ARTIFICIAL INTELLIGENCE IN BUSINESS OPERATIONS: EXPLORING PRODUCTIVITY AND ACCEPTANCE

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Abstract: *This paper will provide information on the impact of AI in daily life and work-related activities.Today, AI functionalities could nowadays transform businesses, playing a critical role in enhancing and improving decisions. From virtual assistants to automation tools, AI covers a great amount of information, which could impact the core. In this paper, the productivity and sense of failure of AI will be paper. The productivity of AI, such as, varies by tasks and industry. AI could excel in repetitive and high-precision tasks. On the other hand, humans outperform AI in tasks requiring creativity and emotional intelligence. This qualitative study will show the perception of integrating AI into workflows and asking questions about value added. To evaluate the impact of artificial intelligence (AI) on business operations, an online survey was conducted to examine perceptions of AI's efficiency, adaptability, and fault tolerance.The analysis revealed generational differences in acceptance and trust towards AI. Younger respondents, particularly those under 25, were found to have greater tolerance for AI errors and a greater willingness to integrate AI into workflows. This is likely to reflect their familiarity with technology. In contrast, older respondents exhibited lower levels of trust and acceptance, particularly in contexts requiring precision, such as financial transactions. The results suggest that while AI is perceived as highly effective in repetitive and data-intensive tasks, its limitations in adaptability and emotional intelligence remain a concern. The findings emohasize the need for reskilling initiatives to facilitate workforce transitions and the development of ethical guidelines to address trust and reliability issues.*

Keywords*: Artificial Intelligence; Productivity; Failure; Problem-Solving; Consistency; Precision*

JEL Classification*: M10; M15*

1.Introduction

Artificial intelligence (AI) has rapidly become an essential component in various industries due to its remarkable ability to increase efficiency and productivity. This analysis explores the main drivers behind AI's effectiveness, emphasizing its data management capabilities, consistency, adaptability, and automation. Understanding these factors can shed light on how AI is transforming traditional processes and helping to accelerate deciosion making and increase performance.

2.Efficiency of Artificial intelligence

The line of efficiency and productivity of AI could be described by several key reasons such as automation, data handling, consistency, and adaptation. AI could be productive due to its large capacity to process a large volume of data in a short period of time. Its ability to learn from data allows it to improve over time, while reducing human error and increasing efficiency. This fact could also lead to faster decision-making and enhaced overall productivity in various fields of application. (Ping Wang, 2024)

Therefore, the automation potential of AI can disrupt the employment market. Ethical considerations include how to manage displacement and support workforce transitions. (Wong, 2024; Ban et al., 2024) The negative impacts of AI being used to increase the productivity of a business are summarized by job displacement. (Taelim Choi, 2024) Automation with the help of AI can lead to reduction or elimination of jobs in certain sectors, particularly in those involving routine or repetitive manual tasks. Employees may find themselves unprepared for new, roles due to the new requirements regarding learning skills. The reskilling and upskilling working tools will be needed to help employees transition to new roles in an AI-driven economy. (Mikael Wahlström, 2024)

The positive impacts of the integration of AI can refer to a more balanced work-life environment among employees. AI can manage, workloads by reducing the high volume of processed data and embracing efficient work paths. AI can rapidly analyze large volume of data by spotting patterns and improving forcasting different business strategies. (Ghosh, 2025) Additionally, artificial intelligence could take over repetitive tasks and let employees focus on developing competencies that are newly valuable in the evolving job market. (Chunlei Chai, 2023) AI is also used nowadays in business to improve the customer experience by offering specialized interaction, suiting he specific customer needs, such as daily customer support, powered by chatbots or virtual assistants. Therefore, a much needed answer to a question outside the business hours , is offered by a specialized virtual assistant, which can recommend products or services based on customer preferences, browsing history or patterns. (Chakraborty, Kar, Patre, & Gupta, 2024)

3.AI Failure

First, AI systems might not align with user values, leading to a disconnect with the intrinsic motivations and expectations of diverse groups. This misalignment can worsen trust and privacy concerns, as users may view technology as invasive or failing to protect their personal data adequately. Additionally, poor user experience and satisfaction can result from interfaces and functionalities that do not consider users' temporal preferences, making them appear unintuitive or cumbersome. Ineffective communication and marketing strategies that overlook these time orientations can result in promotional efforts that fail to engage or attract potential users effectively. Resistance to change might also increase, especially among users who feel their long-standing habits and preferences aren't being valued or addressed by new technology. Ultimately, these issues can prevent AI from reaching its full

potential, with underutilized features and hampered innovation due to a lack of alignment with user temporal expectations and behaviors of users.

Regret frequently influences consumer decision making due to the inherent performance uncertainty associated with products and services (Hur & Allenby, 2022). It is the sense of loss felt after making decisions in uncertain situations only to later realize that other choices would have been better. Interestingly, regret ranks as the second most frequently mentioned emotion right after love (Shimanoff, 1984). Consequently, regret can significantly affect post-choice evaluations, consumer satisfaction, and the likelihood of repeat purchases or continued use of services (Chen & Jia, 2012; Davvetas & Diamantopoulos, 2017).

Assigning responsibility for AI failures can be different depending on the specific circumstances (Kong et. al., 2018), which can stem from factors such as inadequate training data, algorithmic bias, hardware issues, cybersecurity breaches, or human error can be challenging, particularly when the root cause is unclear.

As AI continues to evolve, with its capabilities and limitations still being explored, it is essential to establish ethical guidelines and regulations to ensure responsible development and deployment of robots (Holder, C. et. al., 2016).

4.Methodology

The objective of this research is empirically measure if robots can be efficient in what they do and whether robot mistakes of robots are easily accepted by consumers. To achieve the objective, a questionnaire was created. With the help of the questionnaire, we found out how efficient robots can be and whether their mistakes can be accepted or by the consumer. Respondents were asked to choose the right answer based on their interaction with robots. The target group was not a specific one, the questionnaire was created for all people.

The questionnaire includes a series of demographic variables: gender, age, and income. The questionnaire consists of 19 questions with scaled responses ranging from 1 (totally disagree) to 7 (totally agree), in which respondents were asked to check the statement that corresponds to them.

A total of 538 people participated in the questionnaire. Of the total of 538 respondents, 335 were women, 194 were men, and 4 people preferred not to answer this question.

Most of the participants in the questionnaire (299 participants) belong to the age category <25 years; 136 participants aged between 26-40 years; 63 participants belong to 41-55 age group; 35 participants belong to the age category >55 years and 4 participants did not answer this question.

With the help of the T-Test, performed in Excel and with the help of discriminant analysis, a comparison was made between the age group 26-40 years and 41-55 years, between the age group 41-55 years and the age group >55 years, between the age group >55 years and the age group <25 years and between the age group <25 years and Blanks (people who did not answer this question).

5.Results

The table below presents the 19 questions from the questionnaire together with the average of the answers for each age category and question and the T-test for the age categories. In the discussion section, we present the most important results of

the research and compare the average answers for the respective questions by age category, to discover the respondents' opinions when it comes to the efficiency and failures of robots.

Table 1: The average of the responses by age category and the T-Test

Questions	Average under 25 years	Average 26-40 years	Average 41-55 years	Average over 55 years	T-Test 26-40 years & 41-55 years	T-Test 41-55 years & over 55 years	T-Test >55 years & under 25 years
This robot is efficient	5.000	5.132	4.667	4.686	0.088	0.962	0.268
This robot helps to increase the company's productivity	5.178	5.346	4.587	5.114	0.004	0.160	0.824
I can trust this robot to do its job correctly	4.532	4.904	4.571	5.029	0.214	0.232	0.088
This robot has the ability to adapt to unexpected situations	3.184	3.522	3.190	3.722	0.278	0.214	0.098
This robot has the ability to act independently without human help	3.756	3.824	3.571	3.771	0.415	0.639	0.961
I trust the decisions made by this robot	3.795	3.846	3.381	3.806	0.108	0.300	0.971
This robot reduces the company's error rate	4.424	4.500	4.032	5.056	0.098	0.008	0.023
This robot can be easily repaired	3.993	4.221	3.968	4.444	0.376	0.226	0.142
This robot is easily accepted by other human employees of the company	3.669	3.676	3.175	2.972	0.076	0.609	0.036
I trust that this robot can be	4.672	4.941	4.095	4.750	0.001	0.075	0.791

integrated into customer service							
I feel comfortable making purchasing decisions based on recommendations made by this robot	3.977	4.287	3.476	4.056	0.005	0.187	0.808
I think it is acceptable for this robot to make mistakes	4.241	4.393	3.635	3.722	0.011	0.834	0.113
I can accept the robot's mistakes in its recommendations	4.067	4.051	2.984	3.167	0.000	0.625	0.003
I can accept robot mistakes in the delivered food	3.365	3.213	2.413	2.417	0.004	0.991	0.003
I can accept robot mistakes in the invoiced price	2.769	2.610	1.683	1.694	0.000	0.964	0.001
I worry about the mistakes made by this robot	4.381	4.794	4.889	4.889	0.728	1.000	0.086
I consider that the mistakes made by this robot should be dealt with similarly to those made by human employees	3.799	3.890	3.508	3.306	0.230	0.657	0.159
I consider that this robot should apologize when it makes mistakes	4.408	4.522	4.758	5.222	0.478	0.277	0.020
I intend to keep interacting with this robot, even if it makes mistakes	4.408	4.206	3.159	3.389	0.000	0.566	0.001

Source: Own research results

6.Disscusion

The graph below shows the average responses to the question: Does this robot reduce the company's error rate? With an average of 5.056, the age category >55 years believes that the robot can reduce the company error rate. With an average of 4.500, the age category 26-40 years is in second place, and this category shares the same opinion as the age category in first place. In third place is the age category <25 years with an average of 4.424, and this category believes that the robot can

reduce the company error rate. We note that between the 4 age categories the difference between the average responses is very small, which means that these categories believe that the robot can reduce the company's error rate. In last place with an average of 4.032 is the 41-55 age group, this category considering less than the other categories that a robot can reduce a company's error rate. Between the 26-40 age group and the 41-55 age group, the T test shows that there is an acceptable difference (T-Test=0.098), which means that both categories claim that the robot can reduce the company's error rate. The T test shows that between the age group 41-55 years and the age group >55 years there is a very significant difference (T-Test=0.008), which shows us that older people are more confident that the robot can reduce the error rate of a company. For age groups >55 years and <25 years, the T- test shows that there is a significant average difference (T-Test=0.023), which means that young people do not believe so much that a robot can reduce the error rate of a company, while older people are of the opposite opinion.

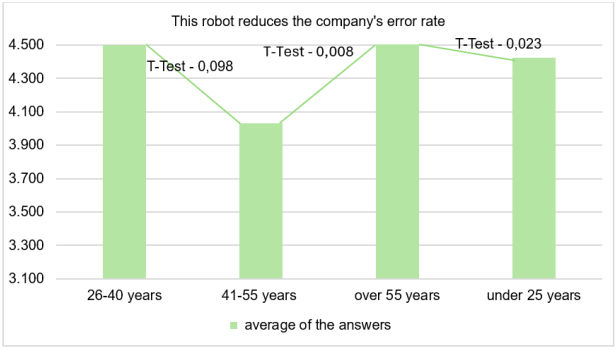

Figure 1: Responses by age group about reducing the company's error rate with the help of a robot
Source: The results of our own research

This graph shows the average answers to the question: Is this robot easily accepted by the company's other human employees? With an average of 3.676, the 26-40 age group believes that the robot can be easily accepted by the company's other human employees. With an average of 3.669, the <25 age group is in second place, which means that this group also has the same opinion as the group mentioned above. In third place is the 41-55 age group with an average of 3.175, and this group believes that the robot can be easily accepted by the company's human employees. In fourth place, with an average of 2.972, is the >55 age group, this group being less in agreement when it comes to the acceptance of robots by human employees. The T-test shows us that between the age category 26-40 and the age category 41-55 there is an acceptable difference (T-Test=0.076), which shows us that both age categories believe that the robot can be easily accepted by the other human employees of the company. Between the age category 41-55 and the age category >55, the T test also shows that there is an acceptable difference (T-test=0.609), which means that these two age categories have similar opinions on the easy acceptance of the robot by human employees of the company. The T-Test shows us that between the age

category >55 and <25 (T-Test=0.036) there is a significant average difference, because younger people are more confident than older people when it comes to having a robot being easily accepted by human employees.

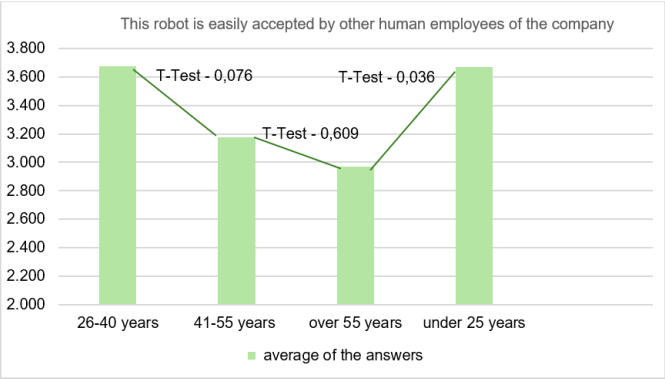

Figure 2: Respondents' opinion by age category about the degree of acceptance of the robot by human employees in a company
Source: The results of our own research

The graph below shows the average responses for the statement: I trust that this robot can be integrated into the services offered to customers. First, the 26-40 age category with an average of 4.941, which means that this category agrees that the robot can be integrated into the services offered to customers. Second place with an average of 4.750 is the >55 age category, also this category considering that the robot can be integrated into the services offered to customers. With an average of 4.672 is the <25 age category in third place, this category being of the same opinion as the categories mentioned above. In last place is the 41-55 age category with an average of 4.095, an average that shows us that respondents in this category also believe that the robot can be integrated into the services offered to customers. The T-test shows us that between the age category 26-40 and the age category 41-55 there is a very significant difference (T-Test=0.001), which means that personnel in the age category 26-40 have more confidence that the robot can be integrated into the services offered to customers than in the age category 41-55. Between age category 41-55 and >55 there is an acceptable difference (T-test=0.075) which shows us that these 2 categories believe almost equally that the robot can be integrated into the services offered to customers. The T-Test shows that between the age category >55 and <25 there is a very acceptable difference (T-Test=0.791), which means that these two age categories have similar opinions.

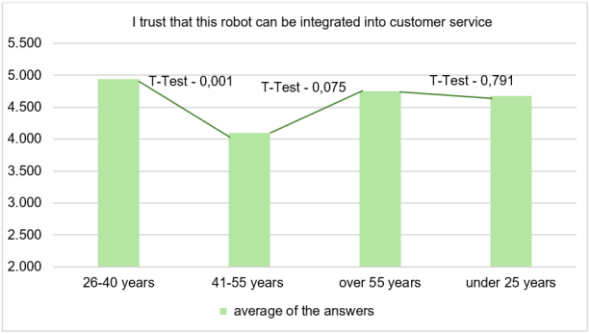

Figure 3: Respondents' opinions by age category about trust in robot integration in customer services
Source: The results of our own research

The statement "I can accept the robot's mistakes in its recommendations" reflects the fact that respondents aged under 25 express the highest level of acceptance, with an average of 4,067. This is closely followed by the 26-40 age group, whose average is 4,051, reflecting the high tolerance and familiarity with AI technology among younger people. Respondents over 55 years show moderate acceptance, with an average of 3,167, while the 41-55 age group shows the lowest tolerance, with an average of 2,984. T-test value of 0,000 indicates a very significant difference between the 26-40 and 41-55 age groups, pointing to greater acceptance among middle-aged respondents. Similarly, a T-Test value of 0,003 between the over 55 and under 25 age groups indicates another very significant difference, highlighting greater tolerance among younger respondents. While a T-test value of 0,625 between the 41-55 and over-55 age groups suggests no significant differences indicating similar levels of acceptance between these two older groups.

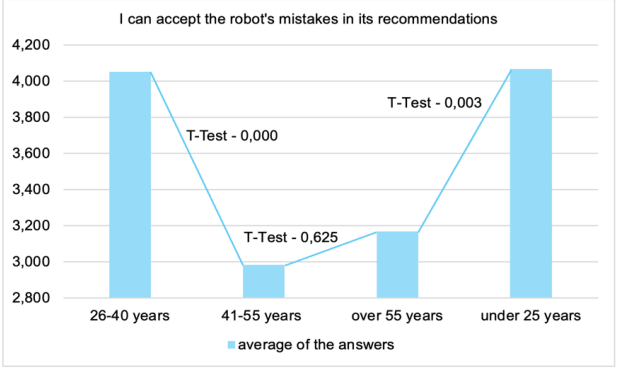

Figure 4: Respondents' opinions by age category about the acceptance of the robot's mistakes in its recommendations
Source: Own research result

The statement "I can accept robot mistakes in the invoiced price" shows that respondents under 25 years of age have the highest tolerance with an average of

2,769, followed by the 26-40 age group with an average of 2,610. These findings suggest that younger and middle-aged respondents are relatively more willing to accept errors in invoiced prices. In contrast, the 41-55 age group shows the lowest level of acceptance, with an average of 1.683. Similarly, respondents over 55 years show only slightly higher levels of acceptance, with an average of 1,694, indicating a common skepticism among older age groups. The T-test value of 0,000 between age groups 26-40 and 41-55 indicates a very significant difference, showing much lower levels of acceptance among the 41-55 age group compared to the age group 26-40. Similarly, there is a very significant difference between respondents aged 55 and under 25 (T-Test = 0,001). However, the T-Test value of 0,964 between the 41-55 and over-55 age groups suggests no significant difference, reflecting similar attitudes within these older demographic groups.

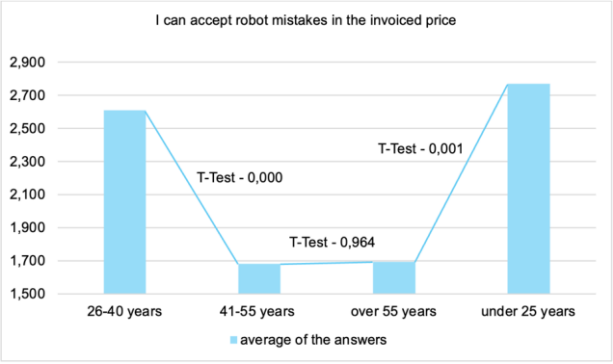

Figure 5: Respondents' opinion by age category on robot mistakes in the invoiced price
Source: Own research result

Regarding the statement "I intend to continue interacting with this robot, even if it makes mistakes", respondents under 25 years of age show the highest intention with an average of 4,408, followed by the 26-40 age group with an average of 4,206. This indicates that young and middle-aged people are more willing to continue interacting with robots, despite possible mistakes. On the contrary, the 41-55 age group has the lowest level of intention, with an average of 3,159, while the 55+ age group has a somewhat higher average of 3,389. These suggest a lower willingness among older respondents to maintain interaction with robots after experiencing mistakes. A T-test value of 0,000 between the age groups 26-40 and 41-55 years shows a very significant difference, reflecting a much lower willingness in the 41-55 age group compared to the middle-aged respondents. Similarly, a T-Test value of 0,001 between the age groups over 55 and under 25 indicates a very significant difference, highlighting a greater willingness in younger respondents. On the contrary, a T-Test value of 0,566 between the 41-55 and over 55 groups suggests no significant differences, indicating similar levels of reticence between older groups.

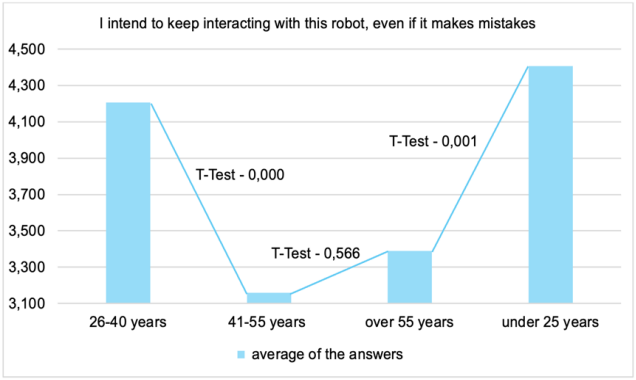

Figure 6: Respondents' opinion by age category on their intention to continue interacting with the robot, even if it makes mistakes
Source: Own research result

7.Conclusions

In conclusion, respondents aged >55 and those aged 26 and 40 have the highest level of confidence that a robot can reduce the error rate of a company. On the contrary, respondents aged <25 and those aged 41-55 have the lowest level of confidence that a robot can reduce a company's error rate. In general, respondents 26-40 and respondents aged <25 believe that a robot can be easily accepted by human employees at the company, while those aged 41-55 and >55 agree less with the statement. Younger respondents are more likely to have come into contact with artificial intelligence, and from this point of view they believe that a robot can be quite effective in a company. Age categories 26-40 and >55 have very high confidence that the robot can be integrated into the services offered to customers, but age categories <25 and 41-55 have approximately the same opinion, these opinions stemming from the fact that today most people interact with different robots when they need certain services.

In conclusion, respondents aged 26 to 40 and those under 25 have the highest level of acceptance of robot mistakes in recommendations, probably reflecting their greater exposure to and trust in technology. In contrast, respondents aged 41-55 are the least tolerant, while those over 55 demonstrate a moderate level of acceptance. In general, younger respondents (under 25 and between 26 and 40) have the highest tolerance for robot errors in the prices charged, which may reflect greater confidence or familiarity with the technology. On the contrary, older respondents (aged 41 to 55 and over 55 years) have much lower tolerance, which may be due to higher expectations of accuracy in financial transactions. Younger respondents (under 25 and 26-40 years of age), in short, show a higher intention to continue interacting with robots, probably due to greater familiarity and tolerance of technology. In contrast, older respondents (41-55 and over 55) show more hesitation, which may reflect higher expectations or a lack of trust in robots.

Based on the results, we observe that people in the age category < 25 years and those in the age category 26-40 years compared to other age categories have greater confidence when it comes to the efficiency of a robot and can tolerate

mistakes more easiliy. We can say that younger people are more prone to interacting with artificial intelligence, which means that they were able to observe what a robot can do well or wrong, while older people may not interact as much with artificial intelligence, causing them to tolerate less the mistakes of robots and to consider less that a robot can be efficient. Artificial intelligence is constantly developing and is increasingly used in most industries, which means that it helps a company become more efficient, even if sometimes artificial intelligence also makes mistakes. Artificial intelligence is already present in everyone's lives but not equally, which we have already observed in the study we conducted. In the future, artificial intelligence will most likely be part of everyone's lives, which means that most people should have different experiences and interactions with it, and then even older people should consider that robots can be efficient, and their mistakes can be more easily accepted.

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