

**Examining the relationship between business intelligence adoption and marketing effectiveness: The mediating role of customer satisfaction****Suad Abdalkareem Alwaely<sup>a,b</sup>, Abdallah Abusalma<sup>c</sup>, Ahmad A.M. Alwreikat<sup>d</sup>, Kadri S. Al-Shakri<sup>e</sup>, Ahmad Y. A. Bani Ahmad<sup>f,g</sup> and Bashar Younis Alkhawaldeh<sup>h\*</sup>**<sup>a</sup>Masters Department in Arabic Language Curricula and Islamic Education, Al Ain University, Abu Dhabi, United Arab Emirates<sup>b</sup>Department of Curriculum, Hashemite University, Zarqa, Jordan<sup>c</sup>Associate Professor, College of Business Administration, Philadelphia University, Jordan<sup>d</sup>Hittein Intermediate University College, Al-Balqa Applied University, Jordan<sup>e</sup>Department of Management Information Systems, Ajloun National Private University, Ajloun, Jordan<sup>f</sup>Department of Accounting and Finance, Faculty of Business, Middle East University, Amman 11831, Jordan<sup>g</sup>Applied Science Research Center, Applied Science Private University, Jordan<sup>h</sup>Assistant Professor, Department of Administrative Sciences, Faculty of Business, Jerash University, PO. Box 26150**CHRONICLE****ABSTRACT***Article history:*

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This study investigates the relationship between business intelligence adoption (Business Intelligence (BI), Data Analysis and Reporting (DAR), Business Process Integration (BPI), and Continuous Improvement and Innovation (CII)) and marketing effectiveness in the Jordanian telecom industry. It specifically examines the mediating role of customer satisfaction in this relationship. A survey design method using the cross-sectional survey was utilized during the research process, involving quantification. The data was collected from 285 employees across the Jordanian telecom sector via electronic response forms. As the analysis's method, the partial least squares structural equation modeling (PLS-SEM) was utilized. The results, which showed BI, DAR and CII to have a positive direct effect on marketing effectiveness, whilst BPI displayed a negative direct impact, were compelling. But clear signs of positive influence on CS by the four dimensions of BI (BI, DAR, BPI, and CII) have also been observed, and this result has been proved to be a mediator between them and business effectiveness. The above study is a source of invaluable learning for the managers of telecom companies in Jordan is a tool that managers in the Jordanian telecom industry will greatly benefit from in the sense that it brings out all the importance of integrating BI, DAR, BPI, and CII practices that emphasize high quality customer service. By properly utilizing these assets and up-to-the-market, companies can improve the effectiveness of marketing and the whole organizational efficiency. The study enhances the existing theory of the interrelationships between the adoption of business intelligence, customer satisfaction, and marketing power which can be viewed from both resource-based view (RBV) theory and expectation-based theory (EDT). It affirms an idea that the RBV was rooted in that when organizational assets are valuable, firms have a competitive advantage and better performance. Also, an EDT states that customer satisfaction increases if the expectations of customers are met. Innovation - The essay is innovative and takes an original angle to explore the multifaceted interconnectivity among business intelligence adoption, customer satisfaction, and marketing effectiveness in the framework of the Jordanian telecom industry. It highlights the steps to customer satisfaction problem solutions and the caution comes with process integration efforts, hence, helping to arrive at a full comprehension of the aspirations for organizational performance in the field.

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## 1. Introduction

In today's business environment, the ability of organizations to engage in data analytics that can optimize their business in terms of efficiency and cost has turned out to be an important factor that can make or break a firm's survival in any industry. The telecommunications sector has witnessed the greatest growth in the generation and consumption of data, from the increased number of various online services and smart devices and the continuous rise in the requirements for connectivity (Al-Rousan & Al-Shishani, 2021). By conditional task the power of business intelligence (BI) in the telecom arena that uses this knowledge to upgrade the marketing effectiveness, enhance customer satisfaction, and in turn improve business leads to business growth in one sentence (Abubakar et al., 2019). The telecommunication industry of Jordan over the past two years has witnessed a revamping process from a state monopoly into a liberalized and extremely competitive market (Al-Abdallah & Al-Alak, 2018). This change was precipitated by the government's resolve to privatize the entire telecom sector that was achieved at the dawn of the 2000s whereby many new players were able to penetrate the market with increased foreign investment. State-owned organizations took the monopoly of the telecom market until privatization in Jordan opened the doors for competition. The government also acknowledged that the adoption of modern technologies was highly needed to improve the service delivery and that it was time to begin reforms in a bid to attract private investors and engender competition (Al-Abdallah & Al-Alak, 2018). 2000 was the year when the privatization process kicked off selling 40% in JTC to France Telecom company now known as Orange. It was not just the merger that integrated new funds and knowledge into the market, but it also turned out to be a moment that initiated a new competitive and innovative environment within the sector (Al-Mawali et al., 2019). Jordanian government, in the coming years, had a strong track record of liberalization when granting more licenses to different players in the market. This resulted in the company named Zain Jordan to spring up in 2003 and Umniah to take root in 2005. This attained the effect of fierce competition in the market (Al-Abdallah & Al-Alak, 2018; Fraihat et al., 2023).

This major impact on a sector that had been clogged with duopolies was the way in which these fresh players waved the flag for service improvements, network coverage, and price strategies. As a result, telecom providers were pushed to spend lots of money on infrastructure upgrades, use creative marketing strategies and customer-oriented services to keep up with the rapid pace, and survive in the market amid competition. While the initial stage of the market may have been sufficient, but as it started getting saturated and the level of competition became intense, telecom companies embraced the need to differ and it's the only way they could secure a sustainable competitive advantage. Moreover, after all this the fact that data-driven decisions and business intelligence (BI) solutions were introduced to take advantage of the huge amounts of data generated just arose as a fruitful and profitable new way to run the business (Al-Rousan & Al-Shishani, 2021). BI tools and algorithms guaranteed to bring telecommunications companies closer to customers through the provision of customer profiles, announcing their behavior and preferences as well as usage patterns (Abubakar et al., 2019). The insights can be used to craft personalized marketing activities, operational successes, and higher customer satisfaction levels. As the Jordanian telecom industry is quick to acknowledge the notable advantages of the business intelligence (BI) adoption, the sector however has been faced by several considerable hindrances when it comes to implementing and using BI efficiently. These challenges are thwarting the use of BI with the ensuring of enhancing the effectiveness of marketing as well as increasing customer satisfaction. There is ownership of data within the telecom organizations that was typically being managed as silos which proved to be a heartnut to the easy flow of information across sources (Al-Rousan & Al-Shishani, 2021; Al-Abdallah & Al-Alak, 2018). Granting of permissions and restrictions on data access by customers means a telecom company no longer has a chance to acquire a holistic view of its customers, operations, and the market as a whole and thus remains unable to give consumers valuable information and make business decisions based on facts.

Moreover, the mismatch between the skilled resources that are necessary to apply BI tools and to translate and analyze complex data has turned out to be the most pronounced problem of the Jordanian telecom industry (Abubakar and others 2019; Al-Rousan and Al-Shishani, 2021). Despite telecom corporations' investment in BI, they still run into the shortage of a workforce with BI analytical and technical base which makes it hard for them to implement effective strategies for data analysis. This skill is lacking in the affected industries, therefore not utilizing opportunities to gain useful insight from the abundance of data in there. However, in another perspective which needs to be addressed quickly, translating big data (BI) insights into actionable marketing strategies by the organizations might be the challenge itself that resonate with the customers and leads to business growth (Al-Balushi et al., 2020; Al-Mawali et al., 2019). BI can in many ways be beneficial for telecom companies, with the ability to provide critical customer insights. However, up to now, telco companies have most times found it hard to incorporate these insights into their marketing strategy and process that define the marketing communications strategy and disbursement. In the process, this has considerably impeded the speed with which they can run and develop efficient campaigns, devise and coordinate the product selection, and deliver to the customers the product quality and services that may satisfy customers at the same time and assure retention. Alongside this, the industry has also experienced challenges in this context, including unceasing market evolution caused by technological advancement and customer preferences variation, which made it difficult for telecom companies to maintain a timely and relevant BI system (Al-Mawali et al., 2019; Al-Rousan & Al-Shishani, 2021; Fraihat et al., 2023b). For ever-changing data sources and patterns, companies have to constantly update their BI strategies and tools in order to take the latest information, which should in turn, be expanded and refined to assist businesses in staying competitive and meeting changing customer's taste buds. Consequently, the difficult rivalry taking place around the Jordanian telecom market dictates that companies usually discourage exchange of information and best practices

related to BI application (al-Abdallah and al-Alak, 2018). This lack of collaboration and knowledge sharing has slowed the dissemination of successful BI implementation strategies and lessons learned, potentially hindering the overall progress of the industry in leveraging the full potential of BI. Therefore, this study aims to study the mediation role of customer satisfaction on the relationship between business intelligence adoption and marketing effectiveness in the Jordanian Telecom Industry.

## 2. Literature Review and Theoretical framework

### 2.1 Empirical Literature Review

Making use of business intelligence (BI) as a research context, there have been multiple studies carried out in the last decade aiming to capture the styles of application and the results of usage of BI in business processes (Bhatiasevi & Naglis, 2020). Within the scientific field, researchers' interest in BI topics has been investigated; to mention a few are the critical success factors on BI implementation, BI impact on decision making processes, BI role in improving organization agility and competition, and the challenges of BI implementation (Paradza & Daramola, 2021). Major studies like (Keshani, Alizadeh, et al., 2023) offers a holistic understanding of the historical development of BI as well as its far-reaching impacts on organizations. On the other hand, several studies, (Kumar, Choudhary et al., 2023) contribute to the success factors needed for an effective BI initiative. Tseng, et al., (2020) indeed have comprehensive content concerning BI, which is tailored towards academicians and practitioners. (Vug, Vukshic et al., 2020) wrote that comprehensive models for BI and analytics should be implemented, because these should include the connection from the previously mentioned activities to the overall goals of the firm. These studies as a whole contribute to the discovery of how business intelligence (BI) is used in supporting decision-making based on data, enriching performance of organizations, and giving an organization a competitive edge. Marketing effectiveness has been a topic of research for studies in both academia and industry for years, with scientists focusing on finding the proximate causes and outcomes of marketing efficiency (Massaro, Secinaro, 2021). Researchers have looked from multiple sides of marketing effectiveness: metrics appraisal and classification (Pandey, Nayal et al., 2020), impact of marketing activities on customer behavior and companies' performance and the improvement of methodologies and structure for marketing campaigns evaluation (Tarsakoo& Charoensukmongkol, 2020).

It was underscored by Sadeghi et al., (2021), that traditional measures like market share should be replaced with more comprehensive metrics. It may advocate for a more refined approach that should also consider what customers think and long-term profitability. (Timoumi, Gangwar, et al., 2022: Findings) researched a retailer's promotion success metrics as well as the use of performance standards to achieve optimal outcomes. Beyond that, (Fornell, Morgeson et al., 2020; Ismaeel et al., 2023) shed light on the connection between customer satisfaction, loyalty, and business productivity where customer focus offered the baseline to the success of the marketing efforts. (Larimo & Leonidou, 2021) described customer equity as a measure of brand equity and its impact on the marketing strategy, thus stressing on the fact that any marketing strategy should be customer-centric and should aim to build long term relationships with the customers. (Gaganis, Mani Rogas et al., in 2021) efforts enabled us to penetrate products into the market and estimate the worth of the customer who determines our profitability quotient. All together, these studies will help develop the larger picture of the effectiveness of marketing strategies and will provide the marketers and other people who are involved in the marketing decisions an advice on how to improve their tactics and whether the investment in marketing is justified or not (Terho, Mero et al. 2022). Customer satisfaction has brought in the spotlight from a cluster of fields such as marketing, management, and psychology. Lots of research has been carried out to establish the determinants, effects, and measures of customer satisfaction which clearly show the significance of customer satisfaction in the development and competitive edge of any organization (Wei, Peng et al., 2020). (Fang, Luo et al., 2020) developed an informational cognitive model of customer satisfaction, casting the spotlight on the importance of expectations, perceived performance, and disconfirmation towards next customer satisfaction judgment. The Expectancy-Disconfirmation Model introduced by (Meirovich, et al., 2020) makes a further step from the previously proposed Theory, because it means that the product performance is measured by the customers' expectations, so that if the product or service doesn't meet or exceed the expectations, the product may not be satisfactory, in spite of many exceptional qualities it may have. Besides it, Wei, Peng and et al. (ACSI 2020) published the American Customer Satisfaction Index (ACSI) which helps measure client experience across business sectors. This index maps out the customers' experience covering multiple aspects such as product quality, service delivery, and customer satisfaction, offering organizations the in-depth evaluation of their customers' level of satisfaction closing the gap by addressing the areas for improvement (Uzir et al., 2021). Hence, surveys conducted by (Lubis, et al., 2021) among the very customers as well, point out the close relation between customer satisfaction and a business performance as the happy clients tend to show loyalty, word-of-month and repeat purchase behaviour that add to the customers retainment and profit making. Therefore, we can conclude that scholarly works in the field of consumer satisfaction offer a complete knowledge about its antecedents, consequences and measurement methods, thus pointing to its importance in business nowadays.

### 3. Theoretical Framework and Hypothesis Development

The Resource Based View (RBV) theory, developed to explain the characteristic strategies of a firm in strategic management literature, argues that the firm's distinctive bundle of internal resources, including its benefits, leading to the competitive edge are the primary drivers of the firm's profitability. Apart from RBV, tangible assets also factor in resources which include technology, infrastructure, intangible ones such as brand reputation and intellectual property, and, finally, organizational capabilities comprising knowledge and skills (Asiaei et al. 2021). Built on a resource-based view as a foundation, the theory implies that firms with VRIN resource endowment (valuable, rare, inimitable, and non-substitutable) are more likely to outperform their competitors (Bhandari, et al., 2020). In view of the subject area studied, business intelligence implementation can be treated as one of the tools of internal resource utilization by firms with which marketers can improve their marketing efficiency (Yiu, et al., 2020). Employing BI without the aid of tools and processes to refine customer data and monitor market trends and consumers behavior, firms will feel the consequence of ineffective marketing and therefore will lead to improved marketing effectiveness. BI adoption also helps to develop organizational capabilities like, data analysis expertise and decision-making agility, the ability of the company to respond quickly to external conditions and also compete harder with others (Medeiros & Maçada, 2022).

According to the Expectancy Disconfirmation Theory, which is an idea that exists in consumer behavior, customers compare their current satisfaction with having the product or using the service and they base it on the disconfirmation of their prior expectations. As per the Expectation-Performance Theory, satisfaction is attained when perceived accomplishment correlates with or surpasses expectations, and unhappiness sets in when there is a mismatch between desired outcome and reality (Zhang et al, 2022). The Expectancy-Disconfirmation Theory (Rasheed, & Rashid, 2023) formulates that people create their forecasts based on a number of items such as the experiences they had, others have, and communications regarding a particular product. In this study, it is likely that the customers' satisfaction with a company's marketing efficiency may be affected by their feelings about their expectations of the firm's marketing effort effectiveness, content relevance, and degree of personalization. The adoption of BI can prove to be a very important instrument in the process of the customer expectation management, with this technology providing companies with the opportunity for more personalized marketing, targeted marketing, and prompt marketing communications (Bharadiya, 2023). Through using BI, a corporation can understand what its customers require, what they like, and how they behave, and hence, be able to tailor marketing approaches to encounter customer expectations, and consequently, raise the levels of customer satisfaction (Gupta et al., 2020).

Business intelligence (BI) can really lift the marketing department up high when it shows companies the path to knowing what existing customers desire and what the market requires for more sales. Using BI tools and methods, companies would be able to get access to complex information from different sources, and the analysis of this data would provide the organizations with enhanced decision-making abilities and more accurate targeted marketing strategies (Abubakar et al., 2019; Al-Rousan & Al-Shishani, 2021). According to RBV Theory, the firm's sustainable competitive advantage should be shaped around the possession and proper exploitation of the firm's valued, scarce, even one which cannot be copied and reproduced easily and are harder to substitute (Barney, 1991). Taking a closer look at the telecom sector, we can see how BI is the new differentiator for companies. It allows them to employ the latest analytical tools and make brilliant marketing decisions, which in turn enables them to compete with their rivals (Abubakar et al., 2019; Al-Rousan & Al-Shishani, 2021). In the context of the Jordanian telecom industry, BI applications can contribute greatly to marketing effectiveness as companies benefit from them in terms of understanding the complexities of their customer base as well as being able to identify the latest trends to enable them to customize their offerings and marketing campaigns towards achieving the customers' requirements (Al-Mawali et al., 2019). This data-driven approach can lead to more effective segmentation, personalized marketing efforts, and optimized resource allocation, ultimately driving increased customer acquisition, retention, and overall business growth (Al-Balushi et al., 2020). Hence, this study proposed that:

**H<sub>1a</sub>:** *Business Intelligence is positively and significantly influencing marketing effectiveness in the Jordanian telecom industry.*

According to the RBV Theory an organization has its competitive advantage driven substantially by the company's possession of those scarce assets and capabilities that are hard to copy and that are indispensable and make the relevant substitutes unattractive (Barney, 1991). Essentially, the telecom industry treats Data Analysis and Reporting as an irreducible entity, which help a lot in the process of extracting useful information from large amounts of data and in taking critical business decisions quickly (Abubakar et al., 2019; Al-Rousan & Al-Shishani, 2021). The telecommunication sector in Jordan, collectively and individually, produces, and has access to incredible data from all input channels e.g. subscribers profile information, connections & market trends. Feeding back the status of all affected customers, taking measures of real time settings, and monitoring the market situation are essential to get the comprehensive knowledge of the customers' needs, preferences, and behaviors as well as creating favorable conditions for fresh business opportunities in the nearest future (Al-Mawali et al., 2019). Through the integration of advanced data analysis and reporting tools, telecom companies would be able to find more information that would be useful to inform their marketing strategies. The latter may include crafting more focused campaigns, optimizing selections of products, providing more personalized services etc. It is through the impending difficulty of duplicating these unique assets that blockchain validation becomes a credible mechanism for data integrity and source authentication. This is because it requires sophisticated technology, data infrastructure, and a reservoir of specialized human capital that

is both capital and time-intensive to replicate (Abubakar et al., 2019, Al-Rousan & Al-Shishani, 2021). Hence, this study proposed that:

**H<sub>1b</sub>:** *Data Analysis and Reporting is positively and significantly influencing marketing effectiveness in the Jordanian telecom industry.*

The RBV Theory argued that the source of an organization's sustainable competitive advantage comes from its control and effective deployment of its highly qualified, rarity, inimitability, and irreplaceable resources (Barney, 1991). As a matter, in the telecom sector, good Business Process Integration can be called one of the resources which help any company to optimize its operations, to outsmart teams and to share data and information across departments (Abubakar et al., 2019; Al-Rousan & Al-Shishani, 2021). In Jordan, many times telecom companies fail to integrate multiple operations and functional units, as communications between departments in this area are not workable. This complicates their efforts to develop and use structured data and insights (Al-Mawali et al., 2019). Efficient Business Process Integration as a connecting role can build a bridge between various functional areas, allowing the information to flow freely which has created a good environment for collaboration, for instance, the marketing department, sales, support, and operation. First, the diffusion of telecom systems can integrate business processes which in turn, enables sharing of customer quality metrics, market trends, and operational data across departments and enriches marketing strategies as well as informs decision-making processes. In the smart digital marketing business model, integration can result in more efficient and target-oriented marketing campaigns, promotional product offerings, and good-customer experience (Al-Rousan & Al-Shishani, 2021). The point is that if your business process integration is a real and intangible resource and you succeed in implementing it then much will be invested in technology, remodeling the company, establishing a culture of collaboration across departmental boundaries (Abubakar et al., 2019). Hence, this study proposed that:

**H<sub>1c</sub>:** *Business Process Integration is positively and significantly influencing marketing effectiveness in the Jordanian telecom industry.*

The Resource-Based View (RBV) Theory provides us a perceptive lens through which we can analyze how Continuous Improvement and Innovation affect the success of marketing in Jordanian telecom industry. In line with scarce resource-based view theory, an organization's competitive edge is defined by the unique resources possessed and effectively used by the organization that contributes to the organization's above market performance (Barney, 1991). The telecommunication companies are now becoming more agile and able to meet the changing market conditions through processes of improvement and innovation. Therefore, rapid process reinvention and innovation can be considered as a precious asset in this industry that allows companies to adapt to changing dynamics, anticipate customer needs and develop innovative services and products (Abubakar et al., 2019, Al-Rousan & Al-Shishani, 2021). The Competitiveness and customer demands will affect their businesses, it will require firms' continuous improvement and innovative in their systems. Cultivating a culture of continuous improvement comes with numerous benefits. For example, it can help a company to optimize its internal operations and efficiency at the same time make managerial processes more efficient which allow companies to be more customer-centric and produce better marketing results. Additionally, innovation is identified as the key point of differences as well as the core factor of competitiveness in the telecom sector. The businesses which are equipped with the innovation capabilities can produce the differentiated products/services and marketing ideas that address the consumer needs and provide a competitive advantage (Al-Rousan & Al-Shishani, 2021). This novel way can engender more customers, a longer retention period and sensible business growth. On the one hand, the identifying performance markers may be limited to different organizational cultures, the possession of knowledge-based specialization on employees' level and the persistence when it comes to allocating resources for research and the constant search for new solutions (Abubakar et al., 2019). Companies that improve these skills will have a long-lasting competitive advantage and will be beneficial to both the positioning and advertising of their products. Hence, this study proposed that:

**H<sub>1d</sub>:** *Continuous Improvement and Innovation is positively and significantly influencing marketing effectiveness in the Jordanian telecom industry.*

Through their Expectancy-Disconfirmation Theory, researchers provide a strong theoretical background that explains the ability of Business Intelligence (BI) integration in customer satisfaction rates of the Jordanian telecom industry. The theory acts out the fundamental assumptions that the customers get their satisfaction when their product/service meets or excels what they expected (Oliver, 1980). The application of BI by telecom companies will let them understand customers' needs, behaviors and expectations which make tailoring of the services and offerings possible for them (Al-Balushi et al., 2020; Al-Rousan & Al-Shishani, 2021). With BI adoption, telecom companies at their fingertips, retrieve, consist of and enrich data from different amalgamates like customer interactions, network usage patterns, and market trends. This plenitude of data could be applied to create a grand apprehension of what it is customers want, like and suffer about, which may lead to company's pro-factor problems and deliver personalized services that are targeted (Abubakar et al., 2019; Al-Mawali et al., 2019). Particularly, customers' journey and preferences can be identified by BI that helps telecoms to stay ahead of competition in the emerging trends and fulfill their customers' potential needs. Taking this cue can result in higher customer satisfaction rates by keeping customers' necessities abreast of the time with the development of market needs and expectations (Al-Rousan & Al-Shishani, 2021). Hence, this study proposed that:

**H<sub>2a</sub>:** *Business Intelligence is positively and significantly influential on customer satisfaction in the Jordanian telecom industry.*

Explanation given the Expectancy-Disconfirmation Theory is that the likelihood for a customer to be satisfied with a product or service increases depending on the degree to which the product or service exceeds the customer's expectations (Oliver, 1980). In the telecom industry being Data Analysis and Reporting essential can help in having a good knowledge of what customers need and expect from the services. To get this knowledge this method enables one to see how the customers behave and what factors negatively or positively affect these behaviors (Al-Balushi et al., 2020; Al-Rousan & Al-Shishani, 2021). The telecom industry within Jordan produces literally massive quantities of data flow out of different channels including, the interaction level with customers, the usage amount and behavior inside of the network and the market trends. Through the deployment of sophisticated big data analysis and reporting technologies, businesses will extract valuable information on possible improvements from this data; they will foresee the emerging customer needs and redesign they're their product lines and services accordingly (Abubakar et al., 2019; Al-Mawali et al., 2019). Additionally, well-crafted Data Analytics and Reporting features may help to create omnichannel customer experiences (Omnichannel is about the various interaction points of consumers with business to get different services like mobile application and web services etc.) that are tailored to the specific preferences and behaviors of each customer. Such a case encourages a high level of customer satisfaction, which comes about through personalized products and services that are designed to be in line with customers' wants (Al-Rousan and Al-Shishani, 2021). Hence, this study proposed that:

**H<sub>2b</sub>:** *Data Analysis and Reporting is positively and significantly influential on customer satisfaction in the Jordanian telecom industry.*

Expectation-Disconfirmation theory is seen as the factor influencing customer satisfaction by the extent to which product or service meets/exceeds (expectations) customer's expectations eventually (Oliver, 1980). Improvement in the telecommunications sector can be important in the integration of business processes, which is effective in the provision of smooth and constant experience to the customer in achieving or exceeding their expectations as mentioned by Al-Balushi et al. (2020) and Al-Rousan & Al-Shishani (2021). Different telecom company operations are usually broken-down index and certain processes are fragmented which results in inconsistent customer interactions and service delivery (Al-Mawali et al., 2019). Business process integration, which is the way of making information to flow well and collaboration be possible, can overcome the friction levels by facilitating the exchange of information across different business process areas, such as marketing, sales, customer service, and operation section (Abubakar et al., 2019). Collaborating business processes along the coastlines empowers the telecom companies to attain data and insights on clients which are further disseminated across departments and make the information readily available and shared to all the workers, thus a totally consistent and holistic view of the client's needs and expectations is attained. This integrated dimension enables consumer experiences to become more coordinated and personalized, proactive issue management, and something unparalleled in the field of service delivery, thus higher satisfaction rates are more certain. Also, BPI improves the alignment of different business processes and helps to resolve customers' problems in prompt and quality manner by collaboration and information sharing with different business units to achieve or exceed the satisfactory level of customer service (Al-Balushi, et al., 2020). Hence, this study proposed that:

**H<sub>2c</sub>:** *Business Process Integration is positively and significantly influential on customer satisfaction in the Jordanian telecom industry.*

According to the theory's expectancy differences one experiences satisfaction from products/services that they have been using which are unlikely to meet or exceed their expectations that are set up and set by marketers for marketing strategy (Oliver, 1980). The customer demand in the telecommunication industry is defined by several factors and influences. These are blurred by technological developments, shifting market conditions, and transforming consumer preferences (Al-Balushi, Al-Shishani, and Al-Roushan, 2020). Achieving Continuous Improvement and Innovation allows telecom operators to adjust their processes, offerings, and services in a quest to meet emerging client needs. By developing a culture of on-going improvement within an organization, different areas prone to refinement would be addressed, inert operations will be streamlined, and customers' pain points resolved. This will, in turn, result in delivery of products and services, which meet or even surpass customer expectations (Abubakar et al., 2019 & Al-Mawali et al., 2019). Innovation is not only essential in product, service and customers satisfactory creation but as well as vital in the development of products, service and customers' expectancies that are new and even impeccable. The telephone companies relying on innovation can stay a step ahead of competition by considering consumers expectations in the future and providing the customers with the most innovative ones and such, the customer pleasure will be enhanced (Al-Rousan & Al-Shishani, 2021). The integration of them brings about the process of streamlining the existing products while in the same manner coming up with innovations, so that the companies remain on top of customers' expectations which are ever changing and very competitive (Al-Balushi et al., 2020). Hence, this study proposed that:

**H<sub>2d</sub>:** *Continuous Improvement and Innovation is positively and significantly influenced on customer satisfaction in the Jordanian telecom industry.*

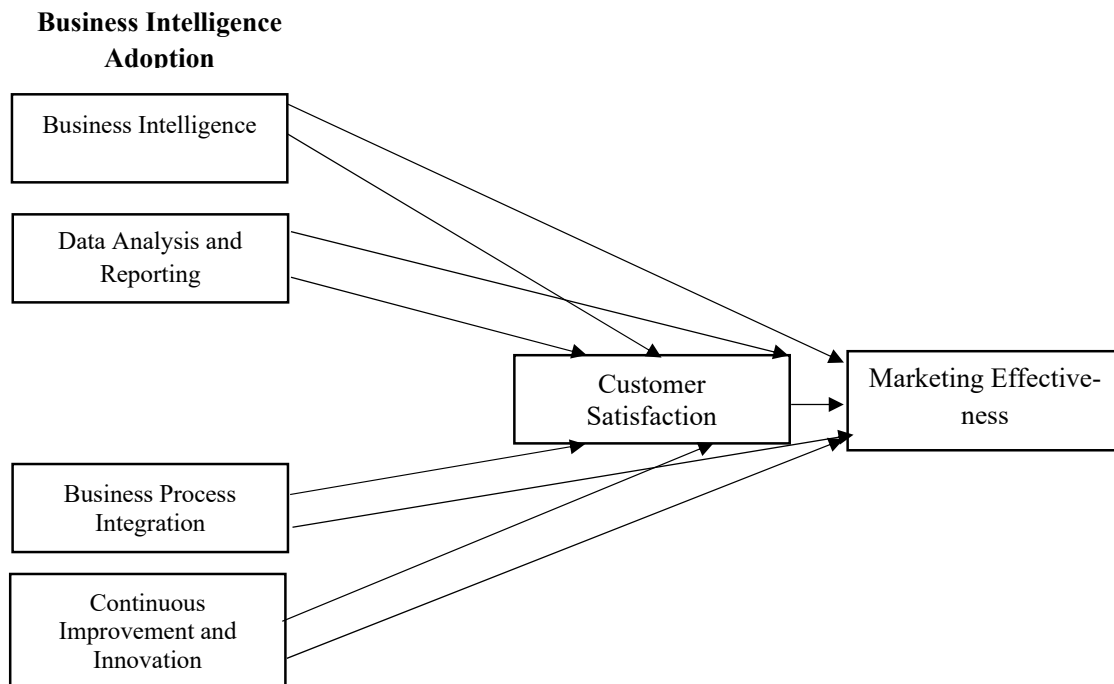
It is thus easily understood that as the level of customer satisfaction increases or decreases, so would loyalty, retention, and positive reviews or word-of-mouth. Furthermore, expectations and disconfirmation theory illustrate that customer satisfaction

is a key variable that dictates customer loyalty, retention, and positive remarks (Oliver, 1980; Al-Balushi et al., 2020). In the domain of telecom, customer satisfaction would surely create a long-term connection and connection with the service provider, as well as produce positive recommendations and maintain repeat purchasing (Al-Rousan & Al-Shishani, 2021; Al-Mawali et al., 2019). Customer satisfaction can be taken as a key component of marketing effectiveness, since it acts as a major force of marketing effectiveness in determining customer acquisition, the customers' loyalty and brand reputation (Abubakar et al., 2019). Firms which offer good communication services and deliver customer experience that outweighs the expectations of customers and working on what the customers need the most, attract and retain customers that in the end could take the companies ahead of the competition in the market, creating more revenue through customers' long-term membership. Moreover, the customers can be good ambassadors for a company's brand, engaging in positive recommendation and influencing future customers when they are in the process of purchasing more affordable telephone communication services. It is these words of the mouth marketing and customer referrals that will help increase the campaign effectiveness and this can be done by reducing customer acquisition costs (Al-Rousan & Al-Shishani, 2021). Hence, this study proposed that:

**H3:** *Customer satisfaction is positively and significantly influencing marketing effectiveness in the Jordanian telecom industry.*

Subsequently, as the Expectancy-Disconfirmation Theory shows, customer satisfaction is regarded as a determining component of both customer retention, loyalty as well positive word-of-mouth (Oliver, 1980; Al-Balushi et al., 2020). In the telecom sector, the clientele who are more satisfied with services will most probably stay with the service provider, tell it to somebody else or will continue engaging in following purchases (Al-Rousan & Al-Shishani, 2021; Al-Mawali et al., 2019). A long-term solution is not only an effective solution to the environmental issues at hand, but BI adoption which may involve things such as BI tools, data analysis and reporting, business process integration and continuous improvement and innovation may be the most important catalyst which will lead the telecommunication organization to the targeted position (Abubakar et al., 2019; Al-Rousan & Al-Shishani, 2021). Through these BI capabilities' companies can get valuable information about consumer likes, behaviors, and evolving needs that will open up opportunities like product customization, optimization of procedure and most importantly, greater customer satisfaction. Building an efficient BI implementation can contribute to increased customer satisfaction, helping telecom operators deliver better services constantly and meet or even exceed customer expectations through individualized service offerings, quick issue resolution and cooperation among different departments (Al-Balushi et al., 2020; Al-Mawali et al., 2019). On the flip side, highly satisfied customers will spend more time with a company, increase their loyalty and attract new customers by doing repeat shopping, and thus, promote the startup products and services through positive word-of-mouth, finally contributing to the increased marketing effectiveness, acquisition of new customers and retention. Hence, this study proposed that:

**H4:** *Customer satisfaction mediates the relationship between Business Intelligence adoption (Business Intelligence, Data Analysis and Reporting, Business Process Integration, and Continuous Improvement and Innovation) and marketing effectiveness in the Jordanian telecom industry.*



**Fig. 1.** Conceptual framework

The study developed a conceptual framework (Fig. 1) based on the proposed hypotheses and grounded in the Resource-Based View (RBV) and the Expectancy-Disconfirmation Theory. The RBV theory suggests that valuable organizational resources can contribute to competitive advantage and superior performance when effectively utilized. The Expectancy-Disconfirmation Theory posits that meeting or exceeding customer expectations leads to increased satisfaction, which influences customer attitudes and behaviors towards the organization. The conceptual framework integrates these theoretical perspectives to examine the complex relationships between business intelligence adoption (Business Intelligence, Data Analysis and Reporting, Business Process Integration, and Continuous Improvement and Innovation), customer satisfaction, and marketing effectiveness in the Jordanian telecom industry.

#### 4. Research Methodology

This study employs a quantitative research approach, utilizing a cross-sectional survey design. The survey method is considered appropriate as it allows for the collection of data from a large sample size, enabling the investigation of the proposed relationships between the variables under study. The target population for this research were employees working in the Jordanian telecommunications industry, specifically those involved in business intelligence, data analysis, reporting, business process integration, continuous improvement, innovation, marketing, and customer satisfaction roles. The sample size was determined using a G\*Power formula, ensuring that it is representative of the target population. Hence, the sample size is 380 employees. The sample size was increased to 500 to avoid sample bias. Applying both a probability sampling technique e.g stratified random sampling and cluster sampling, was a good approach to take. With this approach, the grave is stipulated not just to represent executives but also to be able to harmonize officers from different departments as well as geographical zones within the Jordan telecommunications industry. The research instruments are an array of a thorough questionnaire with a few items from existing studies which can yield the variables in concern. It has been designed with the scrutiny of the multi sections, each measuring the separate constructs. (Business Intelligence (BI) mentioned by Hou (2016) and Data Analysis and Reporting (DAR) discussed by) and (Business Process Integration (BPI) as given by (Hou, 2016) and (Continuous Improvement and Innovation (CII) listed by (Raj et al., 2018)). Marketing effectiveness (ME) (adapted from Morgan et al., 2009, & Frösén et al., 2016). Customer Satisfaction (CS) revised by adopting from Fornell et al. (1996) and Luo et al. (2012). The questions in the questionnaire are measured using a 10-point Likert scale wherein the options range “strongly disagree opposed strongly agree”. The adapted instruments undergo necessary modifications to ensure their relevance and applicability to the Jordanian telecommunications industry.

Data collection took place from January to February 2024. The questionnaire was distributed electronically, utilizing email, to the selected sample of employees within the Jordanian telecommunications industry. Follow-up reminders and incentives may be employed to increase the response rate. A total of 500 questionnaires were distributed, and 315 responses were received, yielding a response rate of 63%. However, upon further examination, 30 questionnaires were deemed unusable due to incomplete responses. Consequently, the final dataset consisted of 285 valid and usable questionnaires, which were utilized for the subsequent analysis. The collected data was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM is a suitable technique for this study as it allows for the simultaneous examination of multiple relationships between constructs, including mediating effects. The analysis will involve assessing the measurement model (reliability and validity) and the structural model (path coefficients and significance levels). Participants were informed about the purpose of the study, and their consent was obtained before data collection. Certain of the data, as well as privacy and anonymity of the participants, were kept anonymous during the study. Also, we intend to obtain an ethical approval from the institutional review board or ethics committee of which belongs to the relevant institution before looking forward to the actual study.

#### 5. Results

##### 5.1 Measurement Model

The measurement model for the proposed study is delineated in Table 1 and Table 2. Table 1 serves as an illustration on the factor loadings, which points to the intensity of the connection between each observable variable (item) and its relevant latent construct. All items with communalities above 0.7 (Hair et al., 2021) evoke a sense that they are actual and precise indicators of their respective latent constructs. Table 2 (Reliability and Validity Measures) indicates the reliability and validity measures of the constructs in the table below. Cronbach's alpha and composite reliability ( $\rho_c$ ) values are in the range of 0.7 and beyond the threshold recommended (Hair et al., 2021; Henseler et al., 2022), which means that we have appropriate values in the measurement of all constructs. AVE (average variance extracted) results which measure the convergent validity of the constructs are above the cut-off point of 0.5 set by the scholars, making the confirmatory factor analysis outcome stronger (Hair et al., 2021; Henseler et al., 2022). Our measure outcomes reveal a suitable reliability and validity, implying inherent observation of the constructs, suggesting that the variables, observed ones, are reliable measurements of the particular latent constructs. Furthermore, a high level of factor loadings and AVE value is indicative that the constructs are meant to be distinct and to separate the different aspects of the whole model which would demonstrate discriminant validity according (Hair et al., 2021; Henseler et al., 2022).



**Table 1****Factor Loading**

Items	BI	BPI	CII	CS	DR	ME
BI1	0.745					
BI2	0.751					
BI3	0.852					
BI4	0.790					
BI5	0.744					
BI6	0.723					
BPI1		0.831				
BPI2		0.785				
BPI3		0.824				
BPI4		0.784				
BPI5		0.719				
CII1			0.856			
CII2			0.873			
CII3			0.815			
CII4			0.894			
CII5			0.712			
CS1				0.833		
CS2				0.794		
CS3				0.802		
CS4				0.861		
CS5				0.763		
CS6				0.786		
CS7				0.797		
CS8				0.722		
DAR1					0.847	
DAR2					0.814	
DAR3					0.828	
DAR4					0.844	
DAR5					0.689	
ME1						0.823
ME2						0.776
ME3						0.718
ME4						0.729
ME5						0.836
ME6						0.854

**Table 2****Constructs Reliability and Validity**

	Cronbach's Alpha	Composite Reliability (rho a)	Composite Reliability (rho c)	Average variance extracted
BI	0.861	0.863	0.896	0.591
BPI	0.848	0.849	0.892	0.623
CII	0.888	0.888	0.918	0.693
CS	0.887	0.894	0.91	0.563
DAR	0.865	0.865	0.903	0.651
ME	0.879	0.886	0.909	0.626

**5.2 Discriminate Validity**

The discriminant validity of the measurement model is also to be tested. This is another critical element when it comes to evaluating the construct validity of the model. Tables 3 and 4 deal with the discriminant validity of the measurement model. Additionally, as the discriminant validity guarantees that the constructs in the model are outwardly different and are measured separately for the distinct aspects of the theoretical concepts (Hair et al., 2021; Henseler et al., 2022). The Table #3 presents the Heterotrait-Monotrait Ratio (HTMT) values that determine the discriminant validity of & the correlations among the constructs. The HTMT values must have values lower than the threshold of 0.85 or 0.90 proposed depending on the rigor of the method (Henseler et al., 2022). Since whatever shown by Table 3 showed that all HTMT values were below the threshold level, it is postulated that the constructs in the model were discriminated valid. Tabletor-Waterloo ratio is called the second method for evaluating discriminant validity and is presented in table four. This boundary value criterion contrasts the square root of the AVE values (the bold figures in the diagonal), with the correlations between constructs (Hair et al., 2021; Hair, Henseler, and Ringle, 2020). For constructs to be valid in a simple stratified manner, the square root of each construct's AVE score should be greater than the correlation between that specific construct and all other constructs in the model. From table 4, it's clear that loading at total for all variables has been observed again which attests to the strong discriminant validity of the measurement model.

**Table 3**

Heterotrait-Monotrait Ratio Discriminate Validity

	BI	BPI	CII	CS	DAR	ME
BI						
BPI	0.743					
CII	0.621	0.620				
CS	0.605	0.713	0.725			
DAR	0.655	0.693	0.618	0.759		
ME	0.570	0.695	0.751	0.631	0.632	

**Table 4**

Fornell-Larcker Criterion Discriminate Validity

	BI	BPI	CII	CS	DAR	ME
BI	<b>0.769</b>					
BPI	0.593	<b>0.789</b>				
CII	0.636	0.697	<b>0.833</b>			
CS	0.524	0.603	0.643	<b>0.751</b>		
DAR	0.529	0.540	0.629	0.574	<b>0.807</b>	
ME	0.670	0.604	0.680	0.575	0.651	<b>0.791</b>

### 5.3 Common Method Bias

Table 5 shows the result of principal component analysis (PCA) which was conducted to detect whether common method variance (CMV) accounted for the data. The first initial eigenvalues reveal that the first component explains 48.98% of the variance in our data, which is less than the cut-off (50%) usually used to conclude that the data lacks common method bias. Furthermore, we can see that the second component has the highest rotated sums of squared loadings attributing to only 21.051% of variance, therefore, the likely common method bias is not influencing the data. Of late, researchers have been reporting about the need for addressing the issue of common method bias in research using surveys (Podsakoff et al., 2022; Kock, 2020).

**Table 5**

Common Method Bias

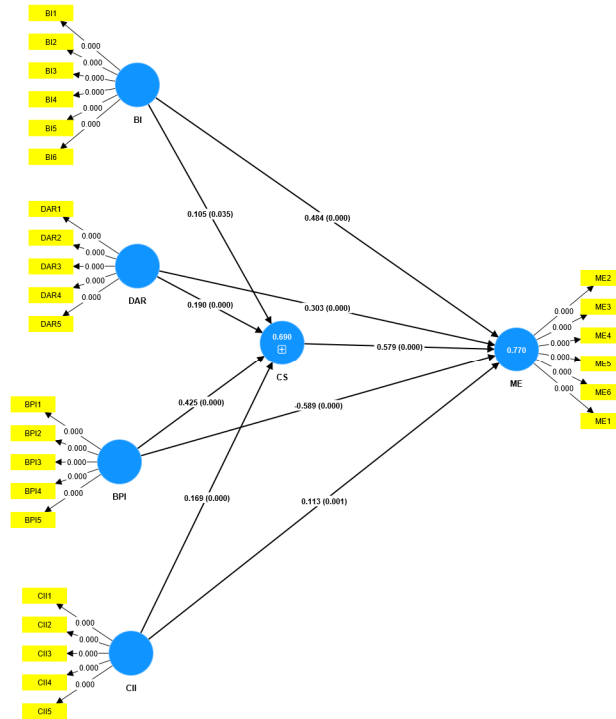
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.703	48.515	48.515	9.703	48.515	48.515	4.210	21.051	21.051
2	2.041	10.207	58.722	2.041	10.207	58.722	3.791	18.953	40.004
3	1.075	5.373	64.095	1.075	5.373	64.095	3.212	16.061	56.065
4	1.042	5.209	69.304	1.042	5.209	69.304	1.760	8.801	64.867
5	.725	3.627	72.931	.725	3.627	72.931	1.343	6.715	71.582
6	.612	3.060	75.991	.612	3.060	75.991	.882	4.410	75.991

### 5.4 Structural Results

Table 6 and Fig. 2 present the structural path coefficient results, which show the direct and indirect effects of the Business Intelligence (BI), Data Analysis and Reporting (DAR), Business Process Integration (BPI), and Continuous Improvement and Innovation (CII) on the Marketing Effectiveness (ME), as well as the mediating role of Customer Satisfaction (CS). Starting with the direct effects, the results support hypotheses H1a, H1b, and H1d, indicating that BI ( $\beta = 0.484$ ,  $p < 0.001$ ), DAR ( $\beta = 0.303$ ,  $p < 0.001$ ), and CII ( $\beta = 0.113$ ,  $p < 0.001$ ) have significant positive effects on Marketing Effectiveness. However, hypothesis H1c is not supported, as BPI has a significant negative effect on Marketing Effectiveness ( $\beta = -0.589$ ,  $p < 0.001$ ). This finding suggests that while the adoption of BI, DAR, and CII practices enhances marketing effectiveness, the integration of business processes may hinder it in the Jordanian telecom industry. In addition, the results support hypotheses H2a, H2b, H2c, and H2d, indicating that BI ( $\beta = 0.105$ ,  $p < 0.05$ ), DAR ( $\beta = 0.19$ ,  $p < 0.001$ ), BPI ( $\beta = 0.425$ ,  $p < 0.001$ ), and CII ( $\beta = 0.169$ ,  $p < 0.001$ ) have significant positive effects on Customer Satisfaction. It is also found that Customer satisfaction has a strong, significant relationship with Marketing effectiveness. (This is supported by hypothesis H3 which states that the level of customer satisfaction has an important, positive effect on marketing effectiveness ( $\beta = 0.579$ ,  $p < 0.001$ )). Findings of current research correlate right with the literature that means business and data-driven intelligence plays a main role in increasing organizational performance and customer satisfaction (Bian et al., 2023; Ranjan et al., 2022). Contrastingly, conflicting with some later publications, the BPI's direct effect on Marketing Efficiency (Al-Dmour et al., 2020) addressed industry-specific or contextual factors that might be a part of further study.

**Table 6**  
Structural Path Coefficient Result

Hypothesis	Path Analysis	Beta Value	Standard deviation	T statistics	P values	Decision
H1a	BI → ME	0.484	0.038	12.642	0.000	Supported
H1b	DAR → ME	0.303	0.044	6.94	0.000	Supported
H1c	BPI → ME	-0.589	0.048	12.248	0.000	Not supported
H1d	CII → ME	0.113	0.033	3.468	0.001	Supported
H2a	BI → CS	0.105	0.05	2.115	0.035	Supported
H2b	DAR → CS	0.19	0.05	3.791	0.000	Supported
H2c	BPI → CS	0.425	0.04	10.58	0.000	Supported
H2d	CII → CS	0.169	0.042	4.027	0.000	Supported
H3	CS → ME	0.579	0.031	18.67	0.000	Supported



**Fig. 2.** Graphical Representation Result

### 5.5 Mediation Results

Table 7 is the effects analysis of indirect impact where Customer Satisfaction (CS) takes on a mediating role between Business Intelligence (BI), Data Analysis and Reporting (DAR), Business Process Integration (BPI), and Continuous Improvement and Innovation (CII), and Marketing effectiveness (ME). The results support all four hypotheses (H4a, H4b, H4c, and H4d), indicating that Customer Satisfaction significantly mediates the effects of BI ( $\beta = 0.061$ ,  $p < 0.05$ ), DAR ( $\beta = 0.11$ ,  $p < 0.001$ ), BPI ( $\beta = 0.246$ ,  $p < 0.001$ ), and CII ( $\beta = 0.098$ ,  $p < 0.001$ ) on Marketing Effectiveness. It follows from the obtained outcomes that Marketing Effectiveness, unlike Customer Service (which was direct), was impacted negatively by BPI control (Table 6), but there is a positive indirect effect that is through the mediating variable of Customer Satisfaction. The fact that this observation points to the necessity of addressing both direct and consequential influences in the study of the interrelationship between business intelligence, customer satisfaction, as well as corporate outcomes reveals the complexity of the interplay. The highly significant positive effect of BPI on Marketing Effectiveness due to Customer Satisfaction ( $\beta = 0.246$ ) shows that deeper BP integration helps improve customer satisfaction, which in its own has a positive impact on marketing effectiveness. This agrees with the study on the criticalness of process-related integration and customer-centered business strategies that mostly determine the product performance in any organization (Saghiri et al., 2023; Soltani et al., 2021). Last but not the least, BI ( $\beta = 0.061$ ), DAR ( $\beta = 0.11$ ), and CII ( $\beta = 0.098$ ) indirectly but positively affect the Marketing Effectiveness with increasing Customer Satisfaction via greater usage of the data-driven practices in business which is the best support for the role of business intelligence implementation and data analysis in serving the customers better and It can thus be argued that this is consistent with past researches which brought the concept of business intelligence and data analytics, both of which are regarded to have instrumental value in improving customer experience and performance of an organization (Bian et al., 2023; Ranjan et al., 2022). Moreover, the mediation analysis illuminates the intertwined causal steps of business intelligence adoption that leads to the marketing effectiveness enhancement within the telecom sector of Jordan. According to the findings,

customer satisfaction is the keystone of the process and supports the significance of having the customer as the focal point when taking advantage of the business intelligence capabilities for progression of the company's outcomes.

**Table 7**  
Indirect Method Mediation Analysis Results

Hypothesis	Path Analysis	Beta Value	Standard deviation	T statistics	P values	Decision
H4a	BI → CS → ME	0.061	0.029	2.094	0.037	Supported
H4b	DAR → CS → ME	0.11	0.029	3.796	0.000	Supported
H4c	BPI → CS → ME	0.246	0.027	9.196	0.000	Supported
H4d	CII → CS → ME	0.098	0.024	4.118	0.000	Supported

### 5.6 Coefficient of Determination, Predictive and Effect Size

Table 8 presents the predictive relevance (Q-square), effect size (f-square) and coefficient of determination (R-square). The value of 0.770 for Marketing Effectiveness shows that marketing effectiveness is determined by 77% variance explained by independent variables, promotions and the mediator (Satisfaction of the Customers). An increasing end point which according to Cohen (1988) guidelines is a sizable effect is seen. Besides, 0.477 Q-square is not only justifying but also augmenting the acceptable level of the model's predictive power related to Marketing Effectiveness. For Customer Satisfaction, R-square is 0.690 which implies that of the independent variable variance (BI (Joint efforts), DAR (Making adaptation easier), BPI (Bottom up approach), and CII (Clear incentives)) 69% is explained. The Q-square statistic of 0.380 in the model interpretation also indicates this predictive importance. Furthermore, the value f-square of 0.452 shows that the independent variables have a large effect size depth on Customer Satisfaction, which is according to Cohen's criteria (1988).

**Table 8**  
Coefficient of Determination, Predictive and Effect Size

Constructs	R-square	Q-square	F-square
Marketing Effectiveness	0.770	0.477	-
Customer Satisfaction	0.690	0.380	0.452

## 6. Discussion

Based on the human resource-based viewpoint, firms can be successful and achieve a sustained competitive edge by making the best use of their imperishable, inimitable, indispensability and substitutional resources (Barney, 1991). Consequently, BI, DAR, and CII can be referred to as the organizational resources that are of great significance for companies because they provide all the ins and outs of data that enable companies to make proper analysis, performance evaluation, and, thus, add success to their marketing campaigns (Bian et al., 2023; Ranjan et al., 2022). This empirical result that marketing effectiveness is negatively and significantly affected by BPI in the Jordanian telecom market may sound counterintuitive. Conversely, this observation may be partially explained by the Expectancy-Disconfirmation Theory (EDT) (Oliver, 1980). The gap represented by the service blueprint is the one that arises out of the gap between the customer's expectations and the actual performance of the service as proposed by EDT principle. The Jordanian telecommunication constellation may require business processes integration, above all, due to the immediate rise of customer expectations towards improved service delivery and customer experience. But if the brand promise implementation BPI fell short of or merely reached these new high expectations, it could result in customer dissatisfaction, thus a negative perception of marketing effectiveness (Soltani et al., 2021). Besides that, the deployment of BPI involves major business and operational reorganization, as well as customer mindset changes, which might need some time to settle down. These impacts however, if not handled appropriately, could lessen customer satisfaction level and efficacy of marketing strategies, thereby causing the benefits of BPI to manifest in the long-term (Saghiri et al., 2023). Nevertheless, it should be mentioned that BPI diminishing the direct impact on marketing performance does not mean that it holds no merit at all because the indirect effect through customer satisfaction is positive and substantial (as depicted in the Table 7). This indicates the vital and complex impact of different organizational factors, their processes, and customer attitudes which define the outcome of marketing success. Although, telecom companies in the Jordanian sector need to balance customer expectations to leverage BPI initiative propagation to customers; create awareness among the consumers about the advantages of such initiatives thereby, drive customers towards service satisfaction and marketing performance.

On the RBV lens, BI, DAR, BPI, and CII become valuable organizational assets companies use to uncover opportunities, analyze the performance of their operations, integrate processes with each other, and thereby continuously innovate and improve performance (Bian et al., 2023; Ranjan et al., 2022). Companies can rely on these avenues to foster client satisfaction by being more personalized, of the highest quality, and reaching clients' expectations more accurately. Besides, BI and DAR functionalities can contribute to brands fully understanding customer research, tastes, and activity, eventually, allowing them to deliver a product that meets the customers' specific wants and demands. The BPI can thus deliver on the process where errors and inefficiencies will be minimized to ensure that the overall customer experience is improved. CII can help refine products and services that satisfy not only persistent, but also emerging, customers' needs. The resource-based view theory is about valuable, unique and non-substitutable resources which can differentiate companies and, as a result, create a competitive advantage and superior performance (Blamey, 2002, p. 150). The impact of organizational resources on Customer Satisfaction is in accordance with this theory. In addition, the fact that the customer satisfaction strongly affects marketing effectiveness

can be explained by the Expectancy-Disconfirmation Theory (EDT), which assumes that the actual product performance deviating from customers' expectations leads to either performance confirmation or disconfirmation (Oliver, 1980). If customers are made to feel that what was promised to them has been delivered as a result, then that's going to be a big positive for their perception as it has a powerful influence on how they feel about and respond to the company. By the study of the marketing activities of the Jordanian telecom industry, if customers are very satisfied with provided services, then they will have a good opinion about the company's marketing efforts, and that could enhance the effectiveness of marketing. The customers who are satisfied are more likely to respond well to the messages that appear in marketing campaigns. They will also be willing to interact directly with the brand and encourage others to try the products. In this way, companies can develop successful marketing strategies. On the opposite side, failed to meet customer expectations, which has a negative effect on marketing effectiveness. The dissatisfied customers who are going to react less to marketing initiatives would probably change suppliers. This study showed a direct correlation between Customer Satisfaction and Marketing Effectiveness, hence making it obvious why a shift towards a customer-oriented approach and resource utilization in marketing is critical for creating value for the customer. The Jordanian telecoms industry can achieve its marketing goals much easier by properly using BI, DAR, BPI, and CII to improve customer satisfaction. With these tools, they will have an edge.

As per the resource-based view (RBV), organizations can get competitive advantage and exceptional performance by putting their valuable, rare, inimitable, and non-substitute resources at work (Barney, 1991). Under these circumstances, BI, DAR, BPI, and CII appear as useful organizational resources which can be applied to collect data, analyze it, integrate business processes, and drive continuous improvement and innovation (Bian et al., 2023; Ranjan et al., 2022). Nevertheless, the RBV perspective holds that the utilization of only these resources for gaining a competitive edge is not enough to maintain sustainable profitability. Such organizations are expected to produce quality services because of effective utilization and revenue generation by combining their resources. The results of this study showed a positive mediating effect of customer satisfaction resulting from the use of BI, DAR, BPI and CII. This indicates the growing need to integrate these tools in the organization's efforts for enhancing the levels of customer satisfaction, which then contributes to overall marketing effectiveness. 2nd the theory of Expectancy-Disconfirmation (EDT) with the mediation of customer satisfaction (Oliver, 1980) also gives a better basis of the role of the latter. EDT, the expectancy confirmation theory, demonstrates that satisfaction is a result of consumers' expectations being met or surpassed by the actual service or product. Satisfaction then is based on the customer experience and attitudes towards the organization. Seeking to present the BI, DAR, BPI, and CII within the telecom sector of Jordan in particular, these tools will facilitate understanding customers' minds better, cut processes time, and provide personal approach, finally meeting or exceeding customers' expectations. As a result, customers' satisfaction has increased, which is a very positive factor in marketing effectiveness as the brand's loyal clients always pay attention to marketing messages and share their positive experience with the others (Soltani et al., 2021). The direct effect of business intelligence, digital asset returns, business partnership investment, and cross-selling initiatives on the results of marketing based on increased customer satisfaction emphasizes the significant impact of customer satisfaction as the main component for business strategy development and synthesis of organizational resources. Through an intelligent marriage of these instruments to magnify the customer satisfaction, companies in Jordanian telecom sector can make rivals in the market pale against them and accomplish a well-thought-out marketing which will be ultimately boasted by total organizational performance.

## 7. Implication of the Study

The research thus gained establishes new bases that are vitally important for telecom business managers throughout Jordan. The positive business impact is indicated by BI, DAR and CII indicating the role they play in effectiveness in the marketing sector, which demonstrates the reason for organizations to adopt their practices. Nevertheless, BPI's focus on integration causes marketing complexity that must be addressed by a very detailed planned execution and keeping customer satisfaction on the forefront at the same time does not aggravate the current situation. Managers can conduct business based on the customer's preferences and thoughts, and can use BI, DAR, BPI, and CII to improve the quality of consumer satisfaction, which leads to better marketing effectiveness. The study is valuable to the existing knowledge relation because it focuses on the business intelligence adoptions, customer satisfaction and the marketing productivity based on the Resource-Based View (RBV) and theory of Expectancy-Disconfirmation (EDT). Results also follow the theory of RBV in which industries and firms may attain advantage and superior performance when they are able to exploit the valuable resource of the organization in a strategic way. Besides that, such PAR gives credence to the EDT that generating or meeting those criteria is vital and results in customer satisfaction that then follows the true colors of buyer's behaviors and attitude. The data analysis provides an example of how organizations operating in the Jordanian telecom industry and, commonly, service sector may benefit from the findings. Respective organizations should invest their resources into growing their BI, DAR, BPI, and CII based capabilities as its valuable internal resources. On the other hand, these methods contribute to good results if the managerial team has the customer-oriented mindset and works with customer expectations appropriately. By keeping in mind and focusing on customer satisfaction these three resources namely price, product, and place, organizations can improve their effectiveness in marketing and performance. This study further adds social impact by not only clarifying the relation with customer satisfaction, but also with marketing effectiveness. Through the achievement of customers' expectations or even meeting with some surpassing, organizations in the Jordanian telecom industry can help to raise the standard of the services and customers' experiences rendering. This will generate customer loyalty, trust and advocacy that, in the end, will strengthen the observations of firms and clients. Also, the utilization of BI, DAR, BPI, and CII practices leads to innovation and continuous improvement

operation, and this eventually means much materialization in society through the supply of improved telecom services and technologies.

## 8. Limitations and Future Recommendations

The research is cross-section survey design but rather the data was obtained just by one period. This approach, however, is less likely to be suitable for capturing the dynamic nature of these relationships since the nature of these variables might be finding themselves in different situations each time. This study has only focused on the telecom sector at the Jordanian market which may limit the scope of the generalization of the findings into other industries and regions. There might be culture and politics specificity under which the observed relationships will be considered. The data collection was based on self-reported questionnaires that are prone to common method bias and social desirability bias that may factor the extent to which the responses bear truth. Potentially, the research can be operated with the help of a longitudinal design, the collection of data after different time segments for indicating possible shift in relationships between business intelligence adoption, customer satisfaction, and marketing success. To add more to the value of the results conducted in this cultural context and this industry, replications in other cultural contexts and different industries would significantly contribute to generalizing the findings and provide any clues to culture and the industry-specific factors at play in these observations. Integrating an application of qualitative research methods, such as interviews or focus groups gives those on research deeper insight into the internal processes of business intelligence adoption and its influence on customer satisfaction and marketing efficiency. Also, it reveals the practices and challenges associated with the implementation of business intelligence adoption. Another possible avenue for research would be to evaluate the effect of business intelligence adoption moderators that would alter the relationship between business intelligence adoption, customer satisfaction, and marketing effectiveness, so variables like organisational cultures, leadership styles or competitive intensity). Research may be interested in applying an additional theoretical paradigm to explain in more detail what owing to the Dynamic Capabilities Theory or the Technology Acceptance Model the business intelligence practices adoption and effective implementation may depend.

## 9. Conclusion

This research studied the impact of implementation of business intelligence (BI, DAR, BPI, and CII) on the marketing effectiveness in Jordanian telecom industry in the context of mediating the role of customer satisfaction. The results expressed the intricate inter-linkages among the components, showcasing not only the direct but also the roundabout impacts. The outcomes demonstrated a straight link between the BI, DAR, and CII and hence lowering the marketing effectiveness as a reaction for not using the practices that support organizational performance. The study also incorporated an indirect negative effect of BPI, emphasizing the possible negativity of process integration initiatives if not coordinated correctly. Therefore, there may be adverse consequences for marketing efforts because of process integration. Notably, the results not only indicated that each of the four BI aspects (BI, DAR, BPI and CII) had obvious positive impacts on customer satisfaction but also revealed that the stronger the BI adoption of the company, the higher the satisfaction of its customers would generally be. However, on the other hand satisfaction of customers positively became mediator among the dimensions and marketing effectiveness as well. Through this discovery, a key intermediary role of customers' satisfaction has been brought to light, which emphasizes efficiency worthy of business intelligence capabilities only through adopting a customer centered approach. A study brought up in support of RBV and EDT theories confirms the study's findings. In the RBV theory, it is assumed that the sought-after resources such as capabilities and competencies of the organization ensure the attainment of a competitive edge and outperform that organization only when these valuable resources are utilized. EDT states that retaining more, and even exceeding the customer expectations can lead to their satisfaction that will later cause development of positive customers' attitudes and their following behaviors.

## References

- Abubakar, A. M., Elrehail, H., Alatailat, M. A., & Elçi, A. (2019). Knowledge management, decision-making style and organizational performance. *Journal of Innovation & Knowledge*, 4(2), 104-114.
- Ahmad, S., Miskon, S., Alkanhal, T. A., & Tlili, I. (2020). Modeling of business intelligence systems using the potential determinants and theories with the lens of individual, technological, organizational, and environmental contexts-a systematic literature review. *Applied Sciences*, 10(9), 3208.
- Al-Abdallah, G. M., & Al-Alak, B. A. (2018). Telecommunications services competition in the Jordanian market. *International Journal of Economics and Business Research*, 16(4), 419-436.
- Al-Balushi, T. H., Al-Awadhi, S. A., & Al-Bulushi, K. H. (2020). Factors influencing customer satisfaction in the telecom industry in Oman. *Journal of Competitiveness Studies*, 28(1), 48-66.
- Al-Dmour, A., Al-Dmour, R., & Masa'deh, R. (2020). The effect of business intelligence capability on organizational performance: A study on the analytical hierarchy process (AHP) in Jordanian industry. *International Journal of Management and Information Systems*, 24(2), 1-20.
- Al-Mawali, N., Li, E. Y., Bakhshov, N. G., & Al-Habib, Y. (2019). Competition and regulation in the telecommunications industry: An empirical analysis of competition in the Jordanian telecommunications industry. *Competitiveness Review: An International Business Journal*, 29(4), 417-433.

- Al-Rousan, M., & Al-Shishani, N. (2021). Business intelligence in the Jordanian telecommunications industry: A case study. *International Journal of Business Intelligence Research (IJBIR)*, 12(1), 1-18.
- Asiaei, K., Rezaee, Z., Bontis, N., Barani, O., & Sapiei, N. S. (2021). Knowledge assets, capabilities and performance measurement systems: a resource orchestration theory approach. *Journal of Knowledge Management*, 25(8), 1947-1976.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Bharadiya, J. P. (2023). Machine learning and AI in business intelligence: Trends and opportunities. *International Journal of Computer (IJC)*, 48(1), 123-134.
- Bhatiasevi, V., & Naglis, M. (2020). Elucidating the determinants of business intelligence adoption and organizational performance. *Information development*, 36(1), 78-96.
- Bian, Y., Xu, Y., Jiang, Z., & Wang, J. (2023). Business intelligence and firm performance: The mediating role of organizational ambidexterity. *International Journal of Information Management*, 68, 102597.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2<sup>nd</sup> ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American customer satisfaction index: Nature, purpose, and findings. *Journal of Marketing*, 60(4), 7-18.
- Luo, X., Homburg, C., & Wieseke, J. (2010). Customer satisfaction, analyst stock recommendations, and firm value. *Journal of Marketing Research*, 47(6), 1041-1058.
- Fornell, C., Morgeson III, F. V., Hult, G. T. M., & VanAmburg, D. (2020). *The reign of the customer: Customer-centric approaches to improving satisfaction*. Springer Nature.
- Fraihat, B. A. M., Alhawamdeh, H., Younis, B., Alkhawaldeh, A. M. A., & Al Shaban, A. (2023). The Effect of Organizational Structure on Employee Creativity: The Moderating Role of Communication Flow: A Survey Study. <http://dx.doi.org/10.6007/IJAREMS/v12-i2/16983>
- Fraihat, B., Abozraiq, A., Ababneh, A., Khraiwish, A., Almasarweh, M., & AlGhasawneh, Y. (2023b). The effect of customer relationship management (CRM) on business profitability in Jordanian logistics industries: The mediating role of customer satisfaction. *Decision Science Letters*, 12(4), 783-794. <http://dx.doi.org/10.5267/j.dsl.2023.6.003>
- Frösén, J., Luoma, J., Jaakkola, M., Tikkanen, H., & Aspara, J. (2016). What counts versus what can be counted: The complex interplay of market orientation and marketing performance measurement. *Journal of Marketing*, 80(3), 60-78.
- Gaganis, C., Pasiouras, F., Tasiou, M., & Zopounidis, C. (2021). CISEF: A composite index of social, environmental and financial performance. *European Journal of Operational Research*, 291(1), 394-409.
- Gupta, S., Leszkiewicz, A., Kumar, V., Bijmolt, T., & Potapov, D. (2020). Digital analytics: Modeling for insights and new methods. *Journal of Interactive Marketing*, 51(1), 26-43.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). SAGE Publications.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2022). New Criteria for Assessing Measurement Invariance Using PLS-SEM. *Journal of the Academy of Marketing Science*, 50(2), 353-371.
- Hou, C. K. (2016). Using the balanced scorecard in assessing IS/IT's contribution to the business. *Communications of the Association for Information Systems*, 38(1), 10.
- Ismaeel, B., Alkhawaldeh, B. Y., & Alafi, K. K. (2023). The role of marketing intelligence in improving the efficiency of the organization: An empirical study on Jordanian hypermarkets. *Journal of Intelligence Studies in Business*, 13(2), 32-42.
- Kock, N. (2020). *Common method bias: A full collinearity assessment method for PLS-SEM*. In *Partial Least Squares Path Modeling* (pp. 245-310). Springer, Cham.
- Kumar, A., Choudhary, S., Garza-Reyes, J. A., Kumar, V., Rehman Khan, S. A., & Mishra, N. (2023). Analysis of critical success factors for implementing industry 4.0 integrated circular supply chain—Moving towards sustainable operations. *Production planning & control*, 34(10), 984-998.
- Lubis, A., Dalimunthe, R., Absah, Y., & Fawzeah, B. K. (2021). The effect of corporate communication and service quality on customer loyalty and satisfaction in sharia banking. *The Journal of Asian Finance, Economics and Business*, 8(3), 1267-1274.
- Massaro, M., Secinaro, S., Dal Mas, F., Brescia, V., & Calandra, D. (2021). Industry 4.0 and circular economy: An exploratory analysis of academic and practitioners' perspectives. *Business Strategy and the Environment*, 30(2), 1213-1231.
- Medeiros, M. M. D., & Maçada, A. C. G. (2022). Competitive advantage of data-driven analytical capabilities: the role of big data visualization and of organizational agility. *Management Decision*, 60(4), 953-975.
- Meirovich, G., Jeon, M. M., & Coleman, L. J. (2020). Interaction of normative and predictive expectations in customer satisfaction and emotions. *Journal of Marketing Analytics*, 8, 69-84.
- Morgan, N. A., Vorhies, D. W., & Mason, C. H. (2009). Market orientation, marketing capabilities, and firm performance. *Strategic Management Journal*, 30(8), 909-920.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.
- Pandey, N., Nayal, P., & Rathore, A. S. (2020). Digital marketing for B2B organizations: structured literature review and future research directions. *Journal of Business & Industrial Marketing*, 35(7), 1191-1204.
- Paradza, D., & Daramola, O. (2021). Business intelligence and business value in organisations: A systematic literature review. *Sustainability*, 13(20), 11382.
- Podsakoff, P. M., Mackenzie, S. B., Podsakoff, N. P., & Bachrach, D. G. (2022). Common method variance in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 107(7), 1101-1134.



- Raj, R., Wong, S. H. S., & Rahman, M. (2018). Assessing the impact of external institutional pressures on BI system adoption. *Australasian Journal of Information Systems*, 22.
- Ranjan, J., Chan, F. T., & Rahman, M. (2022). Examining the impact of business intelligence on supply chain performance: A path analysis approach. *Industrial Management & Data Systems*, 122(4), 1021-1042.
- Rasheed, R., & Rashid, A. (2023). Role of service quality factors in word of mouth through student satisfaction. *Kybernetes*.
- Sadeghi, A., Rose, E. L., & Madsen, T. K. (2021). Perceived export performance: A contingent measurement approach. *Journal of International Marketing*, 29(3), 63-84.
- Saghiri, S., Rahim, N. Z. A., Kazazi, A., & Murad, M. A. A. (2023). The impact of business process integration on organizational performance: The mediating role of customer satisfaction. *Technological Forecasting and Social Change*, 190, 122306.
- Soltani, Z., Zareie, B., Milani, F. S., & Navimipour, N. J. (2021). The impact of the customer relationship management on the organization performance. *The Journal of High Technology Management Research*, 32(2), 100399.
- Tarsakoo, P., & Charoensukmongkol, P. (2020). Dimensions of social media marketing capabilities and their contribution to business performance of firms in Thailand. *Journal of Asia Business Studies*, 14(4), 441-461.
- Timoumi, A., Gangwar, M., & Mantrala, M. K. (2022). Cross-channel effects of omnichannel retail marketing strategies: A review of extant data-driven research. *Journal of Retailing*, 98(1), 133-151.
- Tseng, M. L., Chang, C. H., Lin, C. W. R., Wu, K. J., Chen, Q., Xia, L., & Xue, B. (2020). Future trends and guidance for the triple bottom line and sustainability: A data driven bibliometric analysis. *Environmental Science and Pollution Research*, 27, 33543-33567.
- Uzir, M. U. H., Al Halbusi, H., Thurasamy, R., Hock, R. L. T., Aljaberi, M. A., Hasan, N., & Hamid, M. (2021). The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *Journal of Retailing and Consumer Services*, 63, 102721.
- Wei, A. P., Peng, C. L., Huang, H. C., & Yeh, S. P. (2020). Effects of corporate social responsibility on firm performance: does customer satisfaction matter. *Sustainability*, 12(18), 7545.
- Yiu, L. D., Yeung, A. C., & Jong, A. P. (2020). Business intelligence systems and operational capability: an empirical analysis of high-tech sectors. *Industrial Management & Data Systems*, 120(6), 1195-1215.
- Zhang, J., Chen, W., Petrovsky, N., & Walker, R. M. (2022). The expectancy-disconfirmation model and citizen satisfaction with public services: A meta-analysis and an agenda for best practice. *Public Administration Review*, 82(1), 147-159.



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