ITU library reading list for August 2020

Each month, the ITU Library selects the most up-to-date information on topics related to ITU’s work and activities from the Library’s subscriptions to 200+ electronic resources. Selected information is published in a Monthly Reading List that provides staff members with easy access to key resources on each topic.

Please suggest topics you wish to add to the list by sending an email to library@itu.int

The full text of all items in the Monthly Reading List is available remotely for ITU staff members by using Remote Desktop or by connecting with the ITU VPN.

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e-Resources on COVID-19

Many publishers have created e-Resource collections on COVID-19. ITU Library & Archives has created a resource guide highlighting the resource collections most relevant to ITU and its areas of work. Learn more by clicking here.
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ABSTRACT: "The development of 5G presents regulators with several security-related challenges. Implementation of a security framework that would be capable of addressing all concerns of users and, by extension, of governments, is one of them. In March 2019, the European Commission presented a plan to achieve, throughout the European Union, a concerted response to security concerns related to 5G networks. This article presents one of the national responses that consists of assessing the risk pursuant to the EN-ISO/IEC 27005 standard and introducing relevant risk mitigation measures. The article focuses on the introduction of a methodical approach to developing 5G security regulations based on an analysis of different risk scenarios. It also strives to propose the applicable government-level mitigation measures aiming to counteract any 5G security threats should these be encountered. When implemented efficiently, the said mitigation measures guarantee that the new networks will be designed in a proper manner. They will also impact cybersecurity of all networks over the coming years."


ABSTRACT: "The first commercial products of 5G will be released within 2020 and therefore, it becomes an absolute necessity to research whether the key enabling technologies are advantageous for the operators to invest in. One of the most fundamental technologies Cognitive Radio (CR), since there is not much research in the field. This paper develops a techno-economic framework for the CR technology and is contrasted with an already existing model for Software Defined Networks (SDN). A Sensitivity Analysis (SA) indicates the cost parameters that are the most expensive ones and should be reconsidered for the model’s wide adoption and viability."


ABSTRACT: "The worldwide large-scale commercial deployment of 5G has commenced in 2020 for supporting enhanced Mobile BroadBand (eMBB), ultra-Reliable and Low-Latency Communications (uRLLC), and massive Machine-Type Communications (mMTC) services. Nevertheless, the upsurge of Artificial Intelligence (AI)-powered applications, the developmental law of one-decade-one-generation of wireless communications and the inherent limitations of 5G have also been spurring the industry and academia to dedicate their efforts to the research of future 6G wireless systems. 6G will be a disruptive, pervasive, intelligent, and endogenous wireless system, which will revolutionize all walks of life and accelerate the transformation and innovation of the global society. In this paper, we present a forward-looking, comprehensive and in-depth analysis and technical identification of 6G. Specifically, we firstly introduce the fundamental theories of 6G in terms of potential requirements. Then, we focus our attention on the discussion of promising key technologies in terms of spectrum, air interface, delay, access, energy consumption, coverage, AI, electromagnetism, interaction, etc."

ABSTRACT: "Network slicing is a powerful tool to harness the full potential of 5G systems. It allows verticals to own and exploit independent logical networks on top of the same physical infrastructure. Motivated by the emergence of the big data paradigm, this article focuses on the enablers of big-databased intelligent network slicing. The article starts by revisiting the architecture of this technology that consists of data collection, storage, processing, and analytics before it highlights their relationship with network slicing concepts and the underlying trade-offs. It then proposes a complete framework for implementing big-data-driven dynamic slicing resource provisioning while respecting SLAs. This includes the development of low-complexity slices' traffic predictors, resource allocation models, and SLA enforcement via constrained deep learning. The article finally identifies the key challenges and open research directions in this emerging area."


ABSTRACT: "This paper tracks increasingly aggressive initiatives by the United States government to reallocate spectrum on an expedited and unilateral basis well before conclusion of inter-governmental coordination. Rather than embrace the customary commitment to achieve consensus on global spectrum allocations at the International Telecommunication Union (“ITU”), the Federal Communications Commission (“FCC”) has auctioned off large blocks of frequencies for the next generation (“5G”) of wireless services. The FCC might have framed its first 5G auction, reassigning Ultra High Frequency (“UHF”) spectrum, as a one-time deviation from compliance with long standing, intergovernmental coordination procedures. These frequencies have ideal signal propagation characteristics and the Commission could use financial incentives—unavailable in most nations—to expedite “repacking” by incumbent broadcasters willing to move, share or abandon spectrum in exchange for ample financial compensation. However, the FCC has continued to auction off 5G spectrum on grounds that it must find ways to abate an acute shortage of wireless bandwidth and doing so will regain or maintain global leadership in wireless technologies. This paper offers a critical rebuke to unilateral spectrum management, because the short-term benefits expected by the U. S. government likely will be offset by countervailing harms to 5G manufacturers, carriers and consumers. The paper tracks fractious preparation for the ITU’s 2019 World Radio Conference by the U.S. delegation and the mixed record achieved there. Additionally, the paper explains how injecting trade, industrial policy and national security issues at the ITU can trigger more delays and disputes, including possible retaliation by nations displeased with U.S. efforts to subvert traditional technology optimization goals. A worst case scenario has the ITU deadlocked and unable to reach closure on “mission critical” spectrum planning issues at World Radio Conferences, convened every four years. The paper concludes that costs and likely challenges to the efficacy and legitimacy of the ITU will reduce the benefits accruing from the FCC’s unilateral, spectrum planning campaign."


ABSTRACT: "The intelligent wireless edge is redefining our digital lives. By shifting the computation from cloud to edge, it promises ultra-low latency for the emergent applications, such as real-time video analytics, safe self-driving, virtual reality, online games, and many more. Many edge
scenarios need low latency in indoor/outdoor, and static/mobile settings. A promising solution is the cellular edge (Figure 1, such as Amazon Wavelength [3]). To date, the 4G LTE and emerging 5G cellular networks are the largest wireless infrastructures that offer ubiquitous coverage and seamless mobility support. They operate in the licensed spectrum and support carrier-grade QoS for low latency."


ABSTRACT: "5G cellular networks come with many new features compared to the legacy cellular networks, such as network data analytics function (NWDAF), which enables the network operators to either implement their own machine learning (ML) based data analytics methodologies or integrate third-party solutions to their networks. In this paper, the structure and the protocols of NWDAF that are defined in the 3rd Generation Partnership Project (3GPP) standard documents are first described. Then, cell-based synthetic data set for 5G networks based on the fields defined by the 3GPP specifications is generated. Further, some anomalies are added to this data set (e.g., suddenly increasing traffic in a particular cell), and then these anomalies within each cell, subscriber category, and user equipment are classified. Afterward, three ML models, namely, linear regression, long-short term memory, and recursive neural networks are implemented to study behaviour information estimation (e.g., anomalies in the network traffic) and network load prediction capabilities of NWDAF. For the prediction of network load, three different models are used to minimize the mean absolute error, which is calculated by subtracting the actual generated data from the model prediction value. For the classification of anomalies, two ML models are used to increase the area under the receiver operating characteristics curve, namely, logistic regression and extreme gradient boosting. According to the simulation results, neural network algorithms outperform linear regression in network load prediction, whereas the tree-based gradient boosting algorithm outperforms logistic regression in anomaly detection. These estimations are expected to increase the performance of the 5G network through NWDAF."


ABSTRACT: "With the advancement in drone technology, in just a few years, drones will be assisting humans in every domain. But there are many challenges to be tackled, communication being the chief one. This paper aims at providing insights into the latest UAV (Unmanned Aerial Vehicle) communication technologies through investigation of suitable task modules, antennas, resource handling platforms, and network architectures. Additionally, we explore techniques such as machine learning and path planning to enhance existing drone communication methods. Encryption and optimization techniques for ensuring long–lasting and secure communications, as well as for power management, are discussed. Moreover, applications of UAV networks for different contextual uses ranging from navigation to surveillance, URLLC (Ultra-reliable and low–latency communications), edge computing and work related to artificial intelligence are examined. In particular, the intricate interplay between UAV, advanced cellular communication, and internet of things constitutes one of the focal points of this paper. The survey encompasses lessons learned, insights, challenges, open issues, and future directions in UAV communications. Our literature review reveals the need for more research work on drone–to–drone and drone–to–device communications."

**ABSTRACT:** "With 6G flagship program launched by the University of Oulu, Finland, for full future adaptation of 6G by 2030, many institutes worldwide have started to explore various issues and challenges in 6G communication networks. 6G offers ultra high-reliable and massive ultra-low latency while opening the doors for many applications currently not viable by today’s 4G and 5G communication standards. The current 5G technology has security and privacy issues which makes its usage in limited applications. In such an environment, we believe that AI can offer efficient solutions for the aforementioned issues having low communication overhead cost. Keeping focus on all these issues, in this paper, we presented a comprehensive survey on AI-enabled 6G communication technology, which can be used in wide range of future applications. In this article, we explore how AI can be integrated into different applications such as object localization, UAV communication, surveillance, security and privacy preservation etc. Finally, we discussed a use case that shows the adoption of AI techniques in intelligent transport system."


**ABSTRACT:** "COVID-19 pandemic has affected the world in an unexpected manner. The human race is battling against the pandemic while schools, universities, industries, hospitals and governments are seeking new methods and technologies to seamlessly continue their usual operations. In response, this paper presents how 5G and IoT (Internet of Things) related technologies can be efficiently utilized and developed to fight against the COVID-19 pandemic. Several use-cases on how 5G and IoT can be enablers to provide innovative solutions in the areas of telehealth, contact tracing, education, retail and supply chains, e-government/ remote office/ information sharing, smart manufacturing and factory automation, e-tourism and entertainment are presented along with their technical requirements and challenges. It is envisaged that the proposed solutions will be instrumental to facilitate the usual lifestyle, work and other day-to-day activities of humans in the post-pandemic world."


**ABSTRACT:** "Recently, unmanned aerial vehicles (UAVs) have gained notable interest in various applications such as wireless coverage, aerial surveillance, precision agriculture, construction, power lines monitoring and blood delivery, etc. The UAVs implicit attributes e.g., rapid deployment, quick mobility, increase in flight duration, improvements in payload capacities, etc., place it as an effective candidate for many applications in 5G and Beyond communications. The UAVs-assisted next-generation communications are determined to be highly influenced by various techniques and technologies like artificial intelligence (AI), machine learning (ML), deep reinforcement learning (DRL), mobile edge computing (MEC), and software-defined networks (SDN). In this article, we develop a review to investigate the UAVs joint optimization problems to enhance system efficiency. We classify the joint optimization problems based on the number of parameters used in proposed
optimization problems. Moreover, we explore the impact of AI, ML, DRL, MEC, and SDN over UAVs joint optimization problems and present future research challenges and directions.

Bibliography on “accessibility and ICTs”


ABSTRACT: "Background: Research has supported the cost-effectiveness of cognitive training tools enhanced by information and communication technologies (ICT) in several populations, including individuals with mild cognitive impairment (MCI) and age-related cognitive decline. The implementation of ICTs in this population, however, is sometimes challenging to their cognitive and age characteristics. Ultimately, this might compromise the effectiveness of ICT-enhanced therapies in this population. The aim of this study is to test the usability and acceptability of a European project prototype for elderly care, in an attempt to explore the ICT design needs of users with MCI. Methods: Participants were 28 individuals aged 58â€“95 years and with a diagnosis of MCI. Results: The results showed a low perception of peripheral elements and the need to place main interaction elements in the centre of the screen. The correlation between the general level of autonomy (daily life activities) and the ICT autonomy level was significant and positive. The speed of audio help had a significant impact on performance. Conclusion: The present work contributes to the literature on ICT usability needs of users with MCI. Some usability recommendations for designing interfaces for this type of user are provided in the text."


ABSTRACT: "Background: Research has supported the cost-effectiveness of cognitive training tools enhanced by information and communication technologies (ICT) in several populations, including individuals with mild cognitive impairment (MCI) and age-related cognitive decline. The implementation of ICTs in this population, however, is sometimes challenging to their cognitive and age characteristics. Ultimately, this might compromise the effectiveness of ICT-enhanced therapies in this population. The aim of this study is to test the usability and acceptability of a European project prototype for elderly care, in an attempt to explore the ICT design needs of users with MCI. Methods: Participants were 28 individuals aged 58â€“95 years and with a diagnosis of MCI. Results: The results showed a low perception of peripheral elements and the need to place main interaction elements in the centre of the screen. The correlation between the general level of autonomy (daily life activities) and the ICT autonomy level was significant and positive. The speed of audio help had a significant impact on performance. Conclusion: The present work contributes to the literature on ICT usability needs of users with MCI. Some usability recommendations for designing interfaces for this type of user are provided in the text."

ABSTRACT: "Social media platforms are deeply ingrained in society, and they offer many different spaces for people to engage with others. Unfortunately, accessibility barriers prevent people with disabilities from fully participating in these spaces. Social media users commonly post inaccessible media, including videos without captions (which are important for people who are Deaf or Hard of Hearing) and images without alternative text (descriptions read aloud by screen readers for people who are blind). Users with motor impairments must find workarounds to deal with the complex user interfaces of these platforms, and users with cognitive disabilities may face barriers to composing and sharing information. We invited accessibility researchers, industry practitioners, and end-users with disabilities to come together at the Computer-Supported Cooperative Work conference (CSCW 2019) to discuss challenges and solutions for improving social media accessibility. Over the course of a day that included two panels and breakout sessions, the workshop attendees outlined four critical future research directions to progress on the path to accessible social media: tooling to support disabled people authoring content, developing more accessible formats/tools for new forms of interaction (e.g., Augmented and Mixed Reality), using communities to distribute accessibility labor, and ensuring machine learning systems are built on representative datasets for disability use-cases."


ABSTRACT: "Background
About ten years ago, an age-related digital divide was identified, where ‘the elderly’ denoted a group of people at risk of losing the benefits of a digital society. The aims of this work are to find a relationship between self-assessed health and internet use by older people in European countries and to ascertain whether this relationship differs in countries with a more developed eHealth policy.

Materials and methods
An ordered logistic regression is estimated for all countries in the sample and for two countries subsets which differ in their eHealth performance. Individual data is collected by SHARE. The classifying criterion of eHealth performance is based on the ‘eHealth’ policy dimension of the indicator used to construct the Digital Economy and Society Index. The average marginal effects are computed for the variable of internet use.

Results
Results show that older people who use the internet tend to report better health status. This relationship however may not hold for low levels of health and it is stronger in countries with low eHealth performance.

Conclusion
Policy measures on eHealth not only contribute to people’s health but also help to alleviate critical situations such as the one created by the Covid-19 pandemic."

Bibliography on “artificial intelligence (AI)"

ABSTRACT: "Organizations continue to make investments in social media with the hope that it will help their sales force in improving engagement with customers. The academic literature on social media use in business markets has supported the growth and utilization of such technology; however, much more work is needed. This article, building upon the recent scholarly advances and considering a managerial perspective, offers suggestions to guide future academic research examining the links between social media use and customer engagement within the B2B sales domain. Several research questions are presented under the four broad topics, namely utility of social media technologies, context matters, social media pitfalls, and futuristic social media applications."


ABSTRACT: "The worldwide large-scale commercial deployment of 5G has commenced in 2020 for supporting enhanced Mobile BroadBand (eMBB), ultra-Reliable and Low-Latency Communications (uRLLC), and massive Machine-Type Communications (mMTC) services. Nevertheless, the upsurge of Artificial Intelligence (AI)-powered applications, the developmental law of one-decade-one-generation of wireless communications and the inherent limitations of 5G have also been spurring the industry and academia to dedicate their efforts to the research of future 6G wireless systems. 6G will be a disruptive, pervasive, intelligent, and endogenous wireless system, which will revolutionize all walks of life and accelerate the transformation and innovation of the global society. In this paper, we present a forward-looking, comprehensive and in-depth analysis and technical identification of 6G. Specifically, we firstly introduce the fundamental theories of 6G in terms of potential requirements. Then, we focus our attention on the discussion of promising key technologies in terms of spectrum, air interface, delay, access, energy consumption, coverage, AI, electromagnetism, interaction, etc."


ABSTRACT: "There have been numerous applications of artificial intelligence (AI) technologies to online advertising, especially to optimize the reach of target audiences. Previous studies show that improved computational power significantly advances granular audience targeting capabilities. This study investigates and classifies various machine learning techniques that are used to enhance targeted online advertising. Twenty-three machine learning-based online targeted advertising strategies are identified and classified largely into two categories, user-centric and content-centric approaches. The paper also identifies an underexamined area, algorithm-based detection of click frauds, to illustrate how machine learning approaches can be integrated to preserve the viability of online advertising."


ABSTRACT: "The EU General Data Protection Regulation (GDPR) introduces a new right to data portability, which allows users to move their personal data to other platforms, potentially affecting competition between rival platforms offering similar (homogeneous/substitute) products or services"
within the European Union. However, it is still unclear what effects this new regulation could have on competition and, consequently, on innovation in digital markets. Therefore, this paper analyzes the effect of data portability driven by competition on the data-driven innovation response of online platforms such as Spotify, Google, and Facebook. We conduct an empirical analysis of Spotify, which is an online platform facing competition within the EU, and perform a comparison between data portability to number portability of the telecommunication sector to predict the future impact of the new regulation. Finally, we compare the observations on Spotify with Facebook and Google, which are companies in winner-takes-all markets. We argue that online platforms like Spotify, which face competition within the EU, will invest in two forms of data-driven innovation due to the effect of data portability. These types are ‘exploitation-innovation,’ by improving the existing technology, and ‘exploration-innovation’ by developing new technology. In ‘exploitation-innovation,’ firms, like Spotify, will increase investments in data-driven innovation to enhance users’ engagement and retention to avoid churn. In ‘exploration-innovation,’ these firms will invest in data-driven innovation to develop new algorithms to include data from customers acquired from their competitors. On the contrary, online platforms, like Facebook or Google, which do not face real competition, will not have a substantial need to invest in data-driven innovation solely due to data portability.”


ABSTRACT: "The increasing adoption of AI profoundly changes the informational foundations of societies. What does this mean for the functioning of liberal democracy, specifically in terms of responsiveness and accountability? The present paper addresses this question by discussing how capabilities of AI affect the informational requirements of the democratic process. Based on a systems theory perspective, the consequences of AI are shown to be wide-ranging. AI can reduce or increase information deficits of both citizens and decision-makers on the input, throughout, and output level of the political system. While the challenges that AI creates for democratic responsiveness and accountability have a novel technological dimension, they are nonetheless in continuity with existing transparency and accountability problems. Avoiding a negative impact will require institutionalizing suitable governance mechanisms – a task that is challenging already at the throughout and output level, but particularly difficult, and important, at the input level of politics.”


ABSTRACT: "AI applications are tackling economic and social challenges facing developing countries. Economically speaking, AI possesses unique mechanisms that allow it to have significant impacts on economic productivity. While developing countries may experience a decline in outsourcing jobs from developed countries, the potential negative impact of such decline can be minimized by appropriate policy to deploy AI solutions. The true potential of AI comes from the ability to complement as well as enhance traditional factors of production.”

ABSTRACT: "Sensor network, as one component of mobile edge computing (MEC), is a promising platform to provide services for users. With the development of artificial intelligence (AI) applications, the integration of mobile edge computing and AI unlocks unlimited possibilities in people’s daily lives. However, AI techniques and mechanisms specifically designed for the devices and servers operating in the mobile edge computing environment face secure challenge. To improve the security of wireless network, a security-enhanced traceback (SET) scheme is proposed. Firstly, the network is divided into three areas, nodes in different areas adopt different marking probability. Nodes in the area far from the sink adopt higher marking probability, nodes in the area nearest to the sink adopt lower marking probability to save energy. Secondly, the marking tuple of data packets is not only stored in nodes, but also is migrated to nodes far from the sink to balance the storage space of nodes. The results of both theoretical analysis and extensive experimental simulations indicate that the network performance of SET scheme is better than the existing traceback scheme."


ABSTRACT: "Artificial intelligence (AI) agents driven by machine learning algorithms are rapidly transforming the business world, generating heightened interest from researchers. In this paper, we review and call for marketing research to leverage machine learning methods. We provide an overview of common machine learning tasks and methods, and compare them with statistical and econometric methods that marketing researchers traditionally use. We argue that machine learning methods can process large-scale and unstructured data, and have flexible model structures that yield strong predictive performance. Meanwhile, such methods may lack model transparency and interpretability. We discuss salient AI-driven industry trends and practices, and review the still nascent academic marketing literature which uses machine learning methods. More importantly, we present a unified conceptual framework and a multi-faceted research agenda. From five key aspects of empirical marketing research: method, data, usage, issue, and theory, we propose a number of research priorities, including extending machine learning methods and using them as core components in marketing research, using the methods to extract insights from large-scale unstructured, tracking, and network data, using them in transparent fashions for descriptive, causal, and prescriptive analyses, using them to map out customer purchase journeys and develop decision-support capabilities, and connecting the methods to human insights and marketing theories. Opportunities abound for machine learning methods in marketing, and we hope our multi-faceted research agenda will inspire more work in this exciting area."

Moore, R. J., Smith, R., & Liu, Q. "Using computational ethnography to enhance the curation of real-world data (RWD) for chronic pain and invisible disability use cases." SIGACCESS Access.Comput., no. 127(2020) Full-text retrieved from ACM DL.

ABSTRACT: "Chronic pain is a significant source of suffering, disability and societal cost in the US. However, while the ability to detect a person’s risk for developing persistent pain is desirable for timely assessment, management, treatment, and reduced health care costs—no objective measure to detect clinical pain intensity exist. Recent Artificial Intelligence (AI) methods have deployed clinical decision-making and assessment tools to enhance pain risk detection across core social and clinical domains. Yet, risk assessment models are only as "good" as the data they are based on. Thus, ensuring fairness is also a critical component of equitable care in both the short and long term. This paper takes an intersectional and public health approach to AI fairness in the context of pain and invisible disability, suggesting that computational ethnography is a multimodal and
participatory real-world data (RWD) methodology that can be used to enhance the curation of intersectional knowledge bases, thereby expanding existing boundaries of AI fairness in terms of inclusiveness and transparency for pain and invisible disability use cases."


ABSTRACT: "Infants and toddlers have a dramatic way of communicating their needs-raising their voices. As soon as they raise the alarm, their caretakers receive and interpret the signal and take the desired action to address their concerns. Metaphorically, Internet of Things (IoT) devices are children, enabled and enriched by a 4th industrial revolution, artificial intelligence (AI), and related technologies. These children can send and receive signals, not only about their well-being but also of their neighbors, fellow citizens, and even opponents. Old-style infrastructures are not suited for our IoT based, cyber-physical world-the Internet of Everything-which is a world of screaming and streaming children."


ABSTRACT: "Recent advances in artificial intelligence (AI) are creating new opportunities for personalizing technology-based health interventions to adolescents. This article provides a computer science perspective on how emerging AI technologies—intelligent learning environments, interactive narrative generation, user modeling, and adaptive coaching—can be utilized to model adolescent learning and engagement and deliver personalized support in adaptive health technologies. Many of these technologies have emerged from human-centered applications of AI in education, training, and entertainment. However, their application to improving healthcare, to date, has been comparatively limited. We illustrate the opportunities provided by AI-driven adaptive technologies for adolescent preventive healthcare by describing a vision of how future adolescent preventive health interventions might be delivered both inside and outside of the clinic. Key challenges posed by AI-driven health technologies are also presented, including issues of privacy, ethics, encoded bias, and integration into clinical workflows and adolescent lives. Examples of empirical findings about the effectiveness of AI technologies for user modeling and adaptive coaching are presented, which underscore their promise for application toward adolescent health. The article concludes with a brief discussion of future research directions for the field, which is well positioned to leverage AI to improve adolescent health and well-being."


ABSTRACT: "With 6G flagship program launched by the University of Oulu, Finland, for full future adaptation of 6G by 2030, many institutes worldwide have started to explore various issues and challenges in 6G communication networks. 6G offers ultra high-reliable and massive ultra-low latency while opening the doors for many applications currently not viable by today’s 4G and 5G communication standards. The current 5G technology has security and privacy issues which makes its usage in limited applications. In such an environment, we believe that AI can offer efficient solutions for the aforementioned issues having low communication overhead cost. Keeping focus
on all these issues, in this paper, we presented a comprehensive survey on AI-enabled 6G communication technology, which can be used in wide range of future applications. In this article, we explore how AI can be integrated into different applications such as object localization, UAV communication, surveillance, security and privacy preservation etc. Finally, we discussed a use case that shows the adoption of AI techniques in intelligent transport system."


ABSTRACT: "The last decennary has marked as the breakthrough in the advancement of technology with evolution of artificial intelligence, which is rapidly gaining the attention of researchers across the globe. Every field opted artificial intelligence with huge enthusiasm and so the field of dental science is no exception. With huge increases in patient documented information and data this is the need of the hour to use intelligent software to compile and save this data. From the basic step of taking a patient's history to data processing and then to extract the information from the data for diagnosis, artificial intelligence has many applications in dental and medical science. While in no case artificial intelligence can replace the role of a dental surgeon but it is important to be acquainted with the scope to amalgamate this advancement of technology in future for betterment of dental practice."


ABSTRACT: "AI applications are radically transforming the manner in which service providers and consumers interact. We explore how the humanness of AI applications affects consumers’ trust in these applications. Qualitative evidence collected with focus groups provides fresh insights into the roles of anthropomorphism and intelligence, as key constructs representing humanness. Our findings reveal the consumers’ perspective on the nuances of these constructs pertaining to services enabled by AI applications. It also extends current understanding of the phenomenon of the “uncanny valley,” by identifying conditions under which consumers experience discomfort and uneasiness as AI humanness increases in service environments."


ABSTRACT: "Recently, unmanned aerial vehicles (UAVs) have gained notable interest in various applications such as wireless coverage, aerial surveillance, precision agriculture, construction, power lines monitoring and blood delivery, etc. The UAVs implicit attributes e.g., rapid deployment, quick mobility, increase in flight duration, improvements in payload capacities, etc., place it as an effective candidate for many applications in 5G and Beyond communications. The UAVs-assisted next-generation communications are determined to be highly influenced by various techniques and technologies like artificial intelligence (AI), machine learning (ML), deep reinforcement learning (DRL), mobile edge computing (MEC), and software-defined networks (SDN). In this article, we develop a review to investigate the UAVs joint optimization problems to enhance system efficiency. We classify the joint optimization problems based on the number of parameters used in proposed
optimization problems. Moreover, we explore the impact of AI, ML, DRL, MEC, and SDN over UAVs joint optimization problems and present future research challenges and directions."


ABSTRACT: "The vast volume of documents available in legal databases demands effective information retrieval approaches which take into consideration the intricacies of the legal domain. Relevant document retrieval is the backbone of the legal domain. The concept of relevance in the legal domain is very complex and multi-faceted. In this work, we propose a novel approach of concept based similarity estimation among court judgments. We use a graph-based method, to identify prominent concepts present in a judgment and extract sentences representative of these concepts. The sentences and concepts so mined are used to express/visualize likeness among concepts between a pair of documents from different perspectives. We also propose to aggregate the different levels of matching so obtained into one measure quantifying the level of similarity between a judgment pair. We employ the ordered weighted average (OWA) family of aggregation operators for obtaining the similarity value. The experimental results suggest that the proposed approach of concept based similarity is effective in the extraction of relevant legal documents and performs better than other competing techniques. Additionally, the proposed two-level abstraction of similarity enables informative visualization for deeper insights into case relevance."


ABSTRACT: "The advent of ‘DeepFake’ content that is increasingly difficult for humans and machines to distinguish as artificial portends a number of challenges to democratic societies. In order to effectively respond, policymakers must gain understanding of how DeepFake content might manifest. This paper aims to offer necessary context by exploring AI-enabled multimedia disinformation across different levels: (1) as a mass-produced, regular feature of the information environment in democracies and (2) as a highly tailored instrument used in tandem with cyber operations. I explore the impact of DeepFakes on the ability of populations to determine the origination, credibility, quality and freedom of information. Such macro impacts amplify the potential value of DeepFake content employed alongside targeted cyber activities, a combination that even alone offers belligerent actors new opportunities for enhancing attempts at disinformation and coercion. Nevertheless, I ultimately argue that DeepFakes should be thought of more as an evolution than a revolution in disinformation techniques, the real threat of which emerges from the manner in which new abilities to produce even reasonable fidelity fabrications rapidly and at scale combine the multiform shape of the modern digital information environment to make organized influence efforts much more dynamic than has previously been the case."

Bibliography on “big data”

ABSTRACT: "This article examines the big data practices employed by the online gambling industry to illustrate the wider societal power structures involved. As well as using data for commercial ends, gambling operators in the UK market are obligated by law to utilise gamblers’ data to protect problem gamblers. This paper argues that the use of data in this way can be interpreted as a form of social control when observed through a Foucauldian lens. Contrary to the dominant narrative of free and informed choice, gamblers’ behaviour is arguably being governed both at an individual level through disciplinary mechanisms of surveillance and correction, and at the level of the population through governmentality techniques applied to the gambling environment. Through big data practices and industry discourse, these mechanisms of power are used to frame the choices of individuals and shape them into a productive population of ‘responsible gamblers’.”


ABSTRACT: "Big data has played an increasingly important role in using data to improve business value. In response to several big data challenges, the purpose of this study is to identify firm-level capabilities required to create value from big data. The adjacent theories of business process management and IT business value underpinned the study, together with an in-depth case study that led to the identification of twenty-four types of capabilities related to IT, process, performance, human, strategic, and organizational practices. The findings confirmed the application of practices and capabilities of adjacent theories, as well as certain practices and attributes that were both changed and reinforced at the intersection of big data. As an outstanding additional support to the extant big data studies, this work empirically confirms and portrays hitherto unexplored capabilities of big data and set their roles, thus providing a holistic overview of firm-level capabilities that are required for big data value creation."


ABSTRACT: "Advancements in environmental sensors and laboratory instrumentation are inherently linked with Big Data in environmental chemistry. Technological advancements in instrumentation have greatly increased the throughput and precision of measuring chemical, biological, and physical variability and have also resulted in the generation of vast quantities of digital data that can be used to monitor the fate of chemicals in the environment. However, many challenges to accessing and analyzing these data are proving persistent. This review provides a brief overview of the technological advancements that enabled the age of Big Data in the environmental chemistry, the current status of data integration in the environmental sciences, and areas of opportunity for more efficient data integration and comprehensive environmental study, particularly accessibility and use by a multidisciplinary audience."


ABSTRACT: "Network slicing is a powerful tool to harness the full potential of 5G systems. It allows verticals to own and exploit independent logical networks on top of the same physical
infrastructure. Motivated by the emergence of the big data paradigm, this article focuses on the enablers of big-databased intelligent network slicing. The article starts by revisiting the architecture of this technology that consists of data collection, storage, processing, and analytics before it highlights their relationship with network slicing concepts and the underlying trade-offs. It then proposes a complete framework for implementing big-data-driven dynamic slicing resource provisioning while respecting SLAs. This includes the development of low-complexity slices' traffic predictors, resource allocation models, and SLA enforcement via constrained deep learning. The article finally identifies the key challenges and open research directions in this emerging area.


ABSTRACT: "Big data allows organizations to process massive and complex data to extract hidden patterns, draw insights, and also to share data through the network. Data that transit in an organization network is often sensitive and requires an efficient and secure platform. For this reason, network security has been brought to the forefront in the Big data era. In this context, network security platforms have to deal with vast and complex information to predict and prevent potential attacks in real-time. However, these platforms are often based on traditional approaches, which make them unreliable to secure big data. In this paper, we mainly focus on network security and protection strategies of big data. First, we highlight factors affecting network security platforms in the Big data era. Then, we go through different big data strategies that allow ensuring security across networks while surveying recent researches."


ABSTRACT: "Due to the limitation on computational power of existing computers, the polynomial time does not work for identifying the tractable problems in big data computing. This paper adopts the sublinear time as the new standard to recognize the tractability in big data computing and study tractable problems in terms of computational complexity theory. The random-access Turing machine is used as the computational model to characterize the problems that are tractable on big data. First, pure tractable class PT is proposed and two important classes within it, PPL and PDP, are studied. The structures of this two pure tractable classes are deeply investigated and they are proved PPL₁ ⊊ PPL₁⁺¹, PPL₁⊆PT and PDP₁⁺¹ ⊊ PDP₁ ⊊ PT. Then, pseudo-tractable class PsT is proposed and is partitioned into two classes, PsTR and PsTE, according to preprocessing techniques. The relations among pseudo-tractable classes and other complexity classes are investigated and they are proved that PsT ⊆ P and Image 1. Finally, we show that PPL is closed under DLOGTIME reduction."


ABSTRACT: "The increasing digitization of the economy means that a new digital resource—a digital twin of an organization—is now feasible. We suggest five principles that assist in the construction of an organizational digital twin and show how they combine into a dynamic evolutionary process that builds and maintains the digital twin incrementally. We also discuss the organizational implications of implementing a digital twin and how digital twins create value in an organization."

ABSTRACT: "Disaster management is a growing concern and priority throughout the world and "resilience" is increasingly viewed as a key capacity related to disaster and post-disaster management and development. Recent research highlights how resilience is enhanced through the use of "big data" technologies that improve the speed and effectiveness of linkages between disaster information and systemic response. Summarizing and discussing this research, this study highlights and substantiates the potential of big data strategies to help mitigate the risks and impact of socio-ecological vulnerability. Based on a qualitative desk review and analyses of secondary data, resilience is framed as a function of the adaptive, absorptive and transformative capacity of socio-political systems to withstand and cope with the adverse effects of disaster. In addition, this study emphasizes the major principles and components of effective big data use; e.g., open source tools, strong infrastructure, local skill development, context-specific data sources, ethical data sharing and experiential learning. This study reveals some important big data technologies that can be easily used in the different phases of disaster management and enhancing resilience such as remote sensing imagery, social media data, crowdsourced data, geographic information system (GIS), and mobile metadata. The findings hold major relevancy for policymakers, administrators, and related stakeholders responsible for taking action before, during and after disasters through training, early warning systems, emergency evacuation, relief distribution and other key infrastructural components."


ABSTRACT: "Over the last years, big data has emerged as a new paradigm for the processing and analysis of massive volumes of data. Big data processing has been combined with service and cloud computing, leading to a new class of services called “Big Services”. In this new model, services can be seen as an abstract layer that hides the complexity of the processed big data. To meet users' complex and heterogeneous needs in the era of big data, service reuse is a natural and efficient means that helps orchestrating available services' operations, to provide customer on-demand big services. However different from traditional Web service composition, composing big services refers to the reuse of, not only existing high-quality services, but also high-quality data sources, while taking into account their security constraints (e.g., data provenance, threat level and data leakage). Moreover, composing heterogeneous and large-scale data-centric services faces several challenges, apart from security risks, such as the big services' high execution time and the incompatibility between providers' policies across multiple domains and clouds. Aiming to solve the above issues, we propose a scalable approach for big service composition, which considers not only the quality of reused services (QoS), but also the quality of their consumed data sources (QoD). Since the correct representation of big services requirements is the first step towards an effective composition, we first propose a quality model for big services and we quantify the data breaches using L-Severity metrics. Then to facilitate processing and mining big services' related information during composition, we exploit the strong mathematical foundation of fuzzy Relational Concept Analysis (fuzzy RCA) to build the big services' repository as a lattice family. We also used fuzzy RCA to cluster services and data sources based on various criteria, including their quality levels, their domains, and the relationships between them. Finally, we define algorithms that parse the lattice family to select and compose high-quality and secure big services in a parallel fashion. The proposed method, which is implemented on top of Spark big data framework, is compared with
two existing approaches, and experimental studies proved the effectiveness of our big service composition approach in terms of QoD-aware composition, scalability, and security breaches."


ABSTRACT: "Digitization blurs the lines between technology and management, facilitating new business models built upon the concepts, methods and tools of the digital environment. The purpose of this study is to investigate the role of the Internet of Things (IoT) and Big Data in terms of how businesses manage their digital transformation. The paper argues that the outbreak of IoT and Big Data has resulted in a mass of disorganized knowledge. In order to make sense of the noise, a literature review was carried out to examine the studies, published in the last decade (2008–2019), that analyzed both the Internet of Things and Big Data. The results show that IoT and Big Data are predominantly reengineering factors for business processes, products and services; however, a lack of widespread knowledge and adoption has led research to evolve into multiple, yet inconsistent paths. The study offers interesting implications for managers and marketers, highlighting how the digital transformation enabled by IoT and Big Data can positively impact many facets of business. By treating IoT and Big Data as faces of the same coin, this study also sheds light on current challenges and opportunities, with the hope of informing future research and practice."


ABSTRACT: "The advancements in the industries have paved the way for the distributed establishment of the big data volumes, cyber-physical systems, and industrie 4.0. The perspectives of modules are integrated with the shop-floor monitoring and controlled by computational paradigms, and digital computational spaces. The performance rises after introducing an intelligent and automated manufacturing industry into the next-generation industry. The scope of this paper is to address the state-of-the-art technologies and phases such as digital twins, big data analytics, artificial intelligence, and internet-of-things. The research challenges are examined with attention on data integrity, data quality, data privacy, data availability, data scalability, data transformation, legitimate and monitoring issues, and governance. Lastly, potential research issues that need considerable research efforts are summarized. We believe that this paper is presenting the research directions for researchers in the area of smart industry towards its integration for the advancements of the industrial sector, and agile management. Some surprising development as industry 4.0 integration with socio-technical systems was found in designing the architecture of vertical, horizontal, and end-to-end integration mechanisms."


ABSTRACT: "The utilization of traditional social survey data to approach today’s bullying problems presents some limitations. In response, a new approach to investigate and subsequently intervene is required for understanding the bullying phenomenon. Therefore, this study analyzed the big data generated by social media to identify Future Signals of bullying that can more effectively clarify the
problem and suggest targeted interventions to address the bullying phenomenon in South Korea. Also revealed were topics that may provide future insight regarding social circumstances that require further public attention to address the bullying phenomenon in South Korea. A new approach to investigate and subsequently intervene is required for understanding the bullying phenomenon. By using social big data analysis, 350,314 web documents were collected per hour each day from January 1, 2013 to June 30, 2017, from 279 subject channels based on an ontology of bullying-related topics. Term frequency, document frequency, degree of visibility, and degree of diffusion were computed to identify Future Signals. A substantial overlap of findings between studies based on social big data and traditional survey results was observed for family (e.g., parental divorce, domestic violence, child abuse), peer (e.g., transfer, friend violence), economic (e.g., economic problem), and strain domains, whereas strains concerning the media (e.g., movie, celebrity) and cultural (e.g., materialism, hell Korea) domains seemed to be more salient in social big data. Weak Signal topics in social big data representing media and cultural strain domains (e.g., Youtube, class society, bullying culture) related to the bullying phenomenon appear to be emerging in significance. These topics and their respective strain domains represent potentially important new areas that warrant further investigation by practitioners and policymakers. These findings may allow the early detection of crucial information by providing data to support better informed insight and intervention related to the complex problem of bullying in South Korea.


ABSTRACT: "Smart cities are evolving globally and many governments have invested large sums of monies to develop smart cities. This development is not a result of an overnight decision but rather, smart cities have evolved through a period of time, directly from earlier work on the digital city to ubiquitous city, green city, connected city, sustainable city, eco-city etc. The present age sees the arrival of very high-speed wireless 5G connectivity, fast GPU multi-core-based servers, big data, cloud computing, artificial intelligence, and data analytics. Many of these new technologies have supported the development and realisation of smart cities. In this study, the authors present an outline of security for smart cities and provide a deeper understanding of what we meant by securing smart cities. They discuss the applicability of existing security methods of authentication, access control, encryption, firewalls, and their appropriateness to defending a smart city. Specifically, we cover the security of data, internet, water supply, electricity supply, city brain, and other critical city services and present the possible malicious attacks on a smart city and consequences. Finally, they discuss security best practices for smart cities."


ABSTRACT: "Given exponential growth in the size of big data, its multi-channel sources and variability in quality that create challenges concerning cost-effective use, firms have invested significantly in databases and analytical tools to inform decision-making. In this regard, one means to avoid the costs associated with producing less than insightful reports and negative effects on performance through wasted resources is prioritizing data in terms of relevance and quality. The aim of this study is to investigate this approach by developing and testing a scale to evaluate Big Data Availability and the role of Big Data Prioritization for more effective use of big data in decision-making and performance. Focusing on the context of supply chain management (SCM), we validate this scale through a survey involving 84 managers. Findings support a positive association between Big Data Availability and its use in SCM decision-making, and suggest that Big Data
Prioritization, as conceptualized in the study, has a positive impact on the use of big data in SCM decision-making and SCM performance. Through developing a scale to evaluate association between Big Data Availability and use in SCM decision-making, we make an empirical contribution to value generation from big data.


ABSTRACT: "This study investigates how Big Data Analytics (BDA) can be leveraged to support a city’s transformation into a smart destination. We conduct an in-depth case study of a city-in-transformation and adopt the perspective of technology affordances to uncover the varying opportunities enabled by BDA to facilitate the attainment of smart tourism goals. Our findings unveil three types of BDA affordances and demonstrate how these affordances are actualized in a cascading manner to enable informed decisions and a sustainable development of smart tourism. Implications are presented for future investigation of the affordances of BDA in smart tourism, as well as for policy makers and practitioners who engage in the development of innovative tourism services for the smart citizens."

Bibliography on “blockchain”


ABSTRACT: "Initial Coin Offerings (ICOs), i.e. the initial offer of a crypto-token, represent an increasingly popular method to raise money. However, the determinants of ICOs’ returns for investors are still overlooked. Following this cue, the empirical outcomes of our study based on crypto-tokens issued between 2017 and 2018 evidence the main determinants of ICOs’ returns: first, crypto-tokens returns are positively associated to Ether’s returns; second, ICO price is negatively associated to later price increases; third, crypto-tokens returns are lower when they are offered in presale; finally, the more a crypto-token price increases between the ICO and the listing-date on the secondary-market and the more its price rises in the following month. In so doing, we contribute to a better understanding of the ICO phenomenon and highlight which aspects may benefit fund raising, which are relevant for the establishment of new startups and more broadly for the economic development of a country."


ABSTRACT: "The development of the blockchain with its different virtues (decentralized trust, auditability, accessibility, immutability of their operations, etc.) has allowed centralized applications to find a solution to their problems, such as trust, scalability, etc. One of these applications is the electronic signature of contracts which is a key point for the deployment of electronic transactions in the field of e-commerce. We have used the blockchain for contract-signing to avoid the use of"
centralized trusted third-parties, in a simple way, and where the use of any blockchain solution, allowing data to be published at a reasonable cost, can be easily integrated in our proposal, involving Bitcoin-based solutions (e.g., Litecoin or Dash) or Ethereum. Our results can help other authors to consider more factors, and not just the technological aspects, when selecting a blockchain solution.


ABSTRACT: "The perpetual script of a smart contract, that executes an agreement machine-to-machine without prejudice, guarantees performance of ‘contractual terms’ enabling the exchange or transaction of cryptoassets and other forms of property. Yet, smart contracts as recognisable or valid legal instruments within the boundaries of contract or property law remain uncertain and contentious. Contrary to perceptions of contractual streamlining and efficiency, understanding the uncertainty smart contracts produce lies in the technology’s failure to meet many of the fundamental principles of contract law and theory concerning, for example, breach of promise and remedy for breach. Smart contracts appear to reduce contracting to a form and standard well below that developed by contract law and theory over many centuries in both civil and common law jurisdictions. Including elements of the law of restitution, this article’s remedial analysis will examine smart contracts considering ‘traditional’ contract law to understand and, where possible, test the legal legitimacy of this post-human technology, and explore the potential of smart contracts to supplement or, in time, supersede traditional contract law."


ABSTRACT: "Blockocracies are a coherent, distinctive and novel organizational form bound by a collective ledger and a cryptocurrency. We frame our analysis of blockocracies against Weber’s enduring description of bureaucracy, identifying those features of Weberian bureaucracies that are present, absent or marginalized in blockocracies. In contrast to bureaucracy’s monocratic authority structure, authority in blockocracies is centered on four distinct layers. In each layer, there is governance of the code and governance by the code, and in the latter we distinguish between endogenous and exogenous rules. We also compare the “blockocrat” with Weber’s depiction of the bureaucrat."


ABSTRACT: "Identity management solutions are generally designed to facilitate the management of digital identities and operations such as authentication, and have been widely used in real-world applications. In recent years, there have been attempts to introduce blockchain-based identity management solutions, which allow the user to take over control of his/her own identity (i.e. self-sovereign identity). In this paper, we provide an in-depth review of existing blockchain-based identity management papers and patents published between May 2017 and January 2020. Based on the analysis of the literature, we identify potential research gaps and opportunities, which will hopefully help inform future research agenda."
ABSTRACT: "Once added, though, the information is accessible to all interested parties. [...]it would operate as a private chain for "write" access and a public chain for "read" access. [...]states that recognize value in blockchain to make processes more effective and efficient begin to launch pilot projects and eventually implement blockchain in key government activities, such as land registries, voting and identity records. Colorado's SB86 requires its department of state to consider blockchain for business licensing records. Ohio's legislation would decentralize online record-keeping for car titles and hunting licenses. Vermont's S269 mandates the review of blockchain for archiving public records. Illinois and New York have established task forces to research ways blockchain can manage state records. For example, Illinois is considering it to manage state residents' identification, tokenize assets, and reduce entitlement fraud. [...]Florida and Illinois are planning pilot programs to digitize drivers' licenses and birth registries, respectively. Elections and Voting New York introduced a bill to use blockchain to secure voting records. Virginia's HB2588 established an electronic voting pilot program for service members overseas. Two counties in West Virginia tested a smartphone application for voting in general elections."

ABSTRACT: "The implementation of the blockchain technology in the agri-food supply chains is in its introductory phase. Lead companies, often retailers, introduce this technology for specific objectives, such as assuring traceability or improving sales and reputation. At the same time, the technology could impact much more broadly the performances of food chains. Little is known about this impact as the evidence provided in the literature is scarce and mostly focused on specific indicators. This paper addresses this gap assessing the impact of the blockchain technology on food supply chains from an explorative perspective. An integrated conceptual framework is proposed which includes a broad set of performance dimensions discussed in the literature: efficiency, flexibility, responsiveness, food quality, and transparency of supply chains. These dimensions are assessed using a case study, consisting of three supply chains where a large European retailer has promoted the blockchain adoption. Data was collected through semi-structured interviews with key managers at different stages of the three supply chains and were systematically analysed through a thematic analysis. Results reveal that blockchain technology impacts positively on the profit and/or return on investment of supply chains, it leads to an increase of extrinsic food quality attributes and it fosters a better information management along the food chains due to an improved information accessibility, availability and sharing. The current analysis also suggests an improved management of behavioural uncertainty among the agents of the supply chains and an increase of firm's knowledge as well as supply chain management competencies. While the study remains of explorative nature, it offers a basis for the selection of theoretical approaches and the formulation of new hypotheses for future blockchain studies."

**ABSTRACT:** "This study presents a systematic literature review (SLR) of research on blockchain applications in the healthcare domain. The review incorporated 42 articles presenting state-of-the-art knowledge on current implications and gaps pertaining to the use of blockchain technology for improving healthcare processes. The SLR findings indicate that blockchain is being used to develop novel and advanced interventions to improve the prevalent standards of handling, sharing, and processing of medical data and personal health records. The application of blockchain technology is undergoing a conceptual evolution in the healthcare industry where it has added significant value through improved efficiency, access control, technological advancement, privacy protection, and security of data management processes. The findings also suggest that the extant limitations primarily pertain to model performance, as well as the constraints and costs associated with implementation. An integrated framework is presented to address potential areas wherein future researchers can contribute significant value, including addressing concerns regarding regulatory compliance, system architecture, and data protection. Finally, the SLR suggests that future research can facilitate the widespread deployment of blockchain applications to address critical issues related to medical diagnostics, legal compliance, avoiding fraud, and improving patient care in cases of remote monitoring or emergencies."


**ABSTRACT:** "The Internet of Things (IoT) has penetrated its roots in almost every domain of life. Smart healthcare is one of the major domains that extensively uses IoT infrastructures and solutions. IoT-based smart healthcare systems have immensely added value to the healthcare domain with the use of wearable and mobile devices. This leads to a substantial use of health data sharing for the improved, accurate, and timely diagnosis. However, smart healthcare systems are highly vulnerable to several security breaches and various malignant attacks, such as privacy leakage, tempering, forgery, etc. Recently, the blockchain technology emerged as a propitious solution against such breaches and challenges. This paper presents an up-to-date survey on different challenges and open issues faced in smart healthcare due to the traditional security measures along with the security requirements of such domains. It also amalgamates the potentials of blockchain technology as a promising security measure, highlights potential challenges in the healthcare domain, and provides an analysis of different blockchain-based security solutions."


**ABSTRACT:** "Inconsistency between the way in which the law is structured, and the way in which technologies actually operate is always an interesting and useful topic to explore. When a law conflicts with a business model, the solution will often be changing the business model. However, when the law comes into conflict with the architecture of hardware and software, it is less clear how the problem will be managed. In this paper, we analyze the contradiction of blockchain technology and the requirements of GDPR. The three contradictions we examine are (i) right to be forgotten versus irreversibility/immutability of records, (ii) data protection by design versus tamper-proofness and transparency of blockchain, and (iii) data controller versus decentralized nodes. We highlight that the conflicts can be handled through focusing on commonalities of GDPR and the blockchain, developing new approaches and interpretations, and tailoring the blockchain technology according to the needs of data protection law."

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Monthly Reading List

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ABSTRACT: "Electronic medical records (EMRs) are electronically-stored highly sensitive and private information related to the diagnosis and treatment of patient, and needs to be frequently shared among peers. Sharing of medical records between participants is very challenging because the data might be revealed or tampered during the operational process. To address these challenges, a blockchain-based electronic medical records system is the key solution. In this research, we have discussed how blockchain technology can help in better healthcare data management. We have proposed a blockchain-based records management system for efficient management and sharing of electronic medical records (EMRs). We have implemented a prototype of Electronic Medical Records Management System using permissioned blockchain platform “Hyperledger”. This system ensures privacy, security and easy accessibility and availability of medical records."

Bibliography on “broadband”


ABSTRACT: "This paper tracks increasingly aggressive initiatives by the United States government to reallocate spectrum on an expedited and unilateral basis well before conclusion of intergovernmental coordination. Rather than embrace the customary commitment to achieve consensus on global spectrum allocations at the International Telecommunication Union (“ITU”), the Federal Communications Commission (“FCC”) has auctioned off large blocks of frequencies for the next generation (“5G”) of wireless services. The FCC might have framed its first 5G auction, reassigning Ultra High Frequency (“UHF”) spectrum, as a one-time deviation from compliance with long standing, intergovernmental coordination procedures. These frequencies have ideal signal propagation characteristics and the Commission could use financial incentives—unavailable in most nations—to expedite “repacking” by incumbent broadcasters willing to move, share or abandon spectrum in exchange for ample financial compensation. However, the FCC has continued to auction off 5G spectrum on grounds that it must find ways to abate an acute shortage of wireless bandwidth and doing so will regain or maintain global leadership in wireless technologies. This paper offers a critical rebuke to unilateral spectrum management, because the short-term benefits expected by the U. S. government likely will be offset by countervailing harms to 5G manufacturers, carriers and consumers. The paper tracks fractious preparation for the ITU’s 2019 World Radio Conference by the U.S. delegation and the mixed record achieved there. Additionally, the paper explains how injecting trade, industrial policy and national security issues at the ITU can trigger more delays and disputes, including possible retaliation by nations displeased with U.S. efforts to subvert traditional technology optimization goals. A worst case scenario has the ITU deadlocked and unable to reach closure on “mission critical” spectrum planning issues at World Radio Conferences, convened every four years. The paper concludes that costs and likely challenges to the efficacy and legitimacy of the ITU will reduce the benefits accruing from the FCC’s unilateral, spectrum planning campaign."

**ABSTRACT:** "Since its inception, the internet has been as much technological as social, practical as ideological in character. This article examines academic discourse and asks how research on the multifaceted internet has evolved over the past 25 years. In order to investigate the formation of this academic field, we collected articles published in major academic journals dedicated to new media and digital communication as well as mainstream periodicals in communication studies over the past quarter of a century. Relying on a combination of (semi)automated content analysis and citation analysis, we find that articles related to the internet and its manifold aspects are cited more often than research on other topics. The literature review suggests that as the socio-material infrastructure of the internet has become deeply enmeshed in society its study has evolved from a niche pursuit to the discipline’s core area of inquiry."


**ABSTRACT:** "We evaluate a program by a private Internet Service Provider (ISP) intended to encourage low-income households to subscribe to broadband internet service. As part of its approval of the Comcast-NBCU merger in 2011, the Federal Communications Commission (FCC) mandated a “voluntary commitment” by Comcast to introduce a low-income broadband program that Comcast has branded “Internet Essentials (IE).” We use data from the U.S. Census Current Population Survey (CPS) and the National Broadband Map and a differences-in-differences approach to evaluate the program’s effects on subscription rates for eligible households. We find that between 2011, when the program began, and 2015, broadband adoption by eligible households—those with school-age children who were eligible for free or reduced-price school lunches—had increased by more among households that lived in areas in which Comcast provided broadband internet service than among households that lived in areas served by other cable providers. In our difference-in-differences approach, we estimate that about 66 percent of IE subscribers represent true increases in low-income adoption as a result of the program, with the remaining subscribers being households that switched from a competitor and households that would have subscribed as part of a general upward trend in adoption. We find that CPS survey respondents in IE eligible households had small and insignificant increases their likelihood of taking online courses or job training in Comcast territory relative to similar households residing in the territories of other cable providers and they showed no difference in the propensity to apply for jobs online. These results provide no evidence to support internet literacy training. We also did not find robust effects of some of the program’s other components. In particular, IE makes computers available for $150, but we found no difference in the change in low-income computer ownership across cable territories. As a result, it would be hard to conclude that subsidized computers made a difference in broadband subscription despite the visceral appeal of such programs."


**ABSTRACT:** "This paper finds that policy mixes for mobile broadband diffusion need to be differentiated depending on where a country is situated in three stages of mobile broadband diffusion because as a mobile broadband market grows, demand constraints hindering subscription of mobile broadband..."
will also change. A total of 115 countries are clustered into three groups (Take-off, Fast-Diffusion, and Saturated), categorized by their diffusion rates and diffusion speeds over four years from 2013 to 2016. With pooled and fixed effect panel data models, this paper examines which variables out of 23 explanatory variables were effective in promoting mobile broadband adoption globally. Further, by interacting explanatory variables with two group dummies, this paper identifies differential slope (policy) effects of each explanatory variable on mobile broadband adoption. The paper concludes that, among the three groups, considerable gaps exist in the size of effective policy choice sets: six for Take-off, ten for Fast-diffusion, and thirteen for Saturated, suggesting that the countries in the Take-off stage have a very narrow degree of latitude for developing mobile broadband promotion strategies.

Bibliography on “climate change and ICTs”


ABSTRACT: "Environmental regulation is an important part of many policy mixes for sustainability transitions. However, due to factors including lobbying actions, uncertainty about technological possibilities and costs, there often exists an implementation gap between the regulation and its enforcement. The paper presents an agent-based model to investigate the effect of such implementation gaps on the transition to sustainability for the REACH regulation on dangerous chemical substances. By affecting both the way that heterogeneous actors perceive the regulatory threat and their innovation strategy, implementation gaps may jeopardize the transition to safer substitutes. We show that the combination of the most severe regulation with the strictest enforcement and the shortest timing does not necessarily lead to the highest frequency of bans on dangerous substances, because it may place too much pressure on pioneering firms developing safer substitutes. Opting for a severe regulation should be combined with concessions on enforcement in order to preserve competition and to give pioneering competitors enough time to expand. From a reverse angle, if authorities are keen to apply the regulation strictly, and are prepared to face higher market concentration, then they should relax the degree of stringency in order to enhance the prospects of transition to safer substitutes."


ABSTRACT: "Climate change poses a major threat to human well-being and will be the root cause of a variety of stressors in coming decades. Psychologists have an important role to play in developing interventions and communication strategies to help people understand and cope with climate change impacts. Through a review of the literature, we identify three guiding insights for strategies to promote adaptive coping and resilience to climate change stress. First, it is unlikely that one single “correct” or “best” way of communicating about adaptive coping with climate change exists, but there are established best practices communicators can follow. Second, in implementing these best practices, practitioners must attend to the impact of variability in the nature of different kinds of stress caused by climate change, as well as individual differences in how people chronically respond to stressors. Third, because individuals, communities, and ecosystems are interconnected, work on adaptive coping to climate change must address individual coping in the context of
Community and ecosystem resilience. These insights from psychological science can be leveraged to promote human flourishing despite increasing stressors posed by climate change.


ABSTRACT: "Green Information Systems (Green IS) emerged as a crucial area for research to reduce organizations/society’s carbon footprints and consequently, to achieve environment sustainability. This research paper provides an extensive systematic literature review in Green IS area to facilitate advance research in the area. The aim of the paper is to provide basic understanding of Green IS and to highlight the significant research conducted earlier in this area. Classification approach adopted to conduct the study, and the research area categorized under five segments namely: Green IS concept, innovation and technology, impact of green initiatives, measures and policies, and global context. These five categories were further divided into subcategories to provide in-depth and crystal clear review of literature. Accessible research articles, book chapters and reports from top ten databases Emerald, Science Direct, EBSCOhost, ACM digital Library, IEEE, JSTOR, ProQuest, Sage, Wiley online and Springer link were reviewed. Research propositions are provided for future significant research in this area."

Bibliography on “cybersecurity”


ABSTRACT: "The increasing use of Security Operations Centers (SOCs) by organisations as a part of their cyber security strategy has led to several studies aiming to understand and improve SOC operations. However, to the best of our knowledge, there is no systematic literature review on the challenges faced by SOC analysts or on metrics for measuring analysts performance. To this end, we conducted a Systematic Literature Review (SLR) in accordance with the guidelines for undertaking SLR and analyzed papers published on SOCs between 2008 and 2018. We provide a comprehensive overview of the challenges faced by SOC analysts and of the metrics suggested in the literature for measuring analysts performance. In addition, we present a mapping between the challenges and existing performance metrics showing how the effectiveness of an analyst in addressing a particular challenge could be measured. We also discuss the drawbacks of the existing metrics and suggest directions for improvement. Our findings will enable SOC analysts and managers, as well as the academic community to gain a better understanding of the challenges impeding the performance of SOC analysts, and how analysts performance could be measured and improved."

ABSTRACT: "The electronic government (E-Gov) Systems are currently getting recognized as an authentic strategically tool in delivering E-services. Considering the development of information system (IS) as well as the expanding of the internet-based applications in KSA, E-Gov has always been a significant aspect in delivering governmental services. This research has adopted the (IS) success model by both DeLone and McLean (D&M), moreover, it adopted technology acceptance model (TAM) with cybersecurity factors, both models were implemented to discover the status of the IS success then investigate cybersecurity aspects that impact the service efficiency and effectiveness in KSA. Consequently, this research aims to create a model to investigate the IS success model along with cybersecurity factors that influence E-Gov services effectiveness and usage. Therefore, a survey has been applied as the major data gathering approach; the survey has been distributed among 211 users of E-Gov services consistently. Moreover, all research findings were attained through a quantitative method using the structural equation modelling (SEM). Findings revealed that the constructs fundamental of the (IS) success model are strongly influencing users’ satisfaction (US) of the E-Gov services; correspondingly, the fundamental constructs factors of cybersecurity with TAM appear to have a strong impacts on perceived risk (PR), in addition, both which affect the E-Gov services towards usage and effectiveness."


ABSTRACT: "Big data allows organizations to process massive and complex data to extract hidden patterns, draw insights, and also to share data through the network. Data that transit in an organization network is often sensitive and requires an efficient and secure platform. For this reason, network security has been brought to the forefront in the Big data era. In this context, network security platforms have to deal with vast and complex information to predict and prevent potential attacks in real-time. However, these platforms are often based on traditional approaches, which make them unreliable to secure big data. In this paper, we mainly focus on network security and protection strategies of big data. First, we highlight factors affecting network security platforms in the Big data era. Then, we go through different big data strategies that allow ensuring security across networks while surveying recent researches."


ABSTRACT: "Few empirical studies have examined the cybersecurity policies of cities in the United States. Issues that have yet to be addressed in the literature include whether cities (of various sizes) maintain cybersecurity plans and policies that are sufficient to protect their citizens’ data, a general lack of knowledge regarding cybersecurity policies, and practices on the part of cities that place at risk the security of public services and citizens’ privacy. Our research explored these issues by administering a survey to public officials working in U.S. cities. The survey instrument included questions pertaining to (1) the existence of a formal cybersecurity strategic plan and the utilisation of internet-based technologies in cities, (2) the support received by cities for their cybersecurity planning, (3) the types of cybersecurity policies being implemented in cities, and (4) the resources needed to conduct cybersecurity planning. We collected surveys from 168 officials employed in cities across the U.S. Our analysis of the results indicates that municipalities have formal cybersecurity policies but that they need to increase the integration of cybersecurity practices into their daily management processes by tracking their data, consulting outside security auditors, and increasing management training related to data security."

ABSTRACT: "Liberal democracies and their allies are facing a generational challenge from increased and evolving efforts by foreign actors to undermine public trust and degrade democracy. This article examines the problem of foreign interference with particular reference to the US midterm elections of 2018 as a case study, to draw potential lessons for liberal democracies in advance of future democratic processes. These lessons are centred upon five vulnerabilities to malicious actors, which – if exploited, either partly or wholly – can potentially degrade a democratic political system. The five vulnerabilities incorporate democratic institutions, election infrastructure and private industry. They also include individuals, and the core ideas that underpin democratic norms and values. We call these the ‘Five Is’. The paper outlines the challenges facing the integrity of elections for liberal democracies and fills out the concept of the ‘Five Is’. We note that the ‘Five Is’ are causally linked and overlapping. Having discussed the ‘Five Is’, we then look at the US 2018 midterms as a way to clarify and specify the ‘Five Is’ in practice. The paper then offers eight recommendations for policymakers to increase the resilience of electoral processes to such threats and attacks."


ABSTRACT: "ACM ATHENA AWARD recipient Elisa Bertino, a professor at Purdue University and research director of the Cyber Space Security Lab of Purdue’s Department of Computer Science, has spent her career trying to ensure the security and integrity of the information that is stored in databases and transmitted over mobile, social, cloud, Internet of Things (IoT), and sensor networks. Here, she talks about how her research interests have evolved and why she’s not pessimistic about the future of cybersecurity"


ABSTRACT: "The research question explores factors that create a feeling of privacy violation and discusses steps organizations can take to improve the perception of digital privacy for employees answering, “What intrusion, interference, and information access factors can be implemented by organizations to create a sense of digital privacy for employees in for-profit organizations?” Moor’s Theory of Privacy guides the research examining three components of normative privacy in a digital age: intrusion protection, interference protection, and information access protection. The method of inquiry is a systematic review of twenty-one articles containing published in peer-reviewed academic journals over the last five years. Intrusion protection recommendations include monitoring and compliance with existing legislation, exhibition of transparency on policies and procedures, creating or revisiting existing organizational policies, and providing or enhancing training practices. Interference protection recommendations include gaining consent on policies, and encouraging systems that allow self-control of privacy. Information access protection recommendations involve weighing benefits and costs of security controls, limiting excessive data collection, anonymizing or obfuscating data collection, deleting data when use is complete, creating sanctions for information security misbehavior, and reviewing mobile device management"
This discovered framework can decrease levels of stress, improve task performance, and decrease bad behavior will improving levels of job satisfaction and organizational commitment.


ABSTRACT: "Based upon the service-dominant (S-D) logic and the well-established belief-behavior framework, this study proposes a research model that captures the belief/perception factors and the interactive process driving people to balance and trade-off their cybersecurity concerns for co-created value in social media use. The model was validated with a large set of field survey data of 1,559 Facebook users. For information systems (IS) research, the study represents our attempt in adopting and empirically assessing the S-D Logic in the social media context. We extended the IS privacy calculus literature, and provided a context-specific cognitive/behavioral trade-off view of social media use. For business practice, the study offers managerial guidelines in improving service effectiveness and retaining a critical mass of active social media users for marketing extension, business innovations, and customer relationship management (CRM) in the organizational setting."


ABSTRACT: "Because there is a critical shortage of cybersecurity talent, information security professionals and researchers should cultivate cybersecurity skills by encouraging individuals to pursue cybersecurity learning. However, some aspects of cybersecurity require substantial effort and perseverance for conceptual understanding to be gained. We propose motivation as the key to ensuring continuous engagement with and successful learning of such cybersecurity concepts. With a lab-based training program that taught participants about SQL injection attacks, we tested a research model that integrated flow theory and self-determination theory. Within the training program, we captured participants’ persistence in attempting and successfully completing the training exercises while also measuring their perceptions of motivation and flow. We found that flow facilitated motivation and its key antecedents. Flow and task significance had the strongest effects on motivation, while motivation fostered learning persistence and performance. We recommend training programs that maximize flow and task significance."


ABSTRACT: "This article is designed to outline the lack of international rules of engagement in cyberspace, and how traditional practices and laws of war are applicable to cyberwarfare and how it is not. If there are any legal implications for cyberwarfare, there are very few. Any reasonable anticipation of reprisal after an initial cyberattack by a nation-state upon another is minimum. The problem of attributing a cyberattack to a source remains an enormous challenge for cyber-diplomacy, leading to critics who do not see cyberwarfare as a standalone danger to national security. Regardless of the critics, the Department of Defense (DoD) has established cyber operations as weaponized entities in its Law of War Manual, and there are historical examples that
prove cyberwarfare can act as a dangerous weapon against critical infrastructure and exposed populations. If there continues to be a deficiency of understanding on the part of essential decisionmakers regarding the nature of cyberspace in policy, and a sustained escalation of nation-state on nation-state cyberattacks, without proper rules of engagement in this space with universal axioms of proportionality, the international community could end up in error with an unwanted conventional or nuclear war."


ABSTRACT: "Purchasing items on the Internet with a credit card can be extremely risky. To mitigate this risk, we propose a new Multi-Layer Defense (MLD) scheme which uses two-factor authentication by instituting a random number generator that is only valid for a preset amount of time. For two-factor authentication, we use an eight-digit code that serves as a redundant private key to authenticate the purchases. This can be utilized to identify users of credit cards and establish a more secure way of purchasing items via various marketplaces on the Internet. Specifically, the MLD scheme uses electronic devices to log into the credit card accounts via an application to view a randomly generated code. This is then inputted on an Online Retailer’s website to authorize the use of the credit card. This ensures that a legitimate user is attempting to make a purchase and is not fraudulent. This redundancy, if used, can mitigate the circumstance of lost or stolen credit card information. The use of our proposed MLD scheme, specifically randomly generated code, when making a credit card purchase online could drastically cut down on fraudulent credit card purchases."


ABSTRACT: "A global village is what the father of digital media and communications, Marshall McLuhan had dreamt of in the late 1970s. In June 2017, reaching over 51.7% of the global population, the Internet has made it a reality. In past couple of decades, with upsurge of wireless communication technologies, the Internet has spread its web to connect all corners of the world. Its undeniable merits aside, interconnectivity on such a massive scale ushered in a whole new era of rampant malfeasance, characterized by an ever-increasing rate of cyber-crimes. Intrinsically, cyber-security researchers around the globe have been trying to develop several effective mechanisms to deal with the threats posed by cybercriminals. In this paper, we are presenting Adalward – a five-layer deep-learning framework, which has the potential for overcoming most of the challenges faced by such existing systems. Unique framework of Adalward allows it to utilize both static and dynamic web features for making accurate classification decisions with unmatched efficiency. Adalward was trained on one million labelled URLs obtained from numerous trustworthy sources. By the end of its training phase, Adalward achieved an overall detection accuracy of 99.76%, with a negligible false-positive rate of 0.10% and a nominal false-negative rate of 0.14%.”

ABSTRACT: "Smart cities are evolving globally and many governments have invested large sums of monies to develop smart cities. This development is not a result of an overnight decision but rather, smart cities have evolved through a period of time, directly from earlier work on the digital city to ubiquitous city, green city, connected city, sustainable city, eco-city etc. The present age sees the arrival of very high-speed wireless 5G connectivity, fast GPU multi-core-based servers, big data, cloud computing, artificial intelligence, and data analytics. Many of these new technologies have supported the development and realisation of smart cities. In this study, the authors present an outline of security for smart cities and provide a deeper understanding of what we meant by securing smart cities. They discuss the applicability of existing security methods of authentication, access control, encryption, firewalls, and their appropriateness to defending a smart city. Specifically, we cover the security of data, internet, water supply, electricity supply, city brain, and other critical city services and present the possible malicious attacks on a smart city and consequences. Finally, they discuss security best practices for smart cities."


ABSTRACT: "Knowing domain names associated with traffic allows eavesdroppers to profile users without accessing packet payloads. Encrypting domain names transiting the network is, therefore, a key step to increase network confidentiality. Latest efforts include encrypting the TLS Server Name Indication (eSNI extension) and encrypting DNS traffic, with DNS over HTTPS (DoH) representing a prominent proposal. In this paper, we show that an attacker able to observe users’ traffic relying on plain-text DNS can uncover the domain names of users relying on eSNI or DoH. By relying on large-scale network traces, we show that simplistic features and off-the-shelf machine learning models are sufficient to achieve surprisingly high precision and recall when recovering encrypted domain names. The triviality of the attack calls for further actions to protect privacy, in particular considering transient scenarios in which only a fraction of users will adopt these new privacy-enhancing technologies."


ABSTRACT: "Internet of Things (IoT) is the recent and growing which is inevitable in day-to-day activities in current life. IoT is the network of systems which interconnect various real world objects and serve for the Machine-to-Machine (M2M) communication through the support of Internet. The significant functionality of IoT deals with an enormous amount of data sensed from various heterogeneous IoT devices. The data from various sensors of the objects are collected and converted to information relevant for the application using various machine learning algorithms. Additionally, the business and data analytics algorithms aid in the prediction of events on the basis of observed behavior and information. The routing of information in a secure way with limited resources over Internet in for IoT applications is a significant challenge. This paper is aimed to analyze and explore various research challenges and open issues related to security and use of IoT protocols. The main contribution of the survey is to highlight the research trends and simulation tools used for analysis of IoT layer protocols."
Bibliography on “digital divide”


ABSTRACT: "Coopetition is prevalent in today's dynamic business environment and has attracted research interests. Using coopetitive-based view, this study examines the antecedents and drivers of infrastructure sharing (IS) among local and multinational mobile network operators (MNOs) in Africa. Based on 21 interviews with different stakeholders in seven sub-Sahara African (SSA) countries, we develop an integrative framework of industry/market, technological, and institutional factors that affect IS between MNOs. We find evidence of institutional factors shaping the impact of the industry structure and technological factors on firms' propensity to engage in coopetitive strategies. There is evidence that in contexts with low-level IS, inadequate regulatory interventions mean that the existing market conditions are reproduced, leading to further competitive behaviours from MNOs. For high-level IS, MNOs tend to engage in further coopetitive strategies through strategic learning and cooperate to resolve technological incompatibilities and engage in standards settings. We extend the existing scholarly works on coopetition and IS literature by providing an in-depth understanding of the obstacles faced by MNOs in adopting IS. The study further highlights that IS requires a shift from the competitive-based logic to a dynamic, coopetitive one, which is nonetheless challenging to achieve with limited institutional capacity and support."


ABSTRACT: "This article examines how the scrap-handling/recycling system in Myanmar has adopted mobile telephony in its day-to-day operations, and how this has led to a rationalization of the sector. It focuses on work processes, information and price retrieval, risk management, efficiency, and coordination. Scrap-handlers and ragpickers in four townships of Myanmar were interviewed in three phases of fieldwork, and their mobile phone use was also observed. The findings provide insight into how mobile communication can streamline the day-to-day workings of a sector, and also the disadvantages experienced by those who do not have a mobile phone."


ABSTRACT: "With more than three billion people in isolation, the status of digital spaces is switching from an amenity to a necessity, as they become not only the main way to access information and services, but also one of the only remaining vectors for economic, educational, and leisure activities as well as for social interactions to take place. However, not all are equals in terms of access to networks or connected devices, or when it comes to the skills required to navigate computerized spaces optimally. Digital inequalities were already existing, yet the COVID-19 crisis is exacerbating them dramatically. On the one hand, the crisis will worsen digital inequalities within the population. On the other hand, digital inequalities represent a major risk factor of vulnerability for exposure to the virus itself, and for the non-sanitary consequences of the crisis. Therefore, this paper aims at exploring the reciprocal impacts of the COVID-19 crisis and digital inequalities, and to propose operative solutions to help fight the nefarious consequences of the crisis. We first describe how
digital inequalities are a determinant of health. We then investigate how COVID-19 can potentiate digital inequalities, and how digital inequalities potentiate vulnerability to COVID-19. Finally, in order to contribute to the mitigation of this crisis, we propose a set of multi-layered strategies focusing on actionability that can be implemented at multiple structural levels, ranging from governmental to corporate and community levels."


ABSTRACT: "This paper takes an intersectional perspective to investigate the effect of socio-demographic variables that may constitute to digital divide. The concept of digital divide emerged from a perspective on unequal access to digital technology and relates nowadays primarily the differences in the competencies necessary to handle this technology. To investigate digital divide, the present paper uses the PIAAC framework of digital competencies which is called problem solving in technology-rich environments (PS-TRE). It introduces the approach of intersectionality that describes persons impaired by multiple inequalities. The paper analyzes the impact of these factors on PS-TRE for three subsamples of the German study: (1) employed people who use computers at work and at home, (2) employed people who use computers only at home, and (3) people that are out of the labor force. It analyzes furthermore contributions to digital divide by a comparison of these impacts with literacy and numeracy scores. While employed people with computer use at work and home only had generation as a factor for constituting digital divide, employed people with computer use only at home had migration background as a further factor. Education and cultural capital showed lower impacts on PS-TRE than on literacy and numeracy."


ABSTRACT: "Purpose This paper aims to look at shifts in internet-related content and services economies, from audience labour economies to Web 2.0 user-generated content, and the emerging model of user computing power utilisation, powered by blockchain technologies. The authors look at and test three models of user computing power utilisation based on distributed computing (Coinhive, Cryptotab and Gridcoin) two of which use cryptocurrency mining through distributed pool mining techniques, while the third is based on distributed computing of calculations for scientific research. The three models promise benefits to their users, which the authors discuss throughout the paper, studying how they interplay with the three levels of the digital divide. Design/methodology/approach The goal of this article is twofold as follows: first to discuss how using the mining hype may reduce digital inequalities, and secondly to demonstrate how these services offer a new business model based on value rewarding in exchange for computational power, which would allow more online opportunities for people, and thus reduce digital inequalities. Finally, this contribution discusses and proposes a method for a fair revenue model for content and online service providers that uses user device computing resources or computational power, rather than their data and attention. The method is represented by a model that allows for consensual use of user computing resources in exchange for accessing content and using software tools and services, acting essentially as an alternative online business model. Findings Allowing users to convert their devices’ computational power into value, whether through access to services or content or receiving cryptocurrency and payments in return for providing services or content or direct computational powers, contributes to bridging digital divides, even at fairly small levels."
Secondly, the advent of blockchain technologies is shifting power relations between end-users and content developers and service providers and is a necessity for the decentralisation of internet and internet services. Originality/value The article studies the effect of services that rely on distributed computing and mining on digital inequalities, by looking at three different case studies – Coinhive, Gridcoin and Cryptotab – that promise to provide value in return for using computing resources. The article discusses how these services may reduce digital inequalities by affecting the three levels of the digital divide, namely, access to information and communication technologies (ICTs) (first level), skills and motivations in using ICTs (second level) and capacities in using ICTs to get concrete benefits (third level)."


ABSTRACT: "The emergence of social network sites and online communities has offered new possibilities for older adults to stay socially connected and older adults comprise a growing user group of social media. This paper examines the relationship between older adults’ online social engagement and social capital based on a national survey of adults aged 60 and over. Findings show that older adults who engage more often in specific online social activities (i.e., asking questions on social media, looking at photos of family members/others) enjoy greater bridging social capital (both in offline and online contexts) than those who do so less often. Furthermore, Internet skills moderate the relationship between online social engagement and social capital. Specifically, older adults with greater Internet skills benefit relatively more from engaging in specific online social activities more often with respect to online bridging. The paper discusses the implications for digital inequality scholarship."


ABSTRACT: "This paper examines spatial patterns of information and communication technology (ICT) adoption and utilization and seeks to understand underlying reasons for the digital divide in Latin America and the Caribbean (LAC). Five distinctive clusters of technology adoption and use factors are identified, characterized, and geographically mapped. Disparities in adoption and utilization in ICTs in 36 LAC countries are examined Using a Spatially Aware Technology Utilization Model, fifteen socioeconomic, innovation, business efficiency, infrastructural, affordability, and societal openness indicators are posited to be associated with six ICT indicators. Human development, civil liberties, political rights, urban population, and electricity access are found to influence ICT adoption and use in LAC indicating socio-economic, urban, societal openness, and infrastructural dimensions of the digital divide in this world region. For a sub-sample of Latin American nations, regression findings point to human development and infrastructural factors. Spatial bias in confirmatory analysis is diagnosed, and policies are recommended."

ABSTRACT: "Digital technology has become one of the most important tools for the dissemination of policy information, particularly for implementing short-term transportation policy (STTP). This study investigated the mediating role of the digital divide in the associations between socioeconomic factors and outcomes of STTP through a case study of the first-car buyer policy in Thailand. A structural equation modeling approach was employed to generate a model using a dataset from 77 provinces in Thailand in 2012. The results showed that population density, income per capita, urbanization, and populations of individuals aged 30 to 34 have negative effects on the digital divide, while the digital divide is negatively associated with the beneficiaries of STTP. Meanwhile, economic activity, urbanization, and a population of individuals aged 30 to 34 have indirectly positive links with the beneficiaries of STTP. These findings suggest the significance of the mediating role of the digital divide in the STTP of developing countries."


ABSTRACT: "This paper finds that policy mixes for mobile broadband diffusion need to be differentiated depending on where a country is situated in three stages of mobile broadband diffusion because as a mobile broadband market grows, demand constraints hindering subscription of mobile broadband will also change. A total of 115 countries are clustered into three groups (Take-off, Fast-Diffusion, and Saturated), categorized by their diffusion rates and diffusion speeds over four years from 2013 to 2016. With pooled and fixed effect panel data models, this paper examines which variables out of 23 explanatory variables were effective in promoting mobile broadband adoption globally. Further, by interacting explanatory variables with two group dummies, this paper identifies differential slope (policy) effects of each explanatory variable on mobile broadband adoption. The paper concludes that, among the three groups, considerable gaps exist in the size of effective policy choice sets: six for Take-off, ten for Fast-diffusion, and thirteen for Saturated, suggesting that the countries in the Take-off stage have a very narrow degree of latitude for developing mobile broadband promotion strategies."

Bibliography on "digital economy"


ABSTRACT: "Initial Coin Offerings (ICOs), i.e. the initial offer of a crypto-token, represent an increasingly popular method to raise money. However, the determinants of ICOS’ returns for investors are still overlooked. Following this cue, the empirical outcomes of our study based on crypto-tokens issued between 2017 and 2018 evidence the main determinants of ICOS’ returns: first, crypto-tokens returns are positively associated to Ether’s returns; second, ICO price is negatively associated to later price increases; third, crypto-tokens returns are lower when they are offered in presale; finally, the more a crypto-token price increases between the ICO and the listing-date on the secondary-market and the more its price rises in the following month. In so doing, we
Contribute to a better understanding of the ICO phenomenon and highlight which aspects may benefit fund raising, which are relevant for the establishment of new startups and more broadly for the economic development of a country."


ABSTRACT: "This research investigates the linear and non-linear effects of information and communication technology (ICT) diffusion on financial development for 81 countries over the period 1990–2015 by employing the generalized-momentum method (GMM) and panel smooth transition regression (PSTR). Some main conclusions are presented as follows. First, comparing the different effects of ICT on financial development between the high-income group and the middle- & low-income group, telephone and Internet positively influences both groups' financial development, whereas mobile cellular causes a negative effect in high-income countries, but a positive effect in middle- & low-income countries. Second, the growth of the Internet and telephones raises the financial development in all regions, while mobile cellular growth positively affects financial development only in Africa. Finally, strong evidence appears that the PSTR models capture the smooth non-linear effects of ICT diffusion on financial development, in which the effect of ICT diffusion on financial development is positive in the lower level of ICT diffusion, but turns negative in the higher level of ICT diffusion."


ABSTRACT: "The development of the blockchain with its different virtues (decentralized trust, auditability, accessibility, immutability of their operations, etc.) has allowed centralized applications to find a solution to their problems, such as trust, scalability, etc. One of these applications is the electronic signature of contracts which is a key point for the deployment of electronic transactions in the field of e-commerce. We have used the blockchain for contract-signing to avoid the use of centralized trusted third-parties, in a simple way, and where the use of any blockchain solution, allowing data to be published at a reasonable cost, can be easily integrated in our proposal, involving Bitcoin-based solutions (e.g., Litecoin or Dash) or Ethereum. Our results can help other authors to consider more factors, and not just the technological aspects, when selecting a blockchain solution."


ABSTRACT: "Mobile payments are services that use mobile devices to make payments. When digitalization moves across channel boundaries, online to offline channel retail will expand. Online to offline retailing will become the future retail owner stream and retail operators will move from cross-channel or multi-channel to omni-channel. This study investigates a market survey in Taiwan developing a data mining analytics including clustering analysis and association rules based on a snowflake schema database design. The role of mobile payment is determined in terms of new retail payment mechanism that promotes a better consumer purchase experience in an online to offline business environment."

ABSTRACT: "Artificial intelligence (AI) agents driven by machine learning algorithms are rapidly transforming the business world, generating heightened interest from researchers. In this paper, we review and call for marketing research to leverage machine learning methods. We provide an overview of common machine learning tasks and methods, and compare them with statistical and econometric methods that marketing researchers traditionally use. We argue that machine learning methods can process large-scale and unstructured data, and have flexible model structures that yield strong predictive performance. Meanwhile, such methods may lack model transparency and interpretability. We discuss salient AI-driven industry trends and practices, and review the still nascent academic marketing literature which uses machine learning methods. More importantly, we present a unified conceptual framework and a multi-faceted research agenda. From five key aspects of empirical marketing research: method, data, usage, issue, and theory, we propose a number of research priorities, including extending machine learning methods and using them as core components in marketing research, using the methods to extract insights from large-scale unstructured, tracking, and network data, using them in transparent fashions for descriptive, causal, and prescriptive analyses, using them to map out customer purchase journeys and develop decision-support capabilities, and connecting the methods to human insights and marketing theories. Opportunities abound for machine learning methods in marketing, and we hope our multi-faceted research agenda will inspire more work in this exciting area."


ABSTRACT: "Digitization blurs the lines between technology and management, facilitating new business models built upon the concepts, methods and tools of the digital environment. The purpose of this study is to investigate the role of the Internet of Things (IoT) and Big Data in terms of how businesses manage their digital transformation. The paper argues that the outbreak of IoT and Big Data has resulted in a mass of disorganized knowledge. In order to make sense of the noise, a literature review was carried out to examine the studies, published in the last decade (2008–2019), that analyzed both the Internet of Things and Big Data. The results show that IoT and Big Data are predominantly reengineering factors for business processes, products and services; however, a lack of widespread knowledge and adoption has led research to evolve into multiple, yet inconsistent paths. The study offers interesting implications for managers and marketers, highlighting how the digital transformation enabled by IoT and Big Data can positively impact many facets of business. By treating IoT and Big Data as faces of the same coin, this study also sheds light on current challenges and opportunities, with the hope of informing future research and practice."


ABSTRACT: "The digital economy based on Internet technology has provided an important boost for economic growth. However, it has also created opportunities and challenges for stabilizing
macroeconomic employment and growth. To measure how the Internet technology has influenced employment at the industry level in China, we first separate it from other technological progress in a production function model. Based on the input–output data spanning 2000–2014 in the World Input–Output Database (WIOD), we use a direct consumption coefficient matrix as the spatial weight matrices to verify inter-industry spillovers between 47 industries of China and its influence on employment by using spatial econometrics model. Empirical results indicate that Internet technology progress in one industry will significantly promote Internet technology progress in “adjacent” industries. Internet technology progress directly promote the employment within industry. Furthermore, due to the positive inter-industry spillovers, Internet technology progress also exerts positive effects on employment in other industries and positively affects employment within industry again through various feedback loops between industries. Therefore, policy should promote Internet technology in various industries, especially those closely linked to other industries, to stabilize employment and growth."


ABSTRACT: "With the emergencies of Web 2.0, online word of mouth (e-WOM) has become one of the most useful communication channels. Organizations increasingly rely on social media to receive customers’ feedback for product development. Despite the known effect of e-WOM on customers’ decision-making, few studies have examined the influence of e-WOM on product improvement. Extending the prior e-WOM research, this paper empirically investigates how e-WOM affects mobile application (App) improvement and examines the moderating effect of developer expertise. Based on a dataset obtained from Applause.com, we find that e-WOM volume, valence, and reviewer exposure positively affect App improvement. We also find that developer expertise negatively moderates the effect of e-WOM on App improvement. The results indicate that expert developers are less likely affected by e-WOM. This study contributes by empirically investigating the role of e-WOM used to facilitate customer-to-business communication. This study also provides practical value for firms active in the App market."

Bibliography on “e-Government”


ABSTRACT: "The electronic government (E-Gov) Systems are currently getting recognized as an authentic strategically tool in delivering E-services. Considering the development of information system (IS) as well as the expanding of the internet-based applications in KSA, E-Gov has always been a significant aspect in delivering governmental services. This research has adopted the (IS) success model by both DeLone and McLean (D&M), moreover, it adopted technology acceptance model (TAM) with cybersecurity factors, both models were implemented to discover the status of the IS success then investigate cybersecurity aspects that impact the service efficiency and effectiveness in KSA. Consequently, this research aims to create a model to investigate the IS
success model along with cybersecurity factors that influence E-Gov services effectiveness and usage. Therefore, a survey has been applied as the major data gathering approach; the survey has been distributed among 211 users of E-Gov services consistently. Moreover, all research findings were attained through a quantitative method using the structural equation modelling (SEM). Findings revealed that the constructs fundamental of the (IS) success model are strongly influencing users' satisfaction (US) of the E-Gov services; correspondingly, the fundamental constructs factors of cybersecurity with TAM appear to have a strong impacts on perceived risk (PR), in addition, both which affect the E-Gov services towards usage and effectiveness.


ABSTRACT: "Open government data (OGD) initiatives are an emergent platform research topic. There is little understanding how these platforms are governed for the innovation of services using open data, where the cultivation of an installed base of heterogeneous service innovators can lead to increased usage of OGD. In this paper, we draw on established literature from digital platforms research to investigate how service innovation is cultivated in open government data contexts. We employ a comparative case study of open government data platforms in three leading Latin American cities and draw upon the concept of boundary resources taken from platform theory. Our research generates two key contributions. First, we propose a theoretical model, which explains how an OGD platform owner is able to govern the demand and the supply side of its platform to facilitate the cultivation of a platform ecosystem. Second, we develop contributions to practice in terms of a set of recommendations for governments in emerging countries concerning how to establish and manage a vibrant OGD platform ecosystem."


ABSTRACT: "Web 2.0 has brought innovations in digital government, namely, government 2.0. Social media, as one part of Web 2.0, could potentially support fuller participation and public interaction. Social media enjoys a very high level of acceptance by individual users and government agencies around the world. Web 2.0 and social media usage in the public sector still needs to be tested from the perspective of not only the government but also the community as the recipient of services. Therefore, this study aims to answer the following research questions: How effective has government 2.0 implementation been in Indonesia? Is there a correlation between e-government management and government 2.0 implementation? We adopted the sophistication index (SI) by Bonson et al. (2012) [1] to answer the first research questions. The SI examined the presence of Web 2.0 features and social media applications on these government institutions’ websites. As to answer the second research question, we conducted parametric statistical tests to assess how e-government implementation, based on the Indonesian E-Government Rating (PEGI) score, has influenced the effectiveness of government 2.0 use by government institutions in Indonesia. We observed the websites and social media accounts of 116 Indonesian government institutions. According to the evaluation of Web 2.0 and social media use, the average SI score is 42%. These results indicate that, in general, government institutions in Indonesia have used Web 2.0 and social media features, although the adoption rate has not been equal. The correlations between the PEGI scores and SI values also suggest a positive relationship between the effectiveness of e-government implementation and the effectiveness of government institutions. Therefore,
government institutions that have been effective in implementing e-government have also been effective in implementing government 2.0."


ABSTRACT: "This paper proposes the automated evaluation of readability, through the analysis of different linguistic characteristics associated with a better understanding of the websites of the Spanish Government’s administrative procedures. To fulfil this task, a corpus made by web documents with distinct difficulty levels has been gathered. Then, these documents’ difficulty is assessed through different classic readability metrics. By the use of machine learning methods, different algorithms are analyzed to measure their capability to predict text difficulty. The results obtained show that the official Spanish Government websites have a high difficulty level. The main contribution of this work is the combined application of a wide number of linguistic attributes and the construction of a new corpus addressed to official government texts."


ABSTRACT: "Digital transformation (DT) is a strategic imperative for governments that aim to improve their services and efficiency. Despite high expectations regarding DT practices, there is limited empirical evidence on how governments are approaching DT in a hierarchical bureaucracy context and how flexibility is created to enable progression. In this research, we employed a case study approach to investigate and analyze DT based on relevant events occurring in a five-year period. A conceptual model was created by combining the diamond framework, the technology enactment framework, and enterprise architecture scope to facilitate the chronological analysis of these events and reflect upon the creation of flexibility. The findings indicate that DT in government spreads in waves with adaptations in different organizational elements, impacting the whole administrative system from the provincial level to the country level and including both radical and incremental changes. Flexibility increases alongside progress in DT and can be technology-enabled or policy-enabled. The creation of flexibility also depends on organizational elements and bureaucratic levels. This study advocates a cross-level view to comprehensively understand DT and offers insights to help other governments craft DT agenda."


ABSTRACT: "Blockocracies are a coherent, distinctive and novel organizational form bound by a collective ledger and a cryptocurrency. We frame our analysis of blockocracies against Weber’s enduring description of bureaucracy, identifying those features of Weberian bureaucracies that are present, absent or marginalized in blockocracies. In contrast to bureaucracy’s monocratic authority structure, authority in blockocracies is centered on four distinct layers. In each layer, there is governance of the code and governance by the code, and in the latter we distinguish between endogenous and exogenous rules. We also compare the “blockocrat” with Weber’s depiction of the bureaucrat."

ABSTRACT: "One of the great promises of e-democracy is the potential it holds for increasing citizen participation. Much of the research related to this topic has focused on inputs, identifying the tools and technologies of e-democracy, or factors associated with adoption and/or diffusion of these technologies across units of governments or public organizations. By contrast there has been less research examining how these inputs translate into outcomes, or impacts that e-democracy has on changes in civic behavior or citizen engagement. Our study helps fill this knowledge gap by examining the impact that a specific set of information communication technologies (ICTs) have on a common form of civic engagement: voting. This research creates and tests two unique measures, the online election information index (OEII) and the e-registration service index (ERSI) to examine the extent to which local governments offer online information and utilities that help to educate voters and promote turnout. The index is tested on a sample of 396 county governments in the US to examine the extent to which governments' use of voting ICTs impacts voter participation, while accounting for other institutional and demographic factors that are known to shape voter turnout. We find that voter turnout is indeed higher in communities where local governments offer more voting ICTs, and the availability of these online resources may be particularly influential in boosting turnout in places where state policies serve to constrain or limit turnout."


ABSTRACT: "Effective inter-agency information sharing can facilitate the internal administration and external service delivery of government agencies, as well as help them address some complex social issues and then promote social development. Thus, how to promote the success of inter-agency information sharing has attracted the attention of researchers and public administrators. A lot of research has investigated the influential factors of inter-agency information sharing; however, few studies have taken account of the governmental administrative systems, which may influence the collaborations among agencies. Given the composition of the Chinese governmental administrative systems, this study investigated and compared the factors that influence the inter-agency information sharing in vertical and horizontal dimensions. An extended technology–organization–environment (TOE) framework was used to organize the influential factors. The results show that marked differences in influential factors between vertical and horizontal inter-agency information sharing indeed exist."


ABSTRACT: "The purpose of the application of e-government is to improve public services, to create a democratic government, and increased efficiency. However, the implementation of e-government in an institution is not easy; the level of readiness to adopt a system within a government agency will affect the system usage level wisely and optimally. Therefore, we conduct the systematic literature review using Kitchenham method to summarize researches that has been done in the field of innovation or technology adoption by using the technology-organizational-environment (TOE) framework to measure the readiness of adopting innovation in terms of technology, organization, and environment."
ABSTRACT: "The government in carrying out its function as a public administration servant is regulated in law of the Republic of Indonesia number 25/2009 on public services. Traditional government was identical with ineffective and inefficient bureaucracies, low transparency, and corruption issues which lead to proliferation of maladministration. E-government is required to improve the quality of public service by leveraging on efficiency, collaboration, and transparency. Indonesia e-government was still on early stage of adoption according E-government Development Index (EGDI) rank. However growing number of e-government applications is identified across the nation on multilevel governmental structures. This paper described and analyzed digital transformation in Indonesia public sector through e-government implementation and its impact on value added, agility and control, accountability and collaboration within the context of public service improvement. This paper used literature research methodology to identify and analyzed various e-government implementation. The results showed that the implementation of e-government that have been carried out so far had positive effects on public services. Some e-government applications covering Government to Citizen (G2C), Government to Business (G2B), and Government to Government (G2G) are presented as results of the transformation."

Bibliography on “e-Health”


ABSTRACT: "With advances in digitization, there have been heightened concerns about online privacy in developing countries, in particular, the privacy of personal health information (PHI) as these are shared among various stakeholders. To understand these concerns, this study explores the impacts of individuals' characteristics, experiences, and perceptions on PHI privacy concerns (PHIPC) in the healthcare setting of a developing country, Ghana. Using data from 276 individuals, the results show individuals are less concerned about PHI collection, but more concerned about the management of their PHI once it is collected (e.g. errors, secondary use, and unauthorized use). The results further indicate that the factors influencing PHIPC are differentiated for the collection and management of PHI. While gender, age, health status, and privacy risk perceptions impact PHI collection concerns, PHI management concerns are impacted by privacy orientation, computer experience, and trust in healthcare providers. Implications for research and practice are discussed."


ABSTRACT: “The prevalence of chronic diseases in China has increased rapidly in recent decades. Although the management rate of chronic diseases has improved, there is still no unified and effective management measure for chronic diseases at present. This highlights the importance of effectively managing chronic diseases. With the development of e-health, the ways of getting
medical consultation have changed. WeChat is an extremely popular social application in China. It is easy to operate and can offer multiple functions. Many researches have reported the effectiveness of WeChat in chronic diseases management. Based on the status of WeChat application in chronic diseases management and the characteristics of WeChat technology, we firstly focused on the WeChat application on the management of chronic diseases such as hypertension, diabetes, coronary heart disease and cancer. Then we discussed the value of WeChat in chronic diseases management and analyzed the potential reasons. Lastly, we discussed the limitations of present researches. WeChat can be an effective tool for the management of chronic diseases, but the promotion of this mode needs support and efforts from various aspects to eventually realize improving public health."


ABSTRACT: "This paper provides an overview of the history of e-Health initiatives in Australia. It highlights the importance of contextual factors in their evolution and the way in which certain initiatives have been managed. The first section outlines the development of e-Health systems in Australia from their inception to the present day. Then, Australia’s e-Health system is evaluated in relation to comparable countries using social mechanism theory. This provides a process-based approach for understanding the relationship between process, context and outcomes in the evaluation of e-Health initiatives in Australia and in comparable countries."

Moore, R. J., Smith, R., & Liu, Q. "Using computational ethnography to enhance the curation of real-world data (RWD) for chronic pain and invisible disability use cases." SIGACCESS Access.Comput., no. 127(2020) Full-text retrieved from ACM DL.

ABSTRACT: "Chronic pain is a significant source of suffering, disability and societal cost in the US. However, while the ability to detect a person's risk for developing persistent pain is desirable for timely assessment, management, treatment, and reduced health care costs—no objective measure to detect clinical pain intensity exist. Recent Artificial Intelligence (AI) methods have deployed clinical decision-making and assessment tools to enhance pain risk detection across core social and clinical domains. Yet, risk assessment models are only as "good" as the data they are based on. Thus, ensuring fairness is also a critical component of equitable care in both the short and long term. This paper takes an intersectional and public health approach to AI fairness in the context of pain and invisible disability, suggesting that computational ethnography is a multimodal and participatory real-world data (RWD) methodology that can be used to enhance the curation of intersectional knowledge bases, thereby expanding existing boundaries of AI fairness in terms of inclusiveness and transparency for pain and invisible disability use cases."


ABSTRACT: "Recent advances in artificial intelligence (AI) are creating new opportunities for personalizing technology-based health interventions to adolescents. This article provides a computer science perspective on how emerging AI technologies—intelligent learning environments, interactive narrative generation, user modeling, and adaptive coaching—can be utilized to model
adolescent learning and engagement and deliver personalized support in adaptive health technologies. Many of these technologies have emerged from human-centered applications of AI in education, training, and entertainment. However, their application to improving healthcare, to date, has been comparatively limited. We illustrate the opportunities provided by AI-driven adaptive technologies for adolescent preventive healthcare by describing a vision of how future adolescent preventive health interventions might be delivered both inside and outside of the clinic. Key challenges posed by AI-driven health technologies are also presented, including issues of privacy, ethics, encoded bias, and integration into clinical workflows and adolescent lives. Examples of empirical findings about the effectiveness of AI technologies for user modeling and adaptive coaching are presented, which underscore their promise for application toward adolescent health. The article concludes with a brief discussion of future research directions for the field, which is well positioned to leverage AI to improve adolescent health and well-being."


ABSTRACT: "This study presents a systematic literature review (SLR) of research on blockchain applications in the healthcare domain. The review incorporated 42 articles presenting state-of-the-art knowledge on current implications and gaps pertaining to the use of blockchain technology for improving healthcare processes. The SLR findings indicate that blockchain is being used to develop novel and advanced interventions to improve the prevalent standards of handling, sharing, and processing of medical data and personal health records. The application of blockchain technology is undergoing a conceptual evolution in the healthcare industry where it has added significant value through improved efficiency, access control, technological advancement, privacy protection, and security of data management processes. The findings also suggest that the extent limitations primarily pertain to model performance, as well as the constraints and costs associated with implementation. An integrated framework is presented to address potential areas wherein future researchers can contribute significant value, including addressing concerns regarding regulatory compliance, system architecture, and data protection. Finally, the SLR suggests that future research can facilitate the widespread deployment of blockchain applications to address critical issues related to medical diagnostics, legal compliance, avoiding fraud, and improving patient care in cases of remote monitoring or emergencies."


ABSTRACT: "The Internet of Things (IoT) has penetrated its roots in almost every domain of life. Smart healthcare is one of the major domains that extensively uses IoT infrastructures and solutions. IoT-based smart healthcare systems have immensely added value to the healthcare domain with the use of wearable and mobile devices. This leads to a substantial use of health data sharing for the improved, accurate, and timely diagnosis. However, smart healthcare systems are highly vulnerable to several security breaches and various malignant attacks, such as privacy leakage, tempering, forgery, etc. Recently, the blockchain technology emerged as a propitious solution against such breaches and challenges. This paper presents an up-to-date survey on different challenges and open issues faced in smart healthcare due to the traditional security measures along with the security requirements of such domains. It also amalgamates the potentials of
blockchain technology as a promising security measure, highlights potential challenges in the healthcare domain, and provides an analysis of different blockchain-based security solutions."


ABSTRACT: "Background
About ten years ago, an age-related digital divide was identified, where ‘the elderly’ denoted a group of people at risk of losing the benefits of a digital society. The aims of this work are to find a relationship between self-assessed health and internet use by older people in European countries and to ascertain whether this relationship differs in countries with a more developed eHealth policy.

Materials and methods
An ordered logistic regression is estimated for all countries in the sample and for two countries subsets which differ in their eHealth performance. Individual data is collected by SHARE. The classifying criterion of eHealth performance is based on the ‘eHealth’ policy dimension of the indicator used to construct the Digital Economy and Society Index. The average marginal effects are computed for the variable of internet use.

Results
Results show that older people who use the internet tend to report better health status. This relationship however may not hold for low levels of health and it is stronger in countries with low eHealth performance.

Conclusion
Policy measures on eHealth not only contribute to people’s health but also help to alleviate critical situations such as the one created by the Covid-19 pandemic."


ABSTRACT: "Electronic medical records (EMRs) are electronically-stored highly sensitive and private information related to the diagnosis and treatment of patient, and needs to be frequently shared among peers. Sharing of medical records between participants is very challenging because the data might be revealed or tampered during the operational process. To address these challenges, a blockchain-based electronic medical records system is the key solution. In this research, we have discussed how blockchain technology can help in better healthcare data management. We have proposed a blockchain-based records management system for efficient management and sharing of electronic medical records (EMRs). We have implemented a prototype of Electronic Medical Records Management System using permissioned blockchain platform “Hyperledger”. This system ensures privacy, security and easy accessibility and availability of medical records."

Bibliography on “emergency communication”

ABSTRACT: "With more than three billion people in isolation, the status of digital spaces is switching from an amenity to a necessity, as they become not only the main way to access information and services, but also one of the only remaining vectors for economic, educational, and leisure activities as well as for social interactions to take place. However, not all are equals in terms of access to networks or connected devices, or when it comes to the skills required to navigate computerized spaces optimally. Digital inequalities were already existing, yet the COVID-19 crisis is exacerbating them dramatically. On the one hand, the crisis will worsen digital inequalities within the population. On the other hand, digital inequalities represent a major risk factor of vulnerability for exposure to the virus itself, and for the non-sanitary consequences of the crisis. Therefore, this paper aims at exploring the reciprocal impacts of the COVID-19 crisis and digital inequalities, and to propose operative solutions to help fight the nefarious consequences of the crisis. We first describe how digital inequalities are a determinant of health. We then investigate how COVID-19 can potentiate digital inequalities, and how digital inequalities potentiate vulnerability to COVID-19. Finally, in order to contribute to the mitigation of this crisis, we propose a set of multi-layered strategies focusing on actionability that can be implemented at multiple structural levels, ranging from governmental to corporate and community levels."


ABSTRACT: "How do governments in China and Western democracies differ in their technological response to control the transmission of the pandemic? Based on an analysis of academic papers, World Health Organization reports and newspapers, this research compares two opposing approaches, whereas the Chinese cities and government have adopted a techno-driven approach, Western governments have adopted a human-driven approach to control the transmission of Covid-19. The findings highlight that although the techno driven approach may be more productive to identify, isolate and quarantine infected individuals, it also results in the suppression and censoring the citizen views. It is further emphasized that human interaction with the technology is mediated by the political and institutional context in which the technologies are implemented. This paper contributes to literature by understanding the human-technology relationship, and offers five practical observations for controlling virus transmissions during pandemics."


ABSTRACT: "Dialogic communication has long been viewed as vital for effective organization-public relations. Yet, it is under-theorized whether and how organizations’ disaster communication messages may embody dialogic communication principles, and how various dialogic features are associated with different public engagement outcomes on social media. Extending the Organization-Public Dialogic Communication (OPDC) framework to the context of social media-mediated disaster communication, we propose a multi-level framework to assess the dialogic capacity of Facebook messages sent by disaster management organizations during a natural disaster. Three levels of dialogic communication characteristics (i.e., message structure-level, topic-level, and linguistic level) are examined using content analysis and Linguistic Inquiry and Word Count (LIWC). Results identified media richness, correcting, and confirming topics as three consistent predictors of public engagement of all types. Meanwhile, there exhibit greater variations
regarding how other topical features and linguistic characteristics are related to public’s cognitive, emotional, and behavioral engagement during a disaster.”


ABSTRACT: "The number of foreign residents and tourists in Japan has been dramatically increasing in recent years. Despite the fact that Japan is prone to natural disasters, with each climate-related event turning into an emergency such as with record rainfalls, floods and mudslides almost every year, non-Japanese communication infrastructure and everyday disaster drills for foreigners have received little attention. This study aims to understand how a resilient communication ecosystem forms in various disaster contexts involving foreigners. Within a framework of information ecology we try to get an overview of the communication ecosystem in literature and outline its structure and trends in social media use. Our empirical case study uses Twitter API and R programming software to extract and analyze tweets in English during Typhoon 19 (Hagibis) in October 2019. It reveals that many information sources transmit warnings and evacuation orders through social media but do not convey a sense of locality and precise instructions on how to act. For future disaster preparedness, we argue that the municipal government, as a responsible agent, should (1) make available instructional information in foreign languages on social media, (2) transfer such information through collaboration with transmitters, and (3) examine the use of local hashtags in social media to strengthen non-Japanese speaker’s capacity to adapt."


ABSTRACT: "Disaster management is a growing concern and priority throughout the world and “resilience” is increasingly viewed as a key capacity related to disaster and post-disaster management and development. Recent research highlights how resilience is enhanced through the use of “big data” technologies that improve the speed and effectiveness of linkages between disaster information and systemic response. Summarizing and discussing this research, this study highlights and substantiates the potential of big data strategies to help mitigate the risks and impact of socio-ecological vulnerability. Based on a qualitative desk review and analyses of secondary data, resilience is framed as a function of the adaptive, absorptive and transformative capacity of socio-political systems to withstand and cope with the adverse effects of disaster. In addition, this study emphasizes the major principles and components of effective big data use; e.g., open source tools, strong infrastructure, local skill development, context-specific data sources, ethical data sharing and experiential learning. This study reveals some important big data technologies that can be easily used in the different phases of disaster management and enhancing resilience such as remote sensing imagery, social media data, crowdsourced data, geographic information system (GIS), and mobile metadata. The findings hold major relevancy for policymakers, administrators, and related stakeholders responsible for taking action before, during and after disasters through training, early warning systems, emergency evacuation, relief distribution and other key infrastructural components."

ABSTRACT: "Pupils constantly face risks as they spend most of their time in schools and become easy victims of natural hazards. It is also important for schools in countries like Pakistan where disaster preparedness is subject to a choice rather than a compulsory obligation to provide a robust disaster risk reduction (DRR). The current research employs a pragmatic approach, analyzing the disaster risk management insights on school emergency preparedness in Khyber Pakhtunkhwa province (namely, Peshawar, Charsadda, Nowshera, and Dera Ismail Khan) of Pakistan. Thematic analysis was used to organize the views and responses from interview data. 100 individuals with different roles (senior primary headteachers and teachers), across the twenty schools interviewed through semi-structured individual interviews. The current study identified recurrent responses, which enabled the development of six main themes included 1-alert; 2-emergency planning; 3-preparation measures/protective actions; 4-school building design for safety; 5-school planning for continuation; and 6-hazard education and training. The findings reveal that schools are still vulnerable to flood risk as disaster risk management measures were lowly implemented. The study calls for policymakers to design and upgrade current school buildings to ensure the appropriate protection of students and teachers in the event of disasters. The schools collaboratively develop emergency plans and scenarios, in conjunction with the local institutions and disaster response organizations to build resilience and self-efficacy in times of crisis. In addition to this, enable school authorities (including teachers and other staff) to enhance their professional development on emergency response and management and strategies for school-based disaster response and recovery."


ABSTRACT: "COVID-19 pandemic has affected the world in an unexpected manner. The human race is battling against the pandemic while schools, universities, industries, hospitals and governments are seeking new methods and technologies to seamlessly continue their usual operations. In response, this paper presents how 5G and IoT (Internet of Things) related technologies can be efficiently utilized and developed to fight against the COVID-19 pandemic. Several use-cases on how 5G and IoT can be enablers to provide innovative solutions in the areas of telehealth, contact tracing, education, retail and supply chains, e-government/remote office/information sharing, smart manufacturing and factory automation, e-tourism and entertainment are presented along with their technical requirements and challenges. It is envisaged that the proposed solutions will be instrumental to facilitate the usual lifestyle, work and other day-to-day activities of humans in the post-pandemic world."

Bibliography on “gender”


ABSTRACT: "The purpose of this study was to explore and compare women’s perceptions of Information and Communication Technologies (ICTs), empowerment, and success among
respondents in eight countries. The research sample consisted of 969 participants (137 from Georgia, 105 from Poland, 130 from Romania, 152 from Slovenia, 102 from Spain, 123 from Taiwan, 120 from Turkey, and 100 from the United States). Qualitative data analysis was used for exploring participants’ perspectives among different cultures. The results showed that there were numerous differences among the respondents regarding their perceptions of Information and Communication Technologies, empowerment, and success. Positive experiences of ICTs were primarily related to simplifying communication and enabling easy access to information and methods for sharing it, while negative experiences were typically associated with privacy issues. The success of using ICTs was similarly related to the ability to increase awareness and simplify communication, both of which are necessary for women to reach specified goals and achieve success in the workplace."


ABSTRACT: "Information and communication technology (ICTs) have been proven to be an enabler for women empowerment, particularly for marginalized women. Policies have been formulated to link ICT with gender issues. The success of such policy initiatives largely depends on adoption intention because only ‘transplanting’ will not work. This evidence-based article with primary data established the covariance structure between the dimensions of access, ICT adoption intention and entrepreneurial orientation. This study highlights that different types of access like mental, material, skill and usage contribute significantly towards the adoption of ICT among rural women. Adoption of the ICT leads to innovation. Adoption intention is a booster for entrepreneurial orientation which aids micro-entrepreneurship. The findings of this study are significant because it connects technology adoption with the entrepreneurial intention of women micro-entrepreneurs."


ABSTRACT: "Information and communication technology (ICT) literacy represents an essential skill for adolescents to efficiently participate in a modern society. Previous research reported conflicting findings regarding gender differences in ICT literacy. Therefore, the aim of the present study was the exploration of cross-sectional and longitudinal gender effects on ICT literacy across a period of three years among a sample of German 15-year-olds (N = 13,943). The results showed that ICT literacy increased across the study period. Although gender differences in ICT literacy were negligible at age 15, small differences in favor of boys emerged at age 18. In contrast, gender differences in ICT confidence favored boys at age 15 but did not change subsequently. Hypotheses with regard to moderating effects of gender role orientations were not supported. Overall, the study found only small differences in ICT literacy between boys and girls. The small size of the observed effect does not warrant alarming conclusions regarding increasing disadvantages in ICT literacy for girls."

ABSTRACT: "Purpose
This article starts from the assumption that it is important for the evaluation of gender equality interventions in RTDI (Research, Technology Development and Innovation) to consider its context regarding gender equality regime and evaluation culture because this context does influence effects and long term impacts of such activities. It aims to provide key characteristics for the differentiation of gender equality regimes and evaluation regimes to be considered when designing policy interventions or evaluating specific gender equality interventions in RTDI.

Design/methodology/approach
After a literature review of relevant typologies for welfare state and gender equality regimes, it was analysed to which extent the seven EFFORTI countries correspond to certain typologies based on the data basis of the context research performed in the EFFORTI project. For this context research, international/national and qualitative/quantitative data regarding the relevant framework conditions were firstly collected for each of the EFFORTI countries and secondly compared in a cross-country analysis.

Findings
The research showed that when it comes to gender equality policies, most EFFORTI countries can either be assigned to the Social-Democratic category or Conservative Equal Employment Regime category in the typology of von Wahl (2005), with the latter type tending to provide less favourable conditions for women in the general labour market as well as women in RTDI (e.g. overtime culture). In how far these different types of context can have an impact on the evaluation of interventions can be exemplarily illustrated using case studies carried out as part of EFFORTI.

Connecting the typologies for gender equality policy with evaluation regimes has not proved fruitful, as the two discourses have only begun to converge in recent years. The evaluation regimes and cultures of the respective countries have therefore been described independently. However, it was shown that countries with more expertise in certain areas (e.g. gender, evaluations) developed more routinized and institutionalised procedures in the respective field.

Originality/value
Considering the different framework conditions is relevant when it comes to evaluation as different national contexts might require different policy and designs of activities, but might also shape the interventions' effects. This article therefore aims to provide support in this regard for future evaluations of gender policies."


ABSTRACT: "To understand the intrahousehold distribution of calorie, we consider daily calorie consumption and daily calorie expenditure by an individual. Paper uses information obtained from 24 h recall dietary survey and time use survey, and the face-to-face questionnaire survey of the poor urban individuals of India. We find gender discrimination in the intrahousehold allocation of food and distribution of work over 24 h period. Combined domestic and market work of a sample wife is 2 h 22 min longer than her husband in a day. The results strongly suggest that wives are overburdened with unpaid household activities, and they are not getting their due share in consumption compared to their husbands. Chronic energy deficiency is significantly 186.30 kcal points higher in wives than their husbands."

ABSTRACT: "Using a unique database of over 20 million firms over two decades, we examine industry sector and national institution drivers of the prevalence of women directors on supervisory and management boards in both public and private firms across 41 advanced and emerging European economies. We demonstrate that gender board diversity has generally increased, yet women remain rare in both boards of firms in Europe: approximately 70% have no women directors on their supervisory boards, and 60% have no women directors on management boards. We leverage institutional and resource dependency theoretical frameworks to demonstrate that few systematic factors are associated with greater gender diversity for both supervisory and management boards among both private and public firms: the same factor may exhibit a positive correlation to a management board, and a negative correlation to a supervisory board, or vice versa. We interpret these findings as evidence that country-level gender equality and cultural institutions exhibit differentiated correlations with the presence of women directors in management and supervisory boards. We also find little evidence that sector-level competition and innovativeness are systematically associated with the presence of women on either board in either group of firms."

Bibliography on “ICT for development (ICT4D)”


ABSTRACT: "The purpose of this study was to explore and compare women’s perceptions of Information and Communication Technologies (ICTs), empowerment, and success among respondents in eight countries. The research sample consisted of 969 participants (137 from Georgia, 105 from Poland, 130 from Romania, 152 from Slovenia, 102 from Spain, 123 from Taiwan, 120 from Turkey, and 100 from the United States). Qualitative data analysis was used for exploring participants’ perspectives among different cultures. The results showed that there were numerous differences among the respondents regarding their perceptions of Information and Communication Technologies, empowerment, and success. Positive experiences of ICTs were primarily related to simplifying communication and enabling easy access to information and methods for sharing it, while negative experiences were typically associated with privacy issues. The success of using ICTs was similarly related to the ability to increase awareness and simplify communication, both of which are necessary for women to reach specified goals and achieve success in the workplace."


ABSTRACT: "Information and communication technology (ICTs) have been proven to be an enabler for women empowerment, particularly for marginalized women. Policies have been formulated to link ICT with gender issues. The success of such policy initiatives largely depends on adoption intention because only ‘transplanting’ will not work. This evidence-based article with primary data established the covariance structure between the dimensions of access, ICT adoption intention and entrepreneurial orientation. This study highlights that different types of access like mental, material, skill and usage contribute significantly towards the adoption of ICT among rural women. Adoption of the ICT leads to innovation. Adoption intention is a booster for entrepreneurial orientation which
aids micro-entrepreneurism. The findings of this study are significant because it connects technology adoption with the entrepreneurial intention of women micro-entrepreneurs."


ABSTRACT: "This research investigates the linear and non-linear effects of information and communication technology (ICT) diffusion on financial development for 81 countries over the period 1990–2015 by employing the generalized-momentum method (GMM) and panel smooth transition regression (PSTR). Some main conclusions are presented as follows. First, comparing the different effects of ICT on financial development between the high-income group and the middle- & low-income group, telephone and Internet positively influences both groups’ financial development, whereas mobile cellular causes a negative effect in high-income countries, but a positive effect in middle- & low-income countries. Second, the growth of the Internet and telephones raises the financial development in all regions, while mobile cellular growth positively affects financial development only in Africa. Finally, strong evidence appears that the PSTR models capture the smooth non-linear effects of ICT diffusion on financial development, in which the effect of ICT diffusion on financial development is positive in the lower level of ICT diffusion, but turns negative in the higher level of ICT diffusion."


ABSTRACT: "AI applications are tackling economic and social challenges facing developing countries. Economically speaking, AI possesses unique mechanisms that allow it to have significant impacts on economic productivity. While developing countries may experience a decline in outsourcing jobs from developed countries, the potential negative impact of such decline can be minimized by appropriate policy to deploy AI solutions. The true potential of AI comes from the ability to complement as well as enhance traditional factors of production."


ABSTRACT: "Cellular phones have gained popularity in emerging and developing economies over the last two decades. In this study, we show that the phenomenon of falling prices over time is applicable to the diffusion of prepaid mobile phones. This article extends the logistic diffusion model to accommodate disadopters of the service category. Goodness of fit of the extended model is found superior to the original version, which does not consider disadoption. The empirical findings show that for the 12 countries considered in the analysis, the diffusion speeds and the disadoption rates are influenced by one marketing factor and three socioeconomic factors."

ABSTRACT: "This paper investigates the role of information communication technologies (ICTs) in the transformation of rural economies by evaluating the use of smartphones among farmers in China. We use unique three-wave panel data to document the transformation path of rural economies in recent years. An endogenous switching probit model and a counterfactual analysis are applied to estimate the effects of smartphone use. The results show that from 2008 to 2015, rural economies in China could be characterized by the following three aspects: a) increased off-farm employment, b) expanded grain cultivation, and c) decreased crop diversification. The estimation results indicate that the use of smartphones among farmers had significant impacts on the transformation of rural economies by facilitating the off-farm employment of the farmers' family members, the cultivation of nongrain crops and crop specialization. These findings complement the empirical evidence on the role of ICTs, particularly smartphones, in the development of rural economies in China and other developing countries."


ABSTRACT: "Digital technology has become one of the most important tools for the dissemination of policy information, particularly for implementing short-term transportation policy (STTP). This study investigated the mediating role of the digital divide in the associations between socioeconomic factors and outcomes of STTP through a case study of the first-car buyer policy in Thailand. A structural equation modeling approach was employed to generate a model using a dataset from 77 provinces in Thailand in 2012. The results showed that population density, income per capita, urbanization, and populations of individuals aged 30 to 34 have negative effects on the digital divide, while the digital divide is negatively associated with the beneficiaries of STTP. Meanwhile, economic activity, urbanization, and a population of individuals aged 30 to 34 have indirectly positive links with the beneficiaries of STTP. These findings suggest the significance of the mediating role of the digital divide in the STTP of developing countries."

Bibliography on “intelligent transportation systems (ITS)"


ABSTRACT: "Security in Vehicular Sensor Networks (VSNs) is a critical subject that must be addressed in the emerging Intelligent Transport Systems (ITS). Users share confidential information that can be used against them by attackers. Popular attacks include Malwares and Spams, Black Holes, Wormholes, and Physical/Electronic Outages. Such VSN attacks can lead to loss of life due to road accidents and breach of privacy. In this paper, we overview the VSN concept in a vehicular IoT-based smart city paradigm, focusing on the security aspects. In addition, we discuss the design features of VSN, its robustness, and reliability. We also discuss relevant communication technologies and their security concerns. We highlight the main open research issues in literature and provide hints for overcoming them. This analysis concludes that VSNs play a key role in developing efficient ITS. Nevertheless, current VSNs security standards must be improved for a reliable, and safe transportation system."

ABSTRACT: "The enabling technology of vehicular networks for Intelligent Transportation Systems (ITS), smart cities and autonomous driving, offers promising on-board services such as road-safety, easy navigation, comfort driving and infotainment. These services can co-exist simultaneously in the system. One challenging issue is to provide the different quality of service (QoS) requirements adequate to each service. This may not be an easy task because of the constrained factors characterizing these networks (e.g., growing number of connected vehicular devices, wireless communications, etc.). In this paper, we investigate the radio resources allocation problem to match different QoS requirements in terms of data rate whilst reducing the interference ratio. We first proposed a radio allocation model that aims to maximize the data rate and minimize the transmission power for all users. However, since not all vehicles use services that require high data rates, it will be more efficient to consider different required data rate for each user. Hence, we develop an efficient model for transmission power allocation that aims to reduce the interference ratio while providing the data rate required by each user. The proposed model is based on Generalized Nash Equilibrium (GNE) game where the users compete to acquire the radio resources. We proposed also two water-filling algorithms to solve the spectrum allocation game during Vehicle-to-Vehicle (V2V) communication over multiple channels. The extensive simulations have shown that our model can satisfy the users regarding different."


ABSTRACT: "Connected and autonomous vehicles (CAVs) have the capability to acquire real-time information from each other while human-driven vehicles (HVs) are standalone in the vehicle roadway navigation system. The information asymmetry poses significant challenges in managing and controlling vehicles in mixed traffic. To address such challenges, this study first customises the intelligent driver model to describe the car-following behaviour of CAVs. Furthermore, to raise the traffic efficiency of the mixed traffic flow, a new lane-changing decision support algorithm is proposed, which incorporates the interaction between CAVs and HVs by controlling the speed and locating the lane of CAVs. In addition to the common indexes of outflow and travel time to be used to measure the travel efficiency, new parameters such as platoon intensity and single rate are defined to evaluate the CAV platooning capability. Through simulation tests, the proposed controlling framework is implemented for a two-lane (per direction) freeway segment under different CAV penetration rates and input volumes. The simulation results indicate that, at all the CAV penetration levels, the proposed controlling algorithm provides significant performance improvements to the whole mixed traffic flow in terms of outflow, travel time, and the number of CAV platoons."


ABSTRACT: "How more than 25 years of experience with aviation safety-critical systems can be applied to autonomous vehicle systems."

ABSTRACT: "The smart cities constitute sensing devices that collect a large amount of data. The sensor-based devices are widely using software-defined technology. The adaptation of software-defined devices to the new applications and environment requires a regular update in the programs. However, it is challenging to update the code of a large number of smart sensors spread widely in the smart cities in a fast and cost-efficient way. The mobile vehicles can be used to disseminate the code across these sensing devices. In this paper, a Reliable and Cost-efficient Code mule Selection Scheme (RCCSS) is proposed for code dissemination for software-defined sensor networks. The duty cycle aware broadcast scheme is designed with Ranking-based Ant System (RAS) to provide the maximum coverage of code dissemination. The taxi trajectory dataset is used in experimental evaluation of the proposed code dissemination scheme. The experiment results validate the effectiveness of proposed models over the existing code dissemination techniques."


ABSTRACT: "Development of Software Defined Networking (SDN) based Vehicular Ad Hoc Networks (VANETs) is one of the key enablers of 5G technology. VANETs enable different types of services through communication between vehicles and road side units. Intelligent Transportation System (ITS) introduced this emerging technology to provide travelers comfort, safety, and infotainment services with improved traffic efficiency. Traditional VANET is not sufficient to handle dynamic and large scale networks with their fixed and embedded policies, and complex architecture. Open Network Foundation (ONF) is promoting the adoption of SDN through open standards' development by facilitating logical and centralized control of the entire network. SDN enables VANET to be a flexible and programmable network with the advent of new services and features. A centralized controller in the control plane controls the overall network functionalities and forwarding of data packets through the forwarding devices in the data plane. SDN enhances the efficiency of VANET and provides security benefits to VANET. But, it causes new security problems also with the integration of new technologies and architectural components in the network. This article provides a comprehensive review of VANET, SDN, and SDN based VANETs based on their architectural and implementation details. Then it explains the effect of SDN on the security of VANET when it is integrated with traditional VANET. This paper encompasses a comprehensive review of proposed approaches providing security solutions for SDN based VANETs and outlines emerging research issues as future directions. To the best of our knowledge, this is the first article presenting the comprehensive review of security aspects of SDN based VANET considering architectural and security services on different layers of a network."


ABSTRACT: "Air buses are the new era of public transport system with high speed, luxury and comfort but while considering safety issues it lacks behind with the development of Automobile Industries. Public started to look towards the safety factors of these luxurious vehicles but it is not taken into greater account. Due to the negligence in the safety factors of these vehicles they have become
luxurious confines which destroy the precious lives of many passengers. Recently industrialists identified the necessities of safety factors of these comfort vehicles but still there is no proper solution for this problem. Government has made some safety measures at the time of journey but it does not provide much efficient solution. With a view to change this scenario, the Intelligent Transportation System for Safety and Driver Assistance is controlled through Internet of Things (IoT) which includes sensors to sense the signal and the functions of the vehicle is controlled by the embedded controller. Since the driver is fully responsible to handle the hurdles at the time of driving, he has to be subjected to certain test until which the system will not allow him to start the vehicle. Once the system gets started it starts to analyze the several factors of the transport. IoT enabled sensor transmits the whole data over a sensible grid network to take actions under emergency conditions which enhances the driver safety and prevents vehicle collision. If any of the factors is failed buzzer unit is turned on and fuel supply to the engine is blocked leading to the prevention of disaster. The simulation results of this paper is obtained by AutoCAD and the entire transportation system is controlled through embedded controller."


ABSTRACT: "Motivated by military applications, this work considers connected platoons of ground vehicles of potentially different sizes and presents a model-free approach for optimizing the speed of the platoon to adjust the tradeoff between fuel economy and mobility as measured by travel speed. The motivation to seek a model-free solution is twofold: (1) vehicle models that are typically assumed to be available in model-based methods are not available on-board for military vehicles; (2) a model-free solution can offer robustness to modeling errors. Therefore, in this paper, the problem of optimizing the tradeoff between fuel economy and mobility of a mixed platoon is formulated as an optimization problem and solved using the model-free Nelder-Mead approach. To explore the performance characteristics of this approach, a case study is performed with two different size vehicles that are representative of military trucks, both in simulation and in a novel networked engine-in-the-loop setup. The results show that the proposed approach can achieve the desired balance between fuel economy and mobility in a model-free manner despite the nonlinearity caused by gear shift deadzones, albeit at the expense of relatively slow convergence time. In addition, a design guideline for the parameters in the Nelder-Mead approach is also discussed."


ABSTRACT: "Fog is a weather condition that reduces visibility of the driving scene, while slow traffic may be formed due to the bottleneck on freeways. This phenomenon may lead to higher rear-end crash risk when vehicles approach slow traffic, since drivers might not observe the speed reduction ahead of them timely with the reduced visibility and could not have enough time to respond. This study aims to develop a variable speed limit (VSL) control strategy to reduce the rear-end crash risk at freeway bottlenecks under fog conditions. A VSL control algorithm was developed with consideration of the different relationships between the gap and visibility distance. The VSL strategy was also tested in the fully connected vehicles (CV) environment. A feedback control framework was developed to combine the VSL and CV control. The proposed VSL strategy was
implemented and tested for a freeway section with a bottleneck through the micro-simulation software VISSIM and the intelligent driver model (IDM) was employed to account for car following in the CV environment. Finally, two measurements, which include time-to-collision at braking (TTCbrake) and total travel time (TTT), were employed to evaluate the effectiveness of the proposed control strategy. The results demonstrated that the VSL control played an important role in reducing rear-end crash risk and the effects of the VSL control could be affected by compliance rates. In addition, it was found that the CV environment could further enhance the safety benefits of VSL control and improve the traffic efficiency.

Bibliography on “internet of things (IoT)”


ABSTRACT: "This exploratory study provides an analysis of four New England healthcare organizations network and information security threats involving IoT devices. This study sought to identify any new patterns and outlying threats both, technical or behavioral, that has arisen with the increasing use of IoT devices in healthcare organizations. This exploratory study found that while several known IoT security threats persist in these organizations, a new “fear of not knowing how IoT devices work” emerged. The paper concludes with a discussion of the implications of trusting IoT vendors to ensure security of IoT devices and makes recommendations on how to reduce this fear."


ABSTRACT: "The proliferation of smart city and Internet of Things (IoT) applications has introduced numerous challenges related to network performance, reliability, and security. Moreover, the distributed nature of the smart city and IoT infrastructure has led to issues in regards to service availability, reliability, sustainability and security. Edge computing provides a decentralized computing and communication framework for different types of applications such as intelligent transportation systems, cognitive assistance, health and social services. Edge computing helps in improving the performance of such applications and reduces the end-to-end latency incurred for such time-critical applications. In this article, we introduce a trustworthy smart city service delivery solution at the edge of the network. The solution uses a collaborative technique between distributed edge servers and privacy mediator nodes with the support of an intrusion detection system to enhance the availability, reliability and security of smart city applications. Simulation results show a reduction in the delay per service request by 39.2% for highly dense environments, and up to 62.6% for lightly dense environments. Moreover, the solution reduces the dropped service requests below 2% with high accuracy and detection rates and low false-negative rates."

ABSTRACT: "In this paper, we re-implement a recent work published in Usenix Security 2018: "Acquistional Rule Based Engine for Discovering Internet-of-Things Devices". The paper introduced an NLP-based engine for automatically identifying the type, vendor, and product of IoT devices given banner data as input. We report on our efforts to reproduce the original implementation of the engine, documenting ambiguities around implementation and evaluation details that we encountered, as well as how we addressed them in our work. We evaluate our implementation on two ground truth datasets, finding that it fails to achieve the accuracy reported by the original authors. Our findings highlight the importance of recent community efforts towards a culture of reproducibility by presenting an example of how ambiguities in a research paper combined with lack of access to the original datasets can significantly affect a faithful re-implementation and evaluation."


ABSTRACT: "Infants and toddlers have a dramatic way of communicating their needs-raising their voices. As soon as they raise the alarm, their caretakers receive and interpret the signal and take the desired action to address their concerns. Metaphorically, Internet of Things (IoT) devices are children, enabled and enriched by a 4th industrial revolution, artificial intelligence (AI), and related technologies. These children can send and receive signals, not only about their well-being but also of their neighbors, fellow citizens, and even opponents. Old-style infrastructures are not suited for our IoT based, cyber-physical world-the Internet of Everything-which is a world of screaming and streaming children."


ABSTRACT: “The rapid development and implementation of smart and IoT (Internet of Things) based technologies have allowed for various possibilities in technological advancements for different aspects of life. The main goal of IoT technologies is to simplify processes in different fields, to ensure a better efficiency of systems (technologies or specific processes) and finally to improve life quality. Sustainability has become a key issue for population where the dynamic development of IoT technologies is bringing different useful benefits, but this fast development must be carefully monitored and evaluated from an environmental point of view to limit the presence of harmful impacts and ensure the smart utilization of limited global resources. Significant research efforts are needed in the previous sense to carefully investigate the pros and cons of IoT technologies. This review editorial is partially directed on the research contributions presented at the 4th International Conference on Smart and Sustainable Technologies held in Split and Bol, Croatia, in 2019 (SpliTech 2019) as well as on recent findings from literature. The SpliTech2019 conference was a valuable event that successfully linked different engineering professions, industrial experts and finally researchers from academia. The focus of the conference was directed towards key conference tracks such as Smart City, Energy/Environment, e-Health and Engineering Modelling. The research presented and discussed at the SpliTech2019 conference helped to understand the complex and intertwined effects of IoT technologies on societies and their potential effects on sustainability in general. Various application areas of IoT technologies were discussed as well as the progress made. Four main topical areas were discussed in the herein editorial, i.e. latest advancements in the further fields: (i) IoT technologies in Sustainable Energy and Environment, (ii) IoT enabled Smart City, (iii) E-health – Ambient assisted living systems (iv) IoT technologies in..."
Transportation and Low Carbon Products. The main outcomes of the review introductory article contributed to the better understanding of current technological progress in IoT application areas as well as the environmental implications linked with the increased application of IoT products.


ABSTRACT: "The rapid development of the Internet of Things (IoT) and the huge growth of valuable data produced by decentralising information processing along global apparel supply chain have led to a persuasive appeal for a semantic approach to integrating distributed data facilities in the field of self-determining collaborating logistics services. This paper describes a framework, Apparel Business Decentralised Data Integration (ABDDI), which exploits knowledge representation techniques and languages (e.g. Description Logics – DLs) to annotate relevant business activities, movements of products within the manufacturing network to provide value-added services. More specifically the paper discusses the DLs formalisms, which are used for knowledge representation in a decidable fragment of First Order Logic; and ALN (D) (Attributive Language with unqualified Number restrictions and concrete Domains) related issues. The paper presents an algorithm to demonstrate the DLs based entity concept similarity assessment to facilitate semantic web service. Finally, a business scenario is used to present some of the knowledge representation formalisms and concept similarity assessment in ABDDI."


ABSTRACT: "The Mobile IoT domain has been significantly expanded with the proliferation of drones and unmanned robotic devices. In this new landscape, the communication between the resource-constrained device and the fixed infrastructure is similarly expanded to include new messages of varying importance, control, and monitoring. To efficiently and effectively control the exchange of such messages subject to the stochastic nature of the underlying wireless network, we design a time-optimized, dynamic, and distributed decision-making mechanism based on the principles of the Optimal Stopping and Change Detection theories. The findings from our experimentation platform are promising and solidly supportive to a vast spectrum of real-time and latency-sensitive applications with quality-of-service requirements in mobile IoT environments."


ABSTRACT: "Digitization blurs the lines between technology and management, facilitating new business models built upon the concepts, methods and tools of the digital environment. The purpose of this study is to investigate the role of the Internet of Things (IoT) and Big Data in terms of how businesses manage their digital transformation. The paper argues that the outbreak of IoT and Big Data has resulted in a mass of disorganized knowledge. In order to make sense of the noise, a literature review was carried out to examine the studies, published in the last decade (2008–2019), that analyzed both the Internet of Things and Big Data. The results show that IoT and Big Data are predominantly reengineering factors for business processes, products and services;"
however, a lack of widespread knowledge and adoption has led research to evolve into multiple, yet inconsistent paths. The study offers interesting implications for managers and marketers, highlighting how the digital transformation enabled by IoT and Big Data can positively impact many facets of business. By treating IoT and Big Data as faces of the same coin, this study also sheds light on current challenges and opportunities, with the hope of informing future research and practice.


ABSTRACT: "The advancements in the industries have paved the way for the distributed establishment of the big data volumes, cyber-physical systems, and industrie 4.0. The perspectives of modules are integrated with the shop-floor monitoring and controlled by computational paradigms, and digital computational spaces. The performance rises after introducing an intelligent and automated manufacturing industry into the next-generation industry. The scope of this paper is to address the state-of-the-art technologies and phases such as digital twins, big data analytics, artificial intelligence, and internet-of-things. The research challenges are examined with attention on data integrity, data quality, data privacy, data availability, data scalability, data transformation, legitimate and monitoring issues, and governance. Lastly, potential research issues that need considerable research efforts are summarized. We believe that this paper is presenting the research directions for researchers in the area of smart industry towards its integration for the advancements of the industrial sector, and agile management. Some surprising development as industry 4.0 integration with socio-technical systems was found in designing the architecture of vertical, horizontal, and end-to-end integration mechanisms."


ABSTRACT: "The smart cities constitute sensing devices that collect a large amount of data. The sensor-based devices are widely using software-defined technology. The adaptation of software-defined devices to the new applications and environment requires a regular update in the programs. However, it is challenging to update the code of a large number of smart sensors spread widely in the smart cities in a fast and cost-efficient way. The mobile vehicles can be used to disseminate the code across these sensing devices. In this paper, a Reliable and Cost-efficient Code mule Selection Scheme (RCCSS) is proposed for code dissemination for software-defined sensor networks. The duty cycle aware broadcast scheme is designed with Ranking-based Ant System (RAS) to provide the maximum coverage of code dissemination. The taxi trajectory dataset is used in experimental evaluation of the proposed code dissemination scheme. The experiment results validate the effectiveness of proposed models over the existing code dissemination techniques."


ABSTRACT: "COVID-19 pandemic has affected the world in an unexpected manner. The human race is battling against the pandemic while schools, universities, industries, hospitals and governments are
seeking new methods and technologies to seamlessly continue their usual operations. In response, this paper presents how 5G and IoT (Internet of Things) related technologies can be efficiently utilized and developed to fight against the COVID-19 pandemic. Several use-cases on how 5G and IoT can be enablers to provide innovative solutions in the areas of telehealth, contact tracing, education, retail and supply chains, e-government/remote office/information sharing, smart manufacturing and factory automation, e-tourism and entertainment are presented along with their technical requirements and challenges. It is envisaged that the proposed solutions will be instrumental to facilitate the usual lifestyle, work and other day-to-day activities of humans in the post-pandemic world.


ABSTRACT: "Air buses are the new era of public transport system with high speed, luxury and comfort but while considering safety issues it lacks behind with the development of Automobile Industries. Public started to look towards the safety factors of these luxurious vehicles but it is not taken into greater account. Due to the negligence in the safety factors of these vehicles they have become luxurious confines which destroy the precious lives of many passengers. Recently industrialists identified the necessities of safety factors of these comfort vehicle but still there is no proper solution for this problem. Government has made some safety measures at the time of journey but it does not provide much efficient solution. With a view to change this scenario, the Intelligent Transportation System for Safety and Driver Assistance is controlled through Internet of Things (IoT) which includes sensors to sense the signal and the functions of the vehicle is controlled by the embedded controller. Since the driver is fully responsible to handle the hurdles at the time of driving, he has to be subjected to certain test until which the system will not allow him to start the vehicle. Once the system gets started it starts to analyze the several factors of the transport. IoT enabled sensor transmits the whole data over a sensible grid network to take actions under emergency conditions which enhances the driver safety and prevents vehicle collision. If any of the factors is failed buzzer unit is turned on and fuel supply to the engine is blocked leading to the prevention of disaster. The simulation results of this paper is obtained by AutoCAD and the entire transportation system is controlled through embedded controller."


ABSTRACT: "In today's highly competitive markets, organizations can create a competitive advantage through the successful implementation of Enterprise Resource Planning (ERP) systems. ERP works with different technologies, including the Internet of Things (IoT). IoT uses a unique Internet protocol to identify, control, and transfer data to individuals as well as databases. The data is collected through IoT, stored on the cloud, and extracted and managed in through ERP. In this study, we review the challenges, open issues, applications, and architecture of the IoT-based ERP. For this purpose, we review and analyze the latest IoT-related articles to present the unique features of the IoT and discuss its impact on ERP. The results show sensors and devices connected to the Internet can manage the stored data processed in the cloud through ERP without human intervention. We also discuss the challenges and opportunities in the relationship between ERP and the IoT risen by the introduction of the cloud."


**ABSTRACT:** "Internet of Things (IoT) is the recent and growing which is inevitable in day-to-day activities in current life. IoT is the network of systems which interconnect various real world objects and serve for the Machine-to-Machine (M2M) communication through the support of Internet. The significant functionality of IoT deals with an enormous amount of data sensed from various heterogeneous IoT devices. The data from various sensors of the objects are collected and converted to information relevant for the application using various machine learning algorithms. Additionally, the business and data analytics algorithms aid in the prediction of events on the basis of observed behavior and information. The routing of information in a secure way with limited resources over Internet in for IoT applications is a significant challenge. This paper is aimed to analyze and explore various research challenges and open issues related to security and use of IoT protocols. The main contribution of the survey is to highlight the research trends and simulation tools used for analysis of IoT layer protocols."

**Bibliography on “machine learning”**


**ABSTRACT:** "Network slicing is a powerful tool to harness the full potential of 5G systems. It allows verticals to own and exploit independent logical networks on top of the same physical infrastructure. Motivated by the emergence of the big data paradigm, this article focuses on the enablers of big-database intelligent network slicing. The article starts by revisiting the architecture of this technology that consists of data collection, storage, processing, and analytics before it highlights their relationship with network slicing concepts and the underlying trade-offs. It then proposes a complete framework for implementing big-data-driven dynamic slicing resource provisioning while respecting SLAs. This includes the development of low-complexity slices' traffic predictors, resource allocation models, and SLA enforcement via constrained deep learning. The article finally identifies the key challenges and open research directions in this emerging area."


**ABSTRACT:** "There have been numerous applications of artificial intelligence (AI) technologies to online advertising, especially to optimize the reach of target audiences. Previous studies show that improved computational power significantly advances granular audience targeting capabilities. This study investigates and classifies various machine learning techniques that are used to enhance targeted online advertising. Twenty-three machine learning-based online targeted advertising strategies are identified and classified largely into two categories, user-centric and content-centric approaches. The paper also identifies an underexamined area, algorithm-based detection of click
frauds, to illustrate how machine learning approaches can be integrated to preserve the viability of online advertising.”


ABSTRACT: "Artificial intelligence (AI) agents driven by machine learning algorithms are rapidly transforming the business world, generating heightened interest from researchers. In this paper, we review and call for marketing research to leverage machine learning methods. We provide an overview of common machine learning tasks and methods, and compare them with statistical and econometric methods that marketing researchers traditionally use. We argue that machine learning methods can process large-scale and unstructured data, and have flexible model structures that yield strong predictive performance. Meanwhile, such methods may lack model transparency and interpretability. We discuss salient AI-driven industry trends and practices, and review the still nascent academic marketing literature which uses machine learning methods. More importantly, we present a unified conceptual framework and a multi-faceted research agenda. From five key aspects of empirical marketing research: method, data, usage, issue, and theory, we propose a number of research priorities, including extending machine learning methods and using them as core components in marketing research, using the methods to extract insights from large-scale unstructured, tracking, and network data, using them in transparent fashions for descriptive, causal, and prescriptive analyses, using them to map out customer purchase journeys and develop decision-support capabilities, and connecting the methods to human insights and marketing theories. Opportunities abound for machine learning methods in marketing, and we hope our multi-faceted research agenda will inspire more work in this exciting area.”


ABSTRACT: "5G cellular networks come with many new features compared to the legacy cellular networks, such as network data analytics function (NWDAF), which enables the network operators to either implement their own machine learning (ML) based data analytics methodologies or integrate third-party solutions to their networks. In this paper, the structure and the protocols of NWDAF that are defined in the 3rd Generation Partnership Project (3GPP) standard documents are first described. Then, cell-based synthetic data set for 5G networks based on the fields defined by the 3GPP specifications is generated. Further, some anomalies are added to this data set (e.g., suddenly increasing traffic in a particular cell), and then these anomalies within each cell, subscriber category, and user equipment are classified. Afterward, three ML models, namely, linear regression, long-short term memory, and recursive neural networks are implemented to study behaviour information estimation (e.g., anomalies in the network traffic) and network load prediction capabilities of NWDAF. For the prediction of network load, three different models are used to minimize the mean absolute error, which is calculated by subtracting the actual generated data from the model prediction value. For the classification of anomalies, two ML models are used to increase the area under the receiver operating characteristics curve, namely, logistic regression and extreme gradient boosting. According to the simulation results, neural network algorithms outperform linear regression in network load prediction, whereas the tree-based gradient boosting algorithm outperforms logistic regression in anomaly detection. These estimations are expected to increase the performance of the 5G network through NWDAF."

**ABSTRACT:** "Recently, unmanned aerial vehicles (UAVs) have gained notable interest in various applications such as wireless coverage, aerial surveillance, precision agriculture, construction, power lines monitoring and blood delivery, etc. The UAVs implicit attributes e.g., rapid deployment, quick mobility, increase in flight duration, improvements in payload capacities, etc. , place it as an effective candidate for many applications in 5G and Beyond communications. The UAVs-assisted next-generation communications are determined to be highly influenced by various techniques and technologies like artificial intelligence (AI), machine learning (ML), deep reinforcement learning (DRL), mobile edge computing (MEC), and software-defined networks (SDN). In this article, we develop a review to investigate the UAVs joint optimization problems to enhance system efficiency. We classify the joint optimization problems based on the number of parameters used in proposed optimization problems. Moreover, we explore the impact of AI, ML, DRL, MEC, and SDN over UAVs joint optimization problems and present future research challenges and directions."

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**Bibliography on “management and leadership”**


**ABSTRACT:** "Challenging the prevailing consensus that leader humility is uniformly beneficial we investigate circumstances where leader humility behaviors are positively perceived and yet negatively received due to attributions of impression management. Arising from potential inconsistencies in perceptions and attributions, we argue that followers may evaluate leader humility behavioral displays as either genuine or hypocritical. We conducted two studies, in different contexts, to test followers’ reactions to leader humility displays. In Study 1 (Confucian Asian cluster), we used a survey methodology to test our theoretical model. Due to the validity problems with our instrumental variables, we were unable to draw conclusions from the results of study 1. In Study 2 (Anglo cluster), we used a scenario-based experimental design. While the hypothesized mediating effect via perceptions of leader hypocrisy was not supported by the results, we found support for the hypothesis that the interaction of leader humility and impression management positively influenced hypocrisy."


**ABSTRACT:** "This research examines the tension between the aims of the United Nations’ Sustainable Development Goal 8 (SDG 8), to promote productive employment and decent work, and the adoption of Artificial Intelligence (AI). Our findings are based on the analysis of 232 survey results, where we tested the effects of AI adoption on workers’ psychological contract, engagement and trust. We find that psychological contracts had a significant, positive effect on job engagement and on trust. Yet, with AI adoption, the positive effect of psychological contracts fell significantly. A further re-examination of the extant literature leads us to posit that AI adoption fosters the creation..."
of a third type of psychological contract, which we term “Alienational”. Whereas SDG 8 is premised on strengthening relational contracts between an organization and its employees, the adoption of AI has the opposite effect, detracting from the very nature of decent work.”


ABSTRACT: "Big data has played an increasingly important role in using data to improve business value. In response to several big data challenges, the purpose of this study is to identify firm-level capabilities required to create value from big data. The adjacent theories of business process management and IT business value underpinned the study, together with an in-depth case study that led to the identification of twenty-four types of capabilities related to IT, process, performance, human, strategic, and organizational practices. The findings confirmed the application of practices and capabilities of adjacent theories, as well as certain practices and attributes that were both changed and reinforced at the intersection of big data. As an outstanding additional support to the extant big data studies, this work empirically confirms and portrays hitherto unexplored capabilities of big data and set their roles, thus providing a holistic overview of firm-level capabilities that are required for big data value creation.”


ABSTRACT: "The continuing emergence of Asia as a critically important continent for the foreseeable future has renewed interest in understanding theory and practice in this region. This special issue was designed to shed light on human resource management (HRM) issues in this region, and to help guide future research in and on this region. In this introductory article, we first analyze the growth of HRM scholarship in Asia, by examining the research published over the last twenty-five years. We then describe the genesis of this special issue, and summarize the key themes emerging from the review articles in the issue. These include: psychological contract; work-life interface; corporate social responsibility; multinational corporations and their subsidiaries; the challenges of global talent management; convergence-divergence; state socialism to post-state socialism; and incorporating the context. We further offer suggestions for future research by proposing critical topics and emerging themes, including: employee voice; diversity and inclusion; employee well-being and resilience; preparing and responding to crises; and green human resource management. We conclude by offering theoretical perspectives and highlighting key recent developments which are likely to impact future practice, and should be addressed by scholars.”


ABSTRACT: "The continuing emergence of Asia as a critically important continent for the foreseeable future has renewed interest in understanding theory and practice in this region. This special issue was designed to shed light on human resource management (HRM) issues in this region, and to help guide future research in and on this region. In this introductory article, we first analyze the
growth of HRM scholarship in Asia, by examining the research published over the last twenty-five years. We then describe the genesis of this special issue, and summarize the key themes emerging from the review articles in the issue. These include: psychological contract; work-life interface; corporate social responsibility; multinational corporations and their subsidiaries; the challenges of global talent management; convergence-divergence; state socialism to post-state socialism; and incorporating the context. We further offer suggestions for future research by proposing critical topics and emerging themes, including: employee voice; diversity and inclusion; employee well-being and resilience; preparing and responding to crises; and green human resource management. We conclude by offering theoretical perspectives and highlighting key recent developments which are likely to impact future practice, and should be addressed by scholars.”


ABSTRACT: "While most leadership programs seek to develop the leadership qualities of the formal team leader, programs that aim to develop the leadership qualities of team members are rare. This article draws on insights from organisational and sport psychology to develop and introduce a new leadership development program — the 5R Shared Leadership Program (5RS) — that (1) implements a structure of shared leadership (through Shared Leadership Mapping) and (2) further develops participants’ leadership potential (through the 5R’s of Reading, Reflecting, Representing, Realising, and Reporting). More specifically, being a close intertwinement of shared leadership theorising and the social identity approach to leadership, 5RS helps leaders in the team to create, embody, advance, and embed a collective sense of ‘us’ in their teams. In this article, we aim to shed light on the underpinning theoretical foundation of 5RS, while also sharing insights about how 5RS can be delivered in practice. Furthermore, to provide initial insight into the applicability of 5RS in both organisational and sport contexts, we conducted a longitudinal qualitative comparison study. This involved collecting qualitative data from two initial implementations: with an organisational team (N = 16) and a sport team (N = 16). A critical reflection on these initial implementations of 5RS leads to recommendations for future efforts to develop shared leadership in organisational and sporting teams. In particular, we highlight the importance of explaining the nature of shared leadership at the start of the program and of having multiple follow-up sessions for participants. In conclusion, by helping leaders in the team to develop and mobilise a sense of ‘us-ness’, 5RS gives leaders and their teams the tools to create the best possible version of ‘us’.”


ABSTRACT: "While the effects of gamification have been demonstrated in various fields, research on gamification in the work context is still limited. Gamification can, however, be used as a strategy in companies, for example, to strengthen enjoyment and productivity in the workplace. To investigate this effect, we conducted an online survey with 114 employees that used Habitica, a habit-tracking game, for gamifying their work-related tasks. Qualitative findings demonstrated that participants used work gamification for organization and self-monitoring. This data also illustrated how employees with and without leadership responsibilities used work gamification. Employees without leadership responsibilities used it as a trigger for self-motivation; employees with leadership responsibilities used it to improve their health. Quantitative findings showed positive effects of work
gamification on work enjoyment, and on productivity only for employees with leadership responsibilities. Our results underline the importance of taking work-related variables into account when researching work gamification.


ABSTRACT: "This study furthers investigation into exactly how Social CRM (S-CRM) is different from traditional CRM, and models the interrelationships between its capabilities. It is underpinned in dynamic capabilities theory, to explain how social media, as a resource all organizations use, can lead to differing performance outcomes. It is underpinned in seminal research into traditional CRM, but which does not cater for the disruptive nature of social media. We outline how S-CRM is a second-order dynamic capability consisting of a set of first-order integrative dynamic capabilities that, when properly interrelated, lead to performance outcomes. We particularly model the role of S-CRM front- and back-office technology capabilities, customer engagement initiatives, and social information processes in driving customer relationship performance. Findings show that S-CRM is different from traditional CRM in a range of ways in the front- and back-offices, and provide a framework for researcher and managers in information systems and marketing to operate at strategic and tactical levels within S-CRM, while being congnisant of both."


ABSTRACT: "Professional social media platforms (PSMs), including LinkedIn, have created better opportunities for students and employees to advance their career aspirations. Though PSMs seem to be an effective human resource management (HRM) tool, in order to leverage PSMs effectively, it is strategically essential to incorporate research inputs from both the employers’ and the individuals’ perspectives. Realizing this, academic researchers have been interested in PSMs since the previous decade. However, research on PSMs and their effectiveness continues to be in the embryonic stage. To catalyze scholarly interest and provide a foundation for formulating sound theoretical propositions for the efficient use of PSMs, it is imperative to aggregate and critically evaluate prior findings and provide avenues for future research. Addressing this need, the current study undertakes a systematic literature review to comprehensively understand the influence of PSMs on one particular aspect of HRM—namely, hiring processes. Forty-five studies were selected from existing literature to examine the accumulated knowledge, assess current research boundaries, and derive ways to enrich this area of research further. The study is motivated by the fact that given the short life cycle of social media platforms and information systems, PSMs need to innovate and continuously offer value to their users. The study makes a concrete contribution to PSM literature by generating actionable research avenues for future researchers and providing practical insights for managers and service providers."

ABSTRACT: "Meritocratic promotion—promoting the best performing employees—is a pervasive strategy to fill leader positions. However, the predictive validity of this strategy is unclear due to diverging theoretical predictions from different research disciplines and due to inconsistent empirical results. Further, the different disciplines rarely acknowledge and refer to each other, thereby impeding a cumulative understanding of meritocratic promotion. With our systematic review, we intend to initiate an interdisciplinary dialogue by (i) providing an overview of pertinent theoretical approaches including their deviating predictions, (ii) proposing mediators and moderators of the relationship of employee performance and leader performance to improve future research on meritocratic promotion, (iii) assessing the study quality, and (iv) summarizing and discussing empirical findings to advance the understanding of the predictive validity of meritocratic promotion. We conclude by presenting theoretical conclusions, point towards future research directions, and provide guidance for future research, including a checklist. We also discuss practical implications for human resource management."


ABSTRACT: "Given exponential growth in the size of big data, its multi-channel sources and variability in quality that create challenges concerning cost-effective use, firms have invested significantly in databases and analytical tools to inform decision-making. In this regard, one means to avoid the costs associated with producing less than insightful reports and negative effects on performance through wasted resources is prioritizing data in terms of relevance and quality. The aim of this study is to investigate this approach by developing and testing a scale to evaluate Big Data Availability and the role of Big Data Prioritization for more effective use of big data in decision-making and performance. Focusing on the context of supply chain management (SCM), we validate this scale through a survey involving 84 managers. Findings support a positive association between Big Data Availability and its use in SCM decision-making, and suggest that Big Data Prioritization, as conceptualized in the study, has a positive impact on the use of big data in SCM decision-making and SCM performance. Through developing a scale to evaluate association between Big Data Availability and use in SCM decision-making, we make an empirical contribution to value generation from big data."

Bibliography on “regulatory/statistical report”


ABSTRACT: "With the mobile voice market saturated and heavily dominated by prepaid subscriptions, operators are focused on premium services and mobile data to boost their revenues. ENACOM has distributed licences for the usage of 450MHz spectrum in H1 2019 to local providers which will, in line with the country's rural connectivity plan, offer mobile data services for the first time to 0.3mn inhabitants. National operators will continue to improve their wireline networks to boost the adoption of multi-play packages after convergence was approved in 2018. We expect Argentina's attempts to renegotiate its foreign debts will be protracted and difficult, keeping the country cut off from foreign capital markets for much of the coming year. The government has yet to establish a working rapport with its creditors, which has prevented the two sides from making progress towards
“a compromise. A major hurdle will be the government’s lack of a plan to restore growth and fiscal sustainability, which has grown increasingly difficult amid a weakening global outlook.”


**ABSTRACT:** “The IT market in Australia is forecast to contract in 2020 because of the Covid-19 pandemic and public health policy response, which will result in lower levels of business investment household consumption. The core scenario is for recovery to begin in 2021, but considerable uncertainty continues to surround this outlook because of the potential for a second wave of infections, or for the deployment of a vaccine to take longer than anticipated. Even under the core scenario, there are considerations for IT vendors in the shape of the recovery, as well as lingering effects on behaviour such as the extent to which the shift to remote working is permanent.”


**ABSTRACT:** "Bahrain Telecommunication Company and STC Bahrain launched their commercial 5G networks in June 2019, with Zain Bahrain launching its commercial 5G service in June 2020, and we expect the next-generation technology to support market momentum in a saturated landscape. Operators are looking to deepen their relationships with existing customers by broadening the scope of their services. Growth in the mobile sector will be derived from upselling lucrative 5G and LTE-A premium data services and investment in new technologies. In the fixed segment, regulatory developments for the establishment of a national broadband network are a positive step."


**ABSTRACT:** "Opportunities are growing in Bangladesh’s wireline segment, concentrated in metropolitan areas where high investments in fibre infrastructure could pan out, notwithstanding that last-mile infrastructure has long suffered from a lack of investment from incumbents. Mobile will be the primary driver of growth and is the focus for operators, which have been keen to expand the availability of their new 4G networks as well as expand adoption through the sale of low-cost 4G-compatible feature phones. The regulator announced plans to hold an auction for 5G spectrum later in 2020, but it is unclear if this will attract high interest from operators who have a lot of work to do, as 4G covered only 14% of the market in the end of 2019. There is room for organic growth in the mobile voice and data segments as mobile penetration rates are moderate, while multi-SIM ownership is common. The mobile market is dominated by prepaid subscriptions and there is a risk that a number of inactive SIMs are discounted periodically. The regulator remains keen on concentration of market share in the hands of mobile market leader, Grameenphone, and is pursuing new rules to regulate the market power of the operator."


**ABSTRACT:** "With a high mobile services penetration, Belgium presents little room for organic growth. Limited opportunities will see operators upselling their customers to more premium services,
leveraging converged offerings. Increasing M2M connections will be the other main driver of growth over the medium-to-long term. Our outlook for broadband remains positive, due to operators' fibre investments and more favourable regulation, while fixed voice connections are set to continue to decline over the next decade.”

ABSTRACT: "Mobile services continue to be the dominant form of communication and connectivity in each of Burundi, Congo-Brazzaville and the Democratic Republic of Congo. Wireline voice and broadband connectivity is conspicuously absent, reflecting the lack of cost-effectiveness of such infrastructures in these geographically challenging and sparsely-populated countries. In all three markets, usage of basic non-voice services such as messaging and mobile money is supporting operators' investments, but players are struggling to persuade consumers to make more use of premium offerings. This may call into question the rationale for investing in 4G technology while 3G connections are still 'good enough' for most users and highlights the challenges operators will face in rolling out 5G networks later in the decade.”

ABSTRACT: "The IT market outlook was lowered again this quarter as economic data releases began to show the severe impact of domestic and regional lockdown policy responses to the Covid-19 pandemic on business investment and household consumption. The core scenario is for stabilisation of economic and IT market conditions in H2 2020 as restrictions are eased, but there is a high-impact downside risk of a second wave of infections in winter 2020/21 that would necessitate a further substantial downgrade to our IT market forecast. Meanwhile, under the core scenario the deployment of a vaccine should unlock a strong rebound in the IT market in 2021, but with some lasting impacts from the pandemic experience, such as the momentum towards remote working and faster cloud computing solution adoption.”

ABSTRACT: "We retain the view that mobile broadband services and cellular innovation will continue to drive the Czech telecoms market. New bundle combinations and bigger data allowances will boost mobile growth, especially LTE take-up. Vodafone is increasing its footprint in the Czech market with a view to becoming a stronger converged player by acquiring Liberty Global’s cable assets. The deal was approved by the European Commission in July 2019 and the purchase was finalised at the beginning of August 2019. Operators are preparing for the evolution towards 5G and four companies won spectrum which can be used in 5G deployments in a mid-2017 auction. Another auction to allocate frequencies for 5G use in the 700MHz and 3,400-3,600MHz bands will be held most probably in July or August 2020, as the government looks to attract a potential fourth mobile network operator. Wireline investment in VDSL and fibre are on the rise and demand for high-speed services, including LTE-based fixed wireless broadband, should generate some growth in the fixed broadband sector.”


ABSTRACT: "We adjusted down the short-term IT market forecast for France this quarter as the negative economic impact of lockdown increased. The core scenario is still for a sharp drop in IT market activity to be followed by stabilisation as lockdown eases in H2, and then a rebound in 2021 with the deployment of a vaccine that unlocks pent-up private and household sector investment and consumption. This scenario continues to be subject to elevated uncertainty, with the most direct impact on our forecast existing in the potential for a second wave of infections in winter 2020/21. There are also unknowns about the lasting impact of the Covid-19 pandemic on consumption, investment and society more broadly, with ramifications for the IT market over the medium term."


ABSTRACT: "The Greek voice market is saturated and potential growth stems from the increasing usage of data through 4G and, from 2021 onwards, 5G, as well as wireline broadband connections. All operators offer fixed and mobile services. The share of prepaid mobile subscriptions is slowly falling from a high level while mobile penetration is rising, although it passed the 150% mark a few years ago. 4G adoption was particularly fast over 2018, though it receded slightly in 2019, which supports ARPU growth prospects. Yet, Greece has the lowest ARPUs in Western Europe, as prepaid SIMs can remain active for 12 months without top-ups diluting average revenue."


ABSTRACT: "The main downward revision to the outlook for Hungary's IT market occurred last quarter in the early stages of the Covid-19 pandemic in Europe, but with economic data releases pointing to an even more severe impact on business investment and consumption, there was another smaller downward revision in this quarterly update. The core scenario is still for stabilisation of the economy and IT market in the second half of 2020 and rebound in 2021, but this depends on there not being a second wave of infections in winter 2020/21 and the deployment of a vaccine in 2021."
There are also longer-term uncertainties about the impact of the pandemic on economic and social life that will shape patterns of IT demand, such as the degree of caution that will continue to be exhibited by consumers and businesses, the extent to which the shift to remote work is permanent, and the lasting momentum for cloud services adoption.


ABSTRACT: "The deterioration in the economic environment in Indonesia and globally since the last quarter meant that the forecast was again revised lower in this update, reflecting the headwind for IT vendors as business investment plans are downsized by price sensitive Indonesian firms. The core scenario is still for an economic and IT market recovery that begins in 2021 with the arrival of a Covid-19 vaccine. There is however considerable uncertainty because of the potential for a faster spread of infections in the short-term that could require restrictions be tightened again, or for delays in the production and distribution of a vaccine."


ABSTRACT: "5G remains a long-term opportunity for the Indonesian mobile market, given the significant scope for operators to monetise their existing LTE networks; indeed, we observe that operator capex for 2020 will be focused largely on improving 4G network capacity to cope with continuously rising mobile data traffic. Indonesian mobile users are still price sensitive, further suggesting that 5G adoption will only likely accelerate in the long term when the ecosystem of devices matures further, and cost falls sufficiently for mass market affordability. In the near term, we see potential for ARPU recovery, though the push to acquire more subscriber ex-Java could see operators lowering their tariffs, presenting downsides to our forecasts."


ABSTRACT: "Although the mobile voice market is saturated, operators note great appetite for data, content and VAS. Robust M2M subscription growth and uptake of bundles present interesting opportunities for operators to increase their revenue. The government's National Broadband Plan, which will support the roll-out of high-speed broadband across rural areas, has been awarded to the National Broadband Ireland consortium."

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Monthly Reading List

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ABSTRACT: "Japan's IT market is forecast to contract in 2020 because of the Covid-19 pandemic and public health policy response, which will result in lower levels of business investment household consumption. Our core scenario is for recovery to begin in 2021 with the deployment of a vaccine, which unlocks IT spending as confidence returns, and with an added boost from deferred spending in 2020 and the rescheduled Tokyo Olympic Games. As is the case globally, uncertainty persists because of the potential for a second wave of infections in winter 2020/21 that would see IT investments deferred and downsized again. There are also questions about possible shifts in consumer and business behaviour once the pandemic has passed that will shape IT demand, such as a greater degree of caution and societal shifts such as more people working from home."


ABSTRACT: "In this Q420 update, our outlook for positive growth in both the Malawian and Mozambican mobile market remains unchanged as the markets continue to perform in line with our forecasts. The markets are still characterised by low levels of mobile penetration, which operators can tap into for significant organic growth opportunities. Additionally, operators' increasing emphasis on 3G and 4G as a differentiator, as well as a focus on value added services, such as MFS, will drive subscriber and revenue growth. However, we note that low levels of urbanisation and constrained spending powers mean that the monetisation of premium and advanced services will be a longer-term process. On the downside, further discounting of inactive SIMs remains a persistent risk to our forecast. Meanwhile, fixed voice subscriptions will continue to decline in both markets due to a strong preference for cheaper and more accessible mobile alternatives among most consumers and small businesses."


ABSTRACT: "The commercialisation of 5G networks could now be delayed after the government reversed its course on its decision to allocate spectrum directly following public backlash. Risks also remain skewed to the downside given that operators are reallocating capex in the short term towards bolstering the resiliency and capacity of their current 4G and fibre networks. While competitive pressures remain high given that operators continue to focus on price to attract subscribers, the consumer market is advanced and has shown strong demand for advanced mobile broadband services."


ABSTRACT: "The severity of the public health crisis in Mexico and the government's unwillingness to implement large-scale fiscal stimulus combine to inform our view that the IT market will..."
underperform its peers in the short and medium term. The Covid-19 pandemic will depress business investment and household consumption in 2020 and beyond, and this headwind will overpower specific developments in the IT market such as faster digital transformation and the acceleration of cloud migrations. Risks also continue to be weighted to the downside because of the potential for the acute phase of the public health crisis in Mexico and the US to extend into 2021."


**ABSTRACT:** "In MENA, the focus for 2020 will mostly be on the roll-out and commercialisation of 5G platforms. The cost of securing licences and spectrum will be high, so operators must look to build compelling use cases for the new technology. Players such as Etisalat are targeting the premium and enterprise ends of the market, while Zain is targeting industrial IoT opportunities through its certified drones business. Ooredoo, meanwhile, is reinventing itself as a mass market digital lifestyle services player. It is too soon to be sure which model - or mix of models - will win out, but cost-cutting and improving revenue margins will be essential. This can be done through service partnerships or through the spin-off of passive infrastructure to specialised players: the towers market in MENA is immature and ripe for exploitation in 2020 and beyond."


**ABSTRACT:** "The short-term outlook has been lowered in the the latest Q320 update to account for the severity of the Covid-19 shocks, which will depress macroeconomic growth and hurt consumer sentiment and business confidence alike for much of 10M20. Our core scenario envisages a modest return to growth from Q420, with greater pent-up demand being unlocked from 2021 onwards. The Netherlands is both a regional leader in the level of IT spending per capita and adoption of advanced solutions within the region, which is a reflection of the affluence of local consumers and the sophistication of enterprise demand. This is because of the scale of tech intensive verticals like financial services, ICT, R&D and advanced manufacturing. Looking ahead over 2021-2024, domestic demand for software and services will be driven by cloud migrations, as well as adoption of a new breed of solutions, which utilise cloud technologies, machine learning and data analytics, in combination with expanded data flow from sensors and systems to offer advanced automation and intelligent assistance solutions. The main downside risk is of a slowdown in the Netherlands' economy, due to a protracted eurozone recession, another wave of Covid-19 infections and wider disturbances from the post-Brexit relationship and a US-China trade war."


**ABSTRACT:** "The Peruvian mobile market has seen strong growth, despite escalating penetration rates, owing to the strong competition between operators which keeps prices down. Remains to be seen if the decrease registered in Q319 will start a new trend, though we believe this to be unlikely."
Operators continue to invest heavily in expanding the availability of 4G services, both in terms of coverage and price, as well as new investment in fixed services to drive convergence. Even if the coronavirus pandemic, which led the government to impose a lockdown in March 2020 will stop or slow down these operations for a while, the long term trend remains upward. Price competition from newcomers, Bitel and Entel, has led to a decrease in average revenue per user levels, hindering the monetisation of the advanced LTE-A networks through content and services. Operators are also striving to improve their converged offers by investing in fixed broadband, particularly into FTTx, currently dominated by Telefónica, also the leader in fixed voice and pay-TV.


ABSTRACT: "The negative economic impact of the Covid-19 pandemic will result in a contraction in the Polish IT market in 2020 as businesses scale back investment and household consumption becomes more cautious. The core scenario is for an improved situation during H2 2020 after the low points in activity during lockdown, but there is downside should there be a second wave of infections in winter 2020/21. The IT market rebound is then expected in 2021 with the deployment of a vaccine that will boost sentiment, unlock more ambitious investment plans and pent-up demand from 2020. Uncertainty surrounds aspects of the recovery, such as the extent to which businesses will remain cautious even as the public health crisis eases, and the ways that could affect IT demand in positive and negative ways, such as reduced investment budgets but with increased demand for automation as management prioritise operational resilience."


ABSTRACT: "Our outlook for Rwanda’s telecommunications market remains relatively unchanged this quarter as the market continues to perform in line with our forecasts. With a mobile penetration rate of only 76.1% in Q2 2020, prospects for strong mobile subscription uptake over our 2029 forecast remain. However downside risks exist from the introduction of a regulatory limit on SIM ownership as well as the weak consumer profile of the largely rural potential customer base. The mobile market ended Q2 2020 with a total of 9.9mn subscribers, shedding 2,823 subscribers as the market experiences volatile growth with the discounting of unregistered SIMs. Our forecasts for 3G/4G uptake remain cautious on the back of new data indicating that a weak consumer profile continues to weigh significantly on uptake of advanced services. However, the uptake of mobile financial services bodes well for operators revenue deepening strategies through the introduction of value-added services. We believe that in the medium term uptake will be driven by competition between operators, the proliferation of low-end smartphones, and increased access to submarine cables through terrestrial cable networks. Meanwhile, our wireline forecasts remain unchanged at very low levels, but we note that the government’s national broadband plan, as well as operator-led investments and aggressive market entry strategies from players such as Liquid Telecom will continue to pose upside risk to our broadband forecasts."

ABSTRACT: "Our overall view of the Saudi mobile market remains positive as operators focus on advanced services and deploying 5G-ready infrastructure. Some of the fluctuation in subscription numbers seen in recent years due to SIM ownership limits, biometric requirements and discounting of inactive SIMs will continue, but in the short- to medium-term, growth will be positive, particularly in the post-paid sector and other premium services. As operators adapt their strategies to the unified licensing regime and government supports investments into fiber infrastructure, we believe there will be a strong uptake of fiber services, especially among businesses. Operators’ ARPU figures will increase, as operators leave it to MVNOs to cater to low-cost prepaid subscribers and choose to focus on more lucrative services."


ABSTRACT: "The South African mobile market offers limited prospects for organic growth outside of small isolated rural pockets. Operator’s efforts to drive 4G and dedicated broadband uptake provide the main growth opportunities although these expansion plans will face temporary setbacks from a significantly weakened economic environment and the Covid-19 pandemic, at least over the 2020 period. Looking forward, a key factor for the future development of mobile broadband is the successful allocation of 4G spectrum in lower frequency bands to curb infrastructure cost. We believe that there is considerable scope for operators to improve customer retention and engagement through enhanced service portfolios as a wider range of on-net value-added services can be developed targeting specific local customer segments."


ABSTRACT: "Several hurdles weigh on our outlook for the Sri Lanka telecoms market. Taxation remains a significant issue and has been a major point of contention for operators operating in the market. Weak economic growth and little growth in disposable incomes have also slowed the transition toward mobile data services; this is a significant downside risk for both our 4G and 5G forecasts for the market. While limited 5G networks are expected to be launched in 2020, expansion of networks will likely be in the backburner for some time, with adoption only picking up later on in our forecast period. Lack of investment into wireline infrastructure also makes serving customers in rural areas difficult and - most significantly - expensive."


ABSTRACT: "Low penetration rates offer opportunities for significant upselling of low-cost, low-value basic services in both Sudan and South Sudan. Advanced services uptake will stem from the ongoing deployment of advanced networks in both countries, although much will depend on sustained improvements in their respective economic and security situations. Limited wireline infrastructure and the high cost of fixed equipment ownership will dampen demand for fixed broadband services, meaning that 4G networks will have to shoulder much of these countries' demand or Internet connectivity. 5G will be deployed towards the end of the current decade, but operators will struggle to find commercially viable use cases for the new technology in both markets."

ABSTRACT: "Despite the less stringent social distancing measures put in place in Sweden compared to most countries in Western Europe, the IT market will still contract in 2020 because of a decline in business investment and household consumption due to the economic disruption and uncertainty caused by the Covid-19 pandemic. The core scenario is for recovery to begin in 2021, but considerable uncertainty continues to surround this outlook because of the potential for a second wave of infections in winter 2020/21 or for the deployment of a vaccine to take longer than anticipated. Even under the core scenario there are considerations for IT vendors in the shape of the recovery, as well as lingering effects on behaviour such as the extent to which the shift to remote working is permanent."


ABSTRACT: "The development of Taiwan's IT market is forecast to decelerate in 2020 because of the negative impact of the Covid-19 pandemic on levels of business investment and household consumption. The deterioration in IT market performance is forecast to be less severe in Taiwan than in most of its peers because of the effective public health policy response that mean there was not a strict national lockdown in the first half of 2020, so while there was a headwind due to uncertainty and higher rates of precautionary saving, there was not a crash in economic activity as was seen in Western Europe and the US. The core scenario is for the IT market to accelerate in 2021 with the deployment of a vaccine, though there is a high-impact downside risk in the possibility of a more severe outbreak that leads to domestic lockdown in Winter 2020/21."


ABSTRACT: "The telecoms market in Turkey is well developed, but it still presents potential for growth. Over 90% of users are on 4G networks and the rest are almost all on 3G. The fact that there are three strong operators in the market fosters healthy competition, which reduces prices and drives innovation in a market focused on post-paid subscriptions. We expect 5G commercialisation to begin from late Q420 or early 2021 as operators look to exploit next-generation technologies by up selling advanced mobile data high speed packages. Furthermore, services like wireline broadband and M2M are growing, while wireline voice remains stable due to its inclusion in packaged services. Downside risks to the development of the market include high inflation and growing government influence in the telecoms market. The Covid-19 shocks will further depress the investor sentiment in 2020 and there is a likelihood that CapEx investments will dry up with 5G and fibre projects being postponed."

**United kingdom information technology report - Q4 2020**  

**ABSTRACT:** "The IT market in the UK is forecast to grow at a CAGR of 5.2% over the medium term (2020-2024) to reach a total of GBP173bn (USD260bn). In our core scenario growth is expected to resume in 2021 as the economy and IT market benefit from an easing of lockdown restrictions and a stronger external environment that results in less cautious consumption and enterprise investment. Uncertainty is elevated and risks are weighed to the downside because of the potential for secondary infection peaks that result in further lockdowns, or for the economic impact to be longer lasting in terms of employment levels, incomes and sentiment."

**Venezuela telecommunications report - Q4 2020**  

**ABSTRACT:** "Main industry players are limited to trying to keep their networks up and running, refraining from making any strategic moves until the socio-political turmoil has a clearer outcome. The government’s determination to stabilise the economy and open the oil sector could reflect concerns about its internal stability, potentially pushing it to return to the negotiating table and agree to new elections. Meanwhile, hyperinflation and social unrest continue to plague the industry. As people are pushed into poverty, looting of telecoms equipment for sale in the black market has soared. Operators’ real revenues dwindle quickly because of hyperinflation. They can barely repair and maintain their networks, let alone roll out upgraded infrastructure. New black spots appear on a daily basis. Venezuela retains strong investment potential, but the economy needs to stabilise before any returns are realised."

**Bibliography on “satellite communications”**


**ABSTRACT:** "The worldwide large-scale commercial deployment of 5G has commenced in 2020 for supporting enhanced Mobile BroadBand (eMBB), ultra-Reliable and Low-Latency Communications (uRLLC), and massive Machine-Type Communications (mMTC) services. Nevertheless, the upsurge of Artificial Intelligence (AI)-powered applications, the developmental law of one-decade-one-generation of wireless communications and the inherent limitations of 5G have also been spurring the industry and academia to dedicate their efforts to the research of future 6G wireless systems. 6G will be a disruptive, pervasive, intelligent, and endogenous wireless system, which will revolutionize all walks of life and accelerate the transformation and innovation of the global society. In this paper, we present a forward-looking, comprehensive and in-depth analysis and technical identification of 6G. Specifically, we firstly introduce the fundamental theories of 6G in terms of potential requirements. Then, we focus our attention on the discussion of promising key technologies in terms of spectrum, air interface, delay, access, energy consumption, coverage, AI, electromagnetism, interaction, etc."

ABSTRACT: "The Harvest Oil Platform, near Point Conception, California, has long served as the NASA prime verification site for the TOPEX/POSEIDON and Jason series of reference altimeter missions. In this brief review article, we provide a short history of the platform verification experiment dating to the site selection in 1989. We describe the evolution of the verification data record over the past three decades, and demonstrate how the results have informed the development of a stable and accurate climate data record of sea level change from satellite altimetry."


ABSTRACT: "OneWeb has begun the deployment of its global internet system – one that will bridge the digital divide and bring internet connectivity to underserved communities throughout the world. The backbone of its network is a constellation of nearly 600 low Earth orbit (LEO) satellites that service user terminals designed for a variety of communication use cases. From its inception, OneWeb has committed itself to the highest standards of responsible design and operational practices and believes that all stakeholders need to take responsibility for the long-term sustainability of space. To assure safe space operations in the presence of collisional hazards, we need to adopt a more comprehensive approach to Space Environment Management (SEM). In addition to improving Space Situational Awareness (SSA), collision avoidance capabilities, and debris mitigation standards, it is critical that the global space community also develop real possibilities for environmental remediation. There are still some technical challenges to solve before Active Debris Removal (ADR) services become a reality, but the more formidable challenge in developing a commercially viable ADR services industry is likely to be cost. It remains to be seen whether mission architectures and business models can be crafted to support price points that are attractive to commercial operators, or whether ADR is destined to be a service only governments can afford. As part of its commitment to space sustainability and environmental stewardship, OneWeb is including a grappling fixture on every one of its satellites to facilitate capture in the event that retrieval should become necessary. In addition, OneWeb has worked with Altius Space Machines over the last three years to develop an advanced grappling fixture that accommodates a number of grappling techniques. Furthermore, over the last three years, OneWeb has worked with Altius Space Machines on advanced grappling techniques in the hopes of standardizing a versatile capture interface for on-orbit servicing, thereby lowering the projected cost of ADR and other services for everyone. The result is Altius’ DogTag™ universal grappling fixture, a low-cost, lightweight, universal interface for small satellites. The primary capture mechanism is magnetic, but it is also designed to support mechanical, adhesive, and penetrating capture techniques as well. Altius was recently awarded a contract for almost 600 fixtures by OneWeb Satellites and will begin delivery of flight hardware in December 2019."


ABSTRACT: "A single-receiver integer ambiguity resolution-enabled precise point positioning (PPP-RTK) user experiences a long convergence time when the rather weak single-constellation dual-frequency ionosphere-float model is used. Nowadays, the rapid development of Global Navigation
Satellite Systems (GNSS) provides a multitude of available satellites and frequencies that can serve in improving the user’s model strength and, therefore, its ambiguity resolution and positioning capabilities. In this study, we provide insight into and analyze the global impact of a multi-GNSS (GPS, Galileo, BeiDou-3) multi-frequency integration on the expected ambiguity resolution and positioning performance of the ionosphere-float uncombined PPP-RTK user model, and demonstrate whether it is the increased number of satellites or frequencies, or a combination thereof, that speeds up ambiguity-resolved positioning. Moreover, we explore the capabilities of both full (FAR) and partial (PAR) ambiguity resolution, considering the full ambiguity information content with the LAMBDA method, and investigate whether PAR is an efficient solution to the multi-dimensional ambiguity case. The performance of our solutions is assessed in terms of the ambiguity success rate (ASR), the number of epochs (TTFA) to achieve both an ASR criterion and a horizontal positioning precision better than 10 cm, as well as the gain in precision improvement. Based on multi-system multi-frequency simulated data from nine globally distributed stations and a large number of kinematic solutions over a day, we found that the increase in number of frequencies enhances the ambiguity resolution performance, with PAR achieving a TTFA reduction of 70% when five instead of two Galileo frequencies are used, while the ambiguity-float solution is only slightly improved. Further, our numerical results demonstrated that the increase in number of satellites leads to an improvement in both the positioning and ambiguity resolution performance, due to the improved geometry strength. It is shown that the GPS+Galileo+BeiDou solutions can achieve a TTFA of 6.5 and 4.5 min (at 90%) on a global scale when two and three frequencies are used, respectively, without any a priori information on the ionospheric delays. Finally, we analyzed the sensitivity of the PPP-RTK user’s performance to changes in the precision of the measurements.

Bibliography on “semantic web”


ABSTRACT: "Until the inception of Web 1.0, the Information Retrieval was the center of the stage for library and it was defined as search and passive. Later on, the emergence of Web 2.0 was encouraged into the community, social interaction and user-generated content. Web 3.0 is a modern phenomenon and also known to â€œ3D Web or the Semantic Webâ€©, and it often used for specifically to formats and the technologies. The advanced Web 4.0 is the Ultra-Intelligent Agent Interactions between humans and machines. Semantic web technology finds meanings from various sources to enabling the machines and people to understand and share knowledge. The semantic web technology helps to add, change and implement the new relationships or interconnecting programs in a different way which can be as simple as changing the external model that these programs are shared. To give an information need, the semantic technologies can directly search, capture, aggregate, and make a deduction to satisfy the user needs. The paper presents a framework for knowledge representation assembling semantic technology based on ontology, semantic web, and an intelligent agent algorithm as a connectivity framework to share the appropriate knowledge representation which includes the web ontology language that discovers related information's from various sources to serve the information needs. The research addresses the intelligent agent algorithm is the key contribution that reveals appropriate information and empowers Web 3.0 and embraces Web 4.0 into the coming semantic web technology."

**ABSTRACT:** "The rapid development of the Internet of Things (IoT) and the huge growth of valuable data produced by decentralising information processing along global apparel supply chain have led to a persuasive appeal for a semantic approach to integrating distributed data facilities in the field of self-determining collaborating logistics services. This paper describes a framework, Apparel Business Decentralised Data Integration (ABDDI), which exploits knowledge representation techniques and languages (e.g. Description Logics – DLs) to annotate relevant business activities, movements of products within the manufacturing network to provide value-added services. More specifically the paper discusses the DLs formalisms, which are used for knowledge representation in a decidable fragment of First Order Logic; and ALN (D) (Attributive Language with unqualified Number restrictions and concrete Domains) related issues. The paper presents an algorithm to demonstrate the DLs based entity concept similarity assessment to facilitate semantic web service. Finally, a business scenario is used to present some of the knowledge representation formalisms and concept similarity assessment in ABDDI."


**ABSTRACT:** "The vast volume of documents available in legal databases demands effective information retrieval approaches which take into consideration the intricacies of the legal domain. Relevant document retrieval is the backbone of the legal domain. The concept of relevance in the legal domain is very complex and multi-faceted. In this work, we propose a novel approach of concept based similarity estimation among court judgments. We use a graph-based method, to identify prominent concepts present in a judgment and extract sentences representative of these concepts. The sentences and concepts so mined are used to express/visualize likeness among concepts between a pair of documents from different perspectives. We also propose to aggregate the different levels of matching so obtained into one measure quantifying the level of similarity between a judgment pair. We employ the ordered weighted average (OWA) family of aggregation operators for obtaining the similarity value. The experimental results suggest that the proposed approach of concept based similarity is effective in the extraction of relevant legal documents and performs better than other competing techniques. Additionally, the proposed two-level abstraction of similarity enables informative visualization for deeper insights into case relevance."

**Bibliography on “smart cities”**


**ABSTRACT:** "Security in Vehicular Sensor Networks (VSNs) is a critical subject that must be addressed in the emerging Intelligent Transport Systems (ITS). Users share confidential information that can be used against them by attackers. Popular attacks include Malwares and Spams, Black Holes, Wormholes, and Physical/Electronic Outages. Such VSN attacks can lead to loss of life due to road accidents and breach of privacy. In this paper, we overview the VSN concept in a vehicular IoT-based smart city paradigm, focusing on the security aspects. In addition, we discuss the design
features of VSN, its robustness, and reliability. We also discuss relevant communication technologies and their security concerns. We highlight the main open research issues in literature and provide hints for overcoming them. This analysis concludes that VSNs play a key role in developing efficient ITS. Nevertheless, current VSNs security standards must be improved for a reliable, and safe transportation system."


ABSTRACT: "Article 35 of the General Data Protection Regulation (GDPR) states that data controllers are required to carry out data protection impact assessment (DPIA) if a processing operation, particularly involving the use of new technologies, is ‘likely to result in a high risk to the rights and freedoms of natural persons’. The focus in this paper is on the role and responsibilities of data controllers in a smart city platform in assessing ‘high risk’ and the importance of impact assessment in relation to data processing with the latest technologies for the protection of personal data."


ABSTRACT: "The proliferation of smart city and Internet of Things (IoT) applications has introduced numerous challenges related to network performance, reliability, and security. Moreover, the distributed nature of the smart city and IoT infrastructure has led to issues in regards to service availability, reliability, sustainability and security. Edge computing provides a decentralized computing and communication framework for different types of applications such as intelligent transportation systems, cognitive assistance, health and social services. Edge computing helps in improving the performance of such applications and reduces the end-to-end latency incurred for such time-critical applications. In this article, we introduce a trustworthy smart city service delivery solution at the edge of the network. The solution uses a collaborative technique between distributed edge servers and privacy mediator nodes with the support of an intrusion detection system to enhance the availability, reliability and security of smart city applications. Simulation results show a reduction in the delay per service request by 39.2% for highly dense environments, and up to 62.6% for lightly dense environments. Moreover, the solution reduces the dropped service requests below 2% with high accuracy and detection rates and low false-negative rates."


ABSTRACT: "How do governments in China and Western democracies differ in their technological response to control the transmission of the pandemic? Based on an analysis of academic papers, World Health Organization reports and newspapers, this research compares two opposing approaches, whereas the Chinese cities and government have adopted a techno-driven approach, Western governments have adopted a human-driven approach to control the transmission of Covid-19. The findings highlight that although the techno-driven approach may be more productive to identify, isolate and quarantine infected individuals, it also results in the suppression and censoring the citizen views. It is further emphasized that human interaction with the technology is
mediated by the political and institutional context in which the technologies are implemented. This paper contributes to literature by understanding the human-technology relationship, and offers five practical observations for controlling virus transmissions during pandemics."


ABSTRACT: "The rapid development and implementation of smart and IoT (Internet of Things) based technologies have allowed for various possibilities in technological advancements for different aspects of life. The main goal of IoT technologies is to simplify processes in different fields, to ensure a better efficiency of systems (technologies or specific processes) and finally to improve life quality. Sustainability has become a key issue for population where the dynamic development of IoT technologies is bringing different useful benefits, but this fast development must be carefully monitored and evaluated from an environmental point of view to limit the presence of harmful impacts and ensure the smart utilization of limited global resources. Significant research efforts are needed in the previous sense to carefully investigate the pros and cons of IoT technologies. This review editorial is partially directed on the research contributions presented at the 4th International Conference on Smart and Sustainable Technologies held in Split and Bol, Croatia, in 2019 (SpliTech 2019) as well as on recent findings from literature. The SpliTech2019 conference was a valuable event that successfully linked different engineering professions, industrial experts and finally researchers from academia. The focus of the conference was directed towards key conference tracks such as Smart City, Energy/Environment, e-Health and Engineering Modelling. The research presented and discussed at the SpliTech2019 conference helped to understand the complex and intertwined effects of IoT technologies on societies and their potential effects on sustainability in general. Various application areas of IoT technologies were discussed as well as the progress made. Four main topical areas were discussed in the herein editorial, i.e. latest advancements in the further fields: (i) IoT technologies in Sustainable Energy and Environment, (ii) IoT enabled Smart City, (iii) E-health – Ambient assisted living systems (iv) IoT technologies in Transportation and Low Carbon Products. The main outcomes of the review introductory article contributed to the better understanding of current technological progress in IoT application areas as well as the environmental implications linked with the increased application of IoT products."


ABSTRACT: "The smart cities constitute sensing devices that collect a large amount of data. The sensor-based devices are widely using software-defined technology. The adaptation of software-defined devices to the new applications and environment requires a regular update in the programs. However, it is challenging to update the code of a large number of smart sensors spread widely in the smart cities in a fast and cost-efficient way. The mobile vehicles can be used to disseminate the code across these sensing devices. In this paper, a Reliable and Cost-efficient Code mule Selection Scheme (RCCSS) is proposed for code dissemination for software-defined sensor networks. The duty cycle aware broadcast scheme is designed with Ranking-based Ant System (RAS) to provide the maximum coverage of code dissemination. The taxi trajectory dataset is used in experimental evaluation of the proposed code dissemination scheme. The experiment results validate the effectiveness of proposed models over the existing code dissemination techniques."

ABSTRACT: “Smart cities are evolving globally and many governments have invested large sums of monies to develop smart cities. This development is not a result of an overnight decision but rather, smart cities have evolved through a period of time, directly from earlier work on the digital city to ubiquitous city, green city, connected city, sustainable city, eco-city etc. The present age sees the arrival of very high-speed wireless 5G connectivity, fast GPU multi-core-based servers, big data, cloud computing, artificial intelligence, and data analytics. Many of these new technologies have supported the development and realisation of smart cities. In this study, the authors present an outline of security for smart cities and provide a deeper understanding of what we meant by securing smart cities. They discuss the applicability of existing security methods of authentication, access control, encryption, firewalls, and their appropriateness to defending a smart city. Specifically, we cover the security of data, internet, water supply, electricity supply, city brain, and other critical city services and present the possible malicious attacks on a smart city and consequences. Finally, they discuss security best practices for smart cities.”


ABSTRACT: “This study investigates how Big Data Analytics (BDA) can be leveraged to support a city’s transformation into a smart destination. We conduct an in-depth case study of a city-in-transformation and adopt the perspective of technology affordances to uncover the varying opportunities enabled by BDA to facilitate the attainment of smart tourism goals. Our findings unveil three types of BDA affordances and demonstrate how these affordances are actualized in a cascading manner to enable informed decisions and a sustainable development of smart tourism. Implications are presented for future investigation of the affordances of BDA in smart tourism, as well as for policy makers and practitioners who engage in the development of innovative tourism services for the smart citizens.”

Bibliography on “social media”


ABSTRACT: "Organizations continue to make investments in social media with the hope that it will help their sales force in improving engagement with customers. The academic literature on social media use in business markets has supported the growth and utilization of such technology; however, much more work is needed. This article, building upon the recent scholarly advances and considering a managerial perspective, offers suggestions to guide future academic research examining the links between social media use and customer engagement within the B2B sales domain. Several research questions are presented under the four broad topics, namely utility of social media technologies, context matters, social media pitfalls, and futuristic social media applications."

ABSTRACT: "Social media use is an increasingly prevalent part of modern life and allows for a wide variety of ways to engage with others. The current research examines how chronic social goal orientations relate to social media use and to individuals’ sense of connection with others while using social media. Utilizing social achievement goal theory, we hypothesized that social goal orientations would predict 1) the likelihood of engaging with a larger audience on social media, 2) whether social media was used in a relatively active, deep, and interactive manner, and 3) the degree to which social media involvement leads to a feeling of social connection. Results of two studies supported our hypotheses and suggested that social development, social demonstration-approach, and social demonstration-avoid goals relate to different kinds of social media behavior and different perceptions of social connection in relation to their social media use. Findings suggest that social media provide a variety of ways for individuals to attain a sense of social competency and connection that are consistent with their underlying goal orientations."


ABSTRACT: "Facebook and Instagram are currently the most popular Social Network Sites (SNS) for young adults. A large amount of research examined the relationship between these SNS and well-being, and possible intermediate constructs such as social comparison, self-esteem, and repetitive negative thinking (RNT). However, most of these studies have cross-sectional designs and use self-report indicators of SNS use. Therefore, their conclusions should be interpreted cautiously. Consequently, the goal of the current experience sampling study was to examine the temporal dynamics between objective indicators of SNS use, and self-reports of social comparison, RNT, and daily fluctuations in negative affect. More specifically, we assessed 98 participants 6 times per day during 14 days to examine reciprocal relationships between SNS use, negative affect, emotion regulation, and key psychological constructs. Results indicate that (1) both Facebook and Instagram use predicted reduced well-being, and (2) self-esteem and RNT appear to be important intermediate constructs in these relationships. Future longitudinal and experimental studies are needed to further support and extend the current research findings."


ABSTRACT: "Since 2007–2008, American undergraduates’ media ecology has changed dramatically without an accompanying transformation in how they use media to end relationships. The similarities in people’s breakup practices between 2008 and 2018 reveal that, regardless of what social media is used, American undergraduates turn to media in moments of breakup as ways to manage three complicated aspects of ending a relationship: untangling all the ways in which people signal intertwined lives, deciphering the quotidian unknowable of another person’s mind, and trying to control who knows what when. This paper explores how rapid shifts in media ecologies may change the ways in which conventionalization around social practices emerges, leading to more norms oriented around what all media accomplish, rather than generating norms around the affordances of a specific medium."

ABSTRACT: "Social media platforms are deeply ingrained in society, and they offer many different spaces for people to engage with others. Unfortunately, accessibility barriers prevent people with disabilities from fully participating in these spaces. Social media users commonly post inaccessible media, including videos without captions (which are important for people who are Deaf or Hard of Hearing) and images without alternative text (descriptions read aloud by screen readers for people who are blind). Users with motor impairments must find workarounds to deal with the complex user interfaces of these platforms, and users with cognitive disabilities may face barriers to composing and sharing information. We invited accessibility researchers, industry practitioners, and end-users with disabilities to come together at the Computer-Supported Cooperative Work conference (CSCW 2019) to discuss challenges and solutions for improving social media accessibility. Over the course of a day that included two panels and breakout sessions, the workshop attendees outlined four critical future research directions to progress on the path to accessible social media: tooling to support disabled people authoring content, developing more accessible formats/tools for new forms of interaction (e.g., Augmented and Mixed Reality), using communities to distribute accessibility labor, and ensuring machine learning systems are built on representative datasets for disability use-cases."


ABSTRACT: "This study furthers investigation into exactly how Social CRM (S-CRM) is different from traditional CRM, and models the interrelationships between its capabilities. It is underpinned in dynamic capabilities theory, to explain how social media, as a resource all organizations use, can lead to differing performance outcomes. It is underpinned in seminal research into traditional CRM, but which does not cater for the disruptive nature of social media. We outline how S-CRM is a second-order dynamic capability consisting of a set of first-order integrative dynamic capabilities that, when properly interrelated, lead to performance outcomes. We particularly model the role of S-CRM front- and back-office technology capabilities, customer engagement initiatives, and social information processes in driving customer relationship performance. Findings show that S-CRM is different from traditional CRM in a range of ways in the front- and back-offices, and provide a framework for researcher and managers in information systems and marketing to operate at strategic and tactical levels within S-CRM, while being cognisant of both."


ABSTRACT: "Based upon the service-dominant (S-D) logic and the well-established belief-behavior framework, this study proposes a research model that captures the belief/perception factors and the interactive process driving people to balance and trade-off their cybersecurity concerns for co-created value in social media use. The model was validated with a large set of field survey data of 1,559 Facebook users. For information systems (IS) research, the study represents our attempt in adopting and empirically assessing the S-D Logic in the social media context. We extended the IS
privacy calculus literature, and provided a context-specific cognitive/behavioral trade-off view of social media use. For business practice, the study offers managerial guidelines in improving service effectiveness and retaining a critical mass of active social media users for marketing extension, business innovations, and customer relationship management (CRM) in the organizational setting.”


ABSTRACT: "Given the paucity of research on the cognitive implications of social media use in middle and late adulthood, we sought to understand the relations between middle-aged and older adults’ social media use and their executive functions (EF)—a set of domain-general cognitive control processes—and the underlying mechanism. By analyzing a nationally representative cohort ranging from ages 40s–70s from the MIDUS Refresher Survey and Cognitive Project, we tested a serial mediation model with perception of social support and sense of control (i.e., personal mastery and perceived constraints) as sequential mediators in a structural equation modeling analysis. We found that perceived social support and constraints fully and serially mediated the relation of middle-aged and older adults’ social media use for interpersonal interactions with EF. Our study demonstrates that middle-aged and older adults’ social media use for social connection can be a useful medium that protects against age-related cognitive decline in EF.”


ABSTRACT: "Dialogic communication has long been viewed as vital for effective organization-public relations. Yet, it is under-theorized whether and how organizations’ disaster communication messages may embody dialogic communication principles, and how various dialogic features are associated with different public engagement outcomes on social media. Extending the Organization-Public Dialogic Communication (OPDC) framework to the context of social media-mediated disaster communication, we propose a multi-level framework to assess the dialogic capacity of Facebook messages sent by disaster management organizations during a natural disaster. Three levels of dialogic communication characteristics (i.e., message structure-level, topic-level, and linguistic level) are examined using content analysis and Linguistic Inquiry and Word Count (LIWC). Results identified media richness, correcting, and confirming topics as three consistent predictors of public engagement of all types. Meanwhile, there exhibit greater variations regarding how other topical features and linguistic characteristics are related to public’s cognitive, emotional, and behavioral engagement during a disaster.”


ABSTRACT: "Universities are evaluated more often basing on the citation scores of their employees, schools translate this pressure onto the scholars. The purpose of this paper is twofold: to identify whether how the use of social networking sites (SNS) may enhance the impact of the research and
thus contribute to the academic success in terms of citations; and to gain a more comprehensive understanding of which SNS may have a positive relation to the academic citations. This study drew from the research on social networks, SNS, and higher education; and empirical study results. Researcher’s SNS use is positively correlated with the academic citations rate – the higher the scholar’s presence in academic, professional, relationship, microblogging SNS, the higher scholarly success. This paper explores the association between the researcher’s social media presence on fathomable SNS (ResearchGate, LinkedIn, Facebook, Twitter) and the level of citations – academic success."


ABSTRACT: "The emergence of social network sites and online communities has offered new possibilities for older adults to stay socially connected and older adults comprise a growing user group of social media. This paper examines the relationship between older adults’ online social engagement and social capital based on a national survey of adults aged 60 and over. Findings show that older adults who engage more often in specific online social activities (i.e., asking questions on social media, looking at photos of family members/others) enjoy greater bridging social capital (both in offline and online contexts) than those who do so less often. Furthermore, Internet skills moderate the relationship between online social engagement and social capital. Specifically, older adults with greater Internet skills benefit relatively more from engaging in specific online social activities more often with respect to online bridging. The paper discusses the implications for digital inequality scholarship."


ABSTRACT: "The emergence of information communication technologies has transformed communication in Nigeria. The mass media once regarded as the most vocal and vibrant press in Africa is losing public trust as people easily source for critical information from social media instead of the media due to their patrimonial relationship with the state. The potentials of these information communication technologies in holding government accountable and enhancing journalism practice has endangered the state. Consequently, attempts by the state at regulating social media and the mass media through draconian bills such as protection from internet falsehood and manipulation bill of 2019, and the National Communication for the prohibition of Hate Speech bill 2019. Using Habermas notion of the public sphere coupled with semi-structured interviews with 12 media practitioners, this paper examines ways in which such regulatory frameworks have impacted on both the media and democratic cultures of the Nigerian state. The paper argues that social media and its convergence in the newsroom has expounded the democratic culture due to its affordances of speedy and accountability. However, the potentials of social media and its affordance has been misused. Consequently, the contestation between the state, public and media on how social media and its convergence in the newsroom can be effectively regulated. The media and public do not trust the state as they blame the state for the rise of fake news (misinformation and disinformation). On the other hand, the state has blamed the desire for profit and commodification of news for the rise of fake news."

ABSTRACT: "Since its inception, the internet has been as much technological as social, practical as ideological in character. This article examines academic discourse and asks how research on the multifaceted internet has evolved over the past 25 years. In order to investigate the formation of this academic field, we collected articles published in major academic journals dedicated to new media and digital communication as well as mainstream periodicals in communication studies over the past quarter of a century. Relying on a combination of (semi)automated content analysis and citation analysis, we find that articles related to the internet and its manifold aspects are cited more often than research on other topics. The literature review suggests that as the socio-material infrastructure of the internet has become deeply enmeshed in society its study has evolved from a niche pursuit to the discipline’s core area of inquiry."


ABSTRACT: "Professional social media platforms (PSMs), including LinkedIn, have created better opportunities for students and employees to advance their career aspirations. Though PSMs seem to be an effective human resource management (HRM) tool, in order to leverage PSMs effectively, it is strategically essential to incorporate research inputs from both the employers’ and the individuals’ perspectives. Realizing this, academic researchers have been interested in PSMs since the previous decade. However, research on PSMs and their effectiveness continues to be in the embryonic stage. To catalyze scholarly interest and provide a foundation for formulating sound theoretical propositions for the efficient use of PSMs, it is imperative to aggregate and critically evaluate prior findings and provide avenues for future research. Addressing this need, the current study undertakes a systematic literature review to comprehensively understand the influence of PSMs on one particular aspect of HRM—namely, hiring processes. Forty-five studies were selected from existing literature to examine the accumulated knowledge, assess current research boundaries, and derive ways to enrich this area of research further. The study is motivated by the fact that given the short life cycle of social media platforms and information systems, PSMs need to innovate and continuously offer value to their users. The study makes a concrete contribution to PSM literature by generating actionable research avenues for future researchers and providing practical insights for managers and service providers."


ABSTRACT: "The utilization of traditional social survey data to approach today’s bullying problems presents some limitations. In response, a new approach to investigate and subsequently intervene is required for understanding the bullying phenomenon. Therefore, this study analyzed the big data generated by social media to identify Future Signals of bullying that can more effectively clarify the problem and suggest targeted interventions to address the bullying phenomenon in South Korea. Also revealed were topics that may provide future insight regarding social circumstances that require further public attention to address the bullying phenomenon in South Korea. A new approach to investigate and subsequently intervene is required for understanding the bullying phenomenon. By using social big data analysis, 350,314 web documents were collected per hour
each day from January 1, 2013 to June 30, 2017, from 279 subject channels based on an ontology of bullying-related topics. Term frequency, document frequency, degree of visibility, and degree of diffusion were computed to identify Future Signals. A substantial overlap of findings between studies based on social big data and traditional survey results was observed for family (e.g., parental divorce, domestic violence, child abuse), peer (e.g., transfer, friend violence), economic (e.g., economic problem), and strain domains, whereas strains concerning the media (e.g., movie, celebrity) and cultural (e.g., materialism, hell Korea) domains seemed to be more salient in social big data. Weak Signal topics in social big data representing media and cultural strain domains (e.g., Youtube, class society, bullying culture) related to the bullying phenomenon appear to be emerging in significance. These topics and their respective strain domains represent potentially important new areas that warrant further investigation by practitioners and policymakers. These findings may allow the early detection of crucial information by providing data to support better informed insight and intervention related to the complex problem of bullying in South Korea.


ABSTRACT: "The unmoderated nature of social media enables the diffusion of hoaxes, which in turn jeopardises the credibility of information gathered from social media platforms. Existing research on automated detection of hoaxes has the limitation of using relatively small datasets, owing to the difficulty of getting labelled data. This, in turn, has limited research exploring early detection of hoaxes as well as exploring other factors such as the effect of the size of the training data or the use of sliding windows. To mitigate this problem, we introduce a semi-automated method that leverages the Wikidata knowledge base to build large-scale datasets for veracity classification, focusing on celebrity death reports. This enables us to create a dataset with 4,007 reports including over 13M tweets, 15% of which are fake. Experiments using class-specific representations of word embeddings show that we can achieve F1 scores nearing 72% within 10 minutes of the first tweet being posted when we expand the size of the training data following our semi-automated means. Our dataset represents a realistic scenario with a real distribution of true, commemorative, and false stories, which we release for further use as a benchmark in future research."

Bibliography on “spectrum management/spectrum sharing”


ABSTRACT: "The enabling technology of vehicular networks for Intelligent Transportation Systems (ITS), smart cities and autonomous driving, offers promising on-board services such as road-safety, easy navigation, comfort driving and infotainment. These services can co-exist simultaneously in the system. One challenging issue is to provide the different quality of service (QoS) requirements adequate to each service. This may not be an easy task because of the constrained factors characterizing these networks (e.g., growing number of connected vehicular devices, wireless communications, etc.). In this paper, we investigate the radio resources allocation problem to match different QoS requirements in terms of data rate whilst reducing the interference ratio. We first proposed a radio allocation model that aims to maximize the data rate and minimize the transmission power for all users. However, since not all vehicles use services that require high data rates, it will be more efficient to consider different required data rate for each user. Hence, we
develop an efficient model for transmission power allocation that aims to reduce the interference ratio while providing the data rate required by each user. The proposed model is based on Generalized Nash Equilibrium (GNE) game where the users compete to acquire the radio resources. We proposed also two water-filling algorithms to solve the spectrum allocation game during Vehicle-to-Vehicle (V2V) communication over multiple channels. The extensive simulations have shown that our model can satisfy the users regarding different.


ABSTRACT: "This paper tracks increasingly aggressive initiatives by the United States government to reallocate spectrum on an expedited and unilateral basis well before conclusion of inter-governmental coordination. Rather than embrace the customary commitment to achieve consensus on global spectrum allocations at the International Telecommunication Union ("ITU"), the Federal Communications Commission ("FCC") has auctioned off large blocks of frequencies for the next generation ("5G") of wireless services. The FCC might have framed its first 5G auction, reassigning Ultra High Frequency ("UHF") spectrum, as a one-time deviation from compliance with long standing, intergovernmental coordination procedures. These frequencies have ideal signal propagation characteristics and the Commission could use financial incentives—unavailable in most nations—to expedite "repacking" by incumbent broadcasters willing to move, share or abandon spectrum in exchange for ample financial compensation. However, the FCC has continued to auction off 5G spectrum on grounds that it must find ways to abate an acute shortage of wireless bandwidth and doing so will regain or maintain global leadership in wireless technologies. This paper offers a critical rebuke to unilateral spectrum management, because the short-term benefits expected by the U. S. government likely will be offset by countervailing harms to 5G manufacturers, carriers and consumers. The paper tracks fractious preparation for the ITU's 2019 World Radio Conference by the U.S. delegation and the mixed record achieved there. Additionally, the paper explains how injecting trade, industrial policy and national security issues at the ITU can trigger more delays and disputes, including possible retaliation by nations displeased with U.S. efforts to subvert traditional technology optimization goals. A worst case scenario has the ITU deadlocked and unable to reach closure on "mission critical" spectrum planning issues at World Radio Conferences, convened every four years. The paper concludes that costs and likely challenges to the efficacy and legitimacy of the ITU will reduce the benefits accruing from the FCC's unilateral, spectrum planning campaign."

Bibliography on “telecommunication/ICT markets”


ABSTRACT: "This article examines how the scrap-handling/recycling system in Myanmar has adopted mobile telephony in its day-to-day operations, and how this has led to a rationalization of the sector. It focuses on work processes, information and price retrieval, risk management, efficiency, and coordination. Scrap-handlers and ragpickers in four townships of Myanmar were interviewed in three phases of fieldwork, and their mobile phone use was also observed. The findings provide

ABSTRACT: "The EU General Data Protection Regulation (GDPR) introduces a new right to data portability, which allows users to move their personal data to other platforms, potentially affecting competition between rival platforms offering similar (homogeneous/substitute) products or services within the European Union. However, it is still unclear what effects this new regulation could have on competition and, consequently, on innovation in digital markets. Therefore, this paper analyzes the effect of data portability driven by competition on the data-driven innovation response of online platforms such as Spotify, Google, and Facebook. We conduct an empirical analysis of Spotify, which is an online platform facing competition within the EU, and perform a comparison between data portability to number portability of the telecommunication sector to predict the future impact of the new regulation. Finally, we compare the observations on Spotify with Facebook and Google, which are companies in winner-takes-all markets. We argue that online platforms like Spotify, which face competition within the EU, will invest in two forms of data-driven innovation due to the effect of data portability. These types are 'exploitation-innovation,' by improving the existing technology, and 'exploration-innovation' by developing new technology. In 'exploitation-innovation,' firms, like Spotify, will increase investments in data-driven innovation to enhance users' engagement and retention to avoid churn. In 'exploration-innovation,' these firms will invest in data-driven innovation to develop new algorithms to include data from customers acquired from their competitors. On the contrary, online platforms, like Facebook or Google, which do not face real competition, will not have a substantial need to invest in data-driven innovation solely due to data portability."


ABSTRACT: "Cellular phones have gained popularity in emerging and developing economies over the last two decades. In this study, we show that the phenomenon of falling prices over time is applicable to the diffusion of prepaid mobile phones. This article extends the logistic diffusion model to accommodate disadopters of the service category. Goodness of fit of the extended model is found superior to the original version, which does not consider disadoption. The empirical findings show that for the 12 countries considered in the analysis, the diffusion speeds and the disadoption rates are influenced by one marketing factor and three socioeconomic factors."


ABSTRACT: "This paper investigates the role of information communication technologies (ICTs) in the transformation of rural economies by evaluating the use of smartphones among farmers in China. We use unique three-wave panel data to document the transformation path of rural economies in recent years. An endogenous switching probit model and a counterfactual analysis are applied to estimate the effects of smartphone use. The results show that from 2008 to 2015, rural economies
in China could be characterized by the following three aspects: a) increased off-farm employment, b) expanded grain cultivation, and c) decreased crop diversification. The estimation results indicate that the use of smartphones among farmers had significant impacts on the transformation of rural economies by facilitating the off-farm employment of the farmers’ family members, the cultivation of nongrain crops and crop specialization. These findings complement the empirical evidence on the role of ICTs, particularly smartphones, in the development of rural economies in China and other developing countries.


ABSTRACT: "About half of the world’s population is not connected to the Internet, and only 39% of the 1.2 billion Africans are Internet users. For technology corporations, such as Google, the unconnected represents potential market that needs to be reached. Google launched the ‘Next Billion Users’ project targeting the unconnected billions, and established ‘Google Station’, a service provided in conjunction with telecom partners to provide free WiFi service in public spaces in few developing countries. Through a critical theoretical articulation of digital coloniality, this paper examines the political economic rationale of Google’s ‘Google Station’ in Nigeria. It exposes the market logic behind Google’s interest in Nigeria, examines the reactions of Nigerians to this ‘free’ access to the Internet and interrogates what this reveals about the culture of innovation and development in Africa. The paper calls for a decolonial thinking about technological development. Failure to do this, Africa will continue to rely on foreign capitalist actors whose intent is to mine the market potential of Africa, but often veiled in benevolent guise."


ABSTRACT: "With the emergencies of Web 2.0, online word of mouth (e-WOM) has become one of the most useful communication channels. Organizations increasingly rely on social media to receive customers’ feedback for product development. Despite the known effect of e-WOM on customers’ decision-making, few studies have examined the influence of e-WOM on product improvement. Extending the prior e-WOM research, this paper empirically investigates how e-WOM affects mobile application (App) improvement and examines the moderating effect of developer expertise. Based on a dataset obtained from Applause.com, we find that e-WOM volume, valence, and reviewer exposure positively affect App improvement. We also find that developer expertise negatively moderates the effect of e-WOM on App improvement. The results indicate that expert developers are less likely affected by e-WOM. This study contributes by empirically investigating the role of e-WOM used to facilitate customer-to-business communication. This study also provides practical value for firms active in the App market."

Bibliography on “telecommunication/ICT policy and law"

ABSTRACT: "The development of 5G presents regulators with several security-related challenges. Implementation of a security framework that would be capable of addressing all concerns of users and, by extension, of governments, is one of them. In March 2019, the European Commission presented a plan to achieve, throughout the European Union, a concerted response to security concerns related to 5G networks. This article presents one of the national responses that consists of assessing the risk pursuant to the EN-ISO/IEC 27005 standard and introducing relevant risk mitigation measures. The article focuses on the introduction of a methodical approach to developing 5G security regulations based on an analysis of different risk scenarios. It also strives to propose the applicable government-level mitigation measures aiming to counteract any 5G security threats should these be encountered. When implemented efficiently, the said mitigation measures guarantee that the new networks will be designed in a proper manner. They will also impact cybersecurity of all networks over the coming years."


ABSTRACT: "Environmental regulation is an important part of many policy mixes for sustainability transitions. However, due to factors including lobbying actions, uncertainty about technological possibilities and costs, there often exists an implementation gap between the regulation and its enforcement. The paper presents an agent-based model to investigate the effect of such implementation gaps on the transition to sustainability for the REACH regulation on dangerous chemical substances. By affecting both the way that heterogeneous actors perceive the regulatory threat and their innovation strategy, implementation gaps may jeopardize the transition to safer substitutes. We show that the combination of the most severe regulation with the strictest enforcement and the shortest timing does not necessarily lead to the highest frequency of bans on dangerous substances, because it may place too much pressure on pioneering firms developing safer substitutes. Opting for a severe regulation should be combined with concessions on enforcement in order to preserve competition and to give pioneering competitors enough time to expand. From a reverse angle, if authorities are keen to apply the regulation strictly, and are prepared to face higher market concentration, then they should relax the degree of stringency in order to enhance the prospects of transition to safer substitutes."


ABSTRACT: "Few empirical studies have examined the cybersecurity policies of cities in the United States. Issues that have yet to be addressed in the literature include whether cities (of various sizes) maintain cybersecurity plans and policies that are sufficient to protect their citizens’ data, a general lack of knowledge regarding cybersecurity policies, and practices on the part of cities that place at risk the security of public services and citizens’ privacy. Our research explored these issues by administering a survey to public officials working in U.S. cities. The survey instrument included questions pertaining to (1) the existence of a formal cybersecurity strategic plan and the utilisation of internet-based technologies in cities, (2) the support received by cities for their cybersecurity planning, (3) the types of cybersecurity policies being implemented in cities, and (4)
the resources needed to conduct cybersecurity planning. We collected surveys from 168 officials employed in cities across the U.S. Our analysis of the results indicates that municipalities have formal cybersecurity policies but that they need to increase the integration of cybersecurity practices into their daily management processes by tracking their data, consulting outside security auditors, and increasing management training related to data security."


ABSTRACT: "The research question explores factors that create a feeling of privacy violation and discusses steps organizations can take to improve the perception of digital privacy for employees answering, "What intrusion, interference, and information access factors can be implemented by organizations to create a sense of digital privacy for employees in for-profit organizations?" Moor's Theory of Privacy guides the research examining three components of normative privacy in a digital age: intrusion protection, interference protection, and information access protection. The method of inquiry is a systematic review of twenty-one articles containing published in peer-reviewed academic journals over the last five years. Intrusion protection recommendations include monitoring and compliance with existing legislation, exhibition of transparency on policies and procedures, creating or revisiting existing organizational policies, and providing or enhancing training practices. Interference protection recommendations include gaining consent on policies, and encouraging systems that allow self-control of privacy. Information access protection recommendations involve weighing benefits and costs of security controls, limiting excessive data collection, anonymizing or obfuscating data collection, deleting data when use is complete, creating sanctions for information security misbehavior, and reviewing mobile device management environments. This discovered framework can decrease levels of stress, improve task performance, and decrease bad behavior will improving levels of job satisfaction and organizational commitment."


ABSTRACT: "Considering the recent increased attention to privacy law issues amid the typically slow pace of legal change."


ABSTRACT: "Safeguarding Finland’s national security is a collaborative function of the intelligence authorities and their clients and partners. This collaboration requires a sharing of national security information within the intelligence community, and with other public authorities – both domestic and foreign – as well as with enterprises and corporations. The first objective of this article is to distinguish norms regulating the sharing of national security information from the intelligence and data processing legislation, and to organise this legal substance into three categories: Disclosure of information in (1) national co-operation, (2) international co-operation, and for (3) crime prevention. The second objective is to identify areas of development in each of these three categories and accordingly suggest law and policy recommendations for the future."

ABSTRACT: "The emergence of information communication technologies has transformed communication in Nigeria. The mass media once regarded as the most vocal and vibrant press in Africa is losing public trust as people easily source for critical information from social media instead of the media due to their patrimonial relationship with the state. The potentials of these information communication technologies in holding government accountable and enhancing journalism practice has endangers the state. Consequently, attempts by the state at regulating social media and the mass media through draconian bills such as protection from internet falsehood and manipulation bill of 2019, and the National Communication for the prohibition of Hate Speech bill 2019. Using Habermas notion of the public sphere coupled with semi-structured interviews with 12 media practitioners, this paper examines ways in which such regulatory frameworks have impacted on both the media and democratic cultures of the Nigerian state. The paper argues that social media and its convergence in the newsroom has expounded the democratic culture due to its affordances of speedy and accountability. However, the potentials of social media and its affordance has been misused. Consequently, the contestation between the state, public and media on how social media and its convergence in the newsroom can be effectively regulated. The media and public do not trust the state as they blame the state for the rise of fake news (misinformation and disinformation). On the other hand, the state has blamed the desire for profit and commodification of news for the rise of fake news."

Oyedemi, T. D. "Digital coloniality and ‘Next billion users’: The political economy of google station in Nigeria." Information, Communication & Society, no. In Press(2020), pp.1-15. Full-text retrieved from Taylor & Francis Online: https://doi.org/10.1080/1369118X.2020.1804982 ABSTRACT: "About half of the world’s population is not connected to the Internet, and only 39% of the 1.2 billion Africans are Internet users. For technology corporations, such as Google, the unconnected represents potential market that needs to be reached. Google launched the ‘Next Billion Users’ project targeting the unconnected billions, and established ‘Google Station’, a service provided in conjunction with telecom partners to provide free WiFi service in public spaces in few developing countries. Through a critical theoretical articulation of digital coloniality, this paper examines the political economic rationale of Google’s ‘Google Station’ in Nigeria. It exposes the market logic behind Google’s interest in Nigeria, examines the reactions of Nigerians to this ‘free’ access to the Internet and interrogates what this reveals about the culture of innovation and development in Africa. The paper calls for a decolonial thinking about technological development. Failure to do this, Africa will continue to rely on foreign capitalist actors whose intent is to mine the market potential of Africa, but often veiled in benevolent guise."


ABSTRACT: "We evaluate a program by a private Internet Service Provider (ISP) intended to encourage low-income households to subscribe to broadband internet service. As part of its approval of the Comcast-NBCU merger in 2011, the Federal Communications Commission (FCC) mandated a "voluntary commitment" by Comcast to introduce a low-income broadband program that Comcast has branded “Internet Essentials (IE).” We use data from the U.S. Census Current Population Survey (CPS) and the National Broadband Map and a differences-in-differences
approach to evaluate the program’s effects on subscription rates for eligible households. We find that between 2011, when the program began, and 2015, broadband adoption by eligible households—those with school-age children who were eligible for free or reduced-price school lunches—had increased by more among households that lived in areas in which Comcast provided broadband internet service than among households that lived in areas served by other cable providers. In our difference-in-differences approach, we estimate that about 66 percent of IE subscribers represent true increases in low-income adoption as a result of the program, with the remaining subscribers being households that switched from a competitor and households that would have subscribed as part of a general upward trend in adoption. We find that CPS survey respondents in IE eligible households had small and insignificant increases their likelihood of taking online courses or job training in Comcast territory relative to similar households residing in the territories of other cable providers and they showed no difference in the propensity to apply for jobs online. These results provide no evidence to support internet literacy training. We also did not find robust effects of some of the program’s other components. In particular, IE makes computers available for $150, but we found no difference in the change in low-income computer ownership across cable territories. As a result, it would be hard to conclude that subsidized computers made a difference in broadband subscription despite the visceral appeal of such programs.


ABSTRACT: "In this study, we explore how the interplay of the quality of university regulations and regional economic development impacts new patent applications and licensing agreements in the context of Brazilian universities. To do that, we rely on data from a recent survey conducted by the Brazilian Innovation and Technology Transfer Managers National Forum (FORTEC Innovation Survey). Employing negative binomial models, we find that the quality of technology-transfer-related regulations has a positive impact on both patenting and licensing activities, whereas the mere existence of those regulations has no (or only little) effect on technology transfer outcomes. This suggests that the presence of regulations per se may not provide (i) the incentive necessary to outweighing the opportunity costs and motivate academics to engage in technology transfer; and/or (ii) the necessary level of clarity, flexibility and consistency to mitigate uncertainties and transaction costs for both firms and university inventors. We also find a negative relationship between regional economic development and patenting outcomes. In contrast, we determine that universities located in regions with higher levels of economic and innovative activity generate more licensing agreements. Finally, our results suggest that the marginal effects of the quality of both IP protection and licensing regulations are higher in more developed regions."


ABSTRACT: "Inconsistency between the way in which the law is structured, and the way in which technologies actually operate is always an interesting and useful topic to explore. When a law conflicts with a business model, the solution will often be changing the business model. However, when the law comes into conflict with the architecture of hardware and software, it is less clear how the problem will be managed. In this paper, we analyze the contradiction of blockchain technology and the requirements of GDPR. The three contradictions we examine are (i) right to be forgotten versus irreversibility/immutability of records, (ii) data protection by design versus tamper-proofness and transparency of blockchain, and (iii) data controller versus decentralized nodes. We highlight
that the conflicts can be handled through focusing on commonalities of GDPR and the blockchain, developing new approaches and interpretations, and tailoring the blockchain technology according to the needs of data protection law."