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**BOOKLET OF ABSTRACTS**

Cyber Threat Intelligence Discovery using Machine Learning from the Dark Web

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# Abstract

*Cyber threat intelligence (CTI) is an actionable information or insight an organization uses to understand potential vulnerabilities it does have and threats it is facing. One important CTI for proactive cyber defense is exploit type with possible values system, web, network, website or Mobile. This study compares the performance of machine learning algorithms in predicating exploit types using form posts in the dark web, which is a semi- structured dataset collected from dark web. The study uses the CRISP data science approach. The results of the study show that machine learning algorithms which are function-based including support vector machine and deep-learning using artificial neural network are more accurate than those algorithms which are based on tree including Random Forest and Decision-Tree for CTI discovery from semi-structured dataset. Future research will include the use of high-performance computing and advanced deep-learning algorithms.*

**Keywords:** Cyber Security, Cyber Threat Modeling, Machine Learning, Deep Learning, Dark Web

How Does BPM Maturity Affect Process Performance?

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# Abstract

*Organizations are increasingly confronted with the consequences of globalization, digitalization and disruptive (technological) developments. The constantly changing and dynamic social, economic, and political environment as well as the public opinion require public organizations to deliver effective and efficient services. These trends also apply to Dutch housing associations who are working together with suppliers in the process of property maintenance to increase quality and to reduce costs. Business Process Management (BPM) has the prospect of enhancing the performance of maintenance processes. Previous studies have confirmed a positive relationship between BPM-maturity and Process performance. However, in different contexts this relation is sometimes inconclusive. Especially, it is not yet clear which BPM-maturity dimensions add most value to performance within a specific environment. Therefore, in this research we focus on studying the influence of BPM-maturity on Process performance of maintenance processes at Dutch housing associations. Furthermore, we focus on intra- versus inter-organizational processes. The findings show that an increase in BPM-maturity leads to improved Process performance. This is specifically true within the inter-organizational context.*

**Keywords:** Housing Associations, Property Management, Maintenance Processes, Business Process Management, Process Performance

A review of the circular economy opportunities in the digital sector

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# Abstract

*Sustainable computing remains a challenge after thirty years. The circular economy business model has been promoted to address the challenges to sustainable production, but the digital sector is slow to adopt this approach. Drawing from the literature the paper outlines progress and challenges in the areas of production, reuse, recycling and waste management. A discussion highlights future research and development opportunities for the sector.*

**Keywords:** Circular economy, sustainability, e-waste

Understanding the Factors that Influence the Decisions Regarding Cybersecurity within an Organization

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# Abstract

*Data breach- is one of the biggest concerns for Information Technology (IT) leaders in major organizations. High-profile cybersecurity incidents such as the 2017 Equifax data breach and the 2019 Capital One data breach have created worries among the customers about the trustworthiness of the organizations in safeguarding their private information. Thus, issues related to cybersecurity have become major concerns for top C-Level executives in any organization. In this study, we examine cybersecurity concerns and the factors that influence the adoption of decisions regarding technologies and policies for cybersecurity. We propose to use the Technology-Organization-Environment (TOE) framework as a springboard to conduct our study. This framework describes the factors as related to the adoption and implementation of technological innovations. Further, this framework suggests that the process of adoption and implementation of technological innovations in an organization is influenced by the technological context, organizational context, and environmental context. The technological context includes internal and external technologies relevant to the firm. The organizational context deals with the resources and the characteristics of the firm, and the environmental context refers to the external and internal environment of the firm such as the industry structure, firm’s competitors, and regulatory environment. As all three contexts do play a role in issues related to cybersecurity, the TOE framework will provide a good basis for understanding the decisions that IT leaders make within the firm regarding cybersecurity.*

**Keywords:** Cybersecurity, Technology-Organization-Environment (TOE), Innovation adoption

Health Information Exchange Adoption and Patient Satisfaction

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# Abstract

*Health information technologies (HIT) enable sharing of electronic patient health information between healthcare providers and provide access to patient health information to improve healthcare quality, efficiency, and safety. Health information exchange (HIE) is a clinical HIT system, which enables reliable electronic exchange of clinical data among healthcare organizations, such as doctor offices, clinical laboratories, and hospitals (Hung & Tan, 2003; Jha et al., 2008; Miller & Tucker, 2014). Patient satisfaction is perceived as a top benefit of hospitals’ investments in HIE. The successful implementation of HIE systems lead to increased organizational efficiency in hospitals. A system that increases organizational efficiency in a healthcare organization may be more likely to enable doctors, nurses, and other staff members to better meet patient needs and expectations. Using publicly available datasets, this study examines the impact of HIE adoption on patient satisfaction. In addition, this research investigates the mediating effect of organizational efficiency in the relationship between HIE adoption and patient satisfaction. The proposed research model for this study is shown in Figure 1. Results of this study will be discussed in presentation.*



**Keywords:** Health Information Exchange, Healthcare Organization Efficiency, Patient Satisfaction

A discussion of the use of constructivist grounded theory and participant action observation research in information technology research

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# Abstract

*Constructivist grounded theory research (Charmaz, 2014) and participant observation action research (Jorgensen, 2020) methods are related under the category of qualitative assessment and share similarities that provide an opportunity to better understand the research topic. In this discussion paper, we look at the constructivist grounded theory research approach as a method for surfacing a model and then utilizing the models within participant observation research as a method to better understand the topic in a group setting while in use. This approach will be examined in the context of information technology research, discussing the similarities and differences in data collection and analysis of data.*

**Keywords:** Grounded Theory Research, Participant Observation Action Research, Research Comparison

EOOH: the Development of a Multiplatform and Multilingual Online Hate Speech Monitoring Dashboard

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ABSTRACT

*Purpose: This short paper describes the dashboard design process for online hate speech monitoring for multiple languages and platforms.

Methodology/approach: A case study approach was adopted in which the authors followed a research & development project for a multilingual and multiplatform online dashboard monitoring online hate speech. The case under study is the project for the European Observatory of Online Hate (EOOH).

Results: We outline the process taken for design and prototype development for which a design thinking approach was followed, including multiple potential user groups of the dashboard. The paper presents this process's outcome and the dashboard's initial use. The identified issues, such as obfuscation of the context or identity of user accounts of social media posts limiting the dashboard's usability while providing a trade-off in privacy protection, may contribute to the discourse on privacy and data protection in (big data) social media analysis for practitioners.

Research limitations/implications: The results are from a single case study. Still, they may be relevant for other online hate speech detection and monitoring projects involving big data analysis and human annotation.

Practical implications: The study emphasises the need to involve diverse user groups and a multidisciplinary team in developing a dashboard for online hate speech. The context in which potential online hate is disseminated and the network of accounts distributing or interacting with that hate speech seems relevant for analysis by a part of the user groups of the dashboard.*

**Keywords:** online hate speech, social media analysis, big data, anonymization, GDPR

Methods for training DevSecOps: A grounded theory study

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# Abstract

*New methods in secure software development provide an opportunity for organizations to strengthen their security posture, though they require training to ensure all elements are understood and implemented, and supported in processes and technology. In this paper, we will examine the outcome of a constructivist grounded theory research project that gathered data from participants on the use of training and the effectiveness of the training within their organizational setting. The outcome from this study provides insights into a multilayer approach to training covering the individual, team, and organization across fundamentals, tools, and procedures and provides insights into the effectiveness of training methods as an outcome of the constructivist grounded theory research.*

**Keywords:** DevSecOps, Training, Grounded Theory Research

Measuring Circularity: The Gordian Knot of the 21st Century

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# Abstract

*Organizations are currently facing substantial challenges regarding becoming circular by 2050 – also referred to as Circular Economy (CE). Subsequently, increasing complexity on all organizational levels creates uncertainty about respective organizational and technological capabilities and adequate strategies to develop these capabilities. Organizations are struggling to pick up the CE ambitions and answer the “what’s in it for me” question. On the other hand, scholars are developing models and frameworks to enable organizations to measure CE performance. Over 125 assessment methods are available for micro-level assessment – measuring up to 365 different metrics. Moreover, extant literature presents barriers and opportunities for CE-transformation focusing on industry, sector, and region, among others. Furthermore, although a more holistic perspective is required to mature for circularity, this is currently lacking. In this paper, we present a multi-methodology view on the use of different approaches for measuring circularity. Our main goal is to extend the existing body of knowledge with an eye on applicability and research directions to untie the Gordian knot of measuring circularity.*

**Keywords:** circular economy, sustainable development, assessment, holistic view, transformation

Social Media and Charitable Giving for Nonprofit Organizations

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# Abstract

*Most Americans say they use social media, such as Facebook and YouTube. According to Pew Research Center’s report on social media use in 2021, Seventy-two percent of Americans say they ever use any social media sites, but the share has remained relatively stable over the past five years (Auxier and Anderson, 2021). While Facebook is one of the dominant social media sites, its growth has leveled off in recent years. Instagram and Twitter are also widely used, next to Facebook. According to the report, the age gaps between younger and older Americans vary across social media platforms. For example, Facebook and Twitter are commonly used across different age groups, compared to Instagram and Snapchat.*

*In recent years, online giving on mobile phones has increased with the use of social media (LaMagna, 2015). The smartphone generation is heavily active on social media, creating a new opportunity for charities; as the number of people using smartphones increases, the potentials of social media for charities increase since they make online donations easier (Chambers, 2013).*

*Aligned with the widespread use of social media sites, nonprofit organizations increasingly use social media to communicate with the public and promote charitable giving. Social media creates a dialog capacity with an otherwise static website by offering the opportunity to share information and interact with the public (Young, 2017). Mathos and Norman (2012) suggest that nonprofit organizations need to use social media to communicate with the public and engage them with their social media sites for fundraising campaigns. However, Carboni and Maxwell (2015) state that while many nonprofit organizations have a social media presence, there is variance in how well organizations use social media to engage stakeholders. Simply having a social media presence is not enough to engage stakeholders. What matters is how strategically organizations use social media to realize their organizational goals. A related issue would be which social media platforms are best for engaging donors.*

*Research has extensively studied nonprofit organizations’ use of social media. However, there has been limited research examining the impact of social media on charitable giving (Haruvy and Popkowski Leszczyc, 2018). Some studies used a measure of organizations’ Facebook Page Likes to examine the role of social media for fundraising (Bhati and McDonnell, 2020; Lee, 2021). However, more research is needed to answer the question of whether the public’s engagement through social media leads to increased contributions to nonprofit organizations (Carboni and Maxwell, 2015). This research attempts to address these gaps by empirically examining the relationship between social media and charitable giving as measured by the amount of donations.*

*We employ a data set of the Nonprofit Times’ top 100 nonprofits ranked by total revenue. As measures for social media traction, we use Facebook Likes and Twitter Followers. We collected the data on the two measures in October 2000 and constructed a data set by combining them with the top 100 nonprofit data for the same year, available from the Nonprofit Times. Our base model estimates charitable giving as measured by contributions and grants influenced by social media traction while controlling for total assets and the industry classified by health, welfare, and cultural activities. We extend the base model to incorporate the economic model of giving proposed by Weisbrod and Dominguez (1986).*

*The economic model of giving posits that as in the consumer market, donor contribution is determined by price, quality, and the information about both price and quality available to the donor. It assumes that when donors give contributions of money, they give not a dollar’s worth of money but rather a dollar of output. Thus, price is defined as the cost to a donor of purchasing one dollar’s worth of the organization’s output. It is a function of efficiency, with which the organization turns donations into programmatic output (Saxton and Wang, 2014). Given that nonprofits can devote resources to programs after fundraising expenditures are incurred, price is measured as the ratio of donations to program expenses (i.e., donations minus fundraising expenses). When fundraising expenses are high, prices are high, leading to lower aggregate donations from supporters. We use the age of the organization as a proxy measure of quality. In the consumer market, information on the qualities of the firms’ output is transferred to consumers through advertising. Fundraising activities play a similar role as advertising in helping spread information on the quality of the organizations’ programs (Weisbrod and Dominguez, 1986; Saxton and Wang, 2014). We propose the following analytical model incorporating the constructs in the economic model of giving. We apply the log transformation to some explanatory variables, such as contributions and grants, total assets, price, and fundraising expenses.*

*LnCGi = β0 + β1SMTi + β2LnTAi + β3LnPricei + β4LnFundi + β5Agei + β6Agei x LnFundi + Industryi + ει*

*CG stands for contributions and grants. SMT is a social media traction extracted with a cluster of the two measures of Facebook Likes and Twitter Followers. TA stands for total assets. As described above, price is constructed by the calculation of (contributions and grants) divided by (contributions and grants – fundraising expenses). Fund represents fundraising expenses. While fundraising efforts can increase the level of contributions directly, they may decrease contributions by increasing the price of giving. Thus, we expect the coefficient of fundraising expenses to be positive, but the coefficient of price is negative. Age is the age of a nonprofit organization. The interaction term of age and fundraising expenses is included to examine the marginal effectiveness of fundraising activities for an organization of a certain age. We expect the sign of the interaction term of age and fundraising is negative since the older an organization is, the less effective additional fundraising effort is likely to provide new information or increase new donations. Industry is a dummy variable for the industry sector.*

*Our preliminary results show that social media traction (SMT) is positively associated with donations (contributions and grants), and the positive relationship is significant. The result indicates that the traction of supporters on social media (Facebook and Twitter) can increase contributions and grants. However, when we estimate the impacts of Facebook Likes and Twitter Followers separately, we find that the coefficient of Twitter Followers is positive and significant while the coefficient of Facebook Likes is not significant. These results suggest that the types of social media have varying impacts on the public’s engagement in fundraising campaigns. As expected, price is negatively associated with donations, and the negative relationship is significant. Our results also show that while the importance of nonprofits’ use of social media is increasing, the financial capacity of nonprofit organizations is still critical for increasing donations.*

*This research sheds light on the literature on IT impacts on charitable giving in the nonprofit sector by adding new knowledge. The contribution of this research is twofold: First, it conducts an organizational-level study of the relationship of social media use to donations (contributions and grants) by the public for nonprofit organizations. Second, it uses different types of social media traction measures, i.e., how extensively nonprofits draw supporters on these social media sites, which have little been analyzed in previous research.*

**Keywords:** Nonprofit organizations, social media, charitable giving, economic model

Teen Pregnancy in the US: A Regression Analysis of Education, Media, and other Socioeconomic Factors

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Quinnipiac University, United States

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# Abstract

*This study attempts to examine teen pregnancy rates in the US in relation to education, health insurance rates, and female labor force participation rates. Multiple regression analysis is the primary method used to pinpoint the most statistically significant variables correlating with changes in teen pregnancy.*

**Keywords:** Data Analytics, Regression, Teen pregnancy, Socio-economic data analysis, Data Mining

Teaching Soft Skills to Information Systems Students

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# Abstract

*This paper explores what one university does for their 225+ management information systems majors to improve their ‘soft’ skills. A pair of one-hour required classes during the spring of the sophomore year and fall of the junior year have the students practicing and reflecting on networking, job searching, and interviewing skills while building their confidence in all of these areas.*

**Keywords:** soft skills, professionalism, career preparation, information systems majors

Factors Affect Time Series Forecasting Accuracy: A Survey

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# Abstract

*This research investigates the factors that affect time series forecasting accuracy in terms of forecasting domain alignment, forecasting model selections, and model validation schemes. Time series forecasting is one of the most challenging areas because almost all data in business finance, social economics, and stock and oil markets are time series. While tremendous efforts have been made to improve the forecasting accuracy in time series data, it remains one of the most difficult aspects in the areas of business analytics, machine learning, and data science. Even with the help of recent development in deep learning and big data algorithms, there has not been a consensual strategy applicable to all time series forecasting models in terms of forecasting accuracy. In general, since time series data are not necessarily independent and identically distributed, it does not guarantee that the future performance will repeat in the same pattern as in the past regardless how well the forecasting model fits the available dataset. Specifically, attentions will be focused on domain alignment among the training data set, the testing data set, and the predicted future values; forecasting models by contrasting statistical time series models against machine learning and deep learning models; and model validation schemes by comparing the usual out-of-sample validation method with the data splitting into training and test subsets to the cross-validation scheme with the data splitting into a series of test subsets.*

**Keywords:** Time Series Forecasting, Domain Alignment, Forecasting Accuracy

Mechanisms for Revival: How Does a Brand Revive itself for a New Generation?

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# Abstract

*Background and Purpose
Age cohorts are analytical perspectives and determining the span of one generation to another is fluid. The generation after Millennials the Post-Millennial group demographers have named this group Generation Z. Generation Z or Gen Z has become a popular naming convention for this group (Fromm & Read, 2018). Generation Z members (born between 1997 and 2012) are the largest age cohort in United States society today with approximately 86.4 million members versus the next largest group of Millennials preceding them with 71.8 million members. Generation Z are digital natives. A digital native is an individual who was born after the widespread adoption of digital technology (Solomon, 2017). Generation Z has grown up using technology such as the internet, computers, and mobile devices where this technology has been present all of their lives. This exposure to technology in the early years of their development is believed to give digital natives a greater familiarity and understanding of technology than people who were born before it was widespread (Nielsen, 2017). As such, interacting regularly with technology at an early age is the deciding factor to be a digital native. That said, Generation Z are more likely to be familiar with the terminology of the digital world. As such, for a brand to revive itself for a new generation, mechanisms for revival must contain the most effective digital component to influence the consumer behavior of this group with positive marketing (Lerman & Shefrin, 2015).

Marketers now more than ever must explore emerging media trends and attitudes among Generation Z to uncover new insights about what kinds of new phenomena are on the horizon, especially as it relates to holding Generation Z attention with digital marketing communication and advertising. Generation Z spends significant amounts of time on social media sites and video source platforms like Instagram, Snapchat, Facebook and YouTube and others, searching for content that is engaging and entertaining (Nielsen, 2017). Digital marketers and advertisers are challenged to develop targeted campaigns to capture the attention of these digital natives that are influential spenders on products and brands. However, according to Advertising Age (2018), 69% of Generation Z avoid ads.

Holding Generation Z attention with digital marketing communication and advertising is important because such communication provides a service to society. It is a vehicle of positive marketing where it serves a purpose to not only make the consumer aware of the value proposition of market offerings, but it also serves to educate the consumer. A lack of engagement in digital marketing communication and advertising means that Generation Z can miss valuable information that could enhance their well-being to include older brands with a rich heritage. Therefore, if marketers and advertisers want to introduce a brand to a new generation, it must evolve and adapt to capture the attention of Generation Z. The crux of repositioning a brand in an effort to revive itself for a new generation, a brand must undercut an existing concept, in this instance that the brand is old an outdated (Ries &Trout, 2001).

Problem Statement and Research Questions
Revitalizing a brand to the Generation Z consumer is not an easy task because they are a distracted multitaskers where the efforts of digital marketers face obstacles to get the attention of this consumer (Nielsen, 2017). As such, the primary research question to be explored in this study is: How does a brand revive itself for the new Generation Z consumers? A secondary research question is what is the role and effectiveness of emergent technology and media, to revive a brand for a new generation of consumer, Generation Z.

Methodology
To address the research questions, respondents will be screened to be Generation Z members and users of the brand category that will be the focus of advertising exposure. The brand to be selected for exposure will be identified as having a strong heritage among older age cohorts versus Generation Z as indicated by the literature (e.g., Legos, Hot Wheels). A descriptive research design will be used for this research. The data collection tool will be administered to respondents as an online survey delivered via email addresses through the Qualtrics XM platform. Availability sampling utilizing a panel resource will be the method to select participants for the study (Robson, 2002). Respondents will be exposed monadically to a single nostalgic brand with advertisements executed on three different platforms, Instagram, TikTok and Augmented Reality as these are popular and emergent technologies leveraged with marketing (Positive Marketing Conference, 2022). The value proposition and copy of the advertisement will be selected to have consistency in its communication but its delivery will vary by the platform where it has been shown (i.e., Instagram, TikTok, Augmented Reality). These will serve as the independent variables for this study (factors). The dependent variables will be brand favorability ratings associated with the ads to include but not limited to purchase intent and image attribute ratings for the brand. The difference in purchase intent and attribute ratings across platforms will be analyzed using analysis of variance techniques and thematic analysis of open-ended commentary. The analysis is expected to determine which platforms indicate comparative evidence of increasing perceptions of brand revitalization.

The expected outcome of this research is to add to the evidence on which technology channel will have the most influence on consumer behavior in this era where advertisers are grappling with the state of digital transformation and its impact on marketing communication.*

**Keywords:** branding, social media, metaverse

Monsoons, Computers, Satellites : History and Politics of Weather Monitoring ICTs in India

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# Abstract

*The monsoons are the single most important natural phenomenon in India. They bring an average precipitation of 35 inches per four-month season encompassing almost all of the sub-continent. A “weak” or failed monsoon has the potential to lead to catastrophic crop failures, wreck the entire country’s economy, cause governments to collapse, and send millions of its citizens to misery and even starvation.
The focus of this paper is on information and communications (ICT) tools used to compute, analyze, and track monsoons, and the technological developments that have occurred over the years, up to the present. Since technologies are not removed from society, but rather constructed by society, the paper delves into the political and historical environments that have often dictated monsoon tracking in India – hence, the technological fixes and their interactions with local communities. It thus dives deep into the history of technologies for meteorological computing, and the accompanying local policy interactions, indigenous approaches, global collaborations, and state control on weather-related information. The paper also briefly analyzes how, in recent decades, newer, localized communications technologies have been deployed during and after monsoons. These technologies help to alleviate some of the disruptions that typically accompany overactive monsoons, such as floods which not only cause environmental damage, but also damage crops and livestock, and cause massive disruptions to transportation and the economy as a whole.*

**Keywords:** Information and Communications Technologies (ICTs) Monsoon prediction technologies, Weather Monitoring, Indian computing, IT in Society, History of Computing

Data Mining Approaches to Personalized Medicine: Potential Applications and Overcoming the Challenges

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# Abstract

*When one of the authors of this paper graduated medical school in 1984, some information about the relationship of specific genetic mutations to particular disease states were known, but detailed analysis of the human genome was still in its infancy. Additionally, the computational resources needed to analyze large-scale genomic data were not available and the limited available resources were economically impractical. As more complete information about the human genome has been unlocked, more efficient and less expensive analysis methods have simultaneously become available. The traditional approach of “one treatment fits all” in a particular disease has been challenged, and the current hope of medical practitioners and drug developers is that analytic approaches to genomic variation of affected patients can lead to more tailored therapeutic approaches. Characterization of cancer cell subtypes, identification of patient subgroups that respond differentially to alternative pharmaceutical approaches, and automated interpretation of medical images and cell pathology offer patients new hope in previously untreatable diseases. Identification of genomic variability patterns and differences in gut biome flora may identify patient groups who respond differentially to novel treatments. This research project seeks to explain the practical and ethical challenges of data mining in the healthcare and biological science environment, to identify the common data mining models used in genomic and pharmaceutical research, and to look at potential ways that these approaches may change the treatment of patients in the future.*

**Keywords:** personalized medicine, genomics, big data, electronic medical record, human genome

An Empirical Experiment Comparing Student Performance in Face-to-Face versus Online Course Delivery

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# Abstract

*The COVID-19 pandemic caused significant disruption to education at all levels. Schools at the primary, secondary, and college-level were forced to rapidly convert from traditional face-to-face classes to hybrid, and in many cases, fully online course delivery. The speed of this conversion did not allow for adequate preparation by many educators. This resulted in situations where courses designed for face-to-face delivery were “shoehorned” into an online mode with little modification. Researchers have spent significant effort debating the necessity of these changes and the impact on students who were forced into social isolation by pandemic restrictions. While these are interesting research topics, they miss a key question--how effective were these on-line classes as compared to their face-to-face counterpart in teaching the material?*

*The rapid conversion to hybrid and fully online course delivery, while unfortunate for many reasons, did have a positive feature. It provided an excellent opportunity to conduct an experiment and collect data comparing the outcome of face-to-face delivery to online delivery of the same course material by the same instructor to a statistically significant population of students who did not necessarily self-select into an on-line course. The unique structure of this experiment held several variables constant that normally would have made the results more difficult to interpret.*

*The research project associated with this presentation collected data from five sections of a junior-level computer information systems course in a business college over a two-semester period. In the first semester one section of the class was taught in a traditional face-to-face manner and a second section was taught fully online. For the second semester there were two sections of face-to-face delivery and one section of online. While the course material and performance expectations were identical for all sections, the material in the online course was structured for online delivery utilizing best practices as defined by the University’s Center for Teaching and Learning. The two online sections were originally scheduled for face-to-face delivery; however, unexpected staffing shortages and latent administration concern about teaching face-to-face while COVID-19 was still prevalent resulted in last minute conversion of both sections to online delivery. Thus, students registered for those sections did not necessarily self-select into an online course. Consequently, this schedule provided a serendipitous opportunity to compare the performance of the two course delivery modes with minimal interference from spurious variables.*

*The presentation of this research will describe the circumstances that resulted in the development of the experiment and data collection. The data for the five sections will be presented and discussed with the intent being to show the benefits and challenges of each course delivery mode. Insights will also be provided related to testing concerns in an online environment. The contribution of this research is that it will help educators understand the benefits and pitfalls of courses designed for online and hybrid delivery. It will also reinforce the best practices of those course components that are most effective for face-to-face delivery.*

**Keywords:** E-learning, Digital learning, Online course delivery, Face-to-Face versus online

Skills and Certifications required by Technical Program Managers

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# Abstract

*The technical program manager b position requires a wide variety of skills and often many years of work experience. In this paper, we examine job postings to arrive at a list of the most common skills and certifications required.

The job requirement can be broken down into three main areas - technical knowledge, program management skills, and leadership skills. Technical knowledge includes general technical knowledge, like system design and database concepts in addition to specific domain expertise, such as security, data analysis, or infrastructure–depending on the organization. Program management would include scope management, risk management, cost estimation, risk management, requirement gathering, and prioritization, diagnosing and monitoring metrics, technical deliverables, etc. Depending on the organization’s project management methodologies (e.g., Agile and CI/CD) the role requires specific knowledge and experience. Leadership skills include communication, decision driving, ownership, and escalation abilities.

In this research project, we examine which certifications provide an individual with the necessary knowledge and skills in each of these areas. We also examine specific requirements for different organizations and make recommendations for individuals seeking to enter the Technical Program Management role.*

**Keywords:** Technical Program Manager, Skill, Certification, information system management, project management

Emerging Trends in Tourism and Hospitality Education: A Bibliometric Analysis

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# Abstract

*Tourism and hospitality as two popular and important subjects of teaching and research in higher education could be traced back to early 1920s when Cornell University offered a Bachelor of Hospitality degree in 1922 ((Barrows and Bosselman, 1999). Around the same time, tourism was studied and taught at the Universities of Rome in 1925 (Airey, 2016). As time goes by, tourism and hospitality education has been recognized as an important academic area and numerous universities and colleges all over the world have been offering courses in tourism and hospitality management and awarding related degrees including BA, BS, MS, MBA, Ph.D., as well as Associate degree (Airey, Dredge & Gross, 2015; Horng & Lee, 2006; King, 2009; Lo, 2006; Singh et al., 2022; UOTP Marketing, 2020). According to Universities.com, a website with comprehensive source about education, there are 473 academic institutions that offer hospitality management programs in the United States (Universiry.com, n.d.). Along with the continuous pedagogical development and academic advancement of tourism and hospitality education, a number of professional and academic journals came into being and remain published to meet the needs of teachers, scholars, researchers and professionals in tourism and hospitality management to this day. Among the 129 journals ranked on the website of Scimago Journal & Country Rank, three of them are specifically dedicated to tourism and hospitality education: (1). Journal of Hospitality, Leisure, Sport and Tourism Education, (2). Journal of Hospitality and Tourism Education, and (3). Journal of Teaching in Travel and Tourism (ScimagoJR, n.d.). Throughout the years, more and more researchers and scholars have conducted research activities for tourism and hospitality education, thus having published numerous research papers in many academic journals. For instance, Benaraba, et. al. (2022) have done a comparative analysis on the career perceptions of tourism management students before and during the COVID-19 pandemic. Hasenzahl, Ghezili & Cantoni (2022) have conducted a pilot study from students’ perspectives on eLearning for tourism during the COVID-19 pandemic. Hsu (2021) has done a cross-sectional and longitudinal study on learning tourism and hospitality subjects with massive open online courses (MOOCs). Volgger, & Pechlaner (2014) have studied the interdisciplinarity, transdisciplinarity and postdisciplinarity in tourism and hospitality education. Wang, Ayres & Huyton (2010) have conducted a case study in Australia, aiming to answer the question “Is tourism education meeting the needs of the tourism industry?”. Ruhanen (2006) has investigated the experiential learning approaches for bridging the divide between theory and practice in tourism and hospitality management education. In addition, there have been other studies carried out from different perspectives and on various aspects of tourism and hospitality education, such as: and tourism and hospitality education in various countries, such as: Australia (Wang, Ayres & Huyton, 2010; Breakey & Craig-Smith, 2008), Brazil and the UK (Knowles, Teixeira & Egan, 2003), China (Lam & Xiao, 2000; Li & Liu, 2016), China and South Korea (Wang & Abukhalifeh, 2021), the Republic of Croatia (Perman & Mikinac, 2014), Ghana (Adu-Ampong & Mensah, 2021), Greece (Christou, 1999), India and Malaysia (Sarkar & George, 2019), Malaysia (Shariff & Abidin, 2022; Hussain, et. al., 2020), and Taiwan (Liu, 2006).

Besides the above research papers on various aspects of tourism and hospitality education, there have been research activities using bibliometric analysis to study the published literature of tourism and hospitality research in various areas, such as: hospitality and tourism innovation research in academic and trade journals (Cao, Shi & Bai, 2022), customer experience research in hospitality and tourism (Kim & So, 2022), past themes and future trends in medical tourism research (De la Hoz-Correa, Muñoz-Leiva & Bakucz, 2018; Habibi, et. al., 2021), hospitality and tourism under COVID-19 (Wang & Wong, 2022), post covid-19 management strategies and policies in hospitality and tourism (Khan, Nasir & Saleem, 2021), the role of tourism management and marketing toward sustainable tourism (Pahrudin, Liu & Li, 2022), social media literature in hospitality and tourism (Nusair, 2020), the past, present, and future of smart tourism destinations (Bastidas-Manzano, Sánchez-Fernández, & Casado-Aranda, 2021), research trends in tourism and hospitality from 1991 to 2020 (Wang, Wang & Wang, 2022), Human resource management studies in hospitality and tourism (Pelit & Katircioglu, 2021), knowledge development in smart tourism research (Johnson & Samakovlis, 2019). Despite the many academic studies on various aspects of tourism and hospitality research with bibliometric analysis, little has done to investigate the published literature in tourism and hospitality education using bibliometric analysis. So far only one paper has been found with the application of bibliometric analysis to the studies on tourism and hospitality education. Menon, et. al. (2021) have conducted a bibliometric analysis on the present and prospective research themes for tourism and hospitality education after the COVID-19 pandemic. The lack of bibliometric analysis calls for researchers to pay more attention to explore the research opportunities and emerging trends with a bibliometric approach to tourism and hospitality education.

Since the research on tourism and hospitality education has become more and more popular and important not only in the United States, but also all over the world, in order to have a better understanding of the research on tourism and hospitality education, this paper proposes a bibliometric analysis on the paper publication and journal performance, focusing on the overall status and emerging trends, as well as the impact on future research on tourism and hospitality education. Using the bibliometric data retrieved from the peer-reviewed publications in the database Web of Science (WOS), this paper aims to answer the following research questions:*

*1. What are the most productive countries, organizations, and researchers in tourism and hospitality education?
2. What are the most popular research journals for researchers to publish their papers on tourism and hospitality education?
3. What are the authorship and collaborative research patterns of tourism and hospitality education researchers?
4. Which research papers are highly influential with respect to citation and usage count on tourism and hospitality education?
5. What are the most frequently used keywords and co-occurrence network in tourism and hospitality education?
6. What are the emerging trends for the future research on tourism and hospitality education?

The significance of this paper is three-fold: First, it would provide answers to the research questions that reveal the present status and emerging trends of tourism and hospitality education research through a bibliometric analysis. Second, it would provide a better understanding of what has already been researched and what is being researched for tourism and hospitality education. Third, it would provide the directions for the future research in tourism and* ***hospitality*** *education, as well as tourism and hospitality education assessment.*

**Keywords:** tourism and hospitality education, emerging trends, bibliometric analysis, paper publication, journal performance, Web of Science (WOS)

Exploratory Data Analysis Using Prescriptive Analytics

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# Abstract

*This presentation is derived from a series of lectures to my students that major in Information Systems. The main tool for running Exploratory Data Analysis (EDA), is to use any one of the existing software whereby you feed in the data, and the software ‘spits’ out the result instantly! This does not help the student get an intuitive idea of the inner workings of EDA. So, in addition to using existing software to execute EDA problems, the students are made to construct the EDA tool using MS Excel, and then compare their results with results from existing EDA programs. This gives the student a deeper insight into how EDA works. The data is obtained by generating five normally- distributed random variables, to simulate the ratings of a newly-developed product in five different regions of the country.*

*This is a practical guide to classification learning systems and their applications. These techniques learn from sample data and make prescriptions for new cases.*

**Keywords:** Data Mining, Cluster Analysis, Data Classification

Machine Learning and Deep Learning in Healthcare: An Analysis

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# Abstract

*This paper presents how Machine Learning (ML) and Deep Learning (DL) technologies use genetic algorithms to transform many aspects of medicine. Our research will discuss various applications such as improving effectiveness of clinical triage, diagnostic interpretation, therapeutic intervention, disease prognostication, and genome interpretation. We will present an overview of why these technologies were developed and how the healthcare professionals use them to enhance patient care.*

**Keywords:** Machine Learning, Deep Learning, Health Care

Impact of Cultural Differences of IT Project Teams on Project Managers’ Leadership Styles

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# Abstract

*Globalization and offshore outsourcing have allowed companies to take advantage of cost-effective technical expertise in other countries and time zones. However, globalization has also added challenges to project management as more and more projects are executed in multicultural environments. As project teams work across time, space, region, and culture, non-technical factors such as cultural issues play a crucial role in determining the success of a project. The success of a project largely depends on how effectively and efficiently such cross-cultural teams are led by project managers in meeting the project goals. Therefore, the study of cultural differences and the impact of such differences on leadership styles has become more important. The purpose of this study is to investigate the impact of cultural differences on the leadership styles of Information Technology (IT) project managers.*

**Keywords:** Culture Differences, Technical Expertise, Information Technology. Leadership

Understanding the role of Emotion in Behaviour: an evaluation of influential definitions

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# Abstract

*Abstract Assessing emotion with AI is widespread: the market size for emotion detection and recognition (EDR) will snowball to exceed USD 50 billion in 2028. Organizations use EDR for understanding, predicting and influencing behaviour, especially where digital communication is involved. We argue that there is a definitional lack of clarity about the concept of "emotion" when measured with EDR tools to draw conclusions related to behaviour. We analyzed the ten leading publications on emotion in relation to behaviour as identified by Waisvisz c.s. (2002). These publications indicate that (1) Emotions happen inside a being and have to be measured indirectly; (2) The expression of emotions through a range of measurable behaviour action responses of a physical or linguistic nature. (3) Whether and how expressions of emotions are expressed depends on and varies with (a) social context and (b) physical contexts, as well as (c) past experiences of the individual and (d) character. Therefore we recommend extreme caution when interpreting EDR measurements and, at a minimum, include information on social and physical context. We also recommend sticking to Panksepp's definition of emotion when measuring emotion in a behavioural context: "Emotional feelings are the experienced affective manifestations of interactions; they are the subjective qualities of mind, aspects of which can be studied systematically." Lastly, while people are neither accurate in estimating their own nor others' emotions, they react to others' supposed emotions. We suggest making use of this principle of Theory of Mind when measuring behaviour.*

**Keywords:** emotion, emotion detection, emotion recognition, psychology, social implications

Conundrum of WannaCry Ransomware Attack: An Analysis

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# Abstract

*Ransomware attacks are spreading like a cyclone wind. The bad actors are using this attack strategy to create havoc in the cyber ecosystem. As a cyclone wind creates atmospheric instability in the global platform; likewise, ransomware creates computer data instability wherever it attacks. Since digitization is the word of the day, every user is striving towards digitization. As a result, users keep data secured in their computer servers or networks. These storage devices are always susceptible to the bad actors who will try to penetrate and steal valuable information. When a system is compromised, unsuspecting user is subject to loss all their valuable date for a ransom. A ransomware is one of the software viruses that hijack users’ data. A ransomware may lock the system in a way which is not for a knowledgeable person to reverse. It not only targets home computers but business also gets affected. It encrypts data in such a way that normal person can no longer decrypt. A person must pay ransom to decrypt it. But it does not generate that file will be released. This paper gives a brief study of WannaCry ransomware, its effect on computer world and its preventive measures to control ransomware on computer system.*

**Keywords:** Ransomware, WannaCry, CyberSecurity

Dynamic Capabilities on Big Data Analytics’ Explosion: Changing Decision-Making Processes in the Organization

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# Abstract

*This study discusses the dynamic capabilities of utilizing Big Data and advanced analytical techniques on the quality of decision-making to achieve performance excellence. In essence, the objective of the study is to examine the impact of the emerging technology and how it affects decision-making in the organizations. The unitilization of Big data analytics provide a mechanism for analyzing a large volume of data to retrieve meaningful insights from data and used the recognized data pattern to predict future performance. Today, many organizations are leveraging data to automate processes, optimize selling strategies and enhance the overall efficiency of the business activities. This study shows that most organizations have improved with the implementation of Big Data and similarly career field has become significantly enhanced when the ability to collect and analyze Big Data is added to the mix. The study noted that the ability to develop Strong Big Data analytics capabilities would be needed for realizing the potential of Big Data analytics for decision-making and performance improvement. We found in our study that decision making is becoming more transparent, accurate, efficient and to some extent faster. The study concluded that as more organizations move towards a data-based decision-making approach, it is essential that organizations foster learning and invest in their employees to gain value-added certifications in this domain. In addition, the study noted that the organizations should take initiatives in sponsoring employee for relevant training programs on analytical tools and techniques that arm them with the knowledge and skills required to leverage data for informed decision-making.*

**Keywords:** Dynamic Capabilities, Big Data Analytics, Decision-Making Processes

Threat Hunting: The PsExec Malware Analysis

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# Abstract

*Organizational administrators have been using Microsoft’s Sys-internal suite-PsExec for managing devices on their respective networks. PsExec is a system administration utility tool that can execute programs on remote Windows hosts. This tool is a lightweight, standalone utility that can provide interactive access to the programs it runs remotely, however PsExec’s versatility and ease of use, make it an easy exploit for attackers. Multiple exploit scripts leveraging PsExec are now part of organizational frameworks Some of the exploit kits include Cobalt Strike and Metasploit, all of which provide PsExec-style capabilities. They can launch Windows programs on remote Windows computers without needing to install software on the remote computer and as such, made the malware Ransomware an easy tool for exploiting unsuspecting victims. Attackers often use Sys-internals PsExec to perform lateral movement. They accomplish the attack by setting a presence in an unsuspecting host environment thereby compromising host credentials with Local Administrator privileges. The attacker can also run PsExec on the compromised host and further execute commands on another host.*

**Keywords:** PsExec, Threat Hunting, Cyber Security, Malware, Ransomware

Preliminary research into the possibilities of using data management for sustainable use of space in the buildings of the University of Applied Science Utrecht

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# Abstract

*At the University of Applied Science Utrecht we have been working on optimising the sustainable use of space for a long time. There are various reasons for this, such as the high costs per square meter, the shortage of space at peak times and the vacancy rate at off-peak moments. There are complaints from the education departments that they cannot book rooms when they need it, while occupancy figures show that on average there should be a lot of rooms available. All this requires a major research. Where we are still in the phase of researching what data we have available and how we can unlock and connect that data.*

*During the preparations for this research, however, it was also discussed that heating, cooling and ventilating all those rooms costs a lot of money. If these rooms are used intensively, that is fine, but if they are often empty, this is not sustainable and therefore undesirable. The department responsible for heating, cooling and ventilation also has a lot of data regarding the use of the rooms, because there are various sensors in the buildings that constantly take measurements. This data is currently used to a limited extent and nothing is yet being done with the combination of the various data from both the building management systems and the education planning systems. The question is what could we do with the combination of all that data?*

*This practice-oriented research will focus on optimising sustainable use of space within the University by providing insight into the actual occupancy of scheduled teaching spaces using the data from the sensors of the building management system. The first step here is to investigate whether the data from the building management system is suitable for determining the occupancy. Subsequently, it will have to be investigated what the possibilities are to make the use of space more sustainable. We also hope that during the research it will already be possible to reduce energy consumption by using the data, so that we meet the call from the Dutch Government to reduce our energy consumption.*

**Keywords:** Datamanagement, Sustainability, Data analysis, internet of things