The 4th International Conference on New Trends in Management, Business and Economics
21-23 April 2023 Athens, Greece
ICNMB

Adopting business intelligence towards strategic ambidexterity as digital marketing matters

[1]Areej Faeik Hijazin, [2]Professor Javier Tamayo Torres, [3]Khalid Hasan Al jasimee
[1]Ph.D. Student, Faculty of Economics and Business- University of Granada - hijazin.areej@gmail.com. Jordan- Amman- Al Hashmi Al Shamali – 11123
[2]Department of the Business Organization University of Granada - jatamayo@ugr.es. Granada- Granada- 18011
[3]Ph.D. Student, Faculty of Economics and Business- University of Granada khasan@correo.ugr. Iraq

Abstract

To survive in dynamic and fiercely competitive environments, companies are forced to simultaneously offer digital tools and solutions to thrive, although the literature indicates the value of business intelligence on companies, few studies on how to combine business intelligence and digital marketing in improving strategic ambidexterity. The study aims to examine the impact of business intelligence on strategic ambidexterity and analyze the moderator role of digital marketing in the relationship between them. The qualitative data was collected through surveys, A total of 307 employees from 3 companies of managerial levels in the telecom sector. Data analysis was carried out using SPSS version 23 software. Different analytical techniques were implemented to analyse the data and report the hypothesis testing results. Particularly, demographic statics were considered to describe the demographic profile of respondents along with the normality checks and validity and reliability tests which were also reported. Furthermore, hypothesis testing results were reported based on multiple regression. The study results indicated a significant relationship between business intelligence and strategic ambidexterity, and digital marketing moderates the relationship between business intelligence and strategic ambidexterity, The study recommends that companies strategically and operationally use B.I. and ambidexterity to explore and exploit opportunities for creating service innovations, improve organizational performance, and use D.M. to strengthen competitive advantage through learning, analysis, regeneration, and technological changes.

Keywords: business intelligence, strategic ambidexterity, digital marketing, exploration, exploitation

1. Introduction

The telecom sector is an essential driver of technological and entrepreneurial endeavors and plays a vital role in the growth of the national economy. Therefore, improving the performance and growth of telecom will significantly affect the economic development of the country (Emami et al., 2022). Environments have a major impact on businesses (Roehrich et al., 2019), Therefore, additional study and analysis are required in this field to offer useful answers to problems relating to survival and expansion. Additionally, evidence emphasizes the numerous issues that telecom firms must overcome to thrive, including a lack of money, a shortage of resources, and inadequate networking capabilities (Pannone, 2001). Besides these challenges COVID-19 epidemic has had a major effect on a large scale of Jordanian companies; (Shraah et al., 2022; Kutieshat & Farmanesh, 2022) and in telecom companies particularly (Emami et al., 2022). As well, restrictions imposed by the COVID-19 pandemic have heightened fear of operational and performance vulnerabilities (Misra et al., 2022). resulting, in the persistence of the COVID-19 pandemic has accelerated the unprecedented and large-scale digitization of modern society (Grover & Lyytinen, 2022).

One of the methods that can assist organizations in transforming and increasing their resilience to resist major challenges and crises is Strategic Ambidexterity (SA) (Stokes et.al, 2019). So, companies must be flexible, and independent and experiment to compete in robust technologies and markets through efficiency, control, and incremental improvement (Birkinshaw & Gupta, 2013). Huang et al., (2020) explain the importance of S.A. for firms as a way to expand their product knowledge in the market by experimenting with new alternatives. On the other hand, exploitation enhances efficiency through existing routines and experiences, in general ambidexterity supports the quality, speed, flexibility, and costs of companies (Tamayo-Torres et al., 2017). In this context, S.A. is a strategic option for accessing and diversifying markets for many companies. Also is an organization's ability to explore and exploit to compete in new technologies and markets that require flexibility, autonomy, and experimentation (Birkinshaw & Gupta, 2013; Hanandeh et al., 2023). Consequently, many businesses began to devise strategies that understand that applying Business Intelligence (BI) tools which are

increasingly vital to the competitiveness of companies of all sizes, modern businesses are surrounded by data and use data science and have to solve various business issues (Cybulski & Scheepers, 2021). Another challenge encountered by marketing managers relates to the rapid digitalization that has revolutionized the marketing landscape. It is more challenging for marketers to draw clients through conventional marketing efforts since the media landscape has gotten more fragmented and media consumption patterns have changed to make more use of digital media (Oktaysoy et al., 2022). As a result, marketers need to come up with new, creative strategies to affect consumer behavior (Lingqvist, Plotkin, & Stanley, 2015). Moreover, Osmundsen and Bygstad (2022) confirmed the continuous development of digital infrastructure evolution and exploring ongoing development of Digital Marketing (DM) has significantly improved both usage and profitability (Tiago & Veríssimo, 2014) and led to a digital ecosystem connected with customers' behavior continuously (Azoeva et al., 2020; Mayer-Schönberger & Cukier, 2013).

March (1991) confirmed significant components to improve organizational performance and strengthen competitive advantage include learning, analysis, regeneration, and technological changes. Innovation ambidexterity positively impacts profitability-based company performance indicators (Jansen et al., 2006). Other studies highlighted the importance of a delicate trade-off between exploration and exploitation to prevent failure in underdeveloped ideas, competencies, and success traps (Junni et at., 2013; Jansen et al., 2006). Ambidexterity allows companies to develop unique capabilities and competencies by venturing into areas beyond the companies' existing knowledge base (Ferreira et al., 2020). Also, innovation ambidexterity in responding quickly to changes in the business environment (Soto-Acosta & Martinez-Conesa, 2018). Exploration introduces companies to diverse market areas and product knowledge to contribute to new product development and market knowledge through exploitation (Huang et al., 2020). Adding B.I. tools in different areas will be better for decision-making. According to the report that needs it, it provides an extra level of information to stakeholders and an integrated set of tools to convert data into knowledge to support decision-making. BI software provides the ability to monitor a business's performance and operation and assist business managers in developing competitive business strategies (Aruldoss et al., 2014). Also, Fast et al. (2021) link a company's access to big data and long-term competitive advantages in digital marketplaces.

Eidizadeh et al. (2017) mentioned that B.I. positively and significantly impacts knowledge sharing and gaining a competitive advantage. The companies must exploit opportunities for growth and development by increasing their market share and expanding the business. (Foroudi et al., 2017). Big data analytics provides value by using the holistic dynamics of people, processes, and technologies to transform data for better decision-making and solutions to business problems to create a competitive advantage (Akter & Wamba 2016). Božič & Dimovski (2019) indicated a positive relationship between B.I., innovation ambidexterity, and firm performance.

The advantage of D.M., which is considered one of the modern methods that will improve the relationship between B.I. and S.A. by increasing the possibilities for faster experimentation with product or service offerings and improved performance predictability of new products or services (Božič & Dimovski, 2019). As Bhosale et al., (2020) indicated that B.I. tools would positively affect D.M.'s performance by improving productivity and increasing gains. Levinthal & March (1993) confirmed the need to increase the exploration of digital technology and exploitation of marketing capabilities. As Mufadhol et al., (2020) showed that digital business applications could help facilitate customer service to market new products and services. Also, apply B.I. in digital advertising by creating reports that lead to more intelligent and cost-effective decision-making, then visualize results using Python to be more visually appealing (Mehanović & Durmić, 2022). And, D.M. impacts the S.A. in the technology sector, has a positive impact on data content infrastructure, the integration of customers with employees, and performance improvement (Tariq et at., 2022).

Huang et al. (2020) indicated that S.A. is sufficient to produce superior new product performance. Moreover, the results suggest that the dimensions of S.A. enhance recent product performance and deliver outstanding new product performance under the disorderly market environment. The field of electronic markets examines the many social, economic, and societal effects that information technology has on business-customer interaction processes. Jansen & Volberda (2006) found that following exploratory innovation is more functional in dynamic environments, whereas exploitative innovation is more valuable to financial performance in competitive environments. Yan et al. (2021) identified that exploration and exploitation are essential in proactive and reactive environmental performance. Moreover, the effect of exploitation increases when technological dynamism is high, and the impact of exploration increases when the company is significant.

Further research recommends implementing B.I. which is beneficial for enhancing the likeliness of success in the performance of B.I. (El-Adaileh & Foster, 2019). Another study suggests further research on S.A. to reduce uncertainty and highlights areas of confusion, competition in mature technologies and markets through exploitation and exploration, where efficiency, control, and incremental improvement are valued, and competition in new technologies and markets where flexibility and independence experimentation are needed (O'Reilly III, Tushman, 2013). The importance of ambidexterity by identifying new opportunities and developing new strategies to exploit them, including the information that helps to know the market circumstances, and the organization can explore opportunities and identify threats for the exploration of new opportunities (Aljumah et al., 2021). Oktaysoy et al., (2022); Dabas & Manaktola (2021) recommend further research using technology and digital tools to reach customers and create value for them.

This study mainly aims to answer two questions. First, Does B.I. impact S.A.? We focus on clarifying the positive effects of B.I. dimensions (OLAP, data mining, data warehouse) on S.A. dimensions (exploration and exploitation). Second, Is there an impact of B.I. on S.A. in the presence of D.M. as a moderator variable? Identifying the positive effect of D.M. to increase the positivity of a relationship between B.I. impact S.A.

This study highlighted two gaps in B.I. and S.A., D.M. literature. First, we explore the impact of B.I. on S.A. from a strategic perspective. Existing research emphasizes Ahmad & Akbar (2021) studying the effect of B.I. and ambidexterity on firm performance, Mehanović & Durmić (2022) studied B.I. on digital advertising but doesn't examine D.M. systems to improve the organizational ambidexterity (Tariq et at., 2022), or how the digital tools would be creating value to customers (Dabas & Manaktola, 2021). Moreover, Husien et.al, 2020 stressed on S.A. focuses further on some parts of it that have not yet been completely understood. Our study examines the relationship between B.I. and S.A., as companies face a high level of environmental unpredictability for development and continuity because of the swift advancement of technology. This study is the first to adopt studying the relationship between B.I. and S.A. and considering D.M. as a moderator variable to enhance the effectiveness and continuity in Jordanian Telecom companies.

The second gap is because of the rapid advancement of technology improvement and openness of local markets to international competition, Jordanian enterprises must cope with a high degree of environmental changes, and due to rapid improvements in numerous fields, information regarding the internal and external environments of the business has quickly become increasingly complex and renewable in Jordanian companies (Zraqat, 2019). So, each company should be aware of the importance of dynamic capabilities as companies have to adapt quickly to competition, so applying dynamic capabilities is one effective strategy to swiftly respond to rivalry and environmental changes (Barreto, 2010). As Its advantages are providing a firm's competitive edge, especially during times of uncertain environments, and differentiates itself from the competitors (Schwarz et al., 2020). Dynamic capabilities include new capabilities to enhance efficiency and competitiveness and help managers acquire capabilities, transform the base, and integrate them to add value to the company. (Donbesuur et al., 2022).

This study differs from other research; It bases on previous studies, recommendations, and interview results on the presence of this competition within Jordanian telecom companies. We need to conduct additional research to examine the relationship between B.I. and S.A., considering D.M. as a moderator variable to enhance the companies' continuity in Jordanian Telecom companies.

In the following section, literature is reviewed regarding B.I., S.A., and D.M. This is followed by the methodological approach outlined, followed by the presentation and discussion of findings. Finally, theoretical and practical contributions and research limitations are presented.

2. Theoretical framework and hypotheses

The S.V. is crucial to accommodating long-term and structural environmental changes. hence, drawing upon dynamic capabilities to retain their customers and provide the best services, and achieve sustainability by having access to resources that are rare, distinctive, and unreplaceable would provide one a competitive edge and allow them to maintain it over time, which would lead to improved performance (Barney, 1991), Teece & Pisano (1997) define the dynamic capabilities is competencies and abilities that a business needs to develop new goods and adapt to changing market dynamics.

Markets effectively distribute resources to their optimum use, and

enterprises should have the management skills to turn those resources into outputs that have the potential to add value over the long run. thus, companies should work toward developing some degree of ambidexterity to handle the conflicts and inconsistencies between exploitation, and exploration (Birkinshaw & Gupta, 2013). S.V. was originally used by Duncan in 1976. However, in the field's groundbreaking work by March (1991) as he mentioned that Exploitation and exploration are two distinct learning processes that businesses should split. S.A. is the ability of an organization to explore and exploit to compete in sophisticated technologies and markets where efficiency, control, and incremental increase are valued, as well as to compete in new technologies and markets where flexibility, independence, and experimentation are required (O'Reilly III & Tushman, 2013). Also, S.A. is the continuous search for harmony between the appropriate exploitation of present ones and the necessary exploration of new possibilities, this pursuit can be accomplished by employing contextual, structural, cyclical, or a mix of these approaches (Taródy, 2016). The ambidexterity perspective shares the exact characteristics of complexity and dynamism in that it combines exploitative and explorative activities. However, it is more concerned with routine optimization or change, indicating a firm's internal focus. As a result, the two methods focus on distinct aspects of the adaptive viewpoint; ambidexterity provides the ability to optimize this value proposition via exploitation or create new ones through exploration. (Lapersonne et al., 2015).

An exploitative attitude assumes that the organization has comprehensive knowledge of external possibilities and internal capabilities. Exploitative corporations anticipate working inside well-established problem-solution frameworks where challenges and answers are well-specified; exploitation has minimum uncertainty and a high success rate. While exploratory business investigates new enterprises or methods of conducting business and provides new opportunities, but it frequently leads to early failures and temporary performance decreases (March, 1991). Exploration involves a high level of uncertainty and has a low success rate. As a result, they concentrate their efforts on what generates the most value and pay less attention to what does not because exploration seldom generates instant profit (Chen, 2017). In this, the definition of exploitation refers to “refinement, efficiency, selection, and implementation,” whereas exploration is interpreted as “search, variation, experimentation, and discovery” (March 1991, p. 102.).

Balancing between exploration and exploitation is a significant difficulty that is especially difficult for smaller, emerging firms without the resources,

talents, and experience required to adopt ambidexterity properly (Tamayo-Torres et al. 2017). These challenges are as follows: first, advanced strategies that incorporate product exploration with market exploration or product exploitation with market exploitation have on profits; second, cross-functional ambidexterity combining product exploitation with market exploration affects profits; third, product ambidexterity has positive impacts on profits for older and larger firms but not for medium and small firms; and fourth market ambidexterity has positive effects on profits for more prominent firms but not for medium and small or older firms (Voss & Voss, 2013).

B.I. systems have evolved since they initially emerged in the middle of the 1950s, structured data systems, frequently in the form of data warehouses that enable a variety of functions including reporting, data analysis, ad hoc query, and dashboards (Božič & Dimovski 2019), and the first use was 1985 (Luhn, 1958), Business intelligence was employed to enhance the effectiveness of the decision-making (Davenport et al., 2010). Over time, other applications including data warehousing, data mining, and online analytical processing (OLAP) became significant (Wixom & Watson, 2010).

B.I. define as the technology, apps, and methods for collecting, storing, obtaining, and analyzing data to support users in making better decisions (Davenport et al., 2010). According to Olszak & Ziemba 2006; Jourdan et al., 2007, B.I. has both organizational and technological components. From a technical perspective, B.I. refers to a collection of tools, technologies, and software platforms that work together to collect incompatible data from many sources, combine it, and then analyze it to make it accessible, from an organizational view, B.I. represents a comprehensive and sophisticated strategy for across organizational decision support (Zamil et al., 2021).

B.I. has been used in various fields to help decision-makers plan for the future, giving numerous levels of information to stakeholders based on their information needs and enabling top executives and stakeholders to create a competitive strategic plan. As Aruldoss et al., (2014) defined the B.I. collecting data from various sources and then transforming raw data into information through people, processes, and analytical tools to make better decisions that will improve the company's or organization's performance perceptions of B.I. features like a relative advantage, complexity, interoperability, and observability are also crucial in assuring B.I. success (Ahmad, 2015).

The application of B.I. has been used in various domains to make decisions or offer input. For example, it has been used to make better judgments in higher education, e-learning, strategy formulation, crime-fighting, finance, and other disciplines. The power of B.I. is integrating data at many levels, giving the relevant information for decision-making at the appropriate time (Aruldoss et al., 2014). The data created by corporate operations have expanded significantly due to the wave of informatization, pushing the intelligent evolution of enterprise warehousing systems. Using big data technology to create B.I. warehousing systems can encourage the rapid growth of B.I. warehousing systems**.** Data warehouses are databases designed to assist decision-makers in obtaining and evaluating meaningful information from diverse data sources (Bimonte et al., 2021). Data Warehouse is a collection of data-oriented for a specific subject, incorporated, not variable, and has disparity time to support decision-making for the company's plans (Efendi & Krisanty, 2020).

The analysis of information network data covers several technological areas, among them OLAP technologies. OLAP is a technology that enables multi-dimensional and multi-level analysis of a large volume of data, providing aggregated data visualizations with different perspectives (Queiroz-Sousa & Salgado, 2019). OLAP tools are primarily intended for interactive report production using user-defined criteria and for enhancing the searching of enormous data sets using generated SQL queries, it conducts intricate assessments of business performance, customer interactions, and profitability analysis (Olszak & Ziemba, 2006). Data mining is used in conjunction with machine learning, pattern recognition, and knowledge extraction to refer to the automated/algorithmic processing of data to extract knowledge (Bimonte et al., 2021). A data mining approach searches and analyzes massive amounts of unstructured data to extract potentially usable information and model it (Ahmad et al., 2022), Data mining is the process of exploring patterns, trends, consistencies, and standards in data sources (Yan et al., 2021).

Ahmad (2015) indicates a relationship between B.I. and S.A. by using B.I. strategies that help to understand their internal and external environment through systematic acquisition, collation, analysis, interpretation, and exploitation of information in their business domains to support their organizational business goals for sustainable competitive advantage. Fink et al., (2017) highlighted the importance of B.I. and the ambidexterity of the companies that use B.I. both strategically and operationally to explore and

exploit opportunities for creating service innovations that have the potential to impact organizational performance. The firms must install new business intelligence systems to analyze the changed data by doing a high level of exploring a new market and developing new products (Yan et al., 2021). Moreover, stored data warehouse enables future forecasting, trend spotting, customer behavior analysis, and competitor analysis, and also allows organizations to identify weaknesses, risks, and hidden opportunities and chances when they are effectively realized (Olszak, & Ziemba, 2006).

That is why we can suggest the following:

Hypothesis 1: Business intelligence and its dimensions (OLAP, data mining, data warehouse) are positive related to strategic ambidexterity.

Based on the components of Business intelligence, the first main hypothesis divides into two sub-hypotheses:

Hypothesis 1.1. Business intelligence and its dimensions (OLAP, data mining, data warehouse) are positive related to exploration.

Hypothesis 1.2. Business intelligence and its dimensions (OLAP, data mining, data warehouse) are positive related to exploitation.

In recent years, as Internet usage has increased, academics have examined the issue of D.M. from a variety of angles. Where the Internet has drastically affected the paradigm of present-day company interactions, modified how information is disseminated, and had a significant impact on marketing strategy. As a result, companies compete in both traditional and virtual markets. D.M. has several definitions, and there is currently no agreement on what the D.M. elements are (ABI & Arief, 2017) While others indicated the elements of D.M. which are the 4Ps (product, price, place, and promotion) (Hunt & Morgan, 1995), these could be put together using the 4Ps marketing mix and segmentation, targeting, and positioning (STP). Promotion includes the use of websites, email campaigns, marketing via social media affairs, online ads, and search engine advertising. The remaining items may be categorized as the analytical process for defining STP and creating the ideal product and price. Websites, directories, and classifieds can be categorized as Place/Distribution (ABI & Arief, 2017). Arthur (1996) indicated that the D.M. has relatively low marginal costs, and can widen and diversify markets. where D.M. is defined as using internet technologies or activities such as internet marketing, digital channels, platform, e-commerce, social media, and mobile marketing (Rabaai et al., 2022). Another definition of D.M. is the method of establishing and sustaining client connections through online interactions to

promote the transfer of thoughts, goods, and services, moreover generating, delivering, trading, and promoting services that meet the needs of both consumers and sellers (Wilkie & Moore, 2007). One of the significant purposes of D.M. is to understand how customers utilize new technologies and use this knowledge to benefit the company, allowing for a more efficient engagement with their target customers (Peter & Lindeque, 2020). The rising use of digital technology has attracted significant studies and practical attention lately; it may be helpful to evaluate companies' maturity, strengths, and weaknesses, as well as a tool to compare competitors. Technology is crucial in enhancing transactions, offering customer services, and other operational conveniences (Misra et al., 2022). Drivers of digital transformation are new technologies and digital business development, supported by digital leadership and culture, data, customers, and D.M. (Peter & Lindeque, 2020; Nusairat et al., 2021).

Businesses have to rapidly adapt to the highly competitive business environment. The use of dynamic capability is one suitable strategy to rapidly deal with competition and environmental changes (Teece et al., 1997; Barreto, 2010). Where digital transformation affects marketing and sales, thus the overall organizational performance (Hauer et al., 2021). Ritz & McQuitty (2019) highlighted that the way marketers engage with today's consumers has been revolutionized by digital; a significant proportion of the world's customers possess and utilize computers and mobile devices, which adds to the explosive development of digital ad expenditure. To adapt to changing market conditions the business must be able to integrate, expand, and reconfigure internal and external competencies as well as generate, extend, or alter its resource base (Mohammad et al., 2021), this capability routine company can gain new resources by modifying its operational procedures to attain effectiveness in a systematic way (Calli et al., 2022; Zollo & Winter, 2002).

The role of D.M. brought trends to shift and companies can see emerging a chance to grow their markets as a result of the changes in business environments (ABI & Arief, 2017), by increasing revenue, improving communication, and improving customer service (Cowley et al., 2021). Bhosale et al., (2020) indicated data has more value in administration, it is critical to route every corporate effort through a logical channel to reasonably measure and expect results; as a result, B.I. will improve the situation through D.M., B.I. is a collection of technologies, architectures, individuals, processes, and methodologies that convert raw data into valuable business information

that use in marketing are reporting, online analytical processing, analytics (past and forecasting), data, and text mining (Stone & Woodcock, 2014).

In order to assist businesses in taking advantage of the benefits of D.M. without wasting money or time, B.I. will assist businesses in making intelligent decisions in D.M. without wasting extra resources. (Mehanović & Durmić, 2022), because D.M.'s strategies depend on the business model within the big data environment (Johnson et al., 2019). Bimonte et al., (2021) stated B.I. assists in identifying customer needs and values, which is useful when designing campaigns of marketing. Also, B.I. helps marketing in improving quality and generating real-time reports to analyze customer behavior and identify customized targeting. Stone & Woodcock (2014) suggested that companies need to pay close attention to B.I., as self-service, because B.I. is increasingly used by customers. Talaoui & Kohtamäki (2020) encourages researchers to adopt a comprehensive view of B.I. Mehanović & Durmić (2022) confirmed the relationship between B.I. and D.M. and the role of the web in communication and sales channels by using tabular reports and Python and the study recommends future research to analyze traffic data such as keywords and topics.

Technology infrastructure reflects a comprehensive approach to operations, consumers, and suppliers if they want to enhance the quality of decision-making, image, or service (Nusairat et al., 2021). There is little convention in the demonstration of organizational ambidexterity activities (exploration and exploitation of opportunities) (Tariq et at., 2022), thus the new technology of D.M. will improve exploration and exploitation practices (Calli et al., 2022; Marchese & Dollar, 2015). Montealegre et al., (2019) indicated a strong relationship between the in-between exploration and exploitation activities and the evolution of digital infrastructure. Akesson et al., (2018) consider ambidexterity as a way for the organization to adapt strategic goals toward the available technology; also, organizational ambidexterity is a future state of new technology and new markets through management of exploitation and exploration. Josephson et al., (2016) indicated the importance of combining the exploitation of current competencies and the exploration of future potential in marketing activities. Ambidexterity includes how a company configures its present capabilities in light of its available resources and competencies (exploitation), as well as how it develops its potential future abilities (exploration) (Cenamor et al., 2019). Exploitation in the context of marketing refers to the process of extracting value from opportunities and solutions found in present marketing opportunities,

Marketing-based exploitation frequently requires advertising and promotion techniques (Ritz & McQuitty, 2019), Exploration, on the other hand, focuses on developing products and solutions to address anticipated market demands. The market search entails experimentation, as well as the generation of new opportunities and knowledge (Vorhies et al., 2011). Tariq et at., (2022) highlighted a positive relationship between D.M. capabilities and organizational ambidexterity in the information technology sector. It also recommends that managers realize their firm work procedures through D.M. systems to improve their organizational ambidexterity and enhance performance.

That is why we can suggest the following:

Hypothesis 2: Digital Marketing moderates the relationship between business intelligence and strategic ambidexterity.

Hypothesis 2.1. Business intelligence and its dimensions (OLAP, data mining, data warehouse) are positive related to the exploration of the exit of digital marketing as a moderator variable.

Hypothesis 2.2. Business intelligence and its dimensions (OLAP, data mining, data warehouse) are positive related to exploitation in the exit of digital marketing as a moderator variable. Now we can suggest the next theoretical model:

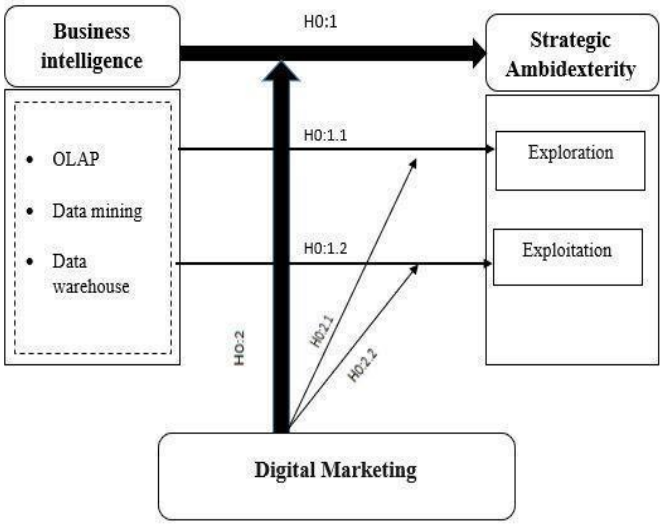

Figure1*: Theoretical Model*

3. Methodology

This study considers causal research used to investigate the moderating role of D.M. on the effect of B.I. on S.A.

The field of study is Jordanian telecommunications companies; The study population comprises all workers of the following job titles (directors, general managers, team leaders, experts, and seniors) in the number of Jordanian telecom businesses 3885 people. The questionnaire was provided to the study's sample personally and through email. After eliminating 43 surveys for being incomplete, the total number of retrieved questionnaires was 350, of which 307 were valid for statistical analysis.

Table 1: *Study population*

Company	**Employees number**
Umniah	1143
Zain	1055
Orange	1687
Total	3885

The study sample is random, stratified, and proportional. It includes all employees, the company's Jordanian communications, and its size of 350, which makes the sample representative of its population and generalizes its results (Sekaran & Bougie, 2016).

Table 2: *Sample size from each company in the telecom companies*

Company	Sample calculation	Sample by company
Umniah	1143/3885=0.294*350=103	103
Zain	1055/3885=0.272*350=95	95
Orange	1687/3885=0.434*350=152	152
Total	350	350

Table 2 shows that the population divides into groups based on job titles and size. The sample was drawn randomly from each stratum for each telecom firm in the previous table. Table 3 below shows the positions and the number of workers in each position in three firms; the sample taken from each position is 350 employees, and the total number of surveys utilized for analysis is 307.

Table 3: *The sample size from each company according to the job title*

Position	Total Employees for the companies	The total sample size for every position	The total sample size for every position	Samples for analyses
Director	144	144/3885=.0371*350=13	13	12
General manager	355	355/3885=.0914*350=32	32	26
Team leader	711	711/3885=0.183*350=64	64	50
Expert	1110	1110/3885=0.286*350=100	100	79
Senior	1565	1565/3885=0.403*350=141	141	140
Total population	3885	350	350	307

The sample was drawn from each position in each company in the table below:

Table 4: *The sample size from companies*

Position	Zain company's sample	Umniah company's sample	Zain company's sample
Director	4	4	5
General manager	9	9	14
Team leader	17	19	28
Expert	27	29	44
Senior	38	42	61
Total	95	103	152

The study used two sources to get its data: secondary sources, which included publications on the study's topic, books, and articles. Additionally, primary data came from an interview that asked open-ended questions on the three research variables and the study's topic. Furthermore, the researcher used data collection using a questionnaire to achieve the study's purpose of covering all aspects of the subject addresses. The questionnaire has been distributed to Jordanian telecom companies' employees at the upper and middle administrative levels. The questionnaire resources are in table 5 (Appendix 1).

Data analysis was analyzed using SPSS version (23) software programs, CA, and testing the research hypotheses was used to check for model validation and reliability. SPSS was used to evaluate: means, standard deviations, skewness, and kurtosis in addition to the frequencies and percentages pertaining sample's description and testing the research hypothesis.

Below is the description of the sample's essential demographic characteristics:

Table 6: *The demographic characteristics*

Variable	Category	counts	%

Gender	Female	120	39.1
	Male	187	60.9
	Total	307	100.0
Age	less than 30	32	10.4
	30 to less than 35	105	34.2
	35 to less than 40	104	33.9
	40 to less than 45	54	17.6
	more than 45	12	3.9
	Total	307	100.0
Educational level	Bachelor	228	74.3
	Diploma	8	2.6
	Higher Diploma	12	3.9
	Masters	57	18.6
	Ph.D.	2	.7
	Total	307	100
Nature of work	Director of department or unit	12	3.9
	Expert in the department	79	25.7
	General Manager/ Assistant General Manager	26	8.5
	Seiner of the department	140	45.6
	Team leaders of the department	50	16.3
	Total	307	100.0
Experience	less than five years	97	31.6
	Five years to less than ten years	148	48.2
	Ten years to less than fifteen years	36	11.7
	more than fifteen years	26	8.5
	Total	307	100

Consistent reliability for each scale and subscale was checked using the Cronbach method

4. Results

Table 7 indicates the reliability analysis using the Cronbach alpha method. After inspecting the results, it can see that the mentioned reliability reflected high-reliability levels noting that the minimum achieved value was assigned to the data warehouse subscale (0.692).

Table 7: *The results of reliability analysis using the method of CA*

Sub-Factor	No. of indicators	CA.
Data warehouse	5	0.692
Data mining	5	0.915
OLAP	5	0.772
Business Intelligence	15	0.701
Exploration	5	0.700
Exploitation	5	0.700
Strategic ambidexterity	10	0.883
Digital Marketing	5	0.763

Table 8 indicates the values of means and standard deviation means, standard deviations normality, and multi-collinearity indicators (factors). The normality was examined by the skewness and kurtosis indicators; the values of skewness ranged between (-1.61) to (-0.25); these results suggest an approximate normal data distribution as the values lay within the range (-3 to +3). The kurtosis indicator maximum value being observed was (4.74) in B.I.; this value was less than the critical value of (8), so the values reflected no concern about normality issues. (Hair et al., 2010; Kline, 2005).

Table 8: *Means, standard deviations normality, and multi-collinearity indicators*

Sub Factor	Means	s. d	Skewness	kurtosis	Multi collinearity	
					VIF	Tolerance
Data warehouse	3.68	0.60	-1.18	2.43	1.468	.681
Data mining	3.07	0.97	-0.26	-1.25	1.199	.834
OLAP	3.41	0.71	-0.49	0.11	1.652	.605
Business Intelligence	3.39	0.44	-1.61	4.74	-	-
Digital Marketing	3.96	0.37	-0.24	1.67	1.280	.781
Exploration	4.00	0.47	-0.25	0.55	1.124	0.890
Exploitation	3.84	0.51	-0.60	1.97	1.124	0.890
Strategic ambidexterity	3.92	0.40	-0.28	1.24	-	-

The collinearity was checked using the VIF (variance inflation factor) and tolerance (the reciprocal of VIF). Generally, multi-collinearity is the degree of linear association among the predictors. It is assumed to have minimum degrees of association (less than 10) (Brace, Kemp, & Snelgar, 2003). As can be noticed, the maximum value of VIF was (1.468) for the Data

warehouse, which was less than (10); in the same context, this value corresponds to a tolerance value of (0.681), such that this obtained tolerance value was > 0.05 concluding no multicanonicity issues can be related to the data (Brace, Kemp, and Snelgar, 2003; Diamantopoulos and Siguaw, 2000).

Table 9: *Correlations among the construct's variables*

	Data warehouse	Data mining	OLAP	Exploration	Exploitation	Business Intelligence	Digital Marketing
Data warehouse	1						
Data mining	-.116*	1					
OLAP	.560**	-.284**	1				
Exploration	.114*	-.020	.174**	1			
Exploitation	.095	-.031	.066	.489**	1		
Business Intelligence	.667**	.529**	.580**	.130*	.055	1	.
Digital Marketing	.244**	-.370**	.374**	.136*	.112	.039	1
Strategic ambidexterity	.121*	-.029	.137*	.854**	.872**	.106	.143*

Table 9 presents the magnitudes of correlation among the research variables. A general look at the figures declares that the correlations are not high, except between exploration (0.845) and S.A. and exploitation and S.A. (0.872), which reflects reasonable validity since they must be strongly related to ambidexterity. The other correlation values did not exceed the ceiling value (0.80). These results support clothe linearity diagnosis in the preceded table.

Although some values of R2 depicted undesired expectation percentages in hypothesis one of the observed variances in the dependent variable, it seems that the prediction of the dependent variable is accepted statistically using the F test and that indicated an important indication regarding the goodness of fit of the overall model.

Table 10: *Standardized impact values effects with the statistical significance relevance*

Hypo-theses	Impact statistics					Model's indicators		
		β	se	T	Prob	R^2	F	prob
H01	B.I. ---> S.A.	0.240	0.050	4.31	0.000	0.057	18.59	0.000

H01.1	B.I. ---> Exploration	0.130	0.060	2.29	0.023	0.017	5.25	0.023
H01.2	B.I. ---> Exploitation	0.256	0.063	4.62	0.000	0.066	21.41	0.000

Results of testing the first main hypothesis:

According to the results provided in table 10, the impact value of B.I. on S.A. was expressed by the standardized beta coefficient (0.240). This impact value was considered statistically significant as the corresponding probability value (0.000) was <0.05. Consequently, the first main hypothesis was accepted. While to the results provided in table 10, the impact value of B.I. on exploitation was expressed by the standardized beta coefficient (0.256). This impact value was considered statistically significant as the corresponding probability value (0.000) was < 0.05.

The mechanism of performing moderation is to create a new variable representing the product of both the independent variable by the moderator variable given that the two variables are ordinal scale then in the upcoming step the three variables are entered as predictors using multiple liner regression.

The second hypothesis was tested using Process macro suggested by Andrew Hays (version 3.5) and provided under SPSS software (version 23).

Table 11:*Moderation effect of D.M. on the relationship between B.I. and S.A.*

Impact statistics					Model's R^2 statistics			
Direction	B	Se	T	prob	Model's R^2	ΔR^2	F	Prob
B.I. ---> S.A.	-1.236	0.375	-3.29	0.001	0.1261	0.00436	15.12	0.000
D.M. ---> S.A.	-1.005	0.307	-3.27	0.001				
Moderation effect on S.A.	0.366	0.094	3.88	0.000				

Results of testing the second main hypothesis:

According to the results provided in table 11, the moderation effect value of D.M. on S.A. was assessed by the beta coefficient of (0.366). This value was considered statistically significant as the corresponding probability value (0.000) was < 0.05.

Further, the results illustrate that an increase in R2 of about (0.00436) had been achieved. The model's R2 was (0.1261). This increase was due to adding the moderator variable D.M. and the moderation effect interaction

between D.M. and B.I. This increased amount of R2 was subjected to statistical significance using f statistics. The results informed that this increase (ΔR2) was considered to be statistically significant as the probability of the f test (0.000) was < 0.05. it is clear that the effect of the moderator had increased the impact of the magnitude of B.I. on the S.A., and it converted the impact direction from negative to positive.

Consequently, the second main hypothesis was accepted.

Table 12: *Moderation effect of D.M. on the relationship between B.I. and strategic exploration*

Impact statistics					Model's R^2 statistics			
Direction	B	Se	t	Prob	Model's R^2	ΔR^2	F	Prob
B.I. ---> S.A.	-1.052	0.458	-2.29	0.022	0.2353	0.00212	7.99	0.009
D.M. ---> S.A.	-0.787	0.375	-2.12	0.034				
Moderation effect on Exploration	0.300	0.115	2.60	0.009				

According to the results submitted in table 12, the relationship between B.I. and exploration was moderated by D.M. This moderation was expressed by the beta coefficient (0.300). This value was considered statistically significant as the corresponding probability value (0.009) was < 0.05.

Furthermore, the results demonstrate that an increase in R^2 of about (0.00212) was revealed. The model's R^2 was (0.2353). It can be assumed and justified that this increase was due to adding the moderator variable D.M. and the moderation effect interaction between D.M. and B.I. This increased amount of R^2 was subjected to statistical significance using F statistics. The results depicted that this increase ($\Delta R^{2)}$ was considered to be statistically significant as the probability of the F test (0.009) was < 0.05. it was clear that the effect of the moderator had increased the impact of the magnitude of B.I. on strategic exploration, and it converted the impact direction from negative to positive.

Based on this result, the first sub-main of the second hypothesis was accepted.

Table 13: *Moderation effect of D.M. on the relationship between B.I. and strategic exploitation*

Impact statistics					Model's R^2 statistics			
Direction	B	SE	T	prob	Model's R^2	ΔR^2	F	Prob
B.I. ---> S.A.	-1.419	0.479	-2.95	0.003	0.1192	0.00374	0.000	0.000
D.M. ---> S.A.	-1.213	0.393	-3.08	0.002				

Moderation effect on Exploitation	0.433	0.120	3.58	0.000				

The results presented in table 13 show the relationship between B.I. and exploitation. D.M. moderated this relationship. The moderation magnitude was expressed by the beta coefficient (0.433). This value was considered statistically significant as the corresponding probability value (0.000) was < 0.05.

Furthermore, the results illustrate that an increase in R^2 of about (0.00374) was revealed. The model's R^2 was (0.1192). It can be justified that this increase was because of adding the moderator variable D.M. and the moderation effect interaction between D.M. and B.I. This increased magnitude of R^2 was tested for statistical significance using F statistics. The results indicated that this increase ($\Delta R^{2)}$ was considered to be statistically significant as the probability of the F test (0.000) was < 0.05. It was clear that the effect of the moderator had increased the impact magnitude of B.I. on strategic exploration, and it converted the impact direction from negative to positive.

Based on this result, the second sub-main of the second hypothesis was accepted.

5. Conclusions, recommendations, and limitations

This study is considered a causal study, and a descriptive-analytical approach was used to investigate D.M.'s moderating role on the effect of B.I. on S.A. In a comparative study among Jordanian telecom companies, the study sample included 350 employees (directors, general managers, team leaders, experts, and seniors), and the population was 3885.

The discussion part of the academic results indicates that the first main hypothesis was accepted. The results of testing the first main hypothesis showed that there was a statistically significant impact of B.I. on S.A. and exploitation. The impact value of B.I. on S.A. was expressed by the standardized beta coefficient, which was 0.240. Similarly, the impact value of B.I. on exploitation was expressed by the standardized beta coefficient, which was 0.256. The corresponding probability value was less than 0.05, which indicated statistical significance. The second main hypothesis was also accepted. The results showed that the relationship between B.I. and S.A. was moderated by D.M. The moderation effect was expressed by the beta coefficient, which was 0.366. This value was considered statistically

significant as the corresponding probability value was less than 0.05. An increase in R2 of about 0.00436 had been achieved, and this increase was statistically significant as the probability of the f-test was less than 0.05. It was observed that the effect of the moderator had increased the impact of the magnitude of B.I. on the S.A., and it converted the impact direction from negative to positive.

Furthermore, the results showed that the relationship between B.I. and strategic exploration was moderated by D.M. The moderation effect was expressed by the beta coefficient, which was 0.300. This value was considered statistically significant as the corresponding probability value was less than 0.05. An increase in R2 of about 0.00212 was revealed, and this increase was statistically significant as the probability of the F test was less than 0.05. The effect of the moderator increased the impact of the magnitude of B.I. on strategic exploration and converted the impact direction from negative to positive.

Finally, the results showed that the relationship between B.I. and exploitation was moderated by D.M. The moderation effect was expressed by the beta coefficient, which was 0.433. This value was considered statistically significant as the corresponding probability value was less than 0.05. An increase in R2 of about 0.00374 was revealed, and this increase was statistically significant as the probability of the F test was less than 0.05. The effect of the moderator increased the impact of the magnitude of B.I. on exploitation and converted the impact direction from negative to positive.

In summary, the results of this study indicate that B.I. has a significant impact on S.A. The results also suggest that D.M. moderates the relationship between B.I. and S.A., strategic exploration, and exploitation. The findings indicate that D.M. enhances the positive impact of B.I. on these variables. This study contributes to the existing literature by shedding light on the moderating effect of D.M. on the relationship between B.I. and S.V.

Two research questions were explored in this study. The first question sought to determine whether there is a relationship between B.I. and S.A. with its dimensions (OLAP, data mining, data warehouse). The findings showed a significant relationship between B.I. and S.A. and revealed that B.I. seeks and exploits opportunities for producing service innovations that have the potential to enhance organizational performance. Strategic exploitation was found to be more important than strategic exploration for the telecom company in this study.

The second research question analyzed whether D.M. has an impact on S.A. The study found a significant relationship between D.M. and S.A. and highlighted the positive impact of D.M. on content infrastructure, customer integration with workers, and performance enhancement. The study also emphasized the importance of developing both exploitation and exploration to improve marketing skills. Companies that are ambidextrous in terms of D.M. exploration and exploitation are likely to have a competitive advantage over those that are not.

The study showed that D.M. plays an important role as a moderator in the impact of the dimensions of B.I. (OLAP, data mining, data warehouse) on S.A. D.M. improves ambidexterity by enabling organizations to adapt strategic goals to accessible technology and to manage the exploitation and exploration process. D.M. technologies can also enhance BI's performance, boost productivity, and increase profits. By leveraging B.I. technologies, organizations can make better decisions in D.M. without wasting additional resources.

Overall, the study suggests that companies should focus on developing both exploitation and exploration to improve marketing skills and gain a competitive advantage in the market. Additionally, companies should leverage B.I. technologies to enhance their D.M. capabilities and improve organizational performance.

The findings indicate that Jordanian telecom companies can enhance their use of B.I. by developing models and tools that predict customer behavior and align strategic planning with changing business environments. The availability of data analysis systems is crucial for reflecting current company performance. Additionally, exploring new products, services, processes, or markets is essential for growth and continuity, and exploitation can improve the learning experience required to keep up with the latest technology and improve current work. Companies must measure the results of D.M.'s analytical tools to improve decision-making and plan for the company's future.

The practical contribution of the study is twofold. First, the application of B.I. has been used in various domains to make decisions or to offer input to decision-making. For example, it has been utilized in higher education, e-learning, strategy formulation, crime-fighting, finance, and other disciplines to make better judgments. The power of B.I. lies in its ability to integrate data at

multiple levels and provide relevant information for decision-making at the appropriate time (Aruldoss et al., 2014). Second, the study highlights the importance of organizational ambidexterity (O'Reilly III & Tushman, 2013) in exploring and exploiting opportunities to compete in sophisticated technologies and markets where efficiency, control, and incremental increase are valued, as well as in new technologies and markets where flexibility, independence, and experimentation are required.

The study recommends that companies strategically and operationally use B.I. and ambidexterity to explore and exploit opportunities for creating service innovations, improve organizational performance, and use D.M. to strengthen competitive advantage through learning, analysis, regeneration, and technological changes. It is worth noting that D.M. is fast-changing, and everything surrounding the term needs to be flexible and adaptable to the customer's needs. Ambidexterity helps companies to be flexible and is an excellent way to get new processes or improve existing ones. The research shows managers how they can achieve competitive advantage through the implementation of B.I. and the influence of some of its dimensions.

As a final step, it is essential to explain the limitations of this research. This study was designed to be applied to the top, middle, and supervision levels in telecom companies. However, generalizing the results to other industrial or service companies may be difficult. The study was applied in Jordan, and its results depend on the responsiveness of the individual samples and their objectivity.

Author Contributions:
Conceptualization, A.H.; methodology, J.T.; software K.A.; validation, J.T., and K.A.; formal analysis, A.H.; investigation, A.H.; resources. writing—original draft preparation, A.H.; writing—review and editing, J.T., A.H. funding acquisition, None. All authors have read and agreed to the published version of the manuscript.
Funding: This research received no external funding.
Conflicts of Interest: The authors declare no conflict of interest.

Acknowledgments

This research has been supported by the Government of Spain, Research Project PID2021. 124725NB.I00 and the Research Projects A-SEJ-196-UGR20.

We have no conflicts of interest to disclose.

Note: this paper was participated in 4th ICNMBE-Conference Proceedings & Journal Publication Opportunity.

References

ABI, J., & Arief, M. T. S. (2017). Examining the Relationship between Transformational Leadership and Dynamic Capability to the Adoption of Digital Marketing in Consumer Shopping Good Firms. *International Journal of Economics & Management*, 11(2), 504 – 487. http://www.econ.upm.edu.my/ijem.

Ahmad, A. M. K., Shattal, M. H. A., Rawashdeh, L. A., Ghasawneh, J., & Nusairat, N. (2022). Corporate social responsibility and brand equity of operating telecoms: brand reputation as a mediating effect. *International Journal of Sustainable Economy*, *14*(1), 78-97. https://doi.org/10.1504/ijse.2022.119722

Ahmad, A. (2015), "Business Intelligence for Sustainable Competitive Advantage", *Sustaining Competitive Advantage Via Business Intelligence, Knowledge Management, and System Dynamics* (*Advances in Business Marketing and Purchasing, Vol. 22A*), Emerald Group Publishing Limited, Bingley, pp. 3-220. https://doi.org/10.1108/S1069-096420150000022014.

Ahmad, T., & Akbar, A. (2021). Role of Information System Strategies, Business Intelligence and Analytics used to Enhance Firm Performance: Mediating role of Innovation Ambidexterity. *Journal of Digitovation and information system*, *1*(2), 69-80. https://doi.org/10.54433/JDIIS.2021100006.

Akesson, M., Sorensen, C., & Eriksson, C. I. (2018). Ambidexterity under digitalization: A tale of two decades of new media at a Swedish newspaper. *Scandinavian Journal of Management*, *34*(3), 276-288. https://doi.org/10.1016/j.scaman.2018.06.004.

Akter, S., & Wamba, S. F. (2016). Big data analytics in E-commerce: a systematic review and agenda for future research. *Electronic Markets*, *26*(2), 173-194. https://doi.org/10.1007/s12525-016-0219-0.

Aljumah, A. I., Nuseir, M. T., & Alam, M. M. (2021). Organizational performance and capabilities to analyze big data: do the ambidexterity and business value of big data analytics matter. *Business Process Management Journal*, 27(4), 1088-1107. https://doi.org/10.1108/BPMJ-07-2020-0335.

Aruldoss, M., Travis, M. L., & Venkatesan, V. P. (2014). A survey on recent research in business intelligence. *Journal of Enterprise Information Management*, 27(6), 831-866. https://doi.org/10.1108/JEIM-06-2013-0029.

Barreto, I. (2010). Dynamic capabilities: A review of past research and an agenda for the future. *Journal of management*, *36*(1), 256-280. https://doi.org/10.1177/0149206309350776.

Bhosale, S. S., Sharma, Y. K., Kurupkar, F., & Jhabarmal, S. J. (2020). Role of business intelligence in digital marketing. *International Journal of Advance & Innovative Research, 7*(5), 2394 – 7780.

Bimonte, S., Antonelli, L. and Rizzi, S. (2021), "Requirements-driven data warehouse design based on enhanced pivot tables", *Requirements Engineering, 26*(1) 43-65. https://doi.org/10.1007/s00766-020-00331-3.

Birkinshaw, J., & Gupta, K. (2013). Clarifying the distinctive contribution of ambidexterity to the field of organization studies. *Academy of Management Perspectives, 27*(4), 287-298. https://doi.org/10.5465/amp.2012.0167.

Božič, K., & Dimovski, V. (2019). Business intelligence and analytics use, innovation ambidexterity, and firm performance: A dynamic capabilities perspective. *The Journal of Strategic Information Systems, 28*(4), 101578. https://doi.org/10.1016/j.jsis.2019.101578.

Calli, B. A., Ozsahin, M., Coşkun, E., & Arik, A. R. (2022). Do generative leadership and digital literacy of executive management help flourishing micro and small business digital maturity? *International Journal of Organizational Leadership*, 307-332. https://doi.org/10.33844/ijol.2022.60332.

Cenamor, J., Parida, V., & Wincent, J. (2019). How entrepreneurial SMEs compete through digital platforms: The roles of digital platform capability, network capability and ambidexterity. *Journal of Business Research, 100*, 196-206. https://doi.org/10.1016/j.jbusres.2019.03.035.

Chen, Y. (2017). Dynamic ambidexterity: How innovators manage exploration and exploitation. *Business Horizons, 60*(3), 385-394. https://doi.org/10.1016/j.bushor.2017.01.001.

Cowley, S., Humphrey, W., & Muñoz, C. (2021). Industry Certifications in Digital Marketing and Media Education: An Examination of Perceptions and Use Among Educators. *Journal of Marketing Education, 43*(2), 189–203. https://doi.org/10.1177/0273475320948570.

Cybulski, J. L., & Scheepers, R. (2021). Data science in organizations: Conceptualizing its breakthroughs and blind spots. *Journal of Information Technology, 36*(2), 154–175. https://doi.org/10.1177/0268396220988539.

Dabas, S., Sharma, S., & Manaktola, K. (2021). Adoption of digital marketing tools in independent businesses: experiences of restaurant entrepreneurs in India and United Kingdom. *Worldwide Hospitality and Tourism Themes, 13*(2), 214-235.

https://doi.org/10.1108/WHATT-09-2020-0120.

Donbesuur, F., Ampong, G. O. A., Owusu-Yirenkyi, D., & Chu, I. (2020). Technological innovation, organizational innovation and international performance of SMEs: The moderating role of domestic institutional environment. *Technological Forecasting and Social Change*, *161*, 120252. https://doi.org/10.1016/j.techfore.2020.120252.

Efendi, T. F., & Krisanty, M. (2020). Warehouse Data System Analysis PT. Kanaan Global Indonesia. *International Journal of Computer and Information System (IJCIS)*, *1*(3), 70-73. https://doi.org/10.29040/ijcis.v1i3.26.

Eidizadeh, R., Salehzadeh, R., & Esfahani, A. C. (2017). Analyzing the role of business intelligence, knowledge sharing, and organizational innovation on gaining competitive advantage. *Journal of Workplace Learning*, *29*(4), 250-267. https://doi.org/10.1108/JWL-07-2016-0070.

El-Adaileh, N. A., & Foster, S. (2019). Successful business intelligence implementation: a systematic literature review. *Journal of Work-Applied Management*, *11*(2), 121-132. https://doi.org/10.1108/JWAM-09-2019-0027.

Emami, A., Welsh, D. H., Davari, A., & Rezazadeh, A. (2022). Examining the relationship between strategic alliances and the performance of small entrepreneurial firms in telecommunications. *International Entrepreneurship and Management Journal*, *18*(2), 637-662. https://doi.org/10.1007/s11365-021-00781-3.

Fast, V., Schnurr, D., & Wohlfarth, M. (2021). Regulation of Data-driven Market Power in the Digital Econ-omy: Business Value Creation and Competitive Advantages from Big Data. Available at SSRN. http://dx.doi.org/10.2139/ssrn.3759664.

Ferreira, J., Coelho, A., & Moutinho, L. (2020). Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation. *Technovation*, *92*, 102061.

Fink, L., Yogev, N., & Even, A. (2017). Business intelligence and organizational learning: An empirical investigation of value creation processes. *Information & Management*, *54*(1), 38-56. https://doi.org/10.1016/j.im.2016.03.009.

Foroudi, P., Gupta, S., Nazarian, A., & Duda, M. (2017). Digital technology and marketing management capability: achieving growth in SMEs. Qualitative Market Research: *An International Journal*, *20*(2), 230-246. https://doi.org/10.1108/QMR-01-2017-0014.

Grover, V., & Lyytinen, K. (2022). The Pursuit of Innovative Theory in the Digital Age. *Journal of Information Technology*, 02683962221077112. https://doi.org/10.1177/02683962221077112.

Hair Jr, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *SEM: An introduction. Multivariate data analysis: A global perspective*, 5(6), 629-686.

Hanandeh, A., Altaher, A., Halim, M., Rezk, W., Mahfoudh, N., Hammouri, Q., & Darawsheh, S. (2023). The effects of digital transformation, digital leadership, and entrepreneurial motivation on business decision making and business process performance: Evidence from greater Amman municipality. *International Journal of Data and Network Science*, *7*(2), 575-582. https://doi.org/10.5267/j.ijdns.2023.3.014

Hauer, G., Naumann, N., & Harte, P. (2021). Digital transformation challenges successful enterprises–an exploration of the collaboration of marketing and sales department in German organizations. *Innovation & Management Review*, *18*(2), 164-174. https://doi.org/10.1108/INMR-05-2019-0066.

Huang, S., Pickernell, D., Battisti, M., Soetanto, D., & Huang, Q. (2020). When is entrepreneurial orientation beneficial for new product performance? The roles of ambidexterity and market turbulence. *International Journal of Entrepreneurial Behavior & Research*, *27*(1), 79-98. https://doi.org/10.1108/IJEBR-02-2020-0103.

Hunt, S. D., & Morgan, R. M. (1995). The comparative advantage theory of competition. *Journal of marketing*, *59*(2), 1-15. https://doi.org/10.1177/002224299505900201.

Husien, W. A., ALhamdany, S. N., & Kataa, I. A., *"The Mediating Role of Organizational Ambidexterity in the Relationship between Business Intelligence Systems and the Learning Organization Exploratory study at the Ramadi's Hospitals," 2020 2nd Annual International Conference on Information and Sciences (AiCIS)* [Paper presentation], Fallujah, Iraq, 2020. https://doi.org/10.1109/AiCIS51645.2020.00041

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science*, *52*(11), 1661-1674. https://doi.org/10.1287/mnsc.1060.0576.

Järvinen, J. (2016). The use of digital analytics for measuring and optimizing digital marketing performance. *Jyväskylä studies business and* economics, 130(170) 1457-1986. http://urn.fi/URN:ISBN:978-951-39-6777-2.

Johnson, D. S., Muzellec, L., Sihi, D., & Zahay, D. (2019). The marketing organization's journey to becoming data-driven. *Journal of Research in Interactive Marketing, 13*(2), 162-178. https://doi.org/10.1108/JRIM-12-2018-0157.

Josephson, B. W., Johnson, J. L., & Mariadoss, B. J. (2016). Strategic marketing ambidexterity: Antecedents and financial consequences. *Journal of the Academy of Marketing Science, 44*, 539-554. https://doi.org/10.1007/s11747-015-0438-5.

Jourdan, Z., Rainer, R. K., & Marshall, T. E. (2008). Business intelligence: An analysis of the literature. *Information systems management, 25*(2), 121-131. https://doi.org/10.1080/10580530801941512.

Junni, P., Sarala, R. M., Taras, V. A. S., & Tarba, S. Y. (2013). Organizational ambidexterity and performance: A meta-analysis. *Academy of Management Perspectives, 27*(4), 299-312. https://doi.org/10.5465/amp.2012.0015.

Kutieshat, R., & Farmanesh, P. (2022). The impact of new human resource management practices on innovation performance during the COVID 19 crisis: a new perception on enhancing the educational sector. *Sustainability*, *14*(5), 2872. https://doi.org/10.3390/su14052872.

Lapersonne, A., Sanghavi, N., & De Mattos, C. (2015). Hybrid Strategy, ambidexterity, and environment: toward an integrated typology. *Universal Journal of Management*, *3*(12), 497-508. https://doi.org/10.13189/ujm.2015.031204.

Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic management journal*, *14*(2), 95-112. https://doi.org/10.1002/smj.4250141009.

Lingqvist, O., Plotkin, C. L., & Stanley, J. (2015). Do you really understand how your business customers buy. *McKinsey Quarterly*, *1*, 74-85.

Luhn, H. P. (1958). A business intelligence system. *IBM Journal of research and development*, *2*(4), 314-319. https://doi.org/10.1147/rd.24.0314.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science, 2*(1), 71-87. https://doi.org/10.1287/orsc.2.1.71.

Mehanović, D., & Durmić, N. (2022). Case Study Application of Business Intelligence in Digital Advertising. *International Journal of E-Business Research (IJEBR), 18*(1), 1-16. https://doi.org/10.4018/IJEBR.293294.

Misra, R., Mahajan, R., Singh, N., Khorana, S., & Rana, N. P. (2022). Factors impacting behavioral intentions to adopt the electronic marketplace: findings from

small businesses in India. *Electronic Markets*, 1-22. https://doi.org/10.1007/s12525-022-00578-4.

Mom, T. J., Van Den Bosch, F. A., & Volberda, H. W. (2007). Investigating managers' exploration and exploitation activities: The influence of top-down, bottom-up, and horizontal knowledge inflows. *Journal of management studies*, *44*(6), 910-931.https://doi.org/10.1111/j.1467-6486.2007.00697.

Montealegre, R., Iyengar, K., & Sweeney, J. (2019). Understanding ambidexterity: Managing contradictory tensions between exploration and exploitation in the evolution of digital infrastructure. *Journal of the Association for Information Systems*, *20*(5), 1. https://doi.org/10.17705/1jais.00547.

Mufadhol, M., Wibowo, A., & Santoso, J. T. (2020). Digital marketing techniques for business intelligence systems use automated chatbot machine learning. *PalArch's Journal of Archaeology of Egypt/Egyptology*, *17*(7),6895-6906. https://www.archives.palarch.nl/index.php/jae/article/view/3091.

Nusairat, N., Al-Gasawneh, J., Aloqool, A., Alzubi, K., Akhorshaideh, A., Joudeh, J., & Ibrahim, H. (2021). The relationship between Internet of things and search engine optimization in Jordanian Tele-Communication Companies: The mediating role of user behavior. *International Journal of Data and Network Science*, *5*(3), 163-172. https://doi.org/10.5267/j.ijdns.2021.6.016 .

Oktaysoy, O., Topcuoglu, E., & Kaygin, E. (2022). A Study on Digital Leadership Scale Adaptation. *International Journal of Organizational Leadership*, *11*(4), 407-425. https.//doi.org/10.33844/ijol.2022.60342.

Olszak, C. M., & Ziemba, E. (2006). Business Intelligence systems in the holistic infrastructure development supporting decision-making in organizations. *Interdisciplinary Journal of Information, Knowledge and Management, 1*, 47–58. Of entrepreneurial orientation. *Technovation*, *92-93*,18.https://doi.org/10.1016/j.technovation.2018.11.004.

O'Reilly III, C. A., & Tushman, M. L. (2013). Organizational ambidexterity: Past, present, and future. *Academy of Management Perspectives*, *27*(4), 324-338. https://doi.org/10.5465/amp.2013.0025.

Osmundsen, K., & Bygstad, B. (2022). Making sense of continuous development of digital infrastructures. *Journal of Information Technology*, *37*(2), 144–164. https://doi.org/10.1177/02683962211046621.

Pannone, A. (2001). Accounting and pricing for the telecommunications industry: An operational approach. *Industrial and Corporate Change*, *10*(2), 453

480. https://doi.org/10.1093/icc/10.2.453.

Peter, M. K., Kraft, C., & Lindeque, J. (2020). Strategic action fields of digital transformation: An exploration of the strategic action fields of Swiss SMEs and large enterprises. *Journal of Strategy and Management, 13*(1), 160-180. https://doi.org/10.1108/JSMA-05-2019-0070.

Queiroz-Sousa, P. O., & Salgado, A. C. (2019). A review of OLAP technologies applied to information networks. *ACM Transactions on Knowledge Discovery from Data (TKDD), 14*(1), 125. https://doi.org/10.1145/3370912.

Rabaai, A., Al-lozi, E., Hammouri, Q., Muhammad, N., Alsmadi, A., & Al-Gasawneh, J. (2022). Continuance intention to use smartwatches: An empirical study. *International Journal of Data and Network Science*, *6*(4), 1643-1658. https://doi.org/10.5267/j.ijdns.2022.4.012

Ritz, W., Wolf, M., & McQuitty, S. (2019). Digital marketing adoption and success for small businesses: The application of the do-it-yourself and technology acceptance models. *Journal of Research in Interactive Marketing, 13*(2), 179-203. https://doi.org/10.1145/3370912.

Roehrich, J.K., Davies, A. Frederiksen, L. and Sergeeeva, N (2019). Management innovation in complex products and systems: The case of integrated project teams. *Industrial Marketing Management, 79*, 84-93. https://doi.org/10.1016/j.indmarman.2018.10.006.

Schwarz, J. O., Rohrbeck, R., & Wach, B. (2020). Corporate foresight as a microfoundation of dynamic capabilities. *Futures & Foresight Science*, *2*(2). https://doi.org/10.1002/ffo2.28.

Shraah, A., Abu-Rumman, A., Alqhaiwi, L., & AlShaar, H. (2022). The impact of sourcing strategies and logistics capabilities on organizational performance during the COVID-19 pandemic: Evidence from Jordanian pharmaceutical industries. *Uncertain Supply Chain Management*, *10*(3), 1077-1090. https://doi.org/10.5267/j.uscm.2022.2.004.

Soto-Acosta, P., Popa, S., & Martinez-Conesa, I. (2018). Information technology, knowledge management, and environmental dynamism as drivers of innovation ambidexterity: a study in SMEs. *Journal of Knowledge Management*, *22*(4), 824-849. https://doi.org/10.1108/JKM-10-2017-0448.

Stokes, P., Smith, S., Wall, T., Moore, N., Rowland, C., Ward, T., & Cronshaw, S. (2019). Resilience and the (micro-) dynamics of organizational ambidexterity:

implications for strategic HRM. *The International Journal of Human Resource Management*, *30*(8), 1287-1322. https://doi.org/10.1080/09585192.2018.1474939

Stone, M. D., & Woodcock, N. D. (2014). Interactive, direct, and digital marketing: A future that depends on better use of business intelligence. *Journal of research in interactive marketing*, *8*(1) 4-17.https://doi.org/10.1108/JRIM-07-2013-0046.

Talaoui, Y., & Kohtamäki, M. (2020). 35 years of research on business intelligence process: a synthesis of fragmented literature. *Management Research Review*, *4*(5), 677-717. https://doi.org/10.1108/MRR-07-2020-0386.

Tamayo-Torres, J., Roehrich, J. K., & Lewis, M. A. (2017). Ambidexterity, performance, and environmental dynamism. *International Journal of Operations & Production Management*, *37*(3), 282-299. https://doi.org/10.1108/IJOPM-06-2015-0378.

Tariq, E., Alshurideh, M., Akour, I., & Al-Hawary, S. (2022). The effect of digital marketing capabilities on organizational ambidexterity of the information technology sector. *International Journal of Data and Network Science*, *6*(2), 401-408.https://doi.org/10.5267/j.ijdns.2021.12.014.

Taródy, D. (2016). Organizational ambidexterity as a new research paradigm in strategic management. *Vezetéstudomány-Budapest Management Review*, *47*(5), 39-52.https://doi.org/ 10.14267/VEZTUD.2016.05.04

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic management journal*, *18*(7), 509-533. https://doi.org/10.1002/(SICI)1097-0266

Tiago, M. T. P. M. B., & Veríssimo, J. M. C. (2014). Digital marketing and social media: Why bother? *Business horizons*, *57*(6), 703-708. https://doi.org/10.1016/j.bushor.2014.07.002.

V Azoeva, O., Yu Mikhalevich, L., A Ostapenko, V., & A Shim, G. (2020). The Labor Nature Changes and its Regulation Challenge Caused by Global Digitalization of Business. *International Journal of Organizational Leadership*, *9*(4), 170-183. https://doi.org/10.33844/ijol.2020.60504.

Vorhies, D. W., Orr, L. M., & Bush, V. D. (2011). Improving customer-focused marketing capabilities and firm financial performance via marketing exploration and exploitation. *Journal of the Academy of Marketing Science*, *39*, 736-756. https://doi.org/10.1007/s11747-010-0228-z

Voss, G. B., & Voss, Z. G. (2013). Strategic ambidexterity in small and medium-sized

enterprises: Implementing exploration and exploitation in product and market domains. *Organization Science*, *24*(5), 1459-1477. https://doi.org/10.1287/orsc.1120.0790.

Wells, J. D., & Hess, T. J. (2002). Understanding decision-making in data warehousing and related decision support systems: an explanatory study of a customer relationship management application. *Information Resources Management Journal (IRMJ)*, *15*(4), 16-32. https://doi.org/10.4018/irmj.2002100102.

Wilkie, W. L., & Moore, E. S. (2007). What does the definition of marketing tell us about ourselves?. *Journal of Public Policy & Marketing*, *26*(2), 269-276. https://doi.org/10.1509/jppm.26.2.269.

Wixom, B., & Watson, H. (2010). The BI-based organization. *International Journal of Business Intelligence Research (IJBIR)*, *1*(1), 13-28. https://doi.org/10.4018/jbir.2010071702.

Yan, J., Tsinopoulos, C., & Xiong, Y. (2021). Unpacking the impact of innovation ambidexterity on export performance: Microfoundations and infrastructure investment. *International Business Review*, *30*(1), 101766. https://doi.org/10.1016/j.ibusrev.2020.101766.

Zamil, A. M., Nusairat, N. M., Vasista, T. G., Shammot, M. M., & Areiqat, A. Y. (2021). PREDICTING TELECOM CUSTOMER CHURN: AN EXAMPLE OF IMPLEMENTING IN PYTHON. *Journal of Legal, Ethical and Regulatory Issues*, *24*, 1-11. https://doi.org/10.1109/icacat.2018.8933783

Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organization science*, *13*(3), 339-351. http://dx.doi.org/10.1287/orsc.13.3.339.2780.

Zraqat, O. M. (2019). Sustainability practices disclosure and value relevance: Evidence from Jordan. *Modern Applied Science*, *13*(9), 75-86. https://doi.org/10.5539/mas.v13n9p75.

Book

Arthur, W.B., 1(996), *Increasing Returns and the New World of Business and the Two Worlds of Business*. Harvard Business Review.

Brace, N., Kemp, R., & Snelgar, R. (2003). *SPSS for psychologists: A guide to data analysis using SPSS for windows.* (2. baskı). Hampshire: Palgrave: Macmillan.

Davenport, T. H., Harris, J. G., & Morison, R. (2010). *Analytics at work: Smarter*

decisions, better results. Harvard Business Press.

Duncan, R. B. (1976): The ambidextrous organization: Designing dual structures for innovation. in: R. H. Kilmann – L.R. Pondy – D. Slevin (eds.): *The management of organization design: Strategies and implementation.* New York: North Holland: p. 167-188.

Marchese, K. and Dollar, B., 2015. *Supply chain talent of the future: findings from the third annual supply chain survey*. Deloitte. 2015.

Mayer-Schönberger, V., & Cukier, K. (2013). *Big data: A revolution that will transform how we live, work, and think*. Houghton Mifflin Harcourt.

Kline, R. B. (2005). *Principles and practice of structural equation modeling*. New York: The Guilford Press.

Appendix A: Questionnaire details

The questionnaire has three sections containing 30 questions, each variable five questions (Table 5):

Variable	Dimension	Articles
Business Inelegance	Data warehouse	1. Chen, Y., & Lin, Z. (2021). Business intelligence capabilities and firm performance: A study in China. *International Journal of Information Management*, *57*, 102232.
	Data mining	
	OLAP	
Digital Marketing	D.M.	1. Järvinen, J. (2016). The use of digital analytics for measuring and optimizing digital marketing performance. *Jyväskylä studies business and economics* (170).
strategic ambidexterity	Exploration	1. Mom, T. J., Van Den Bosch, F. A., & Volberda, H. W. (2007). Investigating managers' exploration and exploitation activities: The influence of top-down, bottom-up, and horizontal knowledge inflows. *Journal of management studies*, *44*(6), 910-931.
	Exploitation	