

Unlocking Blue Ocean Growth Powered by Artificial Intelligence

Shadi Al-Tarifi¹, Jamal Zraqou², Firas Omar³ and Sima Magatef⁴

¹University of Petra, Shadi.Altarifi@uop.edu.jo

²University of Petra, Jamal.Zraqou@uop.edu.jo

³Al-Zaytoonah University, Firas.omar@zuj.edu.jo

⁴University of Petra, smagatef@uop.edu.jo

Abstract

The core of this research lies in the role of artificial intelligence (AI) in facilitating strategic decision-making processes to transition from the Red Ocean to the Blue Ocean strategy. The Red Ocean signifies existing market spaces characterized by intense competition, while the Blue Ocean represents untapped market spaces with uncontested marketplaces. By employing AI techniques such as market analysis, competitive intelligence, customer segmentation, innovation, risk assessment, and decision support, organizations can identify opportunities, mitigate risks, and develop strategies to navigate this transition successfully. The paper introduces an AI-powered approach called Isolation Forest, which supports executives in making well-informed strategic decisions to move from the Red Ocean to the Blue Ocean. The effectiveness of the proposed methodology is demonstrated through a case study. The findings indicate that the suggested methodology holds promise for the future of business.

Keywords: — Artificial Intelligence, Strategic Decision-Making, Red Ocean, Blue Ocean, Market Analysis, Competitive Intelligence, Customer Segmentation, Innovation, Risk Assessment, Decision Support.

1 Introduction

In the contemporary and highly competitive business landscape, organizations are constantly endeavoring to formulate inventive methodologies that empower them to move beyond conventional market boundaries and establish novel avenues for expansion and distinction. The transition from a Red Ocean (RO) to a Blue Ocean (BO) strategy denotes a fundamental shift in approach, wherein companies shift from engaging in existing market spheres that are saturated with fierce rivalry and limited growth prospects (RO) to crafting fresh, unexplored market spheres that are characterized by ingenuity, value creation, and untapped demand (BO).

The terms BO and RO are strategic frameworks coined by Chan Kim and Renée Mauborgne in 2005 to describe distinct market spaces, with the BO strategy encouraging businesses to explore new markets and the RD strategy focusing on competing within existing markets as shown in Figure 2.

The core of this research lies in exploring the dynamics and mechanisms underlying successful transitions from RO to Blue Ocean strategies. The key drivers, challenges, and best practices associated with this transformational journey enable organizations to effectively navigate the complexities of market dynamics and position themselves for sustainable growth and competitive advantage.

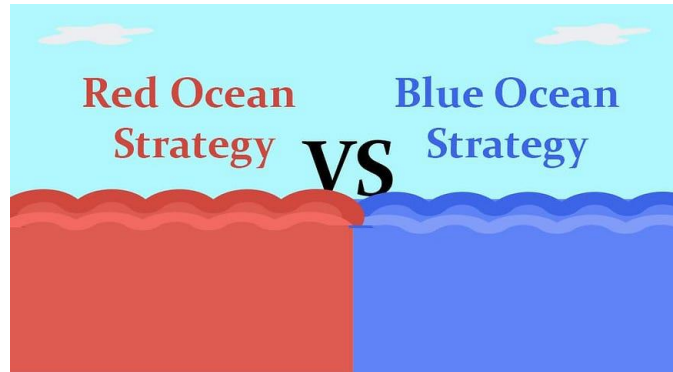


Figure 1: Two strategic frameworks that have the potential to facilitate the success of businesses in a highly competitive market.

By conducting an extensive examination of empirical examples, conceptual frameworks, and pragmatic observations, the purpose of this investigation is to reveal the pivotal elements that facilitate the achievement of prosperous shifts from resource-oriented (RO) approaches to business-oriented (BO) strategies. By the scrutiny of strategic determinations, organizational proficiencies, and market fluctuations entangled in such conversions, this inquiry endeavors to offer implementable observations and counsel for enterprises endeavoring to embark on analogous transformative endeavors.

Ultimately, the findings of this research will contribute to the body of knowledge on strategic management and innovation, offering valuable insights and perspectives on how organizations can thrive in dynamic and evolving market environments by embracing the principles of BO strategy and driving meaningful change in their industries. An illustration of a BO strategy can be observed in the plant-based meat industry. Enterprises such as Beyond Meat and Impossible Foods are establishing a fresh market space through the introduction of inventive plant-based meat products that cater to health-conscious consumers seeking environmentally sustainable alternatives. Remarkably, these companies have effectively forged a new market territory in which competition was previously non-existent or negligible as

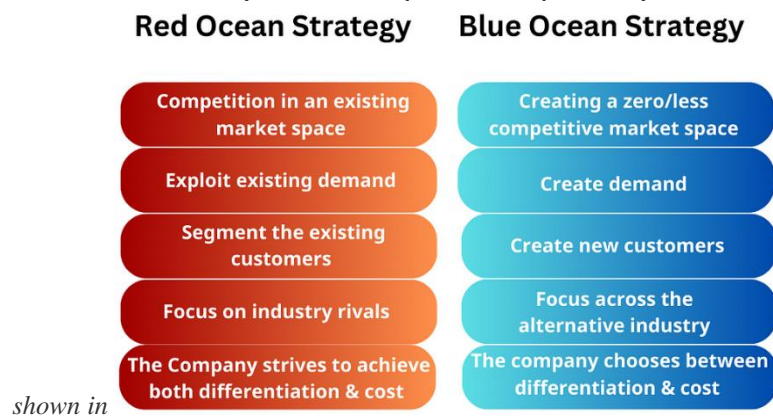


Figure 2.



Figure 2: The concepts of RO Strategy and BO Strategy in strategic management.

For example, today's business environment would be severely lacking without on-demand mobile applications. According to [1], the worldwide on-demand mobile services sector is expected to reach \$1.3 trillion by 2025, illustrating the increasing significance of mobile on-demand apps in today's economy. Businesses have been revolutionized by the proliferation of mobile on-demand applications, which provide customers with a quick and easy way to obtain the goods and services they need [2]. Many individuals have turned to online shopping and home delivery services to reduce their exposure to the COVID-19 epidemic, and this trend has accelerated the development of mobile on-demand applications [3]. This has resulted in a greater need for "last mile" delivery services, which companies like Uber Eats and DoorDash have successfully met [1]. Mobile on-demand applications are increasingly being used outside of the retail and food service industries as well [4]. These industries include healthcare, finance, and education. To sum up, mobile on-demand applications have changed the way we conduct business by providing clients with greater ease, speed, and accessibility, while also opening up new doors for businesses to grow and succeed in today's cutthroat economy.

The goal of this research is to contribute to business development by utilizing the AI-driven approach to drive businesses beyond the limitations of the RO. This article will outline the various ways in which businesses and investors might adjust to the current economic climate, highlighting the key distinctions between them.

Red ocean tactics entail competing in already saturated industries by offering similar products or services at cheaper rates to win market share, while established enterprises typically focus on blue ocean strategies. High levels of competition, low profit margins, and few ways to differentiate yourself are typical of RO methods. That is why companies pursuing RO strategies may have trouble keeping up with shifting consumer tastes and new technologies [5].

The main benefits of switching from RO to BO to Businesses are to gain market share and attract new customers by entering untouched markets. BO enterprises can charge higher prices without losing customers to competitors. This allows the company to make more money. Also, creating a less competitive environment reduces the need for aggressive marketing and pricing.

2 Related Work

Several studies were introduced to investigate the used strategies to move toward the Blue Ocean.

The research study in [6] explores how artificial intelligence (AI) can be leveraged to create uncontested market space and unlock blue ocean growth opportunities. The authors examine the potential of AI to support value innovation, enhance customer engagement, facilitate data-driven decision-making, and promote organizational agility. They present a framework for the AI-powered Blue Ocean Strategy and illustrate its application with case studies.

The investigation of the role of AI in marketing from a Blue Ocean Strategy perspective was explored in [7]. The authors examine how AI can be used to create new market space, redefine existing markets, and deliver exceptional value to customers. They identify key areas where AI can be applied in marketing, such as customer segmentation and targeting, product development and pricing, marketing communications, and marketing channels.

The proposed work in [8] examines the ethical implications of using AI in marketing from a Blue Ocean Strategy perspective. The authors discuss the potential for AI to be used to manipulate and exploit consumers, as well as the potential for AI to exacerbate existing inequalities. They argue that businesses need to be mindful of the ethical implications of AI-powered marketing and take steps to mitigate the risks.

The impact of AI on the future of marketing and the potential for AI to enable businesses to create and capture uncontested market space was explored in [9]. The authors investigate how AI will transform marketing activities such as customer segmentation and targeting, product development and pricing, marketing communications, and marketing channels. They also discuss the challenges and opportunities that businesses will face in the age of AI-powered marketing.

A successful case study that examines how Netflix leverages AI to drive Blue Ocean growth was introduced in [10]. The authors analyze how Netflix uses AI for personalized recommendations, targeted campaigns, and optimized pricing models. They discuss how Netflix's embrace of AI has contributed to its market dominance in the streaming industry and provide a roadmap for businesses seeking to harness AI's marketing power.

AI was used to recognize spam in [11], their research was focused on enhancing user experience, and effective spam filtering aims to safeguard email systems, prompting deeper research. This study introduces GWO-NBC, a hybrid spam filtering technique combining information gain and Wrapper Grey Wolf Optimizer with Naive Bayes Classifier. Rigorously tested, it surpasses existing solutions in security and accuracy.

The intersection of Blue Ocean Strategy and AI-powered marketing to develop a strategic framework that unlocks possibilities for new growth was introduced in [12]. We examine how AI supports value innovation, enhances customer engagement, facilitates data-driven decision-making, and promotes organizational agility. Our findings illustrate the potential of AI to reshape marketing strategies and enable businesses to create uncontested market spaces.

A research that employs the Delphi methodology to delve into potential future marketing trends fueled by AI was explored in [13]. The study gathers insights from experts, identifying key trends likely to reshape the field, including hyper-personalization, widespread data analytics, and an amplified focus on customer experience. Our findings outline critical avenues for businesses seeking to adapt and thrive in the evolving AI-driven marketing landscape.

Introduced in [14], is a significant study offering a systematic review and meta-analysis of AI's influence on marketing. Examining 104 studies, the authors discern a notable positive effect of AI on marketing effectiveness, particularly pronounced in firms with advanced digital maturity levels. Smart cities integrate information, communication, and physical devices for efficient city operations [15]. The proposed research utilizes IoT devices and GIS to predict road conditions and control traffic lights, aiming to prevent congestion. By introducing a novel algorithm, the study harnesses GIS and IoT to mitigate traffic congestion and enhance urban mobility.

A systematic review and meta-analysis of the literature on the impact of artificial intelligence (AI) on marketing was discussed in [16]. The authors examine 104 studies and find that AI has a significant positive impact on marketing effectiveness. They also find that the impact of AI is stronger for firms that have a higher level of digital maturity.

3 Input Data

Historical market data from various sources was collected, including sales records, customer surveys, social media interactions, website analytics, industry reports, and third-party databases as follows:

1. Sales Records were obtained for Amazon sales that are available on [17]. The collected historical sales data was for sales reports to the top Valentine gifts. The dataset includes information such as sales volume, revenue, country, pricing, and timestamps of transactions. The data was organized into a relational database to facilitate further analysis.
2. Customer Surveys were carefully considered by downloading the dataset provided in a public collection of e-commerce orders made at Olist Store in Brazil. It contains information on 100k orders from 2016 to 2018, covering various marketplaces and dimensions such as order status, price, payment, freight performance, customer location, product attributes, and customer reviews. Additionally, a geolocation dataset is available.
3. Social Media Interactions were extracted from several social media platforms, such as Facebook, Twitter, LinkedIn, and Instagram. The collected data was focused on interactions such as likes, shares, comments, mentions, and sentiments toward the brand or products. Social media APIs were used to access historical data and export it for analysis.
4. Industry reports were obtained from historical industry reports and market research studies from reputable sources, such as market research firms, industry associations, and government agencies. The included data comprises the market size, growth rates, trends, competitive landscape, and consumer behavior obtained from [17]

6. Data Integration and Consolidation was performed by integrating data from different sources into a unified dataset or data warehouse for analysis. The data was cleaned and preprocessed to address inconsistencies, errors, or missing values. The data was submitted from local markets.

7. Three success stories of companies that successfully transitioned from RO to BO strategies were normalized into a relational database as follows:

A. *Cirque du Soleil*

- In the previous market space (RO), the circus industry was characterized by intense competition, declining audiences, and commoditized offerings. Traditional circuses focused on extravagant animal acts, clowns, and acrobatics, catering primarily to families and children.

- In the new market space (BO), *Cirque du Soleil* shifted from the traditional circus model to create a new market space that combined elements of theater, circus arts, and spectacle. By eliminating animals, reducing costs, and targeting a more upscale audience, *Cirque du Soleil* differentiated itself from competitors and redefined the entertainment industry.

- The success factors were based on the innovative show concepts, artistic performances, and high production values that attracted a broader audience demographic, including adults, corporate clients, and theater enthusiasts. *Cirque du Soleil* achieved global success and became a profitable entertainment brand with multiple touring shows, resident productions, and merchandise sales.

B. *Nintendo Wii*

- In the previous market space (RO), the video game industry was dominated by Sony's PlayStation and Microsoft's Xbox consoles, which targeted hardcore gamers with high-performance graphics and complex gameplay. Competition was fierce, and innovation primarily focused on technical specifications and game titles.

- In the new market space (Blue Ocean), Nintendo Wii introduced a disruptive gaming console that appealed to a broader audience beyond traditional gamers. With its motion-sensing controllers and intuitive gameplay, Wii targeted families, seniors, and casual gamers, creating a new market space for interactive entertainment.

- The success factors were in the simplicity, accessibility, and social aspects of Wii games attracted non-traditional gamers and expanded the gaming market. *Wii Sports*, a bundled game title featuring interactive sports simulations, became a cultural phenomenon and drove widespread adoption of the console. Nintendo Wii outsold its competitors and became one of the best-selling gaming consoles of all time.

C. *Uber*

- In the previous market space (RO), the transportation industry was characterized by traditional taxi services, which often suffered from issues such as long wait times, inconsistent service quality, and limited availability. Competition among taxi companies was intense, with little differentiation in service offerings.

- In the blue ocean space, Uber disrupted the transportation industry by introducing a technology-driven platform that connected riders with drivers through a mobile app. By offering convenience, transparency, and flexible pricing, Uber transformed the way people accessed transportation services and created a new market space for ridesharing.

- The success factors were in the convenience, reliability, and affordability of Uber's services appealed to a wide range of customers, including commuters, travelers, and

nightlife revelers. Uber's innovative business model enabled drivers to earn income flexibly and efficiently, attracting a large driver network. Despite facing regulatory challenges and controversies, Uber achieved rapid growth and global expansion, becoming a leading player in the ride-hailing industry.

Apple transitioned into a new market space by unveiling the iPod, iTunes, and subsequently the iPhone, centering its attention on ease of use, aesthetic appeal, and seamless integration with its ecosystem. Airbnb revolutionized the realm of hospitality by establishing a platform that allows individuals to lease their residences and properties to tourists, providing distinctive and customized accommodation experiences.

These examples of achievement exemplify how organizations can deviate from conventional industry confines, distinguish themselves from rivals, and establish novel market domains through the embrace of Blue Ocean strategies that prioritize ingenuity, creation of value, and customer-centric approaches.

During the preceding stages, a wide range of historical market data was collected from diverse sources, thereby establishing a strong basis for the execution of market analysis, identification of trends, and formulation of strategic decision-making procedures.

4 Methodology

To expedite the shift from the Red Ocean to the Blue Ocean strategy, the integration of artificial intelligence (AI) is implemented to bolster the decision-making process in the establishment of novel market spaces. The process commences with a comprehensive examination of the market, succeeded by the acquisition of competitive intelligence, customer segmentation, innovation, and risk assessment. The Isolation Forest helps in the decision-making process by providing valuable insights into market dynamics and identifying potential opportunities for transitioning from the Red Ocean to the Blue Ocean. A case study is introduced to explore the practical and effectiveness of the proposed methodology as shown in Figure 3. The subsequent section outlines the recommended methodology for harnessing the capabilities of AI to facilitate this transition:

1. Market Analysis and Trend Prediction is applied by utilizing ARIMA (Autoregressive Integrated Moving Average) models to analyze time-series data and forecast future values based on historical patterns. They capture trends, seasonality, and irregularities in the data, making them suitable for identifying emerging trends and predicting market behavior over time. ARIMA was given the collected dataset to analyze historical market data and identify emerging trends, customer preferences, and potential opportunities. This was achieved by applying machine learning to forecast future market dynamics, demand patterns, and competitive landscapes. Python was used to extract insights from industry reports, news articles, and social media discussions, uncovering latent market needs and shifts in consumer behavior.

2. Competitive Intelligence and Gap Analysis were calculated based on AI to gather and analyze data on competitors' strategies, product offerings, strengths, and weaknesses. A machine learning algorithm is required at this stage to identify gaps in the market where competition is low or non-existent, signaling potential BO opportunities. One machine learning algorithm that can be used to identify gaps in the market where competition is low or non-existent is anomaly detection. Anomaly detection algorithms aim to identify

patterns in data that deviate significantly from the norm, which can indicate areas of untapped opportunity or emerging market niches.

One example of an anomaly detection algorithm is the Isolation Forest algorithm. Most existing model-based approaches to anomaly detection identify instances that do not conform to a normal profile as anomalies. However, the work presented in [18] proposes a novel method that explicitly isolates anomalies instead of profiling normal points, enabling the use of sub-sampling in the iForest algorithm, which has a linear time complexity and low memory requirement. Empirical evaluation demonstrates that iForest outperforms other methods in terms of AUC and processing time, particularly in large data sets, high dimensional problems, and situations without any anomalies in the training set. Isolation Forest works by isolating anomalies in the data using decision trees. It identifies outliers by randomly selecting a feature and then randomly selecting a split value between the minimum and maximum values of the selected feature. This process is repeated recursively until the data points are isolated into individual trees. The anomaly score of each data point is then calculated based on the average path length in the trees. Data points with shorter average path lengths are considered anomalies.

Isolation Forest is applied to identify gaps in the market where competition is low or non-existent as follows:

4.1 Data Preparation

The gathered data was cleaned and preprocessed to manage missing values, outliers, and ensure consistency.

4.2 Feature Selection

The chosen features which are indicative of market competition and possible discrepancies have been identified. These encompass elements such as the distinctiveness of the product, the specific customer segments targeted, and the geographical location.

4.3 Model Training

The model that underwent training was created by utilizing the chosen characteristics from the preceding phase. The purpose of this model is to acquire knowledge on distinguishing abnormalities or exceptional instances within the dataset, which could potentially indicate regions of diminished competition or emerging market circumstances.

4.4 Anomaly Detection

The Isolation Forest model, once trained, is utilized to analyze market data and identify discrepancies. High anomaly scores assigned to data points may imply limited or absent competition, thereby indicating possible market voids or prospects.

4.5 Analysis and Interpretation

The discovered anomalies are then identified as underlying factors leading to recognize the outlier status. However, this step is vital to determine whether these anomalies

represent underserved customer segments, unmet needs, emerging trends, or other elements indicating the market gaps.

4.6

4.6 Validation and Refinement

The recognized market gaps are endorsed using customers' feedback and expert opinions. Consequently, the analysis is refined on validation results and feedback to ensure the identified gaps are actionable and relevant.

Applying the Isolation Forest to discover anomalies, provides the ability to leverage ML to recognize potential market gaps and the areas of low competition, providing valuable insights for strategic decision-making and market positioning.

Customer insights and segmentation are concerned with leveraging AI-driven analytics to segment customers based on behavior patterns, preferences, and unmet needs. Clustering is performed to identify underserved customer segments and niche markets that can be targeted with innovative solutions.

4. Innovation and product development is achieved through AI ideation platforms to generate innovative ideas and concepts. Prediction is used to evaluate the feasibility and potential success of new product offerings, minimizing the risk of failure.

Risk assessment and improvement is employed based on the AI risk assessment to calculate the feasibility and potential impact of transitioning to a Blue Ocean strategy. This is achieved by analyzing the scenarios and simulation-based optimization to assess the risks and rewards associated with different strategic choices.

With the proposed AI approach, organizations can systematically identify, evaluate, and capitalize on Blue Ocean opportunities, driving sustainable growth and competitive advantage in dynamic and uncertain market environments.

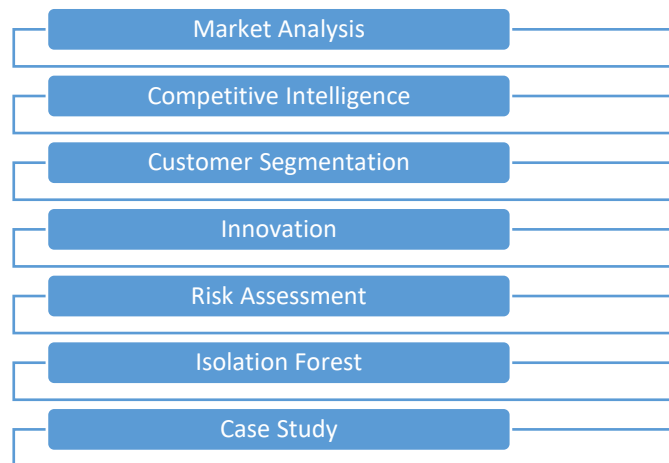


Figure 3: Proposed Methodology for Leveraging Artificial Intelligence in Transitioning from Red Ocean to Blue Ocean Strategy.

5Results

A case study is necessary to handle the experiments. ABC Corporation, a leading technology company, is seeking to increase its market presence by entering new market

spaces beyond its traditional offerings. To reinforce this strategic initiative, the proposed approach is applied to the ABC Corporation to identify untapped opportunities, develop innovative products, and execute a successful market expansion strategy. The obtained results after running the proposed methodology are shown in Table 1. AI is used to support decisions for the creation of new market spaces.

By applying the proposed AI methodology, ABC Corporation is expected to successfully expand its market presence and create new market bays, driving sustainable growth and competitive improvement in the ever-evolving business landscape. This case study shows the transformative impact of AI on market expansion strategies and underscores its importance in shaping the future of business.

Table 1: The experimental results of the proposed methodology.

#	<i>Factor</i>	<i>Result</i>
1	Identification of New Market Spaces	AI analysis identifies several untapped market opportunities, including emerging technologies, niche customer segments, and underserved industry verticals.
2	Innovative Product Development	ABC Corporation is required to launch a series of innovative products tailored to the identified market spaces to ensure market fit and success.
3	Successful Market Expansion	ABC Corporation can enter new market spaces with confidence, gaining traction and market share through differentiated offerings and targeted marketing campaigns.
4	Revenue Growth and Competitive Advantage	ABC Corporation is expected to be a leader in emerging markets, providing a sustainable competitive advantage.

6 Conclusion

In conclusion, the proposed research underlines the pivotal role of artificial intelligence (AI) in driving strategic decision-making processes aimed at transitioning from the RO to the BO strategy. By harnessing AI methods such as market analysis, competitive intelligence, customer segmentation, innovation, risk assessment, and decision support, organizations can effectively navigate this transition by recognizing opportunities, mitigating risks, and formulating strategies tailored to untapped market spaces.

Moreover, the paper informs an AI-powered approach named Isolation Forest, which determines significant promise in supporting executives in making informed strategic decisions to move from the RO to the BO. Through the utilization of Isolation Forest and other AI methodologies, organizations can leverage advanced analytics to gain deeper insights into market dynamics, identify emerging trends, and uncover niche opportunities in uncontested marketplaces.

Furthermore, a case study presented in this paper illustrates the efficacy of the proposed methodology, showcasing visible results and outcomes derived from the application of AI-driven approaches in strategic decision-making. The results underscore the transformative potential of AI in reshaping business strategies and driving sustainable growth in today's competitive landscape.

Overall, the research highlights the importance of embracing AI technologies as strategic enablers for navigating the transition from the Red Ocean to the Blue Ocean, ultimately paving the way for organizational success and competitiveness in dynamic and evolving markets.

ACKNOWLEDGEMENTS

We extend our sincere gratitude to the University of Petra (UOP) for its unwavering assistance. UOP's dedication to advancing education and promoting academic excellence has played a crucial role in the completion of our endeavors.

The commitment of UOP to delivering a conducive atmosphere for learning, encouraging research initiatives, and cultivating a community of scholars has significantly contributed to the expansion and advancement of knowledge within its academic community.

We explicit our deepest appreciation to the UOP for its generous support, which has been crucial in furthering our educational mission and objectives

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Shadi M. Altarifi is assistant professor at the department of marketing, University of Petra, Amman, Jordan. His main teaching and research interests include Digital Marketing, Brand Management, and Service Marketing. He has published several research articles in international reputable journals in the field of marketing.



Jamal S. Zraqou is associate professor at the department of Computer Science, University of Petra, Amman, Jordan. His main teaching and research interests include Image Processing, Artificial Neural Network and Machine Learning. He has published several research articles in international journals in the field of computer science and computer vision.



Firas A. Omar is a candidate with a substantial academic career in higher education administration and teaching is eligible for fellowship consideration by the British Higher Education Academy. I have a strong inclination to research many subjects such as ERP, CSR, data sciences, user experience in the business market, CRM, E-Business, Customer Services, and Technology Adoption.



Sima G. Magatef works as assistant professor at the department of Marketing & Digital Marketing, University of Petra, Amman, Jordan. Her research interests include in digital marketing, marketing strategy, and consumer behavior, she has many research and articles published in Scopus international journals.