





Understanding gap between perception and expectations for artificial intelligence: Implications for sustainable development goals 4 and 9

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Abstract: This research is focused on the gap created in the perception and expectations of Kosovar students in the implementation of artificial intelligence during their learning and education. The research was conducted with students who had attended training on Artificial Intelligence that to identify the gap between their perception and expectations regarding artificial intelligence. The aim of this study is to investigate the understanding gap between perceptions and expectations of artificial intelligence and to provide answers to the research questions posed in this paper. Objective of the study is to shed light on the need for Sustainable Development Goal 4, Quality Education, by emphasizing the importance of inclusive and equitable AI literacy, and also for Development Goal 9, Industry, Innovation, and Infrastructure, by fostering innovation and supporting the development of resilient and sustainable AI infrastructure. During the research we used purposive sampling since we already had access to the database showing which students had attended the training and were certified for artificial intelligence by Microsoft. Based on the use of adaptive learning technology, which is one of the ways Artificial Intelligence can have an impact on student psychology, and based on each student's performance, interests and learning style, we concluded this technology tailors the learning experience to them, and learning is more effective and efficient, and motivation and engagement also increase more.

Keywords: Artificial intelligence, Assurance, Reliability, Responsibility, SDG, Trust.

1. Introduction

Artificial intelligence (AI) is relatively new concept that had emerged by the end of the last century, however its impact on society and in science is significant, since AI is implemented in military, (Johnson, 2020; Thomas, 2020) transportation (Zebrowski, 2020) smart cities Janurova, Chaloupkova, & Kunc, 2020) economics (Ernst, 2021) and education (Yanng, 2022). The definition of AI may be difficult to understand, but the data shows that AI is widely used in various fields, and is particularly focused on three priorities - work, ethics and education (Sharma, et al., 2021).

Since AI is implemented in all fields and it had become part of educational curriculums, we had conducted research with students that had been trained and certified for AI, and goal of the research was to identify gap between expectation and perception regarding the AI. The aim of this study is to investigate the Understanding Gap Between Perception and Expectations for Artificial Intelligence, and to provide answers to the research questions posed in this paper. Because what is supposed to be "artificial" about artificial intelligence, no doubt, has to do with its origins and mode of creation in arising as a product of human contrivance and ingenuity rather than as a result of natural influence (Fetzer, & Fetzer, (1990) According to Nirenburg, (2021). "The core definitional issue, then, is whether AI is intended to imitate human capabilities or seek to imitate how people operate" (Nirenburg, 2021, p. 91), while Yanng (2022) states that "AI is defined as the science and engineering of problem-solving with technological innovations such as machine learning and neural networks" (Yanng 2022, p. 2), based on literature review AI can be defined as Software that imitates human capabilities by making decisions

based on data and past experience; recognizing abnormal events; interpreting visual input; understanding written and spoken language and by engaging in dialogs and conversations. According to Bastian (2020) “AI is a set of algorithmic tools and technologies that enable machines to perform tasks that normally require human intelligence such as perceiving the world, learning from experience, reasoning through information, representing knowledge, acting, and adapting” (Bastian, 2020:59), however as any other new technology also AI is associated with its risks and challenges. AI as new emerging technology will remain part of our life (Ernst 2021; Yanng (2022; Johnson, 2020) and as any other technology it is associated with risks and challenges, (Nirenburg, 2021; Lea, 2020; Thomas, 2020 Zebrowski, 2020). Our research question concerns the understanding of the gap between the perception and expectations of artificial intelligence among young people in Kosovo.

Taking as a reference the training offered by Microsoft, which is related to building a person through education, (Çankaya, & Durak, 2020) within a goal that creates a more sustainable, (Goralski, & Tan, 2020) just and equal world, as it makes necessary the need to address from various related fields, (Holzinger, et al., 2019) the promotion of the values of certain individuals, the exchange of generations and social welfare (Prieto, et al., 2024), this research in itself encompasses the right values and highlights the gaps created.

The objectives of the research are to highlight this gap and explain these two variables, in this case perception and expectations. The work, however, has its own limits and shortcomings. We have made a questionnaire and distributed it to 40 students who have attended AI training and asked them what their perceptions are and what their expectations are. So we have not done any study where the emotional side of the respondents could be included, but only the part that talks about education. We propose other researchers to take up these two issues for research and perhaps expand the research even more, in the countries of the Western Balkans.

2. Theoretical Frameworks

The importance of artificial intelligence applications has not been limited to the field of computer science, but has become important in all fields, including the educational aspect. (Najadat, & Obeidat, 2024, p.3) AI is already applied in the education system in various forms, starting from the use of computer communication and information technologies, which every year evolve, leading to the development of artificial intelligence (Chen, Chen, & Lin, 2020) at a level higher usage, using plagiarism detection software, (Khalil, & Er, 2023) learning management systems, Ayotunde, et al., 2023) registration and retention chatbots, enhanced online discussion boards. With its ability to analyze large amounts of data, make personalized recommendations, and provide interactive learning tools, AI has become a valuable ally in SDGs higher education. Below, we will explore the role of AI in student learning (Tannar, & Susilowati, 2024, p.20) However, the implantation of AI within the education system is closely related to external problems such as the establishment and lack of skills to implement AI (Janurova, Chaloupkova & Kunc, 2020). When implementing AI in the education system, educational institutions should ensure that their staff are trained and that they are aware of the possibilities and limitations of using AI in the education system. Additionally, the challenge remains with students, as this technology is changing rapidly and it is difficult to allocate time and resources to building students' capacities to take advantage of AI (Collar, 2021). Furthermore, educational institutions have very clear rules and regulations, however existing rules need to be updated with a focus on AI, as according to Molloy (2021) “Not all AI projects carry the same ethical risk” (Collar, 2021. p. 107). Artificial intelligence systems must be designed in such a way that they treat all people equally, without making any discrimination on the basis of race, (Ntoutsis, et al., 2020) ethnicity, Van Bekkum, & Borgesius, 2023) beliefs or sexual orientation. (Gerards, & Borgesius, 2022) However, it depends a lot on the programmer (Xenidis, & Senden, 2020). In most cases, AI will crunch data from a logical perspective and make business-based choices on the data – these choices can easily be discriminated against without knowing it. For example, low-income communities typically have lower levels of education and higher risks (Kwon, et al., 2020).

AI as new emerging technology will remain part of our life (Ernst 2021; Yanng (2022; Johnson, 2020) and as any other technology it is associated with risks and challenges, (Nirenburg, 2021; Lea,

2020; Thomas, 2020; Zebrowski, 2020). The AI is reaching into so many facets of our lives that we have no choice but to confront its impacts. According to Borenstein, & Howard, (2021) advancements in artificial intelligence (AI) research have resulted in technological capabilities (Borenstein, & Howard, 2021) that open additional potential for automation, specifically of cognitive tasks (Maedche, et al., 2019). AI provides observable benefits, the collection, use, and abuse of data used to train and feed into AI, (Hutchinson, 2022) as well as the algorithm itself, may expose people to risks that they were not even aware existed. Furthermore, it is important to see how these perceptions (Arguello et al., 2024) may affect their expectations. AI technology is no longer the realm of the imagination, but an integral component of the model of living and learning and a key strategic element for new knowledge on a global scale. This transformative impact has made AI of significant academic interest (Dwivedi, et al., 2021) because, a difference between imaginary and real expectations, can make expectations decisive even if the perceived time to commercialization is seen as short. (Vicsek, 2021) When talking about gaps, then it can be said that there is a gap between actual availability and specific expectations and especially in the field of education (Xiang, et al., 2020).

3. Methodologies

Research was conducted with students that had attended training for Artificial Intelligence, and the research goal was to identify gap between their perception and expectations regarding artificial intelligence. In addition, for this research we had used purposeful sampling since we had already had access on database where was indicated which students had attended training and they has been certified for artificial intelligence from Microsoft. Students had attended training and they had been certified for Azure AI Fundamentals. In total 40 students have been selected for this research and they had filled questionnaire that was designed with Microsoft Forms. Questionnaires was consisted from two parts, in the first part research participants had declared their opinion regarding their expectations for artificial intelligence and on second part they had provided their opinion regarding their perception for artificial intelligence.



Figure 1.
Principles of responsible AI.

Source: <https://www.microsoft.com/en-us/ai/principles-and-approach/>.

Since it is said that it is essential to interpret the answers and provide a deeper understanding of them in the right way, and at the same time to minimize the risks of AI users, the principles of AI are respected, which are provided by Microsoft and are shown in Figure 1. In addition, Microsoft had identified risks and challenges that could occur for AI implementation and those risks and challenges are shown on Table 1.

Table 1.
Challenges or risks from AI.

Challenge or risk	Example
Bias can affect results	A loan approval model discriminates by gender due to bias in the data which it was trained
Errors may cause harm	An autonomous vehicle experiences a system failure and causes a collision
Data could be exposed	A medical diagnostic bot is trained using sensitive patient data, which is stored insecurely
Solution may not work for everyone	A predictive app provides no audio output for visually impaired users
Users must trust a complex system	An AI based financial tool makes investment recommendations – what are they based on?
Who's liable for AI-driven decisions?	An innocent person is convicted of a crime based on evidence from facial recognition-who's responsible?

For the research we had created statements for research participants expectations regarding artificial intelligence and statements regarding their perception regarding artificial intelligence and we had divided them into: Statements for Expectations regarding artificial intelligence; and Statements for perception regarding artificial intelligence.

4. Results and Discussions

As stated in the methodology, for the research we had created 10 statements for research participants expectations regarding artificial intelligence and 10 statements regarding their perception regarding artificial intelligence.

Statements for Expectations regarding artificial intelligence

1. For the implementation of artificial intelligence must possess modern equipment and infrastructure.
 2. Artificial Intelligence trainers should have knowledge in this area.
 3. Artificial Intelligence must provide real-time services.
 4. Artificial Intelligence should provide real-time services.
 5. The implementation of Artificial Intelligence had to be suitable for all people.
 6. Artificial Intelligence should always help people.
 7. People need to have faith in Artificial Intelligence.
 8. The Artificial Intelligence interface should be easy to use and friendly.
 9. Artificial Intelligence must protect people's privacy.
 10. Artificial Intelligence should simulate understanding when communicating with people.
- Statements for perception regarding artificial intelligence.

1. For the implementation of Artificial Intelligence, we possess modern equipment and infrastructure.
2. Artificial Intelligence trainers have knowledge in this area.
3. Artificial Intelligence is reliable.
4. Artificial Intelligence provides real-time services.
5. The application of Artificial Intelligence is suitable for all people.
6. Artificial Intelligence always helps people.
7. People have faith in Artificial Intelligence.
8. The Artificial Intelligence interface is easy to use and friendly.
9. Artificial Intelligence protects people's privacy.
10. Artificial Intelligence simulates understanding when communicating with people

Survey results are displayed on Table 2

Table 2.
Expectations regarding artificial intelligence.

Statement	Expectation	Valid	Missing	Mean
Statement 1	For the implementation of artificial intelligence, modern equipment and infrastructure must be available	40	0	4.08
Statement 2	Artificial intelligence trainers should have knowledge in this area	40	0	4.85
Statement 3	Artificial intelligence must provide real-time services	40	0	4.28
Statement 4	Artificial intelligence should provide real-time services	40	0	4.28
Statement 5	The implementation of Artificial Intelligence should be suitable for all people	40	0	3.95
Statement 6	Artificial intelligence should always help people	40	0	4.18
Statement 7	People need to have faith in Artificial intelligence	40	0	3.78
Statement 8	The artificial intelligence interface should be easy to use and friendly	40	0	4.58
Statement 9	Artificial Intelligence must protect people's privacy	40	0	4.80
Statement 10	Artificial intelligence should simulate understanding when communicating with people	40	0	4.43

4.1. High Expectations

Statement 2 (AI Trainers' Knowledge): With the highest mean score of 4.850, participants have strong expectations that trainers or those instructing on AI possess substantial expertise. This indicates a need for well-qualified trainers to meet participant expectations and build confidence in AI systems.

Statement 9 (Privacy Protection): The expectation that AI must protect privacy scored 4.800, reflecting a critical emphasis on data privacy and security. This high score suggests that privacy is seen as a fundamental component of trustworthiness in AI systems.

Statement 8 (User-Friendly Interface): Participants expect a high level of user-friendliness, scoring 4.575. This points to a preference for intuitive interfaces that make interacting with AI accessible and enjoyable for users.

4.2. Moderate to High Expectations

Statement 4 & 3 (Real-Time Services): Both statements related to real-time services have a mean of 4.275, showing a strong desire for immediate responsiveness and efficiency from AI applications.

Statement 10 (Simulated Understanding in Communication): With a mean of 4.425, there's a notable expectation that AI systems should exhibit empathy or simulate understanding, especially in user interactions. This aligns with an expectation for AI to enhance user experience by demonstrating sensitivity or a human-like approach in communication.

4.3. Moderate Expectations

Statement 5 (Suitability for All People): A mean score of 3.950 indicates moderate expectations that AI should be designed inclusively for diverse users. While still an important expectation, it is slightly lower than others, suggesting that participants might prioritize functionality and security over universal accessibility.

Statement 7 (Faith in AI): With a mean of 3.775, participants have moderate expectations for trusting AI, suggesting that while trust is essential, it may be secondary to tangible aspects like functionality, privacy, and expertise.

4.5. Overall Analysis and Implications

Expectation Consistency: Expectations across statements are generally high, with all means above 3.75, suggesting that participants have robust expectations for AI's functionality, user-friendliness, and privacy.

Priority Areas: The highest-scoring areas (trainer knowledge, privacy protection, user-friendliness) reveal key focus points for AI developers and trainers. Ensuring robust training, prioritizing data security, and enhancing user experience can be critical in meeting these expectations.

Design Implications: AI implementations should prioritize privacy protection, real-time functionality, and user-centric design to meet user expectations effectively. These insights can inform developers about essential factors to consider in AI systems, ultimately supporting better adoption and user satisfaction.

In addition, in second part of the questionnaire, research participants had provided their opinions regarding their perception for artificial intelligence and results are displayed on Table 3

Table 3.
Descriptive statistics for statements on artificial intelligence.

Statement	Experience	Valid	Missing	Mean
Statement 1	For the implementation of artificial intelligence, we possess modern equipment and infrastructure	40	0	3.67
Statement 2	Artificial intelligence trainers have knowledge in this area	40	0	4.42
Statement 3	Artificial intelligence is reliable	40	0	3.57
Statement 4	Artificial intelligence provides real-time services	40	0	4.12
Statement 5	The application of artificial intelligence is suitable for all people	40	0	3.65
Statement 6	Artificial intelligence always helps people	40	0	3.50
Statement 7	People have faith in artificial intelligence	40	0	3.22
Statement 8	The artificial intelligence interface is easy to use and friendly	40	0	3.65
Statement 9	Artificial Intelligence protects people's privacy	40	0	3.52
Statement 10	Artificial Intelligence simulates understanding when communicating with people	40	0	3.82

4.6. High Perceptions

Statement 2 (AI Trainers' Knowledge): With a mean of 4.42, participants perceive that AI trainers possess substantial knowledge, closely aligning with high expectations on this aspect. This suggests confidence in the expertise available within the AI domain.

Statement 4 (Real-Time Services): A mean of 4.12 indicates that participants experience AI as relatively efficient in delivering real-time services, though it is slightly below their expectation (4.275). This score implies that AI systems are performing well in this area, though there is some room for improvement.

4.7. Moderate Perceptions

Statement 10 (Simulated Understanding in Communication): With a mean of 3.82, participants feel that AI exhibits some level of empathy or understanding in interactions. While this score is moderate, it highlights an area where AI could improve to better simulate a human-like response.

Statements 1 and 8 (Modern Equipment and Friendly Interface): Both statements have moderate scores (3.67), suggesting that while participants experience some level of adequacy in infrastructure and user interface design, it does not fully meet their high expectations. Improving hardware capabilities and interface usability could enhance satisfaction.

4.8. Lower Perceptions

Statement 3 (Reliability): At 3.57, reliability is perceived as lower than other aspects, showing that participants may not fully trust AI's dependability. This gap could be due to occasional inconsistencies in AI performance, pointing to a need for more robust systems.

Statements 6 and 7 (Helpfulness and Faith in AI): These statements scored 3.50 and 3.22, respectively, showing that participants feel AI is only somewhat helpful and have relatively low trust. This lower perception in faith indicates a need to build greater transparency and reliability to foster user trust.

4.9. Overall Insights and Implications

Expectation vs. Experience Gaps: Across most statements, perceptions generally fall below expectations, indicating that the current AI implementation does not entirely meet participants' high standards.

Improvement Areas: Key areas for enhancement include increasing the reliability of AI, enhancing privacy protection, and fostering greater user trust. Addressing these aspects could bridge the gap between user expectations and actual experiences, leading to higher overall satisfaction.

Design Implications: Developers should prioritize building reliable, user-friendly, and trustworthy systems. Enhancing transparency, refining the interface, and providing consistent real-time support can help align AI experiences with user expectations.

We had computed variables for tangibility, reliability, responsibility, assurance and for empathy and Table 4 summarizes the computed variables for expectations related to artificial intelligence (AI), showing the mean scores for different aspects that participants value.

Table 4.
Computed variables for expectations regarding artificial intelligence.

Variable	Variable 1: Touch expectation	Variable 2: Reecept	Variable 3: Resexpect	Variable 4: Safeexpect	Variable 5: Eexpect
Valid	40	40	40	40	40
Missing	0	0	0	0	0
Mean	4.46	4.28	4.11	4.18	4.61

Variable 1: Tangibility (touchexpectation)

Mean: 4.4625

This variable reflects participants' expectations regarding tangible aspects of AI, such as equipment quality and technological infrastructure. With a relatively high mean score, participants expect a well-equipped, modern infrastructure that visibly supports AI applications. This indicates that tangible resources are viewed as essential for effective AI implementation.

Variable 2: Reliability (reecept)

Mean: 4.2750

Reliability captures expectations for AI's consistency, accuracy, and dependable performance. This high mean score suggests that participants expect AI systems to perform consistently and deliver reliable outcomes. Reliable AI systems are evidently seen as critical to fostering user confidence and satisfaction.

Variable 3: Responsibility (resexpect)

Mean: 4.1125

This variable relates to participants' expectations about AI's social responsibility, such as inclusivity and supportiveness for diverse user groups. A mean score of 4.1125 indicates that participants value a responsible AI system that serves all users effectively. However, it is slightly lower than other variables, suggesting that while inclusivity is important, it may be less prioritized compared to reliability and tangibility.

Variable 4: Assurance (safeexpect)

Mean: 4.1750

Assurance focuses on the need for AI to inspire user trust, emphasizing ease of use and data security. With a mean score of 4.1750, participants have moderately high expectations for AI to be secure and user-friendly. This score highlights the importance placed on safety and security in AI interactions, as these factors contribute significantly to building user confidence.

Variable 5: Empathy (eexpect)

Mean: 4.6125

This variable has the highest mean score, reflecting participants' desire for AI systems to demonstrate empathy—such as simulating understanding and ensuring privacy. Participants place a premium on these empathetic qualities, likely viewing them as essential for creating a user-centered AI experience that respects privacy and responds sensitively to user needs.

While Table 5 presents the computed variables for participants' experiences or perceptions regarding artificial intelligence (AI). The mean scores across each variable provide insights into how well AI is perceived to meet participants' expectations in practical settings.

Table 5.

Computed variables for perceptions regarding artificial intelligence.

Variable	Variable 1: Touch experience	Variable 2: Re- experience	Variable 3: Re- experience	Variable 4: Safe experience	Variable 5: Experience
Valid	40	40	40	40	40
Missing	0	0	0	0	0
Mean	4.05	3.85	4.00	3.44	3.68

Variable 1: Tangibility (touchexperience)

Mean: 4.0500

This score represents participants' experience with the tangible aspects of AI, such as equipment quality and infrastructure. Although above average, this score is lower than the expectation score of 4.4625, indicating a perceived shortfall in the adequacy of infrastructure or modern equipment for AI applications.

Variable 2: Reliability (reeexperience)

Mean: 3.8500

Reliability captures the consistency and dependability of AI performance as experienced by participants. With a mean score of 3.8500, there is a notable gap when compared to the expectation score of 4.2750. This suggests that participants find AI somewhat less reliable in practice than they had anticipated.

Variable 3: Responsibility (resexperience)

Mean: 4.0000

This variable represents participants' experience of AI's social responsibility, such as inclusivity and usefulness across diverse user groups. While the score is relatively high, it falls slightly below the expectation score of 4.1125, indicating that AI applications meet but do not exceed expectations for inclusivity and responsibility.

Variable 4: Assurance (safeexperience)

Mean: 3.4375

Assurance reflects the extent to which AI systems inspire trust and offer security in interactions. This score is notably lower than others, and compared to the expectation score of 4.1750, it reveals a significant gap. The lower perception of assurance suggests that AI applications may not fully meet participants' needs for security, user-friendliness, or overall trustworthiness.

Variable 5: Empathy (eexperience)

Mean: 3.6750

Empathy involves the ability of AI to simulate understanding and protect user privacy. Scoring 3.6750, this is lower than the expectation means of 4.6125, showing the largest gap among all variables.

This suggests that AI is perceived as less empathetic than participants expect, possibly lacking in user-centered design and privacy protections.

4.10. Gap Analysis between Perceptions and Expectations

The results highlight differences in expectations and perceptions regarding artificial intelligence (AI) among research participants, with a consistent gap indicating that expectations generally exceed perceptions. Here's a breakdown of the findings based on each category analyzed:

4.11. Tangibility

Expectation vs. Perception: Participants had a high expectation for tangible resources, such as modern equipment and knowledgeable trainers, for effective AI implementation. However, the perception scores show a notable gap, with a -0.41 difference in general tangibility, indicating that the perceived adequacy of equipment and infrastructure falls short of what participants expected.

Specific Gaps: The mean score for expectation on trainer expertise (4.85) exceeded the perception (4.42), resulting in a -0.43 gap, showing room for improvement in trainers' perceived qualifications.

4.12. Reliability

Expectation vs. Perception: Reliability gaps are visible, particularly regarding the dependability of AI services. The reliability gap of -0.43 demonstrates that, while participants expect AI to be consistently dependable, they experience it as less reliable than anticipated.

Specific Gaps: The perceived reliability (3.57) contrasts with an expectation mean of 4.28, resulting in a -0.70 gap, particularly showing concerns about AI's reliability in practice.

4.13. Responsibility

Expectation vs. Perception: This category displayed the smallest gap, with a -0.11 difference, indicating that participants' perceptions align closely with their expectations for AI's responsibility, such as inclusivity and usefulness for everyone.

Specific Gaps: Statements related to AI suitability for all individuals and consistent helpfulness show smaller gaps, suggesting that participants generally feel AI meets their inclusivity expectations.

4.14. Assurance

Expectation vs. Perception: Assurance presents a larger gap of -0.74, indicating concerns around AI trustworthiness and user-friendliness. Participants expect AI to foster confidence but perceive it as less dependable.

Specific Gaps: The most significant gap (-0.93) within assurance is on the ease of use and friendliness of the AI interface, suggesting that user experience and intuitive design are critical areas for improvement.

4.15. Empathy

Expectation vs. Perception: The empathy category shows the largest gap (-0.94), where participants expect AI to be more understanding, protective of privacy, and capable of simulating empathetic interactions.

Specific Gaps: Privacy concerns reflect a -1.28 gap, indicating that AI's handling of sensitive information does not meet the high expectations for privacy protections, a significant area for improvement in AI applications.

Results for gap analysis are shown on Table 6 and in Figure 3

Table 6.
Characteristics and statements on perceptions of artificial intelligence.

Characteristic	Statement	Mean (P)	Mean (E)	Difference (P-E)	Mean (G)	Mean (E)	Difference (G-E)
Tangibility	For the implementation of artificial intelligence, we possess modern equipment and infrastructure	3.68	4.08	-0.40	4.05	4.46	-0.41
	Artificial intelligence trainers have knowledge in this area	4.43	4.85	-0.43			
Reliability	Artificial intelligence is reliable	3.58	4.28	-0.70	3.85	4.28	-0.43
	Artificial intelligence provides real-time services	4.13	4.28	-0.15			
Responsibility	The application of artificial intelligence is suitable for all people	3.65	3.95	-0.30	4.00	4.11	-0.11
	Artificial intelligence always helps people	3.50	4.18	-0.68			
Assurance	People have faith in artificial intelligence	3.23	3.78	-0.55	3.44	4.18	-0.74
	The artificial intelligence interface is easy to use and friendly	3.65	4.58	-0.93			
Empathy	Artificial intelligence protects people's privacy	3.53	4.80	-1.28	3.68	4.61	-0.94
	Artificial intelligence simulates understanding when communicating with people	3.83	4.43	-0.60			

The overall analysis in Table 6 and Figure 2 reveals a trend where perceptions fall short across all categories. The most substantial gaps are in empathy and assurance, suggesting that improvements in privacy, trust, and user experience could greatly enhance satisfaction with AI.

These results underscore the importance of addressing both technical and human-centric aspects in AI deployment to meet user expectations comprehensively. Figure 2 is illustrating the gap analysis between expectations and perceptions for each category. The bars show the difference (gap) where perceptions fell short of expectations, with the largest gaps observed in the empathy and assurance categories,

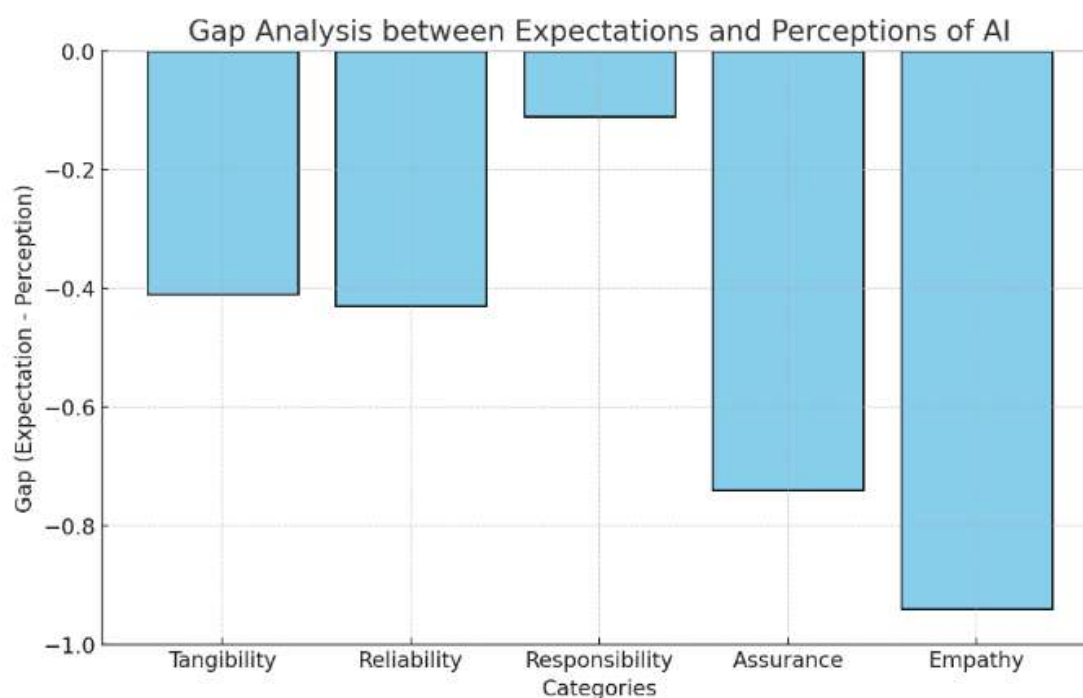


Figure 2.
GAP chart analysis between the perception and expectation of AI.

AI is here and it is becoming part of our life and it used from social medias, search engines, banking sector, educational system, military, entertainment and we need to adjust our behavior and use benefits that AI is providing, however the challenge still remain with ethics, trust, transparency and with privacy. Addressing these gaps, particularly in empathy and assurance, will likely improve acceptance and trust in AI applications. Initiatives to improve user interface design, data privacy measures, and reliability can reduce these perception gaps, fostering a more favorable reception among users.

In recent years, artificial intelligence (AI) has advanced quickly, and its effects on numerous industries have received a lot of attention. The effect of AI on students' education is one area of great concern. AI has the ability to completely change how students engage with and learn from instructional materials. Students can benefit from personalized learning experiences that are catered to their unique requirements and learning preferences by using AI-powered tutors and personalization algorithms. As a result, learning may be more effective and efficient, and motivation and engagement may also rise.

Using adaptive learning technology is one of the main ways AI can have an impact on student psychology. Based on each student's performance, interests, and learning style, this technology tailors the learning experience for them. In addition to boosting motivation and engagement, this can help to reduce frustration and disengagement.

AI can also be utilized to improve the evaluation procedure. For instance, automated essay scoring can give students rapid feedback on their writing, enabling them to make changes in real-time. This can aid in accelerating and improving the evaluation process and enhancing the caliber of the feedback given to pupils. AI can also be applied to improve education. For instance, individualized support and direction can be given to students by means of AI-powered virtual teaching assistants. Both the workload of teachers and the quality of the teaching process may benefit from this.

Implementation of AI will affect the way of working and thinking, in addition with implementation of neuronlike education system will be affected since it will be possible to install knowledge in to human brains, however AI didn't yet find solution to transfer experience and emotions.

5. Conclusions

AI systems work reliably and safely, as in medicine, etc., where the system creates medical prescriptions based on the patient's health history and taking into account previous allergies

Artificial intelligence systems claim to be secure and respect privacy, given that a large amount of data is generated for each individual, the AI system treats that data according to data protection law and applies the principles of Reliability, Integrity and Availability when it comes to personal data.

AI systems empower everyone and engage people without discrimination. Most organizations fail to identify all stakeholders and ways to engage them. Most also work from a hierarchical perspective. AI systems can't approach this when many people don't even realize they're stuck in an exclusive environment. Programmers must have system knowledge to execute this.

AI systems must be understandable and their interface must be user-friendly. However, the programs themselves are only understandable by programmers. As the AI develops its own logic/code, it becomes more complicated for the regular individual.

AI systems must be developed by humans, and humans must not allow any opportunity for AI systems to create any other AI systems. Besides, all those issues should be regulated by law, but laws are always far behind technology. Until a large group is harmed by something, there are no laws to guide it from harm, and the open question remains where is the liability when most stakeholders do not know what it is and how it applies.

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