# Assessing the Importance of Explanations in Software for End-Users

## Welcome to our survey!

Thanks for taking the time to participate in our survey. This research seeks to understand the current perception of end-users regarding the impact of explanations on the transparency of software applications. The goal is to understand what is your perception about the current transparency of the software applications that you use in your daily life, as well as your interest in receiving explanations while using a software system.

Please answer all the questions honestly, because authentic answers are essential for the success of this research. There is no right or wrong answer, so you may feel free to express your true opinion.

By starting the survey, you confirm that you are of legal age (at least 18 years old).

There are 18 questions in this survey

## Demographics

**[A1]What is your country of residence? ***

Choose one of the following answers

Please choose **only one** of the following:

- ○
- ○ Afghanistan
- ○ Albania
- ○ Algeria
- ○ American Samoa
- ○ Andorra
- ○ Angola
- ○ Anguilla
- ○ Antarctica
- ○ Antigua and Barbuda
- ○ Argentina
- ○ Armenia
- ○ Aruba
- ○ Australia
- ○ Austria
- ○ Azerbaijan
- ○ Bahamas
- ○ Bahrain
- ○ Bangladesh
- ○ Barbados
- ○ Belarus
- ○ Belgium
- ○ Belize
- ○ Benin
- ○ Bermuda
- ○ Bhutan
- ○ Bolivia
- ○ Bosnia and Herzegovina
- ○ Botswana
- ○ Bouvet Island
- ○ Brazil
- ○ British Indian Ocean Territory
- ○ Brunei Darussalam
- ○ Bulgaria
- ○ Burkina Faso
- ○ Burundi
- ○ Cambodia
- ○ Cameroon
- ○ Canada
- ○ Cape Verde
- ○ Cayman Islands
- ○ Central African Republic
- ○ Chad
- ○ Chile
- ○ China
- ○ Christmas Island
- ○ Cocos Islands
- ○ Colombia
- ○ Comoros
- ○ Congo
- ○ Cook Islands
- ○ Costa Rica
- ○ Cote d'Ivoire
- ○ Croatia
- ○ Cuba
- ○ Cyprus
- ○ Czech Republic
- ○ Denmark
- ○ Djibouti
- ○ Dominica
- ○ Dominican Republic
- ○ Ecuador
- ○ Egypt
- ○ El Salvador
- ○ Equatorial Guinea
- ○ Eritrea
- ○ Estonia
- ○ Ethiopia
- ○ Falkland Islands
- ○ Faroe Islands
- ○ Fiji
- ○ Finland
- ○ France
- ○ French Guiana
- ○ French Polynesia
- ○ Gabon
- ○ Gambia
- ○ Georgia
- ○ Germany
- ○ Ghana
- ○ Gibraltar
- ○ Greece

- ○ Greenland
- ○ Grenada
- ○ Guadeloupe
- ○ Guam
- ○ Guatemala
- ○ Guinea
- ○ Guinea-Bissau
- ○ Guyana
- ○ Haiti
- ○ Heard Island and McDonald Islands
- ○ Honduras
- ○ Hong Kong
- ○ Hungary
- ○ Iceland
- ○ India
- ○ Indonesia
- ○ Iran
- ○ Iraq
- ○ Ireland
- ○ Israel
- ○ Italy
- ○ Jamaica
- ○ Japan
- ○ Jordan
- ○ Kazakhstan
- ○ Kenya
- ○ Kiribati
- ○ Kuwait
- ○ Kyrgyzstan
- ○ Laos
- ○ Latvia
- ○ Lebanon
- ○ Lesotho
- ○ Liberia
- ○ Libya
- ○ Liechtenstein
- ○ Lithuania
- ○ Luxembourg
- ○ Macao
- ○ Madagascar
- ○ Malawi
- ○ Malaysia
- ○ Maldives
- ○ Mali
- ○ Malta
- ○ Marshall Islands
- ○ Martinique
- ○ Mauritania
- ○ Mauritius
- ○ Mayotte
- ○ Mexico
- ○ Micronesia
- ○ Moldova
- ○ Monaco
- ○ Mongolia
- ○ Montenegro
- ○ Montserrat
- ○ Morocco
- ○ Mozambique
- ○ Myanmar
- ○ Namibia
- ○ Nauru
- ○ Nepal
- ○ Netherlands
- ○ Netherlands Antilles
- ○ New Caledonia
- ○ New Zealand
- ○ Nicaragua
- ○ Niger
- ○ Nigeria
- ○ Norfolk Island
- ○ North Korea
- ○ Norway
- ○ Oman
- ○ Pakistan
- ○ Palau
- ○ Palestinian Territory
- ○ Panama
- ○ Papua New Guinea
- ○ Paraguay
- ○ Peru
- ○ Philippines
- ○ Pitcairn
- ○ Poland
- ○ Portugal
- ○ Puerto Rico
- ○ Qatar
- ○ Romania
- ○ Russian Federation
- ○ Rwanda
- ○ Saint Helena
- ○ Saint Kitts and Nevis
- ○ Saint Lucia
- ○ Saint Pierre and Miquelon
- ○ Saint Vincent and the Grenadines
- ○ Samoa
- ○ San Marino
- ○ Sao Tome and Principe
- ○ Saudi Arabia
- ○ Senegal
- ○ Serbia
- ○ Seychelles
- ○ Sierra Leone
- ○ Singapore
- ○ Slovakia
- ○ Slovenia
- ○ Solomon Islands
- ○ Somalia
- ○ South Africa
- ○ South Georgia
- ○ South Korea

- ○ Spain
- ○ Sri Lanka
- ○ Sudan
- ○ Suriname
- ○ Svalbard and Jan Mayen
- ○ Swaziland
- ○ Sweden
- ○ Switzerland
- ○ Syrian Arab Republic
- ○ Taiwan
- ○ Tajikistan
- ○ Tanzania
- ○ Thailand
- ○ The Former Yugoslav Republic of Macedonia
- ○ Timor-Leste
- ○ Togo
- ○ Tokelau
- ○ Tonga
- ○ Trinidad and Tobago
- ○ Tunisia
- ○ Turkey
- ○ Turkmenistan
- ○ Tuvalu
- ○ Uganda
- ○ Ukraine
- ○ United Arab Emirates
- ○ United Kingdom
- ○ United States
- ○ United States Minor Outlying Islands
- ○ Uruguay
- ○ Uzbekistan
- ○ Vanuatu
- ○ Vatican City
- ○ Venezuela
- ○ Vietnam
- ○ Virgin Islands
- ○ Wallis and Futuna
- ○ Western Sahara
- ○ Yemen
- ○ Zambia
- ○ Zimbabwe

**[A2] What year were you born? ***

Please enter a date:

**[A3]What is your occupation? (In what area do you work?) ***

Choose one of the following answers

Please choose **only one** of the following:

- ○ Sales and Related
- ○ Student
- ○ Arts, Design, Entertainment, Sports, and Media
- ○ Education, Training, and Library
- ○ Research
- ○ Protective Service
- ○ Community and Social Service
- ○ Legal
- ○ Management
- ○ Installation, Maintenance, and Repair
- ○ Food Preparation and Serving Related
- ○ Architecture and Engineering
- ○ Computer and Mathematical
- ○ Healthcare
- ○ Office and Administrative Support
- ○ Construction and Extraction
- ○ Life, Physical and Social Science
- ○ Farming, Fishing, Forestry
- ○ Business and Financial
- ○ Cleaning and Maintenance
- ○ Transportation
- ○ Other

## Software Use

**[B1] Please mark all items that apply to you: ***

Check all that apply

Please choose **all** that apply:

- (1) ☐ I'm proficient with Word Processor Software (Microsoft Office suite including Word, Excel, and Power Point or similars). I'm very comfortable using these programs and have a lot of experience doing so.
- (2) ☐ I know how to distinguish terms like hardware and software.
- (3) ☐ I'm very comfortable using computers and I am confident in my ability to learn how to use new programs quickly.
- (4) ☐ I can create fully functional spreadsheets and I am familiar with organizing and analyzing large sets of data (Eg. Macros and Functions)
- (5) ☐ I understand basic conventions of a web page: URL, header, search box, links, footer.
- (6) ☐ I understand networks concepts like IP address, VPN, routers, LANs.
- (7) ☐ I understand Operating Systems indicators like use of CPU, memory, disk space.
- (8) ☐ I've already have contact with programming and I consider I have basic programming skills.
- (9) ☐ I'm a software/hardware developer.

**[B2]Which of the following devices do you use in your everyday life? (Check all that apply) ***

Check all that apply

Please choose **all** that apply:

- (1) ☐ Laptop
- (2) ☐ Smartphone
- (3) ☐ Tablet
- (4) ☐ Desktop Computer
- (5) ☐ On-Board Navigation System (integrated or integrable on vehicle)
  E.g.: Integrated on the vehicle / GPS device.
- (6) ☐ Other:

**[B3]In a typical day, do you use software applications more for work or personal reasons?  ***

Choose one of the following answers

Please choose **only one** of the following:

- ○ More often for work
- ○ Quite a bit more often for work
- ○ About an equal amount for work and personal reasons
- ○ Quite a bit more often for personal reasons
- ○ More often for personal reasons

**[B4]In a typical day, which category of software/apps do you use on your digital devices most often? (More than one allowed) ***

Please choose the appropriate response for each item:

| | 1 - I don't use it at all | 2 - I don't use it so often | 3 - Neutral | 4 - I use it often | 5 - I use it very often |
|---|---|---|---|---|---|
| (1)Entertainment (Music,Videos, etc) | ○ | ○ | ○ | ○ | ○ |
| (2)Games | ○ | ○ | ○ | ○ | ○ |
| (3)Sports (Schedules, Scores, etc) | ○ | ○ | ○ | ○ | ○ |
| (4)Utility (Calculator, Converter, Translator, Calendar, etc). | ○ | ○ | ○ | ○ | ○ |
| (5)News | ○ | ○ | ○ | ○ | ○ |
| (6)Mobility (Directions, Maps, Public Transportation, Local Ratings,Guidelines, etc) | ○ | ○ | ○ | ○ | ○ |
| (7)Search Tools (Search Engines, Encyclopedia, etc) | ○ | ○ | ○ | ○ | ○ |
| (8)Social Networking | ○ | ○ | ○ | ○ | ○ |
| (9)Messengers (WhatsApp, Telegram, Facebook Messenger, Skype, Email, etc) | ○ | ○ | ○ | ○ | ○ |
| (10)Weather Forecast | ○ | ○ | ○ | ○ | ○ |
| (11)Text Editors | ○ | ○ | ○ | ○ | ○ |
| (12)IDE | ○ | ○ | ○ | ○ | ○ |
| (13)Management Systems (Accounting, Controlling, Purchasing, Sales, etc.) | ○ | ○ | ○ | ○ | ○ |

**[B5]I consider these categories of apps an essential part of my everyday life: *+**

**(The options below would appear depending on the chosen options in question B4)**

Please choose the appropriate response for each item:

| | 1 - Strongly Disagree | 2 - Disagree | 3 - Neutral | 4 - Agree | 5 - Strongly Agree |
|---|---|---|---|---|---|
| (1)Entertainment (Music, Videos, etc) | ○ | ○ | ○ | ○ | ○ |
| (2)Games | ○ | ○ | ○ | ○ | ○ |
| (3)Sports (Schedules, Scores, etc) | ○ | ○ | ○ | ○ | ○ |
| (4)Utility (Calculator, Converter, Translator, Calendar, etc) | ○ | ○ | ○ | ○ | ○ |
| (5)News | ○ | ○ | ○ | ○ | ○ |
| (6)Mobility (Directions, Maps, Public Transportation, Local Ratings, Guidelines, etc) | ○ | ○ | ○ | ○ | ○ |
| (7)Search Tools (Search Engines, Encyclopedia, etc) | ○ | ○ | ○ | ○ | ○ |
| (8)Social Networking | ○ | ○ | ○ | ○ | ○ |
| (9)Messengers (WhatsApp, Telegram, Facebook Messenger, Skype, Email, etc) | ○ | ○ | ○ | ○ | ○ |
| (10)Weather Forecast | ○ | ○ | ○ | ○ | ○ |
| (11)Text Editors | ○ | ○ | ○ | ○ | ○ |
| (12)IDEs | ○ | ○ | ○ | ○ | ○ |
| (13)Business Software (Accounting, Controlling, Purchasing, Sales, etc.) | ○ | ○ | ○ | ○ | ○ |

## Problems with Software Use

**[C1]**

**How often do you have problems understanding the information presented to you in software belonging to these categories you regularly use? *+**

**(The options below would appear depending on the chosen options in question B4)**

| | 1- Never | 2 - Very Rarely | 3 - Rarely | 4 - Occasionally | 5 - Frequently | 6 - Very Frequently |
|---|---|---|---|---|---|---|
| (1)Entertainment (Music, Videos, etc) | ○ | ○ | ○ | ○ | ○ | ○ |
| (2)Games | ○ | ○ | ○ | ○ | ○ | ○ |
| (3)Sports (Schedules, Scores, etc) | ○ | ○ | ○ | ○ | ○ | ○ |
| (4)Utility (Calculator, Converter, Translator, Calendar, etc) | ○ | ○ | ○ | ○ | ○ | ○ |
| (5)News | ○ | ○ | ○ | ○ | ○ | ○ |
| (6)Mobility (Directions, Maps, Public Transportation, Local Ratings, Guidelines, etc) | ○ | ○ | ○ | ○ | ○ | ○ |

| (7)Search Tools (Search Engines, Encyclopedia, etc) | ○ | ○ | ○ | ○ | ○ | ○ |
|---|---|---|---|---|---|---|
| (8)Social Networking | ○ | ○ | ○ | ○ | ○ | ○ |
| (9)Messengers (WhatsApp, Telegram, FacebookMessenger, Skype, etc) | ○ | ○ | ○ | ○ | ○ | ○ |
| (10)Weather Forecast | ○ | ○ | ○ | ○ | ○ | ○ |
| (11)Text Editors | ○ | ○ | ○ | ○ | ○ | ○ |
| (12)IDEs | ○ | ○ | ○ | ○ | ○ | ○ |
| (13)Business Software (Accounting, Controlling, Purchasing, Sales, etc.) | ○ | ○ | ○ | ○ | ○ | ○ |

**[C2]Can you share with us which was (were) the software(s) ? +**

**(The options below would appear depending on the chosen options in question C1)**

(1)Entertainment (Music, Videos, etc)
(2)Games
(3)Sports (Schedules, Scores, etc)
(4)Utility (Calculator, Converter, Translator, Calendar, etc).
(5)News
(6)Mobility (Directions, Maps, Public Transportation, Local Ratings, Guidelines, etc)
(7)Search Tools (Search Engines, Encyclopedia, etc)
(8)Social Networking
(9)Messengers (WhatsApp, Telegram, Facebook Messenger, Skype, etc)
(10)Weather Forecast
(11)Text Editors
(12)IDEs
(13)Business Software (Accounting, Controlling, Purchasing, Sales, etc.)

**[C3]Can you share with us ONE situation where you could not understand the software behavior? Please, start by saying which of the softwares in the list below was the software in question. +**

**(The options below would appear depending on the chosen options in question C2)**

Please write your answer here:

## Explanation Needs

**[D1]**

**Hypothetical Situation: You are using the Navigation System in your car to drive to a certain destination. You are somewhat familiar with the way because you travelled before to this destination, but you notice that today the system is showing another route. This can be due to different reasons: maybe there is an accident on the road ahead or high congestion. You are not sure about the reason, as it does not give you any information about it. How interested are you in receiving an explanation about it? *+**

**(This question would only appear if if the following conditions were met: Participant chose B2(5))**

Choose one of the following answers

Please choose **only one** of the following:

- ○ 1 - Not at all interested
- ○ 2 - Slightly Interested
- ○ 3 - Indifferent
- ○ 4 - Interested
- ○ 5 - Extremely Interested

**[D2]**

**Hypothetical Situation: You are using the Navigation App in your smartphone to go from A to B, either by walking or by using public transportation. You are somewhat familiar with the way, but you notice that today the App is showing another route, lines or connections. You are not sure about the reason, as it does not give you any information about it. How interested would you be in receiving an explanation about it? *+**

**(This question would only appear if if the following conditions were met: Participant chose B2(2) AND B4(6) - from 3 to 5)**

Please choose **only one** of the following:

- ○ 1 - Not at all Interested
- ○ 2 - Slightly Interested
- ○ 3 - Indifferent
- ○ 4 - Interested
- ○ 5 - Extremely Interested

**[D3] Consider the previously shown hypothetical situation(s). What kind of explanation would be helpful for you? +**

**(This question would only appear if D1 or D2 would have been answered)**

Please write your answer here:

## Opinion about Explanations in Software

**[E1]What do you think are the 3 most important advantages of receiving explanations while using software?**

Please write your answer(s) here:
- (1) 1.
- (2) 2.
- (3) 3.

**[E2]What do you think are the 3 most important disadvantages of receiving explanations while using software?**

Please write your answer(s) here:
- (1) 1.
- (2) 2.
- (3) 3.

**Presentation of the Explanations**

**[F1]When should an explanation be presented? ***

Please choose **only one** of the following:

- ○ Everytime I request it
- ○ Automatically, just when something exceptional or unexpected happens
- ○ Both: everytime I request an explanation and automatically when something exceptional or unexpected happens
- ○ Never
- ○ Other

**[F2] First, let's present some definitions: ***

**Explanations about:**

| | |
|---|---|
| **Algorithms** | Convey information and knowledge about the logic adopted in the software to generate the output and how is its reasoning process. |
| **Dataset** | Specify what kind of data the software is using to support its reasoning process and their sources (GPS, public databases, etc) |
| **History** | Determine why the output/behavior is different from previous times (from what you are used to). |
| **User Profile** | Disclose the purposes and how your collected data is used and processed to make an internal profile about you and offer you tailored services/information. |

**Based on these definitions, about which aspects would you consider relevant to receive an explanation about**

Check all that apply

- ☐ Algorithms
- ☐ Dataset
- ☐ History
- ☐ User Profile
- ☐ I'm not interested in receiving any kind of explanation
- ☐ Other:

**We thank you for your efforts and time to support our research.**

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Submit your survey.
Thank you for completing this survey.