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Challenges and New Opportunities

Edited by
Farid Abdallah, Vladimir Simovic and Marcelle de la Roche

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About the Editors

Farid Abdallah

Farid Abdallah is the Dean of the Business School at the Australian University, Kuwait. As a dual national with a diverse social and educational background, Farid's educational experience is best described as multi-disciplinary in law and business domains. Although his academic qualifications are essentially law, his academic career has been major in business schools. He has held multiple administrative positions in business schools since 2011, including Assistant Dean, Department Chair, and Dean of School. Due to his diversion in his career path towards business management, Farid has developed a diversified research interest, contributing to research in various business-related fields and the legal aspects thereof. His current research interest primarily pertains to management and human resources fields, namely digital entrepreneurship, innovation, change management, and human resource management.

Vladimir Simovic

Vladimir Simovic is a researcher at the Scientific Research Center of the Australian University, Kuwait (AU). His professional interests are in digital marketing, digital entrepreneurship, digital competencies, and information systems in business. He is also the Head of the Department of Digital Economics at the Institute of Economic Sciences in Belgrade, Serbia. He is the PM of the European ESF+ project on digital marketing competencies and a participant in the European COST Action on artificial intelligence in business, and he has over 15 years of research and teaching experience. He founded several digital startups in Serbia and a think tank dedicated to innovative learning practices.

Marcelle de la Roche

Marcelle de la Roche is an instructor and researcher at the College of Business, Australian University, Kuwait (AU). She has 15 years of teaching experience, spanning marketing, management and information technology courses. Before embarking on her teaching and research career, she held management positions within various companies in the information technology sector. She currently holds the position of Acting Head of Department for the college's Marketing and Events Management department. Her research interests are primarily digital marketing, neuromarketing, and artificial intelligence.

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Editorial

Statement of Peer Review [†]

Farid Abdallah [1], Vladimir Simovic [2,3,*] and Marcelle de la Roche [1]

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[†] Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

In submitting conference proceedings to Proceedings, the volume editors of the proceedings certify to the publisher that all papers published in this volume have been subjected to peer review administered by the volume editors. Reviews were conducted by expert referees to the professional and scientific standards expected of a proceedings journal.

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Abstract

Innovation Performances of Entrepreneurial Firms in Serbia †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Keywords: innovation; entrepreneurship; business process innovation; Serbia

1. Objectives

This paper explores what innovative Serbian entrepreneurial firms are and what types of business process innovations they have introduced. It also investigates the relationship between introducing innovations on one side and customer and employee satisfaction on the other.

2. Methodology

An online survey was used as the primary source of collecting data. On a 5-point Likert scale, the owners of the companies evaluated different statements about introducing and subsequent use of innovations related to various business processes. On the same scale, they also compared employee and customer satisfaction with that of their most important competitors. The statistical analysis involved descriptive statistics, frequencies, reliability, and correlation analysis.

3. Results

The results indicate that most entrepreneurial firms introduced many business process innovations related to product and business process development. Those innovations allow for more efficient operations and improvements in various processes. They enable establishing routines and responding to customer complaints faster than the competition. The results also suggest a positive association between introducing business process innovations on one side and customer and employee satisfaction on the other.

4. Implications

The findings of this paper can help policymakers create instruments for supporting entrepreneurial firms in Serbia and assess the contribution of innovation to economic goals. They indicate what kind of support is required to strengthen small firms' innovation capacity.

5. Originality Value

As far as the authors are aware, such research has not been previously conducted in Serbia. Nonetheless, the results are comparable with those of similar studies that are conducted in other countries. Moreover, the results of this study could be applied to other Western Balkans countries with similar characteristics of national innovation systems.

6. Contribution

This research adds important new insights into the innovative activity of Serbian entrepreneurial firms, and it shows their success in introducing innovations related to various business processes. Moreover, the findings indicate a clear connection between business process innovations on one side and employee and customer satisfaction on the other.

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Proceeding Paper

The Use of Disruptive Technologies in the Construction Industry: A Case Study to Compare 2D and VR Methods of Concrete Design Interpretation †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: The laggard integration of digital technologies in the construction industry has seen to delay the sector in realizing its potential advantages. Using Virtual reality (VR) in the construction has the capacity to augment the interpretation of structural drawings. Comparing VR using head mounted display (HMD) devices with traditional 2D drawings in identifying structural mistakes in construction drawings has been conducted with engineering students enrolled in a concrete structures course. The findings show that the HMD VR group was able to identify 40% more mistakes in comparison to the traditional group in addition to the increase in efficiency and speed of detection of five minutes. The use of VR within engineering education can potentially increase the pace of digital technology's adaption in the construction sector.

Keywords: AutoDesk Revit®; construction delays; performance; virtual reality (VR); construction industry

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1. Objectives

The construction industry has been diagnosed with low productivity rates and continuous project delays. Additional costs are accompanied by delays, resulting in construction projects exceeding the anticipated budget and time assigned [1]. The construction project design complexity level has been shown to have a considerable impact on project delays [2]. This project aims to integrate the use of VR in engineering education to improve the interpretation and understanding of construction designs.

2. Methodology

Using Autodesk Revit® (Newton, MA, USA), a concrete structure was designed based on engineering best practices. The design was modified by incorporating 12 different structural mistakes and was transferred into a Plugin, namely Enscape® (Karlsruhe, Germany), as shown in Figure 1. The software is compatible with virtual reality head-mounted display sets.

Students were divided into two groups: 2D and VR. Both groups were asked to identify as many mistakes as possible in 15 minutes using 2D plans and Oculus Quest 2 (HMD).

Both groups completed the assessment in an exam-like environment.

Figure 1. 3D model in Enscape®.

3. Results

Table 1 shows the results of the students' assessment.

Table 1. Students' performance results.

		Average Identified Mistakes	Average Unidentified Mistakes (Out of 12)	Average Wrongly Identified Mistake Category *	Average Time
2D N = 11	Average	2.45	9.55	2.91	15:00
	%	20.45	79.55	-	
	SD	1.67	1.67	1.24	
VR N = 10	Average	7.50	4.50	2.50	9:20
	%	62.50	37.50	-	
	SD	2.54	2.54	0.81	

* Wrongly identified mistakes refer to mistakes identified by students that are structurally accepted.

Students of the VR group found 62.5% of the mistakes, in comparison to the 2D group, who identified only 20.45% of the mistakes. The results prove the effectiveness of VR in comparison to 2D plans.

4. Implications

Confirming what was mentioned by [3–5], the results show that students are better prepared for the workplace when utilizing VR in their studies. It contributes to cost reduction and productivity improvements in construction companies.

The construction industry is advised to integrate digital technologies such as VR to reduce misinterpretations of 2D plans and improve their firms' overall performance.

5. Originality Value

The value of this research lies within its methodology and uniqueness in the Gulf Cooperation Council (GCC) region. The experimental research design with an experimental (VR) and a control group (2D) allowed us to draw reliable conclusions. Three main performance indicators were used: correctly identified mistakes, wrongly identified mistakes, and students' time taken for identifying structural mistakes. This approach is original and has not been applied previously.

Furthermore, no similar investigations have been carried out among students in the GCC region. Therefore, the results are also interesting from an educational point of view.

6. Contribution

This research provides evidence that the use of VR in engineering education has positively influenced students' performance, improved their interpretation skills, and increased their efficiency.

The use of VR can be integrated into the architecture, engineering, and construction (AEC) industry so it can further benefit from these advantages. It is crucial to consider VR in complex projects, as companies' competitiveness lies within their ability to reduce the level of complexity.

An improved understanding of the construction project also reduces the chance of project delays.

Author Contributions: Conceptualization, M.I.A.-K.; methodology, M.I.A.-K., M.J. and S.M.S.; validation M.I.A.-K., M.J. and S.M.S.; formal analysis, M.I.A.-K., M.J. and S.M.S.; writing—original draft preparation, M.I.A.-K.; writing—review and editing, M.J. and S.M.S. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

The Effects of Mobile Marketing on Purchasing Decisions in Serbia †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: Mobile marketing is a multi-channel digital promotional activity to reach the target audience through their mobile devices. Mobile marketing has great potential due to the large number of users that can be covered. The subject of this article is the analysis of the influence that mobile marketing has on the purchasing decisions of consumers in Serbia. Research was conducted in order to examine general opinion of respondents about mobile marketing and to examine the influence of the way of using the phone and the importance of permission on the attitude towards mobile marketing.

Keywords: mobile marketing; purchase decision; consumer behavior; digital consumer

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1. Objectives

The behavior of modern consumers is under the constant influence of significant technological changes. The analysis of the digital consumer and the factors that influence him is a very popular topic in academic circles. The main goal of this research is to analyze the influence of mobile marketing on purchase decisions, as well as to examine whether consumption depends on the characteristics of consumers or the purchase value.

2. Methodology

Primary and secondary data collection techniques were utilized. Primary data were collected using a questionnaire created with Google Forms and shared via LinkedIn. The questionnaire consists of three parts: questions related to the respondents themselves for the purpose of respondents segmentation, questions about the use of mobile marketing, and questions on purchasing decisions. The obtained data were processed using the statistical software STATA (StataCorp LLC, College Station, TX, USA) in order to perform correlation analysis.

3. Results

The results displayed that the relationship between mobile marketing and purchase decisions is significant and positive. The analysis also showed that the impact of mobile marketing on purchase decisions is greater among Millennials, which was expected since they are the first generation to grow up entirely in the internet era. There is also a notable group of respondents who find mobile advertising meaningless, which is also in line with some previously conducted research.

4. Implications

The results of the research conducted in this paper are primarily intended for the purpose of scientific research but also for marketers. The analysis, in a comprehensive manner, includes, through different parts of the questionnaire, both the consumer factors on which purchases depend as well as purchase characteristics themselves in order to better understand the connection between mobile marketing and purchase decisions.

5. Originality Value

This paper's results would be of great importance to anyone interested in digital marketing and consumer behavior under the influence of technological changes that are taking place. Most studies on mobile marketing have been conducted in developed countries. However, in the context of developing countries, such as Serbia, there has been an insufficient number of studies, which gives additional importance to this research.

6. Contribution

The conducted analysis represents a good foundation for a number of future studies, which could be extended with a new time range or questions related to another digital marketing channel. In this way, the effects of multiple digital marketing channels could be measured. As this research only covers the territory of Serbia, it would be interesting to expand the research to countries in other regions as well.

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Digital Learning Environment—A Roadmap for the School of Business †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: This paper discusses the process of developing a new Digital Learning Environment (DLE) roadmap for CQUniversity's School of Business and Law. The roadmap was developed through several iterations of data collection, sector analysis, and stakeholder engagement, resulting in the identification of 15 themes mapped against the university's strategic plan, five macro-level trends, and six microtrends. The focus of the roadmap is on enhancing the learning experience of students, engaging them in the process, and raising the visibility of the product functionalities to support academic scholarships. The roadmap also addresses the immediate concerns of transitioning out of the effects of COVID-19 and known issues across the higher education sector while leaving space for exploring innovations in education.

Keywords: digital learning environment; student support; curriculum; learning experience

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1. Objectives

CQUniversity's School of Business and Law introduced significant changes to its Digital Learning Environment (DLE) between 2019, and as a result of CQURenew, the school's transformative project was undertaken in 2020. The objective of this paper is to discuss the process of drafting the next DLE roadmap. The development of a new roadmap is happening at a pivotal time for CQUniversity, and is informed by and aligns with complementary initiatives, processes, and governance structures. [1,2].

2. Methodology

The process for developing the roadmap required several iterations of data collection, sector analysis, and internal engagement, culminating with a roadmap produced for the School of Business and Law. The development of the roadmap included workshops with stakeholder groups such as Tertiary Education leaders, fellow Deputy Deans (Learning and Teaching), school managers, and students. The stakeholders were asked to reflect on three important themes: sector changes, CQURenew, and the future.

3. Results

The grouping of 15 themes was identified from the stakeholders and mapped against the CQUniversity strategic plan. The second stage of the project involved aligning the results with the governance of the university. This resulted in five macro-level trends being identified. [3–5] The final stage was mapping the outcomes to CQUniversity's DLE product groupings of online learning systems and learning analytics, with the result of six microtrends being identified. [6–9].

4. Implications

The school holds expectations for its quality of learning and teaching experiences, particularly in relation to a high-quality curriculum, materials, learning management systems, and teaching practices that support student learning. All the practices and processes assure the equivalence of the design, delivery, and support of learning and teaching quality, for all modes of delivery and locations. The DLE will further enhance the learning experience of our students.

5. Originality Value

While there is a breadth of literature on digitalization in education, this DLE framework addresses the breadth and depth of the information on how business schools can address immediate concerns as we transition out of the effects of COVID-19, address known issues across the higher education sector, and leave space to explore innovations within education.

6. Contribution

The focus of the roadmap for the School of Business and Law is founded upon engagement by students [10] and on raising the visibility of the product functionalities in support of the academic scholarships of learning, teaching, and student support duties. A further focus of the roadmap is invariably upon iterative predictive model enhancements and the ongoing integrations with our current systems.

Funding: This research received no external funding.

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Proceeding Paper

The Link between the English Language and Digital Competences †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: In this digital era, students are required to understand and apply the basic knowledge of digital media because of the transformation in the learning environment. This paper investigates the impact of the English language on the students' achievements in regard to their digital competencies, that is, to what extent university students whose mother tongue is not English feel confident in their ability to learn and practice new digital skills. The findings reveal that most students have positive attitudes towards technologies, however they find English language as a barrier in developing their digital competencies.

Keywords: digital competences; English language; students; higher education

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1. Objectives

Digital competences are important for future professionals who will practice their academic knowledge in different work positions. However, having in mind that the digital revolution is mainly achieved through the English language, as the *lingua franca* [1–4] of new technologies, the question is to what extent are university students to whom English is not a mother tongue confident to learn and acquire new digital skills? Therefore, the aim of this paper was to investigate the university students' self-confidence in their knowledge of the English language in relation to the use of digital technologies, their attitude towards these technologies, their related skills, and competences, and their satisfaction and needs.

2. Methodology

The methodology used in this study is mixed; that is, it performs the descriptive and quantitative analysis. The participants are students from the Academy of Applied Studies of Kosovo and Metohija-Serbia (AASKM). In total, 74 students participated in the study. An adapted questionnaire to assess students' digital and language knowledge and, their perceived skills, their attitudes towards the use of digital technologies in regard to the English language was used [5–9]. To facilitate the data collection, a Serbian translation was provided along with the English version before the online questionnaire was distributed via Google Forms to students of AASKM. The SPSS (Statistical Package for the Social Sciences) data analysis software was used to analyze and provide a descriptive analysis of the data [10,11].

3. Results

A total of 100% of respondents stated that they use the Serbian language interface in email correspondence, and 79.73% use the English language interface. A similar situation is with social networks, where 41.89% of the students stated to use the English language Facebook interface, and 66.22% use the English Instagram interface. 32.43% of participants stated that they never surf the Internet through a variety of Internet browsers using the

English language version (Google Chrome, Mozilla Firefox, Microsoft Internet Explorer, Microsoft Edge), while 44.59% stated they do so occasionally and only 22.97% do it on a regular basis. A total of 47.30% of the students do not agree with the statement that their knowledge of the English language is sufficient for using different digital resources, 37.84% agree with this statement, and 14.86% are not sure. When it comes to the role of the English language in the improvement of digital competences of students, 93.24% think it is important, 6.67% are not sure, and none of the students disagree with this statement. 97.30% of the students agree with the statement that knowledge of the English language helps them to cope better with all digital challenges that may be encountered online. The findings reveal that most students have positive attitudes toward technology. However, they find the English language as a barrier to developing their digital competences.

4. Implications

The finding of this research may be taken into account for the revision of the existing education policies in Serbia regarding the position and practice of the English language related to the acquisition of digital competences among university students [12–14]. Furthermore, findings can be applied to any other non-English speaking country where university students also have the same or similar problems and barriers related to the English language and digital competences.

5. Originality Value

This research brings new insight into the problem that exists in non-English speaking countries that exist among the student population in regard to the relationship between digital literacy and English language knowledge. So far, many studies have been dealing with the issues related to the application of digital technologies in learning and teaching the English language, and to our knowledge, not much attention has been given to the importance of the English language in acquiring digital competences important for both academic and professional achievements.

6. Contribution

It is expected that the results of the research raise awareness of the importance of the English language in the present global educational and employment scene, as well as point out the substantial synergy between English language competencies and digital competences, which is more than evident.

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Proceeding Paper

The Impact of Socio-Demographic Characteristics on Students' Perception of Identification of Opportunities: A Case Study from Kuwait and Serbia †

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Abstract: Digital transformation has increased the necessity of digital entrepreneurial competences (DEC). This paper investigates the impact of socio-demographic characteristics on the student's perception as one of the DEC components, named Identification of opportunities. The authors collected the data with the online survey and distributed it in Kuwait and Serbia in the 2021/2022 academic year. The tests used were T-test, F-test, and factor analysis. The T-test results showed that gender was statistically insignificant in most questions, but employment showed as opposite. The F-test showed that degree level and field of study were statistically significant. With factor analysis, four factors were identified. Paper's results highlight the significance of measuring the DEC and the impact of socio-demographics on them. Despite that, it serves as an excellent base for further research.

Keywords: digital entrepreneurial competences; digital transformation; socio-demographic characteristics; Kuwait; Serbia

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1. Objectives

The rising interest in Digital Entrepreneurial Competences (DEC) is a direct consequence of the pronounced need for digital transformation. Various online tools combined with new business models have created excellent conditions for digital entrepreneurship to prosper. This research aims to show whether university students' socio-demographic characteristics impact their perception of the identification of opportunities as the component of DEC [1].

2. Methodology

Based on the EmDigital framework, the authors created the survey to measure the differences in university students' perceptions of the identification of digital entrepreneurial opportunities. The data was collected from Kuwaiti and Serbian universities between June 2021 and January 2022. The authors used the T-test, F-test, and factor analysis for the examination.

3. Results

The T-test for gender showed statistically insignificant results for most questions (8/12). On the other hand, the same test showed that employment status proved to be statistically significant in 9/12 questions. The F-test showed that the degree level was statistically significant in 10/12 questions, and the field of study in 12/12. In the factor analysis, four key factors were identified: (1) creativity and innovation, (2) the search for and analysis of information, (3) prospecting, and (4) limitations and opportunities.

4. Implications

Results highlight the significance of measuring the impact of the socio-demographic characteristics on the students' perception of identification of opportunities as the component of DEC [2].

5. Originality Value

No similar research has been performed on the topic of the examination of the impact of socio-demographic characteristics on the students' perception of identification of opportunities (as the component of DEC) on a global level.

6. Contribution

The results of this study will contribute to the existing literature in this research field. Our research will also provide a great signal to other authors to focus on measuring these competencies in other fields, other competence areas, and other countries.

Author Contributions: The authors contributed equally to this work. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: The protocol was approved by the Ethics Committee of the Australian University, Kuwait and Institute of Economic Sciences.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. The participants were anonymous.

Data Availability Statement: The data are currently unavailable to the public. More info will be available when all papers are published.

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Proceeding Paper

Social Media Effects on E-Commerce Activities: The Case of Kuwait during and following the COVID-19 Pandemic †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: This paper discusses the impact of social media on the e-commerce industry in Kuwait. The paper highlights the slow growth of e-commerce in the region due to traditional shopping practices and lack of knowledge about e-commerce instruments. The paper explores the potential of e-commerce in Kuwait and how social media platforms like Facebook and Instagram are contributing to its growth. The paper also highlights the efforts of the Kuwaiti government in enhancing its e-Government potential and adopting laws in line with international regulations to make e-commerce more efficient and secure. Finally, the paper discusses the growth of regional-wide platforms in Kuwait and the shift towards the integration of digital technologies into the national economy.

Keywords: e-commerce; social media; online platforms; pandemic

1. Objectives

Social media has become a dominant variable in product marketing among companies. Before the COVID-19 pandemic, Kuwait's business people and the government had recognized the need to digitize their systems to maximize sales and marketing activities [1]. Due to the availability and reliability of Internet connectivity in Kuwait, millions of people can access social media platforms. This paper shall address how social media platforms have impacted e-commerce [2]. It specifically focuses on the relationship between accessibility to social media platforms and its effect on e-commerce usage in Kuwait.

2. Methodology

This study will employ a quantitative research approach. Data collection will involve a quantitative survey consisting of a five-point Likert scale to formulate reliable and suitable findings. The survey will be distributed to a random sample of 300 respondents, including Kuwaiti males and females who hold a bank account/card across different eligible age groups (i.e., 18+).

3. Results

The results of this study will be shared after data collection and analysis. It is important to note that businesspeople in Kuwait have started utilizing social media platforms and social networks to connect with the e-market and advance their trading activities. Kuwaitis extensively use social media platforms and are determined to ensure that they maintain their online presence [3]. Accordingly, it is predicted that this research will provide insights into the significance of social media in relation to e-commerce activities conducted by local individual consumers in Kuwait. Even senior residents are involved in engaging with online platforms, meaning that businesspeople have a chance to reach out to a significant audience.

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4. Implications

The advancement in e-business is happening or being experienced because of multiple factors. For instance, integrating traditional marketing methods with modernized systems results in reliance on e-commerce [4]. This study will develop a theory related to the effect of social media on e-commerce activities during and following the COVID-19 pandemic. The use of social media platforms for business activities is expected to gain support and focus from the government and the private sector. Accordingly, this study will provide practical benefits for businesses by showing the importance of social media platforms in engaging with individuals and converting them into customers. As a result, the successful performance of local businesses will positively reflect on the Kuwaiti government's economic situation.

5. Originality Value

The country has advanced in technology and innovativeness, and people are increasingly engaged with online systems. Diverse purchase behaviors have forced businesspeople to focus on meeting their increased social and emotional needs in the business world. Kuwaitis also shop in malls after learning about products on social media platforms [5]. The pandemic forced them to change their scope and focus on e-commerce as an alternative means of responding to COVID-19 safety guidelines. However, the effect of social media on e-commerce activities during and following the COVID-19 pandemic remains understudied.

6. Contribution

Kuwait's government has been supportive of e-commerce through its willingness to transact online and create a favorable environment for such trading activities. The focus on e-government services has meant that Kuwaitis are able and willing to trust companies with online transactions with the hope that the anticipated or ordered goods can be delivered [6]. Millions of Kuwaitis have joined social media platforms, particularly Instagram and Facebook. Accordingly, this research contributes to the existing literature by showing e-commerce entrepreneurs the changes in consumer behavior patterns during and following the COVID-19 pandemic.

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Proceeding Paper

The Impact of Social Media Marketing on Brand Community Membership: A Higher Education Perspective of University Students' Experiences in Kuwait †

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Abstract: Consumer identification with brands has received extensive attention in the fields of consumer behavior and psychology. Such consumer-brand identification is conceptualized through the term "brand community". A brand community is formed when a group of consumers express their interest towards and communicate their identities through a specific brand. The current literature shows that existing research on brand communities appears to be dominantly oriented towards tangible products. Accordingly, this research aims to explore the impact of social media marketing on brand community membership related to an intangible aspect of the self. Contextually, the research seeks to examine the impact of social media marketing of higher education institutions in Kuwait on students' relevant associations. Students are at the core of higher education institutions due to identifying as both consumers and creators of value. A mixed method approach to data collection and analysis will be employed in this research. The findings of this research are expected to provide important implications for theory and practice.

Keywords: identity; brand community; social media; higher education institutions

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1. Objectives

This research aims to explore the impact of social media marketing on brand community membership related to an intangible aspect of the self (i.e., educational service/experience). It specifically intends to develop an understanding of how social media marketing impacts brand community membership and, relatedly, what type of social media content influences brand community membership from a higher education (HE) perspective.

2. Methodology

This research will utilize a mixed-method approach of data collection, consisting of both qualitative interviews and a quantitative survey to investigate the relationship between social media marketing and brand community membership within educational institutions. The online survey will be randomly distributed to private university students in Kuwait through formal approval from the relevant institutions. The face-to-face interviews will follow non-probability and purposive sampling and be conducted based on the participants' ease of access and willingness to participate.

3. Results

This research is a work in progress, and the final results will be available after the data are collected and processed. It is estimated that this research will provide empirical evidence on the association between the different types of content distributed over social media and individual readiness to join the brand community. The focus of the research is on brand community membership in higher education institutions, and the expected results will be formulated accordingly.

4. Implications

The research offers theoretical and practical implications. Theoretically, exploring consumer identities in relation to brands from an intangible perspective advances the knowledge about brand community membership, especially since the existing research is heavily focused on the tangible elements linked to the development of brand communities. Practically, this research benefits several stakeholders. Since the major purpose of private sector academic institutions is to provide a service (i.e., education) in return for benefits (i.e., profits), this research will enable those institutions to better understand their students' responsiveness to social media marketing content and to enhance their association with the university (i.e., brand community). Relatedly, universities provide venues for retail businesses to rent on the campus. Therefore, it would be beneficial for those businesses to understand the students' demands prior to conducting their business operations. Furthermore, this research will provide access to data related to university students' attitudes toward social media marketing content, which will help marketing practitioners to predict future consumption patterns and construct their marketing campaigns accordingly.

5. Originality Value

The popularity of social media platforms has led to their increased importance as tools for marketing communication and consumer-brand mediation [1]. While it is acknowledged that social media is utilized to establish strong customer–brand relationships, the impact of social media content in the brand community literature appears to be largely underexplored [2]. In particular, "the process through which consumers increase the connection between the brand and the self through social media marketing activities has yet to be examined" [3] (p. 2).

6. Contribution

In recent years, higher education institutions have increasingly relied on social media platforms to communicate with their target audience [2]. Despite the observed rise in competition and marketing activities among universities, the impact of marketing activities on students' university choices remains obscured in the extant literature [4]. Therefore, this research contributes to the existing knowledge by addressing the impact of social media marketing on brand community membership for university students in Kuwait.

Author Contributions: Conceptualization, D.S.A. and H.A.; methodology, D.S.A.; resources, D.S.A. and F.A.; writing—original draft preparation, D.S.A.; writing—review and editing, D.S.A., A.E., V.S., F.A. and H.A.; visualization, H.A.; supervision, A.E. and V.S. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

Impact of the COVID-19 Crisis on the Demand for Digital Goods and Services in Serbia †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: The main goal of the paper is to examine whether the COVID-19 crisis has changed the "usual" pattern of consumer behavior. The analysis was conducted on the basis of samples of 6354 and 6108 Serbian households for 2019 and 2021. The results of the analysis showed that there have been changes in the behavior pattern of Serbian households when it comes to demand for digital goods and services. The obtained results have a special significance for producers, traders of digital goods and services in Serbia. This work has achieved both theoretical and empirical contribution in the field of microeconomic theory and analysis.

Keywords: demand; digital goods and services; COVID-19 crisis; consumer behavior; econometric model

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1. Objectives

The theory of consumer demand postulates that consumer behavior is influenced by numerous economic factors (such as consumer income, price of the observed good, prices of complementary products and substitutes), demographic factors (gender, age, education, marital status, etc.), geographical factors (a region in which one lives, climatic conditions, size of the city, degree of urbanization, etc.) and psychological factors (motives, attitudes, habits, feelings) that determine consumer preferences, i.e., the order in which consumers rank individual products through the combination of quantities of individual products, omitting the influence of natural, political and similar factors [1–3]. The main goal of this work is to examine the impact of the COVID-19 crisis, which is a type of manifestation of natural factors, on the demand for digital goods and services in Serbia. More precisely, the main goal of this paper is to examine whether the COVID-19 crisis has changed the "usual" pattern of consumer behavior [4–11].

2. Methodology

The analysis of the impact of the COVID-19 crisis on the demand for digital goods and services, i.e., on consumer behavior, was conducted based on 6354 and 6108 samples for 2019 and 2021, respectively. The relevant data were collected by the Statistical Office of the Republic of Serbia using the Household Consumption Survey, which is standardized and harmonized with appropriate survey instruments used by the European Union Statistics Agency (EUROSTAT). To investigate the impact of the COVID-19 crisis on the demand for digital goods and services, econometric techniques were used based on models formulated in the form of a regression equation and appropriate tests for examining the robustness of the results and testing the set research hypotheses [12–18].

3. Results

By applying relevant estimators to the selected econometric specification for which the value of the information criterion is the smallest, appropriate results were obtained, and the hypothesis tested that the parameters of the models evaluated for 2019 and 2021 were equal. At a risk level of 0.05%, the null hypothesis was rejected, and it was shown that the difference in the value of the population parameters was statistically significant, thus proving the initial research hypothesis about the change in the pattern of consumer behavior in the demand for digital goods and services in Serbia.

4. Implications

In addition to the significance of the results for the expansion of the concept of consumer demand theory, the obtained results have a special significance for producers and traders, i.e., providers of digital goods and services.

5. Originality Value

The originality of this work is reflected in the fact that, for the first time in the field of theory and analysis of consumer demand, the influence of natural factors on consumer behavior is introduced and analyzed.

6. Contribution

This work has provided both theoretical and empirical contributions in the field of microeconomic theory and analysis. The theoretical contribution comprises expanding the theoretical model of consumer demand, in which, in addition to the standard variables, a completely new variable is included in the classic model that determines the demand for consumer products, especially the demand for digital goods and services. The empirical contribution is reflected in the fact that they are based on original microdata that make up large samples, on the basis of which the studied parameters of demand for digital goods and services were precisely assessed.

Author Contributions: Conceptualization, H.H. and M.B.; methodology, H.H. and M.B.; software, M.B.; validation, H.H. and M.B.; formal analysis, A.S.; investigation, A.S.; resources, M.B.; data curation, M.B.; writing—original draft preparation, M.B.; writing—review and editing, H.H.; visualization, A.S.; supervision, A.S. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

Digitalization in the Industries of Fuels and Motor Oils †

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Abstract: With the advent of new digital communication channels, the conventional industry also stepped into direct communication with users and has the opportunity to advance by knowing and responding to the rapidly changing and evolving needs of the digital consumer. One of the changes is delivery platforms and the growth of e-commerce. Accordingly, this paper aims to identify how mobile applications as a new and modern solution can answer specific customers' needs. In addition, it improves service performance, positive impacts on the users, their loyalty, and recommendations. Marketing campaigns also ask for a different approach to that type of sale channel.

Keywords: digital consumer; transformation; digital communication; sales channels; marketing campaigns

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1. Objectives

The aim of this paper is to show how new and up-to-date solutions may be good answers to a specific consumer segment and new circumstances and that they can thus applied in the conservative industry [1–4]. In order to obtain a market position and stay relevant to digital native generations, companies need to provide corresponding solutions. Contactless payment via a mobile application and quick response codes seem to be a suitable response that improves performance, modernizes brand, and generates satisfaction [5].

2. Methodology

The applied research method was used in the form of an online survey of the consumers who downloaded the application, signed in, and made at least one transaction. The aim of the research was to understand the impact of the new payment service, the level of satisfaction with it, and users' motivation to use it further and recommend it to their friends and relatives. The questionnaire was composed of 20 questions. The research was conducted using a representative sample of users, chosen randomly, and 826 respondents participated in research.

3. Results

The results of the research showed the level of satisfaction with the new payment channel, room for improvements, and features that are not communicated well or needed at all. Additionally, research results show the differences among age groups. The level of acceptance, usage, barriers, and motivations are diverse, and can even be opposite in some cases. The personalized communication and playfulness of the application have positive impacst on the users, their loyalty, and recommendations, which is, in total, a positive impact.

4. Implications

Conventional industries, such as the industries of fuels and motor oils, have stepped into direct communication with users and have the opportunity to advance by learning about and responding to their rapidly changing and evolving needs [5,6]. Despite all the positive reception, there is still great resistance to its broader usage, which can be overcome by setting different targets, slower pace, and different approaches [7–11]. The ultimate goal is to have satisfied and loyal users, but also to be profitable.

5. Originality Value

The need to research the quality of service is very pronounced in order to improve business results, whether the objective is to achieve better communication with users [12], greater insight into their needs, and an overall enhanced efficiency of the processes [13]. Given the importance of new digital solutions, there is a good reason to focus scientific research on this type of communication. A significant focus of the work was directed toward the research model, which serves as a support for increasing the market position of the company and its overall profitability.

6. Contribution

The implementation of new digital-based sales and communication channels is an opportunity for new experiences and, hence, to provide a better service [1,14]. Establishing direct communication with visitors and buyers, as well as with the brand new group known as users, influences their attitudes about the company and their willingness to come more often and spend more. A new solution can become a crucial sales channel and keeper of market share. By following already-made pioneer steps, all other market players can also benefit.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy restrictions.

Conflicts of Interest: The authors declare no conflict of interest.

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proceedings

Proceeding Paper

Measuring the Effect of Consumer Brand Engagement on Brand-Related Outcomes in Gamified Mobile Apps: A Solicitation of Technology Acceptance Model †

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Abstract: The present study investigates the role of gamification in fostering consumer engagement wherein consumer brand engagement construct has been viewed as a multidimensional construct embracing conscious attention, affection, participation and social connection dimensions in mobile apps settings. Brand related outcome-brand loyalty was also proposed as an outcome variable. Built upon Technology Acceptance Model (TAM), a conceptual model has been proposed which has included perceived usefulness and perceived ease of use as antecedents of consumer brand engagement in gamified mobile applications settings. Furthermore, the study also explored how consumer brand engagement drives users' behavioral intention to use gamified mobile apps. The results revealed that gamified marketing activities integrated on mobile apps drives consumer brand engagement which in turn found to be positively related with user's behavioral intention to use gamified mobile apps.

Keywords: consumer engagement; gamified mobile apps; multidimensional model; TAM

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1. Objectives

The present study examines the role of gamification in fostering consumer engagement wherein the consumer engagement construct has been viewed as a multidimensional construct encompassing conscious attention, affection, enthused participation, and social connection as its dimensions in gamified mobile applications [1–3]. Brand-related outcomes, behavioral intention to use, and brand loyalty were also proposed as outcome variables [4]. Built upon the technology acceptance model (TAM), a conceptual model has been proposed. The conceptual model includes perceived usefulness and perceived ease of use as precursors of consumer engagement in a gamified mobile applications context.

2. Methodology

Furthermore, the study also explores how consumer engagement drives users' behavioral intention to use gamified mobile apps. An online survey was used to collect the data. Data were sourced from 200 respondents, and structural equation modeling (SEM) was employed to analyze the collected data. Confirmatory factor analysis (CFA) through IBM AMOS 22.0 (IBM, New York, NY, USA) was employed to assess the reliability and validity of the scale items. Furthermore, the structural model was also assessed to establish model fit and to check the proposed hypotheses also.

3. Results

The overall model fit was satisfactory with a 1307.783 Chi-Square (χ^2) value, df = 580, χ^2/df = 2.255, compare fit index (CFI) = 0.875, Tucker–Lewis index (TLI) = 0.864, and root mean square error approximation (RMSEA) = 0.079. All items are loaded on the measurement model. After measurement model fit, the construct's reliability and validity measures were also assessed. The construct reliability (CR) was also measured, and values were found to be more than the threshold of 0.7 [5]. The results confirmed no reliability and validity concerns. After this, the proposed conceptual model and hypotheses were tested via the structural model. Overall, model statistics show that the model fit indices (SRMR 0.0631, CFI = 0.886, NFI = 0.809) are satisfactory. The structural model is statistically significant. Perceived usefulness impacts consumer engagement ($p < 0.01$); perceived ease of use also influences consumer engagement ($p < 0.05$), and consumer engagement positively influences the behavioral intention to use ($p < 0.01$). However, consumer engagement does not statistically influence brand loyalty.

4. Implications

The results revealed that gamified marketing activities integrated into mobile apps drive consumer engagement, which in turn was found to be positively related to users' behavioral intention to use gamified mobile apps.

5. Originality Value

The study is the first of its kind that has applied the technology acceptance model (TAM) in gamified mobile settings and studied the influence of consumer engagement on behavioral-related outcomes.

6. Contribution

This paper offers valuable implications for multinational companies which are in the business of developing applications. The study helps in identifying the precursors of driving engagement among users in gamified settings and, subsequently, its effect on brand-related outcomes [6]. Perceived usefulness and perceived ease of use positively influence consumer engagement and, in turn, consumer engagement influences the behavioral intention to use.

Author Contributions: Conceptualization, M.P., R.N. and G.G.; methodology, M.P., G.G. and R.N., writing—original draft preparation, M.P.; writing—review and editing, G.G.; visualization, G.G.; supervision, M.P.; project administration, R.N. All authors have read and agreed to the published version of the manuscript.

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proceedings

Proceeding Paper

Is There a Relationship between Making Digital Payments and Internet Usage, Digital Skills, and Education Worldwide? †

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Abstract: This paper examines whether there is a significant positive relationship between making digital payments and the following variables: 1. Internet usage, 2. digital skills, and 3. education. Data for 114 countries are gathered from the Global Findex database 2017, World Economic Forum—The Global Competitiveness Report 2017–2018, and the World Bank database. The correlation analysis results show a statistically significant strong positive relationship between making digital payments and each of the variables, i.e., the level of Internet usage, digital skills, and education. The strongest relationship is identified between making digital payments and Internet usage, indicating the critical role of Internet infrastructure and affordability.

Keywords: making digital payments; internet usage; digital skills; education

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1. Objectives

Improvements in technology and changes in human behavior related to increasing usage of the Internet and mobile devices (smartphones, laptops, and tablets) in everyday life have significantly changed the way individuals execute their financial activities. Numerous studies investigated the association between the usage of digital financial services and variables such as Internet usage, digital skills, and education [1–6]. Considering that no study has been conducted on a global level, the aim of this research is to determine whether there is a statistically significant positive relationship between making digital payments and the level of 1. Internet usage, 2. digital skills, and 3. education worldwide.

2. Methodology

For the analysis, we collected data for 114 countries from the following publicly available databases: the Global Findex database 2017 [7], Global Competitiveness Report 2017–2018 [8,9], and the World Bank database [10]. We used correlation analysis with a 95% confidence interval to test the formulated hypotheses. We observed only the 2017 data, considering that it was the initial year of digital skills data publication.

3. Results

Our findings reveal that there is a significant strong positive relationship between making digital payments and:

1. The level of Internet usage, i.e., the percentage of citizens who used the Internet (correlation coefficient = 0.721);
2. The level of citizens' digital skills, i.e., computer skills, basic coding, digital reading (correlation coefficient = 0.633);
3. The level of citizens' education, i.e., tertiary education enrollment rate (correlation coefficient = 0.659).

4. Implications

The results highlight the significance of the Internet infrastructure and its affordability, considering that the highest value of the correlation coefficient is between variables Making digital payments and the level of Internet usage, i.e., the percentage of citizens who used the Internet. In addition, our findings indicate the importance of education and the possession of an adequate level of digital skills for adopting digital financial services. Countries, especially low-income countries, should develop strategies to improve the state of their citizens' financial inclusion in the mentioned segments.

5. Originality Value

There is no similar research that has examined the existence of a statistically significant relationship between the citizens' level of Internet usage, digital skills, and education and their execution of digital payments on a global level.

6. Contribution

The results of this study will be a valuable contribution to the existing body of literature in this research field. In addition, our research provides insights into the relationships between the mentioned variables globally.

Author Contributions: Conceptualization, M.A., Đ.I. and V.V.; methodology, M.A., Đ.I. and V.V.; software, Đ.I.; validation, M.A. and Đ.I.; formal analysis, Đ.I.; investigation, M.A.; resources, M.A.; data curation, M.A.; writing—original draft preparation, M.A., Đ.I. and V.V.; writing—review and editing, M.A., Đ.I. and V.V.; visualization, M.A.; supervision, V.V.; project administration, M.A.; funding acquisition, M.A. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement: The data sources for the variables are listed below. Making digital payments, available online: https://www.worldbank.org/en/publication/globalfindex/Data; Internet usage, available online: http://reports.weforum.org/global-competitiveness-index-2017-2018/competitiveness-rankings/#series=NETUSERPCT; Digital skills, available online: https://tcdata360.worldbank.org/indicators/h945a9708?country=BRA&indicator=41400&viz=line_chart&years=2017,2019; Education, available online: http://reports.weforum.org/global-competitiveness-index-2017-2018/competitiveness-rankings/#series=ENROL3GR.

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Conflicts of Interest: The authors declare no conflict of interest.

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proceedings

Proceeding Paper

Compulsive Buying and Beliefs about Digital Advertising †

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Abstract: In view of concerns about consumers' vulnerability to contemporary marketing tactics, this study aims to examine the extent to which compulsive buying affects beliefs about digital advertising. The results of a survey of 117 consumers suggest that compulsive buying positively affects the enjoyment of digital advertising. Subsequently, enjoyment positively affects the perceived appropriateness and behavioral impact of digital advertising. Overall, the findings indicate that a 'shopaholic' market segment appears to be more positively predisposed and therefore receptive to digital advertising. Thus, socially responsible businesses should take into account compulsive buyers' vulnerability and protect them by adjusting their advertising actions accordingly.

Keywords: compulsive buying; digital advertising; consumer beliefs; structural equation modeling

1. Objectives

Most prior studies have perceived compulsive buying as a consequence of advertising [1]. However, considering that such tendencies or behaviors may be the function of numerous external influences and personal characteristics [2], the present research views compulsive buying as a factor shaping consumer beliefs about digital advertising [3], and aims to examine the significance and magnitude of its impact.

2. Methodology

The study's non-random sample consisted of 117 participants, the majority of whom were female (73%), had attended tertiary education (68%), and were between 18–34 years of age (68%). Compulsive buying was measured with a 6-item scale [4], while beliefs about digital advertising were measured with a slightly modified and shorter version of the 'public opinion towards advertising' scale [5].

3. Results

Exploratory and confirmatory factor analyses established one factor that measured 'Compulsive Buying-CB' (α = 0.79) and two factors that measured consumer beliefs about digital advertising (α = 0.81 for 'Appropriateness and Behavioral Impact-ABI' and Spearman–Brown = 0.76 for 'Enjoyment'). The structural equation model (x^2 = 20.18, p = 0.32; CFI = 0.99; TLI = 0.99; RMSEA = 0.03; SRMR = 0.05) shows the significant and positive effects of CB on enjoyment and the effects of enjoyment on ABI (Figure 1).

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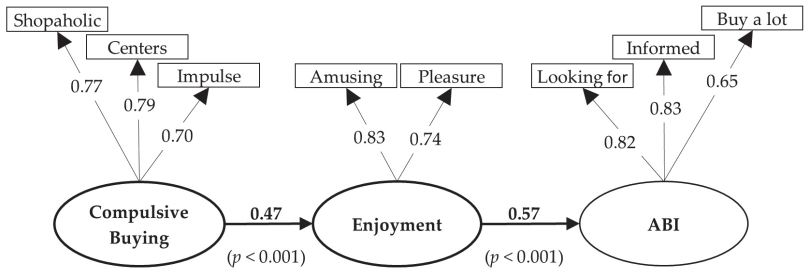

Figure 1. Path diagram.

4. Implications

A 'shopaholic' market segment appears more receptive to digital advertising, as its members are more likely to believe that digital ads are entertaining and engaging (i.e., enjoyable). Nevertheless, brands are advised to abstain from solely viewing this market segment as a profit-making opportunity. Because of the effectiveness of contemporary marketing tactics, socially responsible businesses should consider compulsive buyers' vulnerability and adjust their advertising actions accordingly.

5. Originality Value

Contrary to an existing theory suggesting that compulsive buying may, in part, be the product of marketing and advertising tactics [6], the present study suggests that, when viewed as a consumer characteristic, compulsive buying shapes consumers' beliefs about digital advertising. To the best of our knowledge, this work represents one of the few research efforts to establish a directional relationship with compulsive buying as the explanatory variable.

6. Contribution

In contrast to past research, which hypothesized that audiences with compulsive buying tendencies would have unfavorable attitudes towards advertising (Aad) [3], the present research indicates that compulsive buying is positively associated with the enjoyment of digital advertising. Furthermore, results agree with more up-to-date research about consumer materialism, which has been found to positively affect Aad [7].

Author Contributions: Conceptualization, C.L. and A.P.; methodology, C.L.; software, C.L.; validation, C.L., A.P. and N.K.; formal analysis, C.L.; investigation, A.P.; resources, A.P.; data curation, C.L.; writing—original draft preparation, C.L. and A.P.; writing—review and editing, C.L., A.P. and N.K.; visualization, C.L. and A.P.; supervision, C.L.; project administration, C.L., A.P. and N.K. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available upon request from the corresponding author. The data are not publicly available because they were provided by participants solely for the purpose of the present study.

Conflicts of Interest: The authors declare no conflict of interest.

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proceedings

Proceeding Paper

Skills and Motivation Factors of Generation Z for Creating Successful Employer Branding Strategies †

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Abstract: The digitization in which the protagonists who are the subject of this paper's research were born—the so-called Generation Z—has influenced everything aspects of life, including the attitude of new generations towards work. Working environment, expectations of jobs, working hours, motivation and loyalty of workers change a lot from generation to generation. There changes greatly affect the entire labor market, as well as the preferences of members of this generation regarding the choice of employers.

Keywords: Generation Z; employer branding; digital skills; executive skills; motivation factors

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1. Objectives

When you looking back at the history, in the simplest explanation, the ground for generational variations is the ever-changing path of life [1]. The aim of this paper is to determine the perceptions and skills of members of Generation Z in the workplace, as well as their preferences in terms of their employer. Unlike previous generations, Gen Z members have always had and will have instant access to a wealth of information on a variety of topics [2]. As Gen Z has been branded with the epithets of digital talents and/or digital natives, it is evident that the Internet is a key factor that completely shapes the world of this generation since they do not know a world without social media, smartphones, and computers. Additionally, members of Generation Z are, compared to millennials, more socially oriented and very interested in social problems, corporate social responsibility, and environmental issues around the world. Bearing this in mind, the aim of this study is to indicate what the expectations of members of Generation Z are from employers, which can serve as a solid basis for defining successful employer branding strategies. Employer branding can be described as the process of creating an identity that is recognizable and unique, which greatly affects the company's differentiation from the competition [3]. Also, employer branding denotes the activities directed towards influencing the opinion of a brand and it also signifies a company's image as an employer [4].

2. Methodology

A certain amount of research has been devoted to examining and defining the skills of members of Generation Z, as well as their views on employer branding and financial and non-financial motivators at work. Being part of the most technologically advanced generation has allowed members of Generation Z to realize some clear distinctive advantages [5], since they were born into challenges era, starting with the issue of terrorism, the world political instability to the environment concerns [6]. However, due to an increase in global development and technological progress, the disappearance of many occupations and the emergence of new ones that require the mastery of new skills, and a lack of talent, there are difficulties for employers in attracting and retaining the best digital natives. Organization can attract the employees only when, it has a positive image as an employer in the market [7]. This research will be conducted in August and September 2022 among members of Generation Z (persons between the ages of 18 and 26) who are employed. During this period, 300 questionnaires will be distributed online.

For the purposes of this paper, based on an analysis of previous research, an original questionnaire was designed and composed that consists of several parts (answers to the questions, except for the first part of the questionnaire, will be given in the form of a five-point Likert scale):

- the first part of the questionnaire includes the socio-demographic characteristics of the respondents;
- the second part of the questionnaire includes the *DNAS (Digital Natives Assessment Scale)* [8];
- the third part of the questionnaire includes the *Executive Skills Questionnaire* scale [9];
- the fourth part of the questionnaire is devoted to the *Scale Development in Employer Branding* [10];
- the last part of the questionnaire includes Herzberg's motivation scale [11].

After data collection, preliminary analyses will be performed, and the data will be processed in the statistical program *IBM SPSS-26.*

3. Results

Expected results:

- Determine what level of digital skill members of Generation Z possess.
- Determine the level of executive skills of members of Generation Z, their mean values, and the correlation between them.
- Determine what members of Generation Z prefer in an employer, and then show the relationship between the skills they possess and job satisfaction.
- Determine the basic motivation factors of members of Generation Z at work, as well as whether they are more motivated by material or non-material factors.
- Determine the correlation between the level of digital and executive skills, as well as motivation factors, and expectations from the employer.

4. Implication

Gen Z is made up of a workforce that is likely to disrupt current trends in the work environment [12]. Members of Generation Z are more prone to risk, but they are also in constant search of stability. This means that employers will have to offer financial security in order to improve the long-term stability of jobs and to prevent potential brain drain. In the process of building a brand, by applying knowledge in the field of marketing and human resources, employers try to present themselves to candidates from the labor market as employers with ideal working conditions, while they try to increase the degree of satisfaction, commitment, motivation and loyalty of existing employees [13]. Recognizing the role that employer branding plays in the process of attracting and maintaining a continuous inflow and retention of talent through providing employment opportunities and creating working conditions that meet the needs and preferences of members of Generation Z is very important. In addition to financial motivation, Generation Z is focused on the so-called "other side of the coin", which refers to the hybrid model of work and team-building activities, through which digital natives achieve harmony between their private and business life.

5. Originality Value

Nowadays in the dynamic transformational environment, organizations face many challenges to become more knowledge-based, more emphasis on innovation and technology, as well as facing intensive competition for attracting and retaining a high-quality workforce [14]. There is a very pronounced need to determine the perceptions and skills of members of Generation Z, a generation of young people entering the labor market with a new outlook on the world. The original value of the work is based on connecting knowledge about the skills possessed by and motivation factors of members of Generation Z with the expectations of employers. Due to the comprehensive challenges that affect most aspects of our lives, major innovations are continuously taking place in the labor market, but also ups and downs in terms of the availability of qualified talent [15], which leads to major changes in existing jobs but also to the creation of modern, hitherto unknown jobs that require the mastery of new skills. Therefore, employers must create a business environment that will provide employees with a sense of security and comfort but also a desire for advancement, achievement, and growth, with earnings that will be equivalent to a job well done, which means that both tangible and intangible benefits are equally important [16].

6. Contribution

The results obtained from this research can be used by employers to improve organizational culture and communication, team spirit, work tasks, opportunities to build international careers, benefits, reputation, work–life balance, training and development, task diversity, customer relations, autonomy and socially responsible business in order to adapt to the expectations of members of Generation Z. The above could result in the better attraction and retention of talent, which is the greatest intangible value of modern organizations.

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proceedings

Proceeding Paper

Priority Activities for Implementing Industry 4.0—The Case of Serbia †

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Abstract: The industry 4.0 concept is essential to fostering innovation and promoting economic growth. Its successful implementation involves the entire innovation ecosystem, as defined by open approaches to innovation, which emphasize collaboration among various actors in the innovation system. The efficiency and intensity of interactions between different actors determine the innovation activity needed for industry transformation. The integration of technologies is at the heart of Industry 4.0. By conducting a survey among the most important actors in the innovation ecosystem, this research identifies priority activities for implementing the concept in Serbia.

Keywords: Industry 4.0; priority activities; national innovation system; preparation process; Serbia

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1. Objectives

The purpose of this paper is to assess the priority activities in the Republic of Serbia's preparation for Industry 4.0 implementation. As a result, key participants in the national innovation system were identified based on their role in the generation, diffusion, and application of scientific and technological knowledge [1,2]. Enterprises (large enterprises and SMEs), science and academia, innovation infrastructure, organizations engaged in innovation activities, start-up companies, actors involved in the promotion and enhancement of innovations, government departments, and information and communication technology companies have been identified as the primary participants in the national innovation system.

2. Methodology

An online survey was conducted between March and April 2021 to empirically assess the priority activities in the preparation process for implementing Industry 4.0. A multiple-choice question with predefined answers was included in the questionnaire, and respondents were asked to rate the answer options on a 7-point Likert scale [3,4]. The survey asked participants to "rank the activities in order of priority in preparing the Republic of Serbia for the implementation of Industry 4.0". The responses were gathered from 87 representatives of selected innovation ecosystem participants (40 enterprises, 10 start-ups, 8 representatives of science and academia and organizations engaged in innovation activities, 6 representatives of actors involved in the promotion and enhancement of innovations and information and communication technology companies, and 3 government departments).

3. Results

According to the research findings, the highest priority in preparing the Republic of Serbia to implement Industry 4.0 is the definition of strategic documents, followed by the announcement of tenders and the allocation of funds for developing Industry 4.0. Encouragement of greater economic interest in the application of Industry 4.0, development of digital infrastructure, and development of a stimulating legal framework for Industry 4.0, on the other hand, share third place. Among other important activities, stimulating measures for the development and retention of competent staff, informing the public about the significance of Industry 4.0, studies and professional publications in the field of Industry 4.0, and the development of maps for the presentation of capacities were highlighted.

4. Implications

The research findings could have theoretical, economic, and broader social implications. The findings can inspire future research by providing a more detailed analysis of each activity and its role in implementing Industry 4.0, as well as a comparative study of their impact on neighboring countries. The survey results suggest a set of recommendations for Serbian policymakers. The findings serve as a starting point for improving the conditions for implementing Industry 4.0. Implementation of identified priority activities and Industry 4.0 provides an opportunity to solve problems in the fields of industrial production, environmental protection, digitalization, energy efficiency, and so on.

5. Originality Value

There is no comparable research in the Republic of Serbia. This study is unique due to the survey participants and the results obtained. The research is significant because of the unique findings on priority activities for implementing Industry 4.0.

6. Contribution

The scientific contribution of the research is a comprehensive approach to analysis and applied methodology. The research's findings advance theoretical and methodological frameworks in the field of implementing Industry 4.0. The research findings may have an impact on decision makers and the process of developing public policies. The findings are meant to serve as the foundation for evidence-based public policy decision making in the field of innovation.

Author Contributions: S.Đ. conceptualization, S.Đ. and I.B. methodology, S.Đ. and I.B. data analysis, S.Đ. and I.B. original draft preparation. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

Model Misspecification as the Causes of Flypaper Effect †

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Abstract: The aim of this paper is to investigate the relationship between the Fly-paper effect (FPE) and possible errors in the specification of econometric models used in the empirical analysis of FPE. Using desk research method to gathering and analyzing scientific papers considering different aspects of misspecification problem, it was executed classification of papers in three groups depending on the type of errors in the model specification: incorrect functional form, incorrect choice of explanatory variables and incorrect statements about stochastic error of model. Research results showed that the wrong specification of the model affects the presence or absence of FPE) and the size of the FPE. The originality of this paper is reflected in the original classification of scientific papers devoted to the problem of misspecification of regression models used for econometric modeling of FPE. The contribution of this work is reflected in the identification of possible errors in the specification of the model for the empirical analysis of FPE and their implications on the properties of the parameter estimates of the used model.

Keywords: flypaper effect; misspecification; functional form; omitted variables

1. Objectives

Although the Flypaper effect (a phenomenon that claims that transfers from the central government to local government have a larger effect on local government expenditure than an equivalent increase in own local revenues) was discovered almost 50 years ago, it is very intensively studied in the literature of fiscal federalism and local public finance, both from a theoretical and even more from an empirical point of view [1–9]. The aim of this paper is to investigate the relationship between the Flypaper effect (FPE) and possible errors in the specification of econometric models used in the empirical analysis of FPE.

2. Methodology

There are a large number of scientific papers considering different aspects of the misspecification problem. In this paper, a desk research method was used to gather and analyze those papers, classifying them into three groups depending on the type of errors in the model specification: incorrect functional form, incorrect choice of explanatory variables (omitting relevant explanatory variables or including irrelevant variables) and incorrect statements about stochastic error of the model [10–20].

3. Results

Research results showed that misspecification of the regression model implies (a) biased and ineffective parameter estimates, (b) unbiased but ineffective parameter estimates or (c) biased parameter estimates depending on whether the source of error in the model specification is (a) omitting relevant explanatory variables, (b) including irrelevant variables, or (c) an incorrect functional form. Moreover, the results of the research showed that incorrect specification of the model affects both the manifestation (the presence or absence of FPE) and the size of the FPE.

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4. Implications

Examination of the impact of misspecification of the model on the empirical results—if FPE exists, if FPE is symmetric, what the size of FPE is—has particular importance for econometric modeling of FPE considering the importance of information on whether total local expenditures or some items of local expenditures in a specific country or specific region behave according to the FPE model or not, which is especially important not only for transfer policy but for fiscal policy as well.

5. Originality Value

The originality of this paper is reflected in the original classification of scientific papers devoted to the problem of misspecification of regression models used for econometric modeling of FPE, through pointing out the implications of different types of errors in model specification, and highlighting the importance of model specification tests and other elements of strategy in the process of choosing an appropriate model for empirical analysis of FPE.

6. Contribution

The contribution of this work is reflected in the identification of possible errors in the specification of the model for the empirical analysis of FPE and their implications on the properties of the parameter estimates of the used model. It also highlights the implications of the wrong specification of the model on the manifestation of FPE. Finally this work explains how it may contribute to a better understanding of the phenomenon of FPE.

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proceedings

Proceeding Paper

The Role of Educational Technology and Open-Access Resources in Accessible Quality Learning and Teaching: An Exploratory Field Study on Academics, Students, and Administrators in Kuwait †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: This research is in response to a Kuwait Foundation for the Advancement of Sciences (KFAS) call for basic and applied research proposals in education for Kuwait. The Kuwait tertiary sector requires a better understanding of the role of educational technology and open access resources. This research proposal outlines the systematic collection of data from academics, students and administrators to enable better decision making within tertiary institutions and across the tertiary sector.

Keywords: teaching technology; teaching and learning; academic engagement; online learning; smart learning environments

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1. Objectives

This research explores existing and emerging information technology and its effectiveness in supporting tertiary academic communities in Kuwait. The research will identify the likely avenues to promote motivations for adopting and building the knowledge and skill sets of students, teachers, and administrative staff. The research will also identify the strategies that institutions and the state may adopt to support the transition to innovative, efficient technologies as a platform for improvement in pedagogy and educational outcomes.

2. Methodology

The research data are derived from three national embedded mixed method [1] voluntary survey instruments that were administered online (Qualtrics). The qualitative and quantitative data will be collected from all the 11 tertiary institutions, enabling a qualitative thematic (NVivo) and quantitative statistical analysis (SPSS) within and across the tertiary sector. Combining the quantitative and qualitative analyses affords an opportunity to triangulate the results from multiple perspectives, increasing the accuracy and confidence in the conclusions [2].

3. Results

The results will determine whether the cultural, technical, and contextual issues identified by Alfelaij [3] and Al-Ali [4] still inhibit the integration of teaching technology in Kuwait. The rapid implementation of online learning in response to COVID-19 will be considered against the perceptions of educators [5], students [6], and other stakeholders [7]. Finally, whether smart learning environments [8] afford a path forward will also be determined.

4. Implications

This study provides an exploration of the following research questions:

1. What are the emerging teaching and learning needs of higher education academic communities in Kuwait?
2. What factors influence the academic engagement with evaluating, implementing, and resourcing educational technologies?
3. How can the future teaching and learning needs of higher education communities be met?
4. How has the pandemic, the adoption of online learning, and the decline in practical training impacted higher education communities?
5. How would Kuwait embrace smart learning environments?

5. Originality Value

The prior literature will be tested against the current COVID-19 environment to see whether cultural, technical, and contextual factors remain constraints to the adoption of educational technology. Insights will be gathered on potential new technologies, such as smart learning environments, and the factors that may inhibit their adoption. The data set will be both unique and extensive. This is particularly important, as more traditional educators retire and are replaced by more tech-savvy staff.

6. Contributions

This research if funded will provide institutions with a data set to understand their current capabilities and expectations from academic staff, students, and administrative staff, benchmarked against other institutions in the Kuwait tertiary sector. This will enable institutions to better plan for and implement educational technology, resourcing, and training. If repeated at defined intervals, the data set will provide a longitudinal study of the changing educational technology needs and requirements in Kuwait.

Author Contributions: Conceptualization, S.C. and V.S.; methodology, S.C. software, V.S.; validation, S.C. and V.S. and A.E.; formal analysis, S.C. and V.S.; investigation, all authors; resources, A.E. and V.S.; data curation, V.S.; writing—original draft preparation, S.C. and A.E.; writing—review and editing, S.C.; supervision, A.E.; project administration, A.E. and V.S.; funding acquisition, S.C. and V.S. Investigation, S.C. and V.S. and A.E. and D.S.A. and W.D. and R.M. and F.A. and K.A. All authors have read and agreed to the published version of the manuscript.

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proceedings

Proceeding Paper

Digital Functions of Aircraft Engineering with Respect to Human Factor Principles: Challenges Ranging from Manufacturers to Payload †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: Aircraft are considered to be today one of the most impressive engineering marvels of mankind ever made. While servicing commercial and/or private air transport, milestones of state-of art-technology are being achieved one after another, regularly, on all aspects of their engineering ranging from design, manufacturing, production, till air operations, maintenance and technical training. On these engineering aspects, digitization plays a key role since nowadays, its absence would make rather impossible the safe flight of these marvels on air. This study demonstrates the impact of digitization on these aspects and the interaction of Artificial intelligence (AI) on digitized aircraft systems, aiming to the ultimate goal of systems' operations being humanly governed, yet human error-free, under the Human Factors (HF) principles and methodology.

Keywords: aircraft digitization; human factors; modular avionics; NDI and NDT; flight safety

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1. Objectives

The study's objective is to demonstrate that digitization on aircraft is of paramount significance, as well as the inter-relationship between digitization, human factor (HF) principles, and the applied digitized functions and techniques ranging from manufacturers to payload, with respect to their effect on flight safety [1,2]. Additionally, the role of Artificial Intelligence (AI) is a challenge already underway in the industry aiming at the integrated embedding of AI on aircraft digital functions, free of human errors [2].

2. Methodology

Literature review synthesis (LRS) with bibliographic secondary data analysis. Literature review refers to a related bibliography, including aviation regulations, aircraft manufacturing data, aircraft engineering handbooks, manuals and training books.

3. Results

By converting analog information into a digital/PC-readable format, digitization handles massive amounts of information on the computerized aircraft systems as a mandatory element of their manufacturing, operation, maintenance, and training [1,3–6]. HFs, as conceptual aviation principles related to human performance, when applied to digitization functions, minimize errors that jeopardize flight safety [7]. AI, defined as the simulation of human intelligence in machines in terms of learning, reasoning, and perception, when combined with HF is challenged to be embedded in aircraft digital systems, functions, and processes, resulting in their safe performance [1,7].

4. Implications

Digitally engineered aircraft models related to static–aerodynamic loads produce fail-safe structures, having a potential failure possibility of 1×10^{-9}–1×10^{-16} [1,6]. In the world of aircraft digital avionics, computers exchange data, free of e-malicious attacks, under HF-based human interaction, resulting in error minimization [5–7]. When training is complete, aircraft interactive models reveal engineering secrets, resulting in integrated knowledge [4].

The challenge of AI, when totally integrated into aircraft, will leverage aircraft digitization for its functions to be performed by AI maths algorithms under human governance [6,8].

5. Originality Value

Originality is profound, since the study demonstrates the inter-relationship between aircraft digitization and HFs for the above-mentioned purpose of human error capturing and minimizing, mainly during aircraft manufacturing and maintenance [1,3,7,9]. Additionally, due to the emphasis that aviation regulations, either for aircraft production or operation, maintenance, or training, include mandatory HF considerations, warnings, cautions, and practices already predefined in aviation legislation, hence, have to be followed as laws which are sought solely by Aviation Authorities [2,10].

6. Contribution

The scientific contribution emphasis of this study proves that, for a totally safe aircraft Commercial Air Transport (CAT) flight, digitization has to be combined with HFs, providing the necessary leverage for incorporating state-of-art technology, including the design, production, air-operations, maintenance, and technical training. Additionally, AI has to be totally embedded in aircraft digitization, along with HFs, as proven flight safety tools, enabling human error-free functions under human control and governance.

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proceedings

Proceeding Paper

How Competent Are Our Students in Digital Entrepreneurship? †

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Abstract: This paper provides insights into the research design and preliminary results of the research targeting digital entrepreneurial competence levels of the university students acquired during the course of formal university education. The preliminary insights represent the part of the research grant funded by Kuwait Foundation for Advancements in Sciences aiming to develop the tool for assessing the levels of students digital entrepreneurial competences. The preliminary results indicate that there are differences in digital entrepreneurial competence levels which can be attributed to different characteristics of university students.

Keywords: digital entrepreneurial competences; EmDigital; competence frameworks; digital entrepreneurship

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1. Objectives

Digital Entrepreneurial Competences (DEC) are vital prerequisites for digital entrepreneurship. Some studies [1] suggested that there is a gap between the level of competences that students are required to possess to join the contemporary labor market and the actual level of DEC they possess. To the best of our knowledge, the academic literature does not provide evidence of the research focused on measuring the levels of DEC that university students acquire during their university education. The main objective of this research is to develop relevant methodology and to measure DEC levels of university students.

2. Methodology

The methodology for assessing DEC levels of university students was developed using the EmDigital framework proposed by Prendes-Espinosa et al. [1]. This research focused on the first competence area of EmDigital, called the "identification of opportunities". The instrument (questionnaire) was developed using the approach proposed by Kluzer and Priego [2]. The research was conducted simultaneously in Kuwait and Serbia. The descriptive statistics was used for assessing the DEC levels of university students.

3. Results

The preliminary data show that students in Serbia performed better compared to students in Kuwait. The level of acquired DEC for Bachelor students is higher compared to diploma and Master students. As per field of study, finance students showed better knowledge than IT and business economy students. Employed students performed better than unemployed students, and female students performed slightly better than male students.

4. Implications

The final results of the research outlined in this paper will provide higher education institutions (HEI) in Kuwait and Serbia with empirical evidence regarding the levels of

DEC that their students acquire during their university education. This research is focused on the first competence area of EmDigital as a DEC framework and, in combination with the research which will be executed using the DEC online tool (for all the competence areas of EmDigital), it will provide a detailed insight into the DEC levels of university students. As a consequence, HEIs will be able to adjust their curriculums to better meet the needs of the contemporary labor market.

5. Originality Value

No similar research exists in the academic literature on DEC to date. This research reveals not only the DEC levels of university students in the participating countries but also points to its association with different variables (age, gender, level of study . . .).

6. Contribution

This research contributes to a better understanding of the effectiveness of the educational efforts of HEIs in Kuwait and Serbia in terms of the preparedness of their students for the labor market and digital entrepreneurship after their graduation.

Author Contributions: Conceptualization, V.S. and A.B.-M.; methodology, V.S. and M.S.; resources, M.S., H.S. and R.B.; writing—original draft preparation, V.S.; writing—review and editing, M.S. and D.I. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and has received an ethical approval from the Scientific Research Center of the Australian University in Kuwait, prior to its administration.

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Data Availability Statement: Data sharing is not applicable to this article.

Conflicts of Interest: The authors declare no conflict of interest.

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proceedings

Proceeding Paper

Applying Artificial Intelligence in the Digital Transformation of Banking Sector †

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Abstract: This paper presents the process of digital transformation of banking sector aiming to emphasize the impact of applying artificial intelligence in order to enable chatbot customer service, robo advice, predictive analytics, cybersecurity, as well as credit scoring, and direct lending. The proposed framework is composed of three levels of application the artificial intelligence in digital banking. The application of artificial intelligence platforms in the banking sector is essential to meet the needs of today's digital-first customers as well as to stay a step ahead of tomorrow's digital banking challenges.

Keywords: artificial intelligence; banking; digital transformation

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1. Objectives

It is a fact that the main competitors in the banking sector are not the banks that still have the branch networks, but the fasting growing companies such as the digital banks and fintech companies that are geared towards highly scalable digital acquisition [1–4]. The main objective of this paper is to present the impact of applying artificial intelligence in the banking sector, focusing on the process of digital transformation in banking.

2. Methodology

One of the key technologies that change the banking sector is artificial intelligence [5–10]. Four digital disruptors imply the application of artificial intelligence in the banking sector: intelligent data analysis, robotics, embedded banking, as well as smart infrastructure. We propose the methodology for applying artificial intelligence in banking in order to enable chatbot customer service, Robo advice, predictive analytics, cybersecurity, as well as credit scoring, and direct lending. The model is given in order to facilitate the process of digital transformation in the banking sector.

3. Results

According to the proposed framework for the digital transformation of the banking sector, there are three levels of application the artificial intelligence in digital banking. The first level refers to the use of machine learning in the process of teaching machines to learn patterns for the realization of digital banking. The second level relates to general intelligence, which could convince the customers and staff in digital banking they communicate with a human if they did not have the knowledge it was a computer. The third level refers to using artificial intelligence in digital banking that is smarter than banking staff.

4. Implications

The application of artificial intelligence in the banking sector is a long process and needs to fulfill many requirements to become operational. By using the proposed framework, it is necessary to digitally transform half of the jobs in banking today. Due to artificial intelligence, many old jobs in banking will disappear in the near future. On the other hand, there are new jobs such as data scientist, behavioral psychologist, the experience designer that are necessary for the process of realizing digital banking.

5. Originality Value

The application of artificial intelligence in the digital transformation of the banking sector is an unstoppable process. The proposed framework could help the banks that are at a crossroads. On the one hand, they can focus on the creation of infrastructure for the application of artificial intelligence in banking through both the transformation of business processes in banking and the employment of highly qualified staff who would know both technology and banking. On the other hand, they can come to the point they will operate in a world of branches until they are completely marginalized.

6. Contribution

Artificial intelligence is a prerequisite for the digital transformation of the banking sector. The proposed framework for the application of artificial intelligence in the banking sector can help the banks in seeking to balance in maintaining the level of trust they have built with their customers, delivering engaging and user-friendly digital banking experiences. In the digital banking era, going back to traditional banking practices, like requiring in-person visits for onboarding or manual reviews, is off the table. Having artificial intelligence platforms in place is essential for banks to meet the needs of today's digital-first customers as well as to stay a step ahead of tomorrow's digital banking challenges.

Author Contributions: Conceptualization, S.D.R. and H.H.; methodology, S.D.R. and H.H.; software, S.D.R.; validation, S.D.R., H.H. and M.B.; formal analysis, S.D.R.; investigation, M.B.; resources, S.D.R. and H.H.; data curation, S.D.R. and H.H.; writing—original draft preparation, S.D.R., H.H. and M.B.; writing—review and editing, S.D.R., H.H. and M.B.; visualization, M.B.; supervision, H.H.; project administration, S.D.R. All authors have read and agreed to the published version of the manuscript.

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proceedings

Proceeding Paper

Rapid Digitalization in Pandemic Times: Investigation of the Leadership Role in Managing Information and Communication Overload in Higher Education Institutions in Kuwait †

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Abstract: The advancement of technology paved the way for significant improvements in higher education institutions (HEIs) as much as it was associated with sizable pressures for individuals, implied by the challenging task of managing enormous volume of information from digital communication channels. This research is addressing two main objectives. First, explore the extent of Information and Communication Overload (ICO) that accompanied the digital transformation in Kuwaiti HEIs and accelerated amidst the Covid19 pandemic. Second, assess the conditions that are/could be used in those organizations to mitigate ICO and any of its adverse effects.

Keywords: digital transformation; information overload; communication overload; leadership; higher education institutions

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1. Objectives

This research aims to explore the extent of information and communication overload (ICO) that accompanied the rapid digital transformation in Kuwaiti higher education institutions (HEIs) during the pandemic and to assess whether leadership could help mitigate its adverse effects. Evidence shows that several Middle Eastern HEIs are increasingly engaged in digital transformation [1] and entrepreneurial modernization and diversification [2].

2. Methodology

This study adopted a qualitative approach based on in-depth semi-structured one-on-one interviews with three academic managers working in three different Kuwaiti HEIs. This approach is recommended for exploratory studies tackling evolving phenomena [3]. The researchers conducted the interviews for a period of 45 minutes with each participant. Notes were taken during the meetings, and interviews were recorded for the data analysis, completed using the coding process.

3. Results

The collected evidence highlights the central role of leadership in mitigating the magnitude of ICO in higher education settings. Leaders should streamline the amount of information and the number of communications flowing within their units. Courtesy, employee empowerment, and proactive planning also seem to be determinant leadership features that limit ICO. The latter involves a careful selection of change initiatives based on the efficient use of available resources.

4. Implications

This study emphasizes the increasing exposure of academics to the phenomenon of ICO, as explained by the amount of disruptive information that they receive. This implies that HEIs' leadership should play a significant role in managing the enormous volume of information from digital communication channels. A second implication derives from the exploratory nature of this study, which raises a number of opportunities for future research, such as the impact of servant leadership on ICO.

5. Originality Value

HEIs experienced significant difficulties in digital transformation during the pandemic, such as insufficient funding for substantive digitalization, staff unpreparedness, and resistance to change [4–8]. Therefore, HEIs represent an appropriate field of research to explore the aspects of ICO in the digital era, and analyze the organizational responses brought to them. To date, almost no studies have focused on the academic leadership role in limiting the effects of ICO.

6. Contribution

This research would contribute to the enhancement of the knowledge background in the area of ICO by addressing the nature of leadership support in the higher education sector, which has been overlooked in previous studies. The outcomes would represent useful guidance for HEIs in the Middle East and worldwide about dealing with ICO using a multilevel approach. Indeed, several researchers have acknowledged ICO as the source of various forms of strain for workers, including stress and job dissatisfaction [9–11].

Author Contributions: Conceptualization, M.S. and O.A.; methodology, O.A.; software, O.A.; formal analysis, O.A.; investigation, M.S., H.S. and R.B.; writing—original draft preparation, M.S.; writing—review and editing, M.S. and O.A.; supervision, M.S.; project administration, M.S.; funding acquisition, M.S. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement: Our institution does not systematically apply an ethical approval procedure for the research conducted by staff members. Ethical approval is only mandatory when the research samples involves respondents from particular groups with whom particular precautions have to be considered (e.g., children, disabled people, etc.).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study through a cover letter attached with the questionnaire. All respondents had to view and agree prior to answering the survey questions.

Data Availability Statement: Data are available on request from the corresponding author.

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proceedings

Proceeding Paper

Analysis of Public Debt in Selected Western Balkan Countries †

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Abstract: The increase in public debt represents one of the most important problems faced by almost all economies in the world. Among them are the countries of the Western Balkans. Certain countries of the Western Balkans managed their public debt relatively well until the start of the COVID 19 pandemic. After that, all countries face a significant increase in public debt and a drastic drop in GDP. For most of the countries of the Western Balkans, which are countries in transition, one of the big problems is also a significant drop in the inflow of foreign direct investments.

Keywords: public debt; indebtedness; economic system; economic growth

1. Objectives

As one of the most important ways of financing state activities, public debt represents one of the most important problems faced by almost all of the countries in the world. The global financial crisis and the crisis caused by the coronavirus pandemic have influenced the increase in indebtedness of almost all of the countries in the world. Many countries are faced with the problem of public debt sustainability and fiscal imbalances. Due to the drastic increase in health care costs and aid to the national economy, many countries are forced to take on additional debt in order to mitigate the negative effects of the COVID-19 pandemic on the entire economic system. The aim of this paper is to analyze the public debt of selected countries of the Western Balkans, as well as to consider the possibility of maintaining public debt at the optimal level in relation to GDP [1].

2. Methodology

The selected countries included in this analysis are the Republic of Serbia, the Republic of Montenegro, Bosnia, and Herzegovina, the Republic of North Macedonia, and the Republic of Albania in the period from 2010 to 2020, which are countries aspiring to be members of the European Union, and the Republic of Croatia, which is a country that is already a member of the European Union. The research and projections of the World Bank, the International Monetary Fund, and data from the websites of the Ministries, Agencies, and Central Banks of the mentioned countries were used for the aforementioned analysis. The research method used is a qualitative analysis of quantitative data, where the quantitative data are presented in tabular and graphical forms [2–6].

3. Results

By analyzing the public debt in the mentioned countries, it can be seen that the constant increase in public debt is a reflection of the modern functioning of the economy of many countries. All of the countries that were the subject of the analysis before the outbreak of the crisis caused by the coronavirus had moderate indebtedness, but a growing tendency toward it. During the crisis, many countries faced a sharp increase in public debt. At the same time, during the last year, all of the observed economies faced a large

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drop in economic activity, primarily in countries whose GDP is significantly represented by tourism. Additionally, one of the key problems faced by all of the countries is the decline in the inflow of foreign direct investments, which will significantly slow down the already low economic growth [7–11].

4. Implications

The implemented fiscal consolidation and achieved economic growth in the last few years before the outbreak of the coronavirus crisis contributed to the improvement of the fiscal position of these countries. This influenced the creation of space for fiscal action and financing significant public assistance programs. However, all of these countries "welcomed" the coronavirus crisis with significantly higher amounts of public debt than that which they had before the outbreak of the great global financial crisis in 2009. A large number of fiscal and monetary measures taken by all of the countries in order to mitigate the consequences of the coronavirus had a significant impact on the increase in the budget deficits of all of the countries. All of the above events led to the need for additional borrowing, whereby future repayments based on interest will increase in a situation where the fiscal deficit and public debt are increasing. It will be of great importance to review and modify the medium-term fiscal strategy, with the aim of establishing an adequate balance between the fiscal incentives and fiscal consolidation [12–15].

5. Originality Value

The obtained research results are significant both from the aspect of science and from the aspect of practical results that can indicate the problems of increasing the public debt of the selected countries. The contribution of the work is reflected in concrete conclusions that indicate the necessity of increasing foreign direct investments in the mentioned countries that were the subject of the analysis. Additionally, due to the threatened economic growth, it is necessary to implement adequate programs of fiscal consolidation in all of these countries. One of the key prerequisites is the adequate coordination of monetary and fiscal policies, where the relationship between the two policies is often conflictual rather than cooperative. The countries that are the subject of this analysis will have to direct their fiscal policy and instruments for its implementation with the aim of stabilization, the reduction of expenditures, and the establishment of a budget balance [16–19].

6. Contribution

It is characteristic of all these countries that there has been an increase in public debt. The increase in public debt was largely influenced by the coronavirus pandemic, which caused an increase in the costs of combating the pandemic and helping the economies and populations of the countries that are mentioned. All of the countries that were the subject of the analysis before the outbreak of the crisis caused by the coronavirus had moderate indebtedness, but with a growing tendency toward it. During the crisis, many countries faced a sharp increase in public debt, especially Montenegro. Of all of the countries that were the subject of the analysis, Serbia best "controls" the amount of its public debt. Additionally, one of the key problems faced by all of the countries is the decline in the inflow of foreign direct investments, which will significantly slow down the already low economic growth. The implemented fiscal consolidation and achieved economic growth in the last few years before the outbreak of the coronavirus crisis contributed to the improvement of the fiscal position of these countries. Regarding the forecasts of certain international institutions for the coming period, there will be a modest improvement in primary activity, but the problems of large public debt will be present in many countries. In the conditions of high-level indebtedness, one of the key challenges for all of the countries will be to stimulate the growth of economic activity with limited resources.

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proceedings

Proceeding Paper

Health Information Systems, the Use of Electronic Recipe and the Attitude of Healthcare Professionals †

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Abstract: Developments in information technology rapidly affect every sector, including the health sector. All of the technology-based applications that occur as a result of technological developments in the health sector are called e-health. E-prescription application is one of the important e-health applications. In the study, the perspectives of health professionals against e-prescription application were examined.

Keywords: digital transformation in health; health industry; health workers; health management

1. Objectives

Technology has facilitated fast, timely, and accurate decision making in institutions. This situation is not different in the health sector [1]. Technological applications in the field of health are gathered under the title of e-health. Some e-health concepts in our country are web-enabled transactions, advanced network and information systems, family medicine information systems, central patient appointment systems, telemedicine, e-pulse, e-prescription systems, etc. [2–4]. The e-prescription application is one of the important applications. With e-prescription, written data can be written, stored, and transferred electronically [5].

The e-prescription system has many advantages. Preventing disruptions in prescriptions, making prescriptions accessible electronically, being fast, and preventing unnecessary drug waste are just a few of them. However, it is difficult for people to abandon the order they are used to, and health professionals also defend this situation. Therefore, in this study, it is aimed to measure how e-prescription applications are evaluated in terms of healthcare professionals. Did the healthcare professionals find the e-prescription application facilitating? According to healthcare professionals, did e-prescriptions prevent waste? According to healthcare professionals, did e-prescription increase service quality?

In order to find the answers to these questions, we conducted a study with the health workers in a state hospital in Turkey.

2. Methodology

In this study, a literature review was conducted on the use of electronic prescriptions both in our country and in the world. A survey was conducted with 368 healthcare professionals working in the field of surgery at X state hospital in Turkey with a simple sampling method. The questionnaire used was developed by Aslan in 2014 [6]. The answers to the survey questions were arranged according to the seven-point likert system. While testing the results, answers of 1: strongly disagree, 2: disagree, and 3: somewhat disagree

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were accepted as "no". Answers of 4: somewhat agree, 5: agree, and 6: strongly agree were accepted as "yes".

Data were analyzed with a one-way ANOVA and T-test. In the factor analysis, it was determined that the scale had 7 subdimensions. Two of them divided the ease of using e-prescriptions into two subheadings. These are as follows:

1. learning and convenience.
2. business convenience.

The sum of these two subheadings was evaluated as perceived ease of use. The study also analyzed the difference in perceived ease of use in terms of sociodemographic variables.

The third subdimension of the scale measured information and system quality. These two quality types, which are close to each other but different, were handled as two separate dimensions. System quality was seen as conformity to the desired information technologies for the respondents. Information quality was associated with other features, such as speed. These two dimensions were interpreted regarding the perceived usefulness and intention to use the e-prescription system.

3. Results

As a result, it was seen that physicians' perspectives on e-prescription were positive. This shows that physicians running e-prescription, which is an integrated version of the developments in technology in the health industry, give satisfactory results. The results of the study are as follows:

A total of 45.2% of the respondents are women, and 67.16% are married. A total of 72.39% of the participants stated that e-prescription increased their speed, and 80.97% of them stated that they gave accurate information about patients and drugs. A total of 80.23% of employees stated that it reduces errors compared to paper prescriptions. A total of 82.09% of the employees stated that they could follow the drugs more easily, and 71.64% of them stated that they had no problems with the e-prescription system. According to 69.41% of employees, e-prescription improves performance. According to 78.35% of employees, the e-prescription system makes transactions more accurate. A total of 88.06% of the participants have a positive view of the e-prescription system.

4. Implications

The proportion of physicians who favor using e-prescriptions is higher than those who do not. As a result, it can be shown that physicians are intertwined with technology. Thanks to e-prescription, physicians' work becomes easier, and they can examine more patients. The vast majority of physicians think that the use of e-prescription prevents drug theft, excessive drug use, etc. The use of e-prescriptions prevents waste of paper.

According to the results of the research, it has been determined that healthcare professionals have similar attitudes towards e-prescription. The fact that most healthcare professionals are in favor of using e-prescriptions shows that they are satisfied with the technological developments in the field of health when they follow the advances in technology.

5. Originality Value

Thanks to informatics in health, physicians can make a correct diagnosis and make it easier to diagnose. Patients began to be served faster. The quality of service to patients has increased. E-prescription is a development within the scope of informatics in health.

In this study, how e-prescription, which is one of the applications of informatics in health, is evaluated by physicians is discussed. It was conducted to determine whether e-prescription provides ease of work for physicians, whether it increases the work performance of physicians, whether the physicians fulfill their duties faster thanks to e-prescription, whether e-prescription prevents the waste of paper, and the quality of e-prescription. Thanks to e-prescription, the service provided to patients is increasing.

6. Contribution

In this study, how e-prescription, which is one of the applications of informatics in health, is evaluated by physicians is discussed. It was conducted to determine whether e-prescription provides ease of work for physicians, whether it increases the work performance of physicians, whether the physicians fulfill their duties faster thanks to e-prescription, whether e-prescription prevents the waste of paper, and the quality of e-prescription. Thanks to e-prescription, the service provided to patients is increasing.

Developments in information technologies continue to increase day by day. The reflections of the developments in information technologies are also seen in the field of health. First of all, those working in the field of health have adopted health informatics over time as a result of the benefits provided by technology, although they resisted the developments in health informatics.

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proceedings

Proceeding Paper

Digitalization and Creative Industries—Trends and Perspectives †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait,17 November 2022.

Abstract: Policymakers worldwide have been gradually acknowledging the value and enormous potential of the creative industries as a driving force and a catalyst for socio-economic progress. Before the COVID-19 pandemic, the sector was expanding at an unprecedented rate. However, because of their unique characteristics, the creative industries were among the industries most heavily affected by the pandemic. The pandemic has also accelerated the sector's digital transformation by inventing different ways of consuming cultural and creative content. Virtual engagement is expected to level up and become even more realistic in the years to come through the increased usage of advanced digital tools such as augmented reality (AR), virtual reality (VR), and 3D gaming.

Keywords: creative industries; COVID-19; digital transformation; global trends; Western Balkans; the Republic of Serbia

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1. Objectives

The COVID-19 pandemic affected the creative sector profoundly [1–4]—more than 10 million creative workers worldwide lost their employment in 2020 [5,6] due to the pandemic and the measures imposed to mitigate its adverse effects Along with the global imbalances, the pandemic also accelerated pre-existing trends such as digitalization [7], i.e., the development, dissemination, and accessibility of creative content have all undergone a deep digital transition. Taking into account the role of creative industries in today's globalized environment [8,9], the paper aims to offer deeper insights into the state-of-the-art and future prospects of the sector with an emphasis on its digital transformation.

2. Methodology

A standard desk research method was performed to achieve the paper's objectives. Secondary data analysis was conducted on the global, regional (the Western Balkans), and national (the Republic of Serbia) levels.

3. Results

The pandemic effects varied considerably amongst industries. While travel restrictions and social distancing measures adversely impacted physical events and attractions, the IT industry benefited [2]. In that regard, the global pandemic triggered a digital surge [7,10]. For example, Netflix hours viewed per minute climbed 7.4 times between 2016 and 2021, while Facebook logins per minute, Google searches per minute, and YouTube views per minute all almost doubled. Innovative ways of using and accessing digital technologies have also come to light. Nevertheless, it should not be neglected that the further digitalization of creative industries could intensify current disparities [2].

4. Implications

Creative industries are one of the fastest expanding industries on a global scale [11–13]. Pre-pandemic, the sector generated global revenues of 2.250 billion USD, while its share in global GDP was projected to reach 10% by 2030 [3]. It should not be neglected, however, that creative industries are more than an economic sector with promising future growth [14]. They are the embodiment of creativity, ingenuity, and imagination through which fundamental social and cultural values are spread on a worldwide scale. Taking into account the sector's role and potential, especially in the emerging market context, the conclusions and recommendations obtained in this paper are primarily intended for the policymakers and expert public in the Republic of Serbia.

5. Originality Value

The paper provides a new interpretation of existing sources on creative industries at the global, regional (Western Balkans), and national (the Republic of Serbia) levels, offering novel insights into this respective area.

6. Contribution

The conclusions obtained in this paper contribute to the growing body of literature in the field of creative industries by providing deeper insights into the current state and prospects of the sector. In that regard, the critical cornerstone for socio-economic progress is creativity. Accordingly, the health crisis brings an opportunity for the sector to re-establish itself in a more resilient and sustainable manner and in alignment with the 2030 Agenda.

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Proceeding Paper

Future Kuwait: Prosperity, Stagnation, or Decline? †

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Abstract: This study is a qualitative meta-analysis employing a critical interpretive synthesis to describe three equally probable future social and economic growth scenarios for the State of Kuwait over the next 15 years. The first scenario adheres to what we refer to as the "Sustainable Growth" Model, as stated by the United Nations Development Goals and the Kuwait Vision 2035 presented by His Majesty the Amir Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah. As the polar opposite of the worst-case scenario, the next scenario is the 'Mismanaged Resource-Based Autocracy' Model, which reflects the negative. The third scenario, which we refer to as the 'Equality of Result amongst Social Groups' Model, falls between the first two. In order to avoid assigning blame for past deeds or pointing fingers, which could be unhelpful to a consensus-building process for necessary actions, we chose to use the pasts of other nations to forecast the future of the State of Kuwait. Singapore was the best fit for the first scenario, Venezuela for the second, and Lebanon for the third, according to our examination of recent socioeconomic histories. All of these nations attained independence about the same period as the State of Kuwait and share numerous other commonalities. The three future projections served as input variables for a bottom-up and top-down consensus-building procedure regarding utilitarian action in Kuwait.

Keywords: scenarios; public choice; stakeholder theory; scenario planning

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1. Objectives

This study is a qualitative meta-analysis of three future scenarios of social and economic development in the State of Kuwait over the next two decades. It compares the social and economic developments of Singapore, Lebanon, and Venezuela over the last two decades. These countries were chosen due to their similarities to the demographics, economics, and value system of Kuwait. This study's objective is to project the consequences if Kuwait's social and economic environment develops as it has in these countries [1–4].

2. Methodology

This study combines stakeholder theory, public choice into a model of the market economy as per the Shell scenarios. There are eight steps to the execution of this study: we will select input drivers; map their interrelationships; define dimensions of uncertainty; select criteria for scenarios of similar outcomes; gather a wide range of relevant data; map foreseeable future challenges and formulate strategic options; receive feedback on the scenarios; and discuss the implications of this study in a forum [5–15].

3. Results

The Kuwait of the future could follow the pattern of Singapore (prosperity), Lebanon (stagnation), or Venezuela (decline), depending on the choices that are made by policymakers in the next 10 to 20 years. If they implement effective policies that encourage direct foreign investment, small business entrepreneurship, and the local production of manufactured goods, then the road to prosperity will be followed. If not, then stagnation is inevitable, and decline is possible as global demand for oil recedes [16–20].

4. Implications

The impact of this exercise, assuming that it reaches a critical mass of influential decision-making Kuwaitis, will be profoundly influenced by political, cultural, and regional motivations. The purpose of this study is not to confirm preconceived ideas but to generate a wide discussion of future opportunities and threats by revealing the 'big picture' with a summary of the findings. It is hoped that this study will lead to strategies and policies based on informed, utilitarian value judgments.

5. Originality

There have been several attempts to perform economic scenario forecasting for Kuwait and other countries. Shell conducted significant strategic research before investing in Kuwait's infrastructure. The South African Mandela administration forecasted a favorable long-term scenario called 'The Flight of the Flamingos'. In a paper commissioned by the Icelandic finance minister in 2001 for the Icelandic economy, the first author of this paper predicted a scenario that was fulfilled in the 2008 global economic crisis. The methodology in this paper rest on the work from 2001 with later improvement. This studied is aimed to create a consensus of needed structural improvement for sustainable development.

6. Contribution

Although this study is not primary research, it draws from numerous sources of secondary research, much of which is original. This paper synthesizes a wide range of research on different countries to posit possible outcomes for Kuwait. Its theoretical approach intertwines socioeconomic studies of public choice with stakeholder theory in a model of the market economy. It is hoped that this study's theoretical contributions and resulting practical applications will be useful to a wide range of researchers. The study is an input for further papers about consensus making by focus group and Delphi method using this paper as the three possible outcomes depending on choices that yet have not transpired.

Author Contributions: A.O. was the principal investor of the project and was responsible for the conceptualization, methodology, and final editing, as well as funding acquisition and administration. D.T., R.B. and R.M. were responsible for the literature review, data curation, scenario writing, original draft preparation, and editing. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

Shortening Disrupted Supply Chains through the Use of 3D Printing Innovations †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: Additive manufacturing utilising 3D printing in an increasing range of materials (plastics, composites and metal alloys) is becoming an important technology for prototyping, critical componet replacement and production of innovative designs that cannot be relicated via reductionist processes (typically cassting and machining). In Australia, universites and industry are investing in these technologies to revitalise manufacturing industries and shorten supply chains.

Keywords: manufacturing; 3D printing; supply chains; biomimicry

1. Objectives

Recent global disruptions have exposed the lengthy and fragile supply chains of many components used in manufacturing, construction, repair, and maintenance across many industries. This has been exasperated in countries where there is a perception that the relevance and extent of the manufacturing sector have decreased. Australia is an example of such a jurisdiction; however, prior to the pandemic, Government actions were in place to address the decline in manufacturing, and research providers such as Universities have responded through innovative equipment acquisition and further development. One such area that can support the cost-effective regional and local manufacturing of complex components has been that of additive manufacturing (3D printing).

2. Methodology

Ref [1,2] have recently reviewed some of the developments in advanced manufacturing, focusing on the 3D printing of composites, metal alloys, and construction materials. The advantages of their adoption and utilization by industries, such as defense, aviation, resources, and agriculture, are apparent. Finally, the opportunity for further innovation and its impact on supply chains is highlighted.

3. Results

Examples are available of where regional industries, which are often remote from major population centers, of have benefited from the adoption of innovative 3D printing technologies, as well as where they will benefit in the future [3,4]. Major reductions in the storage (warehousing) of repair components can be achieved; however, OEMs (Original Equipment Manufacturers) remain concerned about the warranty and safety issues of independently manufactured parts. Necessity remains the mother of invention, and a functioning part is often better than no part or the promise of delivery. SMEs focused on supporting major regional engineering projects are developing their use of Industry 4.0 technologies to supply locally manufactured parts and shorten critical supply chains.

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4. Implications

Additive manufacturing, whether the duplication of parts for repair and maintenance, incorporation of novel or previous waste materials (circular economy), or production of innovative designs, requires a new skill set and paradigm. Educators must respond to these industry expectations through curriculum developments and investment in new equipment. The innovative additive manufacturing processes allow for a wider range of materials to be used more efficiently, plus a greater use of biomimicry in the design process [5,6]. Software simulation of the performance of innovative designs also removes the requirement for the production and testing of all possible options.

5. Originality Value

The review article contains opinions and observations on the adoption of innovative Industry 4.0 technologies, 3D printing in particular, prior to and during recent supply chain disruptions.

6. Contribution

Steve Hall provided the review article and acknowledged the interactions with colleagues and suppliers in the recent procurement and installation of innovative 3D printing equipment at CQ University, Australia.

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Proceeding Paper

Digitalization in Healthcare: A Systematic Review of the Literature †

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Abstract: With agile changes in many sectors, technology comes to the focus of our lives and helps us to take more solid steps. Concepts such as e-commerce, e-health, and data mining have come to the fore. The effects of technological advances, which have begun to integrate into health services, such as increasing work efficiency, service quality, and creating a safe service environment have been determined. In this review study, various digitalization studies carried out in the field of health between 2012–2022 were examined and summarized.

Keywords: digitalization in healthcare; digital maturity models; health information technologies

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1. Objectives

With the developments in technology, different opportunities have arisen for sectors to develop themselves and increase their quality. The digital transformation has also led to significant changes in the field of healthcare, such as more time allocated to patients, higher quality healthcare, higher patient safety, and more significant capabilities in healthcare [1,2]. Through this literature review, our aim is to understand the current trends and methods regarding digitalization in healthcare.

2. Methodology

We followed the systematic literature review methodology for this study. Along with this literature review, it is expected to provide a concise summary of the studies on digitalization in healthcare. Databases, such as Web of Science, PubMed, and Science Direct, were included in this review. While reviewing articles, the scope was narrowed down with keywords based on different perspectives and methods in relation to relevant topics. A systematic literature review was carried out between 2012 and 2022.

3. Results

In this systematic review, the articles published in the specified time period were included and examined. Considering their focus and the methodology used in relevant research, we presented and summarized the studies in the literature in two groups: (1) Digitalization in Healthcare (DiH) and (2) Digitalization Maturity Models (DMM) in healthcare. Our study resulted in 29 studies, of which 12 were in the first group and the other 17 were included in the second group.

4. Implications

Our systematic review has revealed that studies in DiH focused on standardization of patient care, prevention of medical errors, a better diagnosis process, higher patient safety, the digital readiness of healthcare workers, and the quality of healthcare in general. DMM research, on the other hand, has focused on four main areas: (1) Clinical Decision Support Systems; (2) Level of Health Information Technologies; (3) Digitalized Healthcare Process Management; and (4) Digital Healthcare Innovation Models [3–7].

5. Originality Value

Our study is one of the pioneering studies that systematically explore and summarize the literature on the digitalization of healthcare. Healthcare cannot ignore the data science perspective anymore. The digitalization of the healthcare environment has been in a state of continuous progression. Healthcare providers should be provided with the required digital infrastructure and intelligent applications. That is why our study provides a valuable output to better understand current trends and techniques.

6. Contribution

Similarly, to almost every sector, digitalization in healthcare has been improving very fast. However, health is a complex phenomenon, and thus data quality, security, reliability, and ethical considerations must be taken into consideration in the process. Hence, our study provided a concise summary that shows recent trends, different methodologies, and important challenges. Those trends and challenges might shed light for policymakers and healthcare managers in terms of health technology assessment.

Author Contributions: Conceptualization, H.T. and A.E.; methodology, E.D. and L.Ö.P.; resources, E.D. and L.Ö.P.; writing—original draft preparation, E.D. and L.Ö.P.; review and editing, K.A.J.; supervision, H.T. and A.E. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

Service Quality Indicators as a Key Factor of Voluntary Pension Fund Competitiveness †

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Abstract: The role of the voluntary pension fund is to ensure the preservation and increase of their value by investing the collected payments and contributions, and thus the later amount of private pensions for payment. Savings for a private pension is a long-term investment and aims to preserve a certain level of the investor's standard of living even in times when monthly incomes begin to fall due to retirement. The advantage of investing in a voluntary pension fund compared to individual investment is that it is possible to diversify the risk on a larger number of securities with larger funds invested.

Keywords: voluntary pension funds; service quality indicators; competitiveness

1. Objectives

A voluntary pension fund (VPF) is an investment fund that collects voluntary pension contributions and invests them to achieve a return on the invested money and ensure the later payment of private pensions. For such a fund to function smoothly, it is necessary to look in detail at all the positive and negative effects of potential solutions, and then carry out an adequate reform of the pension system [1–3]. The main goal of this paper is to define indicators that can be used for the adequate and timely analysis and measurement of the quality of service (QoS) that VPF provides to its members. On the one hand, if the QoS offered by VPF is at a high level, the satisfaction of their members will be higher, while on the other hand, business success will be guaranteed.

2. Methodology

The study was conducted on an appropriate sample of 150 respondents in Dunav d.o.o. (VPF). Clients' attitudes about the QoS are offered by VPF, and the underlying factors of satisfaction were identified based on the conducted research using a structured questionnaire. For the purpose of this research, an instrument was constructed and validated to examine the clients' opinions and attitudes on the QoS provided by Dunav d.o.o. (VPF), while in the analysis, the Kaiser–Guttman criterion was applied.

3. Results

The most important indicators in the QoS of VPF identified in this research are as follows:

- Investing in a VPF represents a suitable type of saving that contributes to a better future quality of life;
- Contribution to a more comfortable life and personal safety;
- A significant addition to the already realized financial competencies based on insurance;
- Greater comfort in the use of personal funds;

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- The possibility to choose the manner and length of receiving a pension;
- Flexibility and transparency of cash payments to the fund;
- Possibility to use the accumulated funds to start a personal business.

4. Implications

There is very little research in the field of pension fund services, factors that affect their operations, and their business performance [4–6]. Thus far, the impact of QoS as a factor of the strategic position and competitiveness of pension funds has not been analyzed. This research represents a pioneering attempt to analyze an extremely complex business segment. The empirical research offered significant data that can greatly help to observe and evaluate the QoS that VPF provides for its clients.

5. Originality Value

The results of this research are significant both from scientific and practical perspectives. This research defines indicators and the basic factors of satisfaction of members of VPF with the provided QoS. Additionally, the contribution of this research is reflected in the improvement of customer relationship management in VPF. On the one hand, clients are provided with the best possible conditions when it comes to the provided service, while, on the other hand, VPF's profitability would increase. Based on the obtained results, it would be useful to define an evaluation model enabling a clear and detailed evaluation of the QoS provided by VPF to its clients. This way, VPF will be able to successfully operate and compete in the market [7–9].

6. Contribution

The market of pension funds is still characterized by a high degree of market concentration. Regardless, the potential for the establishment of new funds and growth of existing funds exists [10–12]. Therefore, it is quite certain that there is interest in the sector of VPF, both among the founders and among the users of the funds' services [13]. Considering the great competitiveness and importance of services, the QoS offered by individual VPFs will significantly ensure their recognition on the market. This paper's practical contribution is reflected in applying a new empirical research procedure to study the QoS offered to members of VPF, which aims to ensure customer satisfaction.

Author Contributions: Conceptualization, D.M. and I.B.; methodology, D.M.; software, I.B.; validation, D.M. and I.B.; formal analysis, D.M.; investigation, D.M. and I.B.; resources, I.B.; data curation, I.B.; writing—original draft preparation, D.M.; writing—review and editing, D.M.; visualization, I.B.; supervision, D.M.; project administration, D.M. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

Impact of COVID-19 on Digital Consumer Behavior in the Western Balkans †

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Abstract: COVID-19, caused health and economic problems in almost all countries. This crisis has caused unprecedented supply and demand shocks and led to significant changes in people's behavior and spending. Demand depends on consumer behavior, which may have changed with the outbreak of the pandemic. Consumer Behavior is a process of analyzing the causes and patterns of consumer behavior when purchasing products and services. The article analyzes the changes in consumer behavior during the COVID-19 pandemic in the Western Balkans.

Keywords: consumer behavior; digital consumerism; Western Balkans; consumer habits

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1. Objectives

The concept of consumer behavior represents the activities of purchasing and consuming products and services. It is influenced by various different factors: economic, social, cultural, personal, etc. It is indisputable that the pandemic caused wide-ranging effects, changing consumer behavior on global and national levels [1–5]. Traditional consumer behavior has been significantly transformed, giving way to an increase in digital consumerism [1–3]. Therefore, this paper examines how consumer behavior changed due to and in relation to the COVID-19 pandemic in Western Balkan countries.

2. Methodology

The goal of this research is to determine the level of changes in digital consumer behavior in Western Balkan countries affected by the COVID-19 virus. The approach of the research involved the collection of primary data. The collection method was a survey of consumer behavior, which was distributed online. The survey was conducted through a questionnaire composed of 10 questions and divided into two parts. The first half of the research questions concerned the demographic profiles of the respondents, while the second half was related to digital consumer behavior.

3. Results

In regard to the results of the survey, the most prominent conclusions demonstrate that the majority of respondents have indeed changed their consumer behavior by increasing digital consumerism. Moreover, 60% of the respondents consider digital purchasing safe and are satisfied with their consumer experience. Therefore, almost 80% of respondents are likely to return to the web pages that they feel are safe and have already used for purchasing. The overall rating of the digital consumer experience of the respondents is 8 out of 10.

4. Implications

The research results obtained in this paper contribute to the growing body of literature in the field of digital consumption and consumer behavior, identifying the changes that took effect in digital consumption in a post-COVID-19 period. The COVID-19 pandemic, as an impetus for behavior change, represents the chance for different enterprises to change and adapt more quickly to the growing digital market [1–5].

5. Originality Value

The originality value can be seen in the scope of the research, which takes into consideration all of the countries from the Western Balkans, i.e., North Macedonia, Bosnia and Herzegovina, Serbia, Albania, Bulgaria, and Greece. Furthermore, it examines the rise of digital consumption habits after the COVID-19 pandemic and changes in consumer behavior, which led to the broadening of the scope of digital consumerism. The paper also points to the changes in consumer habits toward the increased use of digital markets.

6. Contribution

The results and findings presented in this paper could be useful for businesses and companies to understand how their own consumers are reacting and to develop a customized strategic approach to business. This research indicates that the new habits now formed will endure, permanently changing how consumers behave. Companies must respond to this changing consumer behavior by creating better business strategies to remain well-positioned in the market and grow even stronger in the future.

Author Contributions: Conceptualization, V.P. and A.M.; methodology, V.P.; software, A.M.; validation, V.P. formal analysis, V.P.; investigation, A.M.; resources, V.P. and A.M.; data curation, V.P.; writing—original draft preparation, V.P. and A.M.; writing—review and editing, V.P.; visualization, A.M.; supervision, V.P. All authors have read and agreed to the published version of the manuscript.

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Digitalization of the Macedonian Economy in the Post-COVID-19 Pandemic †

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Abstract: Paper aims to elaborate the digitalization process in Macedonian Economy in the period after COVID-19 crisis, particularly aligned with the digitally skilled population and highly skilled digital professions, as well as the digital transformation of businesses. The methodological approach is quantitative and qualitative resulting from the very nature of the research question. The results demonstrated low level of digitalization both with businesses and population in the Macedonian economy after the outbreak of the pandemic.

Keywords: digitalization; digital economy; digital skills; digital transformation of businesses

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1. Objectives

Future processes emphasize the shift toward digitization in many areas of living and actions [1,2]. The importance of this process has been intensified even more with the emergence of the COVID-19 pandemic, changing the habits, needs, and processes of both individuals and business entities [3]. Every single economy, including the Macedonian economy, should upsurge digitalization in order to follow the trends in the global economy. Hence, this paper aims to evaluate whether the COVID-19 pandemic has improved the digital economy in the country, especially in terms of a digitally skilled population and highly skilled digital professions and digital transformation of businesses.

2. Methodology

The research was conducted through quantitative and qualitative analysis of two types of secondary data. The first type is quantitative data from relevant sources, realistically showing the degree of digital economy development, such as the OECD Digital Society Index, the WITSA Network Readiness Index, the Balkan Business Barometer, the Global Competitiveness Index, and detailed assessment with the Digital Economy and Society Index (DESI) of the European Commission [4–7]. The second type is qualitative data, derived from the legal framework, strategic programs, and policies of North Macedonia that cover the topic of digitization [8–11].

3. Results

The research identified an unnoticeable improvement in the digitalization of the Macedonian economy after the outbreak of the pandemic. Business entities are still very slightly digitized, and digitization is insufficiently supported. There is a low level of the population's digital literacy, which is a serious obstacle for the more significant use of digital tools and services, including electronic shopping, affecting the electronic sale of goods and services by companies. Additional efforts are required to accelerate digitization, target sectors, and stakeholders, where it is most urgently needed and will generate the greatest added value.

4. Implications

This paper implies an enrichment of scientific knowledge about the digital economy, identifying the changes in the digital population skills and the digital transformation of businesses in the post-COVID-19 period, in the country, and beyond. The research refers to the changing role and perception of digitization in economies and societies and to the growing recognition of digitization and the development of the digital economy as a need. It points to the necessity of reforms and investments in digital technologies, infrastructure, and processes. Subsequently, every economy, including the Macedonian economy, will be more competitive on a global level, resilient, innovative, and less dependent.

5. Originality Value

The approach of evaluating the digital economy in the country through a mix of numerous indicators and parameters that are part of already existing bases marks the originality of the paper. Many of them are placed and compared in one place, giving a more comprehensive overview of the state, and the results can be more firmly confirmed and concluded.

6. Contribution

Considering the relatively new operating conditions as a result of the pandemic, this research contributes to the evaluation of the new states and circumstances in the digital economy in the country and indicates the shortcomings, challenges, and opportunities in the direction of its improvement. At the same time, the contribution of this paper is to indicate the connection of the digitization process with a series of policies to support and create an environment for the introduction, development, and application of digital technologies and tools in the economy, which must be adapted to ensure its successful implementation.

Author Contributions: Conceptualization, I.S.G. and K.P.; methodology, I.S.G.; software, K.P.; validation, I.S.G. and K.P.; formal analysis K.P.; investigation, I.S.G.; resources, K.P.; data curation, I.S.G.; writing—original draft preparation, I.S.G. and K.P.; writing—review and editing, I.S.G. and K.P.; visualization, I.S.G.; supervision, K.P. All authors have read and agreed to the published version of the manuscript.

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proceedings

Proceeding Paper

Investigating the Factors Which Determine the Adoption of Mobile Banking Apps by Youth: The Case of Kuwait and Serbia †

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Abstract: The research objective of the study is to assess the impact of perceived ease of use, perceived usefulness, personal innovativeness, perceived risk, and social influence on the intention to use mobile banking applications by university students in Kuwait and Serbia. Preliminary (Kuwait sample size = 51, Serbia sample size = 31) descriptive statistics and comparisons of means between Kuwait and Serbia confirmed that Kuwaitis perceive mobile banking as related to higher risk compared to Serbians, explaining why Serbians have a more positive attitude towards mobile banking and higher intention to use it.

Keywords: mobile banking applications; digital financial services; adoption of banking technology; digital skills; innovative banking

1. Objectives

The main goal of this study is to determine the factors that have an impact on the intention to use mobile banking applications by university students in Kuwait and Serbia. The research objectives are:

- To determine which of the proposed adoption factors by the literature represent, and to what extent, are the main predictors of the intention to use mobile banking applications by the youth. These factors are: the perceived ease of use, the perceived usefulness, the personal innovativeness, the perceived risk, and social influence [1–8].
- To compare the key predictors of the adoption of mobile banking by the youth in Kuwait and Serbia.

2. Methodology

The study used a descriptive and causal research design; the sample consisted of 900 university students from Kuwait and Serbia. Figure 1 presents the three phases of the study. Firstly, using confirmatory factor analysis, it will be checked if the selected adoption factors from the literature review are appropriate for our sample. In the case of a rejection of the measurement theory, the new extracted factors will be used to proceed with a regression analysis. The second phase will be the construction of two regression models (one for Kuwait and one for Serbia), using the factors, instead of the original variables, for estimating the probability of increasing the intention to use mobile banking. Finally, the two regression models will be compared, and *t*-tests will be conducted to identify the differences between the means of the selected variables from the Kuwaiti and Serbian samples.

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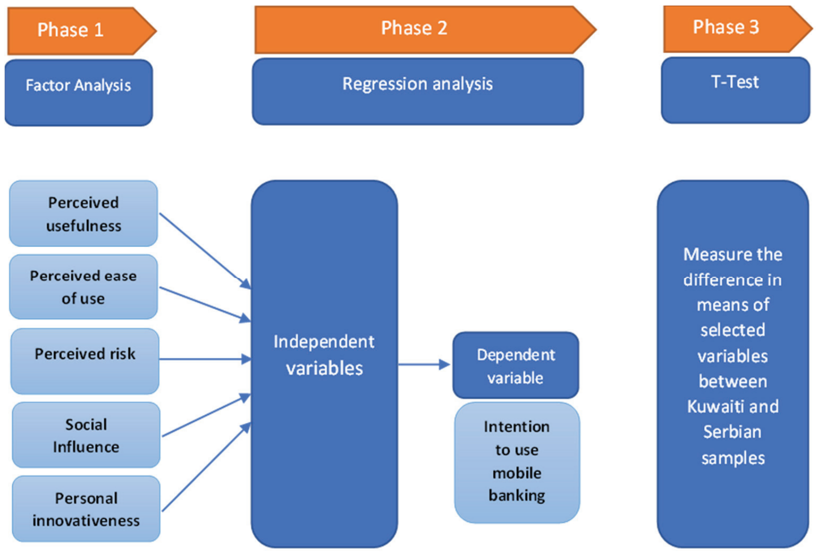

Figure 1. The three phases of the study.

3. Results

The results of this research will be useful in understanding the impact of the studied factors on mobile banking adoption. Furthermore, the authors aim to uncover the influence of a descriptive video related to mobile banking on the intention to adopt it. These results will help banks to better understand the driving factors for youth to start using their cutting-edge services, to identify critical areas for improvements, and to enhance their digital strategies accordingly. Finally, the comparison of the empirical findings between Kuwait and Serbia will provide insights into the differences in the willingness to adopt mobile banking applications, which could be explained due to the diverse cultural contexts between the two countries. Table 1 presents the preliminary (Kuwait sample size = 51, Serbia sample size = 31) descriptive statistics and comparisons of means between Kuwait and Serbia using independent samples T-tests. 7.8% of Kuwaitis never heard about mobile banking, while all Serbians interviewed mentioned they were aware of mobile banking applications. 78.4% of Kuwaitis declared they use mobile banking, while the relevant percentage for Serbians is 74.2%. Although the independent sample t-test statistic did not reveal any statistically significant differences between the means of the constructs under study (perceived ease of use, perceived usefulness, personal innovativeness, perceived risk, social influence and intention to use), it is worth noting the difference between the perception of risk (Kuwaitis M = 3.49, Serbians M = 2.85) and the difference between the attitude towards mobile banking (Kuwaitis M = 3.50, Serbians M = 4.09). Based on the findings, Kuwaitis perceive that mobile banking is related to higher risk compared to the Serbians, explaining why the Serbians have a more positive attitude towards mobile banking and higher intention to use it.

Table 1. Preliminary descriptive statistics (percentages, mean values, standard deviations) and T-test statistics between the Kuwaiti and Serbian samples.

	Kuwait	**Serbia**	**Independent Samples T-Test**
Heard about M-Banking	Yes = 88.2% No = 7.8%	Yes = 100% No = 0%	
Use M-Banking	Yes = 78.4% No = 21.6%	Yes = 74.2% No =25.8%	
Perceived Usefulness (5 = Agree, 1 = Disagree)	M = 3.95 SD = 0.44	M = 3.90 SD = 0.54	$t(17) = 0.212$, $p = 0.835$
Ease of Use (5 = Agree, 1 = Disagree)	M = 3.75 SD = 0.79	M = 3.95 SD = 0.76	$t(17) = -0.554$, $p = 0.587$
Risk (5 = High risk, 1 = Low Risk)	M = 3.49 SD = 0.88	M = 2.85 SD = 1.42	$t(17) = 1.212$, $p = 0.242$
Social Influence (5 = High, 1 = Low)	M = 2.93 SD = 0.76	M = 3.12 SD = 1.30	$t(17) = -0.407$, $p = 0.689$
Personal Innovativeness (5 = High, 1 = Low)	M = 3.34 SD = 0.77	M = 3.56 SD = 1.41	$t(17) = -0.441$, $p = 0.665$
Environmental Awareness (5 = High, 1 = Low)	M = 3.91 SD = 1.07	M = 4.25 SD = 0.97	$t(17) = -0.707$, $p = 0.489$
Attitudes towards M-Banking (5 = Positive, 1 = Negative)	M = 3.50 SD = 0.79	M = 4.09 SD = 1.02	$t(17) = -1.421$, $p = 0.173$
Intention to use M-Banking (5 = High, 1 = Low)	M = 3.61 SD = 0.77	M = 4.09 SD = 1.18	$t(17) = -1.068$, $p = 0.300$

4. Implications

The results of this research will be important in understanding the impact of the selected variables on mobile banking adoption by the youth. Additionally, the results could form a good basis for understanding the adoption of other digital services. This study also examined the extent to which a descriptive video related to a mobile banking app influenced the decision to use the mobile banking application in the future. The implication of this issue is reflected in the creation of informative videos which describe, in detail, the financial services offered by a bank.

5. Originality-Value

The research conducted in Kuwait on this topic explored the existing users' continuous intention to use mobile banking [9], but not potential users, such as university students, who had not adopted mobile banking. Also, to the best of our knowledge, no comparative study has examined the impact of the perceived ease of use, perceived usefulness, personal innovativeness, perceived risk, and social influence on the intention to use mobile banking by the youth in Kuwait and Serbia.

6. Contribution

The scientific contribution of the study will be achieved through the systematization of previous knowledge and the development of new theoretical knowledge on the adoption of mobile banking by the youth. The conceptual model, the methodology, and the results of the empirical analysis will form a basis for future research on similar topics, since the banking sector is characterized by dynamic changes involving constant innovation. The results will be valuable for banks in Kuwait and Serbia to improve their business strategy.

Author Contributions: Conceptualization, data collection, writing—review and editing, funding acquisition, F.T. and M.R.; project administration, supervision, methodology, software, validation and formal analysis, F.T.; investigation, resources, visualization, M.R. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

Business-To-Business Wasta Relations †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: This study's goal is to objectively look at the negative aspects of business-to-business (B2B) connections in established global business models that rely on robust networks. The partial least squares structural equation model is utilized for data analysis, and the design and technique employed for this study apply a questionnaire survey to gather data from buyers in 224 Kuwaiti enterprises. The social exchange theory was the basis for the research, which examined the connections between B2B wasta, relationship satisfaction, creativity, and efficiency. The results demonstrate that, in spite of the notion that wasta, when used in B2B partnerships, delivers long-term advantages, it has a detrimental effect on the efficiency of the organization. By highlighting significant challenges connected to the complex nature of B2B interactions, the study adds to the body of knowledge already available on B2B relationships. The study extended our present understanding of the application of SET in B2B wasta partnerships by confirming the relevance of relational and innovative advantages above economic repercussions.

Keywords: wasta; business-to-business relations; Kuwait; social exchange theory

1. Objectives

This study aims to experimentally analyze the negative aspects of business-to-business (B2B) connections in established global business models that rely on robust networks [1]. Wasta is a widespread phenomenon in the Arab-speaking nations of the Middle East and North Africa (MENA) region and is characterized as a social compact between group members who grant reciprocal preferential treatment. Arab society is seen as a collectivist society, hence creating long-lasting networks with partners is thought to be the secret to a prosperous business in the area [1]. The State of Kuwait is primarily highlighted, with the relationships clearly depicted.

2. Methodology

The partial least squares structural equation model is used in this study's data analysis to gather information from buyers in 224 Kuwaiti businesses [1]. Data were collected using a questionnaire survey [1,2]. This technique has proven successful in many data studies. Kuwait was chosen as the study's context. Kuwait, a Middle Eastern nation with Saudi Arabia and Iraq as its neighbors with a population of 4.1 million, is categorized as a high-income nation.

3. Results

The results demonstrate that, in spite of the notion that wasta, when used in B2B partnerships, delivers long-term benefits, it has a detrimental effect on the efficiency of the organization. The interaction of wasta and relationship satisfaction produced a result. Additionally, we discovered a detrimental and statistically significant link between effectiveness. Combining these findings implies that wasta has a major influence on Kuwaiti enterprises' commercial behavior [2].

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4. Implications

We examine the connections between B2B wasta, relationship satisfaction, innovation, and efficiency using the social exchange theory as a framework. In conclusion, we wonder why consumers and businesses use wasta networks, given how unpopular they are in general. Are those involved in wasta not worried about ruining their reputation in society? Losing face in the community seems to be less of a concern than losing face in business, in our opinion, when considering the data in the context of high-context nations in general, Arab countries in general, and Kuwait in particular [1]. The parties run the danger of losing face in the business world and being viewed as unreliable if they do not sacrifice their ethics and reciprocate. As a result, it has a direct bearing on potential financial gains.

5. Originality Value

The study enhances our present understanding of the application of SET in B2B wasta connections by confirming the significance of relational and innovation benefits above economic repercussions [1]. Accordingly, this analysis runs counter to the prevalent notion in the literature that the resources of the enterprises will influence the relationships. We conclude that Arab businesses view long-term connections as a resource. Creating these firm-level relationships is one of the most important investments they can make for non-Arab enterprises planning to collaborate with organizations in the area [3,4]. Additionally, as relationships and trust are developed at the individual level, businesses should take care when selecting the people who will create these B2B wasta interactions.

6. Contribution

By highlighting significant concerns connected to the multidimensional character of B2B wasta interactions, this study adds to the body of knowledge already available on B2B connections. In the beginning, information for this study was gathered from consumers in one nation within the Arabic-speaking region. The study's main objective was to show how complex B2B interactions may be [5]. Future research may reveal methods to deal with problems brought on by the complex nature of these relationships. Second, the study was carried out in a Kuwaiti domestic business environment. Future research could build on these findings to examine the impact of wasta on the relationships between buyers and sellers involving foreign companies doing business in the Arab world [1]. Finally, only one factor was employed to gauge effectiveness. This metric, which was not highlighted in earlier studies, was investigated and developed. Future research might create a multi-item measure to improve it.

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proceedings

Proceeding Paper

Individuals' Acceptance and Behavior towards Online Banking in Kuwait †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: This research aims to determine key drivers for intention to use digital banking services, i.e., e-banking, m-banking in Kuwait. Data was collected from 202 bank customers using a questionnaire. All items were measured by a 5-point Likert scale. Factor analysis was used, identified the following variables: 1. Perceived usefulness, 2. Perceived ease of use, 3. Perceived risk, 4. Subjective norm, 5. Perceived behavioral control, 6. Trust, 7. Word-of-Mouth, 8. Attitude, and 9. Intention. Average scores concluded that respondents gave highest value for usefulness of digital banking services. Generally, respondents worry about their privacy, especially providing personal information, and fear of phishing.

Keywords: digital transformation 4.0; online and mobile banking; theory of reasoned action (TRA); theory of planned behavior (TPB); technology acceptance model (TAM)

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1. Objectives

Online banking is the use of the Internet on supported devices such as computers, tablet devices, and smartphones to remotely access banking services and carry out various transactions. The focus of this research was in understanding customers' behaviors and perspectives on online banking regardless of the platforms used. The frameworks and concepts applied to study consumers' behaviors and attitudes to innovation and changes have been drawn from multiple sources [1–7].

2. Methodology

The research used both primary and secondary data, and the focus was largely on primary data collection and analyses. The secondary data were used to write the literature review and develop the conceptual framework. This research followed the deductive approach. The objective was to study the phenomenon (attitude and intention towards adopting and using online banking in Kuwait) using existing theories, and the final aim was to understand this phenomenon based on a large population (banking customers in Kuwait). Quantitative data analysis was carried out by implementing various variables related to the main research question and linked to the dependent variables affecting the adoption of this service by the Kuwaiti population studied. The sample was collected from five major Banks in Kuwait by administering surveys in branches and contacting bank customers by email [8–13].

3. Results

The findings show that banks need to make online banking easy to use. Customers are attracted to platforms that do not require special skills or much time to learn and use. Individuals' perceived ease of using online banking was a more substantial factor impacting attitude compared to perceived usefulness, followed by the impact of the perceived usefulness on individuals' intention to use online banking. The most substantial effect on intention was the subjective norm, which indicates the impact of people close to the individual, thus influencing their intention towards using online banking. Surprisingly, word-of-mouth, which was expected to be a reliable tool in community-based settings and marketing, turned out to not be very significant.

4. Implications

In the strong community-based culture that Kuwait has, people seek the opinion and advice of various members of their social circle. If online banking is not perceived as a reliable tool for carrying out financial transactions, then its usage and any issues that may arise from it can create a negative impact on the social circle of the people using it. Such situations can create a barrier to adopting and using online banking. Banks in Kuwait need to practice various measures in promoting online banking and ensuring that their customers are satisfied with online banking so that they will speak positively about the impact of online banking on their banking needs [14–19].

5. Originality Value

This research sheds light on the importance that digital transformation brings to E-business models in the financial sector, looks at current trends and what can be adopted within the Kuwaiti –Business-to-Customer model, what the adoption of new technologies by banks in Kuwait indicates, and how the focus on innovation leads to better services for their customers. The adoption rate of mobile smart devices and the Internet by individuals and the technological focus of banks can produce better financial outcomes. The findings of this research contribute to the directions that the banks need to proceed in to ensure that the right results are achieved. With strong penetration and adoption rates of ICT in Kuwait by individuals and businesses, the recommendations of this research can add to the opportunity for both banks and their customers to have better financial services.

6. Contribution

The following objectives were addressed and analyzed throughout this study:

- Explore how the variables of the TAM and TPB have influenced the intention of Kuwaiti customers to shift towards online/mobile banking in recent years.
- Define the elements of trust and analyze the effect of trust on the intention to use online banking.
- Define the five dimensions of perceived risk and assess their influence on the attitude of customers and their intention to use online banking.
- Determine the importance of word of mouth on the user's intention to use online banking.
- Estimate which of these factors is more influential on the user's intention to use online banking.

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MDPI

Proceeding Paper

Prediction of the Factors Affecting the Permanence of Knowledge in Mathematics Using Soft Computing †

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Abstract: In this scientific research work, the possibilities of applying artificial intelligence of neural networks, i.e., Adaptive Neuro-Fuzzy Inference System (ANFIS) methodology will be presented and explored as a support in teaching mathematics in predicting the durability of knowledge. The results of the research show that it is through the use of these sophisticated technologies that students' achievements in mathematics can be improved, and that research in this direction is very much needed.

Keywords: mathematics; student; scientific literacy; knowledge; ANFIS methodology

1. Objectives

In order to learn mathematics, a modern student does not only need a textbook but must also combine other teaching aids, new learning methods, and activities that can raise their level of self-confidence and logical thinking [1]. In this way, they develop basic mathematical skills, such as problem solving, data collection, data evaluation, measurement, etc. The more mathematics is connected to everyday life, the greater the understanding students will have of the need for mathematics in the world. In the modern implementation of the teaching process, information technology is, in a narrower sense, an indispensable teaching tool supporting teachers in the traditional way of learning, and, in a broader sense, it represents a new methodological approach considering different ways of learning and teaching [2]. Thus, the aim of this research is to predict the factors that affect the permanence of the adopted mathematical content. By using the method of artificial intelligence, that is, the Adaptive Neuro-Fuzzy Interference System (ANFIS), we predict factors that affect the continuity of knowledge in mathematics.

2. Methodology

The methodology used in this study is mixed; that is, it performs descriptive and quantitative analysis [1]. In order to predict the factors that affect the permanence of the adopted mathematical content, we use the Adaptive Neuro-Fuzzy Inference System (ANFIS) methodology [2]. A model of the fuzzy inference system formed using neural networks is used to calculate the parameters of the membership function based on the available input–output data [3]. The model is defined on the basis of available knowledge on the process under consideration.

3. Results

Mean error, mean deviation, mean square error, and root mean square error for training data, test data, and all data combined for the input that has the greatest impact on the output size, as well as the reliability coefficient of the model, are presented in this paper.

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Input 3 has the lowest Root mean squared errors (RMSE), which means that the degree of use of educational software in learning has the greatest impact on the ratio of the average grade in the previous and current year, which is a measure of the permanence of knowledge. In addition to the individual effects of the inputs on the output, the impact of the two combined inputs on the output is also assessed. Input 1and input 3 in combination are found to have the smallest RMSE, i.e., the greatest influence on the output size. Thus, the applicability of mathematics and the degree of use of educational software in learning have the greatest impact on the ratio of the average grade in the previous and current school year in mathematics [4].

4. Originality Value

One of the biggest problems in teaching mathematics is the permanence of the acquired knowledge [5]. In order for some knowledge to become permanent, it is not enough to adopt certain procedures; the taught content must be understood, and the student must be able to apply this knowledge in unknown situations [6]. For this reason, the factor of permanence of knowledge is considered a crucial factor in the improvement of mathematics teaching [7]. The ratio between the average grade in mathematics at the end of the current year and at the end of the previous school year is chosen as an indicator of the permanence of knowledge [8]. Factors influencing the permanence of knowledge are selected based on personal experience. Factor estimation is carried out using ANFIS methodology [9]. The results of the research present the most influential factors for the permanence of knowledge, namely: the most influential factor, the two most influential factors combined, and the three most influential factors combined. According to the results of the research, the most influential factor in the permanence of knowledge is the degree of use of educational software outside the classroom. Learning with educational software activates many more senses than learning in the traditional way [10]. All these senses enable better adoption of teaching contents, as well as much faster and easier recall of some taught content that has not been used for a long time [11]. Most educational software also has a variety of additional content to help children develop their mathematical thinking [12].

5. Contribution

By introducing educational software into the immediate teaching process, mathematics teaching can be improved and modernized and thus keep pace with the technological achievements of the 21st century. Changes in the teaching of mathematics imply inevitable changes in the methodology of teaching mathematics. This will also require a change in the teacher's personality and their role in teaching. The teacher will guide the student in understanding how to learn and what not to learn. In this way, students will be the creators of their own acquisition of knowledge and will have to take responsibility for their education. Learning mathematics will no longer be something that the student will give in to, but something that he will tackle and get the most out of, being aware of its role in the real and creative environment.

Author Contributions: Conceptualization, S.G. and N.D.; methodology, J.S.; software, N.D.; validation, S.G. and N.D.; formal analysis, J.S.; investigation, S.G.; resources, J.S.; data curation, J.S.; writing—original draft preparation, J.S.; writing—review and editing, N.D.; visualization, N.D.; supervision, S.G.; project administration, S.G. All authors have read and agreed to the published version of the manuscript.

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proceedings

Proceeding Paper

Autonomous Vehicles: A Value Proposition for Emerging Markets—The Case of Kuwait †

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Abstract: The advancements in autonomous driving technology are triggering a worldwide disruption to the transportation industry. In the state of Kuwait where people enjoy high financial power, there is a market for introducing a wide range of high-tech vehicles with various levels of autonomous driving. This study follows a qualitative approach based on focus groups and semi-structured interviews with individual and corporate customers, including mainly taxi, food, parcel and cargo companies. It explores the most appealing autonomous features to those segments based on Osterwalder's Value Proposition Canvas. Results indicate that individual drivers, taxi companies and domestic cargo delivery companies perceive potential values in buying level-3 autonomous vehicles (AVs), which provide conditional automation that enables the vehicle to drive itself under the supervision of the human driver. On the other hand, respondents see appealing market opportunities for level-4 driverless vehicles in controlled areas belonging to the oil sector, as well as those at marine ports and airports.

Keywords: autonomous vehicles (AVs); electric vehicles (EVs); artificial intelligence (AI); machine learning (ML); value proposition canvas

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1. Objectives

This study explores the appealing value propositions that autonomous vehicle (AV) dealers in Kuwait could offer to two distinct segments: individual and corporate customers. Here, we strive to formulate who will benefit most from the various levels of autonomous driving suggested by the American National Highway Traffic Safety Administration (NHTSA), starting with level 0: no automation; level 1: basic assistance is provided to the driver; level 2: driver assistance is provided with both accelerating, braking and steering; level 3: conditional automation which enables the vehicle to drive itself under the supervision of the human driver; level 4: high automation where the vehicle is fully autonomous and can drive itself without a human driver, but in limited controlled areas; and level 5: full automation under all conditions and a human driver is not needed to operate the vehicle [1–5].

2. Methodology

The research used both primary and secondary data, with a focus on primary data collection and analyses. Semi-structured in-depth interviews were conducted with individual customers including owners of high-end electric vehicles with advanced autonomous driving features. In addition, focus groups were conducted with members from car showrooms and dealerships. Secondary data were used to write the literature review and develop the conceptual framework. This research followed the deductive approach. The technology acceptance model (TAM) and Osterwalder's Value Proposition Canvas were used in the conceptual framework. All interviewed people were made aware of the research objectives and the various levels of vehicle automation.

3. Results

According to the analysis of the qualitative data, participants welcomed normal cars with internal combustion engines (ICEs) and with basic autonomous features. Smart cruise control, self-parking, traffic jam pilot and crash protection features received the highest level of excitement. Some Chinese car dealers stated that in non-luxury categories, these autonomous features were among the most successful selling points they used to break into the brand-loyal Kuwait car market. For high-tech electric vehicles (EVs), the owners said that they loved the technology associated with level-3 AVs, but they would not trust higher levels of autonomous driving under the current road conditions. Similar indications were given by other respondents regarding taxis and food and parcel delivery companies. However, many respondents see the potential value for level-4 driverless vehicles in controlled areas in the industrial sector, such as in oil fields, logistics and warehousing areas, marine ports and airports.

4. Implications

The study has important practical implications. Kuwait could obtain great benefits by utilizing autonomous vehicles in the transportation industry. The "transport-as-a-service" (TaaS) business model will have disruptive implications in the industrial sector, particularly in controlled areas [2–8]. This covers unmanned small delivery services and large cargo-loading semi-trucks. According to the "Rethinking Transportation" think tank, over 50% of all driving will be by autonomous EVs in 20 years. Tesla indicated that the value of its stock is totally reliant on its EV self-driving capabilities [9–14].

5. Originality Value

Even though Kuwait represents an emerging market for high-tech electric and autonomous vehicles, there is a scarcity of research in this context [15–18]. The study uses a flexible qualitative approach that can be refined when new data emerge. It explores attitudes and behavior of the target market and the fundamental sought values in autonomous driving for both individual and corporate customers. These include functional, social, emotional and supporting values.

6. Contributions

This study opens new horizons for future research to investigate the development of smart cities in emerging markets and their role in the wider adoption and spread of autonomous vehicles. Connectivity and smart transportation systems are enablers of the successful deployment of autonomous driving. AV technology will likely reduce congestion and crashes on roads, which will reduce energy consumption and pollution [3,10,19]. In addition, future studies could quantitatively examine the influence of gender, age, income and other demographic variables on the value proposition for different segments of the market.

Author Contributions: Conceptualization, S.T. and A.O.; methodology, S.T., A.O. and Y.N.; validation, A.O. and Y.N.; formal analysis, S.T., A.O. and Y.N.; investigation, Y.N. and S.T.; resources, S.T., A.O. and Y.N.; data curation, S.T. and A.O.; writing—original draft preparation, S.T. and A.O.; review and editing, S.T. and Y.N.; visualization, S.T. and A.O.; supervision, S.T.; project administration, S.T. and A.O. All authors have read and agreed to the published version of the manuscript.

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proceedings

Proceeding Paper

Customer Relationship Management: A Key Factor in Banks' Competitiveness in Modern Business †

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Abstract: This paper investigates the degree of implementation of the customer relationship management (CRM) concept in Serbian banks. The CRM strategy is extremely important in the financial services sector, given the number of clients and their rapidly changing and evolving needs. The applied research method is an online survey of bank clients, i.e., the collection of descriptive data based on structured questionnaires. The research results showed the extent to which banks effectively use the CRM model. CRM is mostly used for personalized communication with clients, especially with VIP clients who have higher than average importance for banks' operations. In addition, the research results showed that banks improve and integrate their communication and sales channels and train employees to use CRM tools that will enable them to cross-sell while retaining existing and attracting new customers.

Keywords: CRM; bank services; digital communication; sales channels; marketing campaigns

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1. Objectives

The aim of this paper is to investigate the degree of implementation of the concept of customer relationship management (CRM) in Serbian banks. Namely, CRM, as a factor in the competitiveness of the banking sector [1,2], influences the improvement of a bank's business performance, i.e., the improvement of a bank's market position in achieving set goals [3,4], and is based on up-to-date and relevant information on the bank's service users. In addition, CRM improves service performance and contributes to the optimization and standardization of services [5], resulting in high-quality delivery and low service delivery costs.

2. Methodology

The applied research method is an online survey of bank clients, i.e., the collection of descriptive data based on structured questionnaires [6]. The basic instrument in the survey is a questionnaire, which is most often used to collect primary data. This research aimed to analyze the impact of the implementation and integration of CRM on the improvement of a bank's business performance, i.e., on the improvement of a bank's competitive position [7,8]. Pre-prepared, structured questionnaires for clients and managers of banks in Belgrade were used to collect data in this research. The questionnaire for bank clients, composed of 15 multiple-choice questions, was forwarded to respondents via email, and some clients were interviewed using the personal interview method. This research was conducted by sending questionnaires to the emails of bank clients in Belgrade in the largest five municipalities (Savski Venac, New Belgrade, Voždovac, Vračar, and Stari Grad). During empirical research, 364 questionnaires for bank clients in the above-mentioned municipalities of Belgrade were collected.

3. Results

Our research results showed the extent to which banks effectively use the CRM model and that CRM is mainly used for personalized communication with clients [9], especially with VIP clients, i.e., clients with higher-than-average importance for a bank's operations [10,11]. In addition, our research results showed that banks improve and integrate their communication and sales channels and train employees to use CRM tools that will enable them to cross-sell while retaining existing customers and attracting new customers.

4. Implications

The CRM strategy is fundamental in the financial services sector given the number of clients and they're rapidly changing and evolving needs [12]. Despite the simplification and efficiency that CRM brings, there is still significant resistance to its implementation, which is overcome by the commitment of top management and the parallel development of relations with employees [13]. The goal that financial organizations want to achieve is to gain potential customers and maintain their loyalty over a long period of time, thus improving their competitive position [14,15].

5. Originality Value

The need to research the quality of banking services is very pronounced to improve business results [16], reflected in technological solutions for better customer communication, clearer insight into their needs, and more efficient business processes [17]. One of the most critical factors in improving communications is CRM (Customer Relationship Marketing), which allows banks to gain potential customers and ensure their loyalty in the long run [18], so there was good reason to focus scientific research on this type of communication. A significant focus of this work was directed toward the research model and its application [19], which supports increasing a bank's market position and profitability.

6. Contributions

Implementing Customer Relationship Management (CRM) in banks leads to higher-quality banking services. In practical terms, CRM is rated as one of the most important sales channels, which impacts on bank's market position and has broad significance for the business community in the banking sector. In addition, CRM is an indispensable instrument for promotional and communicational purposes, which, through the application of information technology, establishes direct communication with clients and significantly influences their attitude toward the bank.

Author Contributions: Conceptualization, I.D.; methodology, I.D. and S.N.; formal analysis, S.N.; resources, I.D.; data curation, S.N.; writing—original draft preparation, I.D.; writing—review and editing, S.N.; visualization, I.D.; supervision, I.D. All authors have read and agreed to the published version of the manuscript.

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Proceeding Paper

The Importance of Digital Skills in Implementing Tourism Public Policies in the Republic of Serbia †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait,17 November 2022.

Abstract: Serbia has recognized the potential of the tourism sector, which is visible through the adopted public policies in this area. However, the question arises as to whether the conditions necessary for their fulfillment have been established. This pilot study aims to assess whether the level of digital literacy of Serbian citizens is a barrier or an opportunity for the implementation of actions and initiatives recommended by the public sector as part of tourism-related public policies. The results indicate that the general level of digital skills of the population of Serbia is not a supporting factor for the implementation of measures foreseen by public policies in this area.

Keywords: public policies; tourism; digital skills; Serbia

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1. Objectives

Tourism is one of the economic sectors most severely impacted by the pandemic issue; therefore, the necessity for new solutions is highlighted. The majority of tourist advances are associated with the digitization process [1]. Tourism processes and activities have been significantly modified by digital technology, which is most evident in the usage of digital media and online platforms for reservations and reviews, but also for tourism products and communication systems [2,3].

Serbia also has recognized the potential of the tourism sector, which is visible through the trend of significantly growing business, and adopted public policies in this area. The Government has approved numerous master plans and development programs during the last fifteen years, such as the umbrella document—the Tourism Development Strategy of the Republic of Serbia [4]. As a result of these processes, the demand for more advanced digital skills among all tourism sector stakeholders has expanded substantially [5–7].

This pilot study aims to assess whether the level of digital literacy of Serbian citizens is a barrier or an opportunity for the implementation of actions and initiatives recommended by the public sector as part of tourism-related public policies.

2. Methodology and Data

There are numerous methodologies for measuring digital skills. We applied Eurostat's methodology [8] on microdata collected by the Statistical Office of RS's "Use of information and communication technologies in the Republic of Serbia—ICT Usage in households and by individuals." It should be kept in mind that the method of data collection does not guarantee completely reliable values, as it relies on the self-assessment of the respondents' knowledge and habits, which in some cases can lead to bias in the responses due to overestimation or underestimation of the actual situation.

Based on microdata we calculated values for the following indicators: information skills, communication skills, problem-solving skills, software skills in content manipulation, and overall digital skills for 2019, a year before the COVID-19 pandemic.

3. Results

We found that the level of digital skills in the section of the sample labeled "Wholesale and retail trade, transport, accommodation, and catering services" was modest. More than 70% of the respondents had a basic and above-basic level of information and communication skills, but nearly 45% of them did not have problem-solving skills or software skills (more than 55%). The obtained values suggest that the overall level of digital skills in Serbia was lower compared to that in most EU countries.

4. Implications

Current public policies in the field of tourism envisage numerous measures (projects) based on digital technology [4]. For these measures to be implemented, stakeholders need to have an adequate level of digital skills (public servants, tourism management, employees in the business sector, and guests). The obtained results suggest that stakeholders' lack of digital skills in tourism in the Republic of Serbia could be a significant constraint on the successful implementation of measures prescribed by public policies.

5. Originality Value

A systematic analysis of the digital skill level of stakeholders involved in implementing public policies, regardless of the area, has not been performed so far in Serbia. Based on secondary data, this research allows the preliminary conclusions that the level of digital skills in tourism is a limiting factor in successfully implementing public policies. To obtain more accurate results, it is necessary to perform an in-depth analysis based on data collected by primary research (self-assessment and/or testing of respondents) using statistical analysis methods.

6. Contribution

We believe that our pilot research has indicated a significant problem in the planning and implementation of public tourism policies in the Republic of Serbia which spills over into the business sector. This topic has become highly relevant in the post-COVID-19 period, given the increased usage of digital technologies in tourism.

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Proceeding Paper

Digital Skills among Women in Tourism in Serbia †

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† Presented at the Digital Transformation in Business: Challenges and New Opportunities, West Mishref, Kuwait, 17 November 2022.

Abstract: The introduction of digitization into the economy has significantly altered working methods. New technologies have a significant impact on labor market conditions, business dynamics, and the skills required to stay in the market. In order for an individual to maintain in the labor market, certain new skills are needed. All members of the labor market must adjust to the new situation. Otherwise, there is a chance of being unemployed. When it comes to digital skills in the labor market, vulnerable groups, including women, must be prioritized. It is necessary to assess their digital skills in order to verify their abilities and potentially work on improving them in order to stay at work or get a promotion on new projects.

Keywords: tourism; digital skills; women; Serbia

1. Objectives

In the last twenty years, tourism has experienced exponential growth. As part of an economy that is developing rapidly, it is necessary to have specific skills to implement the benefits of modern technology, especially ICT and digital skills [1,2]. Digital skills are becoming crucial for many different professions. Women make up the vast majority of the global tourism workforce [3], and are a vulnerable group in the labor market [4]. In Serbia, there is no systematic measurement of digital skills in this population. This paper aims to determine women's digital skills in tourism in Serbia.

2. Methodology

This paper will use microdata from the Statistical Office of the Republic of Serbia (SORS), based on the questionnaire "The Usage of Information and Communication Technology on individuals/households in the Republic of Serbia for 2020". This survey is conducted by SORS annually according to a questionnaire harmonized with Eurostat methodology. Women who declared themselves as employees providing accommodation and food services were selected for this research. Data will be presented by descriptive analysis.

3. Results

The results should present the digital skills of women in tourism and identify potential gaps.

4. Implications

The finding of this paper may have an impact on policymakers and stakeholders. If the results show that women in tourism lack digital skills, it is necessary to organize training and courses. If women have a satisfactory level of digital skills required for their jobs, additional training can be helpful to stay in line with the newest trends in ICT.

5. Originality Value

Considering that, so far, there has been no research on this topic in Serbia, the originality of this paper consists of showing the current situation of digital skills among women in tourism.

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6. Contribution

The main contribution of this paper is creating a potential baseline for further research in this area. In addition, this research can contribute to understanding the levels of digital skills among women in tourism and identify potential gaps.

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