Perceptions of RAIA Introduction by Employees on Employability and Work Satisfaction in the Modern Agriculture Sector

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Abstract

Do technology cause agriculture losses? Do technology cause agricultural job losses? Though it is a popular belief, it does, not all agriculture leader considers it this way. The opinion that the traditional approach to agriculture jobs will be eliminated for contemporary ones' consequence on the arrival of artificial intelligence, robotics, and internet of things, automation, and technology differs from sector to sector. The computer is becoming smarter, creative, and sophisticated hence; making previous roles out of model or fashion. These desires have made agricultural workplaces develop a dependency on the RAIA (Robotics Artificial Intelligence & Automation) system. Many studies have expressed the concern that RAIA may turn out so advanced that aside from displacing humans in the place of work, it will become so complex in such a way that humans won't be able to control it. The current study attempt to address this concern. It provides answers to the question "what is the impact of RAIA on current employability and agricultural work satisfaction? It adopted the cross-sectional research data collection and exploratory design to analyze its objective. About 50 respondents were drawn from the researcher's personal, and professional networks. The participants are all working-class adults from various agricultural firms and from this sector. An overview of the thematic process suggests that the impacts of RAIA are not detrimental. It is not meant to substitute human but to complement. The thematic analysis also provides other findings for agricultural firms and government as detailed in the study result presented. Following this result, the study proposes that irrespective of the unforeseen risk of RAIA, agricultural jobs are secured. Employees of the agricultural sector should keep evolving with technology to remain employable.

Keywords: Agricultural Sector, RAIA, Employability, Work Satisfaction, Artificial Intelligence, Automation

1. Introduction

The adoption of RAIA commenced in the agriculture sector and later spread to different areas of the society as well as the economy (Webster and Ivanov, 2019). Presently, the group of workers that appear not to be afraid of RAIA technologies in the place of work are professionals, managers and the highly literate workers in comparison with those who are manual, les educated, employees. However, studies show that RAIA do have an effect on most task in the workplace (Dekker et al., 2017). Many studies have expressed the concern that RAIA may can turn out so advanced that aside from displacing humans

in the place of work, it will become so complex in such a way that humans won't be able to control (Fast and Horvitz, 2017). For instance, Castelvecchi (2016) opines that during the 1990s, Artificial Intelligence was thought of as a black box that could not be fully controlled nor understood. Humans and Artificial Intelligence will have to complement each other and work hand in gloves. This underscores the importance and need to employing people with requisite skills that would be complementary to technologies (Plastino and Purdy, 2018). Certainly, when comes to with job security, RAIA technologies poses concern to workers.

According to Webster and Ivanov (2019), businesses desire that their cost of production be kept low, they need increasing speed of production, consistency in production and quality of products output and supply chains. These desires have made them develop dependency on robotics, artificial intelligence, and automation (RAIA) system. Earlier studies by Bowen (1966) opined that technology causes job losses and not work. Though it is a popular believe, not all business leader from agriculture sector considers it this way. The opinion that the traditional approach to jobs will be eliminated for contemporary ones' consequence on the arrival of artificial intelligence, robotics, and the internet of things, automation, and technology differs from sector to sector (Ivanov, 2017).

The current study attempt to provide answers to the question "what is the impact of RAIA on current work satisfaction and employability? Consequent on the skills sets which RAIA demands, what is the response of the employers? Are they recruiting, retaining, or managing their current workforce? The study will answer the following questions by scheduling the objectives below;

Objectives of the study

The main objective of the study is to verify the impact of RAIA on current employability and work satisfaction in agricultural sector. To the best of our knowledge, most studies which have examined the effect that RAIA technology has on the labor force were all quantitative in nature and did not reflect the specific and divergent views of end-users (Donepudi et al., 2020a; McClure, 2018). At the moment of conducting this study, a lacunar is clearly seen in literature regarding qualitative research examining individuals' concerns of their employability and work satisfaction within the discuss of RAIA and its potential effect on present and future jobs. The current study seeks to fill this gap.

2. Literature Review

Job Variation and RAIA

According to Nam (2019), not only has job been projected to be lost, projection has also been made of job extinction. Nam (2019) considered both effects as consequence of automation. Technophobes carries irrational fear toward RAIA, humans seem to be abnormally worried, and express the concern of becoming unemployed hence; leading to financial insecurity. This directly contradicts the opinion of non-technophobes who thinks that technology creates expansion and produce opportunities while eliminating inequality (McClure, 2018). Similarly, Kalleberg (2012) opined that all form of Robotics, Artificial Intelligence, and Automation (RAIA) has instituted the need to redesign worker's specialty, job descriptions and vary their focus to producing value surging roles; hence, RAIA is considered as a likely facilitator for upskilling roles causing to adequate job quality.

The study by Rahman et al., (2020) opines that automation is more likely to be applied in operations rather than in jobs. He furthered that RAIA technology can adequately match or do more than human performance or standards; RAIA will not be restricted to low-skilled, nor low wage roles such as home health givers and workers into maintenance, but it shall affect managerial tasks and executive position including staff involve in data and report analysis preparation (Rahman et al., 2020). RAIA will begin

to handle mundane activities (Donepudi et al., 2020a), hence enabling humans to institute interpersonal interactions rather than carrying out arduous tasks (Azad et al., 2011).

In other that firms stay essential in the market and remain competitively, investments in RAIA infrastructures are required, leading to significant job variations. This means that investments that are done at an early stage may produce effective result, enabling customers and workers to adjust and adopt improved changes and operate effectively and in an efficient manner (Webster and Ivanov, 2019). In a more recent study carried out by Raj and Seamans (2019) the adoption of Impact of RAIA needs firms to undergo serious restructuring. Here, to restructure imply variations in the requirements of the employees' skillset. Employees grapples with the uncertainty that is associated with the implementation of smart technology, Artificial Intelligence, robotics, and algorithms (STARA), which may likely have a negative effect on career satisfaction, and the commitment of employees while surging their turnover objectives, depression and cynicism (Asadullah et al., 2019; Brougham and Haar, 2018).

On the negative side, Kalleberg (2012) opined that RAIA creates room for standardization and intensify roles for some workers. Mores so, there is the concern about data privacy. As the technologies accumulate and disperse large amounts of data, the issue of privacy possess a concern. This may potentially cause distrust among workers in the organization. Hence, workers' behavior toward RAIA is affected by fears regarding their privacy, job security, and wages (Plastino and Purdy, 2018). In a related survey performed by Donepudi (2019), as reported in the work of Davenport and Ronanki (2018) the issues faced by leaders and stakeholders during the adoption of RAIA initiatives include difficulty in managing and fusing cognitive tasks with the existing strategies and methods, as well as the relatively high costs of systems, technologies and personnel. However, Donepudi et al. (2020a) opines that safety and quality risks related with Robotics, Artificial Intelligence, and Automation is still undefined but regulatory implications could be huge.

Job Uncertainty and RAIA

Davenport and Ronanki (2018) in a more recent study show that robotic operations may not cause job loss. Davenport and Ronanki (2018) also predicts that substitution of managerial employees nor is the output not the primary aim of applying RAIA. Therefore, as visible improvement in technology emerges, RAIA enables task will cost humans their jobs but on a scale than anticipated (Davenport and Ronanki, 2018). More so, stakeholders in some industries including the retail, machinery and insurance, are concern over losing jobs with the adoption of RAIA (Agrawal et al., 2017, Davenport and Ronanki, 2018, Ivanov, 2017). According to Nam (2019), employees across different industries are certainly worried about the tendency over job security owing to the application of different kinds of technologies (Nam 2019). Job insecurity is used to describe state of powerlessness to stay and sustain the desired continuity in a threatened role conditions (Privara et al., 2019). When individuals think of automation as potential threat to their job continuity, then the fears of job insecurity are alluded (Privara et al., 2018). In the 1980s, the application of Robotics, Artificial Intelligence, and Automation (RAIA) was considered as both negatively and positive. The concerns over the threat posed to job security are the negative sides while the opportunities it comes with offers the positives (Chao and Kozlowski, 1986). RAIA will now work mundane tasks, enabling experts to handle clients' needs and proffer new, and creative ideas (Plastino and Purdy, 2018).

Work Satisfaction and RAIA

Study by Findlay et al. (2017) show that RAIA limits the opportunities for teamwork and job rotation. It also limits career opportunities. More so, Liu et al. (2018) reported that automated jobs, task and assignment eliminates satisfaction, motivation, and then operational performance. Work satisfaction described the positive emotional which arises consequence on the appraisal of job an experience

acquired by an individual (Locke 1976). Whether or not an employee is satisfied with his or her job is manifested in their work related behavior and work related attitude (Robbins and Coulter 1996). When their specialty varies with the likelihood of layoffs, workers begin to appraise and question their worth and contributions, which may potentially affect their self-esteem either negatively or positively and general life satisfaction by extension (Reinardy, 2012). When employees are exposed to technological adoption and major job complexity with new technology, it eliminates work satisfaction irrespective the type of job (Axtell et al., 2002). For instance, the adoption of RAIA made pharmaceutical staff appreciate their role more than what they did before. This is because of the job design, increase patients, upskilling of tasks, and the versatile learning platform it gave those (Findlay et al., 2017). To some other group, this change was perceived negatively.

Employability and RAIA

In this new era, to remain within the modern workplace or retain our employment status, workers would have to be goal oriented, empathetic, focused and adaptable to the needs of other people including being motivated to properly and adequately leverage on automation to secure the required job output (Donepudi et al., 2020b). According to Donepudi et al., (2020a), job should be redefined and revised for the category of work C-suites and the front line staff to enable them use and enjoy the benefit of adapting RAIA-technologies. Robotics processes assist in numerous task. However, analytical, empathy and creative competencies are mainly the characteristic of humans to a considerable extent (Fernandez and Aman, 2018). A blend of human emotions with the skill requisition of automation, then work output will be super. Employability refers to the acquisition of skills, competencies needed to meet the varying needs of workers, customers and, thereby, assisting individuals to understand the potential of RAIA at work (Bhargava et al., 2020). At the moment, a skilled workforce is imperative to keep abreast of technology. Skills like empathy, relativity, ability to motivate others, judgment, and the ability to motivate others remain unique to humans (Rahman et al., 2020; Lichtenthaler, 2018). Webster and Ivanov (2019) mentioned that the development of these skills will commence by providing the right foundations. The right foundation implies altering the educational set up of schools and universities and the efforts of organizational towards training.

3. Methodology

Sampling Technique and Population

The current study follows the cross-sectional research data collection and exploratory design to analyze its objective. The objective of research is to verify and explore employees' perceptions of RAIA implementation in the place of work and its effects on the psychological demands of their job. The study adopted the purposive sampling technique to arrive at its objective. Setia (2016) describes the purposive sampling as a technique which is non-probabilistic and it is based on accessibility, availability the research criteria. About 50 respondents were drawn from the researchers personal, and professional network. The population of are all working class adults in various firms and in from only agriculture sector. The criteria in this case was that all respondents must have used or have dealings with RAIA in their respective workplace. Network from Facebook, Watsapp, Linkedin, Instagram were drawn to make up the population.

Procedure

A structured interview was carried out with about 50 participants. The format of the interview adopted ranges from face-to-face, video calls to WhatsApp. On the whole, the interviews span about 25mins for each respondent. The questions centered basically on 2 principal psychological areas of work namely; employability and work satisfaction. The interview questions were based on literature review. On the

selection criteria, the participants were indirect or direct users of Robotics, Artificial Intelligence, and Automation (RAIA), irrespective of whether these technologies were implemented or would be to adopted in the near future in their workplace or participants who are in a team schedule to implement (RAIA) in firm also qualify to be included. Participant bio sheets were distributed, consent sought by mail. The mails soliciting their participation were sent days before the interview to ensure that they partook voluntarily. They were also informed of their freedom to opt out at any point in time they wished to do so. The respondents were given assurances with regards their confidentiality and anonymity of any data or information released Demographics including occupation, designation, age, sex, years of work experience, and industry was acquired. The opinions of 50 participants were obtained.

Data Analysis

For the current study, a qualitative research method was used to understand the perceptions of the participants. The current study attempt to provide answers to the question "what is the impact of RAIA on current employability and work satisfaction? Consequent on the skills sets which RAIA demands, what is the response of the employers? What does RAIA adoption implies for employees recruiting, retaining, and workplace management? For this reason, the descriptive statistics is used to analyze the descriptive statistics and thematic approach were adopted to arrive at a conclusion. The thematic approach offered a more theoretically attainable and flexible perspective from the qualitative data collected. The inductive learning was used produce sub themes. Following the study, a significant amount of codes was produced and then captioned under specific umbrellas. About five unique themes were discussed. The first entails the perception from their experience, second is human feeling. The outcome is the third. The fourth umbrella reflects the aftermath of RAIA implementation while the last deals with the conscious effort implemented so far. SPSS was used to analyze collected quantitative variables.

4. Result and Discussion

Table 1: Demographics of Respondents

Variables	Frequency	Percentage (%)
Education level		
Primary	3	6
High school	11	22
College	26	52
Others	10	20
Total	**120**	**100**
Firm type		
Private firms	36	72
Public firms	14	28
Total	**50**	**100**
Sector		
ICT	4	8
Retail	10	20
Accounting/ Finance	4	8
Transportation	24	48

Manufacturing	8	16
Total	**50**	**100**
Origin		
Asian	16	32
Americans	4	8
Europeans	5	10
North Americans	10	20
South Americans	6	12
Others	9	18
Total	**50**	**100**

Source: Authors computation using SPSS, 2020

For the distribution by education, 3(6%) of the respondents have gone through primary education, 11(22%) had gotten a high school certificate; 26(52%) of them have acquired a college degree while only 10(20%) of the respondents are other degree. Evidently, the partipants are literates. Majority 36(72%) of the respondents are from the private firms while 14(28%) are from the public firm. Sectorial distribution shows a greater percent of the respondents are from the transportation sector 24(48%), others include ICT 4(8%), Retail 10(20%), 8(16%) are from the manufacturing sector, while 4(8%) are from the accounting and finance sector. For the distribution by origin, 16(32%) of the respondents are Asian, 9(18%); 4(8%) of the respondents are Americans, 5(10%) are Europeans; 10(20%) are from North America while 6(12%) are from South America. The study has respondents from all over the world. With this rich background, expectations are that the study will give us the right perspective on employees and work. The respondents are pulled from various sectors. Evidently, the result from this study will be unique because of industry unique perspective.
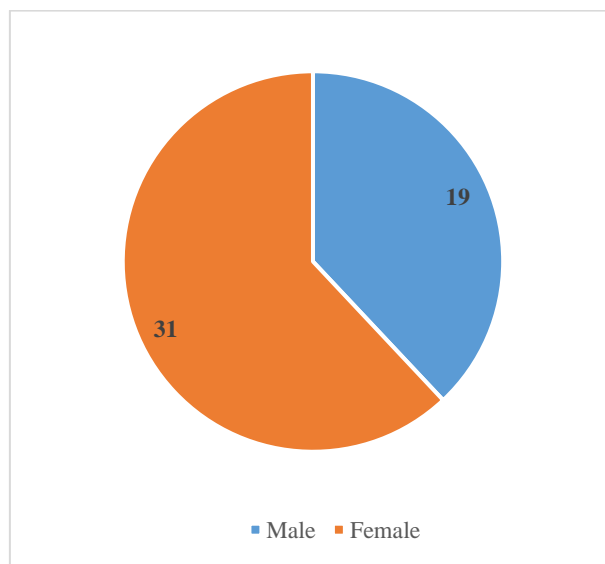

Figure 1: Distribution of respondents by Sex (Source: Authors computation using SPSS, 2020)

Figure 1 shows the distribution of the respondents by sex. Out of the 50 respondents, about 19 (38%) were males while 31(62%) were females. Evidently, the females formed the majority of the respondents.
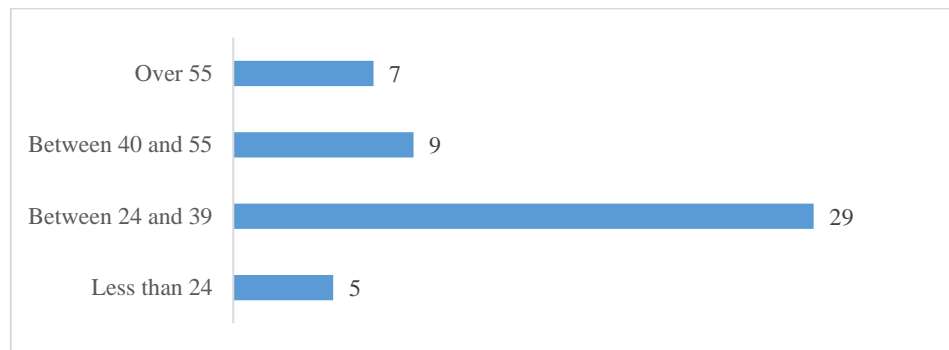
Figure 2: Distribution of respondents by Age (Source: Authors computation using SPSS, 2020)

Figure 2 shows the distribution of the respondents by Age. Out of the 50 respondents, about 5 representing 10% of them were less than 24 years. 29 (58%) of respondents are between 24 and 39 years. 9(18%) of the respondents are between 40 and 55 years old while about 7(14%) are over 55. And table 2 outlines the perceptions of participants with regards RAIA.

Table 2: Perception of RAIA on employability and work satisfaction

S/n	Theme	Sub-theme	Respondents views
1	Experience with RAIA	Perception	• "I think automation and computer can reason for themselves"
		Decision Making	• "You enable the program to think while computer program
		Productivity	• "Simulating and automating the human mind? Mere prediction. It is still a complex issue and cannot even be done with technology" • "If I receive assistance from a robot on my menial job, then I can concentrate on the analytical parts"
		Future expectations	• I totally lack the understanding of how automation will go, it all depends on which direction it goes"
		Hybrid	• "The combination of machine intelligence with that of human is just mind blowing. It can go hand in gloves" • "I do not think that automation will replace human beings" • "More information about AI and automation is needed but technology will never substitute human beings."
2	Human touch	human interaction	• A lot of firms sent out generic information, upon assessment, they were inhumane
		Human involvement required	• "Though it reduces teamwork, and processes, many of the day's activities would still be handle by human" • "Human will not completely hand-off"
		Interpersonal relationship	• "Communicating like though it were human to human cannot happen with automation or will never happen."
		Person Organization fit	• "Machine and automation cannot give feedback as regards the strength and weaknesses of individual employee"
		Assessments	• "The privacy angle is a risk. Once access is granted by automation and machine, then cognitive and personality information about employees are at risk"

3	RAIA Outcomes	Job insecurity	• "Robotics, Artificial Intelligence, and Automation will require humans to deepen and acquire more knowledge"
		Job security	• "With Robotics, Artificial Intelligence, and Automation, certain jobs will certainly disappear"
		Indirect impact	• All of those boring logics and algorithms, automation just relieve you from them" • "New markets that are not tapped before can easily be easily be reached with automation."
		Assistance	• Automation will allow employers to send out feedback to employees and also receive feedbacks as well
		Chatbots	• It is totally impractical because it does not send out the needed information • HR can easily send information to employees
		Macro-level impact	• In my opinion, automation and machines are good but the risk of AI is dangerous. In the hands of a dictator, or criminal element, it may lead to social unrest. I dislike it.
		Output and algorithms	• Honestly, I am yet to entertain risk. • I am yet to witness someone loss his/her job because of automation, and machine.
4	Milestone	Skills acquired	• "Consequent of Robotics, Artificial Intelligence, and Automation, there has been increase in jobs" • "If an educated person enter the labor market with coding knowledge, then they become more creative and employable"
		Irreplaceable competence	• "Though machine will work, but finally the decisions come from humans. • "All AI does is to support the decisions made by man"
		Communication	• AI are workers, then they can be guided to produce result
		Adaptability and Acceptability	• The knowledge and master of AI and ML language gives me pleasure. I have more security in the process."
		Emotional concerns	• "Vary work composition bit pleasurable" • "Eliminates repetitive and mundane tasks" • "When users care less about AI, everything gets wrong
		Extent of impact	• Its impact is massive. I desire for more great impact.
5	Conscious determination	Change in opinion	• I can't say they loss their roles. The task were simply automated.
		Preparedness	• "The benefits are just too overwhelming, just learn to manage the risk.
		Transparency	• "Will come in when everybody understand what is happening, all stakeholders in the business understand the processes, the need for it etc.
		Putting into action	• "When you think through something, try to effect it just perfectly as you thought.

Source: Field Survey, 2020

5. Major Findings and Discussion

- Respondents opined that robots lack the ability to make decisions. For them, there is no need for routine and need human contribution, whereas Artificial Intelligence operate iteratively and can take decisions. AI system that can work independently has not been created.

- In the current study, it has been confirmed that human touch and decision-making capacity are unique only to humans; hence are irreplaceable. The involvement of human continues to remain essential even to the fifth industrial revolution. By implication, high level jobs will not be devoid of effects like the low-level jobs counterpart. The current study also confirms that RAIA will have implication for the managerial and executive roles also (Donepudi et al., 2020a).

- A significant proportion of participant are end-users of RAIA. Most of them use RAIA daily (Donepudi et al., 2020a). However, some respondents lack the experience in advanced technology and for this reason, term it as a black box (when one lack understanding of a phenomenon). This means that automation and humans will complement each other (Castelvecchi, 2016). Not machine nor man will work independently of each other.

- Employees with the right technical knowledge can create a program but an individual with the human aspect will be sought hence; to remain employable, be up to date with technology (Plastino and Purdy, 2018)

- Petrillo et al. (2018) recommends gaining new competence and skill set to close the gap between profession and RAIA. The study shows that although the respondents were confident in the skillsets, there were room for upgradation. This will surge their employability which would cause job security and work satisfaction.

- The study opines that implementation of RAIA in operations should be in ways that gains employees acceptability. These result support Raj and Seamans (2019) who mentioned that when new technology come up, business owners should carry the employees along as much as they can for effective collaboration.

- Participants expressed improved time and skills management because RAIA remove low-value, repetitive and menial task, hence surges productivity, accuracy and efficiency,

- Study revealed that though RAIA help humans, and increase satisfaction, soft skills like interpersonal relationship, emotions, instincts, creativeness and making decisions cannot be replicated. This finding is consistent with past findings (Donepudi et al., 2020a; Lichtenthaler, 2018).

- Technology cannot handle human emotions but a few seem to be able to interact with humans. For instance, evidences from human languages and communications taken to the chatbots, showed a weak and less quality conversational content between humans and with chatbots (Hill et al. 2015). End- users consider the language by the chatbox as artificial and so impersonal.

- The current study flags the probability that employees may have work satisfaction dilemma. Employees are comfortable with RAIA technologies, with the demand for the different professionals, including skills set but seem less satisfied with its impact on their social life. They expressed the possibility of data theft in the place of work

- Employees see RAIA as human's assistant. The assist in decision-making, doing tedious and menial job, and making cost saving. Though there is the potential threat to work,

- Employees consider it necessary to adapt, accept, and gain more knowledge to be employable in the future. Opinion the micro and macro impact of RAIA are inconclusive. It suggests a potential work satisfaction dilemma. The study has the mixed perceptions from respondents suggesting that the effect of RAIA adoption would vary based on the agriculture industry and level of employee.

6. Conclusion and recommendation

The importance of qualitative study is on obtaining a wide opinion from various participants. This opinion is considered to be diverse. So, the current study, viewed RAIA implementation in the workplace from several and interesting perspectives which can be considered by firms when applying automation as well as workers if they are users of automation. Following these findings, the following are some recommendation:

- Hence, individuals must expand their technical knowledge and gain conceptual clarity, so they are aware of what they are dealing with.

- Individual should upskill by instituting, maintaining and managing interpersonal relationships with employees to continue to employable, because, it will have an impact on employability for new and novel jobs in agricultural sector.

- Therefore, agricultural firms should communicate and educate their employees to accept RAIA for a smooth transition.

- Agricultural firms should train a team of expert using an unbais logical sequence with effective RAIA implementation to eliminate adverse effect.

- Irrespective of the unforeseen risk of Robotics, Artificial Intelligence, and Automation, participants believe that their jobs in this sector are secured as far as they keep evolving with technology.

- The study opines that implementation of RAIA in operations should be in ways that gains employees acceptability.

- Firm championing RAIA technology, should think of ethical standards, and promote transparency in processes, and policies according to social and cultural changes of the society to manage risk.

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