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The achievement of digital leadership sustainability and business performance through the implementation of business intelligence, artificial intelligence, and quality learning in private universities in Jordan

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A B S T R A C T

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The objective of research is to explore the impact of business intelligence systems, artificial intelligence, and digital leadership sustainability on the quality of learning and business performance at business schools of private universities in Jordan. Upon gathering and scrutinizing the research materials, a grand total of 281 samples were judged suitable for analysis using PLS software. The findings of this study suggest that the implementation of business intelligence systems, artificial intelligence, and digital leadership sustainability positively contribute to improving both the quality of learning and the performance of enterprises. The results demonstrate that the implementation of a business intelligence system, and Competitive Intelligence, directly and positively impacts the enhancement of learning quality and company performance. Furthermore, Artificial intelligence has a positive influence on the quality of learning and the performance of businesses, namely through the utilization of Deep learning, Digital Data, Graphical Processing Unit (GPU), and Data Safety and Security. Furthermore, digital leadership sustainability exerts a direct and favorable impact on the caliber of education and organizational achievement, encompassing Digital Competence, Flexibility and Agility, Interconnected Thinking, and Employee Orientation. Furthermore, the findings indicate that the level of education, encompassing Summative Assessment, Formative Assessment, Quizzes, and Presentations, is positively associated with enhancing firm productivity. Curiously, the present results contradict previous studies suggesting that the variables being examined had an influence on achieving digital leadership sustainability and business performance. Generally, the main research outcomes recommend that corporations should start adopting strategies related to enhancing learning effectiveness and improving business performance. This research focuses on the major aspects of business cleverness systems, artificial intelligence, and digital leadership sustainability to enhance the quality of learning and business performance in the business capabilities of private institutions of higher education in Jordan.

1. Introduction

Private Jordanian institutions are sighted by the game mutable budding of incorporating cutting edge improvement into their everyday tasks in the forceful realm of higher learning. Prominent technologies such as digital leadership sustainability, intelligent machines (AI), and corporate intelligence (BI) systems have the potential to greatly improve educational

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capabilities and enhance business endings in these foundations (Alserhan & Shbail, 2020). According to Abu-AlSondos (2023) business intelligence systems agreement a stylish structure for pulling together, analyzing, and assembling a sense of immense extents of data generated by a university's ecosystem. Business intelligence (BI) systems allow private universities in Jordan to easily gain insights into various phases of their operations, including student membership, academic performance, resource union, and financial management (Al-Shorman et al., 2021). Provided with this awareness, officers and decision-makers can enrich overall proficiency, streamline operations, and make learned strategic assessments (Varadarajan, 2020).

Wamba-Taguimdje et al. (2020) are prominent that private Jordanian institutions have a lot to expand from using AI into their teaching techniques. According to Olan et al. (2022), AI applications can brand learning familiarities, adapt training methodologies to meet the essentials of individual learners, and provide prepared feedback to tutors and students alike. In addition, AI-driven projecting analytics have the potential to divine student outcomes, ascertain at-risk students, and proactively support them in realizing their academic potential. According to Enholm et al. (2022), this leads to higher degrees of student maintenance and general pleasure.

Nevertheless, private institutions must retain visionary leadership and foster a culture of innovation in order to effectively integrate BI systems, AI technology, and numeral leadership projects (Al-Shorman et al., 2021).Sustainable digital leadership involves not just accepting and adopting technical innovations, but also fashioning a collaborative atmosphere where individuals from all areas of the organization actively engage in the progression of digital transformation (Dewi et al., 2021). Efficient digital leadership sustainability guarantees that technological investments are in route with the university's strategic objectives and are executed in a way that optimizes their influence on learning endings and business performance (Daradkeh, 2021).

To summarize, the application of Business Intelligence systems, artificial intelligence, and digital leadership sustainability has the capacity to acquaint with a new period of exceptional performance at private institutions in Jordan. By utilizing these technologies, institutions may increase the quality of learning experiences, maximize operational efficiency, and stay ahead in the fast changing higher learning environment.

2. Literature Review

2.1 Business Intelligence System (BIS)

The apprehensions encountered by commerce in acquiring and supervising big data were mostly related to the measure, quality, precision, and validity of the data. As a result, the business intelligence tactic has transformed into a highly efficient and advanced method for obtaining an efficient edge by extracting new principles (Ahmad et al., 2020, 2024). Business intelligence systems (BIS) greatly escalate a company's size to collection, be able to, evaluate, and join in its documents for the purpose of gaining insights and creating new products (Borissova et al., 2020). Groups are all the time more adopting analytical business intelligence implements because of the experiments associated with manual work, the need to handle and analyze large volumes of data, the desire to find new insights, and the complexity of doing business performance (Jain et al., 2020). By utilizing data warehouses to store and bring together data, ensuring its accuracy through contradiction, and identifying new data relationships, organizations can develop novel insights, enhance decision-making processes, address elaborate and challenging problems, and in the end deliver original services and goods to consumers (Jain et al., 2020).

2.2 Artificial Intelligence (AI)

Information technologists often make links between the exploration of human beings and the ground of artificial intelligence. Artificial intelligence is a division of realistic computer science that practices computational procedures to assist dealings in quiet out their tasks (Wamba-Taguimdje et al., 2020). Likely the target market in the process of creating and designing a product has been proven to be highly favorable (Olan et al., 2022). Hence, ordinal technology plays a crucial role in the creative and innovative process by serving as a dominant means of communication between customers and businesses (Enholm et al., 2022). Academics normally believe that adding technology resources and systems into organizational, operative, and business contexts is essential for the advancement of their engineering. This was done by developing long-term strategies that may be used as the foundation for creating detailed product increase roadmaps (Loureiro et al., 2021). Artificial intelligence is a methodological device that assists leaders in comprehending and examining the extensive quantities of information found in online repositories and databases (Basri, 2020). Companies can enhance their current situation by espousing and implementing new operational models. This can be achieved through the creation of new products that have the potential to increase customer loyalty, as well as by strengthening their ability to transform and change. Additionally, syndicates can gain advertising share and competitive benefits (Kitsios & Kamarioton, 2021).

2.3 Learning Quality (LQ)

The conception of learning quality is biased and carries diverse meanings for various participants. Previous study (Lutfi et al., 2022) recommends that learning quality shows a crucial role in enhancing the use of managers and organizations in performing their job accountabilities. Furthermore, the quality of knowledge must not only address but also justify both explicit and implicit desires, in addition to the lack of defects (Dewi et al., 2021). Due to the current emergency conditions, several countries have forsaken conventional approaches to increase the quality of education (Mandasari, 2020). During periods of

crisis, tragedy, and violence, workers are entitled to pursue their education without interruption (Daradkeh, 2021). This presupposes that there is uniform treatment of all employees and superiors, as well as equal views for education (Untari & Satria, 2021). However, it is important to note that, mostly in developing countries, this is not often the position (Nasution et al., 2020). All the same, following the comforting control of the Coronavirus pandemic, the role of digital direction will undergo a significant renovation, for the most part in underdeveloped countries (Putra et al., 2022). To add to their business setups and decision-making experiences, employees and managers must procure new skills and knowledge (Pujiati et al., 2021).

2.4 Digital Leadership Sustainability and Business Performance

The minority of firms at this time view the beginning of the new economy as both a warning and a chance. Due to lacking resources such as computers and skilled workers crossing the digital leadership sustainability was exciting for several organizations (Karakose et al., 2021). On the other hand, the system of government has noticed the appearance of the new economy as a prospect to improve their inside effects and acquire a competitive advantage (Zulu & Khosrowshahi, 2021). Establishments seeking permanence and continuing even situations in opposite of challengers make out the effort and essential of keeping various know-hows when it comes to reaching customers and providing distinctive and innovative products ahead of competitors at a reasonable price (Chatterjee et al., 2023). In response to the going up costs of commercial, operational, and transportation expenses, as well as the growing reliance on technological systems to button big data and customer demands, most businesses have revolved to enhancing their technological capabilities as a means of achieving optimal business performance (McCarthy et al., 2022). In addition, several studies have been done on the evaluation of digital leadership sustainability managers, as well as the efficacy of distant learning systems (Syaifullah et al., 2021). The effects of digital technology such as lecture records, demand implements, lecture hall response classifications, and virtual certainty on active learning, repetition, and opinion in the classroom have been investigated by (Kamal et al., 2023). When measuring the attainment of information system acceptance, researchers assess the value, system consumption, real profits, and learners' views (Stojanovic et al., 2020). Based on previous studies and analyses, the following research suggestions are:

H_1: *The impact of business intelligence systems has a strong relationship on achieving digital leadership sustainability*.

H_2: *The impact of business intelligence systems has a strong relationship on Business performance.*

H_3: *The impact of artificial intelligence has a strong relationship on achieving digital leadership sustainability.*

H_4: *The impact of artificial intelligence has a strong relationship on Business performance.*

H_5: *The impact of learning quality has a strong relationship on digital leadership sustainability.*

H_6: *The impact of learning quality has a strong relationship on achieving Business performance.*

H_7: *The improving of digital leadership sustainability has a strong relationship on enhancing Business performance.*

3. Research model

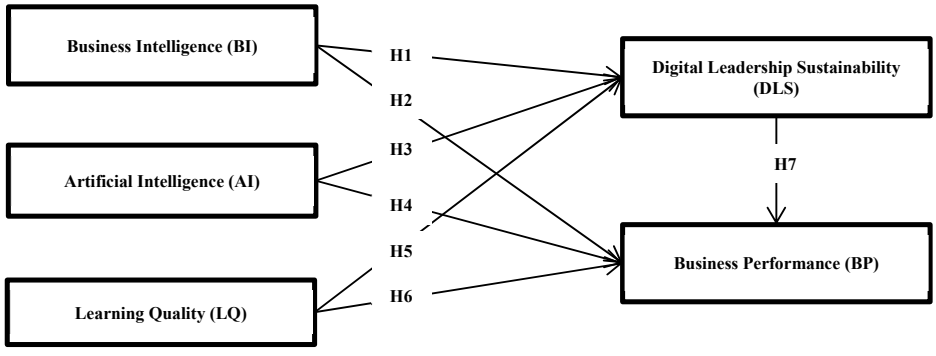

Fig. 1. Research Model

4. Research methodology

The research study was created using Google Drive and disseminated to partakers. The survey utilized a five-point Likert scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree) to quantitatively consider the major constructs of the study. The assistant used the Partial Least Squares (PLS) system to statistically consider and value the research ideas. Upon guiding authentication and filtration of all acquired data, a total of 281 respondents' responses were reasoned meet for exploitation in the inquiry process and for the going-over of the study hypotheses. Ultimately, the total number of sections developed was tenfold greater than the number of predictors (Hair et al., 2011).

5. Research results

Table 1 shows the outcomes of a reliability investigation conducted using composite reliability values, average variable retrieval, and a Cronbach alpha equal or higher than 0.50. Additionally, the table provides the research theoretical framework, which is founded on the evaluation, exhibits a high side by side of resilience, making it appropriate for further analysis of the research hypotheses.

Table 1
Reliability and validity test results

Code	Variable	Factor's Loading	VIF
Business Intelligence System (BIS)	(Cronbach's Alpha: 0.562, CR: 0.541, AVE: 0.652		
BIS1	User Engagement	0.551	1.152
BIS2	Research and Impressions	0.574	1.175
BIS3	Sentiment Analysis	0.561	1.570
Artificial Intelligence (AI)	(Cronbach's Alpha: 0.571, CR: 0.554, AVE: 0.522		
AI1	Volume	0.572	1.562
AI2	Velocity	0.583	1.578
AI3	Variety	0.560	1.892
Learning Quality (LQ)	(Cronbach's Alpha: 0.481, CR: 0.537, AVE: 0.563		
LQ1	Patterns and Trends	0.531	1.523
LQ2	Algorithms	0.521	1.713
LQ3	Accuracy and Evaluation Metrics	0.488	1.712
Digital Leadership Sustainability (DLS)	(Cronbach's Alpha: 0.472, CR: 0.534, AVE: 0.534		
DLS1	Strategic Planning	0.436	1.336
DLS2	Resource Allocation	0.493	1.421
DLS3	Organizational Performance	0.487	1.158
Business Performance (BP)	(Cronbach's Alpha: 0.483, CR: 0.452, AVE: 0.610		
BP1	Employee Motivation	0.416	1.744
BP2	Communication Patterns	0.492	1.742
BP3	Organizational Culture	0.543	1.752

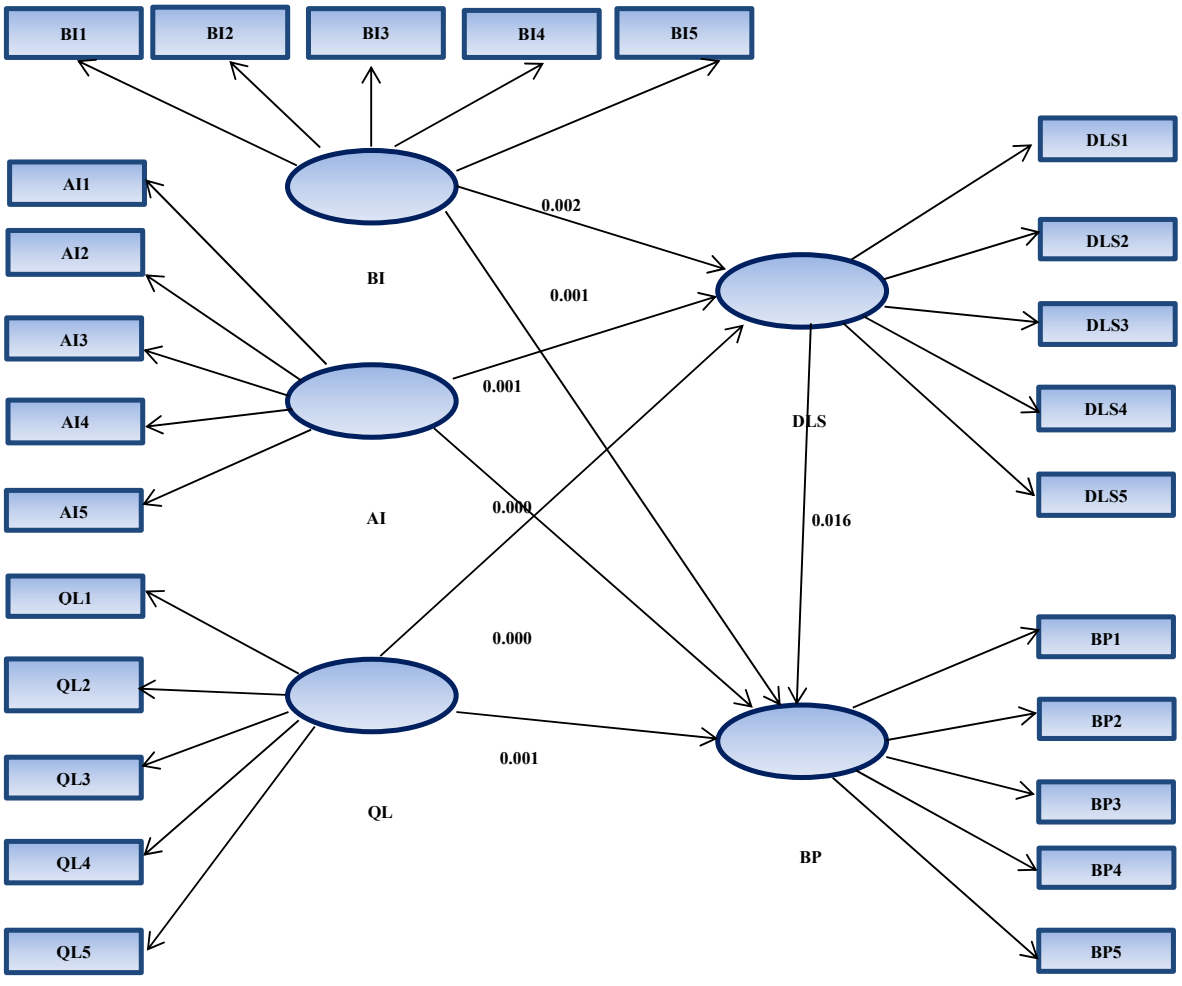

Fig. 2. Analysis Results Paths in Smart-PLS

All the search hypotheses have been completely accepted, and their immediate impacts and interrelationships are displayed in Table 2 as follows.

Table 2
The results of the testing the hypotheses

	Research hypotheses test	P-value	Results
H_1	Business Intelligence (BI) →Digital Leadership Sustainability (DLS)	0.002	Supported
H_2	Business Intelligence (BI) →Business Performance (BP)	0.001	Supported
H_3	Artificial Intelligence (AI) → Digital Leadership Sustainability (DLS)	0.001	Supported
H_4	Artificial Intelligence (AI) → Business Intelligence (BI)	0.000	Supported
H_5	Learning Quality (LQ) → Digital Leadership Sustainability (DLS)	0.000	Supported
H_6	Learning Quality (LQ) → Business Intelligence (BI)	0.001	Supported
H_7	Digital Leadership Sustainability (DLS) → Business Intelligence (BI)	0.016	Supported

6. Conclusion and Implementation

The outcomes have indicated that BIS, AI, LQ, unique usage indexing, source correctness, and deep learning all exert beneficial direct effects on achieving digital leadership sustainability and company performance. The discoveries align closely with the results informed in other studies (Olszak, 2022; Olan et al., 2022; Putra et al., 2022; Borah et al., 2022; Kamal et al., 2023). This learning have also exhibited the enhancements that AI brings to corporate outcomes, including better truthfulness in data, improved reflectivity into data, innovative problem-solving competencies, and accelerated education from data. This finding aligns with the results of prior research. Research has shown that corporate intelligence, covering activities such as data warehousing, data mining, business process management (BPM), and cooperation brainpower, directly and positively controls business act. This outcome supports the findings of prior readings. Finally, this study ends the gap from those of later readings that found no reminder between sustainable digital leadership and business act. To review, this study recommends organizations to arrange the utilization of Business Information Systems (BIS) and Artificial Intelligence (AI) by aiding decision-makers. This is required to stay in one of rapid change and competition, expand a competitive advantage, attain new knowledge, develop decision-making methods, and progress customer fulfilment.

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