç-bitiş süresi:21.08.2015 10.15-11.00

Cinsiyet: Erkek

1- Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?

İş yükü, evrak dökümantasyon sorunları mevcut. Hastanın geçmiş hikayesi, geçmiş muayenelerini, geçirdiği hastalıkları öğrenebilme sorunları oluyor. Nöbet ve özlük sorunları da var. Sorunlar çok.

2- Bu ürünü ön görülen amaçla kullanır mısınız?

Kullanırız. Hasta muayenesi ile ilgili kullanırız.

3- Üründe beğendiğiniz özellikler neler?

Hasta ile görüşmeyi bölmüyor. Kayıt için, kaydetmek için, yazmak için.

4- Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Yakını görme problemi olanlar için zor. Ekran belki biraz büyütülebilir. İkinci ekran takılabilir. Çift ekranlı olarak veya tek ekranlı olarak kullanılabilir. Öyle bir opsiyon olabilir. **(Tuşları rahat kullanabildiniz mi?)**

Valla kullanacağım gibi görünüyor. Herhalde biraz zaman alacak. Her şeyi öğrenmesi biraz zaman alır ya. En azından ergonomisi rahat. Ulaşması rahat.

Belki bilgisayara klavyesinden de kumanda edilebilme imkanı konabilir. Ya da uzaktan kumanda ile de olabilir. Ya da aynı görüntüleri bilgisayar monitöründe de görme imkanı olabilir.

(Sesle kullanır mısınız?)

Sesli olarak da kullanılabilir. İngilizce de olabilir.

5- Sizce doktorlar bu ürünü kullanır mı? Neden?

Kullanırlar. Her şeyi kolaylaştırdığı için, hasta muayenesi için.

6- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

Sağlar. Tabi geliştirmede sınır yok. EKG kayıtları, tomografi kayıtları, film kayıtları görünebilir.

(Ağır mıydı?)

Yok değildi. Ağır değildi.

(Şeffaf olmasını ister misiniz?)

Değişik renklerde olursa daha iyi olur.

7- Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Alabiliriz herhalde bilemiyorum. Olabilir.

8- Bu ürüne ne kadar ödeme yaparsınız?

Piyasa koşullarına göre ödeme yaparım. 1 laptop ücreti kadar ödeyebilirim.

9- Bu ürünü başka hangi konularda kullanabilirsiniz?

Bu kullandıkça, öğrendikçe cevaplanacak bir soru.

(Kayıt özelliğini düşünerek cevaplayabilirsiniz.)

Hobi alanında kullanılabilir. Spor yaparken kullanılabilir. Yemek yaparken tarif izlenebilir.

10- Başka eklemek istediğiniz bir şey var mı?

Adli olaylar için caydırıcı olabilir. Bizde hasta kaydı yapılmıyor.

Güvenlik amaçlı da kullanılabilir. Kayıtların kanıt olarak kabul edilip edilmemesi durumu var.

(Kaydedilen datalar sestem yazıya programıyla mı yoksa başka biri tarafından mı (eş zamanlı olarak) yazıya dökülsün?)

Yok datayı başkası yazmasın. Kayıtlar programla yazıya dökülsün. Sekreter olduktan sonra faydası yok ki.

Notlar:

Herhalde önce özel hastaneler alırlar.

Gözün gördüğünü, aynı şeyi kaydediyor. Kamera,vs, başka açıdan kaydediyor ama bu ürün gözün gördüğü açıdan kaydediyor.

Ya da otoskoplara kendimi muayene edebilirim. Doktor kendi kendini muayene edebilir.

B.7.6. Transcript 6

Yaş Aralığı:30-40

Uzmanlık:Aile Hekimliği

Mekan: ASM

Tarih, başlangıç-bitiş süresi: 21.08.2015 11.00-11.15

Cinsiyet: Kadın

1-Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?

-

(Tansiyon ölçüyor mu?)

Yok. Tansiyon cihazıyla ölçüp bu gözlüğe gönderebilirsiniz. Laboratuvar bilgilerini de görebiliyorsunuz.

2- Bu ürünü ön görülen amaçla kullanır mısınız?

Evet. Kullanabilirim.

3-Üründe beğendiğiniz özellikler neler?

Laboratuvarı getirmesi, kolaylaştırması işleri

(Hasta, doktor ilişkisini bozar mı?)

Yok, bozmaz.

(Tuşların yeri uygun mu?)

Uygun, kontrol edilebiliyor.

4- Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Kaba ve erkeksi. Bayanlar için biraz daha şekilli, estetik olması lazım.

(Şeffaf olsun mu?)

Olabilir.

5- Sizce doktorlar bu ürünü kullanır mı? Neden?

İşlerini kolaylaştırdığı için kullanılabilir.

6- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

Bizim işimizde sağlamaz. Çünkü bizde röntgen yok. Laboratuvarı olan dahiliye gibi bölümlerde kullanılabilir.

7- Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Yok alınmaz.

8- Bu ürüne ne kadar ödeme yaparsınız?

-

9- Bu ürünü başka hangi konularda kullanabilirsiniz?

Başka bir konuda kullanmayız.

10- Başka eklemek istediğiniz bir şey var mı?

-

(Kaydedilen datalar sesten yazıya programıyla mı yoksa başka biri tarafından mı (eş zamanlı olarak) yazıya dökülsün?)

Yok. Programla.

B.7.7. Transcript 7

Yaş Aralığı: 40-45

Uzmanlık: Pratisyen Aile Hekimi

Mekan: ASM

Tarih, başlangıç-bitiş süresi:26.08.2015 14.20-15.00

Cinsiyet:Kadın

1- Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?

Çevre ve iç yapının daha uygun olduğu mekanlarda çalışmıyoruz. İnsanlar hekimlere saygılı değil. Bizler bu işi sadece görevimiz olduğu için yapmıyoruz. Çağ ilerliyor ama bizler yerimizde sayıyoruz. Zaman zaman yeniliklerin de tanıtıldığı eğitim toplantıları almamız gerekiyor.

Ön konuşmalar:

(TAÇLA DENEDİ)

Gözlük herhangi bir gözlük olabiliyor mu?

Herhangi bir gözlüğe takılabiliyor.

(SESLİ KULLANIM TANITILİYOR.)

Gözlüksüz görebiliyor musun?

(TANITIM YAPILDI)

Görme problemi olan insanlar için sıkıntılı gibi. Daha geniş bir gözlük olabilir.

(GÖZLÜKLE DENEDİ)

Ekran daha büyük yapılabilir. Ekran bu bölümde olacak değil mi?

Değişebilir.

Pratiklik açısından güzel bir şey.

5 yıla kadar bizlere gelebilir belki.

(SESLE KOMUT DENEDİ. BAŞARILI OLMADI)

Hastayla bütün görüşmemi kayıt mı edecek? Önemli şeyleri seçip kaydetmesi gerekli.

Kaydedecek.

Önemli şeyleri seçip kaydetmesi gerekli.

Programla yazıya dökülür. Akşam siz onun önemsiz bölümlerini çıkarırsınız. Çok kalabalık olduğunda her şeyi kaydedemiyorsunuz.

Gün sonunda fazla olan bilgileri silebiliriz. Çok konuşuyoruz. Beslenmeden tut her şeyi anlattığım için veri fazlalığı olur.

2- Bu ürünü ön görülen amaçla kullanır mısınız?

Kullanırım.

3- Üründe beğendiğiniz özellikler neler?

Pratik olması. Hasta verilerine çabucak ulaşabilmek. Ergonomik.

(Tuşların yerini beğendiniz mi?)

Onlar da pratik.

(Tasarımı hakkında ne düşünüyorsunuz?)

Ekranın daha geniş olsun isteyebilirim. Görmem gerekiyor.

4- Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Ekranı tam net belki ben ayarlayamadım.

Üründe üç pivot var. O noktalardan ayarlıyorsunuz.

Kendi yüzüme göre ayarlayabiliyorum yani.

5- Sizce doktorlar bu ürünü kullanır mı? Neden?

Yoğun poliklinik ortamında bilgilere daha çabuk ulaşmak için kullanılabilir. Hastayı görür görmez temasa geçebilirsin bu şekilde.

6- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

Sağlar. Zamandan fayda sağlar. Kişiye özel olabilir. Yüze daha rahat oturması için. Öyle bir şey yapılabilir. Daha ergonomik olabilir. Şeffaf olabilir, olmayabilir.

7- Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Bu daha iyi gibi geldi bana. Çünkü o zaman kamera neredeyse oraya yönelmen gerekir. Çünkü direk hastayla yüz yüzesin. Kameraya göre hareket etmiş olacaksın. Bu şekilde kamera sana göre hareket ediyor.

8- Bu ürüne ne kadar ödeme yaparsınız?

Devlet ödemeli. Kurumsal olmalı.

Buradaki cihazların hepsini biz alıyoruz. Steteskopu da. Mobilyalar, vs, her şey bize ait. Maaşın içinde bu harcamalar da var.

9- Bu ürünü başka hangi konularda kullanabilirsiniz?

Ameliyatlar olabilir. Mesela bir toplantıya girdiğinde, toplantıyı kaydedebilir.

Halk sağlığı eğitimleri oluyor. Belki orada yanımızda götürüp kullanabiliriz.

Kızımın gösterilerini kaydedebilirim.

(Kaydedilen datalar sestem yazıya programıyla mı yoksa başka biri tarafından mı (eş zamanlı olarak) yazıya dökülsün?)

Sestem yazıya programıyla kaydolduktan sonra biz düzeltsek bilgi fazlalığı olmaz.

10- Başka eklemek istediğiniz bir şey var mı?

Yok.

(Memnun musunuz, değil misiniz?)

Memnunum.

B.7.8. Transcript 8

Yaş Aralığı:40-45

Uzmanlık:Aile Hekimi

Mekan: ASM

Tarih, başlangıç-bitiş süresi: 27.08.2015 11.50-13.00

Cinsiyet:Erkek

TANITIM+VIDEO

Ön konuşma:

(Hasta görüşmelerinin başka bir ülkede farklı bir süreci olabilir mi?)

Öykü alma dünyanın her yerinde aynıdır. Sadece farklı milletlerin öyküleri farklı olabilir ama o da ırka bağlı, jeolojik etkenlere bağlı değişiklikler. Kesinlikle etkilemez. Öyle bir algınız olmasın.

Mesela ben fotoğraf çekmesini isterim. Çekiyor dur herhalde.

(Çekiyor.)

İstedğim şeylerle karşılaştırmasını isteyebilirim.

Yeni başlayan birisi için, sıradan birisi için bile bazı şeyler doğru olabilir.

Mesela kulağının içine bakıyorum hastanın, çok istediğim bir şeydir. Oteoskop denilen bir cihaz var.

Onunla fotoğraf çekmek isterim. Ya da boğazına bakıyorum. Onun fotoğrafını çekmek isterim.

Oteoskopta kamera olmasını isterim.

Akıllı gözlük, bu kamerayla, soğuk ışık kaynaklarıyla, endoskopiyle bağlantılı çalışacak.

2- Bu ürünü ön görülen amaçla kullanır mısınız?

Evet. Kesinlikle. Çok faydalı olur öyle bir şey.

3- Üründe beğendiğiniz özellikler neler?

Bir kere insan beyninden daha fazla kaydedebiliyor. Bizden daha fazla bir hafızası var. Ayrıca dokümantasyonu kolaylaştırıp, bir de standardize etmiş oluyor. Şimdi farklı farklı iki doktor mesela bir

kısaltma yapar birisi, öteki anlamaz. Başka hastanelerde başka kısaltma geçerlidir. Fransa'daki vital bulguları farklı şekilde yazar. Bizde tansiyon ta şeklinde yazılır. Bunları standartize etmesi çok önemli. Bir de ne olabilir. Bizden daha iyi görebilir. Şöyle söyleyeyim. Sonuçta bir makine ama, ben hastayı gördüğümde karıştırabiliyorum.

(Ekranla ilgili bir sıkıntı var sanırım.)

O sıkıntı değil. Onlar aşılır. Teknolojiyle aşılabilecek şeyler olduğunu düşünüyorum. Kaç GB mesela. İşlemcisi nasıl?

4- Üründe beğenmediğiniz veya zorlandığınız özellikler neler?

Dediğiniz gibi bu ergonomik özellikleri. Ama bunun da çok çabuk aşılabileceğini düşünüyorum. Sonuçta insanın yönetmesi gereken bir şey çünkü biz bunu şeylerde gördük. Birçok tıbbi alet, gözlük anlamında söylemiyorum. Mesela EKG cihazı ritmi ölçer, kendine göre bir değerlendirme yapar ama hep yanlışır onun değerlendirmesi. Normal seviyede der. Bazı şeyleri göremeyebiliyor. Çünkü her şey moda moda olmayabiliyor. Çok multifaktoriyellik var. Google'dan bir şey aramak kadar basit değil. 2+2 bazen 4 olmayabiliyor. O yüzden her zaman güvenmem. O bir kayıtçı. Bir araç. Ona tanı koydurmaya çalışmamak lazım.

Beğenmediğim özellik biraz daha hafif olabilir. Gözlük şeklinde olması şart mı? **(Değil).**

(Burada TAÇ ek parçası takılarak tekrar akıllı cihaz denendi.)

USB girişi ile şarj oluyor. Ek bir şarjı var.

Bana bu hali daha iyimim gibi geldi.

Ürün tuşlar tanıtıldı.

(Tıp öğrencisi) Kol saati şeklinde bir yönetimi olsa.

Kumanda şeklinde olabilir mi?

Kumanda şeklinde çok kolay olur, rahat olur.

Ameliyatta bile kullanılır. Ben gözlüğe göre bunu daha rahat buldum.

5- Sizce doktorlar bu ürünü kullanır mı? Neden?

Tabii ki kullanırlar. Doktorlar teknolojiye açıktırlar, öyle olmalıdırlar. Kullanmazlarsa işlerinden olurlar. 10-15 sene sonra bunu kullanmayan doktor kalmayacak bence. Eski doktorlar tabii ki kullanmayabilir, ben de belki kullanamam ama çok güzel bir cihaz bence.

(Ergonomi problemini yok sayarsak)

Şuanda ekstra bir şey vermiyor. Bilgisayarda bunların hepsini hesaplayabilirim. Ellerimin boştta kalması şuanda bir şey ifade etmiyor. Küçük bir telefonla da bunların hepsini yapabilirim. Daha nazif dallarda, nazif dediğimiz daha cerrahi dallarda, ya da elleri doluyken doktorun, işte cerrahi dalında daha bir işe yarar gibi geliyor. Bilgisayarı taşıyamazsınız çünkü oraya. Bizim gibi klinisyenlerde, dahili birimler gibi, aile hekimliği için lüks bence.

6- Ürünün size işinizde bir yarar sağlar mı? Yeterli değilse geliştirme amaçlı değişiklik önerileriniz nelerdir?

Kesinlikle yarar sağlar. İşte hem hafıza açısından, az önce gösterdim ya (göz anlatım kitapçığı) ya bazı şeyleri bizde anında sadece hastayla ilgili bilgileri değil, bizim kendimizin standart bilgilerimizi de sürekli değişen yenilenen bir şey. O konuda da bize yardımcı olabilir. 20 seneye yakın hekimim. Ve bazen bilmediğim şeyler gelebiliyor. Açıyorum, yepyeni bir ilaç çıkıyor mesela. Diyor ki onu kullandım

ben. O sırada bilgisayardan araştır, kitaba bak falan. Onları da hızlandırmak mümkün. Ama en çok pratikliği sözel emirleri yerine getirmesi. O çok faydalı olur. Hasta dosyasının oluştururken, o eski laboratuvar tetkiklerinin görülmesi, bunlar güzel şeyler. Geliştirilecek çok şeyi olduğunu düşünüyorum. Şuan aklıma gelmiyor ama

(Muayene sırasında gerekli bilgileri dışarıda geniş bir ekranda mı yoksa gözlükteki ekranda mı görmek istersiniz?)

Karşıdaki ekran tabi ki çok rahat olur ama hastanın görmesini istemeyeceğim şeyler olabilir. İlla ki olur. Belki hastaya söylememeniz gereken bir şey vardır. Kötü anlamda söylemiyorum. Ameliyatta hastanın içinde bir şey kalmış da olabilir, bu da var ama yanlış olabilir.

Tıpta kullandığımız bazı aletler var. Mesela pulseoximetre. Vücuttaki nabızı ölçer. Buradan geçen kanın oksijenle doymuşluğuna bakıyor. Bu bizim için çok vital bir bulgudur. Bunu hemen gözlükle görebilmem iyi olur.

7- Bu ürünün sağladığı yararı akıllı cep telefonlarından alabilir misiniz, kıyaslar mısınız.

Bunun tek farkı ergonomisi. Başa takılır, ellerin serbest. Olabilir.

(Tıp öğrencisi) Fotoğraf çekmesi güzel.

Ben de dermatolojik hastalıklarda bazen çekiyorum. Bazen arkadaşlarıma gönderiyorum ne düşünüyorsun diye. Ortak paylaştığımız platformlar var. İlginç şeyler oluyor. Tanıdığım bir doktor bütün ameliyatlarını çekiyor. Bütün ameliyatlarını gördüm. Eskisi gibi değil ameliyatlar. Kendin bile göremiyorsun ki. Büyütmek gerekiyor.

8- Bu ürüne ne kadar ödeme yaparsınız?

1000TL veririm. Ama istediğim gibi programlanmış olacak. Şuan ki çıplak haliyle asla.

9- Bu ürünü başka hangi konularda kullanabilirsiniz?

Motosiklette çok işe yarar. Hem kamerası var, depo olarak kullanabiliyorsunuz. Arka tarafı interkom olarak da kullanabilirsiniz. Helikopterlerde falan da haritası var, derinliği de gösterir, isterseniz her şeyi yüklersin. Fish founder bile olur. Araç kullanımında bence çok faydalı olur. Her yerde bunu görebileceğimizi umuyorum.

Sadece doktorlar için değil, tüm sağlık çalışanları için. Mesela Türkiye'de artık tekrar Amerikan sistemine dönülüyor acillerde, 112'de. Artık sadece acil tıp teknisyeni duruyor. Doktorlar durmuyor. Şimdi, onlara da çok faydalı olur. Onkolog ile ilgili EKG'sini kendi kendine tanıyor ya, onun gibi, onlar kullanabilir. Yoğun bakım hemşireleri kullanabilir. Artı şimdi hasta aktarma diye bir şey var. Vizite yapıyorsun dolaşıyorsun, güzel bir şey ama servisin hemşiresine aktaracak bir şey kalmayacak. Bir hocamız şöyle derdi. "Bizde(tıpta) yazılmamış yapılmamıştır." Siz giderseniz. Mesela benden sonra Ahmet geldi. Eğer ben buraya not almadıysam yaptığım enjeksiyonu, o yapmak zorundadır. Bizde onun için çok önemlidir. Bunu hasta başında olan, serviste olan hemşire de kullanabilir, servisin doktoru da kullanabilir. Ameliyathanelerde kullanabilirsiniz ama sürekli hastane takibinde de kullanabilir. Acilde de kullanılabilir. Her yerde bunun kullanımı var.

Bizde doktor hastayı bilgilendirmiyor. Bizim en büyük sağlıktaki problemimiz bu. Biz bunu aşabilesek. Hastayı bilgilendirmiyor. Hastayı bilgilendirici foylerimiz var.

Yavaş yavaş işte. Böyle şeyler olduğunda hastaya şunu ver diye bize hatırlatabilir. Ya da hastayla ilgili değerleri o da görüyor, ben de görüyorum. Ben yapmam gereken işlemleri biliyorum ya. Sen bunun

MR'ını da çek diyebilir. Böyle bir algoritma. Tıpta her şey algoritma, böylelikle doktor hatalarını önlemeye yardım eder.

Böyle el kitapları da olabilir. Bunlar da çok işe yarıyor. Acillerde özellikle. Mesela depreme giderken böyle şeyler kullanırım yanına alırım. Basite indirgenmiş kitaplar çok önemlidir, pratikte. Mesela ben bunu gördüğümde tak tak gözümün önüne gelmesi faydalı. Kırmızı göz kitapçığını göster.

Mesela bir gebe izleme formu en basiti. Neler yapılması gerekiyor. 1., 2.,4,32. hafta farklıdır. Hatırlatabilir. Şunları şunları yaptın mı diye.

Scanner özelliği var.

Hasta dosyasını indir. Bundan her servise bir tane koysan bütün gün çalışır. Ve neler neler atlanıyordu. Bir çok yanlış da düzeltebilir.

Özel ilaçlar var. Mesela kırmızı reçeteli.2. 3. check yapabilir. Hastalarını tekrar kontrol et diye. Mesela alerjileri hatırlatır. Penisilin alerjisi mesela. Her türlü alerjiyi hatırlatır. Bir de dikkat ederiz. Şu hastalığı var mı, diye.

10- Başka eklemek istediğiniz bir şey var mı?

Gözlüksüz, hafif hali daha çok hoşuma gitti. Gerçekten her bakımdan, kamerayı şöyle ayarlıyorsun, mikrofonu zaten var. Bu aynı zamanda kişiselleştirilmiş bir cihaz olmalı bence. Telefon olarak da kullanabilmeliyim burada çalışırken. Telefon bozulur başka bir şey olur. O zaman 1000TL değil 1200TL veririm.

1- Mesleğinizle ilgili yaşadığınız sıkıntılar nelerdir?

Daha kişiselleştirilmiş olursa daha iyi olur. Mesela iki tip arkadaşlarım var. Ortası yok. Kimisi hiç akıllı telefon kullanmıyor. Haklı sebepleri var. Facebook yok, vs..Kimisi de piyasaya çıkan en iyi ürünü almaya çalışıyor. Gözlüğün çıktığı gün alacak çok kişi var.

(Tıp öğrencisi) Hasta servisinde hasta dosyaları çok kayboluyor. Biz onu çok yaşıyoruz.

Klinik anlamda, hastaların yattığı yerlerde, acil servislerde çok işe yarar. Bazı şeyleri hemen hatırlatır. Çok uçuk şeyler geliyor acile. İşte, bilmediğim bir hayvan sokmuştur. Onunla ilgili bilgiyi hemen alırsınız. Ya da başka birisi zehirlenmiştir. İlk defa görüyorsunuzdur. Mesela, bir şey içmiştir. Araştırman gerekiyor. Bu konuda çok pratik olduğunu düşünüyorum.

İşte servislerde de hasta aktarımı açısından, hastalara yapılması gereken orderları verirken doktor, yanlış duyar ya da ağzından yanlış çıkar. Bitti yani, yanlış ilaç, bitti. Tecrübeli bir hemşireyse, onlar zaten deneyimli oluyorlar, giderek. Bakar, ya doktor bey, emin misiniz? Ya yok öyle dememiştim diyerek düzeltir. Gerçekten, bu açıdan pratik olabilir bunlar.

Ayrıca daha kişiye özel olsa, ben daha çok tercih ederim.

112 ambulanslarında doktorun gitmediđi yerde, tıp teknisyeni hem doktorlar iletiřim kurarak, bunun sayesinde. Çünkü o zaman napıyorsunuz? İki kiřisiniz. Bir taraftan hastaya kalp mesajı yapıyorsunuz. Öteki zaten damar yolunu açıyor. Bu handsfree telefon dıřında, senin gözünün önüne o algoritmayı getirecek. Ben diyeceđim ki EKG ritim řu, bakacak kamerayla ritmi deđerlendirecek. Ritmi deđerlendirdi, ne yapması gerekiyor. Burada bunu yapman gerek diye söylüyor.

(Burada mobil kalp řok cihazını gösterdi.)

APPENDIX C

EXPERT FOCUS GROUP STUDY

C.1. Expert Focus Group Constructs and Definitions

Table C.1. Expert focus group constructs and definitions

	Construct (İngilizce)	Construct (Türkçe)	Açıklama
1.	eye health	Göz sağlığına uygun	Akıllı gözlüğün göz sağlığına uygun tasarlanması
2.	ease of use	Kullanım kolaylığı	Akıllı gözlüğün kolay kullanılması
3.	usefulness	Kullanışlılık	Akıllı gözlüğün kullanışlı olması
4.	ease of learning	Öğrenme kolaylığı	Akıllı gözlüğün kolay öğrenilebilmesi
5.	understandability	Anlaşılabilirlik	Akıllı gözlüğün kullanımının açık ve anlaşılabilir olması
6.	technical support	Teknik destekler	Üreticinin akıllı gözlük kullanıcılarına teknik destek sağlaması
7.	organizational support	Organizasyonel destekler	Akıllı gözlüğün kullanıldığı kurumlarda kullanıcıya destek sağlanması
8.	official endorsement	Hastanenin resmi desteği	Akıllı gözlüğün doktorlar tarafından kullanımının sağlık birimi tarafından desteklenmesi
9.	social factors	Sosyal faktörler	Akıllı gözlüğün kullanımı etkileyen sosyal faktörler (herkese uyum sağlama gibi)
10.	internal influence	İç etkiler	Kullanıcının çalıştığı kurumdaki kişiler, arkadaşlar, akrabalar, güvendiğimiz kişilerin görüşleri
11.	external influence	Dış etkiler	Kullanıcıyı etkileyen dış etkiler (gazete, mecmua, reklamlar, ünlüler, vs...)
12.	hands free	Eller boştta	Akıllı gözlüğün elleri kullanmadan kumanda edilmesi
13.	screen size	Ekran boyutu	Akıllı gözlükte hangi boyda ekran kullanılacağı
14.	touch controls	Dokunmatik kontroller	Akıllı gözlüğün dokunmatik ped kullanılarak kumanda edilmesi
15.	view of screen	Ekranın görüş açısı	Akıllı gözlüğün ekranının görüş açısı
16.	screen's ergonomic	Ekranın ergonomisi	Akıllı gözlük ekranının ergonomik olması, gözün ekrana rahatlıkla odaklanabilmesi

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Table C.1 (cont.).

17.	switch controls	Tuş kontrolleri	Akıllı gözlüğün tuşlarla kumanda edilmesi
18.	camera's ergonomic	Kameranın ergonomisi	Akıllı gözlükteki kameranın ergonomik ve esnek olarak kullanılabilmesi
19.	head fixing with screw system	Vida sistemi ile başa sabitleme	Akıllı gözlüğün vida sistemi ile başa sabitlenmesi
20.	battery life	Batarya ömrü	Akıllı gözlüğün batarya ömrü
21.	bone conduction speaker	Kemik iletimli hoparlör	Kullanıcının dışında dışarıdan çok duyulmayan hoparlör
22.	camera	Kayıt kamerası	Akıllı gözlükte video kaydeden kameranın yer alması
23.	LED flash	LED ışık	Akıllı gözlükte aydınlatma amaçlı LED ışık kullanılması
24.	memory size	Hafıza boyutu	Akıllı gözlükte hafızanın boyutu
25.	microphone	Mikrofon	Akıllı gözlükte mikrofon yer alması
26.	navigation	Navigasyon	Akıllı gözlükte özellikle ambulans için navigasyonun kullanılması
27.	quality of sound	Ses kalitesi	Akıllı gözlükteki ses sisteminin kalitesi (müzik, video, ses kayıtları, internet...)
28.	type of screen	Ekran tipi	Akıllı gözlükte yer alan ekranın tipi (şeffaf veya şeffaf olmayan)
29.	system's speed	Sistem hızı	Akıllı gözlüğün sisteminin hızı
30.	projectors	Projektör	Akıllı gözlükte projektör teknolojisinin kullanılması (Gözlük ekranındaki bilgilerin başka bir cihaza ihtiyaç duymadan belirli bir yüzeye yansıtılabilmesi)
31.	remote control	Uzaktan kumanda	Akıllı gözlüğün uzaktan kumanda ile kontrol edilmesi
32.	resolution of screen	Ekranın çözünürlük kalitesi	Akıllı gözlüğün ekranının çözünürlük seviyesi
33.	speech recognition (Speech to text program)	Ses tanıma-Sesi yazıya çevirme	Akıllı gözlüğün sesi tanıyarak, kelimeleri yazıya dönüştürmesi
34.	facial recognition	Yüz tanıma	Akıllı gözlüğün yüzü tanıması (Doktorun hastayı hızlı olarak tanımasını sağlar)
35.	voice control	Sesle kontrol	Akıllı gözlüğün sesle kumanda edilmesi
36.	gesture control	Hareketle kontrol	Akıllı gözlüğün el ve vücut hareketleriyle kumanda edilmesi
37.	wireless connectivity	İnternet bağlantısı	Akıllı gözlükte kablosuz internetin kullanılması

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Table C.1 (cont.).

38.	Zoom	Yakınlaştırma-Uzaklaştırma	Akıllı gözlükte odaklanma özelliğinin yer alması (özellikle ameliyatlarda)
39.	type of operating system	İşletim sistemi	Akıllı gözlükte kullanılan işletim sisteminin çeşidi (ios, Android)
40.	AR	Artırılmış gerçeklik	Akıllı gözlük medikal uygulamalarında artırılmış gerçekliğin kullanılması
41.	medical applications	Medikal yazılımlar	Akıllı gözlükler için yeni medikal yazılımların geliştirilmesi
42.	quality of connectivity	Bağlantı kalitesi	Akıllı gözlükteki internet bağlantısının kalitesi
43.	privacy	Gizlilik, mahremiyet	Akıllı gözlüğün hasta ve doktorun gizlilik haklarını koruyarak kullanılması
44.	cost	Maliyet	Akıllı gözlüğün kazandırdığı ekonomik getiriler
45.	heating problem	Isınma problemi	Akıllı gözlüğün ısınma probleminin olmaması
46.	readability	Ekranın okunabilirliği	Akıllı gözlüğün ekranındaki yazıların okunabilir olması
47.	security	Güvenlik	Akıllı gözlükteki bilgilerin korunması, bozulmaması
48.	safety	Güvenlik	Akıllı gözlük kullanıcıların fiziksel güvenliği
49.	time factor	Zaman faktörü	Akıllı gözlüğün medikal kullanımlar sırasında zaman kazandırması
50.	weight	Ağırlık	Akıllı gözlüğün ağırlığı
51.	sterile	Steril oluşu	Akıllı gözlüğün medikal kullanımlar sırasında steril kullanılabilmesi
52.	synchronized with the hospital's IT system	Hastanenin bilişim sistemi ile senkronize çalışması	Akıllı gözlüğün hastanenin bilişim sistemi ile senkronize çalışması
53.	practicality	Pratiklik	Akıllı gözlüğün pratik olarak kullanılabilmesi
54.	adjustability	Ayarlanabilirlik	Akıllı gözlüğün kullanıcının vücut yapısına göre ayarlanabilir olması
55.	personalization	Kişiselleştirme	Akıllı gözlüğün kişiselleştirilebilmesi
56.	appearance	Görünüm	Akıllı gözlüğün görünümü (tasarımı, şekli, formu, modası...)
57.	brand	Marka	Akıllı gözlüğün markası, markanın bilinirliği

(cont. on next page)

Table C.1 (cont.).

58.	cost, investment	Maliyet, yatırım	Akıllı gözlük için ödenecek miktar
59.	interface design	Arayüz tasarımı	Akıllı gözlüğün arayüz tasarımı (kullanıcı dostu olması, basit olması, vs...)
60.	extraverted	Dışa dönük	Akıllı gözlük kullanıcısının dışa dönük bir yapısının olması
61.	innovativeness	İnovatif, yenilikçi	Akıllı gözlük kullanıcısının inovatif, yenilikçi bir yapısının olması
62.	awareness	Farkındalık	Kullanıcının akıllı gözlüğün varlığından ve gelişmelerinden haberdar olması
63.	personal concern	Kişisel ilgi	Kullanıcının akıllı gözlük teknolojisine kişisel ilgisi
64.	self-efficacy	Öz yeterlik	Kullanıcının akıllı gözlüğü rahatlıkla kullanabilmesi
65.	anxiety	Kaygı	Kullanıcının akıllı gözlüğü kullanırken tedirgin olması
66.	risk	Risk	Akıllı gözlük kullanmanın riskli olması
67.	complexity	Karmaşıklık	Akıllı gözlüğü kullanmanın karmaşık olması
68.	enjoyment	Keyiflilik	Akıllı gözlük kullanmanın keyifli olması
69.	age	Yaş	Akıllı gözlük kullanıcısının yaşı
70.	gender	Cinsiyet	Akıllı gözlük kullanıcısının cinsiyeti
71.	income	Gelir durumu	Akıllı gözlük kullanıcısının gelir durumu
72.	expertise	Uzmanlık	Akıllı gözlük kullanıcısının uzmanlık alanı
73.	use of spectacle wearers	Daimi gözlük kullanıcısı	Kullanıcının numaralı gözlük kullanıcısı olması
74.	user of smartphone	Akıllı telefon kullanıcısı	Kullanıcının akıllı cep telefonu kullanıcısı olması
75.	ease of hands free calling	Elleri kullanmadan telefonla görüşme	Doktorun ellerini kullanmadan telefonla görüşebilmesi
76.	ease of sending email	Mail atma	Doktorun acil maillerini atabilmesi
77.	ease of telemedicine	Teletıp	Doktorun hastaya akıllı gözlükle uzaktan medikal destek verebilmesi
78.	ease of tele mentoring	Tele mentörlük	Doktorun doktora akıllı gözlükle uzaktan medikal destek verebilmesi

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Table C.1 (cont.).

79.	ease of patient doctor communication	Hasta doktor iletişimi	Hasta ile doktor iletişimini iyileştirmesi (Muayene sırasında yüz yüze görüşmeyi arttırması)
80.	ease of hands free documentation	Elleri kullanmadan belge oluşturma	Akıllı gözlüğün medikal belge oluşturmaları (Hasta görüşmeleri ve kanıtlar gibi)
81.	ease of hands free taking photos	Elleri kullanmadan fotoğraf çekme	Akıllı gözlüğün medikal verilerin elleri kullanmadan fotoğrafını çekmesi (acil vaka gibi)
82.	ease of recording medical data	Medikal bilgileri kaydetme	Akıllı gözlüğün medikal bilgileri kayıt edebilmesi (Hasta görüşmelerinin kaydı, acil vaka kayıtları)
83.	ease of health management	Sağlık yönetimi	Akıllı gözlüğün sağlık hizmetlerinde yardımcı cihaz olarak kullanılması (aktif şekilde)
84.	ease of monitoring medical data	Medikal bilgileri görüntüleme	Akıllı gözlükle medikal bilgilerin görüntülenebilmesi (Hasta kimlik, lab, röntgen sonucu, ilaç...)
85.	ease of medical education	Medikal eğitimi	Akıllı gözlüğün tıp eğitiminde aktif kullanılması
86.	ease of real time video	Gerçek zamanlı video çekme	Akıllı gözlükle gerçek zamanlı video çekilebilmesi
87.	ease of streaming video	Video yayma	Akıllı gözlükle kaydedilen medikal videoların anında internette ve tv'de yayımlanabilmesi
88.	ease of sharing medical data	Medikal bilgileri paylaşma	Akıllı gözlükle kaydedilen medikal bilgilerin ilgililerle hızlı olarak paylaşılabilmesi
89.	ease of searching medical data	Medikal bilgiliyi araştırma	Akıllı gözlük sayesinde doktorun her türlü bilgiyi anında araştırabilmesi (internet, kitap, makale)
90.	ease of facilitating diagnosis	Tanı koymayı kolaylaştırma	Akıllı gözlükle tanı koymanın ve karar vermelerin kolaylaşması
91.	ease of translating	Çeviri	Akıllı gözlükle gerekli durumlarda anında çevirinin yapılabilmesi
92.	ease of scanning	Tarama	Akıllı gözlükle her türlü barkodun taranıp okunması (lab sonucu, hasta kimlik tanıma)
93.	ease of reminding	Hatırlatma	Akıllı gözlüğün çeşitli hatırlatmalar yapması (alerji, hasta ilacı, ameliyat günü,vs...)
94.	ease of surgical education	Ameliyat eğitimi	Akıllı gözlüğün ameliyat eğitimlerinde kullanılabilir olması
95.	ease of surgery	Ameliyat	Akıllı gözlüğün ameliyatlarda kullanılabilir olması

C.2. Expert Focus Group Study Results

Table C.2. Expert focus group physicians' answers' analyses

sn	Type	Constructs	n=7 DR
1	M	ease of medical education	0,71
2	G	voice control	0,57
3	G	screen's ergonomic	0,57
4	G	battery life	0,57
5	M	ease of hands free taking photos	0,57
6	M	ease of recording medical data	0,57
7	G	system speed	0,57
8	M	ease of telementoring	0,57
9	G	heating problem	0,57
10	G	official endorsement	0,57
11	G	wireless connectivity	0,43
12	G	eye health	0,43
13	M	ease of facilitating diagnosis	0,43
14	G	weight	0,43
15	M	ease of reminding	0,43
16	M	ease of searching medical data	0,43
17	G	speech recognition (Speech to text program)	0,43
18	M	ease of monitoring medical data	0,43
19	M	ease of hands free documentation	0,43
20	G	synchronized with the hospital's system	0,43
21	G	cost, investment	0,43
22	M	ease of scanning	0,43
23	M	ease of translating	0,43
24	G	ease of use	0,29
25	G	hands free	0,29
26	G	usefulness	0,29
27	M	ease of real time video	0,29
28	M	ease of surgery (+recording)	0,29
29	G	view of screen	0,29
30	M	medical applications	0,29

DR means that doctors answered questions after watched videos about smart glasses in a medical usage. M means medical constructs, G means general constructs.

Table C.3. Expert focus group students' answers' analyses

			n=19
sn	Type	Constructs	Question-3
1	G	wireless connectivity	0,61
2	G	ease of use	0,61
3	G	voice control	0,56
4	G	screen's ergonomic	0,50
5	G	eye health	0,50
6	G	hands free	0,50
7	G	battery life	0,44
8	M	ease of hands free taking photos	0,39
9	G	interface design	0,39
10	G	portability	0,39
11	M	ease of recording medical data	0,33
12	G	system speed	0,33
13	M	ease of facilitating diagnosis	0,33
14	G	usefulness	0,33
15	G	weight	0,28
16	G	adjustability	0,28
17	M	ease of patient doctor communication	0,28
18	M	ease of sharing medical data	0,28
19	G	resolution of screen	0,28
20	M	ease of reminding	0,22
21	M	ease of searching medical data	0,22
22	G	speech recognition (Speech to text program)	0,22
23	M	ease of real time video	0,22
24	M	ease of surgery (+recording)	0,22
25	G	view of screen	0,22
26	G	memory size	0,22
27	G	Readability	0,22
28	G	appearance	0,22
29	M	ease of health management	0,22
30	M	ease of medical education	0,17

“Question 3” means that students answered questions after experienced Vuzix M100.

Table C.4. Expert focus group physicians' results

Constructs	DR1	DR2	DR3	DR4	DR5	DR6	DR7
ease of medical education		X	X	X	X	X	
voice control	X		X		X	X	
screen's ergonomic	X		X		X		X
battery life	X		X	X	X		
ease of hands free taking photos	X	X	X	X			
ease of recording medical data			X		X	X	X
system speed			X	X		X	X
ease of telementoring		X	X			X	X
heating problem			X		X	X	X
official endorsement	X		X			X	X
wireless connectivity			X		X		X
eye health			X			X	X
ease of facilitating diagnosis			X	X		X	
weight	X	X	X				
ease of reminding	X		X		X		
ease of searching medical data		X	X				X
speech recognition (Speech to text program)	X			X	X		
ease of monitoring medical data			X		X		X
ease of hands free documentation		X	X		X		
synchronized with the hospital's system	X		X	X			
cost, investment		X	X	X			
ease of scanning			X	X	X		
ease of translating		X	X			X	
ease of use			X			X	
hands free			X			X	
usefulness	X						X
ease of real time video			X		X		
ease of surgery			X		X		
view of screen			X	X			
medical applications	X		X				
privacy		X	X				
sterile			X		X		
zoom			X		X		
camera			X				X
quality of connectivity						X	X
security	X				X		
ease of streaming video		X	X				
enjoyment		X	X				
personalization			X			X	
technical support			X	X			
bone conduction speaker			X				X

(cont. on next page)

Table C.4 (cont.).

ease of learning	X		X				
head fixing with screw system	X			X			
organizational support	X		X				
self efficacy			X	X			
use of spectacle wearers		X	X				
safety			X				X
adjustability		X					
ease of patient doctor communication				X			
ease of sharing medical data			X				
resolution of screen			X				
memory size			X				
readability				X			
ease of sending email		X					
ease of telemedicine			X				
gesture control			X				
practicality			X				
expertise						X	
time factor			X				
ease of surgical education			X				
innovativeness		X					
ease of hands free calling		X					
social factors			X				
user of smartphone		X					
interface design							
portability							
appearance							
ease of health management							
microphone							
mobility							
camera's ergonomic							
facial recognition							
quality of sound							
screen size							
switch controls							
type of screen							
anxiety							
AR							
risk							
type of operating system							
understandability							
age							
awareness							

(cont. on next page)

Table C.4 (cont.).

brand							
complexity							
cost							
extraverted							
gender							
head mounted display							
income							
internal influence							
LED flash							
navigation							
Personal Concern							
projectors							
remote control							
touch controls							
external influence							

APPENDIX D

PHYSICIANS' SMART GLASSES USAGE SCENARIOS

D.1. Physicians' Examination Application

A physicians' reason for using this product is to quickly access the patient's information during the examination. During the examinations, physicians compile and filter a lot of information and knowledge relying on their experiences, and they instruct the patient accordingly. During this process, they review the patient's complaints, lab results and medical history. They perform physical examinations when necessary. Finally, they diagnose the patient and decide for outpatient treatment, inpatient treatment, drug therapy, etc. and inform their patients in writing with a prescription, regarding this decision.

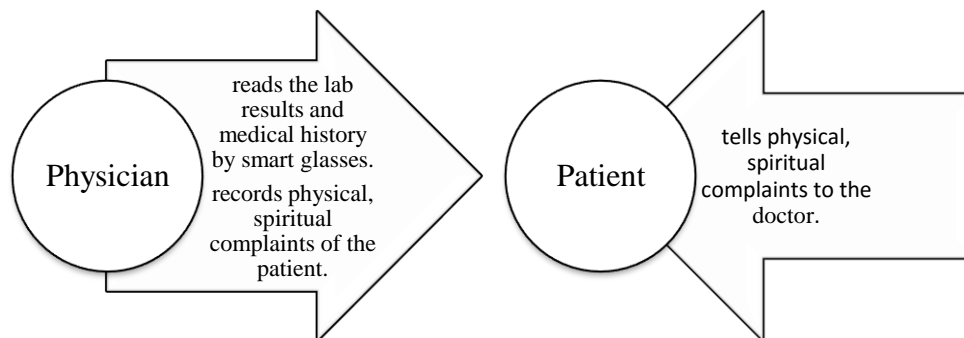


Figure D.1. Transfer of knowledge, information, data recording in the doctor-patient relationship

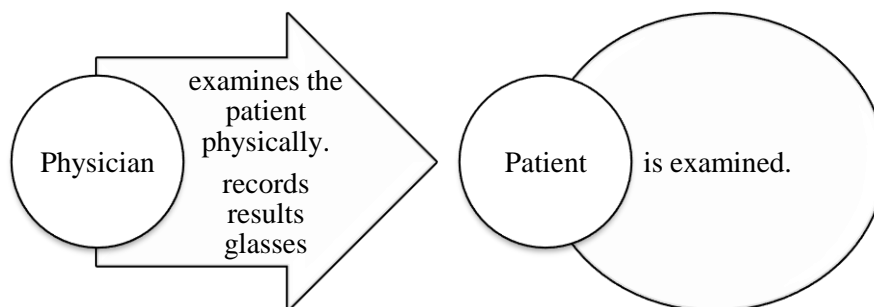


Figure D.2. Recording of physical examination process

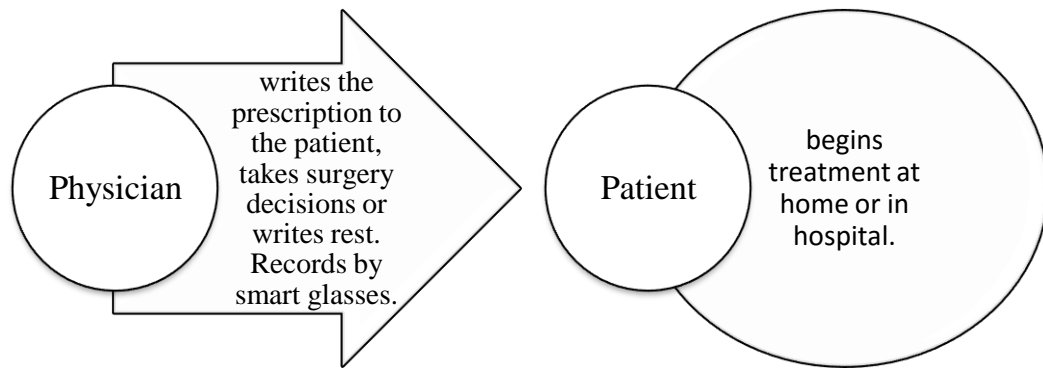


Figure D.3. Concluding the examination

Table D.1. Scenario of physicians' usage smart glasses

FUNCTION	SCENARIO STEPS
Seeing the patient id data.	At first, the patient name will be opened. Also, patient's age, occupation and town will be opened with his/her photograph. Last visiting date is also can be seen.
Recording and Reading the Complaint Information	Patients' complaints will be recorded. It will include the patient's name and image in the corner.
Recording and Reading the Physical Examination Information	Doctors records the findings during the physical examination.
Reading the Laboratory Information	Lab results include blood, diabetes, EKG, HDL, cholesterol tests.
Reading Important Diseases History	Doctor can read the diseases and operations year by year.
Entering the Diagnostic Information	Doctors records diagnostic information.
Writing out prescription	Names of drugs will be recorded.

APPENDIX E

USER EXPERIENCE

E.1. OWN EXPERIENCE OF VUZIX GLASSES

Table E.1. Own experience of Vuzix M100 smart glasses

Place	Date	Actions	Usage hours	Comments
While working on meeting table While traveling in the bus seat	14.05.2015	<ul style="list-style-type: none"> • Added jpeg files prepared for doctors, video for trainers. • Added Music added. • Added PowerPoint files • Used for listening to music-1 hr.- • Used for learning the usage of the product-1 hr.- • It was used in the right eye. • It was used with the crown. 	2 hr.	<ul style="list-style-type: none"> • Having a simple music player is practical. • A bit heavy. • After one day, my left eye spasms and pain. • Could not open the PowerPoint file. • It has focusing problems. • Main part with screen is very moving. • Able to take photos and videos. • Can record audio. • Could get used to the mechanical controls. • Charging is over quickly. • I cut my left eye when using it.
While typing at the dinner table	21.05.2015	<ul style="list-style-type: none"> • Mounted the main part with lens to the glasses. • Removed the crown • Plugged in the additional charger apparatus. 	15 min.	<ul style="list-style-type: none"> • To use with glasses is more comfortable and easy to fix the main part with screen. • It does not affect the normal field of vision. • But I do not read the text because I have eye disorders. • When battery charger is inserted in, headphone is a little hot.
On the sofa, while drinking coffee	21.05.2015	<ul style="list-style-type: none"> • Turned on the music and mix command. • Opened the gallery. 	10 min.	<ul style="list-style-type: none"> • Shows the process of song. • When open the Gallery, music stops. • Photos that were taken placed in Gallery. • Because of eye disorder, have had problems to see the screen. • The screen darkened very quickly.

(cont. on next page)

Table E.1 (cont.).

While cleaning room	21.05.2015	<ul style="list-style-type: none"> • Turned on the music command. • Opened the clock command. 	35 min.	<ul style="list-style-type: none"> • Worked with music. • Hit the hanger because of forgetting the smart glasses. • Glasses is a little big. • Using product for 35 minutes was little tiring. • Learned the time by pressing the button. Finished at right time I've planned. • It can be good for sport activities.
While working on the computer	24.05.2015	<ul style="list-style-type: none"> • Turned on the music command. 	10 min.	<ul style="list-style-type: none"> • The cleaning of the glasses is important. • Music player is practical. • Sound is too high; I could not find much to reduce. • Mounted glasses do not fit into the storage container.
When shopping	25.05.2015	<ul style="list-style-type: none"> • Charged the battery. • Connected with a cell phone by Bluetooth. 	10 min.	<ul style="list-style-type: none"> • There is the standardization. • Charged with the charger of the phone. • Warning text in Bluetooth settings was very small. Had difficulty in reading.
While Interview	04.06.2015	<ul style="list-style-type: none"> • Mounted the apparatus on to the smart glasses. After usage, removed back the apparatus. 	15 min.	<ul style="list-style-type: none"> • Mounting and removing apparatus takes much time.
While working on computer	27.07.2015	<ul style="list-style-type: none"> • Usage with crown 	15 min.	<ul style="list-style-type: none"> • Without glasses, it is easier to use.

APPENDIX F

PROCESS OF THE THESIS

Table F.1. The process of the research study

PROJECT SELECTION	Discussed nearly 50 ideas. Narrowed down into 4 ideas. Chosen 1 topic.	NOV.-DEC. 14
LITERATURE REVIEW	More than 100 papers were analyzed. More than 20 websites related with topic were examined. More than 30 videos about topic were watched.	SEPT. 14- OCT. 15
PROTOTYPE DESIGN	Designed 4 prototypes (interfaces) for Vuzix M100 smart glasses.	MAY. 15- JUL.15
IN DEPTH INTERVIEW	First part, interviewed with 5 people who are pharmacies, instructor, worker in restaurant and interior designer. Second part, interviewed with 8 people who are physicians.	JUNE 15- JUL.15 AUG.15- SEPT.15
EXPERT FOCUS GROUP	95 constructs were sent to 23 students as a pilot study. 95 constructs were sent to 7 expert physicians. Most important 15 constructs were chosen.	SEP-NOV.15
EXPERIMENTAL STUDY	Asked 51 questions with internet-based questionnaire.75 physicians answered.	DEC. 15
DATA ANALYSES	IBM SPSS were used.	DEC. 15
FINDINGS	Analyses were evaluated.	DEC. 15
REVISIONS	Some grammar problems were solved. Some irrelevant data were erased. Some places of the research parts have been changed.	OCT-DEC.15
PRESENTATION	The thesis was presented for 30 minutes to academics.	DEC. 15

APPENDIX G

ANALYSES OF VUZIX M100

G.1. Vuzix Glasses Main Software Applications

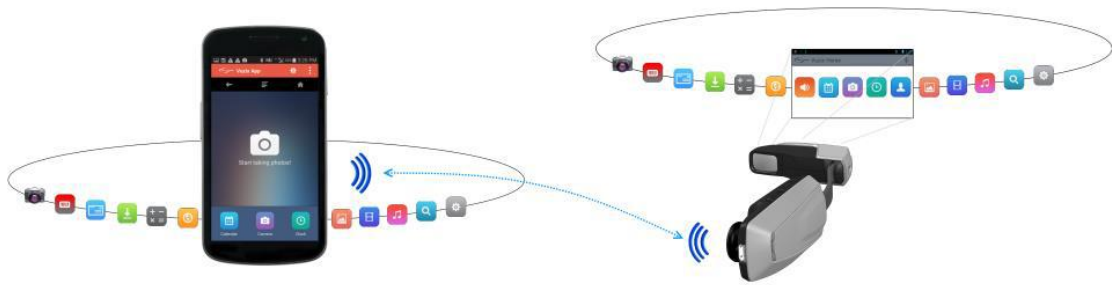


Figure G.1. Relationship between smart glasses and smart phones

G.1.1 Audio Recording



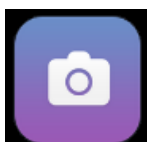
When this app is opened, a record button, and voice needle is shown. According to sound pressure, needle moves during semicircle. Voice records is transferred into music documents. It is possible to listen these records in the music app.

G.1.2. Calendar



When calendar app is opened, it wants the user to upload users own calendar via internet.

G.1.3. Native Camera



The photos that is taken by this app are transferred into Gallery app.

G.1.4. Clock



There are three kinds of clock properties. When the app is opened time, day, month, the name of the day is shown (20:36; Friday, Dec 1). Seconds, minutes and hours timer and stopwatch are also available.

G.1.5. Contacts



Jpeg format pictures can be uploaded and can be viewed.

G.1.7. scanner



G.1.8. Settings



Wi-Fi, Bluetooth

G.1.9. Browser



If internet is not connected, it shows error.

G.1.10. Legacy Camera



G.1.11. Download



Because there is no Internet connection, no sign of a download.

G.1.12. E-mail



When this app is opened, account setup is shown. It asks e-mail address and password. However, the connection with cell-phone is obligatory to use this app. Because there is no keyboard on smart glasses.

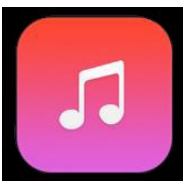
G.1.13 Movie Studio



When Movie Studio is opened, create new player document is shown.

When it is pushed on, "Product Name" is asked.

G.1.14 Music



This app includes five sub-command. These are Artists, Albums, Songs, Playlist and Now Play in commands.

G.2. Hardware features of Vuzix M100

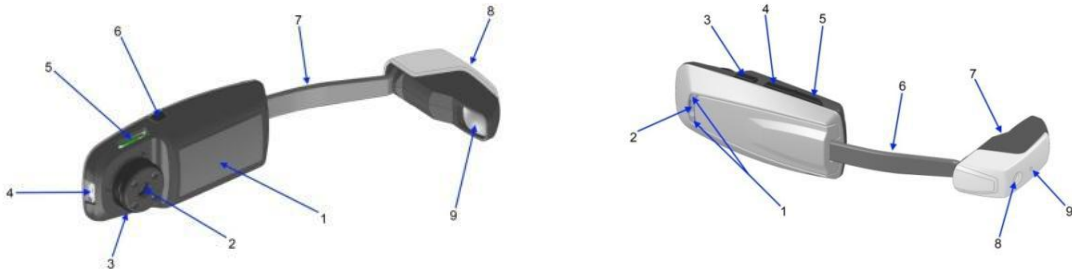


Figure G.2. Hardware features of Vuzix M100

Table G.1. Hardware features of Vuzix M100

<ul style="list-style-type: none"> 1. Blue and white LED indicators 2. Gesture, proximity and light sensor 3. Select/Menu* button 4. Left/Back* button 5. Right/Home* button 6. Eyepiece arm 7. Eyepiece / display window 8. HD camera 9. Camera recording indicator <p>*Long Press</p>	<ul style="list-style-type: none"> 1. FCC and product label 2. Speaker 3. Universal mount 4. Micro USB connector 5. Micro SD card slot 6. Sleep/Power* button 7. Eyepiece arm 8. Eyepiece 9. Eyepiece display window <p>*Long Press</p>
--	--

G.3. Controls

G.3.1. Button control

There are four buttons that help to control device. The three of them are above the device. These are Front, Center and Rear Buttons. One of them is below the device which is On/Off Button.

All these buttons have different properties. They have not has one command. Generally there are two command of these buttons. One is realized by pushing short and the other one is realized by pushing long. The On/Off button is a different a bit. It has three commands.

Table G.1. Use of Vuzix M100 buttons

Button	Action	Result
Rear Button (1)	Short Press	Android's standard SELECT Function
	Long Press	Android's standard BACK function
Center Button (2)	Short Press	Move selection BACK
	Long Press	Android's standard HOME function
Front Button	Short Press	Move selection FORWARD
	Long Press	Android's standard MENU function
On/Off Power Button (6)	Short Press	Put M100 in sleep mode
	Long Press	Open power menu to turn off the M100 or toggle Airplane mode
	Long Press (10 sec)	Force complete shutdown of the M100

G.3.2. Gesture control

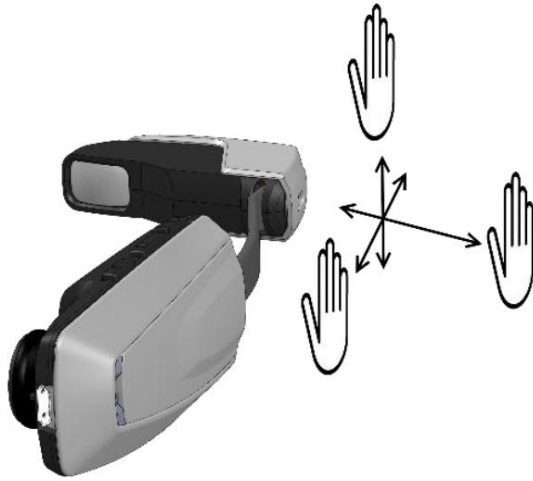


Figure G.2. Gesture control of Vuzix M100

Gesture	Command
Back to Front	Right/Next
Front to Back	Left/Previous
Far to Near (perpendicular to your line of vision)	Android Standard Select
Near to Far	Back
Below to Above	Up
Above to Below	Down

G.3.3. Voice control

Voice on – enable voice control (The M100 is always listening for this unless voice control is selected to be turned off)

Voice off – disable voice control (automatically disables after 20seconds with no voice action)

Voice help – displays a list of possible words the current application understands for about 5 seconds

Scroll left – scroll to the left

Scroll right – scroll to the right

Stop/Halt – stop scroll

Move left – move left one icon

Move right – move right one icon

Select [1-5] – selects the corresponding item

Take Picture – opens the Camera app

Show menu – shows menu options

Go back – back one level in app

Go home – return to launcher

Current Time – opens the Clock app

APPENDIX H

INTERVIEWS' RESULTS

Table H.1. Constructs conducted from interviews

<i>Röpor-taj 1</i>	<i>Röpor-taj 2</i>	<i>Röpor-taj 3</i>	<i>Röpor-taj 4</i>	<i>Röpor-taj 5</i>	<i>Röpor-taj 6</i>	<i>Röpor-taj 7</i>	<i>Röpor-taj 8</i>	<i>Röpor-taj 8</i>
Hasta kontağı	STT programı	Sistemle senkronize	Sesle komut	İş yükü	Labo-ratuar Sonuç-larını okuma	Pratik-lik	Öykü alma	Zoom
Ekran ergono-misi	Hareket kabili-yeti	Labo-ratua-ra Bağ-lanma	Ergo-nomi sorunu	Dökü-mante sorun-ları	Estetik oluşu	Ergo-nomi sorunu	Fotoğ-raf çekme-karşı-laştırma	Araç kulla-nımın-da
Kodla ifade	Hasta iletişi-mi	Ergo-nomi So-runu	Kişisel gözlü-ğe uyumu	Hasta-nın geçmiş hika-yesi	Kadın-lar için farklı	Bilgiye hızlı ulaşa-bilme	Kamera Endos-kopi görü-n-tüleme	Fotoğ-raf İletme
Göze sabitle-me	Ergo-nomik sıkıntı-lar	Kayıt	Kısa sürede kayıt	Gö-rüş-meyi bölme	Dahi-liye gibi bölüm-ler	Ekran boyutu	Yüksek hafıza	Hasta aktar-ma
Kuman-da	Sesle komut	İnsani faktör-ler	Saha eğitimi	Yakın görme prob-lemi	Rönt-gen Sonuç-ları	Yüze göre ayarla-nabil-me	Stan-dartize dökü-mante	Hatır-latma
Verileri girme	Sabit-lenme	Tasar-ruf	STT prog-ramı	Özel hasta-neler	STT prog-ramı	Hasta ile iletişim	İşlemci	Doktor hata-larını önle-me
	Ekran boyutu	Saha Dene-timleri	Ku-rumsal satın alma	Gözün gördü-ğü açı		Kişiye özel	Ağırlığı	Tele-fon
	Zaman kazan-ma	STT prog-ramı		Kendi kendi-ni mua-		Şeffaf-lık	Formu	Kişi-selleş-tirme

				yene				
	Ameliyat izleme	Kurumsal satın alma		Hobi amaçlı		STT programı	Kumanda	Teletıp
	Diğer hekime danışma			Adli kanıt		Ameliyat kaydı	Ameliyat, cerrahi	Hasta emirleri
	Ameliyatta zoom			Güvenlik		Toplantı kaydı	Eller boşta	Hasta kontrolleri
	Işık verme			STT programı		Yüzyüze görüşme	Bilgi gizliliği	İlaç kontrolleri
						Kurumsal satın alma	Kitap tarama	Alerji uyarıları
						Kameranın vücutla hareket etmesi	Bilgisayar tarama	Mikrofon
						Çocuk gösteri kaydı	Lab son. görüntüleme	

APPENDIX I

EXPERIMENTAL STUDY QUESTIONNAIRES

Table I.1 Experimental Study Questionnaires

Table I.1. Questionnaires of smart glasses (Türkçe)

Constructs	Items
Innovativeness	yeni fikirleri benimseme konusunda genellikle temkinli davranırım
Self efficacy	teknolojik cihazları kendi başıma rahatlıkla kullanabilirim
Battery life	bataryasının uzun ömürlü olmasını önemserim
Weight	ağır olmasını istemem
CPU speed (computer speed)	sistem hızının yüksek olmasını önemsemem
Memory size	hafıza kapasitesinin yüksek olmasını isterim
Heating problem	ısınmasını önemsemem
Wireless connectivity	kablosuz internete bağlı olmasını isterim
View of screen	ekranının görüş açısının geniş olmasını tercih ederim
Resolution of screen	ekranının çözünürlüğünün yüksek olmasını önemserim
Adjustability	yüzüme göre ayarlanabilir olmasını isterim
Screen's ergonomic	ekranın ergonomi kurallarına uygun olmasını isterim
Interface design	arayüz tasarımının gelişmiş olmasını isterim
Eye health	göze zarar verme ihtimali beni tedirgin eder
Hands free	eller serbest olarak kullanmayı tercih ederim
Voice control	sesle komuta etmek isterim
Gesture control	el hareketleriyle komuta etmek isterim
Speech recognition	sesi yazıya dönüştüren yazılımın kullanılmasını isterim
Synchronized with the hospital's system	hastane sistemiyle senkronize çalışmasını tercih ederim
Ease of reminding	hatırlama amaçlı kullanmak isterim
Ease of hands free taking photos	eller serbest olarak fotoğraf çekmeyi isterim
Ease of recording surgery	ameliyatlarda kullanmak isterim
Ease of recording medical data	medikal bilgileri kaydetmeyi isterim
Ease of monitoring medical data	medikal bilgileri görüntülemek isterim
Ease of sharing medical data	medikal bilgileri paylaşmak isterim

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Table I.1 (cont.).

Ease of hands free documentation	elleri kullanmadan belgeleme yapmak isterim
Ease of facilitating diagnosis	tanı koymada yardımcı cihaz olarak kullanmak isterim
Ease of telemedicine	tele tıp alanında kullanmak isterim
Ease of medical education	tıp eğitiminde kullanmak isterim
Ease of patient doctor communication	hasta doktor iletişimini iyileştirmesini isterim
Technical Support	kullanırken teknik desteğin olmasını önemserim
Privacy	hasta mahremiyetine özen göstermesini isterim
Compatibility	bu tür teknolojik cihaz kullanmak benim mesleki anlayışıma uygundur
Internal Influence	arkadaşlarım bu tür teknolojik cihazların önemli olduğunu söylüyor
External Influence	teknolojik cihazlar konusuna olumlu yaklaşan pek çok yazı ile karşılaştım
Ease of learning	kullanmayı öğrenmek için çok çaba gerektiğini düşünüyorum
Ease of use	kullanımı zordur
Ease of use	yapmam gereken işlemleri kolayca gerçekleştirebilirim
Usefulness	kullanışlıdır
Usefulness	bana zaman kazandıracaktır
Usefulness	kullanmak işimi daha kolay yapmamı sağlar
Usefulness	kullanmak yaptığım işin kalitesini arttırır
Usefulness	işlerim için yararlı olduğunu düşünüyorum
Attitude	diğer çalışanların kullanmalarını tavsiye ederim
Attitude	kullanmak isterim
Intention	bir yıl içinde kullanmayı planlıyorum
Comment	İletmek istediğiniz diğer görüşler

APPENDIX J

ARTICLE ANALYSES

J.1. Super constructs

Table J.1. Super constructs and sub-constructs of articles

Facilitating Conditions	# articles
facilitating conditions	3
technical support	1
organizational support	2
Intermediary	
intermediary	18
ease of use	10
usefulness	8
Medical Functions	
medical communication	36
ease of hands free calling	4
ease of sending email	1
ease of telemedicine	15
ease of telementoring	9
ease of patient doctor communication	7
Medical recording	25
ease of hands free documentation	6
ease of hands free taking photos	3
ease of recording medical data	16
Medical control	12
ease of health management	12
medical tracing	50
ease of monitoring medical data	20
ease of medical education	18
ease of real time video	8
ease of monitoring medical data	4
medical sharing	4
ease of streaming video	3
ease of sharing medical data	1
medical searching	9
ease of searching medical data	5
ease of facilitating diagnosis	4
smart medical	12
ease of translating	1

(cont. on next page)

Table J.1 (cont.).

ease of scanning	6
ease of reminding	5
surgery	8
ease of surgical education	4
ease of surgery	4
mechanical	33
hands free	11
screen size	5
touch controls	3
view of screen	2
head mounted display	2
screen's ergonomic	6
privacy	1
switch controls	1
camera's ergonomic	2
hardware	71
battery life	10
bone conduction transducer	3
camera	16
Hardware Capacity	1
LED flash	3
memory size	2
microphone	3
navigation	4
quality of sound	6
speaker	1
touch pad	1
type of screen	5
CPU performance	2
visual quality	2
head mounted display	5
projectors	1
quality of monitoring	3
remote control	2
vision angle	1
software	108
hands free	1
navigation	1
notifications	5
resolution of screen	3
speech recognition	10
vital signs	1
voice control	10
wireless connectivity	18
zoom	6
operating system	4

(cont. on next page)

Table J.1 (cont.).

smart	1
AR	6
remote sensing	1
quality of connectivity	1
software structure	1
error	1
recognition	3
privacy	25
medical applications	8
brightness of screen	1
quality of audio	1
general product	121
compatibility	4
cost	13
heating problem	3
mobility	5
observability	3
portability	2
Readability	2
security	4
speed	1
testability	2
time factor	3
trialability	1
usability	5
user guidance	1
weight	6
training of product	1
sterile	2
operability	1
understandability	1
reliability	3
user centered design	3
efficiency	1
desirable	1
interactive	1
vulnerability	1
comfortable	1
wearability	3
effectiveness	1
self efficiency	1
self efficacy	1
synchronized with the system	1
practicality	1
adjustability	1
personalization	3

(cont. on next page)

Table J.1 (cont.).

appearance	10
privacy	2
service availability	1
accessibility	1
brand	2
convenience	1
cost, investment	5
enjoyment	1
safetiness	4
trust	1
interface design	7
security	1
interface design	1
quality of product	1
Social Factors	
Social	10
official endorsement	1
reputation	1
social factors	7
internal influence	1
User Characteristics	
individual	16
extraverted	5
neurotic	2
emotionally stable	1
curious	1
agreeable	1
user persona	2
expertise	1
innovativeness	3
user attitude	16
awareness	3
head gestures	1
Personal Concern	2
time factor	1
use of spectacle wearers	1
ethical	1
emotional trust	1
user of smartphone	1
user competence	1
intention	4
demographic	18
age	7
education level	1
gender	6
income	1

(cont. on next page)

Table J.1 (cont.).

job experience	1
user profile	2
User Health	
User health	5
eye health	1
visual aid	1
visually impaired people	2
hypermetrope	1

J.2. Constructs

Table J.2. Constructs of articles

Constructs	# articles
privacy	28
ease of monitoring medical data	20
ease of medical educa.	18
wireless connectivity	18
camera	16
ease of recording medical data	16
ease of telemedicine	15
cost	13
ease of health management	12
hands free	12
voice control	10
appearance	10
ease of use	10
battery life	10
speech recognition	10
ease of telementoring	9
medical applications	8
ease of real time video	8
usefulness	8
interface design	7
social factors	7
ease of patient doctor communication	7
head mounted display	7
age	7
gender	6
ease of scanning	6

(cont. on next page)

Table J.2 (cont.).

AR	6
quality of sound	6
screen's ergonomic	6
weight	6
ease of hands free documentation	6
zoom	6
mobility	5
extraverted	5
cost, investment	5
usability	5
ease of searching medical data	5
navigation	5
screen size	5
notifications	5
ease of reminding	5
type of screen	5
safetiness	4
time factor	4
satisfaction	4
ease of hands free calling	4
ease of surgery	4
compatibility	4
ease of monitoring medical data	4
security	4
ease of surgical education	4
operating system	4
ease of facilitating diagnosis	4
ease of streaming video	3
innovativeness	3
personalization	3
observability	3
bone conduction transducer	3
reliability	3
LED flash	3
touch controls	3
resolution of screen	3

(cont. on next page)

Table J.2 (cont.).

user centered design	3
microphone	3
quality of monitoring	3
heating problem	3
awareness	3
ease of hands free taking photos	3
recognition	3
wearability	3
testability	2
organizational support	2
sterile	2
user profile	2
view of screen	2
remote control	2
portability	2
user persona	2
visually impaired people	2
Readability	2
neurotic	2
visual quality	2
human computer interaction	2
brand	2
Personal Concern	2
memory size	2
CPU performance	2
camera's ergonomic	2
security	1
enjoyment	1
life style	1
technical support	1
trust	1
interface design	1
hobby	1
quality of product	1
accessibility	1
job experience	1
use of spectacle wearers	1
remote sensing	1
head gestures	1
quality of connectivity	1
patients' identities	1
official endorsement	1
adjustability	1
reputation	1

(cont. on next page)

Table J.2 (cont.).

content	1
smart	1
convenience	1
visual aid	1
hypermetrope	1
desirable	1
quality of audio	1
software structure	1
user guidance	1
speed	1
hardware	1
user competence	1
curious	1
interactive	1
ease of sharing medical data	1
education level	1
practicality	1
success	1
ethical	1
error	1
internet addiction disorder	1
vulnerability	1
service availability	1
visual and audio instructions	1
ease of translating	1
vital signs	1
operability	1
touch pad	1
expertise	1
comfortable	1
understandability	1
agreeable	1
internal influence	1
prototype	1
vision angle	1
effectiveness	1
customization	1
ease of sending email	1
Hardware Capacity	1
eye health	1
switch controls	1
self efficiency	1
projectors	1

(cont. on next page)

Table J.2 (cont.).

self efficacy	1
emotionally stable	1
performance	1
income	1
trialability	1
training of product	1
speaker	1
efficiency	1
synchronized with the system	1
attitude	1
brightness of screen	1
psychological states	1

APPENDIX K

RESULTS OF ANALYSES

K.1. Findings of Analyses

Table K.1. ANOVA Analyses (Gender)

ANOVA-GENDER					
Constructs	F	Sig.	Woman 18	Men 53	Questions
Self_efficacy	10,59	,002	3,61	4,43	I can use technological devices myself easily
EoL	7,39	,008	2,89	2,13	I think that it needs effort to learn use of it
Eo_REC_Surgery	6,41	,014	4,06	4,56	I would like to use it in surgeries
Eo_MON_MedicalData	6,36	,014	4,39	4,77	I would like to monitor the medical data by this product
Eo_REC_MedicalData	6,01	,017	4,39	4,74	I would like to record medical data
Compatibility	4,13	,046	4,33	4,67	It is suitable to my professional understanding to use such kind of technological devices
Usefulness1	3,15	,080	4,06	4,40	It is useful
Usefulness2	2,98	,089	4,24	4,57	It will give me time

(cont. on next page)

Table K.1 (cont.).

Innovativeness	2,52	,117	3,06	2,53	I am usually cautious about adopting new ideas
EoU1	2,33	,132	3,89	4,26	It is easy (R) to use
Attitude2	2,23	,140	4,44	4,71	I would like to use it
Usefulness3	2,17	,145	4,24	4,51	To use it let me do my job easier
Eo_PatientCommunication	2,01	,161	4,06	4,40	I would like to use it for improving doctor-patient communication
Usefulness	1,84	,179	4,33	4,58	Usefulness
EoU	1,70	,197	4,06	4,29	EoU
Eo_Photo	1,67	,200	4,28	4,53	I would like to take photos hands free
Attitude	1,11	,296	4,27	4,45	Attitude
Interface	1,07	,305	4,39	4,57	I would like improved interface design
SystemSpeed	0,99	,323	1,33	1,62	I do not cared high system speed
SynchronizedHospital	0,95	,332	4,44	4,63	I prefer to it would work synchronized with the hospital IT system
Intention	0,93	,338	3,28	3,57	I plan to use it in one year
BatteryLife	0,92	,341	4,67	4,49	I care about it has a battery which has long life

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Table K.1 (cont.).

Attitude1	0,90	,347	4,24	4,45	I advice the other workers to use it
Adjustability	0,86	,357	4,59	4,72	I would like it to be adjusted according to my face
SpeechRecognition	0,75	,389	4,22	4,42	I would like to use speech to text program
Weight	0,66	,418	4,67	4,49	I do not want it over weight
Eo_HF_Documentation	0,46	,502	4,39	4,53	I would like to do documentation hands free
Eo_MED_Education	0,38	,541	4,50	4,62	I would like to use it in medical education
InternalInfluence	0,31	,581	3,71	3,85	My friends say this kind of technological devices are important
EoU2	0,29	,590	4,22	4,32	I can do my work by this product easily
TechnicalSupport	0,26	,609	4,78	4,70	I care about technical support when I am using it
View_Screen	0,25	,616	4,44	4,53	I prefer screen will have wide viewing angle
Usefulness4	0,24	,626	4,28	4,40	To use it increase the quality of work that I have done

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Table K.1 (cont.).

Eo_FAC_Diagnosis	0,20	,655	4,39	4,27	I would like to use it as a assisting device for facilitating diagnosis
GestureControl	0,17	,681	3,39	3,53	I would like to control by gesture
VoiceControl	0,16	,686	4,35	4,25	I would like to control by voice
ScreenErgonomic	0,13	,724	4,76	4,72	I would like the display will be in accordance with the rules of ergonomics
Eo_Reminding	0,11	,742	4,29	4,37	I would like to use it to remind
HandsFree	0,07	,786	4,61	4,66	I prefer to use hands free
MemorySize	0,06	,813	4,61	4,57	I would like to this product has high memory capacity
EyeHealth	0,05	,817	3,89	3,81	The possibility of damaging the eye make me uncomfortable
Resolution_Screen	0,04	,837	4,50	4,54	I care about the high resolution screen
HeatingProblem	0,03	,862	1,72	1,77	I do not care about this product is warming
WirelessConnectivity	0,02	,877	4,67	4,64	I would like wireless connectivity

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Table K.1 (cont.).

Privacy	0,02	,883	4,72	4,70	I would like it to pay attention to patient privacy
Eo_SHARE_MedicalData	0,02	,898	4,11	4,15	I would like to share the medical data by this product
ExternalInfluence	0,01	,934	4,11	4,13	I came across a lot of articles that has positive approach to technological devices
Eo_Telemedicine	0,00	,961	4,33	4,32	I would like to use it in telemedicine
Usefulness5	0,00	,974	4,39	4,40	I think that it is useful for my work

Table K.2. ANOVA Analyses (Age)

ANOVA-AGE											
Constructs	F	Sig.	24 and below 5	25-29 12	30-34 13	35-39 11	40-44 12	45-49 9	50-54 3	55 and above 6	Questions
EoU2	4,75	,000	4,80	4,42	4,62	4,18	3,67	4,44	5,00	3,83	I can do my work by this product easily
Usefulness1	3,68	,002	4,40	4,42	4,69	4,55	3,83	4,11	5,00	3,60	It is useful
Attitude	3,40	,004	4,44	4,55	4,71	4,55	3,77	4,42	5,00	4,13	Attitude
EoU	3,39	,004	4,60	4,54	4,31	4,32	3,71	4,39	4,67	3,58	EoU
Usefulness3	3,07	,008	4,80	4,58	4,62	4,64	3,83	4,44	5,00	4,00	To use it let me do my job easier

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Table K.2 (cont.).

Eo_SHARE_MedicalData	2,94	,010	4,80	3,42	4,85	4,18	3,58	4,33	5,00	3,83	I would like to share the medical data by this product
Attitude1	2,93	,010	4,40	4,50	4,77	4,55	3,58	4,56	5,00	4,20	I advice the other workers to use it
Usefulness4	2,91	,011	4,80	4,50	4,69	4,36	3,50	4,56	5,00	4,17	To use it increase the quality of work that I have done
Eo_HF_Documentation	2,72	,016	4,80	4,42	4,85	4,55	4,33	4,56	5,00	3,50	I would like to do documentation hands free
Usefulness	2,71	,016	4,60	4,63	4,85	4,64	3,92	4,61	5,00	4,17	Usefulness
Usefulness2	2,61	,020	4,40	4,67	4,77	4,64	3,92	4,56	5,00	4,00	It will give me time
Usefulness5	2,56	,022	3,80	4,58	4,77	4,55	3,75	4,44	5,00	4,33	I think that it is useful for my work
Innovativeness	2,17	,049	2,20	2,08	2,54	2,64	3,17	2,67	4,67	2,50	I am usually cautious about adopting new ideas
EoU1	2,14	,052	4,40	4,67	4,00	4,45	3,75	4,33	4,33	3,33	It is easy (R) to use
Eo_MON_MedicalData	2,09	,057	5,00	4,83	4,92	4,64	4,42	4,56	5,00	4,17	I would like to monitor the medical data by this product
Eo_Telemedicine	2,03	,065	4,80	3,67	4,77	4,18	4,17	4,33	5,00	4,50	I would like to use it in telemedicine

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Table K.2 (cont.).

Compatibility	2,01	,067	4,80	4,67	4,92	4,64	4,25	4,33	5,00	4,20	It is suitable to my professional understanding to use such kind of technological devices
Eo_PatientCommunication	1,89	,087	4,80	4,08	4,85	4,09	4,08	4,22	5,00	3,83	I would like to use it for improving doctor-patient communication
SynchronizedHospital	1,80	,103	4,60	4,67	4,92	4,09	4,33	4,63	5,00	4,83	I prefer to it would work synchronized with the hospital IT system
Eo_REC_MedicalData	1,77	,109	5,00	4,75	4,85	4,64	4,33	4,44	5,00	4,50	I would like to record medical data
Attitude2	1,75	,114	4,80	4,75	4,92	4,73	4,25	4,63	5,00	4,17	I would like to use it
GestureControl	1,58	,159	4,40	3,33	4,15	3,00	3,58	3,00	3,33	3,17	I would like to control by gesture
EoL	1,55	,168	2,00	2,00	2,85	1,82	2,50	2,22	2,00	3,00	I think that it needs effort to learn use of it
Eo_FAC_Diagnosis	1,52	,177	4,40	4,00	4,85	4,18	3,83	4,44	5,00	4,20	I would like to use it as a assisting device for facilitating diagnosis

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Table K.2 (cont.).

EyeHealth	1,45	,202	4,40	3,83	3,77	3,00	4,33	4,22	3,67	3,50	The possibility of damaging the eye make me uncomfortable
Self_efficacy	1,42	,213	3,80	4,33	4,62	4,45	4,08	4,11	4,67	3,33	I can use technological devices myself easily
Eo_REC_Surgery	1,40	,220	4,40	4,67	4,69	4,36	4,25	4,22	5,00	3,80	I would like to use it in surgeries
Weight	1,37	,232	4,00	4,25	4,85	4,36	4,83	4,44	5,00	4,50	I do not want it overweight
Eo_Photo	1,37	,235	4,80	4,50	4,69	4,55	4,17	4,33	5,00	4,00	I would like to take photos hands free
Privacy	1,36	,238	4,40	4,92	4,85	4,45	4,83	4,67	5,00	4,33	I would like it to pay attention to patient privacy
SpeechRecognition	1,36	,239	3,60	4,25	4,62	4,18	4,33	4,44	5,00	4,67	I would like to use speech to text program
Eo_MED_Education	1,25	,290	5,00	4,50	4,85	4,64	4,17	4,56	5,00	4,50	I would like to use it in medical education
InternalInfluence	1,20	,314	4,40	3,83	4,23	3,55	3,42	3,89	3,67	3,60	My friends say this kind of technological devices are important

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Table K.2 (cont.).

Interface	1,14	,350	4,80	4,42	4,69	4,55	4,50	4,11	5,00	4,50	I would like improved interface design
BatteryLife	1,14	,351	4,40	4,25	4,77	4,36	4,58	4,78	5,00	4,33	I care about it has a battery which has long life
Eo_Reminding	1,07	,391	4,60	4,00	4,62	4,10	4,18	4,56	5,00	4,40	I would like to use it to remind
ExternalInfluence	0,90	,510	4,00	4,33	4,31	3,91	3,83	4,22	5,00	3,83	I came across a lot of articles that has positive approach to technological devices
SystemSpeed	0,87	,534	1,40	1,42	1,38	1,18	1,67	2,11	2,33	1,50	I do not cared high system speed
View_Screen	0,85	,553	4,20	4,58	4,69	4,36	4,50	4,33	5,00	4,50	I prefer screen will have wide viewing angle
HandsFree	0,85	,554	5,00	4,50	4,62	4,82	4,50	4,78	5,00	4,33	I prefer to use hands free
Resolution_Screen	0,81	,585	4,80	4,33	4,50	4,36	4,75	4,56	5,00	4,33	I care about the high resolution screen
TechnicalSupport	0,80	,588	4,80	4,50	4,92	4,55	4,75	4,67	5,00	4,83	I care about technical support when I am using it
VoiceControl	0,75	,634	4,20	3,92	4,62	4,18	4,25	4,22	5,00	4,20	I would like to control by voice

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Table K.2 (cont.).

ScreenErgonomic	0,67	,694	4,80	4,50	4,85	4,73	4,75	4,67	5,00	4,80	I would like the display will be in accordance with the rules of ergonomics
Intention	0,58	,773	3,20	3,83	3,46	3,64	3,08	3,56	4,00	3,33	I plan to use it in one year
WirelessConnectivity	0,54	,798	4,60	4,75	4,77	4,45	4,50	4,67	5,00	4,67	I would like wireless connectivity
HeatingProblem	0,36	,922	1,40	1,83	1,77	2,00	1,75	1,78	1,00	1,83	I do not care about this product is warming
MemorySize	0,35	,927	4,80	4,50	4,62	4,55	4,58	4,56	5,00	4,33	I would like to this product has high memory capacity
Adjustability	0,34	,932	4,80	4,75	4,69	4,64	4,67	4,56	5,00	4,60	I would like it to be adjusted according to my face

Table K.3. ANOVA Analyses (Education)

ANOVA-EDUCATION							
Constructs	F	Sig.	Student 5	Graduate 14	Master Degree 14	Doctoral Degree 37	Questions
Weight	2,623	,058	3,80	4,29	4,57	4,70	I do not want it over weight
GestureControl	1,961	,128	4,40	3,00	3,29	3,59	I would like to control by gesture

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Table K.3 (cont.).

ScreenErgonomic	1,918	,135	4,40	4,57	4,71	4,83	I would like the display will be in accordance with the rules of ergonomics
Usefulness5	1,897	,139	3,80	4,50	4,71	4,30	I think that it is useful for my work
Compatibility	1,623	,193	4,80	4,43	4,86	4,50	It is suitable to my professional understanding to use such kind of technological devices
SpeechRecognition	1,585	,201	3,60	4,43	4,43	4,41	I would like to use speech to text program
Usefulness4	1,570	,205	4,80	4,43	4,64	4,16	To use it increase the quality of work that I have done
Attitude1	1,564	,206	4,20	4,57	4,71	4,22	I advice the other workers to use it
Usefulness3	1,397	,252	4,80	4,43	4,64	4,31	To use it let me do my job easier
EoL	1,240	,302	2,20	2,50	1,86	2,46	I think that it needs effort to learn use of it
Usefulness	1,210	,313	4,50	4,64	4,75	4,38	Usefulness
EoU2	1,079	,364	4,60	4,43	4,36	4,16	I can do my work by this product easily

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Table K.3 (cont.).

Eo_SHARE_MedicalData	1,037	,382	4,80	4,29	3,86	4,19	I would like to share the medical data by this product
Eo_REC_MedicalData	,993	,402	5,00	4,57	4,71	4,59	I would like to record medical data
View_Screen	,961	,417	4,20	4,36	4,50	4,59	I prefer screen will have wide viewing angle
Attitude	,949	,422	4,52	4,43	4,61	4,29	Attitude
BatteryLife	,947	,423	4,20	4,57	4,36	4,62	I care about it has a battery which has long life
Eo_MON_MedicalData	,934	,429	5,00	4,57	4,79	4,62	I would like to monitor the medical data by this product
Eo_Reminding	,929	,432	4,80	4,36	4,08	4,37	I would like to use it to remind
Usefulness2	,921	,436	4,60	4,50	4,71	4,36	It will give me time
Eo_Telemedicine	,890	,451	4,80	4,07	4,21	4,38	I would like to use it in telemedicine
TechnicalSupport	,881	,455	4,80	4,71	4,50	4,78	I care about technical support when I am using it
HeatingProblem	,843	,475	1,60	1,71	1,43	1,95	I do not care about this product is warming
Self_efficacy	,759	,521	3,80	4,00	4,43	4,27	I can use technological devices myself easily
Eo_MED_Education	,744	,530	5,00	4,43	4,57	4,59	I would like to use it in medical education

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Table K.3 (cont.).

Innovativeness	,642	,591	2,20	2,43	2,93	2,73	I am usually cautious about adopting new ideas
Intention	,633	,596	3,60	3,50	3,79	3,32	I plan to use it in one year
Privacy	,621	,604	4,40	4,79	4,79	4,68	I would like it to pay attention to patient privacy
EoU	,619	,605	4,50	4,29	4,32	4,14	EoU
Attitude2	,615	,608	4,80	4,69	4,79	4,54	I would like to use it
Resolution_Screen	,601	,617	4,40	4,71	4,57	4,44	I care about the high resolution screen
EyeHealth	,565	,640	3,60	3,57	4,14	3,81	The possibility of damaging the eye make me uncomfortable
Eo_REC_Surgery	,484	,694	4,80	4,43	4,43	4,36	I would like to use it in surgeries
Eo_Photo	,460	,711	4,80	4,43	4,50	4,41	I would like to take photos hands free
Eo_HF_Documentation	,455	,715	4,80	4,43	4,36	4,51	I would like to do documentation handsfree
WirelessConnectivity	,398	,755	4,60	4,50	4,64	4,70	I would like wireless connectivity
Usefulness1	,397	,755	4,60	4,29	4,36	4,25	It is useful
InternalInfluence	,392	,759	4,00	3,86	3,57	3,83	My friends say this kind of technological devices are important

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Table K.3 (cont.).

Interface	,325	,808	4,40	4,43	4,64	4,51	I would like improved interface design
VoiceControl	,260	,854	4,00	4,29	4,43	4,25	I would like to control by voice
EoU1	,232	,874	4,40	4,14	4,29	4,11	It is easy (R) to use
Eo_PatientCommunication	,163	,921	4,40	4,29	4,43	4,24	I would like to use it for improving doctor-patient communication
Adjustability	,147	,932	4,80	4,64	4,71	4,67	I would like it to be adjusted according to my face
MemorySize	,146	,932	4,40	4,64	4,57	4,57	I would like to this product has high memory capacity
SynchronizedHospital	,111	,953	4,60	4,54	4,50	4,62	I prefer to it would work synchronized with the hospital IT system
HandsFree	,088	,966	4,60	4,57	4,64	4,68	I prefer to use hands free
ExternalInfluence	,075	,973	4,00	4,07	4,07	4,16	I came across a lot of articles that has positive approach to technological devices
SystemSpeed	,052	,984	1,60	1,64	1,57	1,51	I do not cared high system speed

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Table K.3 (cont.).

Eo_FAC_Diagnosis	,051	,985	4,40	4,21	4,29	4,31	I would like to use it as a assisting device for facilitating diagnosis
-------------------------	------	------	------	------	------	------	---

Table K.4. Descriptive Analyses

Descriptive Statistics						
Sorted by Mean						
Constructs	N	Min	Max	Mean	Std. Deviation	Questions
ScreenErgonomic	70	3	5	4,73	,479	I would like the display will be in accordance with the rules of ergonomics
TechnicalSupport	71	2	5	4,72	,565	I care about technical support when I am using it
Privacy	71	2	5	4,70	,595	I would like it to pay attention to patient privacy
Adjustability	70	3	5	4,69	,498	I would like it to be adjusted according to my face
Eo_MON_MedicalData	71	2	5	4,68	,580	I would like to monitor the medical data by this product
Eo_REC_MedicalData	71	3	5	4,65	,537	I would like to record medical data
HandsFree	71	2	5	4,65	,657	I prefer to use hands free
WirelessConnectivity	71	3	5	4,65	,588	I would like wireless connectivity
Attitude2	70	2	5	4,64	,660	I would like to use it

(cont. on next page)

Table K.4 (cont.).

Eo_MED_Education	71	1	5	4,59	,729	I would like to use it in medical education
SynchronizedHospital	70	2	5	4,59	,712	I prefer to it would work synchronized with the hospital IT system
Compatibility	70	3	5	4,59	,625	It is suitable to my professional understanding to use such kind of technological devices
MemorySize	71	2	5	4,58	,690	I would like to this product has high memory capacity
Weight	71	1	5	4,54	,790	I do not want it over weight
BatteryLife	71	2	5	4,54	,673	I care about it has a battery which has long life
Resolution_Screen	70	3	5	4,53	,675	I care about the high resolution screen
Interface	71	3	5	4,52	,629	I would like improved interface design
Usefulness	71	1,50	5,00	4,52	,684	Usefulness
View_Screen	71	3	5	4,51	,606	I prefer screen will have wide viewing angle
Eo_HF_Documentation	71	2	5	4,49	,754	I would like to do documentation hands free
Usefulness2	70	2	5	4,49	,697	It will give me time
Eo_Photo	71	3	5	4,46	,714	I would like to take photos hands free
Usefulness3	70	2	5	4,44	,673	To use it let me do my job easier
Eo_REC_Surgery	70	3	5	4,43	,753	I would like to use it in surgeries
Attitude	71	2,00	5,00	4,41	,648	Attitude

(cont. on next page)

Table K.4 (cont.).

Attitude1	70	1	5	4,40	,824	I advice the other workers to use it
Usefulness5	71	1	5	4,39	,819	I think that it is useful for my work
SpeechRecognition	71	2	5	4,37	,815	I would like to use speech to text program
Usefulness4	71	2	5	4,37	,882	To use it increase the quality of work that I have done
Eo_Reminding	68	1	5	4,35	,842	I would like to use it to remind
Eo_Telemedicine	71	1	5	4,32	,922	I would like to use it in telemedicine
Usefulness1	70	2	5	4,31	,692	It is useful
Eo_PatientCommunication	71	1	5	4,31	,888	I would like to use it for improving doctor-patient communication
Eo_FAC_Diagnosis	70	1	5	4,30	,968	I would like to use it as a assisting device for facilitating diagnosis
EoU2	71	3	5	4,30	,663	I can do my work by this product easily
VoiceControl	70	2	5	4,27	,947	I would like to control by voice
EoU	71	2,50	5,00	4,23	,670	EoU
Self_efficacy	71	2	5	4,23	,988	I can use technological devices myself easily
EoU1	71	2	6	4,17	,910	It is easy (R) to use
Eo_SHARE_MedicalData	71	1	5	4,14	1,125	I would like to share the medical data by this product

(cont. on next page)

Table K.4 (cont.).

ExternalInfluence	71	2	5	4,13	,925	I came across a lot of articles that has positive approach to technological devices
EyeHealth	71	1	5	3,83	1,219	The possibility of damaging the eye make me uncomfortable
InternalInfluence	70	1	5	3,81	,921	My friends say this kind of technological devices are important
GestureControl	71	1	5	3,49	1,229	I would like to control by gesture
Intention	71	1	5	3,49	1,094	I plan to use it in one year
Innovativeness	71	<i>1</i>	5	2,66	<i>1,230</i>	<i>I am usually cautious about adopting new ideas</i>
EoL	71	<i>1</i>	5	2,32	<i>1,066</i>	<i>I think that it needs effort to learn use of it</i>
EoU1Rev	70	<i>1</i>	4	1,86	,889	<i>It is difficult to use</i>
HeatingProblem	71	<i>1</i>	5	1,76	<i>a1,075</i>	<i>I do not care about this product is warming</i>
SystemSpeed	71	<i>1</i>	5	1,55	<i>1,066</i>	<i>I do not cared high system speed</i>

Note: Italic parts are reverse questions.

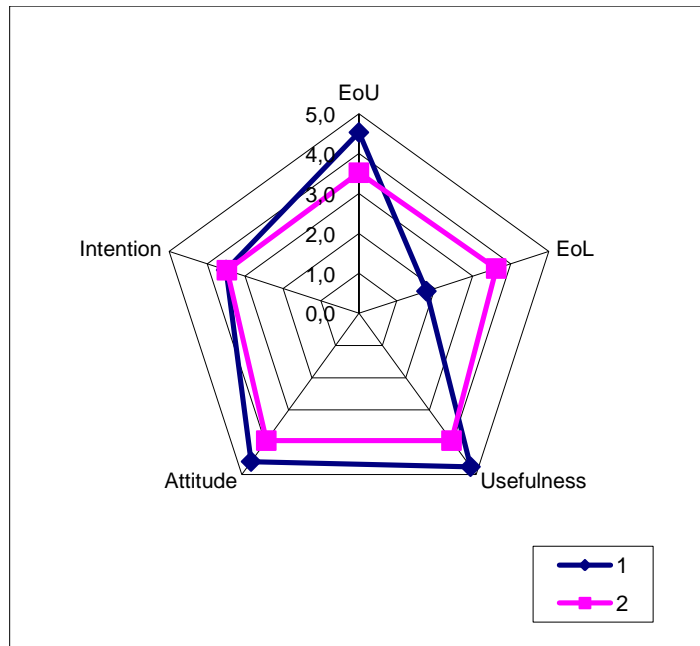


Figure K.1. Cluster Analyses 1a

Table K.5. Cluster Analyses 1a

	Cluster	
	1	2
N=	(50)	(21)
EoU	4,53	3,52
EoL	1,78	3,62
Usefulness	4,76	3,95
Attitude	4,60	3,95
Intention	3,50	3,48

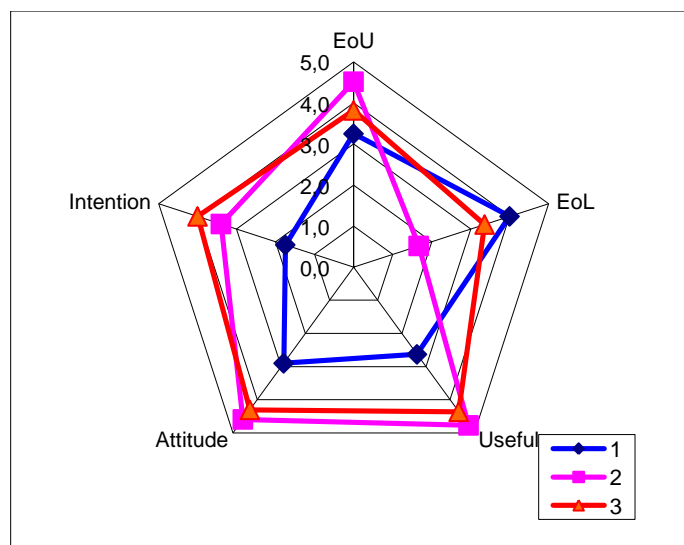


Figure K.2. Cluster Analyses 1b

Table K.6. Cluster Analyses 1b

	Cluster		
	1	2	3
N=	(4)	(45)	(22)
EoU	3,25	4,52	3,82
EoL	4,00	1,67	3,36
Usefulness	2,63	4,77	4,36
Attitude	2,90	4,59	4,30
Intention	1,75	3,40	4,00

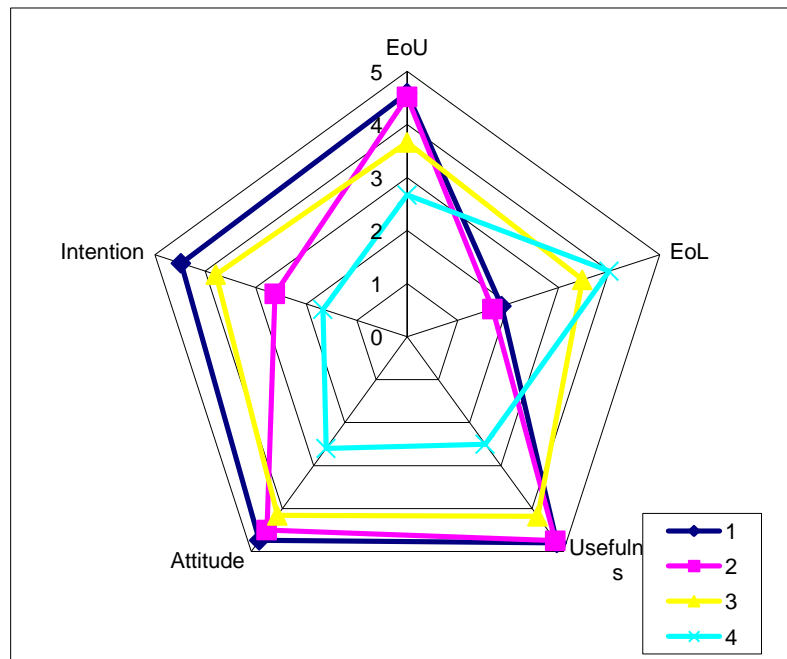


Figure K.3. Cluster Analyses 1c

Table K.7. Cluster Analyses 1c

	Cluster			
	1	2	3	4
N=	(23)	(26)	(19)	(3)
EoU	4,59	4,52	3,66	2,67
EoL	1,87	1,69	3,47	4,00
Usefulness	4,80	4,75	4,18	2,50
Attitude	4,74	4,50	4,16	2,60
Intention	4,48	2,62	3,79	1,67

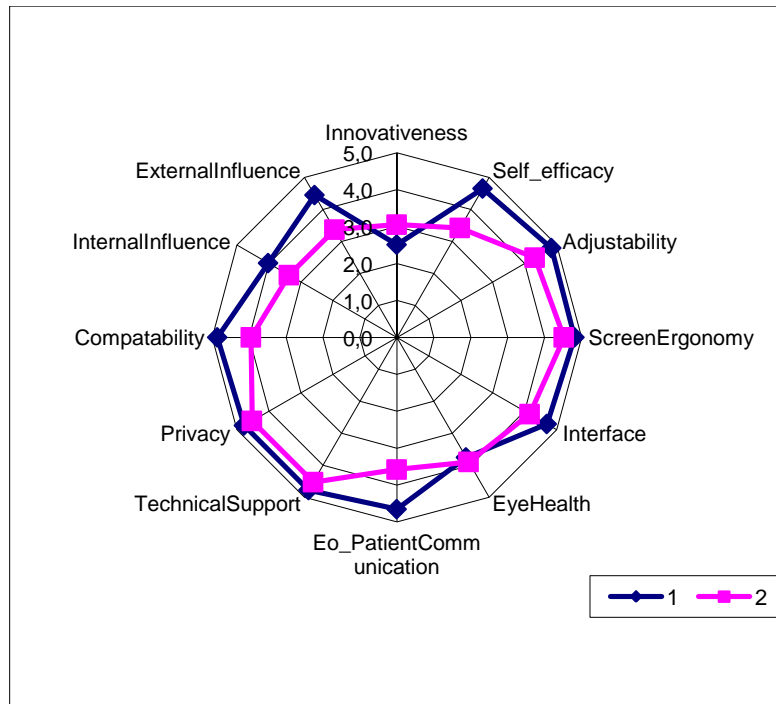


Figure K.4. Cluster Analyses 2a

Table K.8. Cluster Analyses 2a

	1	2
N=	(49)	(19)
Innovativeness	2,51	3,05
Self_efficacy	4,65	3,42
Adjustability	4,84	4,32
ScreenErgonomic	4,82	4,53
Interface	4,69	4,16
EyeHealth	3,76	3,89
	4,65	3,58
Eo_PatientCommunication		
TechnicalSupport	4,78	4,53
Privacy	4,78	4,53
Compatibility	4,86	3,95
InternalInfluence	4,02	3,37
ExternalInfluence	4,45	3,37
EoU	4,51	3,66
EoL	2,00	3,00
Usefulness	4,81	3,79
Attitude	4,65	3,77
Intention	3,53	3,32

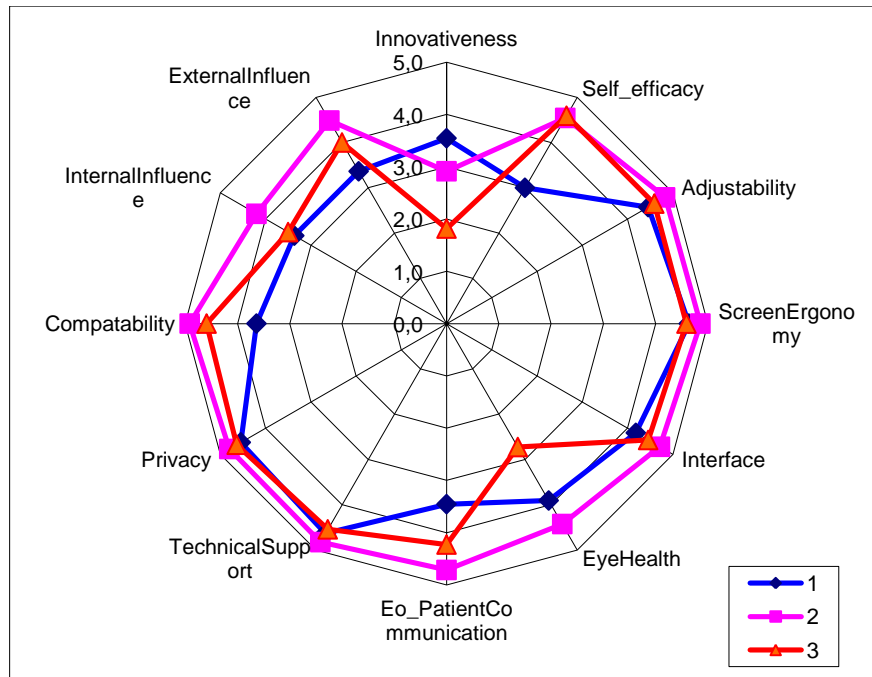


Figure K.5. Cluster Analyses 2b

Table K.9. Cluster Analyses 2b

	Cluster		
	1	2	3
N=	(11)	(35)	(22)
Innovativeness	3,55	2,91	1,82
Self_efficacy	3,00	4,54	4,59
Adjustability	4,45	4,83	4,59
ScreenErgonomic	4,64	4,86	4,59
Interface	4,18	4,71	4,45
EyeHealth	3,91	4,43	2,73
Eo_PatientCommunication	3,45	4,71	4,23
TechnicalSupport	4,64	4,83	4,55
Privacy	4,55	4,80	4,64
Compatability	3,64	4,91	4,59
InternalInfluence	3,36	4,20	3,50
ExternalInfluence	3,36	4,49	4,00
EoU	3,55	4,43	4,39
EoL	3,36	2,23	1,82
Usefulness	3,50	4,83	4,55
Attitude	3,53	4,69	4,40
Intention	3,00	3,60	3,50

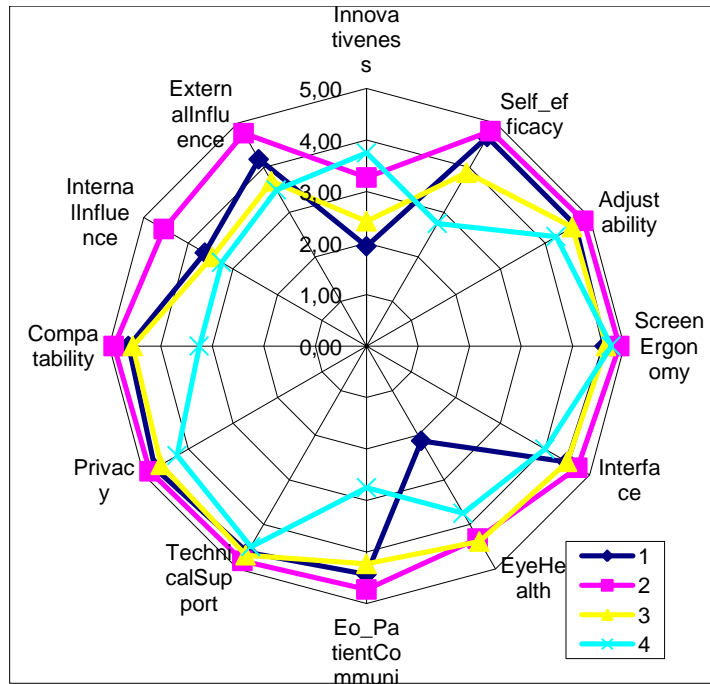


Figure K.6. Cluster Analyses 2c

Table K.10. Cluster Analyses 2c

	Cluster			
	1	2	3	4
N=	(16)	(22)	(26)	(4)
Innovativeness	1,94	3,27	2,42	3,75
Self_efficacy	4,69	4,82	3,88	2,75
Adjustability	4,69	4,86	4,62	4,25
ScreenErgonomic	4,63	4,91	4,65	4,75
Interface	4,50	4,73	4,50	4,00
EyeHealth	2,13	4,32	4,38	3,75
Eo_PatientCommunication	4,44	4,73	4,23	2,75
TechnicalSupport	4,63	4,82	4,69	4,50
Privacy	4,75	4,86	4,62	4,25
Compatibility	4,63	4,91	4,54	3,25
InternallInfluence	3,63	4,55	3,46	3,25
ExternallInfluence	4,19	4,77	3,69	3,50
EoU	4,56	4,59	3,98	3,25
EoL	1,56	1,77	2,88	4,00
Usefulness	4,63	4,86	4,46	2,63
Attitude	4,50	4,77	4,27	2,90
Intention	3,50	3,68	3,54	1,75

Table K.11. Regression Model Summary

	Regression			Model Summary	
choice	dependent	independent	independent	R ²	Adj R ²
1	Intention	EoL EoU Usefulness Attitude	Attitude	0,089	0,076
	Attitude	EoL EoU Usefulness	Usefulness	0,691	0,686
2			Usefulness, EoU	0,712	0,704
			Usefulness, EoU, EoL	0,854	0,716
	Attitude	EoL EoU Usefulness externalConVAR	Usefulness	0,736	0,732
			Usefulness, ExternalInfluence	0,764	0,757
	Attitude	EoL EoU Usefulness externalConVAR externalFeaVAR	Usefulness	0,709	0,704
			Usefulness, Eo_Photo	0,763	0,755
			Usefulness, Eo_Photo, TechnicalSupport	0,793	0,782
			Usefulness, Eo_Photo, TechnicalSupport, Eo_MED_Education	0,813	0,801
			Usefulness, Eo_Photo, TechnicalSupport, Eo_MED_Education, Eo_Reminding	0,834	0,820
			Usefulness, Eo_Photo, TechnicalSupport, Eo_MED_Education, Eo_Reminding, BatteryLife	0,860	0,845
			Usefulness, Eo_Photo, TechnicalSupport, Eo_MED_Education, Eo_Reminding, BatteryLife, GestureControl	0,882	0,867
			Usefulness, Eo_Photo, TechnicalSupport, Eo_MED_Education, Eo_Reminding, BatteryLife, GestureControl, ExternalInfluence	0,893	0,877
	Usefulness	EoL EoU	EoU	0,321	0,311
	Usefulness	EoL EoU externalConVAR	Compatibility	0,477	0,469
			Compatibility, EoU	0,593	0,580
3	Usefulness	EoL EoU externalConVAR externalFeaVAR	Compatibility	0,484	0,476
			Compatibility, EoU	0,577	0,563
			Compatibility, EoU, Eo_Reminding	0,658	0,641
			Compatibility, EoU, Eo_Reminding, SpeechRecognition	0,691	0,670
	EoU	EoL	EoL	0,288	0,278
	EoU	EoL externalConVAR	EoL	0,269	0,258

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Table K.11 (cont.).

			EoL, ExternalInfluence	0,400	0,382
	EoU	EoL externalConVAR externalFeaVAR	EoL	0,243	0,231
			EoL, Eo_MED_Education	0,385	0,364
			EoL, Eo_MED_Education, ExternalInfluence	0,460	0,432
			EoL, Eo_MED_Education, ExternalInfluence, Privacy	0,502	0,468

Table K.12. Regression Coefficients

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,278	0,863		1,480	,143
	Attitude	,503	,194	,298	2,594	,012
a. Dependent Variable: Intention						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,842	,290		2,899	,005
	Usefulness	,788	,064	,831	12,412	,000
2	(Constant)	,543	,311		1,744	,086
	Usefulness	,692	,075	,730	9,249	,000
	EoU	,173	,076	,179	2,269	,026
3	(Constant)	-,045	,423		-,107	,915
	Usefulness	,711	,074	,749	9,628	,000
	EoU	,242	,082	,250	2,940	,005
	EoL	,093	,046	,152	2,000	,050
a. Dependent Variable: Attitude						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,176	,450		2,615	,011
	Compatibility	,730	,096	,696	7,565	,000
2	(Constant)	,353	,468		,754	,454
	Compatibility	,585	,097	,557	6,050	,000
	EoU	,349	,096	,336	3,642	,001
3	(Constant)	-,258	,456		-,567	,573
	Compatibility	,507	,090	,483	5,622	,000
	EoU	,346	,087	,334	3,990	,000
	Eo_Reminding	,227	,061	,293	3,725	,000

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Table K.12 (cont.).

4	(Constant)	-.504	,448		-1,126	,265
	Compatibility	,456	,089	,435	5,143	,000
	EoU	,352	,083	,339	4,228	,000
	Eo_Reminding	,162	,064	,209	2,530	,014
	SpeechRecognition	,169	,068	,211	2,496	,015
a. Dependent Variable: Usefulness						
Coefficients^a						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	4,946	,165		29,987	,000
	EoL	-.293	,066	-.493	-4,430	,000
2	(Constant)	3,376	,449		7,520	,000
	EoL	-.268	,060	-.452	-4,433	,000
	Eo_MED_Education	,330	,089	,378	3,710	,000
3	(Constant)	2,768	,474		5,837	,000
	EoL	-.255	,057	-.429	-4,445	,000
	Eo_MED_Education	,282	,086	,323	3,285	,002
	ExternalInfluence	,193	,067	,281	2,865	,006
4	(Constant)	3,770	,644		5,856	,000
	EoL	-.258	,056	-.435	-4,645	,000
	Eo_MED_Education	,281	,083	,322	3,382	,001
	ExternalInfluence	,221	,066	,321	3,323	,002
	Privacy	-.234	,105	-.210	-2,221	,030
a. Dependent Variable: EoU						

Table K.13. Regression Analyses

Dependent Variable	Independent Variables	Unstandardized	Std. Error	Standardized	t	Sig.	
		B		Beta			
Intention	(Constant)	1,278	0,863		1,480	,143	
	Attitude	,503	,194	,298	2,594	,012	Attitude
Attitude	(Constant)	,543	,311		1,744	,086	
	Usefulness	,692	,075	,730	9,249	,000	Usefulness
	EoU	,173	,076	,179	2,269	,026	EoU
Usefulness	(Constant)	-.504	,448		-1,126	,265	

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Table K.13 (cont.)

	Compatibility	,456	,089	,435	5,143	,000	It is suitable to my professional understanding to use such kind of technological devices
	EoU	,352	,083	,339	4,228	,000	EoU
	Eo_Reminding	,162	,064	,209	2,530	,014	I would like to use it to remind
	SpeechRecognition	,169	,068	,211	2,496	,015	I would like to use speech to text program on this device
EoU	(Constant)	3,770	,644		5,856	,000	
	EoL	-,258	,056	-,435	-4,645	,000	I think that it needs effort to learn using of it
	Eo_MED_Education	,281	,083	,322	3,382	,001	I would like to use it in medical education
	ExternalInfluence	,221	,066	,321	3,323	,002	I came across a lot of articles that has positive approach to technological devices
	Privacy	-,234	,105	-,210	-2,221	,030	I would like it to pay attention into patient privacy

Table K.14. Correlation Analyses

Correlations						
	EoL	EoU	Usefulness	Attitude	Intention	
Gender	-,311	,155	,161	,126	,115	Pearson Correlation
	,008	,197	,179	,296	,338	Sig. (2-tailed)
Age	,131	-,312	-,187	-,183	-,042	Pearson Correlation
	,275	,008	,119	,127	,726	Sig. (2-tailed)
Education	,051	-,150	-,142	-,129	-,095	Pearson Correlation
	,678	,214	,242	,287	,432	Sig. (2-tailed)
Expertise	-,042	,210	-,124	-,072	-,226	Pearson Correlation
	,732	,084	,310	,558	,061	Sig. (2-tailed)
Innovativeness	,117	-,181	-,221	-,220	-,097	Pearson Correlation
	,330	,132	,064	,066	,419	Sig. (2-tailed)

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Table K.14 (cont.).

Self_efficacy	-,396	,416	,416	,363	,120	Pearson Correlation
	,001	,000	,000	,002	,317	Sig. (2-tailed)
Adjustability	-,177	,298	,289	,282	,177	Pearson Correlation
	,143	,012	,015	,018	,143	Sig. (2-tailed)
ScreenErgonomic	-,066	,141	,078	,098	-,104	Pearson Correlation
	,587	,245	,521	,421	,393	Sig. (2-tailed)
Interface	-,277	,149	,290	,252	-,005	Pearson Correlation
	,020	,214	,014	,034	,967	Sig. (2-tailed)
EyeHealth	,285	-,047	,030	,012	,128	Pearson Correlation
	,016	,694	,803	,920	,289	Sig. (2-tailed)
Eo_PatientCommunication	-,213	,394	,413	,473	,149	Pearson Correlation
	,074	,001	,000	,000	,214	Sig. (2-tailed)
TechnicalSupport	-,036	-,051	,145	-,003	,020	Pearson Correlation
	,765	,673	,228	,978	,869	Sig. (2-tailed)
Privacy	-,117	-,040	,138	,108	,030	Pearson Correlation
	,331	,740	,249	,370	,806	Sig. (2-tailed)
Compatibility	-,322	,431	,677	,608	,164	Pearson Correlation
	,007	,000	,000	,000	,176	Sig. (2-tailed)
InternalInfluence	-,116	,286	,215	,290	,036	Pearson Correlation
	,338	,016	,074	,015	,769	Sig. (2-tailed)
ExternalInfluence	-,129	,436	,357	,437	-,034	Pearson Correlation
	,283	,000	,002	,000	,776	Sig. (2-tailed)
BatteryLife	-,006	,132	,348	,157	-,014	Pearson Correlation
	,959	,272	,003	,192	,906	Sig. (2-tailed)
Weight	-,073	,032	,177	,111	-,161	Pearson Correlation
	,544	,794	,139	,356	,180	Sig. (2-tailed)
SystemSpeed	,093	,019	-,046	-,021	-,040	Pearson Correlation
	,443	,877	,706	,862	,744	Sig. (2-tailed)
MemorySize	-,005	,123	,337	,223	,091	Pearson Correlation
	,964	,308	,004	,062	,452	Sig. (2-tailed)

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Table K.14 (cont.).

HeatingProblem	,256	-,219	-,197	-,133	-,068	Pearson Correlation
	,031	,066	,100	,268	,572	Sig. (2-tailed)
WirelessConnectivity	-,066	,211	,356	,313	,007	Pearson Correlation
	,584	,078	,002	,008	,953	Sig. (2-tailed)
View_Screen	,007	,110	,267	,203	,113	Pearson Correlation
	,951	,360	,025	,089	,348	Sig. (2-tailed)
Resolution_Screen	-,143	,154	,147	,105	,010	Pearson Correlation
	,237	,202	,225	,385	,936	Sig. (2-tailed)
HandsFree	-,263	,286	,224	,226	,026	Pearson Correlation
	,027	,016	,061	,058	,827	Sig. (2-tailed)
VoiceControl	-,157	,112	,434	,355	,007	Pearson Correlation
	,195	,357	,000	,003	,954	Sig. (2-tailed)
GestureControl	,182	,067	,089	,219	,072	Pearson Correlation
	,129	,578	,458	,067	,552	Sig. (2-tailed)
SpeechRecognition	-,155	,130	,486	,396	,067	Pearson Correlation
	,197	,281	,000	,001	,579	Sig. (2-tailed)
SynchronizedHospital	-,161	,241	,472	,449	,083	Pearson Correlation
	,184	,044	,000	,000	,493	Sig. (2-tailed)
Eo_Reminding	,042	,088	,380	,384	,069	Pearson Correlation
	,732	,477	0,001	,001	,574	Sig. (2-tailed)
Eo_Photo	-,219	,398	,521	,667	,087	Pearson Correlation
	,066	,001	,000	,000	,473	Sig. (2-tailed)
Eo_REC_Surgery	-,110	,175	,299	,362	,187	Pearson Correlation
	,367	,146	,012	,002	,121	Sig. (2-tailed)
Eo_REC_MedicalData	-,272	,409	,604	,629	,129	Pearson Correlation
	,022	,000	,000	,000	,282	Sig. (2-tailed)
Eo_MON_MedicalData	-,359	,417	,486	,521	,120	Pearson Correlation
	,002	,000	,000	,000	,318	Sig. (2-tailed)
Eo_SHARE_MedicalData	-,003	,193	,395	,328	,047	Pearson Correlation
	,981	,107	,001	,005	,696	Sig. (2-tailed)

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Table K.14 (cont.).

Eo_HF_Documentation	-,273	,407	,395	,357	-,004	Pearson Correlation
	,021	,000	,001	,002	,971	Sig. (2-tailed)
Eo_FAC_Diagnosis	,034	,267	,425	,445	,249	Pearson Correlation
	,783	,025	,000	,000	,037	Sig. (2-tailed)
Eo_Telemedicine	-,094	,142	,284	,279	,179	Pearson Correlation
	,437	,236	,017	,019	,135	Sig. (2-tailed)
Eo_MED_Education	-,140	,417	,534	,610	,310	Pearson Correlation
	,245	,000	,000	,000	,009	Sig. (2-tailed)
EoL	1,000	-,537	-,392	-,275	-,053	Pearson Correlation
	0,000	,000	,001	,020	,660	Sig. (2-tailed)
EoU1	-,617	,895	,407	,395	,130	Pearson Correlation
	,000	,000	,000	,001	,278	Sig. (2-tailed)
EoU2	-,238	,792	,585	,654	,092	Pearson Correlation
	,045	,000	,000	,000	,448	Sig. (2-tailed)
Usefulness1	-,174	,537	,637	,769	,152	Pearson Correlation
	,149	,000	,000	,000	,208	Sig. (2-tailed)
Usefulness2	-,344	,552	,775	,894	,170	Pearson Correlation
	,004	,000	,000	,000	,159	Sig. (2-tailed)
Usefulness3	-,317	,611	,804	,925	,284	Pearson Correlation
	,008	,000	,000	,000	,017	Sig. (2-tailed)
Usefulness4	-,189	,507	,733	,900	,299	Pearson Correlation
	,115	,000	,000	,000	,011	Sig. (2-tailed)
Usefulness5	-,214	,429	,686	,819	,370	Pearson Correlation
	,073	,000	,000	,000	,001	Sig. (2-tailed)
Attitude1	-,358	,531	,942	,826	,224	Pearson Correlation
	,002	,000	,000	,000	,062	Sig. (2-tailed)
Attitude2	-,364	,510	,907	,714	,269	Pearson Correlation
	,002	,000	,000	,000	,024	Sig. (2-tailed)
EoU	-,537	1,000	,566	,592	,134	Pearson Correlation
	,000	0,000	,000	,000	,266	Sig. (2-tailed)

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Table K.14 (cont.).

Usefulness	-,392	,566	1,000	,831	,263	Pearson Correlation
	,001	,000	0,000	,000	,027	Sig. (2-tailed)
Attitude	-,275	,592	,831	1,000	,298	Pearson Correlation
	,020	,000	,000	0,000	,012	Sig. (2-tailed)
Intention	-,053	,134	,263	,298	1,000	Pearson Correlation
	,660	,266	,027	,012	0,000	Sig. (2-tailed)
	0,001	0,01				

Table K.15. Factor analyses of externalConVAR

Rotated Component Matrix^a					
Constructs	Component				Questions
	1	2	3	4	
ScreenErgonomic	0,834	-,009	,032	,225	I would like the display will be in accordance with the rules of ergonomics
Interface	0,812	,263	-,046	-,053	I would like improved interface design
Adjustability	0,722	,159	,234	,019	I would like it to be adjusted according to my face
Eo_PatientCommunication	0,552	0,536	,255	-,023	I would like to use it for improving doctor-patient communication
Compatibility	,202	0,821	,105	-,072	It is suitable to my professional understanding to use such kind of technological devices
Self_efficacy	,117	0,792	-,089	-,070	I can use technological devices myself easily
InternalInfluence	,029	,239	0,755	,278	My friends say this kind of technological devices are important
Privacy	,237	-,076	0,673	-,213	I would like it to pay attention to patient privacy

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Table K.15 (cont.).

ExternalInfluence	-,235	0,561	0,603	,243	I came across a lot of articles that has positive approach to technological devices
TechnicalSupport	0,464	0,202	0,523	-,148	I care about technical support when I am using it
EyeHealth	0,168	,077	-,143	0,708	The possibility of damaging the eye make me uncomfortable
Innovativeness	-0,054	-,195	,171	0,684	I am usually cautious about adopting new ideas

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 15 iterations.

Table K.16. Factor analyses of IntermedItemVAR externalConVAR

Rotated Component Matrix^a							
Constructs	Component						Questions
	1	2	3	4	5	6	
Usefulness3	0,912	,112	,131	,068	,098	-,001	To use it let me do my job easier
Usefulness2	0,879	,053	,159	,060	,028	,119	It will give me time
Usefulness4	0,878	,018	,028	,179	,021	-,048	To use it increase the quality of work that I have done
Attitude1	0,836	,140	,117	-,035	,226	,060	I advice the other workers to use it
Usefulness1	0,748	,133	,008	,073	,034	,008	It is useful
Attitude2	0,746	,092	,204	,028	,302	,201	I would like to use it

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Table K.16 (cont.).

Usefulness5	0,699	,049	,008	,026		- ,052	I think that it is useful for my work
EoU2	0,689	,130	,041	,332	,067	- ,222	I can do my work by this product easily
ScreenErgonomic	-,037	0,890	- ,041	,046	-,014	,034	I would like the display will be in accordance with the rules of ergonomics
Adjustability	,189	0,773	,152	,094	-,063	,162	I would like it to be adjusted according to my face
Interface	,154	0,721	- ,024	-,218	,345	,205	I would like improved interface design
Eo_PatientCommunication	0,417	0,552	- ,004	,150	,241	,182	I would like to use it for improving doctor-patient communication
EoL	-0,177	-,128	- 0,797	-,029	-,283	- ,026	I think that it needs effort to learn use of it
EoU1	0,345	,217	0,713	,189	,003	- ,270	It is easy to use
EyeHealth	0,084	,253	- 0,616	,192	,054	- ,243	The possibility of damaging the eye make me uncomfortable
ExternalInfluence	,394	-,087	,126	0,758	,085	,057	I came across a lot of articles that has positive approach to technological devices

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Table K.16 (cont.).

InternalInfluence	,229	,143	-,001	0,745	-,113	,278	My friends say this kind of technological devices are important
Innovativeness	-,364	,011	-,252	0,547	,283	-,014	I am usually cautious about adopting new ideas
Self efficacy	,290	,106	,217	,070	0,753	-,099	I can use technological devices myself easily
Compatibility	0,598	,125	,013	,055	0,604	,129	It is suitable to my professional understanding to use such kind of technological devices
Privacy	0,097	,090	,054	,159	-,077	0,783	I would like it to pay attention to patient privacy
TechnicalSupport	-,047	,288	-,014	,053	,070	0,710	I care about technical support when I am using it

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Table K.17. Factor analyses of IntermedItemVAR externalConVAR externalFeaVAR

Rotated Component Matrix^a														
	Component													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Usefulness 3	0,887	,065	,058	,072	,101	,065	,201	-,031	,078	-,059	,144	-,092	-,019	-,160
Usefulness 2	0,866	,119	-,007	-,002	,137	-,026	,092	-,016	,004	,055	,150	,147	,072	-,104
Usefulness 1	0,806	,030	,104	,225	,049	-,083	-,185	,055	-,091	,148	-,198	,126	,061	,148
Usefulness 4	0,800	,012	-,037	,177	,021	-,021	,277	-,028	,059	,012	,167	-,227	-,133	-,096

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Table K.17 (cont.).

Attitude1	0,791	,135	,016	,019	,210	,152	,009	,024	,151	,077	,282	-,142	-,005	,007
Attitude2	0,749	,147	,083	,091	,192	,246	-,131	-,126	,097	,165	,092	,111	-,118	,061
Usefulness 5	0,693	-,009	-,020	,005	,061	,331	,042	,016	,026	-,016	,259	-,150	-,060	,018
Eo_REC_MedicalData	0,688	,261	,325	-,286	-,008	,097	,100	-,028	,310	-,058	-,055	,203	,014	-,071
EoU2	0,655	,014	,004	,222	,193	,120	,217	,263	-,006	-,006	-,132	-,151	,027	,055
Compatibility	0,640	,173	,047	-,007	-,001	,599	,074	,070	-,049	,145	,006	,033	,008	,011
Eo_MON_MedicalData	0,637	,363	,250	,000	,093	,200	-,001	,022	,200	-,004	-,068	,342	-,047	-,076
Eo_Photo	0,623	,281	,346	-,170	-,101	-,104	,264	,047	,141	,018	,131	,007	,090	-,248
Eo_MED_Education	0,569	,271	,353	,105	-,028	,164	,031	,280	-,096	-,033	-,042	-,015	,021	-,084
Eo_REC_Surgery	0,496	-,011	,411	-,354	-,157	-,259	-,135	-,028	,067	,082	-,142	,289	-,056	,105
SynchronizedHospital	0,432	,198	,069	,261	,052	,197	,237	-,082	,423	,060	,199	,278	,105	-,120
Eo_HF_Documentation	0,817	,240	,175	,032	,119	,035	-,050	,221	,032	,109	,042	,070	-,054	-,122
TechnicalSupport	0,816	-,040	,095	,156	,057	,026	-,003	,003	,132	-,072	,176	,309	-,071	,071
Eo_Reminding	0,699	,412	-,026	,101	-,101	-,123	-,074	,088	,277	-,039	,155	,116	,076	,090
Eo_Telemedicine	0,690	,134	,243	,242	,017	,204	,252	-,021	-,232	,217	,047	-,237	,030	-,055
Eo_SHARE_MedicalData	0,565	,345	-,026	,023	-,213	,069	,109	-,160	,174	,228	,021	-,368	-,043	,114
Adjustability	0,817	,144	,183	,156	,141	,010	,103	-,041	,097	-,012	,048	,107	,104	-,036
Resolution_Screen	0,725	-,025	,060	-,022	,050	,025	,194	,047	,048	,414	,042	-,003	-,005	,026
ScreenErgonomic	0,681	-,051	,137	,288	,118	,073	-,111	,301	,219	-,041	,179	,064	-,125	,046
MemorySize	0,646	,129	-,045	,010	-,076	-,067	-,141	,100	,258	,295	,070	-,074	-,230	,126
Eo_PatientCommunication	0,504	,386	,204	,234	-,028	,374	,271	-,003	-,230	-,194	,265	,075	,038	-,113
Interface	0,499	,210	,231	,042	,088	,361	-,255	,148	,014	,002	,296	,081	-,300	,066
Eo_FAC_Diagnosis	0,729	,300	,173	,275	-,067	,063	,137	-,015	-,165	-,035	,112	,020	-,001	,131
GestureControl	0,700	,120	,153	,118	-,195	-,081	,059	,037	,203	,121	-,130	,096	-,023	-,095
EoL	0,800	-,183	-,064	-,039	,202	-,191	,003	,110	,036	,026	-,140	-,073	,086	-,001
EoU1	0,762	,339	-,036	,116	,012	,016	,093	,002	,032	-,035	-,166	-,074	,096	-,115
Self_efficacy	0,757	,305	-,043	,029	-,039	,187	,003	-,004	,161	-,007	-,078	,006	-,014	,006
ExternalInfluence	0,713	,365	-,110	-,043	,088	,099	,131	-,035	,087	,241	-,060	,087	,064	,164
InternalInfluence	0,701	,191	,181	,155	,157	,032	-,124	,158	,102	,039	-,028	,148	-,381	,169
EyeHealth	0,795	-,014	-,033	,056	,078	-,319	,093	,051	,034	,033	,049	-,079	,155	,056
HandsFree	0,576	,062	,410	,191	,017	-,278	-,164	-,094	,126	,064	,248	,027	-,133	,034
HeatingProblem	0,515	-,120	-,365	-,173	,267	-,352	,004	-,168	,037	-,143	-,051	-,032	,032	,032
WirelessConnectivity	0,764	,177	,111	,264	-,046	,033	,027	,124	,013	,141	,059	-,020	-,095	-,123
BatteryLife	0,547	,045	,247	,248	,227	-,129	,334	-,047	,245	,181	,034	-,006	,095	,225

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Table K.17 (cont.).

View_Screen	,194	,011	,319	,190	-,042	-,042	,037	,009	,173	0,780	,049	,171	,021	,043
Weight	-,015	,374	,059	-,158	-,026	,143	,281	,195	,085	0,650	,170	,204	-,062	-,071
SpeechRecognition	,352	,196	,203	,051	-,002	-,006	,003	,081	,071	,145	0,739	,188	,098	-,040
VoiceControl	,308	,395	,293	-,174	-,044	-,099	-,105	,255	,088	,093	0,626	-,006	,014	,123
Privacy	-,049	,165	,088	,093	-,010	,019	,170	-,075	,006	,292	,141	0,806	-,065	,021
SystemSpeed	,007	-,034	-,074	,003	-,002	-,021	-,095	,086	-,023	-,013	,057	-,034	0,913	,122
Innovativeness	-,163	,016	,066	-,006	-,088	,011	,171	,048	-,052	,008	,019	,004	,115	0,896

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 22 iterations.

Table K.18 Factor analyses of IntermedItemVAR externalConVAR externalFeaVAR DepVAR

Rotated Component Matrix^a														
	Component													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Usefulness3	0,901	,039	,009	,075	,095	,065	,110	,114	-,002	-,087	,130	,066	,054	-,182
Usefulness2	0,875	,117	-,020	,069	,001	-,020	,141	,154	-,053	,129	,052	-	-,012	-,067
Usefulness4	0,808	-,024	-,056	,173	,203	-,013	,027	,149	,015	-,208	,058	,187	,134	-,117
Attitude1	0,782	,144	,056	,062	,034	,208	,190	,303	,002	-,143	-	-	,038	-,048
Usefulness1	0,766	,068	,157	-,121	,180	-,024	,065	-,095	-,060	,084	-	-	,116	,271
Eo_REC_MedicalData	0,730	,269	,320	,015	-,212	,141	-,019	-,117	,010	,206	,039	,023	-,125	-,199
Attitude2	0,705	,175	,142	-,002	,083	,335	,163	,160	-,192	,100	-	,057	,145	,053
Eo_Photo	0,671	,254	,290	,184	-,117	-,138	-,083	,050	,086	,020	,213	-	-,066	-,297
EoU2	0,667	,003	-,017	,099	,217	,103	,235	-,117	,238	-,176	,093	,015	-,050	,118
Usefulness5	0,652	-,013	-,047	,039	,004	,371	,050	,266	,060	-,117	,051	,067	,294	-,031
Eo_MON_MedicalData	0,639	,391	,241	-,033	,028	,248	,090	-,078	-,004	,318	,059	,047	-,019	-,113
Compatibility	0,609	,158	,024	,166	-,035	,581	,010	,031	,028	,010	,193	-	,067	,080
Eo_MED_Education	0,543	,280	,263	-,039	,069	,134	,020	-,037	,245	-,031	,288	-	,179	-,001
Eo_REC_Surgery	0,484	,040	,458	-,111	-,333	-,178	-,163	-,128	-,033	,314	-	,016	,191	,062
Synchronized Hospital	0,470	,197	,089	,216	,359	,251	,028	,137	,004	,301	-	-	-,097	-,280
Eo_HF_Documentation	,221	0,845	,161	,069	,018	,047	,120	,058	,113	,026	,088	,025	,057	-,078
TechnicalSupport	-,032	0,830	,044	-,008	,186	,051	,027	,131	-,012	,287	,083	,094	-,017	-,011
Eo_Reminding	,434	0,727	,014	-,051	,155	-,047	-,137	,135	,073	,083	-	-	-,090	-,021
Eo_Telemedicine	,116	0,621	,131	,367	,211	,107	,035	,023	-,071	-,246	,411	-	,208	,054

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Table K.18 (cont.).

Eo_SHARE_MedicalData	,371	0,516	,057	,276	,069	,090	-,256	,010	-,188	-,394	-	,046	-,092	,055
HandsFree	,050	0,499	,251	-,045	,008	-,114	,293	,283	,487	,003	-,105	,110	,050	,022
MemorySize	,114	,011	0,787	,019	,028	,020	-,081	,124	,053	-,055	-,132	,156	,036	,054
Resolution_Screen	-,020	,058	0,753	,368	-,005	-,002	,071	,033	,025	,037	,173	-	,070	,028
Adjustability	,161	,178	0,711	,008	,184	-,018	,165	-,019	-,003	,144	,345	-,073	,068	-,102
ScreenErgonomic	-,035	,189	0,683	-,192	,284	,074	,149	,179	,247	,038	,182	,105	-,227	,005
View_Screen	,154	,058	0,538	,506	,212	,050	-,059	,148	-,073	,200	-	-	,226	,073
Interface	,177	,276	0,490	-,227	-,019	,359	,096	,337	,035	,037	,225	,225	-,074	,094
WirelessConnectivity	,227	,151	0,434	,192	,109	,178	-,017	,011	,111	,026	-	,128	-,150	-,427
Weight	,000	,381	,199	0,661	-,139	,120	-,030	,195	,092	,186	-	,044	-,132	-,002
ExternalInfluence	,445	-,187	-,047	0,641	,170	,069	,117	-,140	,054	,120	,110	,078	-,193	,130
GestureControl	,119	,164	,166	,056	0,723	-,043	-,180	-,106	,031	,076	-	,023	,020	-,077
Eo_FAC_Diagnosis	,280	,140	,153	,006	0,694	,013	-,031	,110	-,010	,018	,354	,030	,165	,208
Self_efficacy	,278	-,042	,024	,036	-,029	0,787	,177	-,074	,023	,010	,068	,012	,051	-,052
BatteryLife	,078	,292	,408	,088	,305	0,423	-,151	,038	,248	-,029	-	-	-,308	,059
EoL	-,180	-,074	-,004	,005	,217	-,194	-	-,144	,174	-,068	-	-	,035	,015
EoU1	,340	-,029	,076	,024	,021	,034	0,772	-,163	-,023	-,065	,003	-,073	,071	-,120
SpeechRecognition	,355	,219	,201	,108	,054	-,010	-,013	0,723	,068	,204	,117	-	-,029	-,085
VoiceControl	,314	,436	,322	,002	-,175	-,083	-,057	0,620	,206	-,009	,047	-	-,073	,057
EyeHealth	-,031	,024	,080	,051	,064	,086	-,255	,068	0,815	-,076	,017	-	,092	,095
HeatingProblem	-,122	-,404	-,166	-,225	,276	,026	-,387	-,052	-	-,024	-	-	-,044	-,014
Privacy	-,042	,190	,107	,278	,109	,014	-,016	,131	-,101	0,807	,030	,074	-,011	,055
Eo_PatientCommunication	,397	,137	,252	,029	,195	,219	,029	,172	,036	,078	0,728	,036	,021	-,044
SystemSpeed	,025	-,039	-,113	,000	,021	-,045	,001	,028	,139	-,016	,027	-	-,063	,094
InternalInfluence	,263	,137	,107	,452	,235	-,167	,062	-,125	,247	,179	,148	0,537	-,071	,108
Intention	,214	,022	,046	-,101	,082	,057	,029	-,045	,109	,001	,047	,045	0,838	-,096
Innovativeness	-,125	-,005	,074	,123	,028	,014	-,103	-,015	,115	,034	-	-	-,124	0,786

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 22 iterations.

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