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Issues and Challenges in Implementation of Inclusive Education in Kasturba Gandhi Balika Vidayalayas in Madhya Pradesh State of India: Case Studies

Dr. Vinay Kumar Singh*, Dr. S. C. Chauhan**

Abstract: This study aims to identify the issues and challenges in implementation of inclusive education programme in Kasturba Gandhi Balika Vidyalayas (KGBVs) and to assess the training needs of wardens and teachers. The qualitative research method was adopted. Observation schedule, Information schedule and Focus group discussion was implied. The major findings revealed that Madhya Pradesh, India had adopted the part of the KGBV scheme. Lack of basic facilities, absence of barrier free infrastructure, no awareness on inclusive education among teachers and staff, cases of misdiagnosis, poor implementation of Individualized Education and unavailability of support services were some of the major findings. Training of teachers and KGBVs functionaries on implementation of inclusive education to improve quality of education has been recommended.

Keywords: Inclusion, Inclusive Education, Girls Education, Girls with Disabilities, Gender and Disability, Disadvantaged Girls, Quality Education, Residential School.

1. INTRODUCTION

Inclusive education is a movement that removes all exclusionary policies and practices within the education to include all children affected by factors such as castes, tribes, gender, poverty, social stratification, neglect, disturbances due to human actions, violence and natural calamities etc. The Rights of Persons with Disabilities Act, 2016 (RPwD Act, 2016) defines *"inclusive education as a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities"[1].* Since every child has a right to free education compulsorily upto elementary stage of schooling as per the Right of Children to Free and Compulsory Education Act 2009 (RTE Act, 2009)[2], special efforts are being made to provide quality education to all children including girls with disabilities belonging to Scheduled Castes (SCs), Scheduled Tribes (STs) and Educationally Backward Minorities. The

National Policy for Women, 2016 under section II (ii) on Education states that every effort will have to be made to effectively implement the RTE Act, 2009 by using the education cess particularly in addressing the infrastructure gap, availability of adequately trained teachers, promoting safe and inclusive school environment etc. in remote and tribal areas[2&3]. Gender disparities persist even today in rural areas and among disadvantaged communities. The enrolment trends indicate that there are still significant gaps in the enrolment of girls at the secondary level as compared to boys, especially in the Educationally Backward Blocks (EBBs). The CABE Sub-Committee, 2017 constituted to look into the issues related to 'Girls' Education' has also recommended 'to encourage residential schooling facility for girls and up gradation of the existing Kasturba Gandhi BalikaVidyalayas (KGBV) up to class XII[4].

KGBV is a scheme launched by the Government of India in July 2004, for setting up residential schools at upper primary level for girls belonging predominantly to the SC, ST, OBC and minority communities in difficult areas[5]. KGBVs are set up in Educationally Backward Blocks (EBBs), where the female rural literacy is below the national average and gender gap in literacy is more than the national average. Further, the scope of the scheme was enlarged to cover the EBBs that have rural female literacy below the national average and towns/cities having minority concentration with female literacy rate below the national average. The scheme provides for a minimum reservation of 75% of the seats for girls belonging to SC, ST, OBC or minority communities and priority for the remaining 25%, is accorded to girls from families below poverty line. There were three types of KGBV models under the earlier Scheme of SSA.Model I had school with hostels facility for 100-150 girls; Model II hadschool with hostel facility for 50 girls and Model III had hostels in existing schools for 50-150 girls.

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Under the *Integrated Scheme for School Education-Samagra Shiksha*[4], the existing KGBVs at upper primary level and girls hostels at secondary level would be extended / converged to provide residential and schooling facilities up to Class-XII with the objective to provide access and quality education to girls from disadvantaged groups by setting up residential schools from upper primary to senior secondary level and to ensure smooth transition of girls from elementary to secondary and up to class XII.Four possible models for such schools have been identified. Type-I would be existing KGBVs for classes VI to VIII, Type-II would have KGBVs for classes VI to X; Type-III for classes VI to XII and Type-IV would be existing girls' hostels for classes IX to XII. The up gradation of upper primary schools to the secondary stage would not only include provision of infrastructure and basic physical facilities, but the States and Union Territories (UTs) are required to develop appropriate curriculum framework in collaboration with state nodal agencies/institutes in school education such as State Councils of Educational Research and Training(SCERTs)/State Institutes of Education (SIEs) etc., to strengthen the scheme which would include empowerment issues, adolescent and growing up concerns, vocational skills, self-defense, teaching-learning material, teacher education programmes, monitoring and assessment mechanisms keeping in mind the contexts, age of the learners and the residential nature of the scheme on line of the National Curriculum Framework's (NCF), 2005 recommendation as "Contextualization of pedagogic processes and creation of ethos which enable all children to succeed irrespective of their social backwardness, gender and special education needs."[6]

Madhya Pradesh is a state located in the central part of India. With a Population of over 82.9 million, Madhya Pradesh is the fifth-largest state by Population in India. It's the second largest state by area in India after Rajasthan. There are 51 districts, 342 Tehsils, 54, 903 villages and 509 towns in Madhya Pradesh. The population of Madhya Pradesh was 72 million in 2011 census, which indicates an increase of 24.34% and the population density was 196 people per square kilometer. More than 75% of state population resides in villages whose main occupation is agriculture, while the rest of the population lives in towns. Number of females per thousand male (sex ratio) in the state is 919 whereas the literacy rate is 70.60%. The majority of Population is Hindu (90.89%) while Muslims (6.57%) are making up the largest minority community. Other religions and persuasions have share of 0.83% population in which Jain (0.78%), Buddhist (0.3%), Christian (0.29%), Sikh (0.21%) constitute the population of minority community. There are 15.62% Scheduled Caste (SC) and 21.09% Scheduled Tribe (ST) of total population in Madhya Pradesh[7].The tribes of Madhya Pradesh constitute over 20% of the state population and are mainly concentrated in southern part of the state[8]. Gond is the best known tribe and forms the largest group in Madhya Pradesh. They mainly in habitat areas on both sides of the

Narmada in the Mandla, Chhindwara, Betul and Seoni regions and the hilly terrains of the Vindhya and the Satpura region. Agaria, Pradan, Ojhan, Solahas are the descendent tribal groups originating from Gonds, with two sub castes - Rajgond and Datoliya. Bhils, the second largest tribe are largely concentrated in the area around Jhabua, Dhar and Ratlam. A number of tribes and sub tribes habitants are concentrated in different parts of the state. The social customs prevalent among different types & castes vary more due to variation in their habitat & surroundings geographical conditions. For earnings they depend upon agriculture & forest produce & local craft. With improved communication & growth in the economy, the tribal's way of living has changed from their original hunting & gathering existence to one near the mainstreams[7&8]. Hindi is the official language of Madhya Pradesh also most widely spoken language. It is the predominant language of the official work. For a fair amount of people in the major towns and cities and for the business class, English is their second language. Malwi, Bundeli, Bagheli, Nimari are the commonly spoken regional languages. Total number of literates in Madhya Pradesh is 4, 38, 27, 193 wherein 1, 79, 79, 056 are females and 2, 58, 48, 137 are males placing the state at 28th position. In 2011, literacy rate of Madhya Pradesh is 70.6 percent. Female and male literacy rates in 2011 are 60.0 per cent and 80.5 per cent respectively[7].

2. OBJECTIVES

1. To identify the issues and challengesinimplementation of inclusive education in Kasturba Gandhi Balika Vidyalayas (KGBVs) of Madhya Pradesh.
2. To assess the training needs of KGBVs functionaries for enhancing the quality of education of socially disadvantaged girls with and without disabilities studying in KGBV residential educational setups.

3. METHODS

Study design: This study was exploratory and qualitative in nature.

Tools: The major tools used in this study were specially designed observation schedule and information schedule. Focus group discussion was also included as a research tool for getting data and information from the KGBVs functionaries including supporting staff.

Sample: Madhya Pradesh has adopted the residential model-III of KGBVs and has 202 KGBVs, where girls were staying in the hostel and receiving education in the nearby schools either in the girls' schools or in co-education schools. Four districts of Madhya Pradesh i.e. Ujjain, Dewas, Harda and Vidisha were selected by the state education department for study of KGBVs where students with disabilities were studying. The selected KGBVs were KGBV, DasheraMaidan,

Ujjain out of 4 KGBVs of Ujjain; KGBV, TonkKhurd, Dewas out of 6 KGBVs ofDewas;KGBV, Nateran, Vidisha out of 4 KGBVs of Vidishaand KGBV, Khirkiya, Hardathe only KGBV of Harda.Forty participants, mainly wardens, assistant wardens remedial teachers, head masters, mobile resource consultants, students, parents and HMC members, State Inclusive Education Coordinator, District Programme Coordinators, Block Gender Coordinators, District Assistant Programme Coordinators, Block Mobile Resource Consultants (MRC), Cluster level coordinators and supportive staffwere interacted and information were collected through different research tools.

4. MAJOR FINDINGS AND DISCUSSION

The KGBV had been merged with the *Sarva Shiksha Abhiyan (now Samagra Shiksha)* programme as a separate component during the XIth Five Year Plan since 2007[5]. The present qualitative study explored the inclusiveness of KGBVs byinvestigating the issues and challenges related to education of socially disadvantaged girls withand without disabilitiesand assessing the training needs of KGBVs functionaries in this regard using case studies of four KGBVs where girls with disabilities were studying.

The Rajya Shiksha Kendra, Bhopal is the nodal agencyin the state of Madhya Pradesh looking after the functioning and management of KGBVs within and across districts of Madhya Pradesh.In some of the KGBVs, NGOs were also involved for carrying out different activities. The role of HMC was found negligible in functioning, management, supervision and monitoring activities of KGBVs. NITI Aayog had also reported that in spite of existence of parent teacher association in most of the KGBVs, their involvement in activities were minimal[5]. It was found that most of the girls studying in the selected schools, though from the socially disadvantaged group, were neither Dropped Out girls nor Out of School girls, for which the KGBV scheme adheres to. They were studying in primary schools of their locality prior to get admission in these KGBVs. There was no uniform criterion followed in admission of girls with disabilities, also reported by Srivastava[9], or girls without disabilities, as found by NITI Aayog[5] and was suggested to ensure strict adherence to guidelines for identification of Out of School and Dropout Girls for enrollment in KGBVs. The four KGBVs studied were not actually the Vidyalayas (schools); these were only providing the residential facilities to the girls and vidyalayas were found missing. Madhya Pradesh had adopted the model-III of the KGBV scheme in which hostels in existing schools for 50-150 girls were the provision. This reflects the educational escapism by the state, since the state had adopted the convenient model of the KGBV scheme. If other two models would have been adopted, the girls from the rural and remote areas, where there were no government schools, KGBV residential-cum-school model would have been

established to facilitate education of deprived girls, but the convenient model was adopted where the school is existing so that the state does not have to spend extra on the appointment of permanent regular teachers as well as in management of schools (vidyalayas) in the residential setups and saving the due financial share of the state under this scheme.

None of the KGBVs had regular permanent teachers and staff, which was also reported by NITI Aayog[5] in the evaluation study on KGBV. The wardens of the KGBV were the primary teachers of the nearby school getting Rs.2000/- for warden-ship, doing only administrative and supervisory job. The wardens were interestingly not staying with girls (except one of the studied KGBVs) as warden of the KGBV; whereas in most of the states the wardens stay with the girls in the KGBV. In Madhya Pradesh, in most of the KGBVs, assistant warden, contractual appointeeused to stay with girls in the hostel, as reported. It was learnt that there was a provision of only one assistant warden regardless of number of girls (whether 50 or more than 150) staying in the KGBV. All the remedial teachers, cooks, watchman were either contractual staff or on honorarium basis. The remedial teachers were paid very low honorarium of Rs. 80/- per day of maximum Rs. 2500/- pm. Similar findings were reported in the evaluation study on KGBV by NITI Aayog[5] that most of the teachers are not satisfied with the amount of salary they are receiving and the position of teachers working on a daily wage basis was the worst. These were kinds of policy discrimination with the girls' education compromising with minimum salary structure of the staff and with minimum infrastructures demanding quality education, if compare with other similar residential co-educational government setups like NavodayaVidyalayas or Eklavya Model Residential Schools.

The government of India had launched *Accessible India Campaign (Sugamya Bharat Abhiyan)*[10&11], a nationwide campaign in 2015 that aims to make barrier free environment for persons with disabilities all over the country for safe, dignified life of Persons with Disabilities, which also aims to enable persons with disabilities to gain universal access, equal opportunity for development, independent living and participation in an inclusive society in all aspects of life. None of the KGBVs studied had barrier free environment as recommended in the RTE Act, 2009 and the RPwD Act, 2016[2&1]. Even the building did not have ramp at the entrance. The corridor, dormitories, toilet, dining area, washbasin etc all were not at all accessible. This shows the attitude of ignorance and discrimination towards girls with and without disabilities staying in residential setups.

In most of the KGBVs, the basic facilities like cots were not available for girls and if available, the girls were sharing the cots because number of cots was less than the number of girls staying in the KGBVs. Similarly other basic facilities like

toilet and bathrooms were either very dirty or not usable as generally seen in public places. The facilities of hot water andemergency lights, separate remedial classrooms were not available in thestudied KGBVs. This shows the implementation errors and lack of monitoring and supervision by the block, district and state level officials letting the deprived girls to struggle with the day to day difficulties who were staying away from their family. The girls had to wake up by 5.00 am early in the morning and their time schedule for sleeping at 10.00 pm at night showing a very long duration of studying and working that to in the age group of 11-14 years. The recitation of Bhojan Mantra before taking food was in practice, which was not really practiced in the houses and families of girls contrary to their sociocultural practices. The morale behind the bhojana mantra was'not wasting a single food grain', however, they were wasting food items while taking meals even after recitation of bhojan mantra, as it was reported too. These practices were just the kind of formalities, which alienating them from their own socio-cultural practices and preparing them for an artificial life not matching to reality. The food items provided to the girls were vegetarian food; however some girls were non- vegetarian. They had to adjust with other girls and whenever they go back to their homes during holidays, they used to eat non vegetarian items available at their homes. These practices and certain routinesbeing followed up for convenience in these KGBVs, somehow, lead the girls to follow a much mechanized way of living at very early age of their lives. The food items, may be vegetarian or non-vegetarian, that should be as per the choice of the girls. The common likes and dislikes may be exercised to find out, and at least once or twice a week, the menu should have items of theirchoices or the local favourite dishes, so that the girls would feel attached to their KGBVs as they are living in their own home and are being taken care in homely familial environment.

Safety and security of the girls were the prime area of concern. In not a single KGBV studied had boundary wall except wire fencing that to around 4ft height. NITI Aayog had reported that girls were feeling insecure because of lack of boundary walls in KGBVs[5]. When asked about the boundary wall, the warden and officials showed the fencing around the KGBV. However, the surroundings had either villagers or the adjoining boys' hostels. In some of the KGBVs, monkeys, dogs and other animals used to jump over the fencing and enter the premises of KGBVs. It was felt that there was an urgent need of boundary wall of good height with iron gates. The male watchman had been appointed in every KGBV. He did not have room outside at the main gate of the KGBV. In three out of the four KGBV, he used to sit in the outer corridor of the entrance and using the toilet and kitchen inside the KGBV, which means he had easy access inside the building. It was reported that the watchman used to escort the girls to the nearby school and bring them back to the KGBVs from school, but teachers/assistant wardens did not escort them. The

male guard must be replaced with the female guard or female guard should also be appointed if male guard is already placed. There must be a room having toilet facilities for the guard at the gate of the KGBV, not in the corridor near the main entrance in the building. The visiting mobile resource consultants of the KGBVs and other schools of the locality and blocks were generally male. Although the frequency of visits were very low once in a month or twice as reported, but there was a risk of safety of inhabitant girls. The male resource consultants must be replaced by the female resource consultant with frequent visits to the KGBVs where girls with disabilities were staying and studying.

The girls with different disabilities were made to stay in the dormitories which were on first floor in three KGBVs and they were found struggling in climbing up and down the stairs, particularly girls with locomotor disabilities. This shows the attitudes of wardens/teachers and ignorance on the basic needs of the girls with disabilities in these KGBVs. When asked about the reasons, the wardens of these KGBVs responded that we had never thought of it. When asked about any girls with disabilities were staying on the ground floor, the answer was no. They reflected that all the girls with disabilities would be shifted on the ground floor immediately without the conscience that their classmates/roommates would be on the first floor. This approach indirectly or unconsciously would be discriminating them due to their disabilities through separating them from their classmates and friends. Such kind of practicesreflected the poor understanding of philosophy of inclusive education and non-exclusionary practices.

The teachers and staff of KGBVsand the schools where girls were receiving education, had not received any kind of training related to inclusive education or on education of children with disabilities. They did not aware of identification indicators of disabilities. They were unaware of the implications of disabilities on their education. They were found unaware of the difficulties faced by the girls with disabilities in learning in the classrooms and living in residential setups. They did not know to assess the learning needs of girls with disabilities. They reported that they had not even come across with the kind of supportive services required by these girls. Teachers were completely unaware about modification in classroom transaction process, adapted curriculum contents and evaluation procedure, required educational kits and TLMs, the aids and appliances and care of these aids etc. For non-disabled girls also, the language was the major barriers of interaction in the classroom. The girls did not understand the school and classroom language. The medium of instruction and interaction was Hindi, but the dialect girls speak at home was different than the Hindi. The teachers teaching in the classrooms were using the traditional approach of teaching. They were hardly using the activity based approach or any other innovative approach like collaborative practices to teach the basic concepts of sciences

and mathematics. The parts of a plant were taught in a way so that the girls had to mug up the different five parts instead to show a plant and its part which were readily available there. There were absolute lack of contextualization and integration of socio-cultural milieu of the locality and girls with whom and for whom education was going on. Similarly evaluation of girls' learning was too theoretical as prescribed in the textbooks viz. performance based evaluation "mugging up and answering of the questions". The different modalities of evaluation and comprehensive evaluation were found missing. These findings were consistent with the earlier finding that there were no fixed criteria for assessing learning levels of girls in KGBVs[9]. The teachers require training for update of their own knowledge upon teaching learning in an inclusive classroom.

There were cases of misdiagnosis, particularly in case of girls with low vision and girls with learning disabilities. The girls with refractive error had been categorized as low visioned girls. Similarly girls having lower level of performances in academic subjects were categorized as girls with learning disabilities. Girls with hearing disabilities had certificate of girls with intellectual disability (mental retardation) for getting the monthly pension for the person with intellectual disability. This reflected that the procedure for screening, identification, detailed assessment, medical diagnosis and certification of disability were not properly followed, due to which misdiagnosis of the cases and wrong labelling were observed. There was a need to develop a mechanism which must be simple and easy covering each and every step from screening and identification of disabilities to certification of disabilities. Monitoring and follow ups were required to be done properly on regular basis. Online application for certification of disability could be started with proper examination of cases by a team of professionals as prescribed under the RPwD Act, 2016[1].

The health record of each of the girls was seen in register or in individual case files. But these records were kept as it seems like a formality to keep the health record of girls. None of the health records had showing a record of ill health due to simple cold, cough, fever or stomach ache or any serious health problems or long absentees due to health etc. The record of weight, height, Hb level etc. had never been analysed for taking appropriate intervention measures. All girls were receiving iron tablets as reported without concerning their iron level or Hb level in the blood. The dietary management for iron rich food etc. had never been taken care of. Girls were receiving napkin pads as per their requirements. The assistant warden, remedial teachers and any of the staff had never been to any orientation and training for menstrual health and maintaining hygiene. In case of girls with disabilities, the training for menstrual care is very important from health and privacy point of view. The girls were required to be trained for self-care and maintaining hygiene during menstrual period.

Similar findings were reported by Nuna regarding personal health and hygiene to be practiced by the tribal girls in a study on impact analysis of the National Programme for Education of Girls at Elementary Level[12].

The individual case files of the girls with disabilities were seen in the KGBVs with brief on the case history. Educational assessment was not properly done. Individualized Education Programme (IEP) format was required to be revised since its containing mainly the case history of the girl with disability[13]. The educational assessment and educational intervention programme were required to be properly prepared and implemented. The follow up intervention also required to be recorded. The IEP documents should contain intervention to be done in the classroom and school, how the school teacher would transact the curriculum to the girls with disabilities along with other girls in the classroom, what kinds of modification might be required in the contents and evaluation of learning of different subjects like languages, maths, sciences and social studies being done in the classroom.Srivastava, in her study on KGBVs, had also recommended that in KGBVs, teaching and learning facilities for girls with disabilities could be identified[9]. It was learnt that girls were not receiving any kind of therapeutic services in spite of their requirements like speech therapy and physiotherapy etc. These types of lacuna indicated the complete ignorance on the needs and requirements of girls with disabilities residing in the KGBVs. Provisions for meeting the requirements of girls with disabilities in KGBVs had been recommended by NITI Aaayog and Srivastavasince these facilities were not uniformly available in KGBVs[5&9].

Madhya Pradesh had appointed Mobile Resource Consultants (MRCs) instead of Resource teachers as in other states. The MRCs were working as Mobile Resource Teachers by visiting one school to another, identify children with disabilities, assist in assessment, certification, medical and therapeutic interventions, develop IEPs and provide educational interventions. The professional qualification required for these MRCs was Diploma or Degree in Special Education, sameas Special/Resource teachers recognized under Central Rehabilitation Register (CRR) of the Rehabilitation Council of India (RCI)[13]. Since state wishes to appoint them on contract basis hence the nomenclature of the position perhaps were kept as consultant, who never could claim as teacher, though Rehabilitation Council of India did not have enlisted Resource Consultants in the Central Rehabilitation Register (CRR)[13]. TheMRCs had been paid very less salary than the primary teachers of the government school. The conveyance allowances for travelling to one school to another school were also restricted to Rs.1000/- with the argument of opting public conveyance. In reaching to the most of the KGBVs was very difficult because KGBVs were situated in the rural areas with no proper public conveyance facilities and condition of approaching roads was also poor. Hence, visits to KGBVs by

the MRCs were not regular and frequent. Therefore, ultimate suffers were girls with disabilities residing in these residential setups. They were not getting their due share of required individual support andentitlements as articulated in the RPwD Act, 2016[1].

The vocational activities carried out in the visited KGBVs were not of the productive nature. Making some craft items, sewing and stitching etc. were the major vocational activities. KGBVs were not doing market survey prior to selection of vocational activities. The Schedule of activities for vocational training was found absent. It was required to conduct market survey at least the local market before initiating vocational training so that the desired products could be sale of in the market and quality of the products could be maintained. The girls could be aware of the recent demands in the market and could develop vocational skills. Graded vocational education could also be initiated at different level of school education. The girls should be made competent enough in some of the vocational trades so that they could be capable of producing items or providing services to the society in future as their profession. The teachers would require training on vocational aspects of education for girls residing in these KGBVs.

5. TRAINING NEEDS

- Awareness on the rights of girls with and without disabilities as articulated in different Acts particularly the RTE Act 2009 and RPwD Act, 2016, the provisions and their entitlements[2&1].

- Sensitization on barrier freeinfrastructural and accessibility.

- Sensitization on understanding the basic needs and learning needs of girls with disabilities residing in KGBVs.

- Orientation on issues related to identification, assessment, diagnosis, certification and medication interventions required by the girls with disabilities.

- Universal Design of Instruction and learning-Curriculum adaptation, teaching learning practices, evaluation procedures and communicating to parents.

- Contextualization of teaching learning and practices adopted in daily routine activities, importance of socio-cultural capital, intervention on language related aspects for interacting with girls, prepare them for language acquisition, learning and pragmatic use of language.

- Preparation of individualized support programmes, provision aids and appliances, care and maintenance, documentation/ updating ofindividual case records and follow ups.

- Management of girls with disabilities in residential setups including personal needs, academic teaching/training, safety and security, therapeutic interventions, health related needs etc.

- Sensitization on involving HMC and community inactivities of KGBVs and strengthening their roles.

- Sensitization towards the government policies, programmes and schemes for girls with disabilities.

- Integration of vocational education in daily schedule of activities in the KGBVs.

REFERENCES

[1] The Rights of Persons with Disabilities Act (2016). The Rights of Persons with Disabilities Act, 2016. Ministry of Social Justice and Empowerment, Government of India. India: New Delhi.

[2] The Right of Children to Free and Compulsory Education Act (2009). Ministry of Human Resource Development, Government of India, India: New Delhi.

[3] MWCD (2016). National Policy for Women 2016. Ministry of Women and Child Development, Government of India, India: New Delhi.

[4] MHRD (2018). Framework for Implementation of the Samagra Shiksha-An Integrated Scheme for School Education. Ministry of Human Resource Development, Govt. Of India, India: New Delhi.

[5] NITI Aayog (2015). Evaluation Study on Kasturba Gandhi BalikaVidyalaya (KGBV). National Institution for Transforming India Aayog, Government of India, India: New Delhi.

[6] NCERT (2005). National Curriculum Framework (NCF), 2005. National Council of Educational Training and Research, Ministry of Human Resource Development, Govt. Of India, India: New Delhi.

[7] https://www.censusindia2011.com/madhya-pradesh-population.html accessed on 8th May, 2019.

[8] https://madhyapradesh.pscnotes.com/madhya-pradesh-gk/madhya-pradesh-geography/scheduled-tribe-of-madhya-pradesh/ accessed on 7th March, 2019.

[9] Srivastava, G. (2015). Strategies Adopted for Enhancing Girls in Kasturba Gandhi BalikaVidyalayas Managed by Different Agencies in Gujarat: An Exploratory Study. Journal of Indian Education, XXXXI (2), 58-88

[10] http://disabilityaffairs.gov.in/content/accessible_india.php accessed on 20th May, 2019.

[11] https://currentaffairs.gktoday.in/tags/sugamya-bharat-abhiyan accessed on 20th May, 2019.

[12] Nuna, A. (2016). Impact Analysis of the NPEGEL: A Study of Udalguri District of the State of Assam. Journal of Indian Education, XXXXI (4), 46-64.

[13] http://www.rehabcouncil.nic.in/writereaddata/min-req-spl-edu.pdf accessed on 9th May, 2019.

Marketing with Innovation: It's really works?

Surbhi Bhardwaj*

Abstract: "Every organisation-not just business-needs one core competence that is Innovation" (1). Innovation is the key factor of marketing for sustainable development in this digital era of competition. In the Central and Southern Asia region, India is 57th innovative country in the world as per the Global Innovation Index (GII) (2). Innovation is based on creativity and uniqueness and a good marketing strategy always promote some uniqueness to gain maximum market share and to make their customers to loyal and delegate consumers. Innovation is a tool for growing business with creating some new value and increased productivity as well as efficiency. Success of any organization not get from the comfortable zone but in the other hand, the innovative knowledge and ideas will always win the market share and grow faster in future. Innovation becomes the necessity for marketing mix to gain competitive advantage from global market and for long term survival. Because only marketing is starts from customers and completely finished with customer's satisfactions. Marketing is directly associated with customers and consumers and Inventions are associated with the generation. So behaviour of consumers is totally changed at different level with different generations. At this turn only uniqueness and innovative ideas play vital role for making marketing strategy. And only innovation is that key which helps to pull up the socks of marketing in right and high direction. Innovation is not only restricted with technology but it also considered knowledge, skills and efficiency methods. This paper is highlighted that innovation is where open doors for new market and new customers with in other hand also faced some problems and challenges.

Keywords: market and marketing; innovation and knowledge, adoption of innovations.

1. INTRODUCTION

This is 21st century with full of competition edge with new technology and innovative ideas. Every person tries to be different. So they focused on uniqueness and try to maintain their uniqueness for long time stability. And innovation is the part of this uniqueness and sustainability. Innovation is only key which helps to provide the high competitive advantage in globalisation with the delightment of their consumers. Because innovation is part of consumers they defined it not marketer defined and generate innovation (3). In this high-tech war innovation is the secret to handle the war and fight against competition very efficiently with unique strategies and used creative ideas to protect their operations and customers also

(4). The frequently changes in the requirement of customers is also a key factor to adopt innovation. Innovation is not restricted with technology but strategic innovation, incremental innovation, architectural, radical innovations and others also involve in it (5). An organisation spent million-billion dollars on innovation to gain more profits and returns. India is also running in the race of innovation and India improved their rank from last year. According to Global Innovation Index (GII) in 2017 India has 60th rank in innovation but in 2018 India got 57th rank (global innovation index, GII-2018).

In this competitive world, if the expectations of customers and producers value failed in matching then gap will increase and competitors enjoys this gap and take hold on market. So to remove the gap and reduce the competition pressure and improve level of customer it is necessary to analysis the customers' requirements and expectations. This analysis helps to cover the optimum level of satisfaction and values of both parties (7).

2. MARKET AND MARKETING

2.1 Market

Market is a place where buyers and sellers contact with each other. Market is related to the group of consumers or organisations which has interest in the commodity or service and acquire the resources to buying products under the specified laws and regulation.(8)

2.2 Marketing

Marketing is very wide concept; no one can bind it in the words. Father of the Marketing, Philip Kotler defines the marketing as an exchange process to satisfy the needs and wants (9).

Some features of marketing define the marketing effectively:

- It is consumer oriented; start with consumers' need and end with satisfaction of consumer.

- It is continuous and regular activated process.

- It has integrated approach.

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- It is the mixture of product, price, place, promotion, procedure, process and people.

- Marketing is goal oriented approach.

- Always focus on uniqueness and creative ideas.

3. INNOVATION AND KNOWLEDGE

3.1 *Invention vs Innovation*

Invention and innovation both are related to fulfil requirement of market and providing unique and better ideas for market problems. Both terms are inseparable but interrelate with each other. Invention is a process to create ability and innovation is the process to takes that ability and allows the ability to create some scale for market impact. (10)
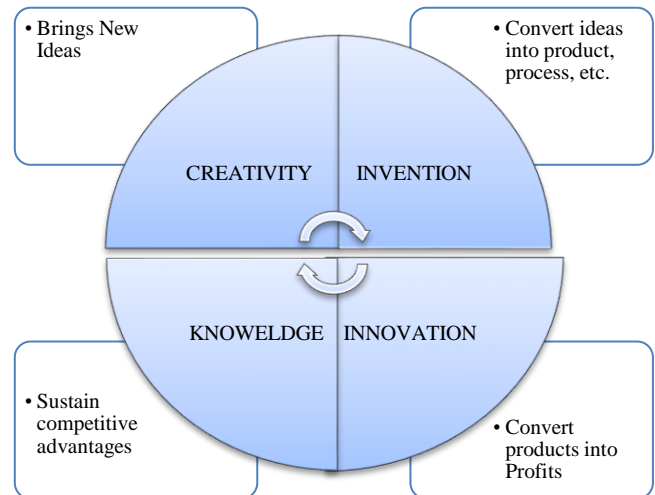
Invention: Invention is required some financial aids, competence and transformation of knowledge. In simple an invention is defined as a novel product, a device, any process, or concept. Some examples of inventions are TV, electricity, printing machine, and others. (11)

Innovation: Innovation is also required some competence and knowledge but knowledge for inventions are related to techniques and market about needs, trends, impacts, financial supports, etc. on the basis of innovation elements the innovation is defined as a process for introducing better and new unique solution to meet out the needs and requirement of existing markets. Examples of innovation are Palmtop, iPhone, LED bulbs, electricity car etc. (11)

3.2 *Knowledge vs Innovation*

Knowledge and innovation both are drives of economy but both are inseparable to each other. People, process, technology and contents are the core elements of the knowledge to imply the innovation. Knowledge is a term which highlighted to increase the learning capability through new and creative ideas. When innovation adds in knowledge according to time and requirement the organisation enjoys more flexibility with high learning capability and better service quality and service delivery (12).

Knowledge is defined as the collective body of methods, technique, strategies, tools, values, etc. which helps the organisation to developed and sustain their competitive advantages to save market and their customers. Innovation is helpful to adopt new ideas for sort out market problem with integration of relevant knowledge to enjoy the business culture in the competitive era. The innovation and knowledge is related to each other this can be represented with the help of an equation: (1)

- Brings New Ideas
- Convert ideas into product, process, etc.

CREATIVITY INVENTION

KNOWELDGE INNOVATION

- Sustain competitive advantages
- Convert products into Profits

4. ADOPTION OF INNOVATION

Fig. 1. Customer behaviour

4.1 *Challenges to Adopt Innovations*

Innovation is part of market and without innovation organisation can't survive in market. But adoption of innovation always creates the fear factor in mind of marketer as well as organization.

Satisfaction of customer is main objective of organization. Business firms timely adopt new ideas for the customers but if the customer not accepted the innovation then business faces the losses.

- Cost and benefit ratio

Organization always tries to earn more maximum returns from innovation rest of cost. So the investment in any innovation adoption has lots of risk which create fear in mind of marketer.

- Organization culture and environment

It is must to match the culture and environment of organization with their inventions and discovery.

- Organisation Resources

The scarcity and availability of resources

- Right people with right process at right place

- Validity

The validity time should be long to improve productivity and enjoy the competitive advantages

- Diversification

Diversification defines the differentiation. An organization is totally diversified with different dimension. So it is a big challenge for organization to adopt innovation

- Competition level
- Turnover status

Frequently adoption of innovation can increase the turnover ratio of employees because every person is not comfortable with quickly change environment. So it is a big issue.

- Market coverage and stability

Figure 1: [13]

What Are Your Biggest Technology Innovation Challenges?
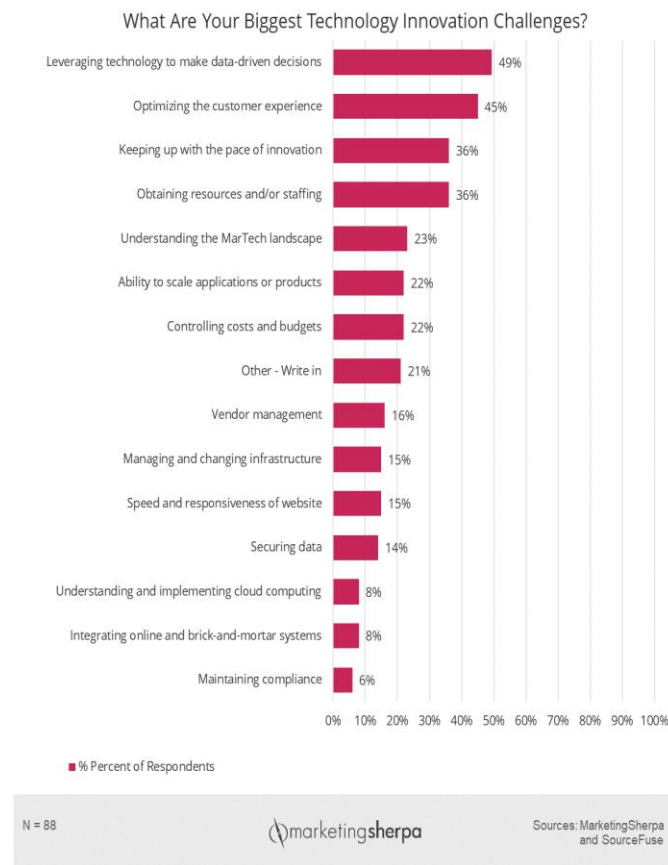
4.2   Buyers Behaviour

Customer is the king of market. Market is running according to customer's need and requirement. To sustain their customers and attract new one business houses always tries to do new experiments in their operations, activities, products; strategies etc. innovation is also part of customer's sustainability. But every customer has different aspect related to invention and innovation. Some factors influenced the behaviour of customers regarding innovation involvement in business. These factors are:

- Nature of innovation
- Validity period
- Cost and benefits ratio
- Personal traits of customers like education, age, gender, etc.
- Compatibility and Complexity (14)
- Relative advantages, etc.(14)
- Risk association with innovation (15)
- Efforts of organization and marketing strategies (15)
- Market segmentation (15)

4.3   Impact of Innovation on Consumer

The innovation has impact on consumers in a number of ways and it can be represent with the help of the below figure.

Figure 2 (16)
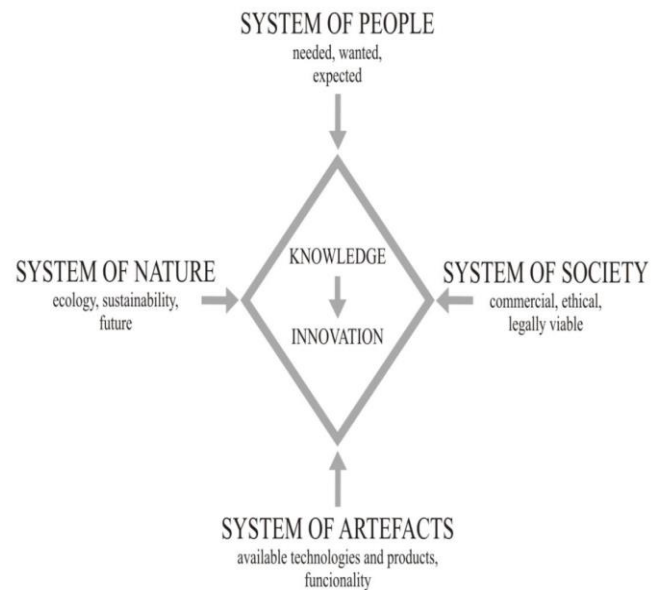
- Variety of products available in market for consumers.
- Innovation helps to improve product quality; consumers buy qualitative products.
- Improve standard living of consumers.
- Consumers lead with technology.
- Innovation helps consumers for comparison between ranges of products.
- Increase awareness regarding techniques.

5. CONCLUSION

Innovation is a very powerful tool to enjoy the competitive advantages for long time. Innovation surround the market which organisation adopt the innovation and transfer knowledge quickly they enjoy more profit and gain maximum market share. Innovation helps to improve the productivity, profitability and consumers satisfaction level. Because consumer is king of market so innovation is only a single recipe to attract and retain customers with diffusion of innovation.

REFERENCES

[1] Jain, Vipul; 'Innovation- A Tool For Modern Marketing' (April 2010); Global Journal of Management and Business Research Vol. 10 Issue 2 (Ver 1.0), GJMBR Classification (FOR) 150301, 1500505

[2] Pulakkat, Hari; ET Bureau; July 11, 2018; http://economictimes.indiatimes.com>GII-ranks

[3] Nielsen Breakthrough Innovation Report, June 2014-US Edition, page-8, http://www.nielsen.com>docs>Reports

[4] Abdul Ghafoor, Awan and Syeda, Zuriat-ul-Zahra; 'Impact of Innovations on Consumers' Behaviour: A Case Study of PAK Electron Limited' (December 2014); European Journal of Business and Innovation Research; Vol.2, No.6, pp.93-108;(www.eajournals.org); ISSN 2053-4019(Print), ISSN 2053-4027(Online)

[5] http://techblog.constantcontact.com>typesofinnovation

[6] pib.nic.in>newsite>printrelease>globalinnovationindex, GII-2018 launched in India

[7] Pour obtenir le grade de, 'Consumer behavior towards innovative products: which methodologies for which values?'

[8] www.netmba.com>marketing>definition

[9] http://en.m.wikipedia.org>wiki>Marketing

[10] https://www.forbes.com/sites/jacobmorgan/2015/09/10/whats-the-difference-between-invention-and-innovation/#1f2d250470f4

[11] http://pediaa.com/difference-between-invention-and-innovation/

[12] Paterson, Paulette; May 22, 2013; https://innovation.govspace.gov.au/knowledge-and-innovation-how-do-they-relate

[13] https://www.marketingsherpa.com/article/chart/biggest-technology-innovation-challenges

[14] http://nptel.ac.in>courses>diffusion-of- innovation

[15] https://www.wisdomjobs.com/e-university/consumer-behaviour-tutorial-94/innovation-10521.html

[16] Tekic, Zeljko; Cosic, Ilija & Katalinic, Branko; 'The Missing Link - Knowledge Creation and Innovation'; Annals of DAAAM for 2012 & Proceedings of the 23rd International DAAAM Symposium, Volume 23, No.1, ISSN 2304-1382 ; ISBN 978-3-901509-91-9, CDROM version, Ed. B. Katalinic, Published by DAAAM International, Vienna, Austria, EU, 2012

Big Data and Financial Sector: A Review

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Abstract: Big data technologies are utilized in different industries of across the world markets like health-care, finance, consumer retail and manufacturing. The finance industry produces enormous data such as information of its customers, logs from its finance services, transaction data that utilized to help take decision, along with external data, such as social media and websites' data. Big data technology has become an integral part of the financial services industry, supporting in:

- Taking benefits from reserved information available at varied sources of semi-structured and unstructured data.

- Generating new revenue streams through data-driven offers, like personalized recommendations.

- Providing better services to customers, such as security.

1. INTRODUCTION

More than 90% companies think that Big Data is going to cast a great impact to revolutionize their business till 2020. As per study, unstructured data is generated at a great pace compared to structured data during the decade.
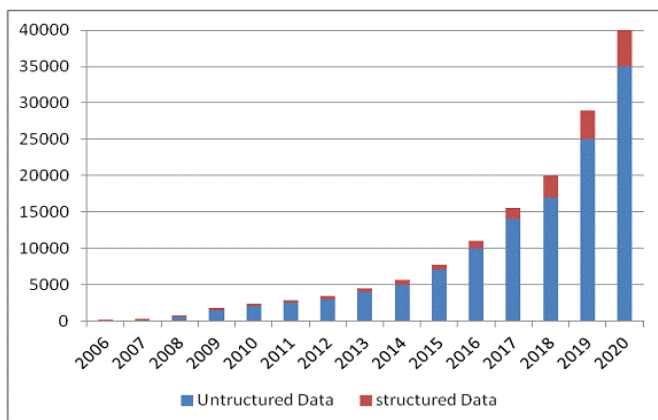
Each industry contains ample data and is required for analyse of these data for some fruitful results. Data warehouses are modifying themselves in Big Data Hadoop system via Sqoop and further be analysed.

Big data in the financial services industries have been responsible for helping to create better customer experiences and to protect businesses. Big data in the financial sector offers various benefits, from better security to better risk management to better customer experiences leading to profitable transactions for the organizations. The big data is an essential element that can help move banking and financial organizations into more secure and successful positions.
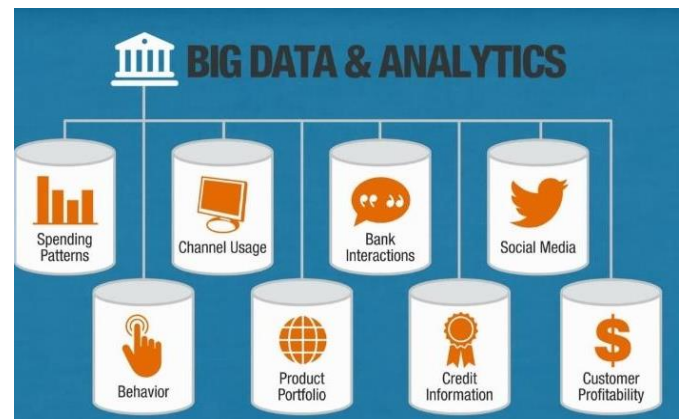
The Big Data analysis technologies, data mining and text mining play a major role in decision making process and enable the financial and non-financial information to get utilized. Multiple techniques were used for various types of financial analysis, like decision tree classification algorithm for data mining shows significant performance for huge data sets, specifically cost data, and justifies its accuracy rate while maintaining a relatively high range.

2. BIG DATA OBJECTIVES OF FINANCIAL SECTOR COMPANIES
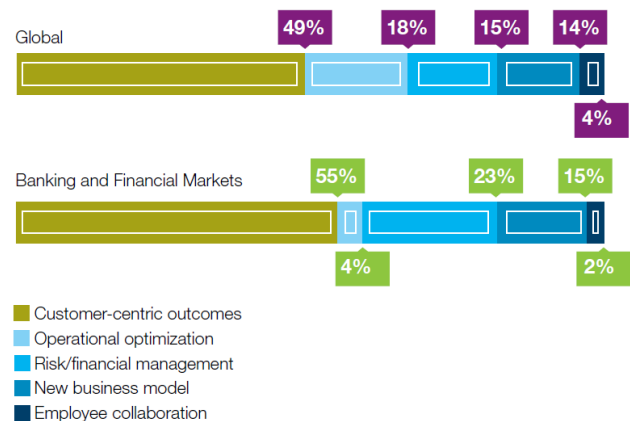
3. MAJOR BENEFITS

- Big data provides an insight about the business, including clients' behaviour, internal process efficiency and wider industry tendencies, supporting the business to make well versed, data-driven decision, and consequently, attain significant outcomes.

- Machine learning (ML) and AI optimize and streamline internal processes. As a result, it offers a performance improvement, as well as decreased operating costs.

- Big data analytics in the finance industry is utilized to improve cyber security and decrease risks. The companies can easily find fraud and prevent potentially malicious actions through intelligent algorithms.

4. MAJOR CHALLENGES

Infrastructure Challenges: Collecting, storing, and analysing the data utilizing an out-dated infrastructure causing the risk of

permanence of whole organization. Firms are facing the challenge of increasing processing capacities or re-building systems to eliminate the risk factors.

Higher Risk with Bigger Data: According to ISACA International, at present, worldwide 38% of companies are accepting to tackle the threat; causing cyber security is a major issue in the sector. However, GDPR has imposed a few restrictions on companies globally those need for collecting and applying users' information.

A Huge Amount of Data: The global population gives rise as much as of 2.5 quintillion bytes of data on a daily basis via card transactions, messages and web pages. It would become a problem to fintech companies to struggle to cope with it.

5. APPLICATIONS

Digital Marketing: The digital approach is an ML process for analysis of big data in social sciences utilizing a Python algorithm. This method shows the consistency in the results gained by applying the traditional procedure, however, the older approach analyses the data quickly.

According to McKinsey, data can be used to secure as much as 15-20% of promotional cost. Finance companies spend ~ 8% of their all-inclusive cost on marketing; big data market strategy helps save the cost, as well as trigger extra sale via extremely targeted marketing processes.

Personalized Products: The financial sector and banking institutions can be benefited from big data by using the given information to customize audience sets on the basis of demography, behaviour, etc., and offer them personalized products. Not every product, such as mortgage, savings

account, IRA, stocks, and bonds, investments or loans, will be a good fit for every customer though. Big data helps banks and financial institutions more specific about product offerings, likely to increase the chance of the right product being offered to the right person.

FinTech Startups: Start-ups of online lending, alternative insurance and money transfer industries, are utilizing big data techniques primarily for their success.

**Systemic Risk Analysis:** Systemic risk is a crisis that leads to the collapse of an entire financial system or entire market of an area or country, as well as global markets. Various machine learning methods have been developed to detect and identify the systemic risk in financial markets and sectors. Many financial organizations make it their whole job to understand risk, insurance agencies need to know how much risk they're

taking on when insuring a customer, whereas investment firms need to understand the risks of the market and how much risk their customers are comfortable with. Big data analysis allows for this process to be faster and more accurate for a better customer experience, as well as a less adverse experience for the banking industry.

The approaches of back testing against older data manage algorithmic trading threads. If a risk threshold is surpassed then analysis of big data also supports real-time alerting.

The present risk assessment view of various major banks:

Leading Banks' Growth and Risk Comparison
(Size of Bubble Corresponds to Bank's Net Profit)
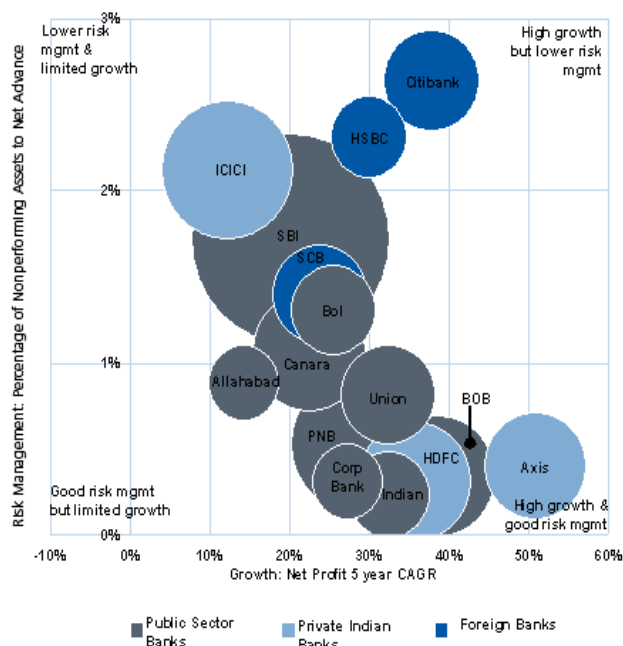
Citi Bank has done the investments in start-ups, as well as established several partnerships with technology firms for its *Citi Ventures*. It made an investment in Feedzai, a data science company which utilizes predictive modelling and real-time ML to identify fake behaviour and reduce risk for online finance companies.

Fraud Detection: Attempted fraud is common in banking and finance sectors. Big data offers a better analysis of data sets that can lead to enhanced fraud detection and prevention. Advancement in analytics and machine learning helps fraud detection teams find out about fraud risks faster and more accurately.

In the below figure, IBM shows how predictive analysis would be helpful to uncover fraud:

Business Process Optimization and Automation: According to McKinsey, banks can automate ~30% of their business via big data and can save a substantial cost, as well as can decrease the failure risk by removing manual errors from some critical procedures.

JP Morgan is employing various AI, as well as ML platforms to improve a few processes, such as algorithmic trading and commercial-loan agreements interpretation.

JP Morgan also gets started data-based automation, *COIN*. The ML algorithm, driven by its private cloud network, is utilized to slow down the required proves time to review documents: this task needed c.360k hours previously, whereas currently it completes in a few seconds.

Improved management & employee performance: Big data resolutions enable fintech firms to fetch and share branch (along with each employee) performance metrics across departments in real-time for better understanding the daily operations, as well as pro-active enable to solve any problems.

For identifying and fixing existing real-time issues, BNP Paribas is engaged in collecting and analysing data on its branch productivity. Also, to get real-time insight about their branch's performance based on several parameters, including acquisition & retention of customers, efficiency & turnover of its employee, amongst others, the bank uses its data analytics software, branch managers, other senior managements.

6. ANALYTICAL TOOLS REQUIRED IN FINANCIAL SECTORS

- **Modelling:** There are primarily 3 major analytics tools (R, SAS, & Python) utilized in financial industry for modelling. Earlier, the industry used only SAS for this. At the beginning, companies were not interested to accept the open-source R code as the companies couldn't claim IP on it. Currently, the firms are utilizing R and Python at their extremes.

- **Optimization:** Optimization can be done in Excel; however R and Python are better optimization tools. It is expected that optimization will get moves towards R and Python from Excel in future.

- **Segmentation:** For segmentation, SAS E Miner is a prominently used tool, though it is expensive. On the other hand Knowledge Seeker and Studio are relatively inexpensive, and allow analysts to form decision trees in a GUI-based in handy mode.

- **Visualization and Dashboarding:** Spotfire, QlikView, Tableau, and SAS visual analytics have changed this domain. CXO dashboards have turned outstandingly insightful. In the future, CXOs will provide a high-level view while offering the flexibility to examine the complicated detail.

7. BIG DATA ADOPTION
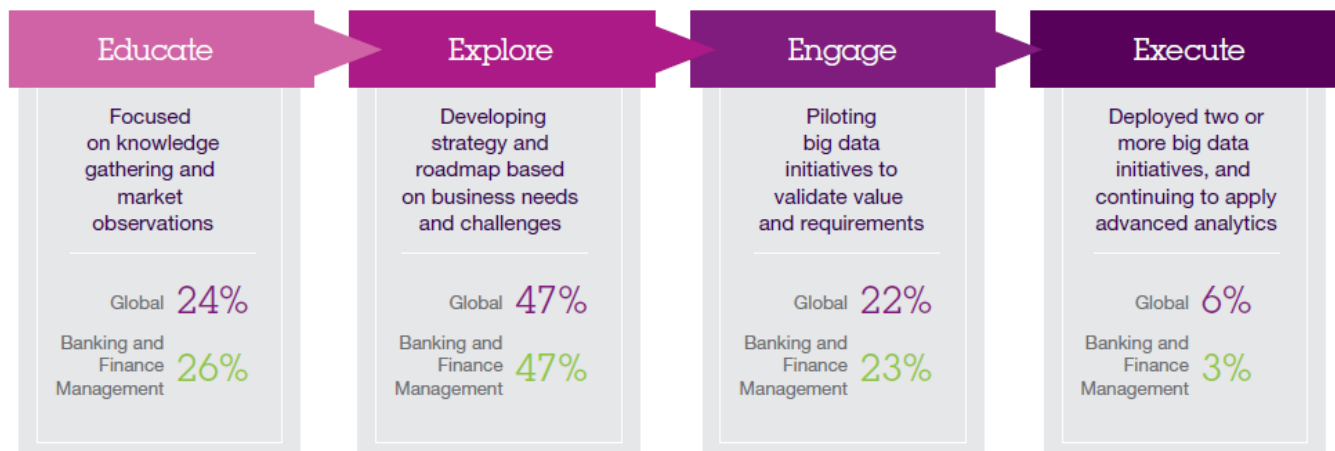
8. CONCLUSION

In nutshell we can understand Big Data technology helps financial industries to maximize the value of data, as well as supports them to gain competitive advantages, minimize costs, changes challenges to opportunities. Investments in big data in the finance sector estimated c.$9 billion in 2018 and these investments are positively expected to increase at a compound annual growth rate of around 17%, accounting for more than $14 billion by 2021, led by abundance of business prospects for various companies of financial industry.

More than 60% of banks approve that big data is censorious to their success, according to Global Transaction Banking. Over 25% of them report positively getting enough business value from their data. Banks need to re-establish their business policies and accept methodology driven by data, to stay up to the mark and competitive.

Although financial industry has already commenced utilizing big data for examining the market and clients' behaviour, it is still deficient. Big data solutions supplier firms are blessed with an unlimited opportunity to grow in the market. A big development can be required in Merchant Account Solutions,

credit card segment like wireless credit card reader, best credit card swiper, amongst others to make it more secure and user-friendly.

REFERENCES

[1] W. Li, Q. Zhou, J. Ren, and S. Spector, "Data mining optimization model for financial management information system based on improved genetic algorithm", *Springer, Information Systems and e-Business Management*, pp. 1-19, January 2019.

[2] M. Pejić Bach, Ž. Krstić, S. Seljan, and L. Turulja, "Text Mining for Big Data Analysis in Financial Sector: A Literature Review", *Sustainability* 2019, 11, 1277, pp. 1-27, February 2019.

[3] J. R. Saura, B. R. Herráez, and A. Reyes-Menendez, "Comparing a Traditional Approach for Financial Brand Communication Analysis With a Big Data Analytics Technique", IEEE Access, Vol. 7, March 2019.

[4] https://mapr.com/blog/how-financial-services-industry-is-winning-with-big-data/.

[5] https://www.globenewswire.com/news-release/2018/10/03/1600512/0/en/Big-Data-in-the-Financial-Services-Industry-Report-2018-2030-9-Billion-Opportunities-Challenges-Strategies-Forecasts.html.

[6] G. Kou, X. Chao, Y. Peng, F. E. Alsaadi, and E. Herrera-Viedma, "Machine Learning Methods For Systemic Risk Analysis In Financial Sectors", *Technological and Economic Development of Economy*, Vol. 25 Issue 5, pp. 716–742, 2019.

[7] W. Breymann, N. Bundi, J. Heitz, J. Micheler, and K. Stockinger, "Large-Scale Data-Driven Financial Risk Assessment", *Applied Data Science*, pp. 387-408 – June 2019.

[8] https://www.techfunnel.com/information-technology/how-the-financial-sector-will-benefit-from-big-data/.

[9] https://easternpeak.com/blog/big-data-in-the-banking-industry-the-main-challenges-and-use-cases/.

[10] https://intellipaat.com/blog/8-reasons-bfsi-is-betting-big-on-data-analytics/.

[11] https://www.hdfstutorial.com/blog/big-data-use-cases-in-banking-and-financial-services/.

[12] https://www.itweb.co.za/content/Gb3Bw7Wo1Ow72k6V.

Introduction to Artificial Neural Network (ANN)

Tarunim Sharma*, Vinita Tomar**

Abstract: The artificial neural network may likely be the complete solution over the most recent decades which have been broadly utilized as a part of a huge variety of applications. This paper focuses on types of artificial neural networks, its elements and applications. To assess the impact of personalized learning in neural network applications. Artificial Neural Networks topologies and some commonly known learning algorithms is presented in this paper. The outcome focused on the importance of using neural networks in possible applications and its influence on learner's progress with personalization system.

Keywords: ANN (Artificial Neural Network); Characteristics; Applications.

1. INTRODUCTION

Artificial Neural Network (ANN) is an efficient computing system whose central idea is obtained from the concept of biological neural networks. ANNs are also known as "artificial neural systems, " or "parallel distributed processing systems, " ANN consists of large collection of entities that are interconnected in some pattern to allow communication between them. The units in these patterns also referred to as neurons, which work parallel.

Every neuron is linked with other through a connection link. Each of the links is associated with weight which consists of information regarding the Input signal. This information is considered to be the most important one for neurons to solve a problem because weight tells the signal that is being communicated. The internal state of neuron is called Activation signal. The input signals combined together with activation rule produces Output signals which are further send to other units.

In simple terms, each neuron takes input from numerous other neurons through the dendrites. It then performs the required processing on the input and sends another electrical pulse through the axiom into the terminal nodes from where it is transmitted to numerous other neurons.

2. WHAT IS ARTIFICIAL NEURAL NETWORK?

ANN stands for Artificial Neural Networks.ANN is an attempt to simulate the neurons that make up the human brain so that computer will be able to learn things and make decisions in a human way.ANN is created by programming computers to behave as though human brain cells do. The structure of ANN is affected by the flow of information. Hence ANN changes are based on input and output signals.

ANN is considered to be based on nonlinear statistical data. This means complex relationships cane be defined between input and output. As a result we will found different patterns.ANN is said to be foundations of Artificial Intelligence (AI) and solve number of problems that seems to be impossible or difficult for human being.ANN has a self learning capabilities like humans that enables them to produce desirable results as large amount of data becomes available.

The general structure of a neural network looks like:
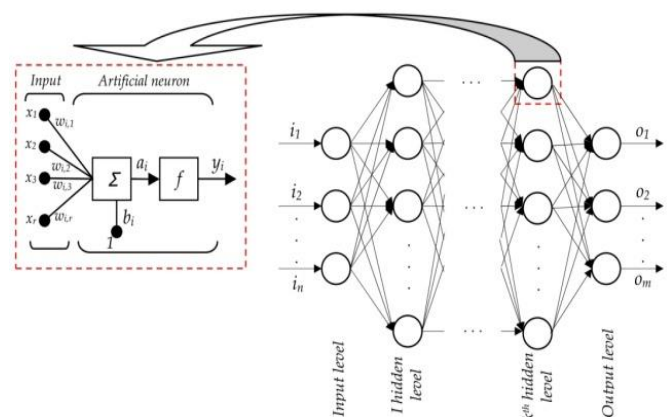
This figure shows a typical neural network along with working of a each neuron described separately. Let's discuss this.

Each neuron is like the dendrites that has the input same as in human nervous system. It assembles all inputs and comply an operation on them. And then it transfers the output to all other

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neurons which they are connected to. Neural networks are divided into 3 layers which are as follows:

1. **Input Layer:** It consists of initial data. The training inspections are catered through these neurons

2. **Hidden Layers:** This is the middle layer layers between input and output where the actual computation is done. It further helps the Neural Network learn the entangled relationships elaborated in data.

3. **Output Layer:** It gives the final output which is extracted from the previous two layers. For Example: In case classification problem having 5 classes, the output later will have 5 neurons.

The artificial analog of the biologic neuron is shown below in figure 2. In ANN model the **inputs** correspond to the dendrites, the body cell relates to the **transfer function**, **net input**, and **activation function**, and the **activation** corresponds to the neuron and synaptic terminal.
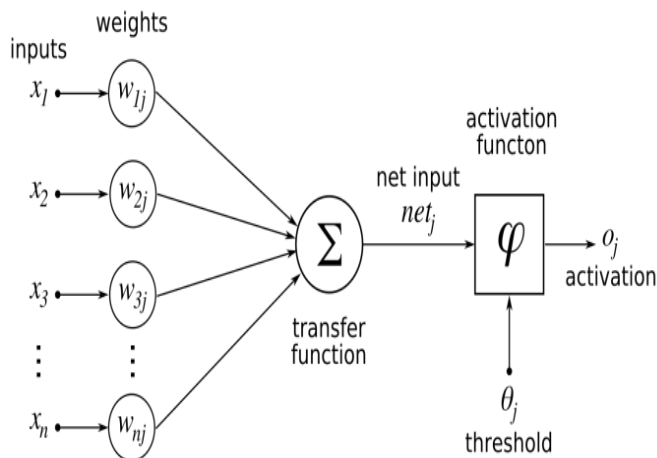

3. TYPES OF ARTIFICIAL NEURAL NETWORKS

There are different types of ANN networks depending upon the human brain neuron and network functions. Different types of ANN are as follows:

a. *Feed Forward ANN*

This is one of the simplest types of ANN. In this network data passes through different input nodes till it reaches the output node. That's why it is said to be Unidirectional. In this input flows in one direction from one layer till it reaches the end layer. In this no back propagation is present. Although it is used in recognition of patterns so they contain fixed inputs and outputs.
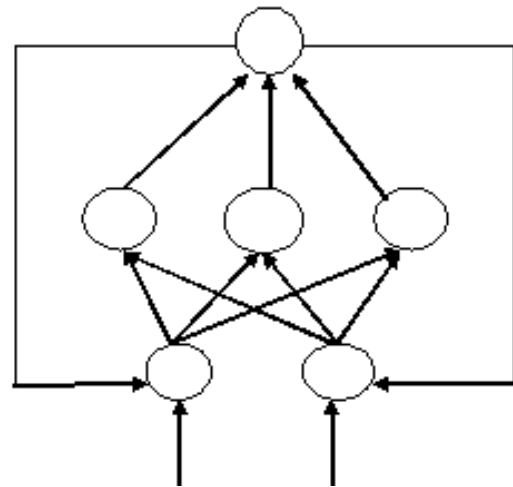
b. *Feedback ANN*

As the name implies Feedback ANN allows

Feedback loops. If output can be directed back acting as inputs to same or previous layers then it is said to be feedback networks. Recurrent networks with closed loop are known as Feedback networks.
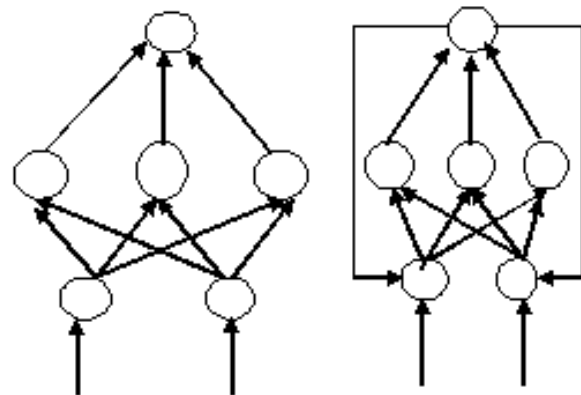
c. *Competitive Learning Neural Networks*

This is the combination of both the networks discussed above. In this the input layer is linear and its outputs are sending to all the parts in the next layer. During the training session the output parts that posse the highest activation to a given input pattern is announced as the winner of weights and is shifted closer to input without changing the rest of the neurons.

Depending on the situation the output of second layer can be linear or non-linear.
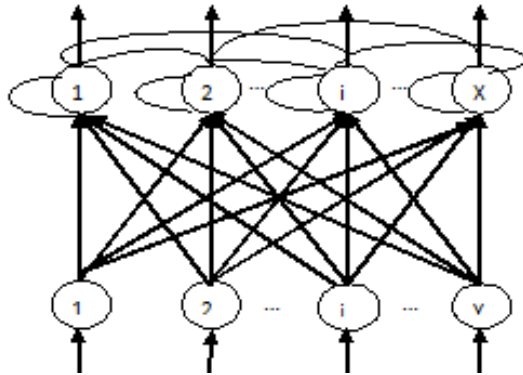
d. *Classification-Prediction ANN* –

This network is based on data mining scheme. In this patterns are identified and divided into particular groups on the basis of which network is trained and then further divide them into different patterns which are said to be new to network.

An artificial neural network is a technique similar to biological neural network. They operate in the similar fashion as neurons and the electric signals in which they communicate as our eyes and brain in human body.

e. *Radial Basis Function Neural Network*

This network acknowledges the distance of any point respective to the centre. In this it has two layers. In the covering layer with the help of radial basis function the attributes are combined. After this output of these attributes is taken into account in order to calculate result in the following step. This network is applicable extensively in power mending systems. In these days power systems have become more complex which increased the risk of knockout. So this network helps to recover power in the shortest possible time.

f. *Multilayer Perceptron*

It consists of three or more layers. It is used to differentiate data that is difficult to get separated linearly. It is a fully connected network in which every node is connected to other node in the next layer. It uses a non linear activation function.

How Artificial Neural Networks work?

ANN develops algorithms using the concept of brain processing to model complex patterns and prediction problems. It is viewed as the weighted directed graphs where nodes represents the artificial neurons and connection between neurons input and output is represented with directed edges with weights.

An ANN involves a number of processors operating in parallel and arranged in layers. The first layer receives the raw input from the outside world. This is where the actual learning for network happens. Each successive tier receives the output from the layer preceding it. The output layer responds to the information fed into it and produces the result.

Each operating node has its own circle of knowledge including rules it was programmed with. The layers are extremely connected which means each node in layer will be connected too many nodes to layers n-1.Output layer may consist of one or multiple nodes from which the answer it produces can be interpreted.

Artificial neural networks are notable for being adaptive, which means they modify themselves as they learn from initial training and subsequent runs provide more information about the world. The most basic learning model is centered on weighting the input streams, which is how each node weights the importance of input data from each of its predecessors. Inputs that contribute to getting right answers are weighted higher. In ANN activation functions is the set of transfer which helps in getting the desired output.

Training set helps in providing tremendous amount of information so that ANN can learn from it. During its training period it learns a lot from number of images tagged. Once the network is trained its output is compared with the human provided output if they are same then that machine is said to be validated. If they deviate it uses back propagation method to correct its learning. This is what is known as Deep Learning that makes a network intelligent.
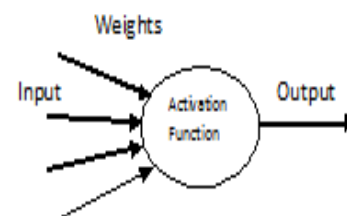
4. ELEMENTS OF ARTIFICIAL NEURAL NETWORKS

Basic elements of Artificial Neural Network are as follows:
- Processing Elements
- Topology
- Learning Algorithm

- *Processing Elements*

ANN is a simple computational model of biological neural network. It consists of number of processing units same as that of neurons in human brain.

A processing unit is made up of aggregating unit followed by an output unit. The function of an aggregating unit is to get n input values, weight each of these units and then calculate weighted sum of all those values.
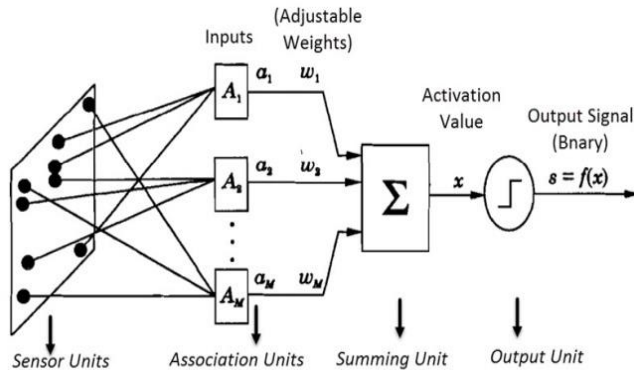
On the basis of sign of the weight of each input, it is decided whether the input has a positive weight or negative weight. The weighted sum of the processing unit produces what we call Activation value and based on the indicator value from activation function, the output is produced.

Both the input and output can be either continuous or particular.

- *Topology*

The organization of the processing units, their interconnections, inputs and outputs is known as Topology. It becomes useful when all the processing elements are organized in an appropriate manner so that the task of pattern recognition can be accomplished.

Some of the commonly used Topologies in Artificial Neural Networks are:

- Instar

- Outstar

- Group of Instars

- Group of Outstars

- Bidirectional Associative Memory

- Auto associative Memory

- *Learning Algorithm*

The final element of ANN is Learning Algorithms. They are implementations of synaptic dynamics and are first derivative of the weights. These laws can be supervised, unsupervised or hybrid of both.

In supervised learning, both the inputs and outputs are provided. During the training of a network the same set of data is processed many times to refine the connection weights. In unsupervised training, the network is having inputs but not with desired outputs. The system will decide itself what characteristics it will use to combine input data. This are known as adaption.

5. APPLICATION OF NEURAL NETWORK

1. Every new technology needs assistance from previous one i.e. data from previous ones and these data are analyzed so that every pros and cons should be studied correctly. All of these things are possible only through the help of neural network.

2. Neural network is suitable for the research on *Animal behavior, predator/prey relationships and population cycles*.

3. It would be easier to do *proper valuation* of property, buildings, automobiles, machinery etc. with the help of neural network.

4. Neural Network can be used in betting on horse races, sporting events and most importantly in stock market.

5. It can be used to predict the correct judgment for any crime by using of crime details as input and the resulting sentences as output. a large data

6. By analyzing data and determining which of the data has any fault (files diverging from peers) called as *Data mining, cleaning and validation* can be achieved through neural network.

7. Neural Network can be used to predict targets with the help of echo patterns we get from sonar, radar, seismic and magnetic instruments.

8. It can be used efficiently in *Employee hiring* so that any company can hire right employee depending upon the skills the employee has and what should be its productivity in future.

9. It has a large application in *Medical Research*.

10. It can be used to for *Fraud Detection* regarding credit cards, insurance or taxes by analyzing the past records.

6. CHARACTERISTICS OF NEURAL NETWORKS

Any Artificial Neural Network, irrespective of the style and logic of implementation, has a few basic characteristics. These are mentioned below.

- It consists of large number of neurons like processing units.

- There exist a large number of weighted connections among these processing elements.

- Distributed representation of data is provided by the connections.

- The connections between the elements provide a distributed representation of data.

- The knowledge is acquired with the help of learning process.

- It is neutrally implemented mathematical model

- It contains huge number of interconnected processing elements called neurons to do all operations

- Information stored in the neurons are basically the weighted linkage of neurons

- The signals from input unit reached at the processing units through connections and their weights.

- This network has the capability to learn, recall and generalize from the data given by doing the adjustments of weights and assignments.

- The collective behavior of the neurons specifies its computational power and not a single neuron transfer's specific information.

7. CONCLUSION

This paper focuses on types of artificial neural networks, its elements and applications. In these paper topologies of Artificial Neural Networks is presented. The commonly used Leaning Algorithms are discussed. Different characteristics of Artificial Neural Network are given.

REFERENCES

[1] https://becominghuman.ai/artificial-neuron-networks-basics-introduction-to-neural-networks-3082f1dcca8c

[2] https://www.geeksforgeeks.org/introduction-to-ann-set-4-network-architectures/

[3] https://ujjwalkarn.me/2016/08/09/quick-intro-neural-networks/

[4] http://pages.cs.wisc.edu/~bolo/shipyard/neural/local.html

[5] https://dzone.com/articles/an-introduction-to-the-artificial-neural-network

[6] https://www.electronicshub.org/artificial-neural-networks-ann/

[7] https://towardsdatascience.com/introduction-to-neural-networks-advantages-and-applications-96851bd1a207

[8] https://www.xenonstack.com/blog/artificial-neural-network-applications/

[9] https://www.quora.com/What-are-the-characteristics-of-artificial-neural-networks

[10] https://www.elprocus.com/artificial-neural-networks-ann-and-their-types/

[11] https://www.geeksforgeeks.org/introduction-to-ann-set-4-network-architectures/

[12] https://www.tutorialspoint.com/artificial_neural_network/artificial_neural_network_applications.htm

Cataloguing for Mechanical Parts Using Firebase: A Study

Ravinder Singh*

Abstract: These days Android is the best and the most well-known working frameworks for smartphones. In the transport industry (mainly trucks and buses), the number of parts and spare parts which are available to sale and purchase from the 1st party and 3rd party vendors are huge. If a person wants to buy a part, it becomes very difficult for him to convey what product he wants just based on the name, because most of the products sold with different names as each manufacturer give it a different name. So, to solve this problem, this application was created. The day on which we launch the application on the Google Play Store. From this very day we are constantly making efforts, to create this app more user-friendly and more user useful. Here we present you a brief insight into our Android app, and discuss some advanced features like automatic watermark, integrated search, etc. In addition to the above talk will also provide a brief app statistics stating figures to user rating, average rating, installations, etc.

Keywords: Android Studio, Firebase, NoSQL, real-time database.

1. INTRODUCTION

Application's objective is to catalog all the available parts and spare parts of trucks and buses which a person wishes to buy. This offers assistance to easily identify the product which they are trying to buy as it displays all the information related to the product like size, an image of the product, number of teeth it may or may not have, the vehicle it's designed for, etc. Customers can contact the seller regarding the price and more details of the product.

2. OBJECTIVES

Application is for the people, who are in the industry of transportation mainly trucks and buses. As all the things require maintenance, so do these vehicles as well.

The purpose of this application is to make it easier for the buyer to find the exact product which he needs.

The spare parts of trucks are very complicated, the seller might have the required part with him but will be unable to make the transaction if the buyer is unable to explain what part he wants to buy/ need.

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This application comes into play as it contains image of the part as well as the minor details of the part like where it fits, its size, number of teeth it has, etc. seeing and confirming the part, the buyer can easily contact the seller for the product and he can be sure to get the right product the first time around rather than waiting to return and exchange the product, which costs valuable time and money because shipping of most of the parts is difficult as the parts are heavy. This application solves this problem

3. FEATURES AND FUNCTIONALITIES OF THE APPLICATION

- Basic Navigation map
- Firebase as a backend
- Easy addition/ updating of new/old parts using the admin app.
- Integrated live search
- Offline capabilities
- Custom Watermark present on all images

Basic Navigation map of the App
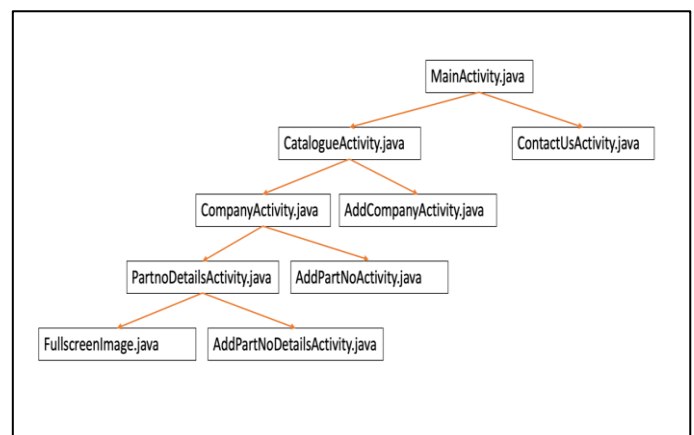
4. FIREBASE AS A BACKEND

Google's Firebase was used as a backend for this project because it offers reliability and constant support. The

documentation for the Firebase is regularly updated and this technology is widely used so any issues which occurred during the development were easily solved by the support of the community.
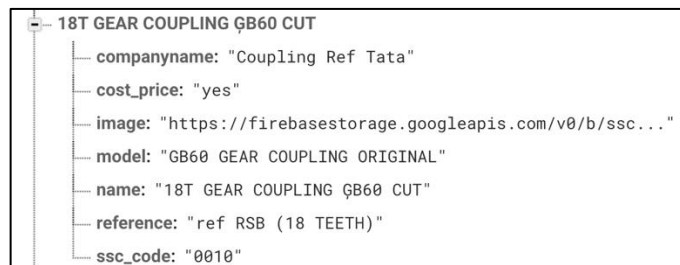
To store the data, Firebase Real-time Database was used. Firebase Real-time database offers Real-time connectivity which means instant updating, adding and deleting of data is possible.

The most common type of database is relational database or SQL, the database, the Firebase Real-time database does not use SQL type database, rather it uses a NoSQL type database. NoSQL database is very flexible and easy to work with, unlike SQL, one does not need to define all the columns first, it can create as the need arises. Firebase Real-time Database stores data in the .json format. The data is stored as key: value pairs.

In our project the data for a single item is stored with the following attributes:

- Company name

- Cost_price

- Image

- Model

- Name

- Reference

- ssc_code

```
- 18T GEAR COUPLING GB60 CUT
    - companyname: "Coupling Ref Tata"
    - cost_price: "yes"
    - image: "https://firebasestorage.googleapis.com/v0/b/ssc..."
    - model: "GB60 GEAR COUPLING ORIGINAL"
    - name: "18T GEAR COUPLING GB60 CUT"
    - reference: "ref RSB (18 TEETH)"
    - ssc_code: "0010"
```

- Company name: used to fetch all the parts of a particular company name into the companyActivity

- Cost_price: used to determine whether the part is available for the customer or not, this is not visible to the customer. It accepts to values: "yes" and "no"

- Image: this is used to store the URL of the image

- Model: used to store the details about the part

- Reference: used to store more details about the part

- Ssc_code: this is a unique code, which helps to identify each part.

We also use Firebase Storage to store images of the product, the URL of the image is fetched and stored in "image". Which is later used to load the image onto the device.

5. ADDING/ UPDATING PARTS THROUGH ADMIN APP

As per the request, an admin app was also created which had the ability to add, delete and update the data. It also had the option to temporarily remove the product if it were out of stock as per the user's need. Admin app makes it easier for the user to do all these things without even logging onto the computer and updating them through the firebase database.

All the processing of data like adding a super-category, image compression, adding a default value are all done through the activities of the admin app.

The admin can add/update/delete data through the floating add button which is available throughout the app.

```
FirebaseDatabase database = FirebaseDatabase.getInstance();
DatabaseReference myRef = database.getReference().child("PartNo").child(nameinput);
myRef.updateChildren(result).

    addOnCompleteListener((task) → {
        if (task.isSuccessful()) {

            Toast.makeText( context: addPartnoDetailsActivity.this, text: "details added successfully", Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText( context: addPartnoDetailsActivity.this, text: "an error occured while uploadig data", Toast.LENGTH_SHORT).show();

        }
        // mProgressDialaog.dismiss();

    });
```

6. INTEGRATED LIVE SEARCH

the application has the feature of the integrated search when the user searches for the part no through the title bar, it fetches all the parts and stores them in a list, and then the substring of each part name is compared and the results are displayed instantly without even pressing the search button. This feature also lets the user search without worrying about the search case.

```java
SearchView.OnQueryTextListener queryTextListener = new SearchView.OnQueryTextListener() {
    public boolean onQueryTextChange(String newText) {

        if (newText.equals("")) {
            return false;
        } else {
            newText = toTitleCase(newText);


            Query query = FirebaseDatabase.getInstance()
                    .getReference().child("Companies").orderByChild("name");
            query.keepSynced(true);
            query.addValueEventListener(search(newText));
            // Toast.makeText(getApplicationContext(), "textChanged :" + newText, Toast.LENGTH_LONG).show();

            return true;
        }

    }
```

7. OFFLINE CAPABILITIES

This app has offline capabilities, even when the user is offline, he can still access the parts which were previously fetched by him. This not only helps to save data but also makes the app faster and efficient with each use.

The offline capabilities of the app are implemented through firebase, the following lines of code help to achieve this.

```java
super.onCreate();

FirebaseDatabase.getInstance().setPersistenceEnabled(true);
```

8. DYNAMIC WATERMARK FOR ALL IMAGES

to solve the issue of the images being used by the competition a custom watermark is added to all images. The watermark contains the SSC code which is unique for each item, this code is added automatically along with the translucent watermark. This Watermark is not added to the actual image which is stored in the firebase storage, but to the app itself, so it saves time as well as processing power to add the watermark. The watermark is just overlaid on top of the image and opacity of the watermark is set to 0.6f which is 60% opacity. The watermark is stored offline, while the image is fetched from the database

```java
mWatermark.setAlpha(0.65f);
```

To load the images from the URL which was fetched from the database, an external library called Picasso is used which loads the data onto the position.

```java
Picasso.get().load(partNo.image).placeholder(R.drawable.ic_settings_black_24dp).error(R.drawable.ic_settings_black_24dp).into(partNoViewHolder.mItemImage);
```

9. SCREENSHOTS

Fig. 1. (main Activity.java)

Fig. 2. (CatalogueActivity.java

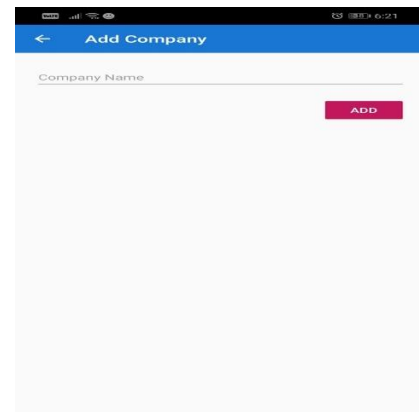**Fig. 3. (AddCompanyActivity.java)**
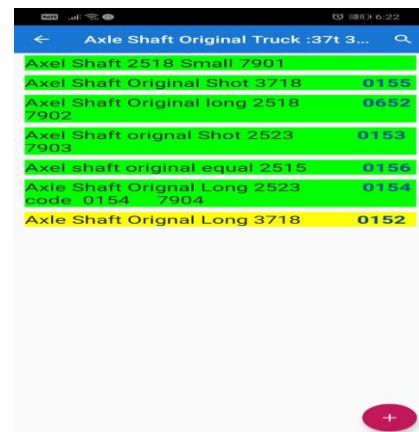
Fig. 4. (Comp
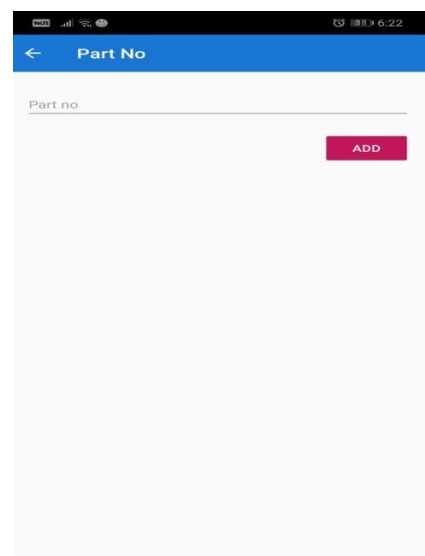
Fig. 5. (Add Partno Activity.java)

Fig. 6. (PartnoDetails.java)

Fig. 7. (Add Partno Details.java)

Fig. 8. (ImageActivity.java)

REFERENCES

[1]   http://firebase.google.com

[2]   www.youtube.com

[3]   www.stackoverflow.com

[4]   geeksforgeek website

An Overview of ISO 29119

Kumar Gaurav*

Abstract: This paper tries to look into in depth of new software testing standarad i.e ISO 29119. This new standard is mandatory and has been divided into five parts. The various parts of the Standard provides not only the definitions and conceptual framework. Further it provides the process, the models and templates used by this Standard. Finally, it tells about keyword driven testing which is at the core of this Standard. The main focus of ISO 29119 is on that software testing should focus on providing information about a software product and finding as many defects as possible, as early as possible, in the development process under given constraints of cost and schedule.

Keywords: ISO, 29119, keyword driven testing

1. INTRODUCTION

Standards are basic guidelines which are of help to number of stakeholders like manufacturers and consumers. ISO says that guidelines are basically guidelines to serve as a tool to fall back upon where some reference is needed in order to arrive at consensus. They ensure that certain kind of professional discipline is maintained. Whenever change occurs in the industrial environment there is a need for some new or revision of Standards. This paper specifically looks into ISO 29119 of software testing.

2. OBJECTIVES OF THE PAPER

- To have an in-depth discussion on ISO 29119
- To look into its historical perspective
- To conclude on the pros and cons of ISO 29119

3. HISTORICAL BACKGROUND

Earlier the International Organization for standardisation was not having any Working Group with software testing experience. It all commenced in 2007 and ISO created WG26 which developed this standard which had only four sections having

- Conceptual framework and definitions
- Test processes
- Test documentation

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- Test techniques

A fifth part concerning process assessment was considered for addition, and it was named as ISO/IEC 33063:2015. The actual fifth part is of relatively new origin which came into publication in November 2016 and revolves around the concept of keyword –driven testing.

4. DISCUSSION

The software industry provides number of standards. We have plethora of standards namely from ISO and IEEE etc. to further the list, we have a new ISO standard just for software testing and is named as ISO/IEC/IEEE/29119. IEEE prescribes that these new software testing standards are to be used in software development life cycle (SDLC) or in any organization involved in software development and testing.

Usage of such a standard will be beneficial for organisations in number of ways, one it is following the standard prescribed which mandated and other benefit is is having quality in software testing. Once an organisation uses standards it is having uniform practices which help in having homogeneity across organisations. This new standard has five parts which are discussed below:
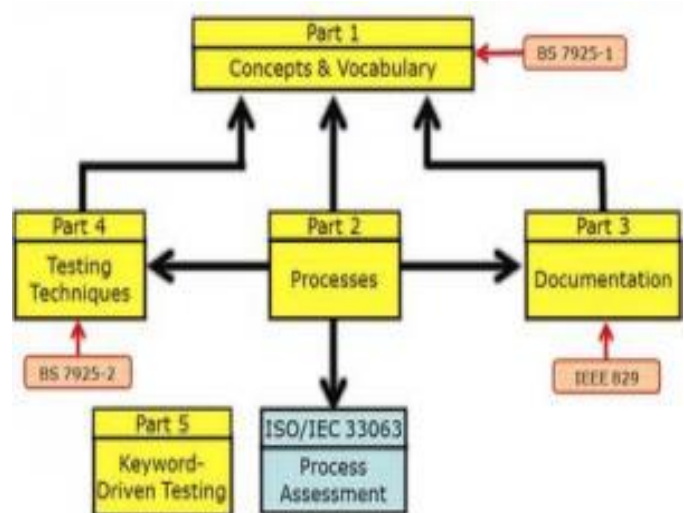

Fig. 1. Structure of ISO 29119

Source: https://xbosoft.com/blog/iso-29119-useful/

ISO/IEC/IEEE 29119-1

The first part of the new Standard provides concepts and definitions. The first part is the primary part of the standard which will help the users to understand and actually use this new standard under this new series. The first part provides with descriptions of the concepts and different ways to apply processes, documents and techniques. Thus we can say, it lays down the foundations of software testing standard.

ISO/IEC/IEEE 29119-2

The second part deals with the process model for testing of software. This model can be used in the life cycle of software development. The major aim of this process model is to tell how software testing is going to be implemented and effectively managed and governed in any organisation. This part also discerns about mitigation of risks in implementation of such process. This part two of the standard prioritizes software testing. It has its focus on features and other attributes related to quality of system under testing.

ISO/IEC/IEEE 29119-3

The next part of the Standard gives the users templates unbelievably for the whole of the life cycle of the software. The templates which help users as a guide are tailor made for every organisation. This is the best thing about the standard that it provides specific solutions to the organisations using them. This standard will displace the existing 829 standard.

ISO/IEC/IEEE 29119-4

This part focuses on software test design techniques for organisations and SDLC models. Again, the part four of the standard is going to drift away the BS- 7925. This document centres on how to derive test conditions, test coverage items and test cases.

ISO/IEC/IEEE 29119-5

ISO/IEC/IEEE 29119-5 is considered as part five of the software testing standards. The 29119-5 standard emphasises on keyword driven testing. The standard covers the following topics:

- The main aim of this part is to give an introduction about Keyword driven testing. This elaborates on the advantages of such testing. It also explains how these keywords can be organized into several layers, common keywords and how these keywords are associated with data.

- It further tells how to identify keywords. It suggests the points which need to be taken care of in maintenance of

defined sets of keywords. It tells anout how keywords are used to create test cases. And also throws light on how Keyword-Driven Testing and data driven testing are related.

- This type of keyword driven testing has frameworks which has software tools, individual scripts and documentation. This part provides insights on how to develop suitable keyword driven test framework. It tells about its various properties.

- This part of keyword driven testing elaborates on data interchange too. Data interchange is basically the type of data required for tools of keyword driven testing and describes data format too.

- This part also tells uses and various issues related to keyword driven testing and how to get started with this testing.

- Various roles in keyword driven testing which can be allocated to different team members are explained related to vis a vis their qualification.

- Finally, it tells certain basic keywords.

- This standard is applicable to all those who want to create keyword-driven test specifications, create corresponding frameworks, or build test automation based on keywords. Along with the above mentioned ISO/IEC/IEEE 29119 software testing standards, there is an addendum to part 2, which is the ISO/ IEC 33063 – Process Assessment Model for software testing. This process model contains a set of indicators to be considered while interpreting the intent of a process reference model. The process reference model 29119-2 forms the basis for the 33063 process assessment model for software testing.

With the introduction of ISO/IEC/IEEE 29119 standards, some of the existing standards will be replaced. These are:

- IEEE 829 Test Documentation

- IEEE 1008 Unit Testing

- BS 7925-1 Vocabulary of Terms in Software Testing

- BS 7935-2 Software Component Testing Standard (will be replaced)

5. CONCLUSION

The main focus of ISO 29119 is on that software testing should focus on providing information about a software product and finding as many defects as possible, as early as possible, in the development process under given constraints of cost and schedule. The major aim of this new standard is to describe generic testing processes. ISO 29119 has a controversial aspect to it at the same time. People against it

argue that the standard defines in great detail the process and the documents for testing, but fails to clarify the purpose of testing, the outcomes that stakeholders expect. ISO 29119 is vague about the ends towards which we are working, but tries to be precise about the means of getting there. But, the paper can be concluded saying the ISO/IEC/IEEE 29119 intended to cover testing of any software system. It provides a common language and process for testing software systems, including a categorization of conventional testing techniques.

REFERENCES

[1] *"ISO/IEC 33063:2015"*. Standards catalogue. International Organization for Standardization. August 2015. *Retrieved 24 June 2018*.

[2] https://www.iso.org/standard/62821.html retrieved on 15-5-19

[3] Reid S. (2012) The New Software Testing Standard. In: Dale C., Anderson T. (eds) Achieving Systems Safety. Springer, London

[4] Chen, Ning, Chen, ethan and Chen, Ian S. (2018) downloaded from https://csce.ucmss.com/cr/books/2018/LFS/CSREA2018/SER3361.pdf on 15-5-2019

The Emergence of Artificial Intelligence in Education: at Present and in Future

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Abstract: In current technology savvy world. The human learning is supported by Artificial intelligence (AI) and Educational technology. They are natural partners in the development of environments which support human learning. These techniques are available now in practical systems. Adding AI can make an exceptional methodology for learning and reasoning in human experiences. This paper presents the role of AI in the various sectors particularly in Education. It gives a brief look at the task that how AI plays a role in teaching Learning process and research instigation as well as areas for future development. The AI models and tools in education and its comparison with the traditional learning are tried to be described in this paper. The study leads to the conclusion that these technologies supplement the learning connections of all the learners worldwide and also enhances the possibilities for teaching and design of instructive experience.

Keywords: Artificial Intelligence, Educational Technology, AI models, learning connections.

1. INTRODUCTION

Machine intelligence is synonym of Artificial Intelligence. It is an intelligence expression by machines, in comparison to the usual intelligence being exhibited by humans. Several significant AI textbooks describe the field as the study of "intelligent agents": "any device that perceives its environment and takes actions that maximize its chance of successfully achieving its goals". It was founded in 1956 as an academic discipline. Later on it has experience numerous waves of hopefulness, followed by dissatisfaction and the loss of funding (known as an "AI winter"), followed by more innovative approaches, accomplishment and improved funding. In the 21st century, AI techniques have experience a rebirth following synchronized advances in computer power, huge amount of data, and theoretical understanding; and AI techniques have turn out to be an indispensable part of the technology of industry that helps to resolve many difficult problems in software engineering, computer science, and operations research

The initiative behind using AI in e-learning is to support eminence in instruction and training. A computer based system is significant for parents & teachers who work optimistically on the factor which help the students for their improved performance. AI may improve e-learning systems and might widely promote providing conveniences with more personalized & better (DSS) decision support system. Education system could play much better for student centric operation towards positive improvement of their performance by offering such approach. In last two decades, internet is being in use for distribution of resources, promote active learning, and release of education in distance learning means. Planning appropriate online delivery structure, allotment of goals of learning, and activities for their courses by the teachers, all these are due to internet .

Following are the examples of various AI models & tools used for educational purpose.

2. EXAMPLES OF AI MODELS AND TOOLS IN EDUCATION:

1. *Smart Content* – These technologies are also referred to as dynamic content. This also attempts to compress text books into useful tool from exam point of view. When used strategically these smart contents have the prospective to facilitate performance and augment production and also helps in Continuous and automated feedback.

2. *Intelligent Tutoring Systems* – This is a computer system that usually without the need of intrusion from a human teacher, aims to provide instant and customized instruction or feedback to learners.

3. *Virtual Facilitators and Learning Environments* – These are Virtual human guides and facilitators for use in a range of educational and curative environments.

For ongoing researching in education using AI, Woolf, et al., (2013) has proposed five key areas which are as follows:

1. Mentor for every learner

2. To Learn 21st century skills

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3. Interaction data for learning

4. Worldwide access to global classrooms

5. Life-wide and Life-long learning

3. Potential role of AI in various other sectors:

There are diverse role of AI in other sectors also. Its extent in every sector made it a most demanding area of this decade. Following are some well known sectors.

i) **Construction**: The construction sector is one of the benefitted sectors of AI. This application will help the engineers to be extra creative and skilled to deliver proficient work in the set time framework Moreover, the technology will be valuable to analyze the work and the procedure of the production industry.

ii) **Agriculture**: One of the core sectors where changes are being done in the cultivation process to get more yield is agriculture. Although there are far-fetched opportunities for AI or machine learning in agriculture but, the execution of the technology is the most difficult in this sector. These technologies like AI & Internet of things will be very valuable in understanding the importance Farmers need to become accustomed to the latest innovative technologies to put into operation and get the utmost productivity from their fields.

iii) **Entertainment:** Thanks to the emerging technologies like AI or machine learning that has brought a big alteration in the entertainment industry also. AI is all over and it is making a big distinction in our lives. The entertainment industry is really changed by AI and it will make it livelier in the days to come. When it comes to entertainment, the algorithms being used by varied applications make our life much simpler.

iv) **Education:** Collaborative virtual networks and AI are used to make an ultimate learning environment for both the students as well as teachers, these technologies are also making our education system smarter and a perfect learning environment for all. Such rising technologies like AI have been used to create a proper fusion of the learning ecosystem.

v) **Healthcare**: The execution of these advanced technologies in the healthcare sector is a pleasure for humanity as it will help relieve all the challenges. These technologies are certainly going to endow with improved services in the healthcare sector. These applications are useful in accepting and perceiving the medical data and attainment of the correct conclusion without direct human input.

vi) **Banking**: Even this sector and financial institutions are showing curiosity in the execution of AI or machine learning.

vii) **E-Commerce:** Majority of the e-commerce companies have been using these advanced technologies.

viii) **Marketing:** Sales & Marketing professional are always ready with their leads and prospects using such technologies.

3. AREAS OF AI IN EDUCATION:

Education is a filed in which the change is always demanded. The role of this change is leading in terms of development of students, teachers, education policy, pedagogy and final result. In this digital era the domination of technology on education is always visible. Artificial Intelligence provides a powerful push to every technology we use in education. The AI goal is learning, natural language, Non monotonic reasoning, planning, and diagnosis, reasoning under uncertainty and temporal reasoning. According to the "Artificial Intelligence in Education (AI-ED)", the main areas of the AI in education are:

1. Intelligent tutoring system

2. Learning environment

3. Learning management system

4. Assessment of learning outcomes

5. Social and cultural aspect of learning

6. Reading and writing

7. Decision support system

8. Computer assisted language learning

All of the above mentioned educational tool are trending these days. Industries are in process of learning the response of students and teacher to develop more efficient tools for educational purpose. We can see their outcomes in our surrounding in classroom teaching learning as well as online teaching learning.

4. CONCLUSION

The interpretation of this whole discussion is to point out the role of artificial intelligence in education. There are a huge scope of innovation and ideas in the use of artificial intelligence. It is next leading responsibilities for us to use them with appropriate methodology to reduce the complexities. The working industries in this field are facing so many challenges therefore it is our responsibilities also to share those challenges. The popularity of alexa and its parallel

controversies is a very good example for us to learn and face the challenges of artificial intelligence in education. But the next age will be of technology and their better advancement therefore how fast we learn and grow with improved results should be our main goal.

REFERENCES

[1] "Role of artificial intelligence based technologies in E-learning" "Hemant Rana1", Rajiv2", " Prof Manohar Lal3" "(University College of Medical Sciences, Delhi, INDIA." "(hemant.mca08@yahoo.in)" date: IJLTEST – Volume I, Issue 5 (May-June 2014).

[2] "E-Learning Systems with Artificial Intelligence in Engineering" Wojciech Kacalak and Maciej Majewski"" Koszalin University of Technology, Faculty of Mechanical Engineering Raclawicka 15-17, 75-620 Koszalin, Poland" wojciech.kacalak@tu.koszalin.pl".

[3] "Some recent work in Artificial Intelligence", "R.J.Solomonoff, member, IEEE", "Prociding of the IEEE", "vol.54, No.12 December, 1966"

[4] "Applications of AI in Education", " by Joseph Beck, Mia Stern, and Erik Haugsjaa", " 5/3/2005".

[5] Fahimirad, Mehrnaz, Shakib Kotamjani, Sedigheh, 2018/12/15 A Review on Application of Artificial Intelligence in Teaching and Learning in Educational Contexts, 8, International Journal of Learning and Development DOI 10.5296/ijld.v8i4.14057

[6] Popenici, S.A.D., Kerr, S. Exploring the impact of artificial intelligence on teaching and learning in higher education. *RPTEL* 12, 22 (2017) doi:10.1186/s41039-017-0062-8

[7] Tamara Dinev and Paul Hart. 2006. An Extended Privacy Calculus Model for E-Commerce Transactions. Info. Sys. Research 17, 1 (March 2006), 61–80. https://doi.org/10.1287/isre.1060.0080

[8] The Impact of Artificial Intelligence on Learning, Teaching, and Education, Policies for the future Author: Tuomi, Ilkka Editors: Cabrera, Marcelino; Vuorikari, Riina; Punie, Yves, ISBN 978-92-79-97257-7

[9] Thomas, Douglas, and John Seely Brown. 2011. A New Culture of Learning: Cultivating the Imagination for a World of Constant Change. CreateSpace Independent Publishing Platform.

[10] Sleeman, D., and J.S. Brown. 1982. Intelligent Tutoring Systems. New York: Academic Press.

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http://www.ispub.com/journal/the_internet_journal_of_mental_health/volume_6_nu mb er_1_45/article/the-war-at-home-consequences-of-loving-a-veteran-of-the-iraqand-afghanistan-wars.html (Accessed 15 July 2010).

Books
Smith, A. and Brown, D. (2005) *Quantitative Data Analysis with SPSS for Windows*, 2nd ed., Routledge, London.

Edited books
Casson, M. et al (Eds*.), (2006) The Oxford Handbook of Entrepreneurship,* Oxford University Press, Oxford.

Book chapters
Estrin, S., Meyer, K.E. and Bytchkova, M. (2006) 'Entrepreneurship in transition economies', in Casson, M. et al (Eds*.), The Oxford Handbook of Entrepreneurship,* Oxford University Press, Oxford, pp.693–725.

Ebooks
Lowry, R. (2009) *Concepts and Applications of Inferential Statistics* [online]. Vassar College, Poughkeepsie NY. http://faculty.vassar.edu/lowry/intro.html. (Accessed 21 February 2009).

Theses
Godfrey, K.B. (1993*) Tourism and Sustainable Development: Towards a Sustainable Framework*. Unpublished PhD thesis, Oxford Brookes University, Oxford, United Kingdom.

Government publications
Department of Culture, Media and Sport, and Department of Business, Enterprise and Regulatory Reform. (2009) *Digital Britain: the interim report*. DCMS and DBERR, London. (Cm 7548). Department of Culture, Media and Sport, and Department of Business, Enterprise and Regulatory Reform (2009). *Digital Britain: the interim report* [online]. DCMS and DBERR, London. (Cm 7548).
http://www.culture.gov.uk/images/publications/digital_britain_interimreportjan09.pd f. (Accessed 1 February 2009)

Conference papers
Unpublished:

Vaughan, R., Andriotis, K. and Wilkes, K. (2000) 'Characteristics of tourism employment: the case of Crete'. Paper Presented at the *7th ATLAS International Conference NorthSouth: Contrasts and Connections in Global Tourism*. 18-21 June 2000. Savonlinna, Finland.

Published:
Jackson, C. and Wilkinson, S.J. (2009), 'An evaluation of the viability of photovoltaics in residential schemes managed by UK registered social landlords' in *COBRA 2009: Proceedings of the RICS Foundation Construction and Building Research Conference*, RICS Foundation, London, England, pp. 396-410.

Reports
Printed
Halliday, J. (1995) *Assessment of the accuracy of the DTI's database of the UK wind speeds*, Energy Technology Support Unit, ETSU-W-11/00401/REP.

Online
Liu, R and Wassell, I.J. (2008*) A novel auto-calibration system for wireless sensor motes*. [online] Technical report UCAM-CL-TR-727, Computer Laboratory, Cambridge University, Cambridge. http:// www.cl.cam.ac.uk/techreports/UCAM-CL-TR-727.pdf (Accessed 18 September 2011)

Standards
International Organization for Standardization (2008) ISO 9001:2008: *Quality management systems -- Requirements*. Geneva, ISO.

Online papers, preprints
Chandler, D. (2009) *Semiotics for beginners*.
http://www.aber.ac.uk/media/Documents/S4B/sem02.html (Accessed 26 July 2010).

Blogs
Shah, V. (2011) 'Capitalism - what comes next?' *Thought Economics* [online] 1 September. http://thoughteconomics.blogspot.com/2011/09/capitalism-what-comesnext. html (Accessed 14 September 2011).

Web sites
Apache Jakarta Project. [online] http://jakarta.apache.org/ (Accessed 21 September 2007).

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