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Redesign Automatic Flashlight Identification Signal 1.0 (AFIS1.0) on KRI with Kansei Engineering and Ethnography Methods

Rancangan Ulang Automatic Flashlight Identification Signal 1.0 (AFIS1.0) pada KRI dengan Metode Kansei Engineering and Ethnography

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Abstract

AFIS 1.0 is a helpful communication tool for sending and receiving automatically operated Morse lamp signal news. In this study, researchers developed AFIS 1.0 because there were still some shortcomings in the previous device, namely that AFIS 1.0 was still operated using a PC, could not store its power, could not be portable, and was not equipped with recorded data. This study aims to identify the attributes of AFIS 1.0, redesign the prototype AFIS 1.0 according to the attributes obtained and test the results of the prototype AFIS 2.0. The method used in this study is ethnography, where the researcher directly observes respondents in the field. Kansei engineering is used to translate respondents' psychological feelings and needs into product design parameters. The results of this study are in the form of a prototype AFIS 2.0 with the Android operating system, equipped with a rechargeable battery, can be installed permanently and portable, equipped with data recording, Morse complex and the tool can be operated automatically or manually. In testing the results of the prototype AFIS 2.0 conducted by the Head of KRI SIM-366 and the Head of KRI Nala-363, it was stated that the tool can be appropriately operated so that AFIS 2.0 can answer respondents' wishes in the field. With the development of AFIS 2.0, it is hoped that communication with soldiers on KRI will be more straightforward in sending and receiving news of Morse lamp signals.

Keywords: AFIS 1.0, Ethnography, Kansei Engineering, Redesign.

Abstrak

AFIS 1.0 adalah alat komunikasi yang berguna untuk mengirim dan menerima berita isyarat lampu morse yang dioperasikan secara otomatis. Dalam penelitian ini, peneliti mengembangkan AFIS 1.0 karena masih terdapat beberapa kekurangan pada alat sebelumnya, yaitu bahwa AFIS 1.0 masih dioperasikan menggunakan PC, tidak dapat menyimpan daya sendiri, tidak bisa digunakan secara portabel dan tidak dilengkapi dengan data rekaman. Tujuan dari penelitian ini adalah mengidentifikasi atribut pada AFIS 1.0, mendesain ulang *prototype* AFIS 1.0 sesuai dengan atribut yang didapatkan dan menguji hasil *prototype* AFIS 2.0. Metode yang digunakan dalam penelitian ini adalah metode *Ethnography* dimana peneliti melakukan observasi langsung kepada responden dilapangan dan metode *Kansei Engineering* yang digunakan untuk menerjemahkan perasaan psikologis dan kebutuhan responden ke dalam

parameter desain produk. Hasil penelitian ini berupa *prototype* AFIS 2.0 dengan sistem operasi android, dilengkapi dengan baterai isi ulang, dapat dipasang secara permanen dan *portable*, dilengkapi dengan data rekaman, kompleks morse dan alat dapat dioperasikan secara otomatis maupun manual. Dalam pengujian hasil *prototype* AFIS 2.0 yang dilakukan oleh Kabagkom KRI SIM-366 dan Kabagkom KRI Nala-363 menyatakan bahwa alat dapat dioperasikan dengan baik sehingga AFIS 2.0 mampu menjawab keinginan responden dilapangan. Dengan pengembangan AFIS 2.0 ini diharapkan prajurit komunikasi di KRI akan lebih mudah dan simpel dalam melakukan kirim terima berita isyarat lampu morse.

Kata kunci: AFIS 1.0, *Ethnography*, *Kansei Engineering*, Rancang ulang.

1. Introduction

KRI, as one of the main components of the fleet, must always maintain readiness so that it is always ready for combat, both in terms of the readiness of the Sensor Weapon and Command (sewaco) and the condition of the KRI personnel. Therefore, it is hoped that the KRI will be ready to support fleet operations as an operational municipality at any time. In order to maintain and improve professionalism and measure the combat readiness of soldiers in the tactical, technical and warfare fields, it is necessary to carry out internal and international training. One of the exercises often done is the light signal exercise (flash exercise). The primary purpose of this exercise is to practice and develop skills in reading letters using light or morse cues (EXTAC, 1996). This exercise is usually carried out after sunset (sunset).

Light signalling exercises (Flashex) are often carried out in almost every Indonesian Navy exercise; therefore, in this study, the authors wanted to develop/redesign the Automatic Flashlight Identification Signal 1.0 (AFIS 1.0) tool which had been created and researched previously by Major Luat (P) Tedi Febriansyah, STTAL Industrial Management Engineering Student Batch XXXVIII. AFIS 1.0 is a Morse light signal communication tool that must exist on the KRI, which is used to send Morse messages using light signals. In addition, this tool can also be used to send a dangerous signal (SOS) if the ship is in an emergency (Febriansyah, 2019).

Figure 1. Current condition of AFIS 1.0

Based on direct observations and observations in the field, there are several problems with AFIS 1.0, so it is necessary to redesign and improve the tool; some wishes and input from users are that AFIS 1.0 still uses PC software so it still requires cable installation to connect between the light box and PC, so that from an ergonomic point of view, it still requires two operators, namely as a lightbox crew whose job is to direct the direction of the lightbox towards the direction of the light (sending messages from other ships) as well as the direction of the lights (receiving news from other ships) outside (outdoor).) and PC software crews in the room (indoor). So, users suggest changing AFIS 1.0 from PC Software to Android-based Software.

In its use in the field, AFIS 1.0 is permanently attached to the shipbuilding, making it less effective because it cannot be used in a portable manner. Therefore, the user hopes that this tool can be used in a portable manner and can be moved in all places and on all sides of the ship's hull so that the exercise can be carried out optimally without experiencing problems with the Blank Sector Area (BSA), especially for the emitting sector of the light. AFIS 1.0 cannot be used when the ship's power is off / the Diesel Generator is off, so there is no power input to supply the tool. Therefore, in developing this product, users hope the tool can be developed again so that the equipment can still be used without electricity.

AFIS 1.0 does not have a recorder/recording data storage feature in operation. This is very important because this feature can be used to reopen exercise data that has been carried out if needed. Apart from that, it can also make it easier for soldiers of the communications division to look back at the training record data that has been carried out, both news that has been received and sent as a basis for training evaluation. The Morse feature in

AFIS 1.0 only uses Morse letters or the alphabet, so it needs to be developed by adding Morse numbers and Morse punctuation.

Based on the input from the users mentioned above, the authors will redesign AFIS 1.0 to become AFIS 2.0, which has quality and is close to the level of perfection according to the wishes of the user so that it is hoped that users will feel satisfied using the tool, primarily to support the Indonesian Navy's training in the field of communication. Therefore, the focus of this study is that researchers will redesign AFIS 1.0 to become AFIS 2.0, which can answer existing problems in the field (KRI).

Kansei Engineering is a method of developing or improving a product or service by translating psychological feelings, and user needs into product design parameters. This method was first introduced by Nagamachi (1995) as a new engineering method in the design and development of industrial products. This product design parameter is a reference for the industry to produce quality products with the correct quantitative measurement of the production process. Some advantages of using Kansei Engineering include getting the taste and tastes of the intended consumers, creating products based on the desires/tastes of consumers, easing consumer satisfaction, suggesting new product trends in the future, and increasing the sense of design in a designer group.

The word ethnography comes from the Greek "ethos", which means tribe, and "graphos", which means something written. Ethnography is the description and interpretation of a culture or social group system. Ethnography is the process and result of research. As a process, ethnography involves long observations of a group, where in this observation, the researcher is involved in the respondents' daily lives or through one-on-one interviews with group members (Noor, 2011). The ethnography research cycle procedure includes six steps: selecting an ethnography project, submitting questions, collecting ethnographic data, producing ethnographic records, analyzing ethnographic data, and writing ethnography.

The objectives to be achieved in this study were to identify the attributes of AFIS 1.0 according to the wishes of the respondents, to design and redesign the AFIS 1.0 prototype according to the attributes obtained from the respondents, and to test the results of the AFIS 2.0 prototype which obtained from research results.

2. Material and Method

Setan This research method describes the process of researching the final assignment, starting from the beginning of the work until the completion of the research. Work begins with identifying problems determining what topics will be raised for writing this research. The stages of this research can be seen in the flowchart (Figure 1).

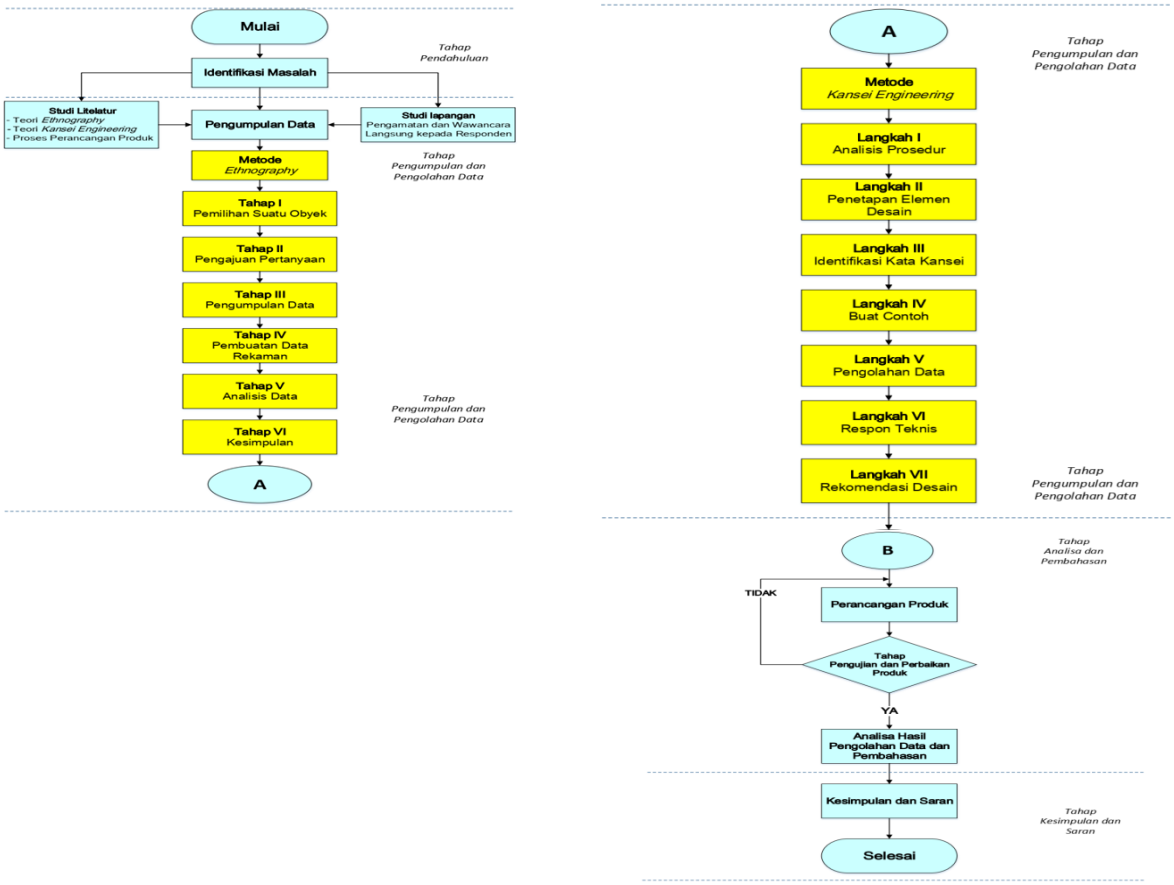


Figure 1. Research flowchart

3. Result and Discussion

3.1. Ethnography

In the Ethnography method, researchers will make direct observations in the field to the soldiers of the communications division serving on the KRI. By making direct observations in this field, the researchers obtained several inputs and suggestions from the respondents. Some of them are as follows: 1) Operation of AFIS 1.0, which still uses a PC and cable installation to develop it further and make it look simpler. 2) The equipment is still permanently attached to the ship's structure, so it cannot be used flexibly. 3) The tool still uses the ship's power source/DG, so that the tool cannot be used if the ship's power goes out suddenly/blackout. 4) Not equipped with a database recorder, so training activities cannot be stored. 5) AFIS 1.0 only uses the Morse Alphabet, so when it is used to send and receive Morse numbers and punctuation marks, the tool cannot work. 6) The speed of the Morse lamp cannot be adjusted as needed (low speed or average speed according to international standards). 7) Apart from being able to operate automatically, respondents also hoped that the tool could also be used manually; this was used to train young communications soldiers who had just entered service at the KRI.

3.2. Kansei Step I and Step II

The initial condition of AFIS 1.0, which makes it easier for KRI soldiers to carry out Flashex exercises, is So that the sending and receiving of Morse lamp signals can be done automatically. We can see the initial conditions regarding AFIS 1.0 from several things below, including 1) The tool's operation still uses cable installation. 2) The tool is still permanently attached to the ship, so it cannot be used mobile. 3) The power input is AC, so it depends on the ship's electricity. 4) Not equipped with a database recorder. 5) Only use the Morse alphabet. 6) The speed of the Morse lamp cannot be adjusted according to the user's wishes. 7) The tool can only be used automatically. Respondents are more comfortable using tools based on the Android Operating System (OS) support on all platforms. Because almost all answered agree and strongly agree. This indicates that the Android OS is more familiar in everyday life. In addition, respondents also supported that this tool uses a high-grade level of Morse code so that all forms of Morse (morse alphabet, morse numbers and Morse punctuation marks) can be accommodated for the tool to be developed.

In terms of equipment placement on the KRI. Most respondents agreed that the tools developed could be installed permanently and portable on the KRI. This tool is also expected to have a dynamic flash rate ratio so that later, the operator can adjust the transmission speed according to the broadcast requirements (slow/low speed and average/average speed/according to international standards). In addition, respondents also agreed that this tool has a white light design like a halogen and uses the type/type of Lux emission. In terms of device power input, some respondents support the idea of equipping the tool being developed with a rechargeable battery. This can be seen from the answers of those who agree with this. In addition, all respondents agreed that this tool was formed so that it has resistance to all weather at sea. The results of some of the questions in the questionnaire we provide can be grouped into several product design elements. Some of the product design elements include

Table 1. Product design elements

No	Design elements	Information
1	Box material	Components to make a lightbox
2	Tripods	Additional tools for the establishment of lights
3	Power Supply	Tool support power input
4	Completeness	Components supporting other tools

3.3. Identify Kansei Word (Kansei Step 3)

From the survey results directly in the field for KRI soldiers, identification of Kansei words was obtained to facilitate research in obtaining information about the user's psychology of feelings (Kansei) towards the tool that the researcher will develop/AFIS 1.0. Kansei's words obtained from survey results and interviews with communication soldiers are as follows:

Table 2. Kansei words

No	Kansei words	Relationship with design elements
1	Operating System (OS) that is used on Android All Devices.	4
2	The device uses a high-grade Morse code (memory test for members).	4
3	The placement device is permanently attached to the wall.	2
4	The device is equipped with a data recorder.	4
5	The device has a dynamic flashlight rate ratio.	4
6	The lights on the device are white, like halogen and use Lux emission.	4
7	The device uses a battery so it can be charged.	3
8	The device is made according to weather resistance.	1
9	The radius of the control device is more than 30 m.	4
10	Only the manual book for operating the device is listed.	4

Table 3. Influential variables

No	Variable
1	Can be operated with Android = Simple
2	All types of morse can be accommodated = Creative
3	The tool is equipped with a tripod = Mobile
4	Setting the time delay of the light beam = Proportional
5	Tools are designed regularly and structured = Tidy
6	The final result of the fall of the refraction of light = Standard
7	The model and completeness of the equipment are worthy of being displayed = Formal
8	Equipped with database recorder and battery = Modern technology
9	Tool design is resistant to various kinds of weather = Safe
10	The tool deserves to be developed and is equipped with a manual book and video of the operation of the tool = Production

3.4. Questionnaire Data Collection

Data collection was carried out by distributing questionnaires to TNI AL soldiers who served on KRI in the Koarmada II Escort Ship Unit ranks, which had a direct role in performing TNI AL training and operations tasks. The questionnaire was distributed in two stages, namely, the preliminary questionnaire and the actual questionnaire. From the data collection results, the questionnaire data was interpreted to obtain information related to consumer needs. Based on the questionnaire distributed, it can be seen that the average level of satisfaction and interest of soldiers towards AFIS 1.0 has been made before.

Table 4. Average level of satisfaction and interest level

Variable	Simple	Creative	Mobile	Proportional	Tidy	Standard	Formal	Modern technology	Safe	Production
Satisfaction	2.97	2.93	3.10	2.90	2.83	2.93	3.00	2.93	3.00	3.03
Interest	3.00	2.97	3.20	3.07	3.03	0.30	3.17	3.33	3.20	3.13
Gap	-0.03	-0.03	-0.10	-0.17	-0.2	-0.07	-0.17	-0.40	-0.2	-0.10

3.5. Determination of the Sequence of Interests

Showing how much the level of importance of each attribute for users can be seen in Table 5.

Table 5. Average value of attribute importance level

Variable	Simple	Creative	Mobile	Proportional	Tidy	Standard	Formal	Modern technology	Safe	Production
Interest	3.00	2.97	3.20	3.07	3.03	3.00	3.17	3.33	3.20	3.13
Order of Interest	9	10	3	6	7	8	4	1	2	5

3.6. Data Processing (5th Kansei Step)

The data obtained in the previous stage is then processed qualitatively and quantitatively. There are two stages in processing the quantitative data results from the questionnaire. The first is the data adequacy test in the sample determination above. Then, the second stage tests the validity and reliability of the questionnaire data. A validity test measures whether the questionnaire is stable and accurate and whether the elements are homogeneous. Questionnaires said to be valid have questions interconnected with the desired concepts. If there are questions that are not related, it means that the question is not valid and will be removed or replaced with another, more valid question concept. The higher the validity obtained, the more the test is on target and shows what it should.

Reliability comes from the word reliability. Sugiharto & Situnjak (2006) stated that reliability refers to a definition that the instruments used in research to obtain information can be trusted as a data collection tool and can reveal actual information in the field. The reliability test is used to see the respondents' level of consistency with the existing variables so that the data obtained will tend to give the same (consistent) results. From processing the questionnaire data with the help of the Office Excel 2013 for Windows program, the results are obtained as shown in Figure 2.

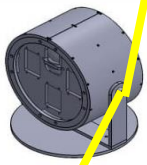
Figure 2.Questionnaire reliability test results

From the test results with the Office Excel 2013 program, it can be seen that Crobach's Alpha coefficient for the level of satisfaction is 0.858, and for the level of importance is 0.868. Both values are in the value range of 0.7 to 0.9, so it can be concluded that the questionnaire attributes for the level of interest and satisfaction are reliable.

3.7. Technical Response (Kansei Step 6)

The several alternative concepts desired by respondents are as Table 6.

Table 6. Design alternatives

No	Technical response	Product choice 1	Product choice 2
1	Camera	 Ezsee camera	 CCTV camera wifi
2	Battery	 Panasonic	 Sanyo
3	Tripods	 Design1	 Design 2
4	LED light	 Lumen LED	 Lux LED
5	Record data	 Sandisk	 Hardisk
6	Lightbox material	 PVC	 Iron plate
7	Light box design	 PVC Material	 Tube Models
		Alternatif 2 (ASS 2.0)	Alternatif 1 (ASS 2.0)

3.8. Design Recommendations (7th Kansei Step)

After the researcher has selected the best design alternative, it can be concluded that the design that will be used to make AFIS 2.0 is as follows: The best type of camera used to support AFIS 2.0 is a wifi camera with the Ezsee type because of its sharpness and can be operated using direct wifi. The choice of battery that can be used

and recharged is the Sanyo battery type because it has long endurance, is simple, and fast in the charging process. The aluminium tripod is the primary choice because it is corrosion-resistant and can withstand loads up to 20 kg. Based on organizational needs and respondents' wishes in choosing the type of lamp, the best lamp selection is LED type because it has brightness and sharpness. In the development of increasingly modern technology, the selection of SanDisk as a record data storage is the most effective because it has a small and simple form; besides that, it also has an affordable price and is easy to use. The recommended base material is PVC because it is strong and weather-resistant at sea, does not transmit heat and can dissipate heat. The choice of model in making a light box is adjusted to the needs of the components to be arranged and placed in the lightbox. Besides that, the placement of tool buttons and components and how to operate them must be arranged ergonomically. This is intended so that the tool's operation can be carried out optimally.

From the explanation above, the researcher concludes that the design should be used as the first alternative to be selected in making AFIS 2.0. In the first alternative, all the desires and wishes of most of the respondents have been accommodated.

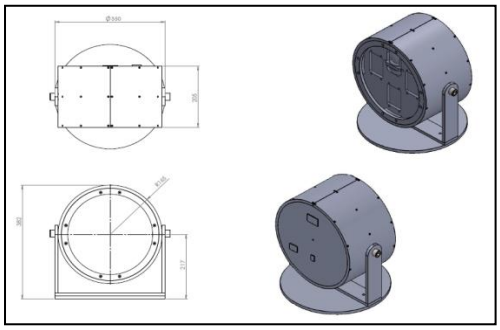


Figure 3. Drawing base

This Figure 3 explains the dimensions of the AFIS 2.0 device that will be used as a casing and the placement of other components that will be needed by AFIS 2.0. There are buttons for adjusting the speed of the light and a memory card slot if you experience problems. The questionnaire results about respondents' satisfaction with AFIS 2.0 can be seen in the attachment to the second questionnaire. The recap of the comparison of the average satisfaction level of the new design is as follows:

Table 7. Comparison of average satisfaction levels

Variable	Simple	Creative	Mobile	Proportional	Tidy	Standard	Formal	Modern Technology	Safe	Production
Old design	1.97	2.45	2.10	2.90	2.35	1.93	2.67	2.90	2.87	2.75
New design	3.00	2.97	3.20	3.07	3.03	3.00	3.17	3.33	3.20	3.13
GAP	1.03	0.25	1.10	0.17	0.68	1.07	0.50	0.43	0.33	0.38

After the researcher tested the prototype tool, the next activity was to calculate the overall costs incurred by the researcher in making the AFIS 2.0 prototype. Details of the cost of making a prototype are as follows:

Table 8. Product manufacturing costs

No	Need	Unit	Amount (IDR)
1	Light Box Panels	1	650.000
2	Aluminum Stand Box	1	450.000
3	Android Programmers	1	3.000.000
4	Microcontroller + Bluetooth	1	2.500.000
5	Aluminium tripod	1	400.000
6	Switching Power Supply	1	250.000
7	EZsee camera	1	450.000
8	Sanyo brand battery	6	180.000
9	Rechargeable battery	1	160.000
10	Step Up Module	1	400.000
11	Mitsuyama 12V LED lamp	3	450.000
12	Battery Indicator	1	150.000
13	Switches	23	150.000
14	Cable	6	150.000
15	Acrylic size 3mm	1	500.000
16	Medium Stainless Bolt	4	80.000
17	Big Stainless Bolt	2	90.000
18	Stainless Couplers	24	120.000
19	Handle box	1	145.000
	Total		10.275.000

3.9. Tool Test Result

The AFIS 2.0 trial was carried out with the KRI Sultan Iskandar Muda-366 at the East Madura Koarmada pier; this KRI is an element of the Koarmada II Eskorta Ship Unit. In the AFIS 2.0 trial, the researcher was assisted by several people, some of whom are as follows: 1) Marine Major (F) Joko Ariyanto NRP 18126/P, as Head of the Operations Department of KRI Sultan Iskandar Muda-366. 2) Peltu Kom Endro Soewanto NRP 76065, as Head of the Communications Division of KRI Sultan Iskandar Muda-366. 3) Pelda Kom Kamdi NRP 89086, who serves as Section Head of the KRI Nala-363 Communications Division. 4) Serka Kom Kusnadi NRP 102445, as Assistant Head of Communications Division KRI Nala-363.

Some of the people above are soldiers who have served for more than 10 years, so they better understand the procedure for sending and receiving light signals. This helps researchers carry out tool trials, especially in providing suggestions and input. The testing of the tool can be seen in Table 9.

Table 9. Tool testing results

No	Test material	Assessment criteria	Test results
1	The tightness of the lamp casing	Waterproof	impermeable
2	Triple Power	Able to withstand a load of 15 kg	> 20 kgs
3	Lightbox weight	10 kgs	10 kgs
4	Tripod weight	3 kgs	2 kgs
5	Light work function	Turns on on demand	In accordance
6	Receiver camera function	Able to read Morse news	In accordance
7	The condition of the nuts/bolts and handle box	Made of stainless steel/stainless steel	Stainless
8	AC cable condition	As per standard 220 Volt cable	In accordance
9	Power supply switch function	It can be used in both AC and battery mode	In accordance
10	OS mode switch function	It can be used in Automatic and Manual mode	In accordance
11	Battery indicator light function	It can light up according to the indication of the battery voltage condition.	In accordance
12	Battery charge switch function	When turned on, the light indicator is yellow	In accordance
13	Bluetooth connection function of the lamp	Bluetooth can be connected to Android devices easily	In accordance
14	Receiver camera Wifi function	Wifi can be connected to Android devices easily	In accordance
15	Lightbox handle function	Able to lift the lightbox quickly and simply	In accordance
16	Battery power system function	The existing battery can be used to operate the tool	In accordance
17	Mains/AC power system function	The tool can be operated using a 220-volt electric power	In accordance
18	Delivery of Morse letters	All Morse letters starting from A can be sent properly	In accordance
19	Sending morse numbers	All morse numbers starting from 1-0 can be sent properly	In accordance
20	Delivery morse punctuation	All morse punctuation in TNI AL can be sent properly	In accordance
21	Acceptance of Morse letters	All Morse letters starting from A-Z can be read properly	In accordance
22	Acceptance of Morse numbers	All numbers starting from 1-0 can be read properly	In accordance
23	Acceptance of Morse punctuation	All Morse punctuation marks in the Indonesian Navy can be read properly	In accordance
24	Bluetooth range	25 m	100 m
25	Wifi range	25 m	100 m
26	Light range	2 Nm (3,704 m)	3Nm
27	The range of the receiver camera	2 Nm (3,704 m)	500 m
28	Battery power capability	2 hours	3.5 hours
29	Battery charging from Min.	1 hour	30 minutes
30	Battery charging from an empty state	3 hours	2.5 hours
31	Tool record data function	It can be used to store recording data	In accordance
32	The light speed setting function	can function properly when used	In accordance
33	Slow mode delivery	Interval speed between Morse letters: 1 second	In accordance
34	Average mode delivery	The interval speed between Morse letters is 0.5 seconds	In accordance
35	Recording data capacity	Following the internal and external memory capacity of the android	In accordance

3.10. Results of interviews with informants (experts)

This activity is carried out to provide assessments, suggestions, and input on the tools that are being developed. The list of experts that the researchers took was as follows: 1) Marine Colonel (E) Ady Sucipto, S.T. NRP 12692/P, as Head of the Koarmada II Communications and Electronics Service. 2) Marine Lieutenant Colonel (P) Rasyid Al Hafiz, maritime Pol., M.Tr.Hanla NRP 14279/P, As Commander of KRI Sultan Iskandar Muda-366 from the Koarmada II Escort Ship Unit. The results of direct interviews with the Expert mentioned above can be seen in the following Table 10.

Table 10. Expert interview results

No	Expert	Evaluation
1	Kadiskomlek Koarmada II	a. AFIS 2.0 is made according to the needs of the Indonesian Navy and can reduce the error rate in sending news. b. This tool benefits operations and training activities because it can be operated automatically or manually. c. Facilitate members in sending and receiving optical news. d. Further research is still needed to test the tool's strength at a later stage, especially the Sea State 1 to 5 test. e. In order to be mass-produced, the equipment needs to be tested at the Dislingbang AL level. f. In sending and receiving news, use only one media (Bluetooth or wifi).
2	Commander KRI SIM-366	a. This tool supports communication with soldiers on ships, especially in Flashex exercises with other ships. b. The tool can work and function properly when tested with KRI SIM soldiers. c. AFIS 2.0 is beneficial for ship communication soldiers with an accuracy rate of sending news approaching 100%. d. To test the strength and durability of the tool, it is necessary to carry out cooperation with the Marine Research and Development Agency.

4. Conclusions

Some things that can be concluded from the results of this study are the level of satisfaction of communication soldiers with AFIS 1.0, which can be analyzed through the attributes obtained from the respondents, including simple, creative, mobile, proportional, tidy, standard, formal, modern technology, safe and production. Researchers can design and redesign the AFIS 1.0 prototype with the attributes obtained from the respondents. The success of this research can be judged by the results of the AFIS 2.0 prototype trial, which states that the tool can be operated properly; this proves that AFIS 2.0 can answer the wishes of respondents in the field.

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