International Journal of Business Marketing and Management (IJBMM)
Volume 5 Issue 11 November 2020, P.P. 51-60
ISSN: 2456-4559
www.ijbmm.com

AI and Human Rights: From Business and Policy Perspectives

D. Majumdar, H.K. Chattopadhyay
Head of the Institute, BGHS, Education Department PhD, North Bengal University West Bengal
(Corresponding Author) Legal Consultant, Calcutta University Kolkata, West Bengal

Abstract: *The Artificial Intelligence (AI) has become a part of our daily lives. Its propensity to affect human rights is getting more severe gradually. Some consequences of interference of AI with human rights have already been experienced. However, with rapid advancement of AI-technology, these consequential adverse impacts due to intersection of AI and human rights are apprehended to grow in severity as well as in dimension. The well-developed standards of international human rights law are expected to provide effective congenial inputs to different countries to actualize executable remedial mechanisms to prevent and to mitigate this ominous situation. These inputs are expected to contribute the different countries to frame appropriate AI-centric regulation and policy with due consideration of the other country-specific challenges. Of course, it is not known how and in what form AI would influence the future of the society since, still this technology is in its initial stage. In this perspective, the purpose of this article is to provide some specific recommendations to build the tools in the form of regulation and policy-framing for protecting the people from the most dangerous applications of AI that might threaten human rights.*

Keywords: Artificial Intelligence, Human Rights, Policy, Regulation, Technology

I. Introduction

Idea and concept of Artificial Intelligence (AI) was an issue of science fiction initially. Later, this concept and feelings of AI has been elevated on the table of hot discussions in the top circles of governments, academia and industrial players. It has been experienced that AI can solve many complex problems in an easy and cost-effective manner without the help of humans [1,2,3]. This AI-technology-applications are in infancy stage. But, still its propensity to interfere with Human Rights is gradually increasing in shape and in severity out of proportion. Of course, these issues of Human Rights abuses are not new to the society. But through the intervention of AI, its dimension and severity has been ominously exacerbated in the perspective of real-life impact and proliferation [4,5,6]. As a culmination of all these outcomes, intersection of AI and Human Rights has become an important and timely issue of discussion among the concerned stakeholders [7]. It has been perceived that the applications of this ground-breaking technology may help and harm the users more in intensity compared to those that can be caused by other contemporary technologies. With time, these good and bad impacts of AIapplications are expected and apprehended to develop more in volume and in proliferation [8,9]. Experts are found to conceptualize this new technology through various lenses [10]. In the context of adverse effects on Human Rights by AI, it has been opined by the expert that AI has "created new forms of oppression, and in many cases disproportionately affects the most power less and vulnerable. The concept of human rights addresses power differentials and provides individuals, and the organizations that represent them, with language and procedures to contest the actions of more powerful acts, such as states and corporation".

International Human Rights Laws through their well-developed institutions can address successfully the Human Rights abuses by the malicious applications of AI. This article, lending inputs from these International Human Rights Laws, has taken an attempt to provide some executable recommendations to combat Human Rights abuses by the use and applications of AI [10,11,12,13]. This has been done through articulation of some statutory steps [14,15].

However, it is necessary to keep in mind always that, this attempt to formulate some recommendations is being taken in a comparatively infancy stage of AI-development. As such, this may be considered as a beginning to grapple with its important potential consequences. This article, in this context, may be construed as an initial scoping concerning to the consequences culminated through intersection of AI and Human Rights [16]. In this article, the first section deals with international landscape of AI, then policy framework and regulatory implication [17]. Thereafter, the article has dealt with impact of AI followed by influence of AI on Human Rights and the article has provided some recommendations to address Human Rights abuses posed by AI [18]. Eventually, the article has been ended with a comprehensive conclusion.

II. International Landscape of AI

In UK, with the rapid growth of AI, a review committee has been commissioned by the UK government for providing recommendations to regulate AI [19].

The recommendations mainly concern with the following points.

i) To develop data trust for ensuring exchange of data that are secure and mutually beneficial between organizations holding data and those who are seeking data for using the data to develop AI [20].
ii) A strong push is to be ensured for academic programmes with focus on AI, especially, in master's as well as in Doctoral levels. For this, governments, universities and organizations are to provide funds. This would improve the skill-level of the stakeholders.
iii) The existing Alan Turning Institute should be named as 'National Institute of Artificial Intelligence and Data Science' for boosting up AI technology. Besides, different national research institutes should work together for developing AI and to see that it is not used for harmful purposes threatening Human Rights [21].
iv) For encouraging uptake of AI in different sectors, especially, in business sector, the government is needed to expand its support programmes for AI and guide the stakeholders to utilise AI to improve economy [22].
v) To protect data from being misused by AI that might jeopardize Human Rights, governments should frame proper regulations that can be executed appropriately and a comprehensive policy is to be provided, especially, in the field of healthcare industries where chance of personal data leakage is deemed to be maximum and can cause even death of a person [23].

However, for protecting Human Rights by the application of AI, the European Union (EU) has already framed General Data Protection Rules (GDPR) that cover transparent use of data. It has been enforced with effect from 2018 [24,25].

In USA (Office of Science and Technology), a report 'Preparing for the Future of Artificial Intelligence' has been released in 2016. This report has given stress to provide ways through which commercially developed AI may be leveraged to address societal issues and can help to drive innovation as well as economic growth [26].

This report has also emphasized on the importance to frame an appropriate regulation to address the Human rights infringement by the applications of AI [27].

The United States Food and Drug Administration (FDA) has already issued some guidelines in 2016 to boost up the development of medical devices which are AI-dependent and to regulate the uses to address Human Rights abuses [28].

The FDA has also provided a comprehensive guideline for the manufacturers for ensuring security of those devices that are interlinked with internet [29,30].

The guidelines include:

i) Arrangements for continuously monitoring cyber security issues.
ii) Taking appropriate steps for mitigating potential risks concerning to AI-applications by chalking out pragmatic programmes.
iii) Programmes for continuously working with the researchers of AI for identifying and for tackling such issues which can be exploited.
iv) Issuance of a guideline (it has been published in 2017) for the staff of FDA on software as a Medical Device (Sa MDY). It would articulate for regulating various kinds of software so that Human Rights abuses using AI can be mitigated.

In India, in different fields, AI technology is applied, and different protective measures and guidelines have been articulated. For industries, standard design guidelines have been provided [31,32]. They are:

"i) Do no harm – ensuring that the collection of data does not cause any harm
ii) Choice of sharing/consent – need for a much better structure regarding it
iii) Burden of compliance on data collecting authority ...
iv) Trust the doctor ....
v) Abstinence from the use of information that can identify a person
vi) Promotion of Human to Human Interaction ..."

India is also emphasizing to strengthen the Intellectual Property Regime (IP regime) in the field of applications of AI because AI possesses borderless applicability (jurisdictional issue) and AI has no 'personhood' in the traditional sense of term [33].

India is giving much emphasis to address infringement of data sharing threatening Human Rights. For this, India is contemplating to frame AI policy for India to materialise the processes to address data sharing infringement with good governance. Different committees have been formed in government level to provide effective inputs

to the authority for articulating appropriate mechanisms to protect data [34]. A "Data Protection Bill, 2018" is already on the table of Parliament of India awaiting exhaustive approval for becoming an Act.

III. Policy framework and regulatory implication

AI is found to possess its effective applications in various sectors and the professionals are found profoundly engaged to use this technology for decision making mechanisms in an accurate manner without the help of humans [35]. The universal use and applications of AI have provoked the stakeholders to manoeuvre how such applications can be managed from legal, ethical and policy perspective so that AI-applications cannot threaten Human Rights. This necessity has brought in a momentum to the concerned authorities of all the countries to sincerely think of managing, governing, regulating, strengthening the existing regulations with appropriate modifications lending inputs from International Human Rights Law to protect Human Rights [36.37].

India, being a developing country, is also trying to frame a new policy on AI with a full coverage concerning legal aspects for protecting Human Rights abuses arising out of intersection of AI and Human Rights [38]. Attempts are being made to bridge the gap between the various applications of AI and the existing laws so that applications of AI cannot threaten Human Rights [39]. In the context of business scenario, every business enterprise needs to preserve different information of its valued customers and in such scenario, it has become necessary to protect privacy of personal data [40]. This concept has gained additional momentum in view of the recent judgement of Supreme Court of India where a full bench of the apex court has declared privacy as a fundamental right in terms of the Article 19 of the Constitution of India [41]. This judgement, in addition, has observed that India needs to articulate a technology-neutral policy on AI and to provide a comprehensive, robust and executable legal framework so that any new technology cannot infringe the fundamental rights of the citizens.

In this context, it is very relevant to explain the meaning of AI. Marrin Minsky has interpreted AI as 'the Science of making machines do things that would require intelligence if done by men' [42]. From a report of Stanford University, it appears that AI is 'a Science and a set of computational technologies that are inspired by – but typically operate quite differently from – the ways people use their nervous systems and bodies to sense, learn, reason and take action'John Mc Carthy has defined AI as 'the science and engineering of making intelligent machines' Stuart Russel and Peter Norving (authors of a text book) opined that AI is required to be categorized into four divisions [43,44].

These are 'systems that think like humans, systems that act like humans, systems that think rationally and systems that act rationally'. AI can be conceptualized as a computer-based system that can function like human being to solve complex problems without human intervention. AI is nothing but an internet-dependent machine that can accurately analyse Big Data (huge volume of data) and can arrive at an accurate decision without the help of human beings. Whatever may be the definition or explanation of AI, experts could not come to an all-agreed definition of AI. Besides, another expert opined that it is not cogent to give a precise definition of AI since in that case such definition might shorten the applicability of AI [45].

The conception of AI covers more on 'field' than on 'thing'. AI can be divided into many fields like neural network, machine learning, natural language processing, robotics, speech processing, vision and so on. AI also covers other fields like psychology, neuroscience, logic, probability, philosophy, linguistics and many others [45,47].

Machine Learning (ML) is considered as one of the most important fields of AI [48]. Machine Learning is defined as 'Computer algorithms that have the ability to "learn" or improve in performance overtime on some tasks'.

IV. The scale, real-life impact and proliferation of AI

Application of AI helps the society in many ways. AI can process andanalyse data accurately without human intervention in a cost-effective way [49]. This data analysis-capability of AI can alleviate some of the important burning problems of the World. It can effectively improve transport system. It can improve the healthcare systems to a great extent. It can help to predict impending climatic disaster and so on [50]. However, it is an agreed issue that all innovative technologies bring in effective advantages to the people and at the same time they bring in damages to the society [51]. The abilities of AI also enable surveillance on such a large scale that was never perceived before. This ability of AI can cause many harms to the society that threaten Human Rights. Despite major strides concerning to the development of AI, this so-called revolution of AI is still in the initial stage [52]. This means, there are many unknown, unexpected and unforeseen possibilities to come in future [53]. However, here some of the issues that cause harm to the people for application of AI are discussed in brief.

i) Perpetuating bias concerning to criminal justice

There are many recorded cases where applications of AI have gone wrong in the systems of criminal justice. In the context of administering criminal justice with the help of AI, (in two different areas) sometimes such AI-applications bring in harm. One is risk-scoring technique. This helps to predict if the defendant is released on bail, there is chance of the defendant to commit offence again or to predict otherwise. This technique is adopted to remove the known human bias of the judges, concerning with decision to sentencing or granting bail. Another area is known as 'predictive policing'. This process involves use of various data for predicting when and where crime might occur and direct legal steps accordingly. But, it is experienced that these recommendations emerging from AI systems very often exacerbate the original bias, which are being tried to be mitigated, either in a direct way or through incorporation of factors which are nothing but proxies of bias.

ii) Accelerating mass surveillance

For analysis of data of various nature, AI helps for mass surveillance. The most dangerous and pervasive instance of this is the use of AI in a software that helps for facial recognition. Though this technology is still not perfect to the desired extent, governments are taking help of this technology to monitor their citizens, to facilitate for profiling of a specific group. Even governments are using this tool to locate and identify individuals. However, this technology is not only being used for surveillance and for identification, but this tool is being used to target and discriminate.

AI can create realistic video recording and sounding audio of real people. This technology may help unscrupulous people to create forged videos of renowned leaders of the World to humiliate their images in the society.

iii) Perpetuating bias in the job market

Hiring processes are known to have associated with bias and discrimination for a long time. To remove human bias from the hiring process, the industry sector is now taking help of AI technology. Even, it is experienced that actions of many hiring authorities by the help of AI are found to have associated with the very bias they seek to mitigate. The major causes of this bias are associated with use of the historical data of the past. If this historical data is covered with bias, how by using those data by the help of AI, the hiring authority can eliminate the bias?

There are other fields where help of AI can cause harm jeopardising Human Rights. All those points are not being discussed here because, in that case, this article will be too lengthy.

V. Influence of AI on Human Rights

Human Rights are inter-dependent and closely inter-connected. It is a common experience that applications of AI are found to have impacted almost all the internationally recognized and accepted Human Rights. There are many issues concerning AI- applications that erode Human Rights. Some of them are discussed below:

There are mainly three legal documents that form the basic structure of laws of Human Rights internationally. They are as follows:

i) Universal Declaration of Human Rights (UDHR)
ii) International Covenant on Civil and Political Rights (ICCPR) and
iii) International Covenant on Economic, Social and Cultural Rights (ICESCR).

Besides, 'the rights to data protection' as considered by European Union Charter of Fundamental Rights has also been considered in this discussion.

Here, in-depth discussions will be taken up to illuminate how AI attempts to infringe Human Rights or how AI has violated Human Rights.

It is pertinent to mention here that issues concerning to violation of Human Rights are not necessarily unique to AI but, many of them are in existence in the digital space. However, by the applications of AI technology, such Human Rights abuses have been magnified out of proportion.

A) Rights to privacy and data protection

Article 17 of the ICCPR envisages

"1. No one shall be subjected to arbitrary or unlawful interference with his privacy, family, home or correspondence, nor to unlawful attacks on his honour and reputation.
2. Everyone has the right to the protection of the law against such interference or attacks"

Article 7 of the European Union Charter of Fundamental Rights lays down

"Everyone has the right to respect for his or her private and family life, home and communications."

Article 8 of the European Union Charter of Fundamental Rights enjoins
"1. Everyone has the right to the protection of personal data concerning him or her. 2. Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified. 3. Compliance with these rules shall be subject to control by an independent authority."

All these enactments cover the issues of preserving rights to privacy and data protection. Privacy is a fundamental right. It is concerned with human dignity. Rights to freedom of expression and association are reinforced by the right to privacy.Many governments are now found to recognise data protection as fundamental right. Protection of data primarily includes protection of personal data. Now, AI technology is capable of analysing Big Data including personal data. This process may reveal personal information of individuals. As for example, Machine Learning has been developed by the researchers. This technology can accurately estimate one's gender, age, marital status, occupation (all these are personal information) just from the location data of one's cell phone. From the knowledge of history, this technology can predict future location. In the context of protection of Human Rights, this information of individual is considered as personal data. In this way, AI adversely impacts on Human Rights.

B) Right to freedom of movement
Article 12 of the ICCPR enjoins

"1. Everyone lawfully within the territory of a State shall, within that territory, have the right to liberty of movement and freedom to choose his residence.

2. Everyone shall be free to leave any country, including his own.

3. The above-mentioned rights shall not be subject to any restrictions except those which are provided by law, are necessary to protect national security, public order (ordre public), public health or morals or the rights and freedoms of others, and are consistent with the other rights recognized in the present Covenant.

4. No one shall be arbitrarily deprived of the right to enter his own country"

As already discussed, AI can provide detail picture of movement of individuals and can easily predict the future location of individuals. It is very easy by the governments to effectively facilitate admonition and restriction of the freedom of movement of the individuals and even of a group of individuals. In this way, AI can infringe Human Rights.

C) Rights to political participation and self determination
Article 25 of ICCPR envisages
Every citizen shall have the right and the opportunity, without any of the distinctions mentioned in article 2 and without unreasonable restrictions:
"1. To take part in the conduct of public affairs, directly or through freely chosen representatives;
2. To vote and to be elected at genuine periodic elections which shall be by universal and equal suffrage and shall be held by secret ballot, guaranteeing the free expression of the will of the electors
3. To have access, on general terms of equality, to public service in his country."

The AI can take up a role to publish disinformation which might create a threat to the right to political participation as well as self-determination. It has been experienced that in 2016, during US presidential election, it has been highlighted how a foreign power could take the help of AI to publish false information which influenced the voters. However, several digital platforms are functioning to keep this in check, but it is apprehended that in future, AI might be able to convince the voters more. This might eventually lead the voters to lose trust on the very legitimacy of elections.

D) Right to work, an adequate standard of living
Article 6 of ICESR lays down
"1. The States Parties to the present Covenant recognize the right to work, which includes the right of everyone to the opportunity to gain his living by work which he freely chooses or accepts, and will take appropriate steps to safeguard this right.
2. The steps to be taken by a State Party to the present Covenant to achieve the full realization of this right shall include technical and vocational guidance and training programmes, policies and techniques to achieve steady

economic, social and cultural development and full and productive employment under conditions safeguarding fundamental political and economic freedoms to the individual."
Also, article 11 of ICESR envisages
"1. The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international co-operation based on free consent.
2. The States Parties to the present Covenant, recognizing the fundamental right of everyone to be free from hunger, shall take, individually and through international co-operation, the measures, including specific programmes, which are needed:
(a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources;
(b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need."

In this context, this is very much relevant to mention that the role played by AI technology towards automation of jobs could pose a serious and real threat to the right to work. It might prevent the people to estimate the labour market. This automation, being the contribution of AI, would result in curtailment of jobs in some specific sectors. Thus, AI would be able to provide some effective shifts in the labour market in the perspective of creation of jobs as well as destruction of jobs.
In this way, many rights guaranteed under different enactments are found to have been violated by the applications of AI threatening Human Rights.
There are several other examples where applications of AI are violating Human Rights. Some of them are being summarized here.

Applications of AI are violating the following norms threatening Human Rights.
i) Right to equality and non-discrimination (Article 3 of ICESCR and Article 3 of ICCPR).
ii) Restriction on propaganda (Article 20 of ICCPR)
iii) Rights to education and rights to take part in the cultural life and rights for enjoying benefits concerning to scientific progress (Articles 13 and 15 of ICESCR)
iv) Rights to preservation of health (Article 12 of ICESCR)
v) Rights of children, family rights, and rights for marrying (Articles 23 and 24 of ICCPR).

However, detail explanations of modus operandi for violation of Human Rights through the applications of AI are not provided here because in that case, this article will be unnecessarily lengthy.

5.1. AI and Robots

Another important issue should be mentioned where AI-empowered Robots may cause harm to the humanity apart from deriving benefits. Of course, now the use of Robots in different fields is limited. But Robotics is a growing field and its contributions in our daily lives will be vital in near future.

In this context, from the angle of Robot-technology being the contribution of AI, autonomous weapons are being constructed. It is in the developing stages in many countries. It is apprehended that due to the inability of AI-technology or due to its inefficiency, the use of autonomous weapons may result in occurrence of unexpected events. This could result in unexpected death or serious injuries to the innocent civilians. This can be avoided; had it been handled by humans.
In healthcare sector, in near future, there will be frequent use of Robots. It would assist surgery. Soon, fully autonomous surgical Robots are expected to be utilized in rehabilitative therapy. But who will be responsible and accountable if bad actors interfere with health Robots? It would cause physical harms to the humans.
Besides, AI-empowered Robot usages will be able for job automation. There is apprehension of job-curtailment. This will threaten the right to work. It amounts to threaten Human Rights.

VI. Recommendations

AI covers a large and diverse field. Any step to address Human Rights abuses by the applications of AI will be sector specific. However, the following four policy-oriented approaches might combat many Human Rights abuses threatened by AI.
A) Executable legislation covering data protection may help to mitigate various Human Rights risks that are being threatened by AI.

B) Applications of AI-technology by the governments are needed to be governed by a high standard. There should be full transparency, accountability and explainability. There should also be provisions of maintenance of Human Rights Impact Assessment, and Open Procurement Standard.
C) Private sectors should be sincere to upkeep Human Rights while using AI. Apart from adhering to internal ethical policies, the private enterprises are scheduled to develop accountability, explainability and transparency processes.
D) More research works are to be conducted to explore in which ways and to what extent AI can cause harm to the Human Rights issues. Authority should appropriately incentivize these research works.

Different countries basing on the above principles and with inputs from the International Human Rights Law have framed regulations and policy. Some of the countries are going to structure regulatory frameworks and appropriate policy to get the Human Rights abuses posed by AI mitigated or even annihilated.
In the perspective of these broad approaches, all the countries are to focus attention on the following issues that might act as feasible weapons to address Human Rights threatened by AI.

i) AI possesses borderless character. Now problem crops up regarding jurisdictional issues for adjudicating any case covering breach by AI. Data protection regulations are needed to address this complexity.
ii) Existing legal framework is to be improved and strengthened so that full protection to personal data may be ensured.
iii) Data processing architecture is to be re-vitalized with attention on the point that unreasonable strictness might inhibit AI innovation beneficial to the society.
iv) For use of personal data by the AI, easy and transparent mechanisms should be there for procuring 'Consent' from the data subjects. Attention is to be focused so that while processing personal data by AI, issues of security and privacy should not be compromised.
v) While processing personal data of children, specific and sedulous attention is needed for procuring parental consent for processing of those data.
vi) There are various forms of Human Rights abuses engineered by the applications of AI. The appropriate authority is needed to provide proper regulatory framework to protect Human Rights in those cases and the authority is to actualize those regulations with good governance through articulating appropriate policy on AI.
vii) Due diligence should be there on Human Rights issues in terms of United Nation (UN) guidelines on Businesses and Human Rights.
viii) The authority dealing with Personal Information (Data) should be transparent in the process of data sharing and should make the data subjects known and informed about the working processes of the AI-system (explainability).
ix) The authority, both private and government, should arrange to establish mechanisms to adhere to accountability and to arrange for remedial architecture.
x) More research works are to be conducted to provide space for ensuring redressal for future anticipated threat on Human Rights posed by AI.
xi) Standardization system is to be ensured. For this, AI should be deemed to be 'responsible AI'. It includes:
    a) Appropriate ability of comprehension (Scrutability)
    b) Outcome must be acceptable (Credibility)
    c) The performance of AI should be such as has been intended (Reliability)
    d) The efficiency of the AI processes may be measured (Auditability)
    e) There should be provisions for manual control which may be applied in case it is required (Recoverability).

VII. Concluding Remarks

AI has wide range of applications in different sectors. It is experienced that AI is helping the healthcare industries in many countries effectively. It is augmenting human capacity, but it is not replacing human labour totally. It is a common experience that any innovative technology is not free from all challenges. AI technology is also not an exception. For this, laudable framework of regulations for governing privacy as well as data integrity is required. While framing regulations and policy on AI, all the developing countries or other countries who have yet not articulated these documents, should focus at least on the vital issues concerning to cultural acceptance, liability, appropriate consent-taking mechanisms and explainability.

So far as India is concerned, in the area of healthcare, it is holding a unique position for being a driver in the AI and healthcare space to be available by the national and international organizations. All the developing countries, including India, are trying to be a part of the journey of AI revolution. The respective governments are engaged in taking appropriate initiative to take help of AI for their benefits in every field. However, many impediments and obstacles are there in the context of adoptions as well as of implementation of AI. These are

due to existence of lack of transparency and clarity in the regulatory system in different countries, in respect of issues of data, certification process and design. Besides, paucity of ethical and resilient data collection and sharing system with the help of AI is causing problems to develop AI architecture in different developing and underdeveloped countries. To ensure this, all the affected countries are needed to take steps for articulating a robust data policy, greater investment in AI-oriented research works, a meaningful privacy legislation, strong infrastructure for the adoption of AI in those countries. However, to accomplish unhindered application of AI, attention must be given on the issue of attack of AI on Human Rights issues. This will substantially retard the progress and would stand on the way to enjoy full potentials of AI. More works are necessary to protect Human Rights because, gradually, AI technology is becoming more sophisticated and is slowly encroaching other fields. In this scenario, it is expected that the recommendations provided in this article would help the authorities of different countries to devise appropriate architecture for protection of Human Rights against applications of AI.

References

[1] Bhattacharjee, K.K., Chatterjee, S., Nguyen, B., Ghosh, S.K., and Chaudhuri, S. (2020), "Adoption of artificial intelligence integrated CRM system: an empirical study of Indian organizations", The Bottom Line, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/BL-08-2020-0057.

[2] Bhattacharya, K. and Chatterjee, S. (2020). "Adoption of artificial intelligence in higher education: a quantitative analysis using structural equation modelling", Education and Information Technologies, In Press. https://doi.org/10.1007/s10639-020-10159-7.

[3] Chatterjee, S. (2011), "Organization learning and learning organization: A critical review - A Paradox", Asian Journal of Computer Science and Information Technology. Vol. 1 No. 3, pp. 64-70. ISSN: 2249-5126.

[4] Chatterjee, S. (2015). "A critical study of creative problem solving on level, style and complexity". International Journal of Science, Technology & Management, Vol. 4 No. 1, pp. 705-713.

[5] Chatterjee, S. (2015). "E-Commerce in India: A review on culture and challenges", IEEE International Conference on Soft Computing Techniques and Implementations (ICSCTI). pp. 105-109. https://doi.org/10.1109/ICSCTI.2015.7489547.

[6] Chatterjee, S. (2015). "ERP failure in developing countries: A case study in India", 2015 Annual IEEE India Conference (INDICON). pp. 1-6. https://doi.org/10.1109/INDICON.2015. 7443222.

[7] Chatterjee, S. (2015). "Security and privacy issues in E-Commerce: A proposed guidelines to mitigate the risk", IEEE International Advance Computing Conference (IACC). pp. 393-396. https://doi.org/10.1109/IADCC.2015.7154737.

[8] Chatterjee, S. (2016). "A synthesis of structural creative problem solving in the perspective of OR/MS methodology", International Conference on Computational Techniques in Information and Communication Technologies (ICCTICT). pp. 1-6. https://doi.org/10.1109/ICCTICT.2016. 7514614.

[9] Chatterjee, S. (2018), "Internet of Things and Social Platforms: An empirical analysis from Indian consumer behavioral perspective", Journal of Behavior & Information Technology, Vol. 39 No. 2, pp. 133-149. https://doi.org/10.1080/0144929X.2019.1587001.

[10] Chatterjee, S. (2018). "Law and Social Cohesion: A chronological overview from India perspective". International Journal of Research in Social Sciences. Vol. 8 No. 3, pp. 204-216. ISSN: 2249-2496.

[11] Chatterjee, S. (2018). "Privacy, Human Behavior and Fundamental Rights in India: Some recent development and analysis", Indian Journal of Law and Human Behavior, Vol. 4 No.1, pp. 95-103. ISSN: 2454-7107.

[12] Chatterjee, S. (2018). "Security and privacy issues in smart cities of India: a proposed it governance framework". Thesis Paper, Indian Institute of Technology Delhi. June 2018. New Delhi, India.

[13] Chatterjee, S. (2019), "Antecedence of attitude towards IoT usage: A proposed unified model for IT Professionals and its validation", International Journal of Human Capital and Information Technology Professionals, Vol. 12 No. 2, Article 2.

[14] Chatterjee, S. (2019), "Antecedents of behavioral intention impacting human behavior to use IoT enabled devices: An empirical investigation", International Journal of Technology and Human Interaction. Vol. 18 No. 1, Article 4.

[15] Chatterjee, S. (2019), "Artificial Intelligence and Personal Data: From Legal and Policy Perspective", International Conference on Digital Transformation: A Cognitive learning towards artificial intelligence [ICDT 2019]. Rajiv Gandhi National University of Law, Patiala, Punjab, India. 6-8 September 2019. pp. 409-417. ISBN: 978-93-83043-28.

[16] Chatterjee, S. (2019), "Factors Impacting Behavioral Intention of users to adopt IoT in India: From Security and Privacy Perspective", International Journal of Information Security and Privacy. Vol. 14 No. 4, Article 6. https://doi.org/10.4018/IJISP.2020100106.

[17] Chatterjee, S. (2019), "Impact of AI regulation on intention to use robots: From citizens and government perspective", International Journal of Intelligent Unmanned Systems, Vol. 8 No. 2, pp. 97-114. https://doi.org/10.1108/IJIUS-09-2019-0051.

[18] Chatterjee, S. (2019), "Influence of IoT policy on Quality of Life: From Government and Citizens' perspective", International Journal of Electronic Government Research, Vol. 15 No. 2, pp. 19-38; https://doi.org/10.4018/IJEGR.2019040102.

[19] Chatterjee, S. (2019), "Issues of Human Rights in the era of Artificial Intelligence: From Regulation and Policy Perspective", Advancements in Legal Research: Reflections in Contemporary Pandemic and Transdisciplinary Dimensions, Amity Law School, Amity University, Noida, Uttar Pradesh, India. 4-5 October 2019. ISBN: 978-16-92702-10-6.

[20] Chatterjee, S. (2019), "Why people will use IoT enabled devices? An empirical examination from Indian perspectives", International Journal of Technology and Human Interaction, Vol. 18 No.2. Article No. 7.

[21] Chatterjee, S. (2019). "Determinants impacting diffusion of knowledge in higher learning institutes in India: an empirical study", Journal of Studies in Higher Education, Earlysite. https://doi.org/10.1080/03075079.2019.1599847.

[22] Chatterjee, S. (2019). "Is data privacy a fundamental right in India? An analysis and recommendations from policy and legal perspective", International Journal of Law and Management, Vol. 61 No. 1, pp. 170-190. https://doi.org/10.1108/IJLMA-01-2018-0013.

[23] Chatterjee, S. (2019). Chatterjee, S. (2020), "AI strategy of India: policy framework, adoption challenges and actions for government", Transforming Government: People, Process and Policy, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/TG-05-2019-0031.

[24] Chatterjee, S. (2020), "Dark side of online social games (OSG) using Facebook platform: effect of age, gender, and identity as moderators", Information Technology & People, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/ITP-05-2020-0267.

[25] Chatterjee, S. (2020), "The safety of IoT-enabled system in smart cities of India: do ethics matter?", International Journal of Ethics and Systems, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJOES-05-2019-0085.

[26] Chatterjee, S. (2020), "Antecedents of phubbing: from technological and psychological perspectives", Journal of Systems and Information Technology, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JSIT-05-2019-0089.

[27] Chatterjee, S. (2020). Critical Success Factors to Create 5G Networks in the Smart Cities of India From the Security and Privacy Perspectives. Chapter 10. In the book of Novel Theories and Applications of Global Information Resource Management by Zuopeng Zhang. IGI Global, USA Publication. https://doi.org/10.4018/978-1-7998-1786-4.ch010. ISBN13: 9781799817864.

[28] Chaudhuri, R., and Chatterjee, S. (2010), "A System Theoretic Analysis of IT/IS Outsourcing: A Case Based Approach", Journal of Modeling and Simulation of Systems. Vol. 1 No. 2, pp. 131-143.

[29] Chaudhuri, R., and Chatterjee, S. (2013), "Information-Knowledge Space: A Transformation Model for IT and other knowledge Intensive organizations", Global Journal of Management and Business Research, Vol. 13 No. 1, pp. 42-52.

[30] Chaudhuri, R., and Chatterjee, S. (2013), "System and Process Analysis of IT/IS Outsourcing in Japanese Market: Opportunities for India", Global Journal of e-Business & Knowledge Management. Vo. 5 No. 1, pp. 8-19.

[31] Dohan, M., and Chatterjee, S. (2020). Artificial Intelligence for Healthcare in India: Policy initiatives, challenges & recommendations. International Journal of Healthcare Information Systems and Informatics. In Press.

[32] Ghosh, S., Chatterjee, S., Chaudhuri, R. and Nguyen, B. (2019), "Are CRM systems ready for AI integration?", The Bottom Line, Vol. 32 No. 2, pp. 144-157. https://doi.org/10.1108/BL-02-2019-0069.

[33] Ghosh, S.K., Chatterjee, S., and Chaudhuri, R. (2019), "Adoption of Ubiquitous Customer Relationship Management (uCRM) in Enterprise: Leadership Support and Technological Competence as Moderators", Journal of Relationship Marketing. Vol. 19 No. 2, pp. 75-92. https://doi.org/10.1080/15332667.2019.1664870.

[34] Ghosh, S.K., Chatterjee, S., and Chaudhuri, R. (2019), "Knowledge Management improving Business Process: An interpretative framework for successful implementation of AI-CRM-KM System in organizations", Business Process Management Journal, https://doi.org/10.1007/s40171-017-0173-5.

[35] Ghosh, S.K., Chatterjee, S., Chaudhuri, R. and Chaudhuri, S. (2020), "Adoption of AI-integrated CRM system by Indian industry: from security and privacy perspective", Information and Computer Security, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/ICS-02-2019-0029.

[36] Ghosh, S.K., Chatterjee, S., Chaudhuri, R., Vrontis, D., Thrassou, A., and Chaudhuri, S. (2020), "Social customer relationship management factors and business benefits", International Journal of Organizational Analysis, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJOA-11-2019-1933.

[37] Gupta, M.P., Chatterjee, S. and Kar, A.K. (2017), "Critical Success Factors to Establish 5G Network in Smart Cities: Inputs for Security and Privacy", Journal of Global Information Management, Vol. 25 No. 2, pp. 5-37. https://doi.org/10.4018/JGIM.2017040102.

[38] Gupta, M.P., Chatterjee, S. and Kar, A.K. (2018), "Alignment of IT authority and citizens of proposed smart cities in India: System security and privacy perspective", Global Journal of Flexible Systems Management. Vol. 19 No. 1, pp. 95-107. https://doi.org/10.1007/s40171-017-0173-5.

[39] Gupta, M.P., Chatterjee, S., and Kar, A. (2018), "Success of IoT in Smart Cities of India: An empirical analysis", Government Information Quarterly. Vol. 35 No. 3, pp. 349-361. https://doi.org/10.1016/j.giq.2018.05.002.

[40] Kar, A.K., and Chatterjee S. (2017). Smart Cities in India: A Conceptual framework for emerging economics focusing on security and privacy aspects, Advances in Theory and Practice of Emerging Markets Book Series. Springer Publication. Status: Submitted, awaiting review.

[41] Kar, A.K., and Chatterjee, S. (2015). "Smart Cities in developing economies: A literature review and policy insights", International Conference on Advances in Computing, Communications and Informatics (ICACCI). pp. 2335-2340. https://doi.org/10.1109/ ICACCI.2015.7275967.

[42] Kar, A.K., and Chatterjee, S. (2016). Concept of Smart Village in India: A literature Review and Policy Insights, International Conference on Smart Cities, ICEG, IIT Delhi, India.

[43] Kar, A.K., and Chatterjee, S. (2017). Readiness of Smart City: Emerging Economy Perspective. Chapter 7, In the book of Emerging Markets from a Multidisciplinary Perspective: Challenges edited by Yogesh K. Dwivedi, Nripendra P. Rana, Emma L. Slade, Mahmud A. Shareef, Marc Clement, Antonis C. Simintiras, Banita Lal.

[44] Kar, A.K., and Chatterjee, S. (2018), "Effects of successful adoption of information technology enabled services in proposed smart cities of India: From user experience perspective", Journal of Science and Technology Policy Management, Vol. 9 No. 2, pp. 189-209. https://doi.org/ 10.1108/JSTPM-03-2017-0008.

[45] Kar, A.K., and Chatterjee, S. (2018), "Regulation and governance of the Internet of Things in India", Journal of Digital Policy, Regulation and Governance. Vol. 20 No. 5, pp. 399-412. https://doi.org/10.1108/DPRG-04-2018-0017.

[46] Kar, A.K., and Chatterjee, S. (2019), "Securing IoT devices in Smart Cities of India: From ethical and enterprise information system management perspective", Journal of Enterprise Information System. In Press. https://doi.org/10.1080/17517575.2019.1654617.

[47] Kar, A.K., and Chatterjee, S. (2020). "Why do small and medium enterprises use social media marketing and what is the impact: Empirical insights from India", International Journal of Information Management, In Press. https://doi.org/10.1016/j.ijinfomgt.2020.102103.

[48] Kizgin, H., Chatterjee, S., Kar, A.K., and Dwivedi, Y.K. (2019), "Prevention of cybercrimes in smart cities of India: from a citizen's perspective", Information Technology & People, Vol. 32 No. 5, pp. 1153-1183. https://doi.org/10.1108/ITP-05-2018-0251.

[49] Majumdar, D., Chatterjee, S., Misra, S. and Damaševičius, R. (2019), "Adoption of mobile applications for teaching-learning process in rural girls' schools in India: an empirical study", Education and Information Technologies, In Press. https://doi.org/10.1007/s10639-020-10168-6.

[50] Rana, N.P., Chatterjee, S., and Dwivedi, Y.K. (2020), "Social media as a tool of knowledge sharing in academia: an empirical study using valance, instrumentality and expectancy (VIE) approach", Journal of Knowledge Management, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JKM-04-2020-0252.

[51] Sreenivasulu, N.S. and Chatterjee, S. (2019), "Personal Data Sharing and Legal Issues of Human Rights in the Era of Artificial Intelligence: Moderating Effect of Government Regulation", International Journal of Electronic Government Research, Vol. 15 No.3, pp. 21-36. https://doi.org/10.4018/IJEGR.2019070102.

[52] Thrassou, A., Chatterjee, S., Chaudhuri, R., Vrontis, D., and Ghosh, S.K. (2020), "ICT-enabled CRM system adoption: a dual Indian qualitative case study and conceptual framework development", Journal of Asia Business Studies, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JABS-05-2020-0198.

[53] Vrontis, D., Chatterjee, S., Chaudhuri, R., Thrassou, A., Ghosh, S. (2020), "ICT-enabled CRM System Adoption: A Dual Indian Qualitative Case Study and Conceptual Framework Development", Journal of Asia Business Studies, In Press. https://doi.org/10.1108/JABS-05-2020-0198.