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RESEARCH ARTICLE

UNDERSTANDING AND USES MADE OF ARTIFICIAL INTELLIGENCE BY ENTREPRENEURS IN COTE D'IVOIRE

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Abstract

Studies on entrepreneurship and artificial intelligence are common. A subset focuses on the uses of AI by entrepreneurs. Others adopt the perspective of incubators and accelerators for a more efficient company selection process, or the positioning of investors, to analyze how AI proves useful for an optimized analysis of companies seeking financing In Cote d'Ivoire,no studies were conducted before on the understanding of artificial intelligence and its uses by entrepreneurs.We conducted a survey of entrepreneurs aged 20 to 60, operating in various industry sec tors,including agriculture,beauty,entertainment and telecommunications The aim was to assess the percentage of entrepreneurs able to define AI, the proportion who knew how to use it in their businesses, and to identify the most common use cases.The results show that over 95% of the entrepreneurs claimed to know what AI is, but that only 65% of the proposed definitions were valid.Furthermore, 55% claimed to know how to use AI within their businesses.Use cases vary but most of those can be grouped into three main categories: improving customer experie nce,making predictions,and creating innovative content.Additional ave nues for research would be to measure the gains(market share, revenue) generated using artificial intelligence.

Introduction:-

Several studies have shown the strong connection between the level of entrepreneurship and the economic growth of a country.Stoica et al. (2020) show that opportunity-driven entrepreneurship and early-stage entrepreneurship would be key factors in stimulating economic growth across a sample of European countries.Munyo and Veiga (2022) analyzed data from the Global Entrepreneurship Monitor (GEM) for South American countries, to assess how those affected the economic activity (as measured by the Gross Domestic Product, GDP). One important result was that 'there is a positive and significant relationship between intrapreneurial activity and economic growth'.T. Zarkua et al. (2025) underscore the significant potential of entrepreneurship to drive economic development across diverse nations, regardless of their development stage. The findings demonstrate a positive and statistically significant association between higher levels of Global Entrepreneurship Index (GEI) and increased economic development.

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Since entrepreneurship appears to be a key factor for economic development, improving the quality and productivity of entrepreneurs and companies, should contribute to growth.

Zhao et al. (2022) led a study using data from 222 Chinese cities above prefecture-level to show that 'Digital economy has remarkably improved high-quality development'.Giuggioli and Pellegrini (2023) proposed a study showing that AI has profound implications when it comes to entrepreneurship. In particular, it positively impacts entrepreneurs in four ways: through opportunity,decision-making, performance, and education and research.Sheperd and Majchrzak (2022) state that 'AI is simply a tool. Entrepreneurship is also simply a tool. How they are combined and used will determine their impact on humanity.' And they discuss 'how entrepreneurs can use AI as a tool to help them increase their chances of entrepreneurial success'.Chalmers et al. (2021) propose 'a conceptual framework that maps the impacts of AI on new venture processes, practices and outcomes', recognizing that 'the diffusion of AI technology and other digital technologies will not happen in isolation, but rather as part of a broader trajectory of interlinked economic and political changes'.The connection is clear: the proper use of AI by entrepreneurs can make them better and more successful, which would contribute to economic growth.The present study aims at assessing the level of understanding that entrepreneurs operating in Cote d'Ivoire have of AI in year 2025, and at exploring the main uses that are made of it within local companies.We will present the materials and methods that helped us collect the needed data, before outlining the main results and discussing those.

Materials and Methods:-

To assess the level of understanding that entrepreneurs operating in Cote d'Ivoire have of artificial intelligence (AI) in year 2025, and to explore the main uses that are made of it within local companies, we decided to use a survey.

The questions related to our theme were part of a broader questionnaire including information about:

- **the company:**
  - registered or not?
  - registration period
  - legal form
  - industry
  - incubated or not, and by which organizations?
  - accelerated or not, and by which organizations?
  - number of employees
  - funding sources
  - revenue level and evolution

- **the founder(s):**
  - age
  - gender
  - place of origin
  - dwelling place
  - full-time entrepreneur or not?
  - co-founder or not?
  - level of investment readiness
  - knowledge of and opinion on the startup legal framework
  - knowledge and uses of artificial intelligence

The questions were written both in English and French because some founders, even though they are operating in Cote d'Ivoire, are more fluent in English than French. It can be the case for some entrepreneurs of Ghanaian, Liberian or Nigerian origin, or also for some binational people such as an Irish Ivorian who had just come back from Dublin to Abidjan a couple of years before.In the results analysis of the present article, we will focus on the four questions about the knowledge and uses of artificial intelligence:

Question 1:
Do you know what artificial intelligence is?

Question 2:
Please describe artificial intelligence in your own words.

Question 3:
Do you use artificial intelligence in your business operations today?

Question 4:
How do you think artificial intelligence could help in your business operations?

For the first phase of the survey, the questionnaire was sent to participants matching the following criteria:
- Biological age: above 19
- Currently having or having had an entrepreneurial activity within the past year
- Entrepreneurial activity based in Cote d'Ivoire
- Literate
- Internet access available
- Ability to use a computer or smartphone.

The communication channels for questionnaire sending were:
- Email
- WhatsApp
- LinkedIn

The questionnaire was self-administered. No interview was conducted.

For the second phase of the survey, the questionnaire was administered to participants matching the following criteria:
- Biological age: above 19
- Currently having or having had an entrepreneurial activity within the past year.
- Entrepreneurial activity based in Cote d'Ivoire

The questionnaire was interviewer-administered. The interviewer was a research assistant.

The reason for having those two sets of participants was the will to have a more inclusive study. Indeed, as strange as it may seem, some entrepreneurs did not have an email address of their own or had never filled an online questionnaire. But still, they were already using some AI tools in their business operations. The total number of participants was 65 whereas we were aiming at 100. One of the main challenges faced was due to 2025 being a year of presidential election. Many people approached by the research assistant did not want to participate because they suspected that the survey results would be used as part of some political manipulation. Others requested to be paid to answer the questions.Out of the 65 participants, 65.1% were male and 34.9% were female entrepreneurs.Three were from Burkina Faso, two from Nigeria, one from Cameroon, one from Benin, one from France, and all others from Cote d'Ivoire (Abidjan, Bingerville, Dabou, Facobly, Adzopé, Yamoussoukro, Daloa, Bouaké, Bouaflé, Soubré, Gagnoa, Korhogo, Man, Daoukro, Bondoukou and Tanda areas).The respondents were aged 20 to 60 years old, but the majority was between 25 and 40.

Among them, 40% had a cofounder, 60% did not. 83.1% were full-time entrepreneurs. The remaining 16.9% were mostly employees or students in parallel of their entrepreneurial activities. 28.1% of the founders participated in at least one incubation program. 16.9% of the companies were accelerated. This repartition shows the diversity of respondents. The answers to the questionnaire were exported and saved to a CSV file to be able to process the data using common data science tools. We started with Python pandas library for data manipulation, using standard commands such as the following: pd.read_csv was used to transform the CSV file into a pandas dataframe. It was then possible to use commands such as info, shape, head, describe, as well as the matplotlib and seaborn libraries for data visualization.

Results:-

63 people answered the first question 'Do you know what artificial intelligence is?'. 96.8% of respondents answered yes, 3.2% answered no.

Below is the corresponding chart:

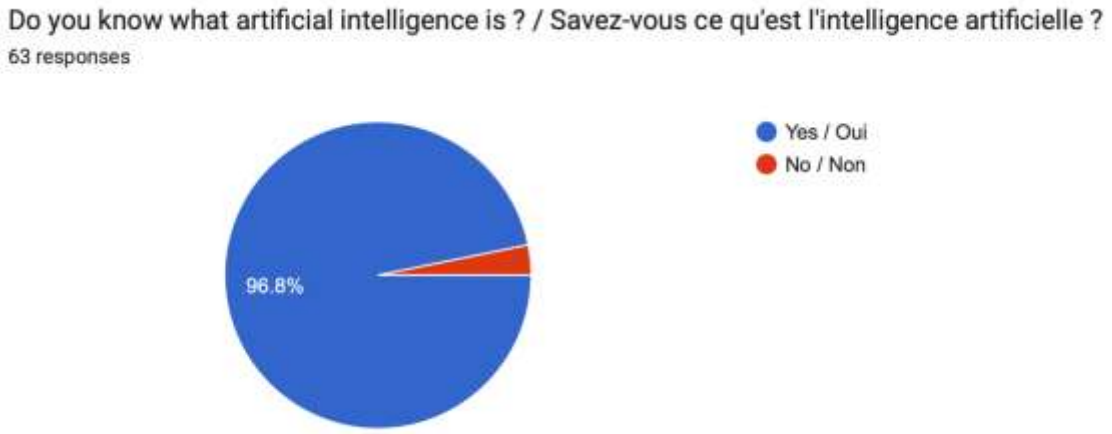

Figure 1 : results to question 'Do you know what artificial intelligence is?'

Question 2 was 'Please describe artificial intelligence in your own words.'
Out of the 63 answers provided, 41 were considered valid, which corresponds to 65%.
We accepted definitions mentioning the simulation of human intelligence or the implementation of human capabilities (pattern recognition, reasoning, etc.) into systems or machines.

We excluded:

- very generic definitions that highlighted the benefits rather than the nature of AI, such as 'Artificial intelligence is a tool that allows for better productivity' or 'that simplifies human work' or 'that optimizes work'.
- definitions that equated artificial intelligence with automation.
- definitions that equated artificial intelligence with robotics.
- definitions that simply did not make sense.

Definitions of artificial intelligence	Valid
Mentioning the simulation of human intelligence	Yes
Mentioning the implementation of human capabilities into systems or machines	Yes
Focused on generic benefits	No
Equating AI with automation	No
Equating AI with robotics	No
Nonsense	No

Table 1 : classification of valid/invalid definitions of AI

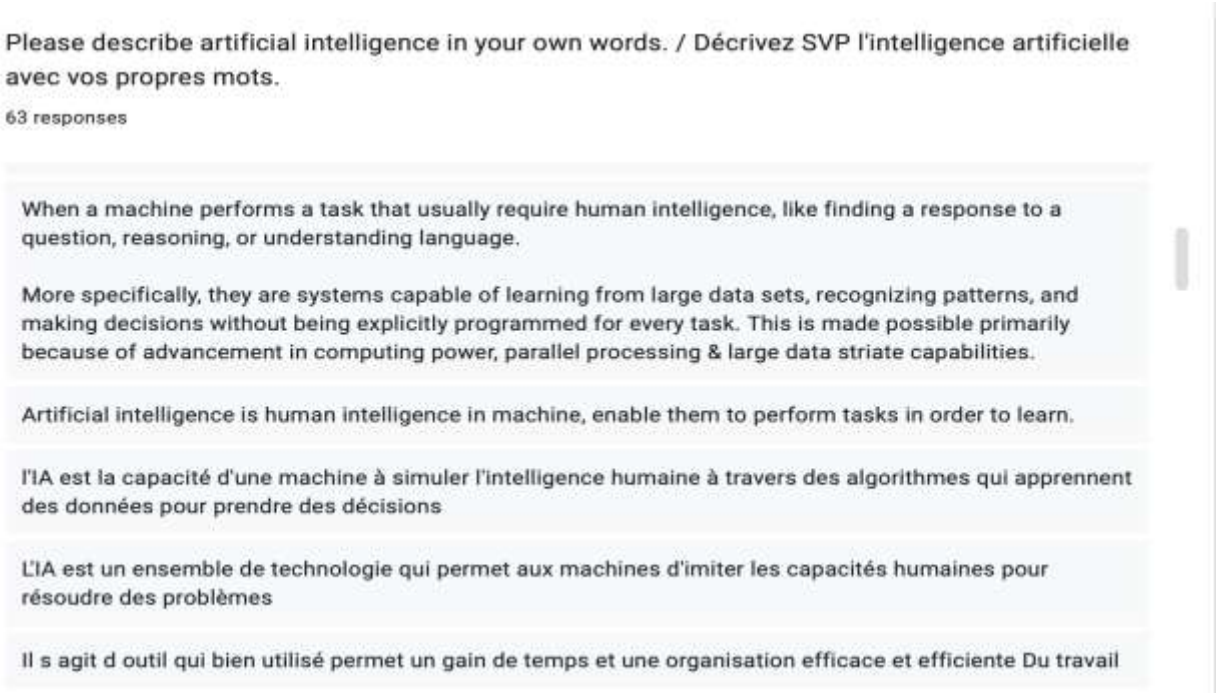

Figure 2 : snapshot of results to question'Please describe artificial intelligence in your own words.'

Question 3 was 'Do you use artificial intelligence in your business operations today?'
65 people answered this question.
55.4% of respondents answered no. 43.1% answered yes, and 1.5% said they were not sure.

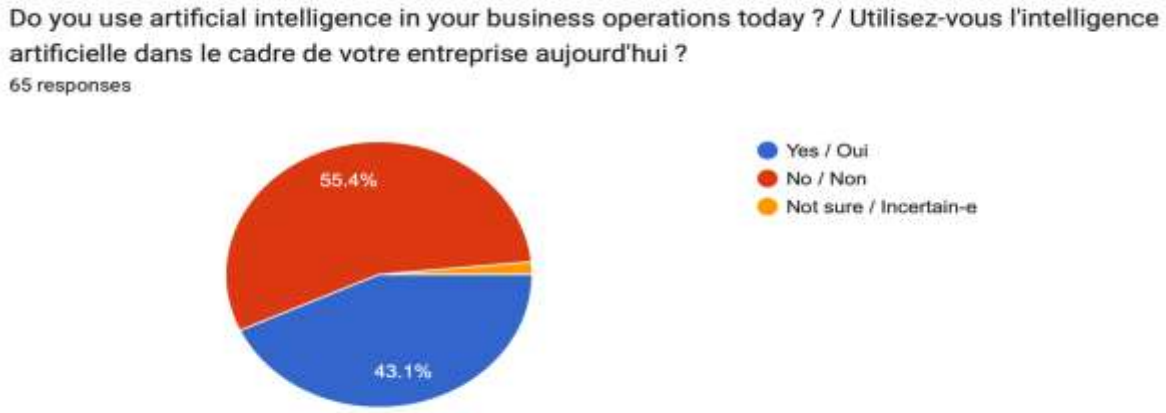

Figure 3 : results to question'Do you use artificial intelligence in your business operations today?'

To question 4 'How do you think artificial intelligence could help in your business operations?', 65 entrepreneurs answered.
Use cases vary but most of those can be grouped into three main categories: improving customer experience, making predictions, and creating innovative content.'Chatbots' and 'virtual assistants' were often mentioned. Those seem to be one of the most common uses of AI in the Ivorian entrepreneurial ecosystem today.The importance of AI in making predictions was stressed by several founders. One use case was the prediction of sales, which is linked with optimized inventory management and customer satisfaction. Another one was the prediction of traffic jam to

optimize routes for smarter garbage collection. Respondents in the entertainment industry (music, animation movies, etc.) insisted on the benefits of AI for content creation.Some founders think of AI as useful for optimizing market research, summarizing documents, improving productivity in general.One participant mentioned the use of AI for recommendation systems.In their answers, some entrepreneurs seemed to equate artificial intelligence with data science, while others understood that AI improves data analysis. One greentechcompany detailed how AI can help in the analysis of satellite images to be able to detect and map mangrove areas.Several founders equate AI with automation of tasks whereas automation is possible without AI, for instance through the coding of simple automation scripts in different programming languages (Perl, JavaScript, Python, etc.).

Discussion:-

This study has allowed us to have a view of how entrepreneurs in Cote d'Ivoire perceived their own knowledge of artificial intelligence, how they would define AI, and which uses they already make or think they could make of it.
The number of participants was limited, partly due to the low level of digital literacy, the lack of research funding and the socio-political context (year of presidential elections). Hence the findings obtained are considered exploratory. However, our work would be a good starting point for further studies about artificial intelligence literacy and usage among entrepreneurs operating in Cote d'Ivoire and elsewhere.The fact that almost all participants stated that they knew what AI is, shows that they are connected to the world news, but could also be explained by the fact that there were campaigns led in the country to raise awareness about technologies, digitalization, and tech entrepreneurship.For instance, from 2018 to 2023, the 'Fondation Jeunesse Numérique' (Digital Youth Foundation in English) led a caravan throughout 24 regions of Cote d'Ivoire to present its missions assigned by the Ministry in charge of digital economy, to talk about the other organizations linked with the Ministry and the role of each of those, to train young people on digital tools and possible careers in the field, tech entrepreneurship, business plan writing, responsible use of social media, digital marketing, electronics, robotics, and the basics of artificial intelligence and Internet of things.

Other organizations such as the National Agency for the universal service of telecommunications (ANSUT), Akendewa, O'village, Meta, and mobile operators, also contributed to raising awareness among the population of Cote d'Ivoire and training the people on the use of some digital tools and platforms.All those initiatives aimed at reaching people who did not attend universities or schools delivering high-quality classes about technologies, such as the University of Cocody, ESATIC, INPHB, etc.However, the facts that out of the 63 definitions proposed for AI, only 65% were valid, and more than half of the participants stated that they were not using AI in their daily operations, show that there is a need for continued and deeper education on the subject.Around 2018, the 'Fondation Jeunesse Numérique', an organization created at the initiative of the Ministry of digital economy, suggested to settle permanently in all regions of Cote d'Ivoire, within the ANSUT-managed community centers, to be able to create active learning communities of young people about entrepreneurship and technologies. The best ones among them would then have served as ambassadors for the rest of the population of the region, as well as the following generation of young people. It is important and urgent to put such a virtuous learning circle in place. The literature shows us a strong link between the development of opportunity-driven entrepreneurship and the socio-economic development of a nation. Another strong link lies between the level of AI literacy of entrepreneurs and the level of competitiveness and success of their companies.

Some prerequisites are the availability of stable electrical and telecommunication infrastructures in the different regions, as well as a significant increase in terms of accessibility to computers and smart phones.As of October 2025, the penetration rate of the Internet was 40% in Cote d'Ivoire.The percentage of social media users compared with the population of the country was 25.5%.Caution is needed here as the growing usage of the Internet, and the social media in particular, does not imply a positive impact on the socio-economic development. Kouassi et al. (2024) shows that social network usage among workers in Cote d'Ivoire was mostly for recreational purpose.Regarding the smart phone penetration, the latest figure available was 45% in year 2020. It must be considered that many of the people who have one smart phone have a second one. Therefore,there is much more than 55% of the population who have none.A limitation of our study is the number of participants, lower than what we aimed at, due to the low level of digital literacy, the socio-political context of year 2025 and the lack of research funding.However, the preliminary results obtained are valuable because there had never been such a study within the Ivorian entrepreneurial ecosystem. Furthermore, two strengths of our work are the diversity of the participantsand that of the industry sectors in which their companies operate.Our results provide a baseline for further research. It would be good to extend the study to a set of 200 entrepreneurs. Also, estimating the gains provided by AI in terms of market share or revenue level, would be very insightful.

Conclusion:-

Our study is the first one of its kind within the Ivorian entrepreneurial ecosystem.Through a survey, we collected useful information about male and female entrepreneurs operating in Cote d'Ivoire within diverse industry sectors.The results revealed that almost all entrepreneurs consider that they know what artificial intelligence is. However, when comes the time to define it, only 65% of them provide valid answers. Furthermore, more than half of the respondents said that they were not using AI in their daily business operations. The actual usages made by the founders mostly fall into one of the following three categories: improving customer experience through virtual assistants, making sales predictions, and creating innovative content.Therefore, there is a lot of room for more practical training on artificial intelligence. Some prerequisites must be met such as access to high-speed Internet and adequate terminals.By increasing the level of AI knowledge of entrepreneurs, the competitiveness and success of their companies can be improved, creating a positive impact on the socio-economic development of the nation.

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FONDATION JEUNESSE NUMÉRIQUE
ORANGE FAB Cote d'Ivoire
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Ethical Considerations:-
Participants were informed of the scientific context and nature of the study. All were adults who answered the questionnaire of their own will. Their personal information is kept confidential.

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