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EDITOR'S NOTE **VOL 13. NO. 3 (2023)**

Strategic Synergies: Enhancing Organizational Resilience and Sustainability through Competitive Intelligence and AI

This issue includes articles on the integrative field of competitive intelligence for organizational learning and sustainability, drawing on the foundations of different business contexts. These studies examine the mechanisms by which these elements interact to promote resilience and adaptability, enriching understanding of their role in strategic sustainability.

Competitive intelligence serves as a critical strategic lever that enables organizations to disrupt market dynamics and competitor behavior. By collecting, analyzing and interpreting relevant data, companies can anticipate market changes and strategically position themselves, emphasizing the role of AI in maintaining competitive advantage. At the same time, organizational learning is identified as a cornerstone that promotes adaptability and innovation. Innovation is driving much intelligence activity, in particular research and development (R&D) and new product development decisions (Calof, J. et al., 2018). This continuous learning process not only improves competencies, but also embeds a culture of innovation, positioning learning organizations to better navigate the uncertainties of the global market and take advantage of new growth opportunities.

Sustainability is closely related to organizational resilience and reflects the ability to withstand, adapt and recover from disruptions. This resilience mediates the relationship between CI, learning and sustainability, showing how knowledge and intelligence contribute to adaptive capacity. In addition to environmental considerations, sustainability includes economic and social dimensions that are essential to the long-term viability of an organization.

The topics of strategic forecasting and environmental scanning further emphasize the importance of preparedness and proactive management. This would make implications for managers who want to compare their own sources of information and improve routines for information gathering (Søilen, K.S., 2019). Such practice allows for the prediction of future scenarios and the assessment of their potential impact, emphasizing the critical nature of forecasting in strategic planning. The rapid evolution of the business environment reinforces the need for anticipatory strategies to mitigate future challenges.

Furthermore, the integration of artificial intelligence into organizational strategies marks a transformative shift towards achieving competitive advantage and sustainability. AI's capabilities to process data and generate insights are improving decision-making, operational efficiency and innovation, signaling the synergistic augmentation of intelligences to achieve superior strategic outcomes.

I would like to express my gratitude to all contributors to this issue.

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On behalf of the Editorial Board,
Sincerely Yours,

Prof. Dr. Andrejs Cekuls
University of Latvia, Latvia

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Bigdata-based university reputation measurement. Towards conceptualizing AI-based university reputation score (URS)

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ABSTRACT The competition inside higher education institutions, namely universities, is tightening, putting emphasize on competitive intelligence (CI) function. At the same time, communication has shifted to digital channels, this trend was largely influenced by Corona virus pandemic. This presents a challenge for university reputation measurement and ranking, while the electronic word to mouth (E-wom) is more challenging to measure, control or influence than the issues measured in traditional university rankings. While traditional metrics are based on measuring academic reputation via surveys and gathering data from research organisations, this paper presents a way to include AI, namely chatGPT and big-data based media-analytics with social media sentiment to aid analysing the reputation of a University. Results based on Finnish universities indicate, that differences between media visibility and sentiment exist, and can be to some extent utilized in rating universities in local level and also generalize to global level, finally targeting to URS (University reputation score) -index. Due to complexity of measuring the reputation of the university strictly via AI and automated opinion mining, several limitations exist. The context of Finnish universities were chosen in order to limit the scope of the analysis.

KEYWORDS: automated university reputation measurement, opinion mining, generative AI

1. INTRODUCTION

This paper aims to explore the possibilities of integrating media monitoring, with digital algorithm based tools to university reputation measurement, belonging to a field of competitive intelligence, helping in rating universities, and also marketing and branding function with analytic tool development. This research analyzes a large number of both editorial material and also web discussions on the Social Media (SoMe) from that point of view.

The need for measuring University reputation has further increased due to coronavirus pandemic, transferring millions of people to online work and education, while increasing electronic word-to-mouth communication eWom (Rani & Shivaprasad, 2021). So this paper is aimed to fill an existing research gap related to integrating media monitoring to detect and measure University reputation in real-time with a comparison to other universities (Garcia-Alsina et al, 2016), helping in positioning universities against their competitors. Managerial research-gap in this case is mainly related to benefitting from measurement and to plan actions.

At the same time, to fill this research gap, advanced measurement can be utilized, based on BigData. Societies are expecting a lot of recent trends in technology developments, such as generative AI, an increase in digital data, supported by more advanced analytics often known as

artificial intelligence or AI, towards predictive and then prescriptive analytics, where analytical models specify optimal future behaviors and actions (Cearley *et al*, 2016).

The theoretical foundation for this paper provides an overview of the key literature-based perspectives applicable to the research focus, including Social Media Monitoring(SMM) with opinion mining(M-Brain, 2015), combined with generative AI. Theoretical concepts are defined in the literature chapter.

The main scope of this paper is to develop and utilize the latest technologies in continuous University reputation measurement namely, media monitoring with opinion mining enhanced with machine learning, combined with generative AI or alternatively human-based research phase to discover the implications to managerial level in universities.

Main RQ is formulated as. ***How to integrate SMM and generative AI to 24/7 reputation measurement? What are the managerial and theoretical implications? (See Figure 1)***

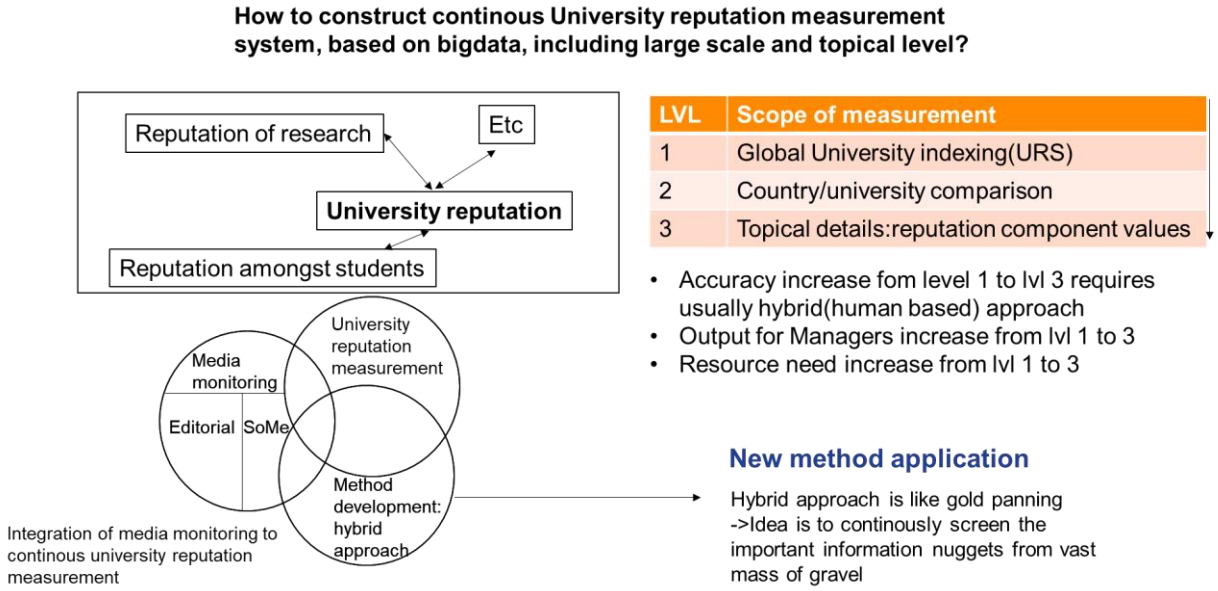

Figure 1. Research basis

Figure 1 presents the main research problem in this paper, which is formulated as: how can you measure reputation of a university, including eWOM and stakeholder's view of a university's reputation while comparing the results to other universities, and get also the reputation details automatically in real time?

In a hybrid approach, suggested by Nuortimo 2021, the final stage after large quantity data analysis is manually made classification. However, generative AI may prove beneficial in this context, by providing indicative university reputation components mined from its large training data set. In this paper, the generative AI was tested as the last stage in the hybrid approach to get an indication, of whether it can retrieve university reputation components, and in general, how reliable are the results.

The selected analysis group includes Finnish QS-indexed universities. The final aim is to create an index for University reputation measurement, URS. In this paper, the basis for the index, University Visibility score(UBV) and reputation components via generative AI, are explored. Results are left indicative.

This paper is organized as follows: First, literature and traditional university indexes are reviewed, namely QS-index, to

find out what the traditional metrics are measuring and how they are formed. Then the large media dataset is explored to gain insights into media-visibility of Finnish universities. Next, an early proposal of UBV-score(University Brand Visibility) is formulated, while presenting the further findings, opportunities and problematics that occurred via the data analytics. Finally, the paper is concluded.

Literature: University reputation and its measurement in the digital age

To highlight the differences between companies, in the modern business landscape, corporate reputation plays a critical role in shaping stakeholder perceptions and influencing business outcomes. The formation, management, and measurement of corporate reputation involves a complex interplay between online and offline factors (Mandelli & Cantoni, 2010). Companies must actively shape their corporate identity, manage stakeholder experiences, and effectively communicate their strategic choices and values (Jones et al, 2009). In the digital age, online environments introduce new challenges, as stakeholders rely on various information sources and engage in online discussions that significantly impact corporate reputation. To thrive in this dynamic landscape, businesses need to embrace proactive reputation management strategies, monitor online channels, and adapt swiftly to changing stakeholder perceptions.

By understanding the multifaceted nature of reputation formation and leveraging both offline and online channels, companies can build and maintain a strong and resilient corporate reputation. Corporate reputation has been studied to be one essential intangible assets of a company, being increasingly influenced by information available in the online environment (Floreddu *et al*, 2014). Furthermore, the reputation measurement side gathers information about online corporate reputation, meaning the representation of multiple stakeholder's perceptions of a company derived from online data. Social and online media monitoring tools (M-brain, 2015) are developed to gather company, in this case, university-related information from online data, and hence, can be viewed as an opportunity to monitor online university reputation in real-time.

Generally, it is agreed, that reputation is a perceptual phenomenon –emerging from observers 'collective judgments about an organization based on the assessment of the organization's performance over time in essential areas (Barnett *et al*., 2006). Research has shown that reputation is also contingency-based, an organization's reputation may vary across stakeholder groups depending on the degree to which each group recognizes that the organization fulfills its expectations (Bromley, 2002). The most famous reputation measurement framework is the RepTrak framework, which has been used to study reputation in companies worldwide and has been adopted by Forbes Magazine in review of the World's Most Respected Companies (Vidaver-Cohen, 2007). Traditional reputation measurement involves surveys, rankings, research metrics, and assessments of graduate outcomes and community perceptions, usually divided to measurable components such as Governance, Financial performance, Innovation, responsibility, leadership, dialogue, workplace and products and services (T-Media, Vidaver-Cohen, 2007).

When moving from companies towards universities, the competitive landscape in the higher education setting has influenced universities into adopt strategies that create competitive advantage, such as building a positive brand image (Panda et al., 2019). University reputation management falls under PR management and is shaped by a multitude of factors, including academic quality, research output, student success, alumni achievements, and institutional culture (Giroux, 2002).

To gain a competitive advantage via better reputation measurement, this paper suggests the measurement of University reputation via utilizing opinion mining,

with a combination of large dataset analytics and generative AI. From automated reputation tracking, suggestions such as Brand Index (Nuortimo, 2019) and Reputation Tracker (Rust, 2021), can be used as a methodological basis of this paper The focus area, the University reputation, has different features than corporate reputation tracking, due to nature of academic institutions. In this setting, the academic contribution of the university is not solely defining the popularity of university, thus different aspects emphasize in popularity amongst different stakeholders and student's.

University reputation is formed through a combination of factors that contribute to stakeholders' perceptions of the institution, such as students accrediting agencies, alumni, donors; parents, other institutions or providers, vendors and suppliers, employers, taxpayers, non-government organizations and government (Marshall & Marshall, 2018)

The pivotal role of students' value co-creation behavior in creating and sustaining university reputation is emphasized (Foroudi *et al*., 2019). University brand (UniBrand) is the most recent concept, however, its theoretical modeling is still partly inadequate, while student satisfaction and trust were demonstrated to impact the relationship between perceived service quality, brand performance, brand image and behavioral intention of education (Sultan & Wong, 2019).

The recent COVID-19 pandemic has shifted universities fast to online learning, which has increased the student e-WOM(electronic word-to-mouth communication) which quality will influence universities' image (Shehzadi *et al*., 2020).On the other hand, the image and reputation management of a university is a complex issue, the way stakeholders perceive universities is not always in line with the image the latter wish to project (Lafuente-Ruiz-de-Sabando *et al*, 2018).

In this setting, A media analysis-based reputation index could provide a practical and dynamic approach to understanding and managing university's reputation. It considers real-time media coverage, sentiment analysis, and visibility metrics, offering valuable insights for reputation management strategies. While it differs from traditional university rankings, it provides a targeted and data-driven assessment of reputation that can complement and enhance existing ranking systems.

As moving to the data-analysis stage, in Finland, the goals set for the performance of a university are guided by Finnish law from universities (Yliopistolaki, 2021), while the mission of the university is set to promote research and scientific education at its highest level, while implementing high level of ethics and good scientific practices. The law itself does not give any performance metrics for universities, however, the university would need a measurement system to improve its performance and competitiveness.

Currently, universities are rated based mostly on manually created ratings/rankings, such as the QS-index (QS, 2021). Universities actively manage their reputation through social media, via marketing communications, but also engage its stakeholders via strategic communication. (Farinloye, *et al*, 2020) and crisis management (Olsson, 2014). University rankings, based on reputation indicators and other criteria, provide a comparative assessment of institutions and play a significant role in shaping institutional reputations within the higher education landscape (QS index, 2021). Different variables associated with an academic reputation, such as research experience and teaching quality and their effect on academic reputation, have been studied by Escandon-Barbosa *et al*, 2023.

University Reputation Management

Universities actively manage their reputation through various strategies and initiatives, such as strategic communication (Holtzhausen & Zerfass, 2014). Universities communicate their mission, values, achievements, and academic offerings through targeted

marketing and public relations efforts (Bamberger, *et al*, 2020). This includes highlighting faculty expertise, research breakthroughs, student success stories, and community engagement. Universities engage with students, faculty, staff, alumni, industry partners, and the broader community to build strong relationships. Meaningful engagement involves effective communication, collaboration, and fostering a positive campus culture(Fitzgerald *et al*, 2020). Universities proactively address and manage potential crises or negative incidents that could impact their reputation, while transparent and timely communication, proactive measures, and effective resolution of issues are essential in maintaining trust and credibility (Toklucu *et al*, 2022). Universities also focus on continuous improvement of academic programs, faculty development, and research excellence. Accreditation processes and external quality assessments help ensure high standards and build reputation (Pham, 2018).

University Reputation Measurement

Measuring university reputation involves both qualitative and quantitative methods. Reputation surveys, conducted among academics, employers, and industry professionals, can gather perceptions of universities' reputations(T-media. 2021). These surveys often assess aspects such as academic quality, research output, and alumni achievements. Prominent university rankings, such as the QS World University Rankings (QS, 2021), Times Higher Education World University Rankings, and Academic Ranking of World Universities (ARWU) (Mussard & James, 2018) incorporate reputation indicators. Research Bibliometric indicators (Durieux & Gevenois 2010) such as citation counts and research impact measures, assess the scholarly output and influence of a university's research. These metrics contribute to reputation measurements, particularly in the field of research-intensive institutions. Tracking the success of graduates (Scott & Wilson, 2002) in terms of employment rates, career advancement, and contributions to society provides insights into the reputation of universities. Alumni surveys and career outcome data (Volkwein, 2010) help gauge the impact of a university's education on students' professional lives.

Monitoring public sentiment, media coverage, and social media discussions surrounding a university can offer insights into its reputation (He *et al*, 2013). Online sentiment analysis and media monitoring tools assist in understanding public perception and identifying potential reputation risks.

Theoretical basis

The development and application of a university reputation index draw upon several theories and concepts related to reputation and stakeholder perception. Some relevant theories related to university reputation include stakeholder theory (Freeman *et al*, 2010), which implies that universities, have stakeholders with diverse interests and expectations, such as students, faculty, staff, alumni, employers, and the broader community.

Social identity theory emphasizes the role of identity and group affiliation in shaping individual behavior and perceptions (Ashforth., & Mael, 1989). Stakeholders may form perceptions of a university based on their social identity and the values and characteristics associated with the institution (Phillips, 2011)

The URS index would take into account how media coverage and sentiment analysis contribute to the construction of a university's social identity and reputation.

University rankings and reputation

University rankings serve as a widely recognized measure of institutional reputation. These rankings assess various aspects, including academic reputation, faculty qualifications, research output, student-to-faculty ratio, international diversity, and employer reputation. Prominent university rankings utilize a combination of quantitative indicators, surveys, and reputation assessments to

determine an institution's overall standing(QS, 20201).

It is important to note that university rankings are not without limitations (Mussard & James, 2018). They often rely on subjective assessments, the inclusion of specific indicators may favor certain types of institutions, and their methodologies may evolve over time. Nonetheless, university rankings seem to continue to be influential in shaping public perception and informing stakeholders' choices.

There exist several international university rankings aiming to classify universities based on different metrics, such as the QS-index (Qs-index, 2020), consisting of six metrics. Universities included in these lists can utilize the information in their marketing and branding. The QS index is based on the following metrics, which are Academic Reputation (-40% influence) based on a survey, Employer Reputation-10% (survey), Faculty/Student Ratio-20% numerical measurement/comparison, Citations per faculty, International Faculty Ratio and International Student Ratio (Qs-methodology, 2021).

This paper aims to introduce a new component to ranking via measurement opinion mined university sentiment and visibility both in editorial media and in SoMe, which indicates also the eVOM component of the University's brand reputation. Table 1 presents the QS-rankings of selected universities

Table 1. The status of different universities in QS-rankings (QS-rankings, 2020)

University Name	Country	Rating in QS rankings/ Overall Score 2020
Massachusetts Institute of Technology (MIT)	USA	1
Stanford University	USA	2
Harvard University	USA	3
University of Oxford	USA	4
California Institute of Technology (Caltech)	USA	5
ETH Zurich (Swiss Federal Institute of Technology)	Switzerland	6
University of Cambridge	UK	7
UCL (University College London)	UK	8
Imperial College London	UK	9
University of Chicago	UK	10
Helsingin yliopisto (University of Helsinki)	Finland	107
Aalto yliopisto (Aalto University)	Finland	134
(Turun yliopisto) University of Turku	Finland	287
Oulun yliopisto (University of Oulu)	Finland	374
Tampereen yliopisto	Finland	395

QS-index development in Finnish universities in general has seen a decline from 2015.

To further investigate the possibility of forming a University Reputation Score, the research approach presented in this paper consists of starting the research via media monitoring black box software-based analysis from a large dataset, including opinion mining analysis via Five Finnish Universities, presented as table 2, complementing it with generative Ai in the later stage.

Table 2. Selected Universities

University/search words	Time /months	Total hits
Turku university	12	37847
Aalto University	12	7433
Helsinki University	12	51532
Tampere University	12	36247
Oulu University	12	24724

From the selected Universities, large-scale analysis highlights the differences in University's media attention in order to discover University's reputation-related details and guide managerial actions. It is noted, that this dataset will contain multiple errors both from search words and also from sentiment classification. In general, Aalto University seemingly had the largest amount of error hits.

Methods: opinion mining via media analytics and generative AI

This paper utilizes opinion mining from large dataset as the first step, with commercial black box media monitoring software M-Adaptive (Nuortimo, 2021). (Figure 2).

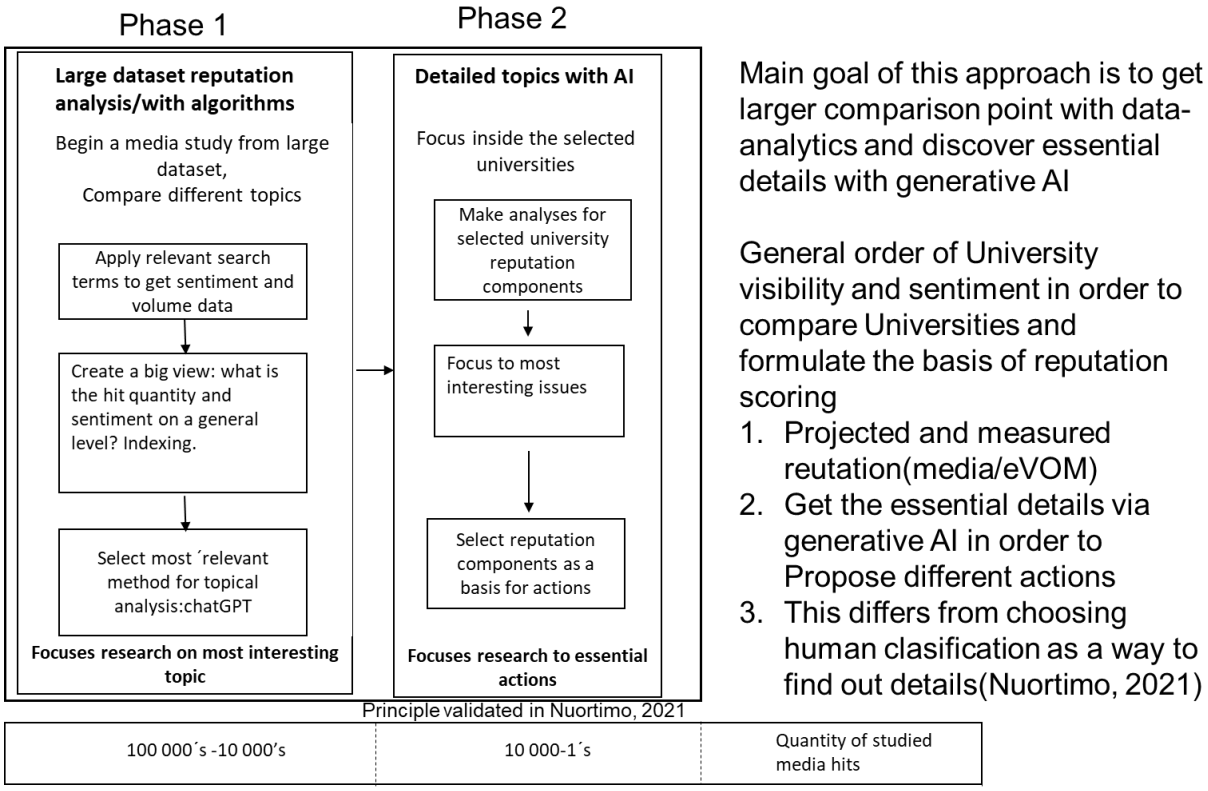

Figure 2. Used methodological approach in the paper

The used software (M-Brain, 2015) has a capability to utilize a large dataset (236 regions, 71 languages in 3 million social media platforms and 100,000 news outlets) both from SoMe sources and editorial media. The software includes different lexicons for several languages, from which the algorithm defines first local sentiments of a document and then compares those to the search terms, while the result is presented for the whole document (Neutral, negative, positive, mixed or unknown). The accuracy of sentiment

classification is closer to 80%, while topical match would require detailed content analysis. After the opinion mining, the university sentiments are grouped and compared with implications for further research stages.

Opinion mining

The use of sentiment analysis, also referred as opinion mining, is growing since the number of views being shared on SoMe sites is increasing, via the categorization of emotions into three, positive, negative and neutral (Liu, 2022) Sentiment analysis has been used for example in evaluating qualitative students' responses (Dake & Gyimah, 2023). The essential component of this paper Opinion mining are natural language processing (NLP) and machine learning (ML) on social media via AI application (Astarkie *et al*, 2023).

chatGPT

The current artificial intelligence tools, such as ChatGPT (OpenAI, 2023) can be used as an indicative tools for a) providing evidence of the logic behind the proposed theoretical logic, b) providing an indication of increased communication and its relation to action, and c) setting a starting point for the deeper analysis. An artificial intelligence chatbot developed by OpenAI, namely ChatGPT (OpenAI, 2023) has emerged as a new AI based tool and is applied in this paper to assess its applicability for analysing the University reputation components, thus supplementing the opinion mining data-analysis as a last stage of hybrid approach (Nuortimo 2021).

ChatGPTs has a potential in data analysis (Biswass, 2023), while it has not been found to be capable of statistical analyses, and it advises about its limitations only if expressively requested (Cascella *et al*., 2023). , it has seen to have language processing capability (Qin *et al*., 2023; Kocoń *et al*., 2023) which makes it a potential candidate to be tested for the purpose of analysing university reputation. In this paper, ChatGPT is used to aid in analyzing a large quantity of University data while formulating a conclusion. AI can also be used to generate entire pieces of academic paper (Thorp, 2023), however, this paper points out that it can be used as data-analysis research method as well. The goal is to gain experimental results and find possibilities to take advantage of the opportunities (van Dis et al., 2023). The ability to produce meaningful insights and sentiment from large volumes of text (Bouschery et al., 2023) seems to exist. ChatGPT may still have its inadequacies in reasoning (Borji, 2023). Haleem et al. (2023) have discovered use of ChatGPT for sentiment analysis, while only one case of this has been found (Haque *et al*., 2022). Finnish university reputation analysis

For the possibility to discover how well universities are present in both editorial and social media during one year, analysis based on 150 000 media hits was committed with 2020 years data, in order to be comparable to chatgpt data, ending in Autumn 2021. The analysis included main Finnish QS-ranked universities from Oulu, Turku, Helsinki, Aalto University and Tampere.

One year 2020 unfiltered/cleaned media visibility for selected universities is presented at the Figure 3.

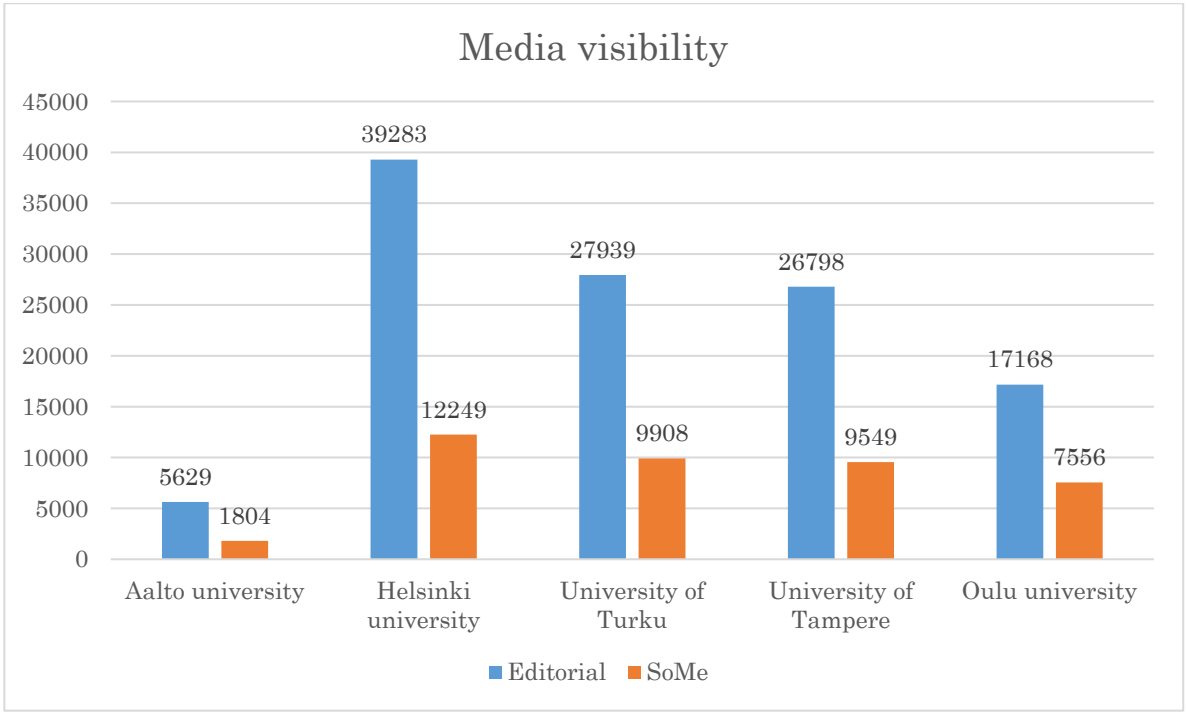

Figure 3. One year university media sentiment

From the large dataset analysis, it is visible that generally editorial media received larger amount of hits compared to social media, which is an indication of non-popularity. This would be in-line with general assumption concerning university's reputation. The quantity of hits is generally in line with size and position of QS ranking of an university, exept for Aalto university, from which the main conclusion is, that dataseries can contain more error than the others.

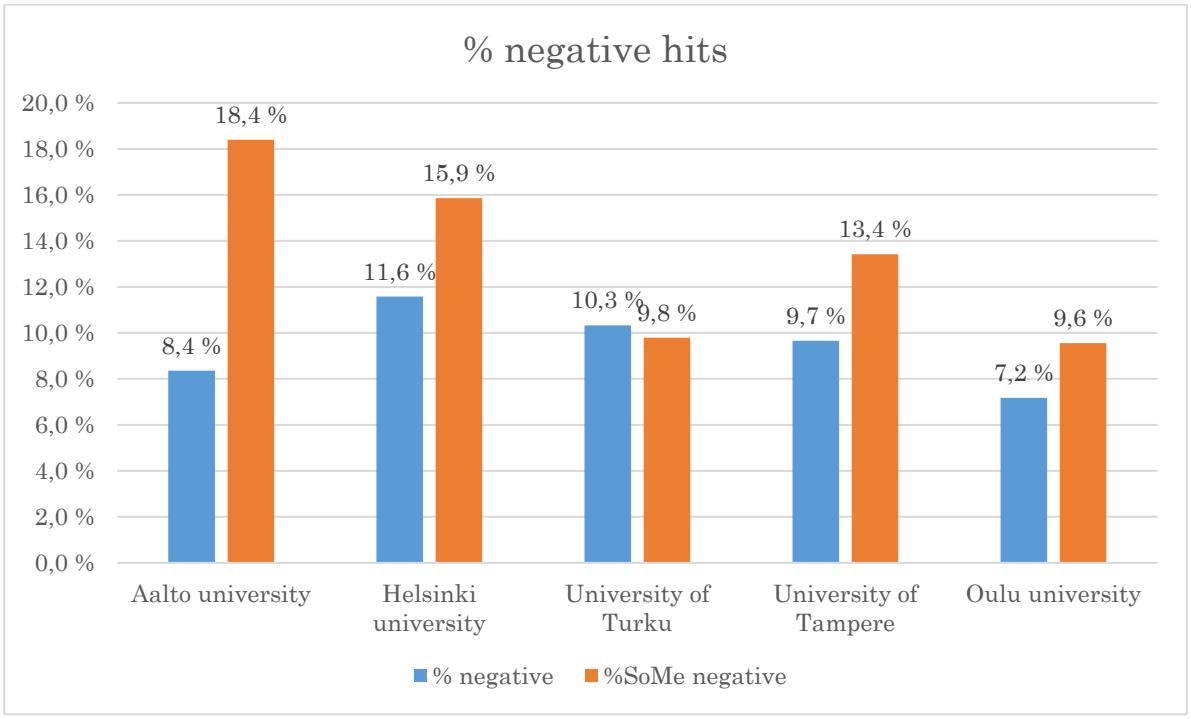

Figure 4. Negative sentiment classification

From the figure 4 it is visible, that the editorial negative hits were concentrated mainly to larger universities with higher QS-scores, while negative SoMe sentiment had more diversity. Oulu and Turku universities had lowest negative scores, Oulu had also lowest editorial negative sentiment (%).
The main insight from preliminary data-analysis was, that media visibility and sentiment based analysis could bring added value both to ranking a university, and also providing insight to different functions, such and marketing and planning.

Chatgpt analysis
In order to get automated view on reputation components, chatGPT was utilized. The other alternative would be to manually classify media hits, which would have provided more details. The results are presented as Table 3.

Table 3. University reputation components from chatGPT

University	Reputation components
University of Oulu	Academic Excellence, Research Focus, Technology and Engineering, Entrepreneurship and Innovation: International Environment Facilities and Resources:
University of Turku	Academic Excellence, Research Output and Impact, Interdisciplinary Approach, Internationalization and Global Outlook, Student Experience and Success, Community Engagement and Impact:
University of Helsinki	Academic Excellence, Research Output, Interdisciplinary Approach, Global Recognition, Strong Faculty, Student Success, Community Engagement, Cultural Heritage, Commitment to Sustainability
Aalto University	Strong Focus on Innovation, Academic Excellence, Research Impact, Interdisciplinary Collaboration, Collaboration with Industry, Design and Art Focus, International Outlook, Student Experience, Sustainability Commitment, Community Engagement
Tampere university	Academic Excellence, Research Impact, Interdisciplinary research, social science focus, communication and engagement, Internationalization, Student support and Experience, Language and communication studies, Collaboration with industry, Commitment to sustainability

The reputation components chatGPT provided from universities are quite general, academic excellence was present in all of the universities. Some focus areas were spotted, such as communication studies for Tampere, design focus for Aalto, and Technology and engineering for Oulu. University of Helsinki was the only one associated with global recognition.

Generally it can be observed, that chatGPT answers are in-line with literature, and can be used as a complimentary feature for opinion mining. However, to differentiate between universities and form competitive advantage, more details would be required. This would implicate either detailed content analysis from media feed, or traditional reputation measurement via questionnaires and interviews. While chatGPT produced results in-line with common understanding, there were usually on few different components/university, not so much suitable for building branding or competitive intelligence strategy. The information from reputation components can be used in principle to quide actions in marketing, communications, competitive intelligence and strategic planning, if there would be more differentiation between the universities.

Towards URS, University reputation score

To follow the reasoning by Nuortimo & Härkönen, 2019 from brand indexing, the brand visibility index for finnish universities

could be generated with similar logic. This could a starting point for the more general URS index, in order to score universities automatically in real time.

Preliminary UBV scores from Finnish universities are presented as Figure 5:

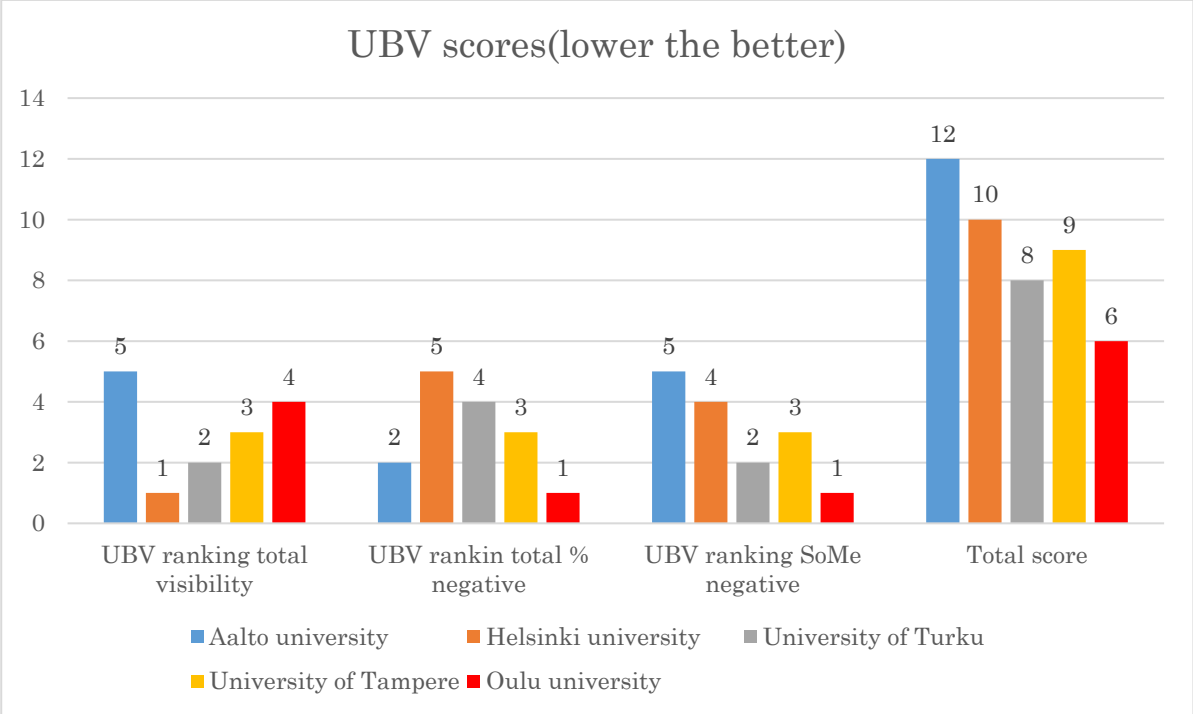

Figure 5. Preliminary UBV-scores

Preliminary UBV(University brand visibility, Based on a Brand index), which could be used as basis for final URS-index, are interesting. Total media visibility would not play such an essential part of the index, while other components, such as total negative sentiment and SoMe negative sentiment play a more role. The total score, measured with lower the better scale, is almost opposite to QS-ranking, while Oulu, Turku and Tampere would take the key positions due to generally more positive sentiment.

So the challenge after data-analysis and preliminary UBV indexing remains, in addition to general indexing challenge, can we establish further analysis from content automatically via generative AI? This should be a crucial step for more accurate measurement needed as a basis for the final URS. Can we establish measurable component for a university reputation? Which component in media attention measures reputation? Can we establish a measurable component for e-wom-related to university? Can we establish a component for research visibility? In this paper, chatGPT is used as a complimentary method for gaining insights from university's reputation, however, clearly with limitations.

The discussion chapter tackles these questions, while presenting solutions based on preliminary analytics.

Discussion

As basis from literature and data-analysis, the main RQ on this paper can be answered as:The formulation of a university reputation score (URS) based on media analysis and opinion mining can provide insights into the perception and visibility of a university in the public sphere. This type of index combines quantitative metrics, such as the total visibility of the university and the percentage of negative media hits, to assess the overall reputation of the institution. However, reputation components related to each university, relevant for the final URS formulation, are explored to be indicatively obtained via generative AI. It is clear, that in this point, results are not explicit enough to formulate URS.

Comparison to University Rankings

While both media analysis-based reputation indexes and university rankings provide insights into university reputation, they differ in several aspects. Media analysis-based indexes primarily rely on media coverage, online discussions, and sentiment analysis to assess reputation, whereas university rankings often incorporate a broader set of indicators, including academic reputation surveys, faculty qualifications, research output, and student-to-faculty ratios. University rankings typically employ complex methodologies that combine multiple indicators and assign weights to different criteria. Media analysis-based indexes, on the other hand, focus more specifically on media coverage and sentiment analysis, providing a more targeted assessment of reputation based on these factors. University rankings often involve subjective assessments through surveys, which can be influenced by respondent biases and regional preferences. Media analysis-based indexes leverage automated analysis and opinion mining techniques, providing a more objective and data-driven perspective of reputation. Media analysis-based indexes offer real-time insights into reputation, allowing universities to monitor and respond to emerging issues promptly. University rankings, on the other hand, are typically released on an annual or periodic basis and may not capture recent developments or changes in reputation.

So it is clear, that when finally created, automated University Reputation score (URS) would not completely replace University rankings, however, could be used as a complementary tool in University reputation management.

Main findings

This research has an approach for analyzing the reputation of selected Finnish QS-indexed universities from large dataset via commercial software, complemented with generative AI based topical analysis. This approach is based on Nuortimo, 2021, and a multidisciplinary view from digital humanities studies, however, without detailed human made content analysis. The human was replaced by generative AI, namely cahtGPT, in this case. While this type of approach was interesting, it did not bring a 100% applicaple solution.

Suggested approach aims to reveal the university reputation continuously with related details. In first stage, media-analysis including multiple sources, is aimed to find the university media visibility and sentiment, while comparing it to other universities. It is to be noted that during this analysis it was clear, that details such as: why was the university had large visibility or some particular sentiment? How can these issues be turned to supporting marketing messaging? Is the positive/negative media hit measuring university reputation or something else? In what way we would target our marketing efforts? Is the competitive rating provided, reliable?

The details were brought in second stage via chatGPT. After this step, the detailed topical level analysis is possible to be made, namely to devide the university reputation to components, and can then be used to compare the AI based analysis results.. If university wants to be projected a place which produces high quality research papers, then this topic can be scanned from communication eVOM, random discussions in the SoMe.

The main findings include:

1) The large dataset based analysis can reveal differences related to Universities, namely media visibility and sentiment. However, any details are not visible; why the sentiment was negative for some universities. most interesting question would be in this point:why is the sentiment so negative, and what can be done to reveal details. Also what details are interesting, should be systematically defined.
2) In second stage, preliminary UBV rating based on a brand index (Nuortimo *et al.*, 2019) was formulated, with implications that the index is measuring universities differently than the traditional QS-rankings. This could be a value-bringing element.
3) As a suggested final stage, generative AI can provide insight into University reputation details. This stage has the

potential in bringing details needed for managerial actions.
4) The added value from this type of reputation scoring would come from continuous follow up with fast reactions and also from focusing marketing efforts and target marketing messages in order to build and manage University reputation. Comparison to other universities would bring input for MI-function.

Practical/Managerial Implications

The managerial implications of the paper are related to discovering new approaches to university reputation measurement. If the university's management would take the benefit of utilizing automated reputation measurement, this could possibly enhance related marketing management and Competitive Intelligence(CI) potential. Media analysis and opinion mining provide a way to monitor the university's reputation in real-time. By analyzing media coverage and online discussions, universities can identify emerging reputation risks, potential issues, and negative sentiments, allowing them to respond promptly and proactively manage their reputation. The index can guide universities in developing targeted reputation management strategies. For instance, by assessing the percentage of negative media hits, universities can identify areas of concern and prioritize actions to mitigate negative perceptions. It helps in identifying reputation gaps and areas that require improvement. The index also enables universities to benchmark their reputation against competitors or peer institutions, acting a bit similar way in this regard as the university rankings. By comparing the reputation scores with those of other universities, institutions can gain insights into their relative strengths and weaknesses, informing strategic decisions and resource allocation, and CI-function.

Theoretical Implications

Theoretical research method implications concern mainly the utilization of different data-analysis methods in researching the formula for university reputation score(URS). When general specifications for university reputation score are concerned, those would need to be holistic while including details, and include both academic contribution and stakeholder view. This paper is not yet capable of formulating the final URS index. The media analysis-based reputation index recognizes that reputation is multidimensional and shaped by various factors, while reputation is not solely based on objective measures but also influenced by subjective interpretations and media portrayals. This aligns with the theoretical understanding that reputation is socially constructed and encompasses different stakeholder perspectives. The index reflects the dynamic nature of reputation by considering real-time media coverage and sentiment analysis. It acknowledges that reputation is not static and can evolve over time based on new information, media narratives, and stakeholder perceptions. This aligns with the understanding that reputation is a dynamic and evolving concept that requires continuous monitoring and management.

Limitations

The Limitations of this paper are related data validity, 100% research data validity is not neither targeted, or achieved (Figure 6).

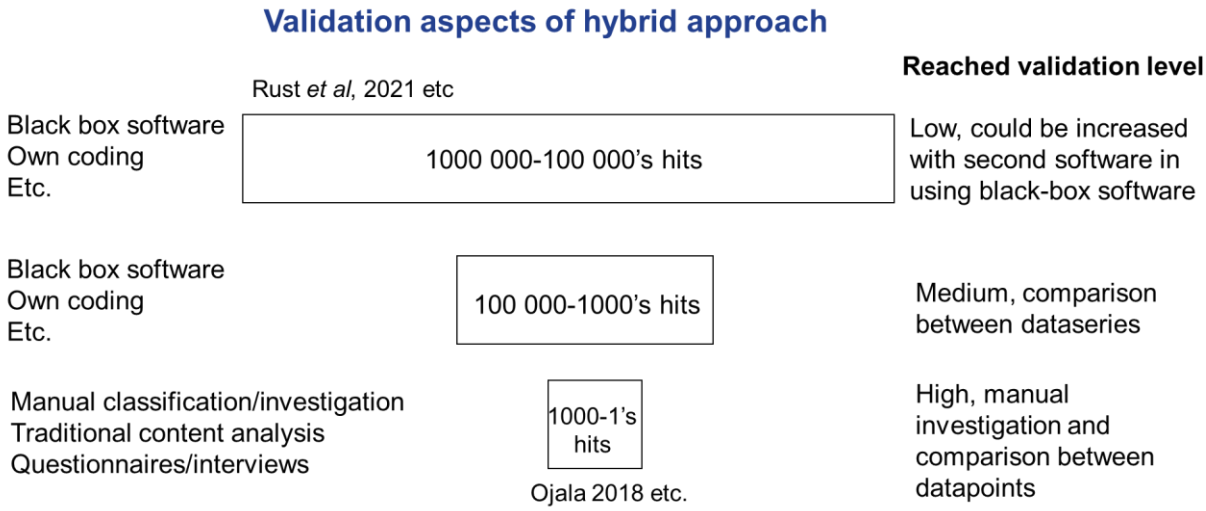

Figure 6. Validation aspect of this paper

From Figure 6, it is visible that larger datasets present challenges for data validity, while the human research is time intensive. Study of Mercedes brand in the internet discussion forum took app. 8 years (Ojala, 2018), while media-analytics can be done in seconds. Second software would have been benefial to be used for better data validity, however, for budgetary reasons it was not available for this study.

University name brings one component of inaccuracy in UBV dataset. Aalto was the most inaccurate one, due to the general meaning of the word in Finnis language (wave).

Datasets both in opinion mining and generative AI are limited to the year 2021, however, presenting a way for URS building.

General chatGPT limitation are considered as (chatGPT, 2023):lack of common sense, it's not able to access the internet, is not able to multitask, has limited knowledge, lacks creativity, cannot provide in-depth information, has difficulty with specialised topic, can provide biased answers, is not able to understand the contex, is not able to express emotion, has issues with complex mathematical problems, needs fine-tuning, has a lot of grammatical errors and typos.

So the limitation of this study leave the research results indicative with increased probability towards possibility of University Reputation Score(URS).

Conclusion

This paper is suggesting that a URS index for rating universities and revealing their competitive position against others is possible to be created, acting as a basis for automated university reputation measurement and competitive university rating. However, this idea is still on a pathway in discovering both methodologies and principles, how this type of index could be created in practice.

University ratings based on UBV, a precursor component for URS, could follow the reasoning from corporate brand visibility index (Nuortimo, 2019), but it is clearly visible, that to discover the differences between targeted image to projected and measured reputation, while with large data set analysis, perceived result are too general to plan further managerial actions.

This analysis was complemented via chatGPT analysis of University's reputation components, giving a summary about the bigdata based reputation. From this stage, managerial implications of detailed actions can be obtained, but on with also on very generic level.

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Analysis of Competitive Intelligence in Retail Management in the Jordanian Market from the Consumer's Perspective

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ABSTRACT This study analyses the competitive intelligence in retail management in the Jordanian market from the consumer's perspective. The study used stratified and random sampling process and collected the data from 334 respondents of the various retail sectors. In addition, this study employed uses the Partial Least Squares Structural Equation Modelling (PLS-SEM) technique. The outcomes disclose several substantial connections. Jordanian sellers' market efficiency is favourably pertaining to expertise of rivals, understanding of consumers, market knowledge, technological expertise, and intelligence of determined alliances. These results emphasise the value of recognizing competitive strategies, customer actions, market trends, tactical alliances, and technological growths for market success. Nevertheless, the research study discovers no significant favourable relationship in between social intelligence and market efficiency in the Jordanian retail industry. This research suggests that while social knowledge is important, its direct impact on immediate market efficiency in this specific atmosphere may be limited. Overall, this research study supplies an useful understanding of the complex relationship between facets of intelligence and market performance in the Jordanian retail market from the consumer's perspective. The effects of these findings for are helpful for retail professionals as they highlight the significance of reviewing competitors, utilizing consumer-oriented methods, integrating modern technologies, and developing

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calculated collaborations to enhance competitors and market performance. This study not only contributes to the scholastic conversation however additionally gives purposeful assistance for retail monitoring techniques in the dynamic and competitive Jordanian market.

KEYWORDS: Competitive Intelligence, Jordanian Retail Management, Market Performance, PLS-SEM

INTRODUCTION

Making decisions is one of the most difficult fundamental tasks in the corporate world. Globalisation, rapid economic development, technological advancements, new legislation, and emerging markets have all had an impact on how businesses make decisions. It includes a thorough data management approach that helps managers make better decisions. BI has emerged as a prominent area within IT, and CI is regarded as a key priority by executives. According to Alfawaire & Atan, (2021), CI is a collection of tools used to enhance decision-making. These tools include data mining, online analytical processing, balanced scorecards, decision support systems, and warehouses. CI solutions help managers learn, govern, and synchronise their organization's operations and processes by providing data for strategic and tactical decision making (Koeseoglu et al. 2021). These days, CI systems are most commonly used by companies that deal with massive amounts of data gathered from a variety of operational and financial sources, like banks and insurance companies. CI is a type of application that can help managers make better decisions by providing them with relevant data. An organization's performance could be enhanced in the long run by making better decisions with the help of CI. Ram and Zhang (2021) states that CI can store many kinds of data and transform it into useful information that the company can use to make smart decisions and boost their production and efficiency. The ability of an organisation to efficiently use the data gathered from their regular business operations can also be seen as CI. Additionally, CI is critical for optimising company effectiveness since it improves decision-making by providing information on new opportunities, risks, and additional business insights. Fast and reliable reporting, better market choice, better client services, more revenues, better knowledge processing, less expense, and faster decision-making are all benefits of CI (Maluleka & Chummun, 2023). Organisational performance is enhanced as a result of better decision-making made possible by the important information offered by CI. Business operations, services, products, innovation, and agility can all benefit from this data, as can decision making. Despite the prevalence of methodical approaches like the CI approach, many businesses still rely on experience and intuition when making decisions (Madureira et al., 2023), particularly in developing nations where users are resistant to technology. Users' comfort with new technology, muddled objectives, insufficient information, ignorance of potential dangers, and insufficient resources are all factors that might influence the so-called "traditional" approach to decision-making, 50% of the CI implementations that try to impact the decision-making process of organisations end up failing because CI is not included in the decision-making process. The aim of this study is to establish the relationship between the different facets of competitive intelligence and market performance in the Jordanian retail sector. Section II: Literature Review provides a detailed assessment of the components of CI and previous research studies. This section also discusses the academic framework of the research. Section III: Method describes the research layout, data collection techniques and analytical approaches used to examine the impact of CI on market performance. Section IV: Independent Variables analyzes the importance and impact of various elements such as innovation, competition, customers, critical partnerships, social elements, and market knowledge on market efficiency. Section V: Dependent Variable focuses on the examination of market efficiency itself,

which is influenced by the independent variables. Section VI presents the results and conclusions, along with an empirical analysis and interpretations based on the information gathered. The limitations of the study are discussed in Section VII: Discussion, along with the implications of the results and key findings for retail managers. The key findings are summarised in Section VIII: Conclusion, which highlights the value of CI and provides directions for future studies.

Overview of Competitive Intelligence and its Components

According to Ain et al. (2019), CI is the keystone of contemporary firm techniques because it makes it possible to collect, examine, and use the important information required to obtain a competitive edge. This critical device is comprised of a variety of parts, each of which uses special insights that are important for making sensible decisions and cultivating lasting development. One of the essential parts of expert system is technological knowledge, which is interested in tracking and comprehending technology growths that have a straight influence on consumer practices and market fads (Ranjan & Foropon, 2021). Business can improve their market position by customising their solutions to fulfill altering consumer assumptions by keeping up to day with technology developments. A full awareness of competitors' tactics, benefits, drawbacks, and market positioning is needed for competitive intelligence. This aspect aids services to identify their rivals' vulnerabilities, recognize the competitive atmosphere, and create approaches to establish themselves in addition to the competition. Comprehending customer preferences, behaviors, and changing demands is the foundation of customer intelligence (Wu et al., 2023). Organizations can develop tailor-maked advertising and marketing approaches and cutting-edge services and products by celebration and analysing consumer data, which supplies them with understandings right into the changing choices and assumptions of their clients. Partnerships and collaborations that influence market dynamics are referred to as calculated partnership knowledge (Al-Okaily et al., 2022). Organizations can broaden into brand-new markets, pool resources, and capitalise on corresponding skills to strengthen their competitive setting by examining and developing calculated partnerships. Understanding social patterns, social shifts, and just how they affect customer practices is the significance of social intelligence. Business can make certain relevance and vibration with target clients by understanding the nuances of social modification and adjusting their techniques accordingly (Atkinsone et al., 2022). Evaluating macroeconomic variables, consumer demographics, market size, industry fads, and market knowledge are all consisted of in the more comprehensive context of market knowledge. Organisations can make critical decisions, respond proactively to market growths, and obtain a thorough understanding of the marketplace environment as a result of this element (Hassani & Mosconi, 2022).

Previous Studies on Competitive Intelligence in Retail Management

Within the context of Knowledge Management, Competitive Intelligence functions as a subset of Business Intelligence. Business intelligence, or strategic intelligence, is another name for it. The literature also uses terms such as Corporate Intelligence, Competitor Analysis, Strategic Planning, and Competitor Intelligence. The goal of competitive intelligence (CI) is not to illegally acquire a competitor's trade secrets or other proprietary information, but rather to gain a better understanding of their organisation, culture, behaviour, strengths, and weaknesses through the systematic and overt collection of a variety of data (Jones et al. 2018). No matter its location, CI's end purpose is the same: to help with company planning by raising awareness of the business environment and, more specifically, the actions of competitors. To be clear, CI is not the same as industrial espionage. When compared to industrial espionage, CI is always carried out in an ethical and lawful manner. It would be counterproductive for a company to conduct its intelligence operations in this space without thinking

about the ethical and legal implications, since doing so would be unethical and could hurt its reputation and ability to compete (Smith & Brown 2019). The idea that 90% of the data required for important decisions is already out there is almost axiomatic in the industry. Intelligence is data that has been processed and can propose courses of action, plans of action, or judgements.21 Beyond the facts, intelligence gives crucial information or insights. There are two subsets of intelligence: data and information. It is easy to jump to the wrong conclusions when you don't have a good reference point. It is easy to misjudge the dynamics or root reasons of the present industry without adequate data. The intelligence loop culminates with assessed data. It is highly improbable that flawless input will be used to generate the intelligence product in reality (Chen et al. 2020). Once the past has happened, it is impossible to foretell what will happen next. Because the correct information wasn't available sooner, the company is now in a position where it can do nothing more than respond to the competitor's move. The specifics, plans, and techniques may or may not be found out; nevertheless, this is far from guaranteed. Rather than focusing on past actions, managers can gain a better understanding of their competitors' future plans with the help of competitive intelligence. At its core, CI is about gaining a better understanding of the market, strengthening internal relationships across departments, gaining assurance when formulating long-term strategies, and outperforming the competition in terms of product quality. In a nutshell, enhanced company performance through enhanced execution (Taylor & Lee 2017). Technology transfer professionals from businesses, universities, and government agencies should be especially interested in CI in the areas of research and development and strategic technology planning. Competitive technology intelligence, which relies heavily on established approaches for technology forecasting, can give the necessary context for understanding technological trends as well as the strengths and weaknesses of competitors. Additional information about the state of technology can be found in new scientometric advancements that depend on database technology. These include things like patent analysis and literature citation analysis (Kim et al. 2019). This data is essential for businesses, academic institutions, and non-profits to use in their technology strategy planning, licencing, and other commercialization endeavours. Every company, for-profit or not-for-profit, feels the effects of societal trends and governmental actions on a daily basis. It may be possible to lessen the negative effect on the company by planning ahead for society's needs, which are expressed in laws and regulations. Opportunities may possibly be uncovered in the future. Already, the level of IT utilisation is a crucial component of the company (Wang & Liu's 2021). During analysis, that field becomes intriguing because a rival may have built a reputation for using its investment in better IT to acquire an edge over the competition. This advantage could manifest as better client acquisition and retention rates, more streamlined internal operations, or a more advanced service offering. To avoid falling behind in this crucial area, it is essential to compare the investments made in each technology initiative.

Theoretical Framework

Understanding the complex connections between these independent variables and their joint impact on market efficiency develops the academic basis for this research. This study means to clarify how CI components add to market performance in the context of Jordanian retail administration by empirically analysing these partnerships. This study uses a methodical framework for doing empirical study and contributes to the existing academic argument within the topic. The research study model portrayed in Number 1 is acquired from the literature gone over above. In addition, the authors who closely addressed these dimensions are referenced below the figure.

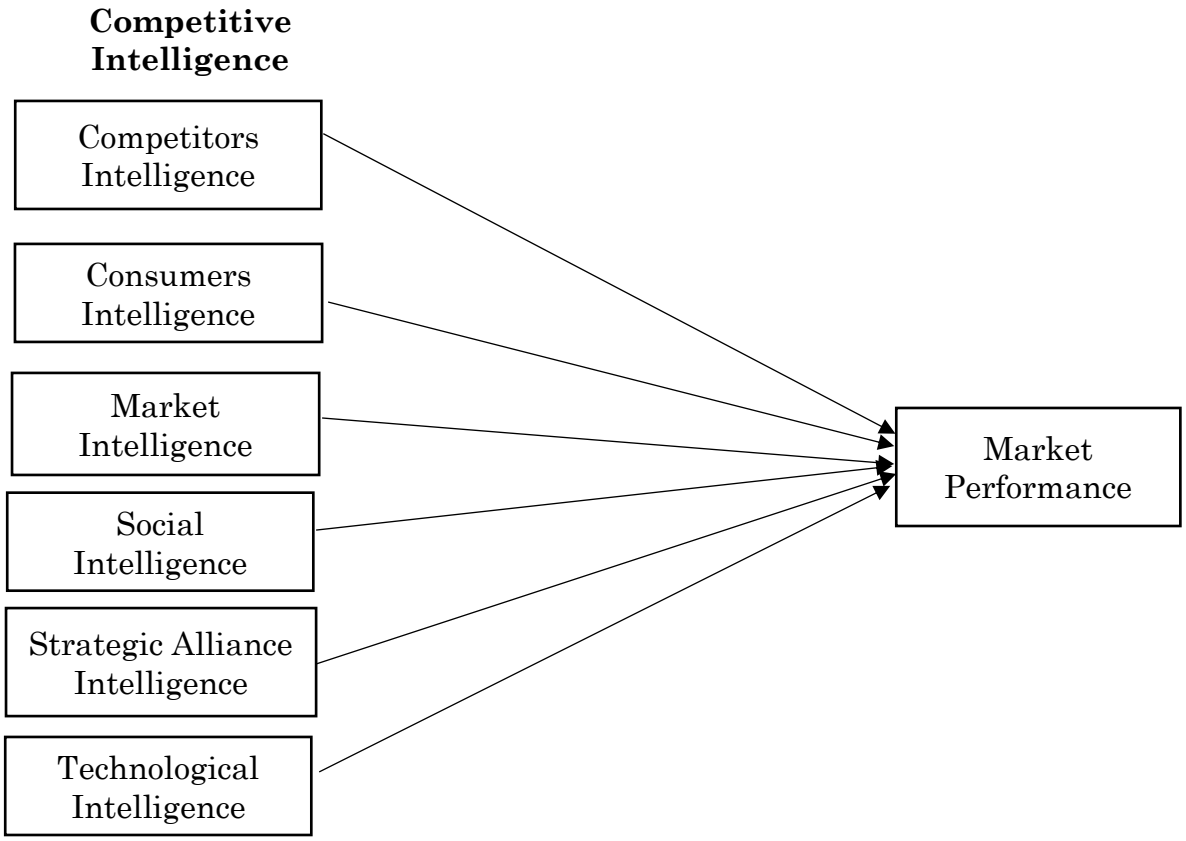

Figure 1. Research Model

Source: Cekuls, A. (2010). Competitive Intelligence Model in Latvian Enterprises. And Cekuls, (2015). Leadership Values in Transformation of Organizational Culture to Implement Competitive Intelligence Management: the Trust Building Through Organizational Culture. Cavallo, et al., (2021): Competitive intelligence and strategy formulation: connecting the dots

Research Methodology

This study utilizes a quantitative study design with the goal of analysing and quantifying information regarding the components of competitive intelligence (CI) and exactly how they affect market efficiency in the retail sector in Jordan. Retail supervisors and execs from various fields in Jordan make up the target population. A representative cross-section of the retail market was found to be stood for by the computed sample size of 334 participants. In order to make sure proportional representation and minimise prejudice, individuals in the stratified arbitrary sampling method were categorised according to retail sections. Questionnaires that have actually been meticulously established are the basis for information collection. These studies aim to provide a detailed understanding of retail managers' point of views and experiences relating to CI components and just how they influence market performance. The set of questions is developed with questions that align with existing literature and theoretical frameworks on knowledge pertaining to market, competitors, modern technology, consumers, society, and alliances. The inquiries were sourced from Wu et al. (2023), Jafar (2020), and Tahmasebifard (2018) and changed as required. To make certain the information collection is durable and trustworthy, credible measurement scales and things from previous research study are used. The research study utilizes the Partial Least Squares Structural Formula Modelling (PLS-SEM) method to assess the information. PLS-SEM was picked because it can manage several variables at the same time and is suitable for complicated designs. This method enables a thorough examination

of the connections between components of competitive knowledge and market efficiency in the retail market in Jordan.

Result and Discussion

Table 1 shows the variable loadings, standing for the connection between different things and their equivalent hidden constructs. The aspect loadings show the instructions and stamina of this relationship. For rival knowledge (COI), the considerable aspect loadings vary from 0.724 to 0.856, showing a strong connection between the measured things (COI1, COI2, COI3, COI4, COI5) and the Rivals Intelligence construct. Likewise, customer knowledge (CONI) exhibits outstanding factor loadings, ranging from 0.813 to 0.865, showing a strong relationship with the measured items (CONI1, CONI2, CONI3, CONI4). Market intelligence (MI) likewise shows significant element loadings, varying from 0.770 to 0.913, showing a solid correlation with the measured things (MI1, MI2, MI3, MI4). The market efficiency (MP) assessment things show substantial variable loadings also, varying from 0.730 to 0.862. The determined products (MP1, MP2, MP3, MP4, and MP5) and the market performance construct reveal a solid relationship, according to these worths. Furthermore, the things connected with social intelligence (SI) and technological knowledge (TI) reveal amazing element loadings, showing a robust partnership with the corresponding constructs (Chen et al., 2023; Sureshchandar, 2023).

Table 1 Factor Loading

Items	Competitors Intelligence	Consumers Intelligence	Market Intelligence	Market Performance	Social Intelligence	Strategic Alliance Intelligence	Technological Intelligence
COI1	0.724						
COI2	0.856						
COI3	0.819						
COI4	0.792						
COI5	0.758						
CON11		0.813					
CONI2		0.865					
CONI3		0.834					
CONI4		0.794					
MI1			0.900				
MI2			0.913				
MI3			0.770				
MI4			0.833				
MP1				0.815			
MP2				0.839			
MP3				0.862			
MP4				0.767			
MP5				0.730			
SAI1						0.822	
SAI2						0.853	
SAI3						0.839	
SAI4						0.868	
SI1					0.851		
SI2					0.843		
SI3					0.878		
SI4					0.868		
SI5					0.77		

TI1							0.849
TI2							0.855
TI3							0.852
TI4							0.706
TI5							0.738

Table presented the results of reliability and validity of the study. The Cronbach's alpha of the constructs showed the value from 0.846 to 0.897 which exceed the threshold value. These values exceed the commonly accepted limit of 0.7, suggesting a high degree of interior consistency among the things within each construct. Higher values recommend that the items successfully gauge the very same underlying concept. Compound reliability (rho_a and rho_c) examines the uniformity of the constructs, considering the variable loadings and typical variance of the items. The composite dependability values for all constructs vary from 0.852 to 0.898, surpassing the suggested threshold of 0.7. These worths even more verify the constructs' high internal uniformity and dependability. The typical variance drawn out (AVE) stands for the proportion of variation caught by the construct things. AVE values over 0.5 are taken into consideration acceptable signs of convergent legitimacy. Although all constructs in the table have AVE values between 0.626 and 0.733, which are slightly listed below the guideline value of 0.7, these values however suggest adequate convergent validity. To sum up, the constructs show strong interior consistency, suggesting that the products measuring each construct are very correlated and accurately determine the desired principles. The composite reliability scores even more support this and reveal that the constructs have regular and reliable relationships with their particular products (Cheung et al., 2023; Welhaf et al., 2023). Although the AVE worths are a little below the suitable limit, they still confirm convergent credibility, indicating that the things merge well to gauge the underlying constructs, albeit with a slightly lower common variance than wanted (Dos Santos & Cirillo, 2023). In general, these outcomes show robust integrity and ample credibility of the dimension design made use of in this research.

Table 2. Reliability and Validity

Constructs	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Competitors Intelligence	0.851	0.859	0.893	0.626
Consumers Intelligence	0.846	0.852	0.896	0.683
Market Intelligence	0.877	0.885	0.916	0.733
Market Performance	0.862	0.863	0.901	0.647
Social Intelligence	0.897	0.898	0.924	0.710
Strategic Alliance Intelligence	0.867	0.869	0.909	0.715
Technological Intelligence	0.861	0.864	0.900	0.644

The HTMT ratio, displayed in Table 3, is an action of discriminant validity that figures out if constructs are more strongly connected with their very own dimensions (monotrait) or with measurements of various other constructs (heterotrait).The HTMT values compare the correlations between constructs with the correlations between items within the same construct (Cheung et al., 2023). The HTMT values in the table show the relationships between the different constructs. A value closer to 1 indicates weaker discriminant validity, i.e., higher similarity between constructs. On the other hand, values closer to 0 indicate stronger discriminant validity, suggesting that the constructs are more different from each other (Paap et al., 2023). The HTMT values for all

construct pairs range from 0.504 to 0.793. While some values are relatively high and indicate moderate correlations between certain constructs, overall, the HTMT values confirm adequate discriminant validity. As expected, the diagonal scores (where constructs are compared to themselves) show consistently higher correlations (scores are 1 as they represent the relationship of a construct to itself). Non-diagonal values indicate correlations between different constructs. For example, the correlation between competitor intelligence and strategic alliance intelligence is 0.620, which indicates a moderate relationship between these constructs. Other constructive pairs also show varying degrees of association. While some construct pairs show moderate correlations, most HTMT scores are lower, suggesting that the constructs are distinct from each other. This supports the notion that these constructs measure unique and separate concepts. Nonetheless, the modest correlations between particular constructs, such as market performance and market intelligence, warrant even more examination to understand feasible overlap or shared variance in between these constructs. These outcomes recommend satisfying discriminant legitimacy for the majority of constructs, suggesting that the dimension version efficiently catches the unique and unique aspects of each construct (Caronni et al., 2023). Nevertheless, taking a look at the relationship between constructs that reveal moderate connections could supply deeper insights into potential conceptual overlap or typical attributes that may need refinement or differentiation of the measurement version.

Table 3. Heterotrait-Monotrait Discriminant Validity

Constructs	Competitors Intelligence	Consumers Intelligence	Market Intelligence	Market Performance	Social Intelligence	Strategic Alliance Intelligence	Technological Intelligence
Competitors Intelligence							
Consumers Intelligence	0.588						
Market Intelligence	0.603	0.528					
Market Performance	0.714	0.645	0.755				
Social Intelligence	0.683	0.533	0.729	0.504			
Strategic Alliance Intelligence	0.620	0.695	0.630	0.678	0.673		
Technological Intelligence	0.676	0.631	0.753	0.538	0.659	0.793	

Table 4 shows the Fornell-Larcker standard, a measure of discriminant legitimacy that examines whether the square root of the AVE (average difference removed) of a construct is more than its relationship with other constructs (Cheung et al., 2023). The diagonal values in the table stand for the square root of the AVE for each and every construct. The AVE indicates the proportion of variance recorded by the determined products of the construct. Higher AVE values imply much better discriminant credibility. The non-diagonal values suggest the connections in between the constructs. The basic states that the square origin of AVE of a construct should certainly be far better than the links in between it and other constructs in order to show adequate discriminant reputation. The tilted well worths (square origin of AVE) are routinely above the relationships in between the constructs. As an example, the square beginning of AVE for rival intelligence is 0.791, which is greater than the correlation in between rival intelligence and the numerous other constructs. This pattern is the very same for all constructs in the table. This suggests that the difference of each construct talked about by the gauged products (square beginning of AVE) is greater than the common variation with the numerous other constructs, validating appropriate discriminant legitimacy. The values along the diagonal suggest that the constructs absorb a substantial part of the variation via their established products. The

off-diagonal worths, which stand for the connections in between the constructs, are lowered than the tilted worth. This confirms that the constructs have a lot more shared variation with their respective products than with items evaluating numerous other constructs. Overall, the outcomes confirm satisfactory discriminant validity in between the constructs based on the Fornell-Larcker requirement. These results support the concept that the constructs in the measurement design represent distinct and one-of-a-kind concepts and reveal that the things measured efficiently capture the difference within each construct and are relatively distinct from the things gauging various other constructs (Shiekh, 2023).

Table 4. Fornell-Larcker

Constructs	Competitors Intelligence	Consumers Intelligence	Market Intelligence	Market Performance	Social Intelligence	Strategic Alliance Intelligence	Technological Intelligence
Competitors Intelligence	**0.791**						
Consumers Intelligence	0.538	**0.827**					
Market Intelligence	0.676	0.693	**0.856**				
Market Performance	0.583	0.613	0.642	**0.804**			
Social Intelligence	0.658	0.620	0.577	0.698	**0.843**		
Strategic Alliance Intelligence	0.619	0.598	0.549	0.663	0.597	**0.846**	
Technological Intelligence	0.543	0.602	0.662	0.529	0.539	0.699	**0.803**

The variance inflation factor (VIF) measures the extent of multicollinearity between the predictor variables in a regression model. VIF values above 5 or 10 indicate a problematic level of multicollinearity, meaning that the variables may be too highly correlated and affect the reliability of the regression results (Kyriazos & Poga, 2023). Table 5 shows the VIF values for different constructs in relation to market performance. VIF values of less than 5 generally indicate that there are no serious multicollinearity problems. Market intelligence and social intelligence have relatively low VIF scores of 1.165 and 1.207, respectively. These scores indicate a minimal degree of multicollinearity in relation to market performance, indicating that these constructs have relatively independent relationships with market performance. However, competitor intelligence (VIF = 2.655), consumer intelligence (VIF = 2.789), strategic alliance intelligence (VIF = 2.298), and technological intelligence (VIF = 1.985) have slightly higher VIF scores. While these scores do not exceed the threshold indicating strong multicollinearity, they do indicate some degree of correlation between these constructs and market performance.

Table 5. Variance Inflation factor (VIF)

Constructs	Market Performance
Competitors Intelligence	2.655
Consumers Intelligence	2.789
Market Intelligence	1.165
Social Intelligence	1.207
Strategic Alliance Intelligence	2.298
Technological Intelligence	1.985

The results of the path analysis in Table 6 show the path coefficients (beta), the standard deviations (STDEV), the T-statistics (|O/STDEV|), and the associated p-values, which indicate the significance and strength of the relationships between the

various constructs and market performance. The path coefficient (beta) of 0.372 indicates a significant positive relationship between competitor intelligence and market performance. The T-statistic of 6.365 and the low p-value (0.000) indicate high statistical significance, which means that changes in competitor intelligence have a significant impact on market performance. In addition, the beta value of 0.149 indicates a positive relationship between consumer intelligence and market performance, albeit weaker than competitor intelligence. The statistical value is suggested by the t-statistic of 2.811 and the p-value of 0.005, which indicate that rival intelligence has a better influence on market efficiency than consumer intelligence. Additionally, a positive however fairly weaker partnership between market intelligence and market performance is suggested by the course coefficient of 0.087. Despite the fact that it is not as strong as rivals' and customer knowledge's, the connected t-statistic of 2.055 and the p-value of 0.040 show statistical importance. Furthermore, there is an extremely minor positive relationship in between market efficiency and social intelligence, as shown by the course coefficient of 0.020. The t-statistic of 0.326 and the high p-value of 0.744 suggest a lack of statistical relevance, suggesting that social intelligence does not significantly influence market performance. In a similar way, the path coefficient of 0.238 indicates a significant favorable partnership in between critical partnership intelligence and market efficiency. The high T-statistic of 6.304 and the reduced p-value (0.000) indicate strong statistical relevance, which emphasises the considerable impact of strategic alliance knowledge on market efficiency. Lastly, the course coefficient of 0.156 shows a moderately favorable connection between technological knowledge and market efficiency. The t-statistic of 2.506 and the p-value of 0.012 show statistical value and show that adjustments in technological knowledge have a notable influence on market efficiency.

Table 6. Path Analysis Results

Path Analysis	Beta	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Competitors Intelligence -> Market Performance	0.372	0.058	6.365	0.000
Consumers Intelligence -> Market Performance	0.149	0.053	2.811	0.005
Market Intelligence -> Market Performance	0.087	0.042	2.055	0.040
Social Intelligence -> Market Performance	0.020	0.06	0.326	0.744
Strategic Alliance Intelligence -> Market Performance	0.238	0.038	6.304	0.000
Technological Intelligence -> Market Performance	0.156	0.062	2.506	0.012

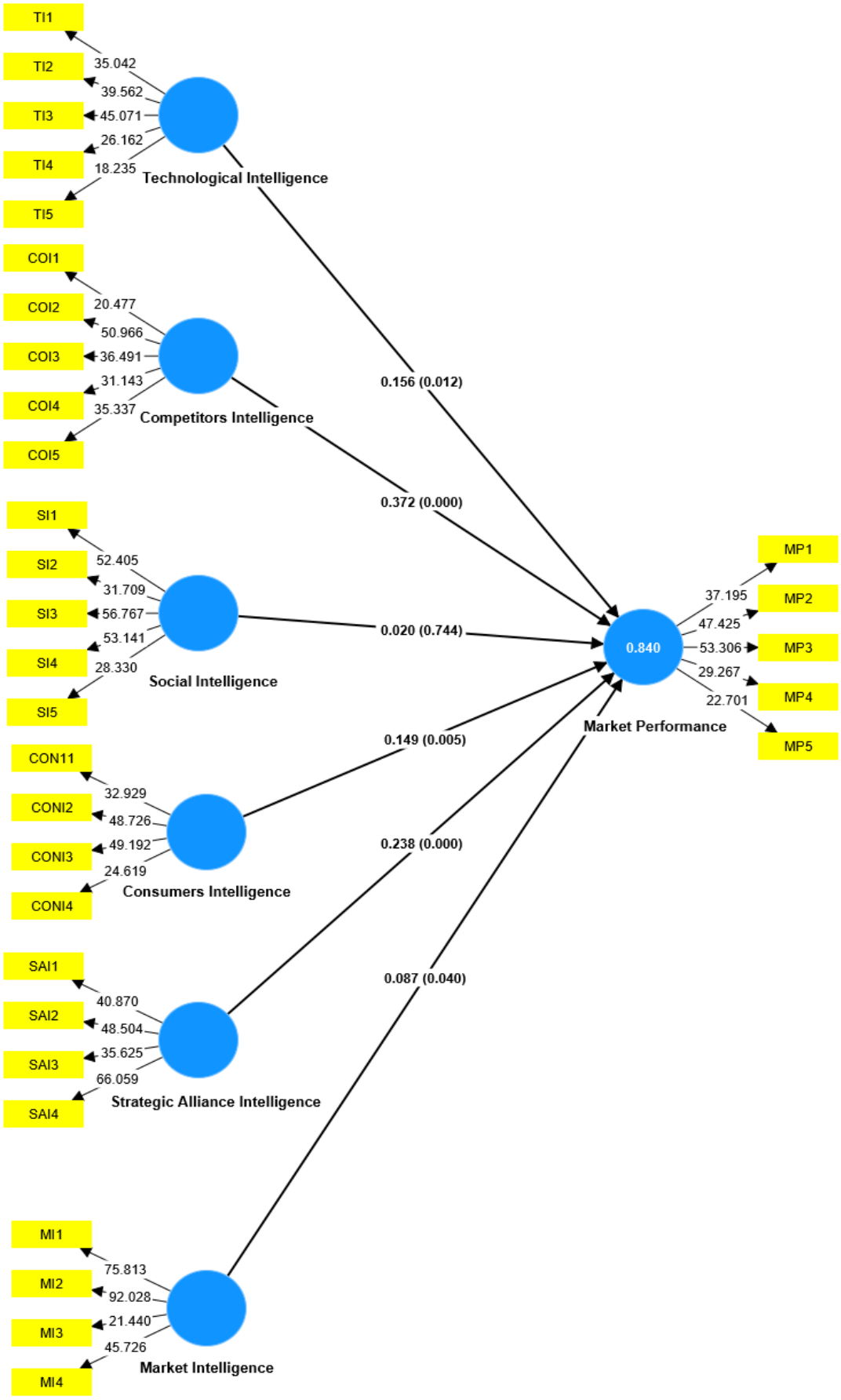

Figure 2. Graphical Results

Discussion

The strong connection in between competitor knowledge and market success in the retail industry in Jordan highlights the vital function of understanding and reacting to competitive characteristics within the neighborhood market. In a competitive retail setting, it is necessary to acknowledge and adjust to the approaches, rates models, item offerings, and market positioning of opponents. Retailers in Jordan must know their competitors' actions in order to place themselves advantageously, recognize gaps, and develop approaches to record market share. The considerable favorable connection uncovered in between customer understandings and market efficiency emphasizes the relevance of consumer-focused approaches in the Jordanian retail industry. Recognizing customer choices, buying behavior, cultural tendencies, and developing demands of regional customers enables retailers to provide customized products, effective advertising campaigns, and personalized solutions. This aligns with the value of attracting and maintaining consumers in an extremely competitive market. The notable positive connection in between market intelligence and market performance emphasizes the worth of extensive understanding of local market dynamics in the Jordanian retail industry. Retailers can obtain benefits from comprehending particular market fads, customer demographics, acquiring habits, and sector modifications that are distinct to Jordan. Adapting methods based upon regional market understanding allows merchants to successfully resolve details market needs. The insignificance of the favorable connection between social intelligence and market efficiency recommends that social patterns and cultural understandings might not directly affect the marketplace success of Jordanian stores as expected. While it is crucial to adapt to social changes, this variable might not have a straight influence on prompt retail market efficiency as various other aspects of intelligence, such as competitor and consumer insights, carry more weight. The significant positive relationship between strategic alliance knowledge and market efficiency in the Jordanian retail market stresses the function of partnerships and partnerships in browsing the market. Structure strategic partnerships with neighborhood companies, suppliers, or market partners can considerably add to market development, source optimization, and ingenious campaigns, thus positively influencing retail performance. Similarly, the observed significant favorable relationship between technological intelligence and market performance emphasises the influence of innovation on the retail field in Jordan.

Conclusion and Implications for Retail Managers in Jordan

This research study on competitive intelligence (CI) in Jordanian retail administration from the customer's point of view has disclosed considerable partnerships in between particular intelligence elements and market performance. Specifically, competitor intelligence, consumer intelligence, market intelligence, calculated alliance intelligence, and technological knowledge revealed substantial favorable associations with market efficiency. Nonetheless, Social Knowledge revealed an insignificant positive connection, recommending that its impact on market performance is reduced in the Jordanian retail landscape. Future study efforts must investigate various other aspects affecting market performance beyond the recognized knowledge measurements. Extending the examination to social or contextual variables, a much deeper evaluation of customer practices, and exploring alternate methods of data evaluation could improve the findings for the study. In enhancement, longitudinal researches can offer a vibrant sight of just how knowledge variables affect market changes gradually. Comprehending the intricate interaction between competitive intelligence factors and market performance in Jordanian retailing is main to monitoring decision-making. Retailers in Jordan must focus a lot more on understanding their rivals' approaches and consumer practices, as well as capitalizing on technological advancements. Strategic partnerships must be cultivated to capitalise on chances for

cooperation in the market. While the impact of social knowledge appears to be limited, its expedition and potential influence in other market segments merits better investigation. The usage of robust techniques, a depictive example and the PLS-SEM approach in the study contributes dramatically to comprehending the duty of knowledge factors in the Jordanian retail market. This investigation of competitive knowledge from the customer's viewpoint in the Jordanian retail industry produces a foundation for critical manoeuvres and future research possibilities that will certainly make it possible for merchants to efficiently leverage intelligence and browse the open market landscape with informed choices and adaptability. To value the value of Strategic Partnership Knowledge, it is suggested for retail supervisors in Jordan to advertise cooperation's and collaborations within the community retail industry. By developing critical alliances with neighbourhood companies or sector partners, there are chances for market growth and effective use sources. This develops a one-upmanship via the exchange of expertise, sources, and market infiltration. These steps not only improve operational performance however additionally strategically position retailers to attain sustainable growth and success in Jordan's challenging and competitive retail market.

Limitations of the Study

Although the research was performed with a sample size of 500 individuals and a stratified random example to make certain that all retail sectors were represented, the generalizability of the outcomes might be limited. Broadening the sample variety and size could give more extensive insights into the broader retail landscape. The research made use of the Partial Least Squares Structural Equation Modelling (PLS-SEM) method, which is appropriate for anticipating analyses and exploratory research yet may have its constraints when capturing intricate relationships. The usage of numerous approaches of analysis, or longitudinal researches, could provide deeper understandings. The study concentrated on particular competitive variables (rival, customer, market, social, tactical alliance, innovation) related to market efficiency. Nevertheless, certain nuances or other uncharted factors within these groups might likewise affect market results, requiring additional examination. The searchings for of the research are certain to the Jordanian retail market. Social, economic, or governing aspects certain to Jordan could influence the observed partnerships. Transferring these outcomes to other markets or global contexts should consequently be performed with caution and consider regional nuances.

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Attaining Organizational Sustainability Through Competitive Intelligence: The Roles of Organizational Learning and Resilience

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ABSTRACT
Purpose: Following the resource-based view (RBV) theory, the Food-Moving Consumer Goods (FMCG) industry also pitches in to help the economy grow. This study is intended to investigate competitiveness and organizational learning against the sustainability of FMCG in Nigeria. However, the interlink between competitive intelligence and organizational sustainability was investigated, with organizational resilience performing a mediating function.
Design/Methodology/Approach: 517 employees from FMCG companies in Nigeria were examined using quantitative and cross-sectional research methods, whereby the data obtained was analyzed using partial least squares structural equation modelling (PLS-SEM) to establish proposed association.
Findings: The results confirmed the expected connections, showing that competitive intelligence (CI) was directly and positively linked to organizational sustainability (OS). They also showed that organizational learning was significantly and positively linked to both competitive intelligence and organizational sustainability. Similarly, the findings revealed that organizational resilience partially mediated the association between CI and OS.
Practical Implications: Gaining an advantage over rivals and successfully achieving sustainable performance are two areas where this research can help company management. Additionally, FMCG companies should integrate organizational learning and resilience approaches into their sustainability efforts.

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Originality/value: This study provides theoretical evidence by examining competitiveness for sustainability, making it one of the initial pieces of research on FMCG. Furthermore, the heuristic model embodies the positive research network that examines organizational resilience as a connection between CI and OS.

KEYWORDS: Competitive Intelligence; FMCG companies; Organizational learning; Organizational resilience; PLS-SEM; Sustainability

1. INTRODUCTION

In today's hypercompetitive and ever-evolving business environment, organizations face a constant struggle to not only to survive but to thrive and ensure long-term sustainability. The pursuit of organizational sustainability has emerged as a paramount objective for businesses, as it encompasses their ability to maintain relevance, profitability, and positive societal impact over time. Organizational sustainability (OS) has emerged as a central concept that transcends the traditional focus on profitability and growth (Giesenbauer & Müller-Christ, 2020). Meanwhile, achieving sustainability requires a multifaceted approach that encompasses various dimensions of organizations' processes.

It looks like competitive intelligence (CI) is changing into a systemic view that includes all of an organization's management processes. This change leads to more knowledge by combining all CI activities into one approach (Cekuls, 2023) for better results. Now, individual CI components are not only viewed as assigned tasks but also evaluated from a conceptual standpoint and managed at the corporate level. Organizations have long recognized competitive intelligence (CI) as a valuable tool for gaining a competitive edge in their respective markets (Sahin & Bisson, 2021). It involves the systematic collection and analysis of information about competitors, industry trends, and market dynamics, enabling organizations to make informed decisions and adapt to changing circumstances. Meanwhile, organizational learning (OL) plays a pivotal role in an organization's ability to adapt, innovate, and respond to challenges (Khan & Khan, 2019). The process of organizational learning involves acquiring, interpreting, and applying new knowledge and insights to enhance performance.

Moreover, organizational resilience becomes a crucial factor in stabilizing business activities in the face of economic challenges in the country. To be resilient, an organization must be able to keep running even when faced with unexpected challenges (Barasa et al., 2018). Organizations today face multifaceted challenges, including shifting consumer preferences, technological advancements, economic fluctuations, and environmental concerns. In this context, organizational sustainability represents an organization's capacity to adapt, endure, and flourish while positively contributing to society and the environment (Huang et al. 2020). However, the attainment of organizational sustainability is a complex endeavour, requiring the synergistic integration of various organizational elements. Competitive intelligence (CI), or the systematic collection and analysis of external information, is crucial for informed decision-making. Organizational learning (OL), the acquisition and application of knowledge, is essential for adaptation and growth (Lau et al. 2018). Organizational resilience (OR), the capacity to withstand and recover from disruptions, safeguards organizational sustainability (Mokhtar et al., 2023). Yet, little comprehensive research has explored the interplay among these factors and the mediating role of organizational resilience.

Despite the growing recognition of the significance of competitive intelligence, organizational learning, and organizational resilience in contributing to organizational sustainability, Unfortunately, studies that thoroughly investigate the relationship between these characteristics are few and far between. In addition, researchers have not yet examined how organizational resilience

acts as a mediator between competitive intelligence, organizational learning, and organizational sustainability. This is particularly true in developing nations like Nigeria and in industries like food-moving consumer goods (FMCG), where competition is fierce. Consequently, this study aims to address this gap by investigating the nexus between competitive intelligence, organizational learning, organizational resilience, and organizational sustainability within the context of contemporary organizations.

LITERATURE REVIEW

Resource-Based View (RBV) Theory

Barney's (1991) work has been instrumental in shaping the RBV theory. Barney's research emphasizes the role of valuable, rare, non-substitutable, and difficult-to-imitate (VRIN) resources and capabilities as sources of competitive advantage. In the context of this study, citing Barney's work can help establish the theoretical foundation for understanding how competitive intelligence, organizational learning, and resilience can serve as valuable resources for organizational sustainability. In support of this, Peteraf's research on dynamic capabilities, which she wrote about in her 1993 paper called "The Cornerstones of Competitive Advantage: A Resource-Based View," adds the idea of dynamic capabilities to the RBV theory. These are organizations' abilities to change their resources and adapt to new environments. Citing Peteraf's work can be particularly relevant when discussing the role of organizational learning and resilience as dynamic capabilities that contribute to organizational sustainability.

The study's choice of the Resource-Based View (RBV) theory as its underpinning theory is grounded in its relevance and applicability to the topic. The RBV theory is a well-established theoretical framework in the fields of strategic management and organizational theory, and it provides a solid foundation for understanding how organizations can leverage their resources and capabilities to achieve and sustain competitive advantages, including sustainability.

Competitive Intelligence

Competitive intelligence (CI) is a multidisciplinary field that has gained significant attention over the years for its pivotal role in shaping an organization's competitive advantage and strategic decision-making processes. Competitive intelligence is commonly defined as the systematic process of gathering, analyzing, and disseminating information about an organization's external environment, including competitors, market trends, and industry dynamics (Calof & Wright, 2008; Olaleye et al., 2021). Nasri and Zarai (2013), emphasize that competitive intelligence involves the ethical collection of data to enhance an organization's understanding of its competitive landscape. Fuld (1995), cited in Cavallo et al. (2021), traces the roots of CI to the military and intelligence sectors, where decision-making relied heavily on critical information gathering and analysis. It gradually evolved into a business practice in the mid-20th century, with scholars like Gilad (1989), cited in Cavallo et al. (2021), acknowledging its emergence in the corporate world. Therefore, competitive intelligence is a dynamic and evolving field that plays a crucial role in an organization's strategic decision-making and long-term competitiveness.

Organisational Sustainability

Organizational sustainability is a concept that has garnered significant attention in the fields of management, environmental science, and corporate social responsibility. Scholars from various disciplines have contributed to the development of this multifaceted concept. Organizational sustainability is often defined “as an organization's ability to meet its present needs without compromising the ability of future generations to meet their own needs” (Brundtland Commission, 1987, cited in Visser, 2017). However, scholars have expanded this definition to include economic, environmental, and social dimensions (Elkington, 1997; Olaleye, Abdurrashid, & Mustapha, 2023). Elkington introduced the concept of the "triple bottom line," which recognizes that organizations must consider their economic, environmental, and social impacts to be sustainable. Therefore, organizational sustainability is a multifaceted concept that encompasses economic, environmental, and social dimensions. It has evolved from a niche

environmental concern to a mainstream business imperative.

Organisational Learning

Management researchers have long devoted considerable attention to the idea of organizational learning because of its centrality to the discipline. It includes everything that businesses do to learn more about their industry, develop original content, and use that content to boost their performance and adjust to new circumstances. Organizational learning is often defined as the process by which organizations acquire, create, retain, and transfer knowledge for the purpose of adapting to their environments and improving their performance (Issau et al., 2023).

Rahma and Mekimah (2023) view organizational learning as a group process that involves acquiring and developing competencies, which can range from superficial to long-lasting. As a result, novel ideas surfaced as the organization accumulated more experience. The concept of the "learning organization," popularized by Senge (1990), emphasizes the importance of creating a culture that promotes continuous learning and innovation. Learning organizations encourage open communication, reflection, and a shared vision among employees to enhance collective learning. Therefore, organizational learning is a dynamic and multifaceted concept that is central to an organization's ability to adapt, innovate, and remain competitive.

Organisational Resilience (OR)

Organizational resilience is a critical concept that has gained prominence in the fields of management, risk management, and disaster recovery. Organizational resilience is commonly defined as the capacity of an organization to anticipate, prepare for, respond to, and adapt to disruptions while maintaining its critical functions and objectives in the face of adversity (Johnson et al., 2023). Resilience emphasizes not only the ability to recover but also the ability to proactively adapt and thrive. Therefore, OR is a dynamic and multidimensional concept that is integral to an organization's ability to navigate challenges, disruptions, and uncertainties.

HYPOTHESES FORMULATION

Competitive Intelligence and Organizational Sustainability

Cavallo et al. (2021) explored what competitive intelligence (CI) does to organizational strategy. Due to its new research topic and the need for extensive analysis, a numerous case study was conducted to comprehend competitive intelligence's mechanisms and principles. Four Brazilian companies with competitive intelligence units for strategic decision-making were studied. This study empirically documents competitive intelligence methods in strategy design. The study also indicated that competitive intelligence practices are largely tactical despite their strategic value and widespread application. This study shows how competitive intelligence can aid, facilitate, and integrate strategy generation, an understudied subject.

CI and SME survival in Benin City, Edo State, Nigeria were explored by Ngboawaji and Nduka (2021). Data analysis employed Pearson's product-moment coefficient of correlation and survey research design. Analysis showed a favourable association between factors. To improve performance and productivity, competitive intelligence and organizational resilience must be considered holistically.

Thus, we hypothesize that

H1 Competitive intelligence has a positive influence on organizational sustainability

Organizational Learning, Competitive Intelligence, and Organizational Sustainability

According to Sezen-Gültekin and Argon (2020), organizations' traits determine how well they survive crises and how long they remain resilient to hurdles by seizing chances and avoiding dangers. It follows that organizational resilience may play a role in determining organizational sustainability. This is due to the fact that system resilience provides a direct means of analyzing the situation, which in turn depends on the features of the stability area associated with the organization. In reality, companies are increasingly focusing on building resilience to guarantee their long-term viability and profitability (Kantur & İşeri-Say, 2015). In their pursuit of long-term viability, organizations, as open systems subject to

high levels of risk, uncertainty, and turbulence, strive for a balance between consistency and stability (Carayannis, Sindakis, & Walter, 2015). Baldwin (2015) argues that businesses' potential to become more successful and influence global conditions is related to the increasing entwinement of resilience and sustainability. Rahma and Mekimah (2023) conducted a study with the goal of understanding how start-ups might use competitive intelligence to boost their performance through increased levels of organizational learning. Rahma and Mekimah (2023) randomly selected 255 start-ups in Algeria, and the results established a link between CI and performance through OL of low magnitude. However, the direct relationship is much stronger due to the non-functionalization of the mediator variable, weakening the connection between CI and a startup's performance. The interaction between the mentioned constructs—learning, competitive intelligence, and organizational sustainability—has a disposition based on the below-stated postulation:

H2 Organizational learning is positively related to organizational sustainability

H3 organizational learning is positively related to competitive intelligence

Competitive Intelligence, Organizational Resilience and Organizational Sustainability

Johnson (2023) examined organisational resilience and managerial effectiveness. This study investigated Yara's management during the COVID-19 pandemic to determine how resilience affected performance, with clarifications from identified gaps in organisational resilience literature. Organisational resilience is essential for good management, according to the study. This study also highlights gaps in the literature, emphasizing the need for context-specific factors, a strong organisational culture, and long-term perspectives in resilience research.

Even though the management of firms searches for necessary information on the market and their competitors, their sustenance depends largely on their resilient capability to undertake the assigned tasks over time. Based on this reaction, the researchers depicted Figure 1 as the heuristic model and further hypothesized that:

H4 Organizational resilience mediates the relationship between competitive intelligence and organizational sustainability

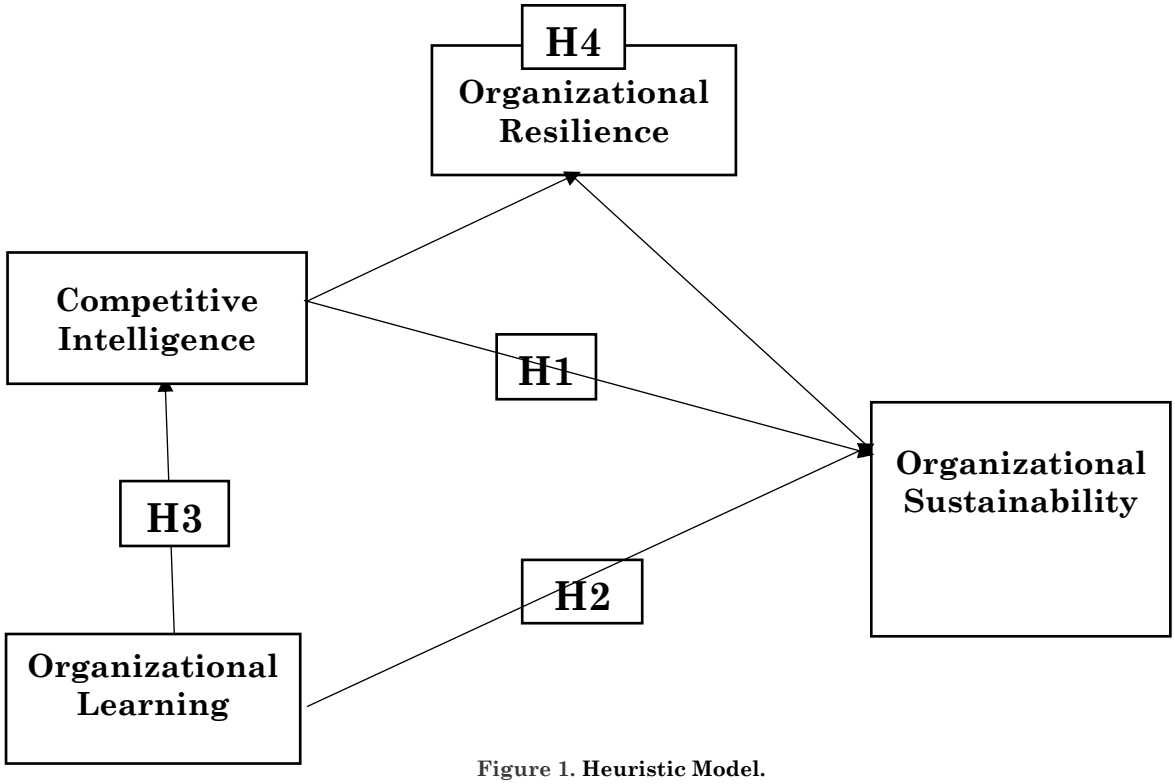

Figure 1. Heuristic Model.
Source: Author's Design

METHODOLOGY

Research Design, Study Area and Participants

This study engages a quantifiable procedure to inquiry the connection between competitive intelligence, organizational resilience, organizational learning, and organizational sustainability. The information was collected using survey data from employees of food-moving consumer goods (FMCG) firms in Nigeria. A total of fifteen FMCG companies were included as study participants, selected from the existing number of FMCG companies in Nigeria. The focus was on the southwestern region of Nigeria, where most firms established their enterprises due to the populace and the accessible market. A purposive and convenience sampling technique was adopted, whereby fifty employees from each firm were selected to give a total of seven hundred and fifty (750).

Measures

Building on previous research, we adopted and modified a well-structured survey to collect data. Competitive intelligence (CI) was captured using a seven-item scale derived from previous studies (Allen & Meyer, 1990; Dishman & Calof, 2008; Olaleye et al., 2021; Stefanikova et al., 2015). Organizational resilience was assessed by the use of a 12-question scale, as cited by Al-Omoush et al. (2023) in the research conducted by Dabos and Rousseau (2004We modified three items from the scale developed by Kale, Singh, and Perlmutter (2000) to evaluate organizational learning. In the end, Olaleye et al. (2023) referenced research by Balasubramanian and Balaji (2022) as a source for developing a nine-item scale to assess organizational sustainability. Therefore, we applied a "5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree)" to all items for the adaptation and modification of this study.

Data Analysis

In order to draw inferences from the research data, researchers applied inferential statistics. Descriptive statistics were employed to describe the sample population frame. To prove that variables interact, we used correlation analysis. Before using "Partial Least Square Structural Equation Modelling" (PLS-SEM) to confirm the structural model, the multi-collinearity and psychometric validity were put to the test. However, PLS-SEM makes fewer assertions than CB-SEM and aims to maximize the explained variance of the dependent constructs by separating its model into smaller components (Hair et al., 2012). In order to draw inferences from the research data, researchers applied inferential statistics. Researchers employed descriptive statistics to describe the sample population frame. To prove that variables interact, we used correlation analysis. Before using "Partial Least Square Structural Equation Modelling" (PLS-SEM) to confirm the structural model, the multi-collinearity and psychometric validity were put to the test.

RESULTS AND DISCUSSIONS

Descriptive Analysis

After five months, we received a total of 517 completed questionnaires, indicating a response rate of 68.9%. Table 1 presents the demographic information of the respondents, including gender, age, educational level, and working experience. The result shows the majority of respondents to be female (64.8%), while male respondents account for 34.2% of the 517 participants. The least number of respondents (10.1%) were above the age of 50 years, while the majority (50.5%) were within the age bracket of 40–49 years. 35.4% had a university education, and 96 (18.6%) had at least attended high school, while the majority possessed an NCE or diploma certificate. In terms of work experience, the majority of 203 (39.3%) had above 8 years of work experience, with the least (18%) working for a period of less than 3 years.

Table 1. The demographic profile of respondents

Variables	Categories	Freq (n=517)	Percentage
Gender	Male	182	35.2
	Female	335	64.8
Age	Below 30 years	71	13.7
	30 - 39 years	133	25.7

	40 - 49 years	261	50.5
	50 years & above	52	10.1
Highest	Secondary School	96	18.6
Educational	NCE /Diploma	238	46.0
Level	University level	183	35.4
Work	Below 3 years	71	18.0
Experience	3-5 years	122	23.6
	6-8 years	192	37.1
	Above 8 years	203	39.3

Source: author's work

HYPOTHESES TESTING

Assessing Measurement Model

Both measurement and structural models were analyzed using Andersen and Gerbing's (1988) two-stage PLS model. During the testing of the measurement model, the factor loadings, average variance extracted (AVE), and composite reliability (CR) were all looked at to check for convergent validity. Consistent with the recommendations of Dijkstra and Henseler (2015), all items (composite reliability, Cronbach's alpha, and rho A) have values over 0.7, and all outer loadings are greater than 0.5. Since all of the AVE values are higher than 0.5, this shows that the convergent item-construct structure is valid (Anifowose et al., 2022; Fornell & Larcker, 1981; Bojuwon et al., 2023; Vetbuje & Olaleye, 2022). The findings are presented in Table 2.

Table 2. Measurement model

Latent Variables	***Loadings(λ)***	**CA**	**rho_A**	**CR**	**AVE**
Competitive Intelligence	**CI**	**0.874**	**0.874**	**0.905**	**0.615**
CI1	0.754***				
CI2	0.749***				
CI3	0.777***				
CI4	0.821***				
CI5	0.805***				
CI6	0.795***				
CI7	-				
Organizational Learning	**OL**	**0.813**	**0.812**	**0.890**	**0.729**
OL1	0.876***				
OL2	0.882***				
OL3	0.801***				
Organizational Resilience	**OR**	**0.925**	**0.926**	**0.935**	**0.548**
OR1	0.714***				
OR2	0.747***				
OR3	0.730***				
OR4	0.744***				
OR5	0.704***				
OR6	0.744***				
OR7	0.748***				
OR8	0.766***				
OR9	0.775***				
OR10	0.788***				
OR11	0.748***				
OR12	0.665***				
Organizational Sustainability	**OS**	**0.880**	**0.881**	**0.904**	**0.511**
Employee-Related Sustainability	**ERS**	0.812	0.813	0.870	0.573
ERS1	0.777***				
ERS2	0.787***				
ERS3	0.795***				

ERS4	0.740***				
ERS5	0.678***				
Governance Sustainability	GS	0.825	0.828	0.885	0.657
GS1	0.774***				
GS2	0.851***				
GS3	0.849***				
GS4	0.765***				

Source: author's work

-* deleted due to poor loadings

Discriminant Validity

According to the Fornell-Larcker (1981) criterion, Table 3 demonstrates that the square root of the Average Variance Extracted (AVE) for each latent variable is higher than the correlation between different constructs in the measurement model, except for organizational resilience. In the case of organizational resilience, its AVE square root is lower than its correlation value. In response to critiques of the Fornell-Larcker (1981) criterion, a different strategy called the Heterotrait-Monotrait (HTMT) correlation ratio was proposed and gained prominence in the "Fornell and Larcker approach" (Henseler et al., 2015). According to Kline (2005), the HTMT values that are higher than the square roots of the AVEs imply that there is a clear presence of discriminant validity among the model constructs. This is because these values are below the threshold of 0.9, as seen in Table 3.

Table 3: Discriminant Validity (Fornell-Larcker Criterion and HTMT ratio)

Variables	**CI**	**OL**	**OR**	**OS**
Competitive Intelligence (CI)	[a]**0.784**	[b]*0.644*	*0.827*	*0.887*
Organizational Learning (OL)	0.545	**0.854**	*0.764*	*0.656*
Organizational Resilience (OR)	0.747	0.666	**0.740**	*0.828*
Organizational Sustainability (OS)	0.780	0.555	0.747	**0.715**

Source: author's work

Notes: "[a]= Diagonal values in bold are the square root of AVE";
"[b]= HTMT ratio are values italicized and placed above the diagonal values in bold format"

Assessing Structural Model

In order to verify our predicted connections, we used the "partial least square structural equation modelling" (PLS-SEM). The parameters of the proposed relationships' underlying structures are listed in Table 4. Competitive intelligence positively and directly influences organizational sustainability (β=0.407, t = 2.034, p < 0.05), supporting hypothesis 1. Both hypotheses 2 and 3 were confirmed by the data, indicating respective links between organizational learning and organizational sustainability, as well as competitive intelligence. The statistical analysis showed a significant positive association between organizational learning and organizational sustainability (β = 0.202, t = 2.565, p < 0.001), as well as a strong positive association between organizational learning and competitive intelligence (β = 0.545, t = 13.944, p < 0.001). The bootstrapping method is used in investigating mediation analysis. The bootstrap method has replaced traditional methods of mediation analysis due to its simplicity and reliability (Alcover et al., 2017). According to Musarapasi and Garanti (2020), bootstrapping is unique in that it uses a resampling of the provided data to draw conclusions and discover more about the underlying population. Therefore, to provide the most reliable result for mediation analysis, a bootstrap sample of 2000 was used in this study. The procedure for testing mediation analysis in SEM is similar to Baron and Kenny (1986)'s causal step approach for mediation analysis. Even after taking into account the role of organizational resilience as a mediator, the direct link between competitive intelligence and organizational sustainability remained. Furthermore, the bootstraps result for indirect effects showed significance for organizational resilience (H4: β=0.407, t = 9.644, p 0.001), thus supporting mediation effects.

Moreover, the estimation of determinant coefficients (R^2) reveals that CI and OL can explain 55.8 percent of the variation in organizational sustainability, while the value of R^2 between path OL→ CI is 29.7 percent, signifying a low degree of predictability could be attributed to the variables. According to Sullivan and Feinn (2012), presenting substantive significance (F^2) alongside beta coefficients, statistical significance, and variance explained (R^2) is recommended. The direct pathways' degree of effect is shown in Table 4. Cohen (1988) reports that the f^2 values for the paths; (CI→OS), and OL→CI were above 0.35 threshold, indicating that these paths had large effects. Furthermore, the f^2 value for the path (OL→OS) is of the moderate effect threshold (< 0.35), showing that organizational sustainability moderately supported the significant influence by organizational learning.

Table 4. Path analysis result

Model fit summary		SRMR = 0.048		NFI = 0.917		Chi-Square = 1,041, 225	
Relationship	**Beta**	**Std. Error**	**T-value**	**p-value**	**F^2**	***R^2***	***Decision***
H1: CI→ OS	0.407	0.002	2.034***	0.042	0.714	0.558	"Supported"
H2: OL→ OS	0.202	0.027	2.565***	0.001	0.286	0.558	"Supported"
H3: OL→ CI	0.545	0.039	13.944***	0.000	0.423	0.297	"Supported"
Indirect Effects (Mediation)							
H4: CI→ OR → OS	0.407	0.042	9.644**	0.000	Partial Mediation		"Supported"

Source: author's work

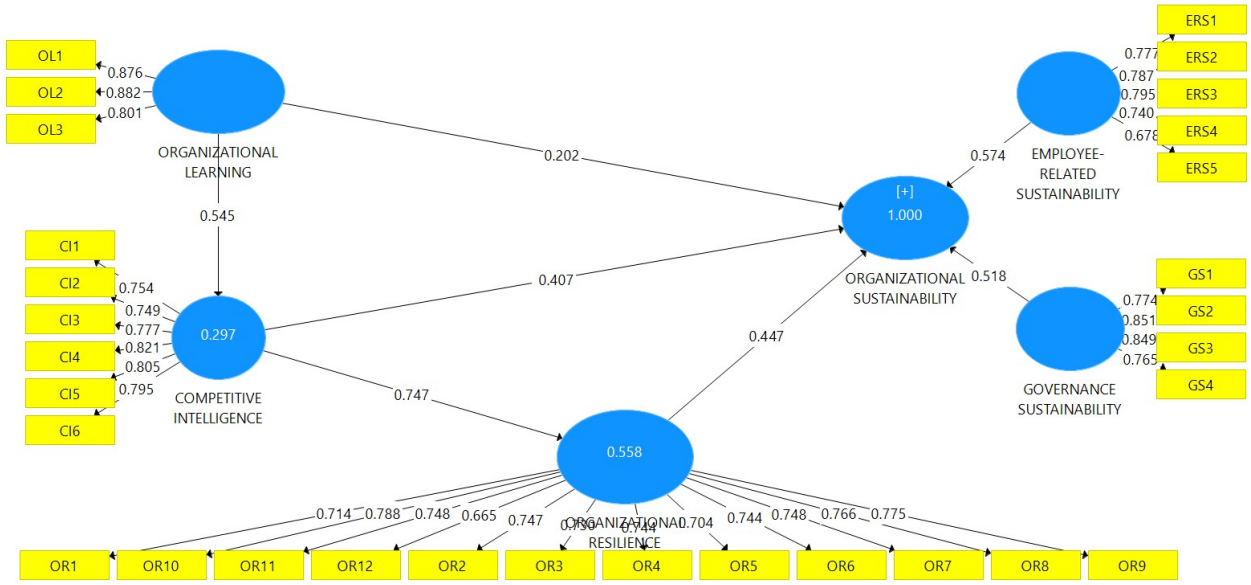

Figure 2. A path analysis

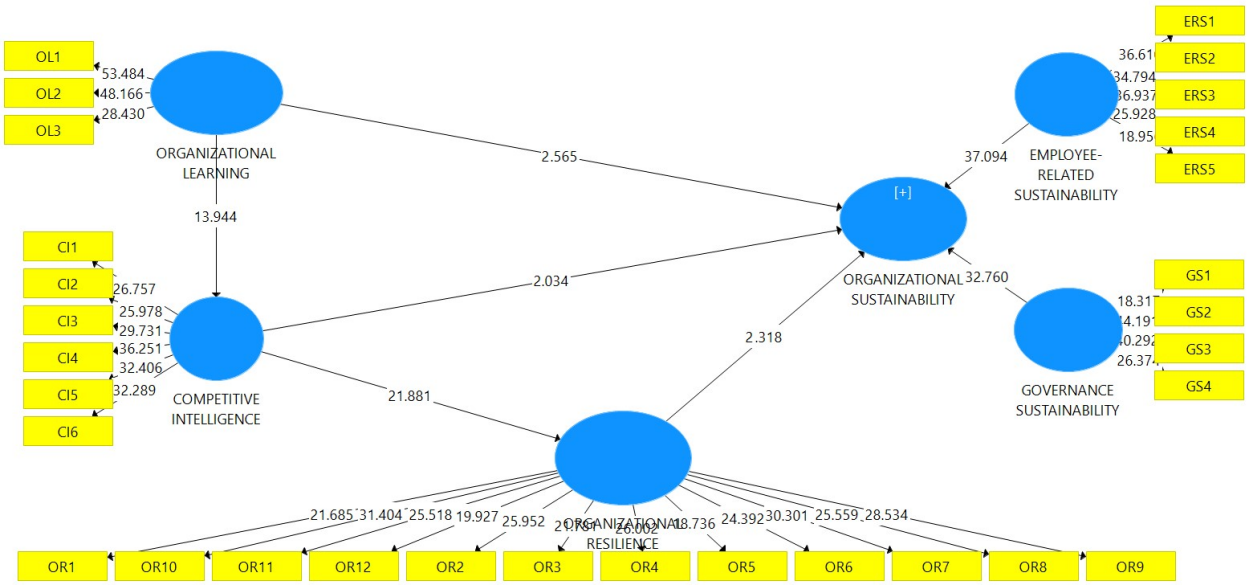

Figure 3. t-statistic

DISCUSSION AND CONCLUSION

Discussion of Findings

In recent years, academics have shown a surge of curiosity about the dynamics of competition, particularly within the fast-moving consumer goods (FMCG) sector, viewing it as an economic machine for achieving sustainability. The present research aims to delve into the essential tripartite relationship between the paradigms of organizational learning, competitive intelligence, and sustainability. In order to clarify the relationship between the recognized constructs and organizational resilience's mediating function, this study develops and evaluates a theoretical model. H1 sought to investigate how competitive intelligence affects the long-term sustainability of organizations. This hypothesis posits a positive correlation between the two variables. Developing a suitable strategy for collecting, analyzing, and sharing information about its external environment enhances an organization's sustainability, as stated by Olaleye et al. (2021). Nonetheless, for the FMCG sector in Nigeria, acquiring sufficient information on rivals, market trends, and industry dynamics is crucial to the survival of the enterprises operating within it.

According to the data provided by respondents, the findings demonstrate that organizational learning has a favourable impact on long-term organizational performance (related to hypothesis 2). Previous research (Kordab, Raudeliūnienė & Meidutė-Kavaliauskienė, 2020; Pole, Madsen & Dishman, 2000) has shown that the need for establishing a sustainable knowledge management cycle within the organization requires organizational learning with a focus on fostering, creating, and applying new knowledge. Organizational learning greatly enhances an individual's professional, social, and personal competencies and experiences (Raudeliūnienė et al., 2020; Engström & Käkelä, 2019; Tran & Pham, 2019). Furthermore, organizational learning enhances the ability to adapt to new circumstances, enabling the company to create value, enhance operational efficiency and effectiveness, and achieve long-term feats (Engström & Käkelä, 2019; Ghasemzadeh et al., 2019).

Following this, we meticulously constructed the third research proposition, Hypothesis Three (H3), to examine the relationship between organizational learning and competitive intelligence. However, the data obtained revealed a positive relationship between OL and CI. Learning is believed to foster CI because it provides a vital resource for understanding the current and future actions of rivals and the business environment as a whole (Vedder & Guynes,

2002). In today's fast-paced marketplaces, organizational learning is essential for improving performance through the development of competitive strategies that are both efficient and adaptable (Santos-Vijande et al., 2012). Learning, according to Dess et al. (2003), is a crucial part of strategy renewal since it allows the organization to adapt to new circumstances. In order to maintain a competitive advantage, organizations constantly assess the skills and actions of their present and future rivals, a process known as organizational learning (Calof & Wright, 2008).

The findings underscored that companies engage in competitive intelligence when they seek to increase their competitiveness by making better use of available information. Since their success relies on making implicit knowledge explicit and sharing it across the members of the firm, this information is perceived as a vast repository of knowledge (Rahma & Mekimah, 2023). In their study on start-up success, Rahma and Mekimah (2023) found a weak correlation, with organizational learning serving as a mediator variable. In the same direction, they claimed that organizations ought to place a premium on organizational learning because it helps businesses improve in all areas: overall capabilities, growth, engagement with the environment, adaptation to internal and external variables, and employee enthusiasm for learning and development.

Finally, hypothesis four (H4) empirically evaluated the notion that organizational resilience acts as a positive mediating variable in the relationship between competitive intelligence and organizational sustainability. Result underscored organizational resilience as a significant mediator in the relationship between CI and OS, aligning with Emmons (2013), and Sezen-Gültekin and Argon (2020) recommendations advocating for capacity and resilience of organizations in order to attain sustainability. These findings, thus, emphasize the crucial role that organizational resilience play in the relationship between competitive intelligence and organizational sustainability within the context of FMCG in Nigeria.

Practical and Theoretical Implications

The fast-moving consumer goods (FMCG) sector is one of the world's largest businesses and continues to make strides despite the COVID-19 epidemic. It has a significant influence on numerous markets. Companies in the Fast-Moving Consumer Goods (FMCG) industries produce and sell a diverse array of products, including food, drinks, personal care items, and home goods. Venturing beyond the academic confines of theoretical discourse, our meticulous research outlines a path that reaches deeply into the tangible domain, capturing implications emerging from an expansive socio-economic context. Similar to a detailed roadmap, our research offers a strategic trajectory for practical implementation that is firmly rooted in a thoughtful understanding of the foundations of organizational theory.

This study highlights the significance of FMCG's industrialized blend of CI and OS. This study also showed that fast-moving consumer goods (FMCG) employees assess and manage high-pressure situations to effectively apply business environment standards such as competitive intelligence and learning while pursuing ongoing business operations. The same holds true for FMCG companies: CI boosts OS, which in turn increases organizational resilience and sustainability. With CI, a company may learn about and adapt to its environs (Barson, 2002). A company can also learn about new market trends and threats that rivals have revealed through CI (Fitzpatrick, 2003). Layer by layer, this research reveals the components of CI that managers may employ to their advantage: the organization's capacity to sustainably decipher and leverage external factors. Meanwhile, the continuous flow of new information between employees makes them more proactive, which in turn creates additional opportunities for the company to gain a competitive edge for survival.

In the complex world of global enterprise, our investigation set out on a distinct course, painstakingly studying two critical avenues: competitive intelligence and sustainability. We set out on this adventure with the primary goal of highlighting the significant impact of organizational resilience, a nebulous and frequently misunderstood

notion, on a trending sector (FMCG), which arose due to the expected crisis (pandemic). Learning as a concerned phenomenon in every organization boosts the activities of the operating environment, especially among competitors, and serves as a bridge between tangible and intangible organizations and society.

The intricate web of relationships between competitive intelligence and sustenance was the subject of our in-depth investigation. By studying sustainability from an exhaustively thorough perspective, we boldly added novelty to the status quo of conventional research on sustainability. We aimed to reinvent the traditional focus and instead highlight unorthodox connections like learning and rethinking organizational strategies for sustainability development.

Finally, the present study affirms the RBV theory, which is a well-established framework for organizational theory. The RBV theory is a well-established theoretical framework in the fields of strategic management and organizational theory, providing an understanding of how organizations can leverage their resources and capabilities like intelligence, resilience, and learning adaptation to achieve and sustain competition and sustainability.

Limitations and Suggestions for Future Research.

Although the study made significant contributions, it may not be applicable to other industries or countries due to its small sample size and limited focus on the southwestern area of Nigeria and fast-moving consumer goods (FMCG) employees. Second, future studies may use longitudinal designs to look at the effects of certain factors over a long period of time rather than cross-sectional ones. Finally, thirdly, the research primarily concentrated on the mediating role of organizational resilience; future studies can broaden their scope by combining their interactions as moderators. It is also evident that employee-related assessments of organizational sustainability are inadequate when contrasted with more general metrics such as social, economic, and environmental sustainability. To further our understanding, future studies should look at sustainability from a monetary and public-spirited perspective, as well as at concepts like quality team effectiveness, organizational culture, knowledge management methods, and their effects on organizational outcomes. Finally, future research can examine the social impact of sustainability to see how it interacts with the public's attitude and quality of life. Accruable to the fact that sustainability is important for both practical and societal uses.

Conclusion

Many experts consider competitive intelligence as a crucial systematic process that enhances a company's performance by applying organizational learning. When it comes to gathering, evaluating, and disseminating information in the face of fierce competition, CI provides a rock-solid foundation on which to build strategic decisions and establish the priorities of the company's intelligence requirements. Finding the priorities of consensus on research and development initiatives, as well as identifying the strengths and weaknesses of rivals and their reactions, are among its stated goals.

In light of these findings, the researchers advise that FMCG companies in Nigeria place a premium on competitive intelligence as a tool for strategic decision-making that would boost their performance and guarantee their long-term viability. The process through which a company strives to develop itself, adapt to internal and external variables, activate its relationships with its environment, improve its overall capabilities, and mobilize its employees to be more attentive in following and acquiring knowledge for the purpose of development and excellence is organizational learning and resilience, which they should also give more consideration to. Additionally, in order to have a competitive advantage, it is crucial to implement ongoing and continuous improvement procedures for competitive intelligence. The fast-moving consumer goods (FMCG) industry in Nigeria has to do more to help its people learn and grow if it wants to live up to its promise of enhancing the connection between competitive intelligence and sustainability. Finally, to perform their role in enhancing the connection between competitive intelligence and sustainability, FMCG companies in

Nigeria also need to invest in training and education for their staff.

Overall, our study has shed light on the interplay between CI, OL, resilience, and sustainability as they pertain to the FMCG industry in Nigeria, and it has also shown where there is room for growth and development. Our goal is for these suggestions to stimulate new lines of inquiry into organizational behaviour in an array of contexts, with the ultimate goal of improving our current understanding of the topic. Every research study, although resolving certain issues, always opens up new pathways for investigation and discovery; the quest for knowledge is continuous.

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A SEM-Artificial Neural Network Analysis to Examine the Role of Strategic Foresight on Organizational Success

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ABSTRACT
Purpose - This study develops a research framework to examine the role of strategic foresight on organizational success at Jordanian financial services companies listed on the Amman Stock Exchange.
Design/ Methodology /Approach – This study targeted the most important Jordanian financial services companies listed on the Amman Stock Exchange, (171) questionnaires were retrieved, and responses were analyzed using descriptive statistics, and SMART PLS & SEM-ANN method.
Finding – The findings indicated that three out of four dimensions of strategic foresight significantly impact organizational success, which are scenario planning, future vision, and environmental scanning. In contrast, the strategic choice did not have any significant impact on organizational success, and this was confirmed by testing the ANN model.

KEYWORDS: Strategic Foresight, Organizational Success, Scenario Planning, Future Vision, Environmental Scanning, Strategic Choice

1. INTRODUCTION

Today's world is complex and quickly changing in rapid ways that are increasingly difficult to predict, such that focusing on a single issue is no longer sufficient to deal with emerging threats and opportunities (VAN Dorsser & Taneja, 2020), which produces more pressure on organizations and forces them to keep pace with the pace of change and reimagining thinking about how they do their work, and how value is created, distributed and captured, not only to survive and thrive but also to meet challenges (Grove et al., 2023). In the same context, the ability of organizations to detect environmental opportunities, exploit energies, discover internal strengths and weaknesses, and harness them to achieve their goals increases their efficiency and effectiveness, as, the availability of cohesion among employees collectively to make appropriate decisions, solve problems, and avoid previous mistakes all lead to the organization moving forward with clear steps towards organizational success (Vayyavur, 2015) This, of course, requires the application and development of new knowledge in addition to the use of technology, which has a large and important role in managing, processing, structuring and benefiting from information quickly as a rapid response to environmental changes (Garcia & Sosa-Fey, 2020). On the other hand, Jordanian financial services companies contribute to activating the role of rational financial systems in supporting economic growth and development and enabling a thriving ecosystem for financial technology. Therefore, they must constantly use forecasting and strategic foresight tools to survive in a dynamic environment. Therefore, this paper attempts to shed light on achieving this through implementing strategic foresight effectively to discover emerging challenges and opportunities and how to respond to them to achieve organizational success.

LITERATURE REVIEW & HYPOTHESES DEVELOPMENT

The future will not be the same as it was before by embracing strategic foresight, adaptability, and transformational thinking, companies can position themselves to survive and thrive in the decades ahead by focusing on strategic foresight to identify and address challenges and opportunities, as strategic forecasting is determined through three types of thinking (future, system, and acceleration), where it appears as a vital capability that enables organizations to adapt to industry changes, explore emerging challenges and opportunities, and guide decision-making in uncertain contexts, it is a critical tool for companies to proactively identify emerging trends and potential risks, develop plans to mitigate threats and capitalize on opportunities, and ultimately enhance their long-term success and can help management make better decisions about the future of the organization (Grove et al., 2023). In the same context, experimental evidence revealed a positive relationship between environmental scanning capabilities, strategic decision-making capabilities, integration capabilities, and organizational excellence where environmental scanning enables managers to monitor their surrounding environment, develop current and future business strategies accordingly, in addition, achieve organizational excellence also strategic choice capabilities enable managers and leaders to develop strategic plans, choose the most effective initiatives, and implement them to achieve organizational excellence (Qahtan & Al Himyari, 2022). Strategic foresight also affects strategic agility, so organizations must have the ability to exploit opportunities available in the business environment and adapt to them, and this can be done by redistributing the resources they possess efficiently and effectively (Flaih & Chalab, 2022). As well as the cognitive administrative capabilities of strategic foresight have a direct impact on its application in the organization, thus ensuring administrative innovation, as the higher the cognitive administrative capabilities with strategic foresight, the greater the added value therefore, it must be integrated within the framework of dynamic capabilities, which leads to enhanced performance and thus the sustainability of the organization (Dominiece-Diasa & Volkova, 2020).In the same field, the concept of strategic foresight was discussed and the two distinct methods by which it was explained on the one hand, it guides policy by providing more systematic knowledge about relevant trends and developments in organizational environments. ; On the other hand, it acts as a driver of reflexive mutual social learning processes among policymakers that stimulate the generation of shared visions for public policy that allow strategic foresight to make an effective contribution to public policy making (Habegger, 2010).Therefore, for a better understanding of the role of strategic foresight in delivering innovations, it is viewed from the perspective of managerial ability that requires a certain set of skills and mindset to master strategic foresight, It represents the ability to create future value and sustainability and the ability for strategic foresight must be dynamic, because It refers to the organization's ability to enhance competitive advantage, enhance decision-making processes in organizations, and thus sustainability for the future, leading to management innovations and ensuring sustainability in uncertain environments (Rohrbeck, 2012). Dimensions of strategic foresight - such as scenarios, written reports, and forecasts - can be useful in communicating ideas to a wide range of stakeholders, and it is a process that continually trains individuals to deal with complexity, think in an integrative manner, and be skilled in developing hedging strategies for the future (Bezold, 2009). On the other hand, inter-organizational cooperation is very important and beneficial in organizational success and is a means of enhancing the quality of services provided. However, inter-organizational cooperation is not easy, especially if organizations must deal with rapid turnover of workers, inconsistent schedules, changes in workers' powers, and other factors. Environmental changes indicate that for organizations, programs, or services to succeed, it is necessary to move away from traditional methods and rely on long-term planning and access to long-term financing (Fraser et al., 2022). As well as that organizational success

results from the interaction of several factors together, such as business ethics, employee cooperation, and participation in training courses, seminars, and meetings for ethical awareness, this leads to the development of traits among employees, such as openness, responsibility, and intellectual and emotional contribution, in a way that requires the highest level of personal participation. This leads to organizational success and sustainability (Silas-Dikibo & Njoku, 2022). Also, transformational leadership is considered a critical organizational success factor by bringing about changes in organizations to achieve the required strategic intentions that can only be achieved through effective transformational leadership. Self-development plans must be formulated at all levels and focus on teamwork to spread optimism and enthusiasm among employees to implement radical change, this, in turn, leads to organizational success (Nuel et al., 2021), Therefore, it is necessary to manage employee relations and adopt effective practices and policies by selecting employees and placing them in the appropriate place, which improves the organization's productivity and always represents the availability of financial and human resources, which contributes to organizational success (Ogar et al., 2021). So, modern organizations must promote a culture of open communication to motivate employee performance and institutionalize consulting programs in organizations to properly prepare new employees to achieve superior performance, grievances and conflicts at work must also be reduced through the participation of employees, listening to their concerns and problems, and training them, which makes them feel comfortable and happy, which is extremely important for achieving high performance, which leads to enhancing organizational success (Ugoani, 2020). as well as social sustainability capabilities, successful integration, and organizational project management efforts have a positive impact on organizational success, which is achieved through excellence in time and quality management of stakeholders, human resources, and economic and social sustainability, as developing vision, policy, and direction with stakeholders leads to organizational success (Yazici, 2020).

Accordingly, the following hypotheses were formulated:

H_1: There is a significant impact at ($\alpha \leq 0.05$) of strategic foresight by their dimensions (environmental scanning, future vision, scenarios planning, and strategic choice) on organizational success at Jordanian financial services companies.

H_2: There is a significant impact at ($\alpha \leq 0.05$) of strategic foresight on flexibility at Jordanian financial services companies.

H_3: There is a significant impact at ($\alpha \leq 0.05$) of strategic foresight on consistency at Jordanian financial services companies.

H_4: There is a significant impact at ($\alpha \leq 0.05$) of strategic foresight on innovation at Jordanian financial services companies.

H_5: There is a significant impact at ($\alpha \leq 0.05$) of strategic foresight on growth at Jordanian financial services companies.

CONCEPTUAL FRAMEWORK

Strategic Foresight

Strategic foresight (SF) developed in the 1950s through two main schools: the French Foresight School, which calls for cooperative systemic thinking, and the American Rand Corporation, which established the concept of "strategic foresight," which is based on methods of anticipating the future, where strategic foresight is considered an important process for identifying activities and processes that help decision-makers chart a course for the organization's future work, formulate flexible policies to deal with future conditions and develop procedures that enhance the desired situation, within a specific time frame based on studying the environment surrounding the organization, developing alternatives and building Scenarios (Altarawneh, 2023), whereas foresight practices take into account all the influences of long-term political, economic, social, technological, cultural, and legal trends so that strategic foresight to envision the future is no longer a luxury, but rather a necessity to achieve large-scale change (Bezold, 2009). Also, foresight is a key strategic capability that includes a set of methods that help explore, imagine, and anticipate the future in an open and

structured way that requires recognition and acceptance that the future is a space of unpredictable possibilities and that we need to focus on the long term and look beyond it through... Incorporate multiple perspectives to navigate potential changes (Grove et al., 2023). and it is a method for understanding, mapping, and influencing the future, through a set of practices that help actors choose the optimal path forward by understanding the potential consequences. Thus, it is considered an important tool that can be used in long-term strategic planning activities and to support the decision-making process (Mohammadi, 2023). Below we discuss Strategic Foresight dimensions:

1. Environmental Scanning

The company must understand and address its internal and external variables to improve its success, as environmental scanning (ES) refers to the organization's ability to study and manage its internal and external environments to collect information and use that information as early warning signs of potential environmental changes, to determine its future course of action (Qahtan & Al Himyari, 2022). Therefore, applying strategic foresight requires a dynamic management ability to sense and seize the opportunities we obtain from environmental scanning as the greater the management's awareness of challenges and opportunities, the greater the likelihood that the organization will foster an innovative environment (Dominiece-Diasa & Volkova, 2020). This requires identifying and analyzing environmental uncertainties (Grove et al., 2023), as the earlier the organization can detect the first indicators of external change in a turbulent environment, the greater the remaining reaction time and the earlier the response (Maertins, 2016).

2. Future Vision

Strategic foresight practitioners face the challenge of improving plausible future vision (FV) through a systematic process of forecasting (van Dorsser, & Taneja, 2020), where it was generally agreed that strategic foresight can serve as a tool that can help individuals adopt a systemic view of interconnected global challenges. (Bezold, 2009) It can help identify and explore challenges and opportunities arising from the multiple signals and drivers of change shaping the future (Grove et al., 2023).Thus, maintaining the future vision, sensing opportunities and improvements, and assisting decision-makers in shaping the organization's future course of action (Dominiece-Diasa & Volkova, 2020) is a sensitive process primarily to ensure the full realization of the organization's strategic basic pillars and thus achieve the vision as a strategic goal by educating all members in the organization for weak signals in the surrounding environment (Maertins, 2016), organizations can also use smart techniques such as anchoring and reframing negative thoughts and using positive language patterns to help individuals maintain a good future vision, overcome challenges, and stay motivated while working to achieve organizational goals (Bohra & Shukla, 2023).

3. Strategic Choice

Strategic choice (SC) capabilities are the organization's ability to choose the alternative that best suits its internal and external conditions, which includes choosing the future that will support its ambition and help it achieve its long-term goals (Qahtan & Al Himyari, 2022). Here there is a need to integrate an understanding of complexity and uncertainty into the decision-making process (Bezold, 2009) Because Managers don't need only to be able to sense opportunities; They must also possess the skills required to seize them (Dominiece-Diasa & Volkova, 2020). So, developing strategic options in an uncertain context and utilizing strategic foresight enables organizations to better deal with future complexities (Grove et al., 2023).

4. Scenario Planning

Building scenario and analyzing trends provides policymakers with the possibility to test decisions that address deep uncertainties, these simulations can help decision-makers avoid costly mistakes in the real world and serve to help societies prepare for and anticipate alternative futures (Bezold, 2009).

Scenario planning (SP) requires organizations to have planning systems that conduct various hypothetical scenario analyses, and this analysis can be done through mechanisms such as simulations, stress tests, etc. which enables the organization to develop different contingency measures against different possible outcomes in the context of long-term

thinking and planning (Mohammadi, 2023).Thus, building scenarios is one of the most common strategic forecasting methods, through which more than one scenario is developed for the proposed alternatives in the long, short, and medium term (Altarawneh, 2023) because the survey system contains fundamental blind spots that require thoughtful thinking to survey regularly where environmental scanning can generate a lot of new data, but the difficult part is selecting valuable knowledge, determining the implications for action, and to choose the most appropriate future scenario (Mohammadi, 2023)

Organizational Success

Organizational success (OP) refers to the superior and sustainable performance results that organizations achieve as a result of implementing appropriate strategies, it also represents valuable insights into the efficiency and effectiveness of the organization in achieving its goals and objectives in a dynamic business environment, therefore, a motivated, specialized, and high-performance workforce must be available to raise organizational competitiveness and achieve organizational success (Alzghoul et al., 2023) as many tools contribute to achieving organizational success, such as flexibility, especially in uncertainty situations (Mahmood et al., 2022), employee consistency and cooperation (Valiyan, 2016), and innovation (Daha et al., 2022). Therefore, the author believes that success in the future is an indication of insight, which is the big picture, which reflects measurements of success from different points of view and angles, and provides indicators towards more advanced evaluation measures, as organizational success shows the organization's development, continuity, progress, and dealing with the changing circumstances it faces. Below we discuss some Tools for organizational success.

1. Flexibility

Flexibility (FLX) allows the organization to confront situations of uncertainty and situations of continuous environmental change and is considered a strategic capability that allows it to build proactive strategies that constitute a strategic advantage that enables it to deal smoothly, efficiently, and effectively (Mahmood et al., 2022). Flexibility encourages employees to generate effective and efficient alternatives to achieve goals. Therefore, it motivates them to become more creative in performing tasks, which leads to rising levels of innovation in the organization (Dahal et al., 2022). it is also considered a skill at the individual and team levels that contributes to dealing positively with changes and difficulties, and it is one of the most important basic assets for enhancing performance and thus organizational success (Arora et al., 2023).

2. Consistency

The basic importance of consistency (CO) in the organization is for individuals to cooperate to achieve common goals, this requires the availability of integrity, solidarity, cooperation, and participation to achieve organizational goals, it also requires solving problems through teamwork, thus, it indicates the amount of cooperation and coordination between individuals in organizational units and their participation in decision-making (Valiyan, 2016). So, whenever there is effective internal communication, there is consistency in the words and actions of employees and provides a comfortable work environment characterized by coordination and communication, which supports the performance of employees to achieve the required organizational goals and objectives (Quilon & Perreras, 2020).

3. Innovation

Innovation (INN) can be defined as the implementation of creative ideas in an organization, which is considered the first step towards development and modernization at present. Especially with the advancement of technology and the increase in competition in companies, innovation helps people achieve their social and economic goals through cooperation whereas the presence of trust in the organization has an important role in the interaction of employees and the development of innovative ideas for the organization (Nurlaela at el., 2022), Therefore organizational success can be enhanced by focusing on human resources behaving in unique ways and viewing creative human resources as an essential skill because they work to improve

organizational success and by focusing on teamwork that leads to the innovation of new work practices that can be used to improve the ability of human resources to contribute organizational success (Daha et al., 2022)

4. Growth

Growth (GR) strategy is considered one of the strategies that organizations aspire to achieve through sales growth, increased assets, or increased profits, which allows them to survive, continue, increase market share, and outperform competitors (Wheelen et al, 2015, 221). Growth also leads to organizational sustainability, especially if the organization has highly skilled executives and creative workers who play a crucial role in enhancing problem-solving skills (Dahal et al., 2022).

Method

Research design:

A quantitative approach was used to achieve research objectives.

Participants

The participants are employees of (29) Jordanian financial services companies listed on the Amman Stock Exchange. A stratified random sample was drawn, consisting of (171) employees.

Measurement

The questionnaire survey was developed depending on the literature review. This study mainly uses the validated existing scales of previous studies which depend on Likert-scale with responses to options that range from 1 to 5, in this regard. Accordingly, the study preserves validity to confirm that all of the questions are understood, and that no ambiguity existed. To measure strategic foresight the study adopts a four-dimensional scale which is represented in (ES, FV, SC, and SP) and consists of (20) items based on (Badr, 2023; Shalaka & Gouda, 2021). In terms of measuring Organizational Success, the study adopts four-dimensional scales represented in (FLX, CON, INN, and GR) based on (Radwan, 2021; Al-Sarayrah, 2021) that include (20) Items.

Analysis & Discussion

The SMART PLS & SEM-ANN method was used to analyze the data. SEM was used to examine the relationships in the conceptual model of the study, and ANN was used to clarify the role of external constructs in predicting internal constructs. It became clear that PLS-SEM is suitable for complex models with multiple structures.

Measurement Model

Evaluation of the measurement model included assessing the convergent and discriminant validity of each measurement scale.

Convergent Validity

Convergent validity enables us to determine the extent of the reliability and credibility of the indicators in terms of the closeness of the questions to each other in interpreting the latent variables, Convergent validity was assessed using factor loading, Cronbach's alpha, composite construct reliability, and average variance extracted (Hair et al., 2014). Loading factor values must be greater than 0.70, While Cronbach alpha values should be higher than 0.7, CR values must be greater than 0.70, and AVE values must be higher than 0.50. These values indicate acceptable convergent validity for the measurement model. The results of the convergent validity test are shown in Table 1. First, the full factor loadings for the items in the measurement model were greater than 0.70 and each item loaded significantly. Also, all Cronbach alpha values recorded values higher than 0.70. We note from Table No. 1 that the values of AVE that were calculated for the various variables range from 0.501 to 0.553 and meet the condition of variance validity, which is greater than 0.5. We also note that all composite reliability values are greater than 0.7, which explains that the consistency between the variables is high.

Table 1. Overview of Tests for Reliability and Convergent Validity.

Variable	Construct	Item	Factor loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE
Strategic Foresight	ES	ES3	0.776	0.719	0.720	0.842	0.640
		ES4	0.795				
		ES5	0.792				
	FV	FV1	0.812	0.832	0.838	0.881	0.599
		FV2	0.703				
		FV3	0.790				
		FV4	0.809				
		FV5	0.748				
	SP	SP1	0.697	0.791	0.792	0.857	0.545
		SP2	0.763				
		SP3	0.708				
		SP4	0.759				
		SP5	0.762				
	SC	SC1	0.775	0.817	0.817	0.872	0.577
		SC2	0.754				
		SC3	0.754				
		SC4	0.771				
		SC5	0.744				
Organizational Success	FI	FLX1	0.799	0.811	0.813	0.876	0.639
		FLX2	0.778				
		FLX3	0.841				
		FLX4	0.778				
	CO	CONS2	0.696	0.739	0.741	0.836	0.562
		CONS3	0.758				
		CONS4	0.765				
		CONS5	0.776				
	INN	INOV1	0.783	0.803	0.805	0.872	0.630
		INOV2	0.851				
		INOV3	0.803				
		INOV5	0.733				
	GR	GROW1	0.743	0.815	0.821	0.871	0.576

Discriminant validity

Discriminant validity shows the extent to which each latent variable is distinguished from the other.

To ensure that indicators that measure a particular latent variable cannot measure another latent variable, we will analyze the Larcker Fornell coefficient, where the square root value of the composite reliability must be greater than the Larcker Fornell value for all cases (Gujarati, 2004).

Table 2. Outcomes of Fornell-Lacker's Criterion.

	SE	FV	OS	SC	SP
ES	0.800				
FV	0.612	0.810			
OS	0.690	0.799	0.697		
SC	0.641	0.650	0.686	0.760	
SP	0.652	0.655	0.769	0.725	0.738

In Table 2, the square root value of the composite reliability is greater than the Larcker Fornell value for each Dimension, which indicates that the model met this standard and was characterized by true differentiation between dimensions.

Structural model

Through the measurement model, the validity and reliability of the current study model were confirmed. The next step in PLS-SEM includes evaluating the structural model of the current study tool by examining the level of collinearity in the structural model of the study tool., The parameters of the independent variables may be biased due to the presence of a high level of collinearity between the expected latent variables, Therefore, we need to examine this relationship. In PLS-SEM, the problem of collinearity arises when the Tolerance values are less than 0.20, and when the Variance Inflation Factor (VIF) values are less than 10 (Hair et al., 2014).

Table (3) shows that all VIF values for the latent variables have achieved values less than 10 and that all Tolerance values have achieved the acceptable statistical threshold, which is higher than 0.20, and therefore it can be said that there are no problems of multicollinearity in the structural model of the study tool.

Table 3. Results of multicollinearity test

latent variables	VIF	Tolerance
ES	2.424	0.524
FV	3.034	0.302
SP	2.360	0.511
SC	3.037	0.299

To evaluate the relationship assumed in the structural model and test the hypotheses, we will rely on a set of criteria, including: (f2, R2), The results of these tests were as follows:

Table 4. Results of coefficient of determination R2 and Effect Size F2 test

	F^2	AR^2	R^2
ES	0.051	0.679	0.682
FV	0.041		
SC	0.034		
SP	0.141		

coefficient of determination (R2)

It is a common measure upon which the structural model is evaluated. This coefficient represents the combined effects of all independent variables on the dependent variables. Table (4) shows that the four independent variables explain %68 percent of the variance occurring in the dependent variable (organizational success

Effect Size F2

It is used to measure the size of the effect of each independent variable on the interpretation of the dependent variable. The level of influence can be determined by 0.35 = > Large effect0.15 = >Medium effect0.02 = > Small effect. The table 4 shows that all independent variables recorded high influence values on the dependent variable.

Hypotheses Testing:

The Structural model explores the overall effects and relationship between the research constructs path coefficient (β) and significance level, and t values. A path coefficient is the standardized regression coefficient , where an absolute (β) value of or more indicates a large effect, values around 0.3 medium and values of less than (0.1) a small effect, table (5) shows the effects among the constructs of the proposed model.

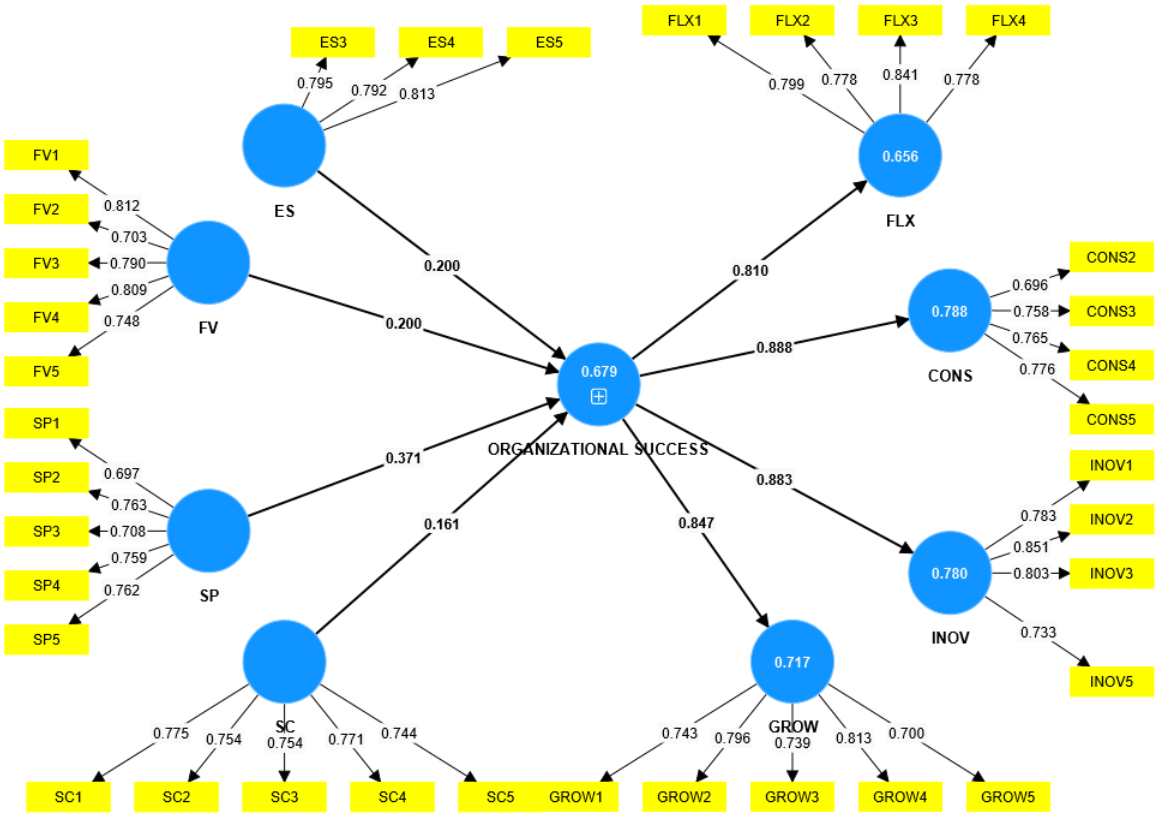

Table 5. Results of hypothesis testing: link relations between key study variables

H	PATH	Beta (ß)	Sample mean (M)	Standard deviation (STDEV)	T-Values.	P-Values.	R^2	Remarks
H1	ES -> ORGANIZATIONAL SUCCESS	0.200	0.196	0.071	2.824	0.005	0.48	SUPPORTED
H2	FV -> ORGANIZATIONAL SUCCESS	0.200	0.202	0.075	2.661	0.008	0.53	SUPPORTED
H3	SC -> ORGANIZATIONAL SUCCESS	0.161	0.169	0.087	1.841	0.066	0.47	NOT SUPPORTED
H4	SP -> ORGANIZATIONAL SUCCESS	0.371	0.365	0.093	3.984	0.000	0.59	SUPPORTED

The SEM results revealed that Strategic foresight has a significant effect on Organizational Success. Three hypotheses out of four were supported which means that three relationships were significant at the 0.05 level, with the path coefficient at 0.371-0.200 respectively. The strongest value was found in the effect of SP -> ORGANIZATIONAL SUCCESS, which indicates the importance of the scenario planning process in better preparing for a range of possible futures, achieving flexibility and adaptation in the face of unexpected changes, and finally mitigating risks, on the other hand, the lowest value was found on the effect of SC -> ORGANIZATIONAL SUCCESS.

ANN ANALYSIS

The ANN methodology explains the importance of this tool in scientific research, as this methodology refers to how cognitive neurons are concentrated and accumulated through several complex probabilistic learning processes to utilize the optimal cognitive neurons as acquired information in predicting outcomes in the neural nodes.

The analysis of the ANN model includes adopting the independent dimensions (ES) (FV) (SP) (SC) as input neurons, while the dependent variable (organizational success) was considered as the output neuron. Also relying on each of R2, RMSE, and S2 and extracting their values from the test data according to the equation R2 = 1 ± RMSE S2. These values confirm the strength of the model and its ability to predict results, which reflects the value of this model in predicting the impact of strategic foresight on organizational success.

The predictive ability of the artificial neural network model was relied upon by calculating the values of the root mean square error (RMSE) included in the testing and training phases of this model and by calculating many iterations. Table 6 indicates the outputs of these two phases, in which the consolidated data show a clear trend, as the average RMSE values for both the training and testing phases were (0.087) (0.088), respectively, which are weak values that indicate the significantly improved predictive accuracy of the ANN model. and verify the effectiveness of the ANN model.

In the second stage of testing this model, reliance was placed on the ratio of variance index (R2) shown by the model, as the results of this test indicate that the input neurons, which represent the independent variables, can explain, and predict about (77.7%) of the variation resulting from organizational success. The value of (R2) indicated by testing the ANN model (The value of R2 in the ANN model was calculated through the following equation: R2 = 1 - RMSE/S2), which is (77.7%) exceeds the value of (R2) (69.7%) that was recorded in the structural relationship modeling (SEM) analysis, which confirms the superior predictive power of the ANN model, especially in explaining the impact of strategic foresight on organizational success. Table (6) also shows the performance indicators for RMSE values within 10 neural networks in the training and testing phases, as all of them recorded values less than 0.1, which reflects the accuracy of the model. These low RMSE values, which are close to the minimum error, indicate a reliable model. High. The training phase recorded an average RMSE value (0.088).

Table 6. RMSE Performance in Training and Testing Phases.

Network	Sum of square error (Training) (organizational success)	Sum of square error (Testing) (organizational success)	Sample size (Training(organizational success)	Sample size (Testing) (organizational success)	RMSE (Training) (organizational success)	RMSE (Testing) (organizational success)
1	0.824	.231	120	51	0.083	0.067
2	0.746	0.365	123	48	0.078	0.087
3	1.361	0.693	116	55	0.073	0.082
4	0.754	0.319	125	46	0.078	0.083
5	0.995	0.223	126	45	0.089	0.070
6	1.387	0.714	122	49	0.077	0.081
7	0.69	0.427	108	63	0.080	0.082
8	0.669	0.434	114	57	0.077	0.087
9	0.773	0.24	123	48	0.079	0.071
10	0.873	0.253	128	43	0.083	0.077
Total	0.907	.390			0.087	0.088

In the third stage of this test, a sensitivity analysis was conducted to analyze and clarify the predictive capabilities of the input neurons, which represent the independent variables (ES, FV, SC, and SP). This would show the relative importance of the external structures to the independent variables, and accurately determine their effectiveness in influencing organizational success in companies. Jordanian financial services, as the importance of each determinant was determined by monitoring changes in expected results for influence, different measures were applied for each factor to arrive at a result that reflects the relative importance of that determinant.

Table (7) indicates the results of the test, as Table (7) shows the adoption of (SP) as the highest determining factor in influencing organizational success, and it is characterized by a natural significance of 95.2%. It is followed by (ES) with a clear natural significance of 62%. While (FV) shows lower normalized significance values, 43.6%. These results are largely consistent with the results of the study through structural equation analysis (SEM), which indicated the importance of (SP) and (ES) in achieving organizational success. Interestingly, despite differences in normalized significance in all cases of the ANN model (ANN-1 to ANN-10); The continued emergence of FV SP and ES as dominant factors reinforces their influential roles in achieving organizational success For Jordanian financial services companies.

This in-depth assessment not only reflects the significant impact of SP and ES on OS, but also skillfully emphasizes the necessity for Jordanian financial services companies to develop strategies and plans towards understanding and identifying these aspects of SP and ES and working to enhance and strengthen them in a way that reflects positively on their success and continuity, through future vision. By developing different possible scenarios and integrating them, financial service companies in Jordan can establish sustainable organizational success.

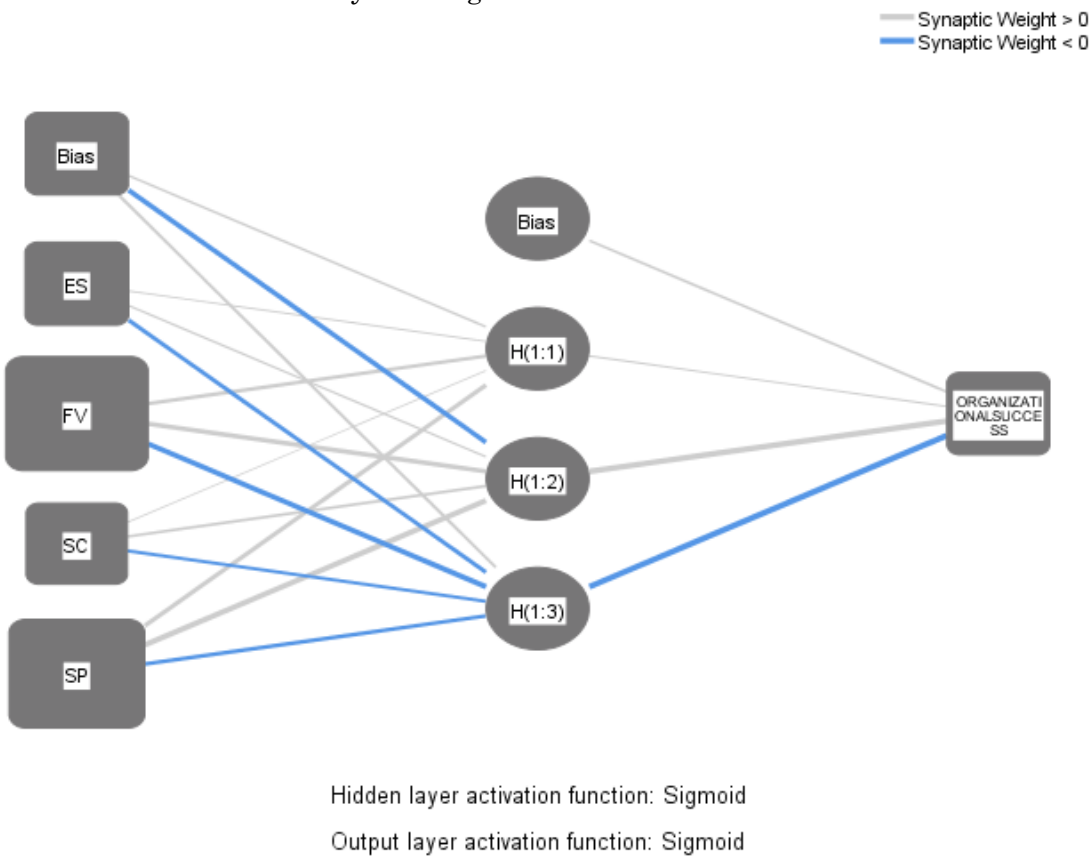

Figure 2. The ANN Model.

Table 7. Sensitivity Assessment Using Normalised_Importance Measures.

network	ES	FV	SP
ANN1	0.215	0.423	0.362
ANN2	0.259	0.165	0.576
ANN3	0.304	0.32	0.376
ANN4	0.215	0.348	0.436
ANN5	0.268	0.278	0.453
ANN6	0.281	0.328	0.391
ANN7	0.233	0.302	0.464
ANN8	0.247	0.272	0.481
ANN9	0.307	0.311	0.382
ANN10	0.302	0.212	0.486
ANN-total	0.2631	0.2959	0.4407
Maximum-Relative-Importance	0.302	0.212	0.486
Normalized-Relative-Importance (%)	62.1%	43.6%	95.2%

DISCUSSION

This study aimed to test the effect of strategic foresight in achieving organizational success. Accordingly, it was assumed that the high ability of Jordanian financial services companies to anticipate the future through (environmental scanning, future vision, scenario planning, and finally strategic choice) would contribute to Its organizational success.

Two different approaches were used to test and confirm this relationship. Smart-pls was used in the first part of the analysis to determine the impact of strategic foresight on organizational success, while ANN was used in the second part of the analysis to confirm the results and reach more accurate results.

The results of the study showed that strategic foresight, in its dimensions, affects the organizational success of Jordanian financial services companies. The percentage of influence that appeared from the results of SMART-PLS was (69.7%), based on the R2 value of 0.679, and the percentage of influence in the results of the ANN analysis increased to 0.777.

The results of the SMART-PLS and ANN test showed that the most influential dimension in achieving organizational success is scenario planning, as the value of the path coefficient reached (0.371). This result was confirmed by the ANN test, as it recorded after scenario planning the highest relative importance for a specific factor in organizational success, reaching (95%). Through this result, the third hypothesis was proven in this study. The results of the two tests showed an impact of both the environmental scan and the future vision in achieving organizational success, as the path coefficients reached (0.200) (0.200), respectively. This result was confirmed by the ANN test, as both the environmental scan and the future vision recorded relative importance values of (62%). (43.6%) respectively. Through this result, the first and second hypotheses were proven in this study.

The results also showed that there was no significant effect of the strategic choice in achieving organizational success, as the path coefficient for this relationship recorded a weak and non-significant value amounting to (0.161). This result was confirmed by the ANN test, which excluded the strategic choice from the network model because it did not achieve any relative importance in the variable. Follower (organizational success), and this result indicates the rejection of the fourth hypothesis of the study.

Theoretical implications

This study contributes to strengthening the current knowledge base by providing valuable theoretical, practical, and administrative evidence regarding the variables and relationships it addresses. This study sought to cover many theoretical, organizational, and applied fields. Hence, this study provided a closer look at how companies develop their capabilities About

strategic foresight to deal with dynamic environments and thus achieve success and continuity. This perspective provides an important basis for understanding the relationship between organizational success and scenario planning, future vision, environmental scanning, and finally the strategic choice in Jordanian financial services companies.

- First: The impact of environmental scanning on organizational success, This result indicates that the ability of the surveyed companies to carry out the environmental scanning process contributes significantly to identifying the opportunities available to them and making comparisons between those opportunities to reach the opportunities that can be exploited successfully based on their capabilities, resources and expertise, as well as allocating the available resources and determining the mechanisms for using them. This is through discovering facts and determining how procedures are improved, to make some changes that attract more customers. Finally, the organization's success in environmental scanning helped it identify the essential and distinctive capabilities that enable it to achieve its goals, which subsequently leads to efficiency in performance to achieve organizational success.

- Second: The impact of future vision on organizational success. The results of the study indicated that future visions affect the achievement of organizational success. The surveyed companies' possession of a clear vision for the future enabled them to anticipate future trends and challenges and set goals that are consistent with the desired results. Through the presence of that vision, the necessary steps to achieve its goals were identified and worked towards achieving them. The future vision of companies contributes to the strategic planning, change, and development management of those companies and the development of innovative solutions that would help their organizations to remain competitive and relevant; Because it clarifies the direction of the business, helps coordinate and group efforts, and motivates the completion of work to achieve long-term goals.
- Third: The impact of strategic choice on organizational success. The results of the study showed that there is no effect of strategic choice on the organizational success of Jordanian financial services companies, and this indicates the inability of these companies to benefit from their ability to develop appropriate strategic alternatives based on the process of environmental scanning and comparison between those alternatives. And then choose the appropriate strategic alternative for them and implement it correctly, to shift from their current competitive position to a new competitive position and thus not move to a better position in the market.

- Fourth: The impact of scenario planning on organizational success. The results of the study showed that scenario planning had the greatest impact on the organizational success of Jordanian financial services companies, which indicates the scenario planning process helped Jordanian financial services companies to better prepare for a range of possible futures, achieve flexibility and adaptation in the face of unexpected changes, and finally mitigate risks.

Practical implication:

This study can provide many important administrative implications. The study also reveals many valuable practical implications for practitioners in general and practitioners in financial services companies in particular. It can be summarized as follows:

- Regarding the impact of strategic choice on organizational success the management of Jordanian financial services companies must take advantage of their ability to develop strategic alternatives and choose the appropriate strategic alternative for them and implement it correctly, to shift from their current competitive position to a new competitive position and thus move to a better position in the market. Scenario planning for organizational success.

- Regarding the impact of environmental scanning on organizational success, it is necessary to adopt modern methodologies in the environmental scanning process, employ advanced information technology tools, and finally work to spread awareness of environmental scanning among employees to increase the ability of companies to quickly respond to environmental changes and adapt to them through integrated and coherent performance in a way that achieves organizational success.

- Regarding the impact of the future vision on organizational success, The Company's future vision must be based on solid foundations, such as sustainability and social responsibility that enable it to anticipate future trends and challenges and set goals that are compatible with those desired results, thus achieving a bright future for the company and its individuals.

- Regarding the impact of scenario planning on organizational success, it is necessary to conduct a regular and continuous scenario planning process, using the correct tools and for the scenario planning process to be realistic and clear. The scenario planning must be performed regularly, preferably once a year or every six months, by best practices that will affect its corporate operations in the future and thus effectively implement its strategies and make decisions when everything is ambiguous, complex, uncertain, and constantly changing.

Study Limitations:

Despite the results reached by this study regarding the impact of strategic foresight on organizational success and the confirmation of those results using ANN, it faced several limitations. Additional research is needed to determine whether these relationships influence organizational success.

In addition, the lack of literature related to the relationship between strategic foresight and organizational success reduces the possibility of comparison with previous studies. Although the current study used financial services companies listed on the stock market in Jordan, the sample size is still small, and therefore more research is needed to collect more comprehensive data to reconfirm the results. The questionnaire was distributed to one group of Two main respondents, which is consistent with the approach of the current study, but there may be a possibility of bias occurring, and this requires conducting future studies and collecting data through different respondents. Also, relying solely on the questionnaire to collect data imposes special limitations, since the answers may be biased due to the common method used to collect all the data. This research was conducted in Jordan, which is considered a developing country. The results may not be generalized to other developed countries. Although the current research contains an appropriate sample size, adequate sampling of the research hinders the generalization of the results, and from the point of view of generalizing the results, measuring the research questions based on the opinion of the respondents would limit the generalization of the results.

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The Impact of Business Intelligence on the Effectiveness of Decision Making at the Islamic International Arab Bank

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ABSTRACT The study purpose is to investigate the impact of Business Intelligence within its domains “Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation” in the effectiveness of decision making within it domains "Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee" at the Islamic International Arab Bank.

To achieve the aim of the study, the quantitative descriptive approach was adopted, by comprehensive sampling to collect data. The questionnaire was administrated manually consisting of (28) items on the sample; which consisted of high management mangers totaling (50) managers, all questionnaires were valid for analysis. A set of statistical methods were used to analyze the data, including the mean and simple and multiple regression coefficient through the statistical analysis program (SPSS). Based on the statistical analysis, several findings were concluded, the most important are:

- The levels of importance for each of the two domains of Business Intelligence, and the Effectiveness of Decision Making in their domains, in the International Arab Islamic Bank were high for all domains.
- There is a significant statistical effect of Business Intelligence on the Effectiveness of Decision Making at the International Arab Islamic Bank.

Based on the findings, the study presented several recommendations, those are:

- Increasing interest in Business Intelligence in all its domains at the Islamic International Arab Bank; since it has an impact on achieving competitive advantage, through interest in strengthening the infrastructure; and using the best technology; so that Business Intelligence is at the highest level at the bank since there is a large number of competitors in the banking sector.
- Enhancing interest in the Effectiveness of Decision Making, because of the sensitivity of decision making, the proper timing for implementing the decision, the ease of implementing the decision, and the acceptance of the concerned employee help to strengthen trust between the decision makers and those affected by the decision, through the participation of subordinates in decisions making through brainstorming sessions; and processes. Persuasion and activating dialogue in the bank to improve transparency.

KEYWORDS: Business Intelligence, Effectiveness of Decision Making, Islamic International Arab Bank

STUDY FRAMEWORK

INTRODUCTION

Today's organizations are witnessing rapid fluctuations and major technological developments, leading to significant changes in the essence of organizational work. This has necessitated the search for ways to survive amid increasing competition and to make every effort to remain in the market. Therefore, business intelligence (BI) role appears to be one of the most important administrative practices needed by organizations, especially banks.

Business Intelligence (BI) is an administrative field with numerous specializations and domains aimed at balancing business and technology. It has an important role in the continuity and success of the orgnizations' operations. . It relies on a set of systems and tools that enable users from various positions process Data through collecting, storing and analyzing. This aids in making rational decisions to increase competitiveness or at least maintain a competitive stance. Business Intelligence helps seize opportunities in an effort to secure a larger market share.

Administrative decisions are the backbone of management. Without them, an organization may weaken and potentially vanish. decision-making aims to solve and diagnose problems and select the best alternatives, requiring the manager's skill to ensure decisions are fair, rational, and legal. However, decisions at all levels, whether routine or strategic, require thorough study and conscious awareness by the decision-makers. They must also be accompanied by streamlined procedures during implementation. It's crucial not to overlook that participation in administrative decisions greatly contributes to decision acceptance, reflecting the integrity and transparency of decision-making within the organization. This creates a work environment rooted in trust and mutual respect.

The effectiveness of administrative decisions is pivotal in achieving an organization's goals, particularly when decision-makers select the optimal timing for announcing their decisions, simplify their implementation, and ensure acceptance by subordinates. This is more feasible when accurate information is available, making decisions more effective, consistent, and equitable. Such outcomes are achievable with Business Intelligence capable of collecting and analyzing data, thus enhancing decision quality and effectiveness.

Therefore, business organizations realized the importance of taking care of its environment in a way that enable them to overcome any threats and investing opportunities, consequently, the adoption of Business Intelligence and the effectiveness of decision making stand as key attributes of today's business organizations. Through Business Intelligence, organizations can adjust their strategies and make informed decisions in response to environmental changes, maintaining their distinct position among competitors

The International Arab Islamic Bank was selected as a case study because it has acknowledged the importance of paying attention to its operational environment, enabling it to navigate threats and leverage opportunities. The Bank, with its branches across the Hashemite Kingdom of Jordan, has shown a keen interest in implementing Business Intelligence to compete in a highly competitive and unstable environment.

The study intends to investigate the influence of BI on the efficacy of administrative decisions at the Islamic International Arab Bank in light of the earlier concepts and the significance of business intelligence.

Importance of the Study:

The importance of the study has two aspects.

Scientific importance: The importance of the study merges from the importance of the variables under study; Business Intelligence within its domains (Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation), Effectiveness of Decision Making within its domains (Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee), the researchers hope that the study is a new addition to enrich the Arabic library with regard to its findings and recommendations.

Practical importance: The International Arab Islamic Bank plays a central role in the life of societies, as it serves all people, and has a main role in economy. The study is

expected to offer many findings and recommendations to apply business intelligence and its role in decision making effectiveness at The International Arab Islamic Bank, this make the banks capable of achieving it goals and makes the work environment more secure and stable. The researchers believe that the study's conclusions and suggestions would draw decision-makers' and concerned people attention.

Study objectives

The study is seeking to identify BI impact within its domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on the effectiveness of decision making in all its domains "Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee" at the International Arab Islamic Bank. The study is seeking to achieve the following:

- Exploring the importance of BI in its domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" at the Islamic International Arab Bank.
- Identifying the level of relative importance of the effectiveness of decision-making in terms of its domains "Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee" at the Islamic International Arab Bank.
- Identifying the impact of BI in its combined domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on the proper timing of decision-making at the Islamic International Arab Bank.
- Identifying the impact of BI in its combined domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on the ease of decision implementation at the Islamic International Arab Bank.
- Identifying the impact BI with its combined domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on accepting the decision by the concerned employee at the Islamic International Arab Bank.

Research Problem and Questions

The problem of the study lies in assessing the effectiveness of decision making at the International Arab Islamic Bank, leveraging what BI offers. The banking sector plays a crucial role in the economic transformation process, characterized by intense competition. The significant similarity in the services provided by these banks intensifies this competition. Consequently, there is a pressing need to enhance competitive tools and strengthen market position to retain current customers and attract new ones with distinguished services. The bank strives to innovate and introduce new methods that are difficult for competitors to replicate, providing services characterized by ease of access to information and follow-up. This innovation fosters customer confidence, buoyed by the bank's long-standing history and reputation. Therefore, the study's problem is encapsulated in the following primary question:

- "What is the level of relative importance of Business Intelligence in its domains Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" in the Effectiveness of decision making in its combined domains "Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee" at the Islamic International Arab Bank? From this master question, the following sub-questions aris:
  - "What is the level of relative importance of Business Intelligence in its domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" at the Islamic International Arab Bank?"
  - "What is the level of relative importance of of the effectiveness of decision-making in terms of its domains "Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee" at the Islamic International Arab Bank?"
  - "What is the is the impact of Business Intelligence in its combined domains "Data Warehouse, Data Mining, Online Analytical Processing, Report

Preparation" on the timely implementation of decisions at the Islamic International Arab Bank?"

- "What is the impact of Business Intelligence in its combined domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on the ease of decision implementation at the Islamic International Arab Bank?"
- "What is the impact of Business Intelligence in its combined domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on decision acceptance by the concerned employee at the Islamic International Arab Bank?"

Study hypotheses

Main hypothesis (Ho1): There is no statistically significant effect at a significance level ($\alpha \leq 0.05$) of BI in its domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on the Effectiveness of Decision Making in its domains (Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee) at the Islamic International Arab Bank. The subordinate sub-hypotheses branch out from the original hypothesis:

- **Sub-Hypothesis 1 (Ho 1.1):** There is no statistically significant effect at a significance level ($\alpha \leq 0.05$) of BI in its domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on the Proper timing of decision-making at the Islamic International Arab Bank.
- **Sub-Hypothesis 2 (Ho. 1.2):** There is no significant statistical effect at a significance level ($\alpha \leq 0.05$) of BI in its domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on the Ease of implementing the decision at the Islamic International Arab Bank.
- **Sub-Hypothesis 3 (Ho. 1.3):** There is no significant statistical effect at a significance level ($\alpha \leq 0.05$) of BI in its domains "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" on Acceptance of the decision by the concerned employee at the Islamic International Arab Bank.

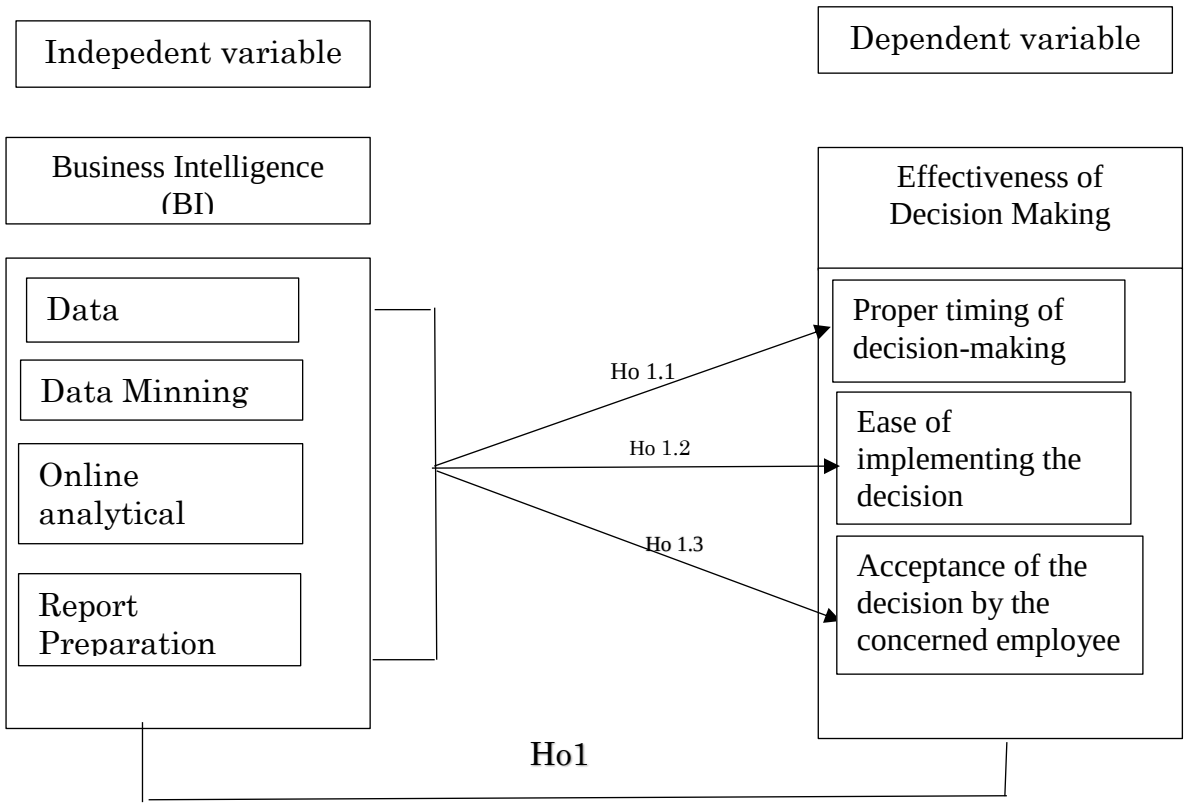

Figure 1. Study Model

Previous studies in the Arabic an Context

Al-Khatahtbeh's study (2023) sought to explore the influence of business intelligence across its domains (Online Analytical Processing, Data Mining, Data Warehouse , and report presentation) on service quality, which was examined through domains such as speed of response, security, realiability, and tangibility. Strategic ambidexterity served as a mediating variable in this relationship. The research adopted a descriptive analytical approach, focusing on a sample of (585) employees from the upper and middle management levels at private hospitals under the Jordan Ministry of Health. Proportional stratified random sampling was utilized for the study. Data collection was carried out using a questionnaire, with (243) questionnaires distributed and subsequently analyzed using the (SPSS) program and (PLS-4 SMART) software. The findings highlighted the significant relative importance of business intelligence, service quality, and organizational ambidexterity within the hospitals. Additionally, the study confirmed the impact of business intelligence on service quality, moderated by organizational ambidexterity, in the private hospitals affiliated with the Ministry of Health in Jordan.

Al-Balawi's study (2023) focused on evaluating the impact of innovative educational leadership, characterized by adopting new ideas, innovative planning, and the development of an innovative vision, on enhancing business intelligence applications, specifically in the areas of data collection, Report Preparation, and information transmission, at the University of Tabuk. The research methodology involved distributing questionnaires to (150) faculty members and conducting a comprehensive survey. Utilizing a quantitative approach, both descriptive and analytical, the study analyzed data and tested hypotheses through statistical methods. The findings revealed a statistically significant relationship between the practices of innovative leadership and the effectiveness of business intelligence applications at the University of Tabuk. Consequently, the study underscored the importance of refining data collection processes, especially from the internet, aiming to achieve data acquisition at minimal costs and maximal quality.

The study by **Binzafrah & Taleedi (2022)** explored business intelligeince influence and its various domains “data collection, data warehousing, Data Mining, and the preparation of reports and information dissemination” on job satisfaction among employees at the Saudi Electricity Company in Asir. A questionnaire was distributed to (354) employees to gather data. The findings indicated that the implementation of business intelligence and its related practices significantly affects job satisfaction. Specifically, the dimension of data extraction was identified as having the most significant impact, followed by data analysis, and then the preparation and dissemination of reports. Based on these findings, Binzafrah & Taleedi recommended the adoption of business intelligence systems for data collection to enhance organizational activities and address business challenges, thereby improving job satisfaction among employees.

The study conducted by **Hassan and Kazem (2022)** explored the influence of business intelligence on achieving sustainable development within the Ministry of Science and Technology in Iraq. The domains of business intelligence analyzed included data reliability, system integration with other systems, analytical capabilities, and user accessibility. These were examined in relation to their impact on various aspects of sustainable development, such as human resources performance, work challenges, efficiency, and teamwork. The findings suggested that the application of business intelligence by the ministry significantly contributes to sustainable development goals. Additionally, the study highlighted the organization's capability to adopt new technologies through the use of business intelligence. Hassan and Kazem recommended the critical importance of inputting accurate data, improving and preserving it, due to its significant role in decision-making processes.

The study by **Abu Hammour and Abu Hamda (2022)** focused on assessing the impact of the quality of administrative information—encompassing its relevance, timeliness, accuracy, and comprehensiveness—on the effectiveness of decision-making, which includes decision acceptance, impact, and continuity, as perceived by supervisory managers in Jordanian ministries. The findings indicated a positive relationship between the quality of administrative information and the effectiveness of administrative decision-making. Based on these results, the study recommended enhancing the awareness of supervisory management regarding the importance of monitoring and following up on administrative decisions. This is aimed at improving decision acceptance and ensuring the continuity of making informed administrative decisions grounded in scientific evidence.

The study conducted by **Hamdan & Rahman (2021)** investigated the effect of a business intelligence system, focusing on its domains (online analytical processing, business processes, and competitive intelligence), on organizational agility, which includes sensing agility, decision-making agility, and application agility, at the National University in Hama. To collect data, a questionnaire was distributed among (75) employees, and the analysis was performed using (SPSS) software. The findings revealed a strong and direct correlation between the components of business intelligence and the agility of organizational movements. Consequently, the study underscored the importance of adopting business intelligence systems across all organizations to enhance data collection, processing, utilization, and the dissemination of insights through appropriate channels.

The study by Al-Qahtani and Al-Subaie (2020) focused on assessing the impact of technical leadership and its correlation with decision-making effectiveness measured through (decision quality, decision acceptance by stakeholders, and timing) among leaders of public education schools in Dammam. The findings indicated that the extent to which these leaders adopted technical leadership practices was high, and similarly, the level of decision-making effectiveness among the leaders of public education schools in Dammam was notably impactful. Based on these outcomes, the study emphasized the importance of reinforcing technical leadership as a means to enhance the effectiveness of decision-making processes.

The study conducted **by Al-Jubouri and Al-Jumaili (2019)** explored the relationship between business intelligence and its components (Data Warehouses, Data Mining, data operations, real-time data processing, and information display techniques) in fostering organizational excellence at the University of Kirkuk. Employing a descriptive analytical method, the researchers designed a questionnaire that was distributed among (40) managers at the university. The collected data were analyzed using (SPSS) statistical software. The findings highlighted a significant and robust correlation between the variables of business intelligence and the achievement of organizational excellence, underscoring the pivotal role of business intelligence in enhancing organizational performance and capabilities.

The study concluded with several key recommendations, among which the most crucial is for the university administration to endeavor to precisely define the objectives of business intelligence and establish future directions. This strategic approach is aimed at significantly contributing to the achievement of organizational excellence, ensuring that the deployment and utilization of business intelligence practices are aligned with the overarching goals of enhancing performance, innovation, and competitive advantage within the organizational context.

Previous Studies in the foreign context

The study conducted by **Mbima & Tetteh (2022)** sought to examine the effect of business intelligence and supply chain ambidexterityon the operational performance of small and medium enterprises (SMEs) within the emerging economies of Ghana. The findings revealed a significant direct relationship between business intelligence and operational performance. Furthermore, it was discovered that supply chain ambidexterityserves as a

mediating factor in the relationship between business intelligence and operational performance among SMEs. Based on these insights, the study emphasized the critical importance of effective information intelligence, highlighting its positive impact on operational performance and the supply chain. Information intelligence not only enhances company performance but also aids SMEs in capitalizing on opportunities and reconfiguring both tangible and intangible assets for improved competitiveness and efficiency.

The study by **Tong et al. (2021)** investigated the impact of implementing business intelligence and data analytics within the hotel industry in Thailand. The research concluded that business intelligence and data analytics significantly influence business performance. It was identified that business intelligence is crucial for analyzing large volumes of data, thereby facilitating predictive analytics with a focus on enhancing customer satisfaction. business intelligence tools were recognized for their capability to assist companies in conducting thorough analyses, monitoring key performance indicators, and generating precise reports. These tools enable analysts to transform their proposals into actionable strategies by effectively communicating their findings to stakeholders. Moreover, the insights derived from business intelligence have the potential to impact decision-making across various departments and functions within organizations. Such insights are instrumental in improving marketing strategies, sales approaches, and customer service practices, thereby fostering a competitive edge in the business landscape.

Asikhia's (2021) research aimed to explore the connection between decision-making effectiveness and organizational excellence, employing a content analysis approach that involved reviewing prior scientific literature. The findings underscored that for administrative decisions to effectively stimulate organizational excellence, practitioners need to circumvent decision-making pitfalls by properly focusing on teamwork and collaborative efforts within their organization.

The study concluded that effective decision-making is indispensable for organizations aspiring to surpass global competition and sustain interactive relationships with customers and other key stakeholders. Consequently, it is recommended that managers should consistently embrace innovative ideas to foster continual improvement in organizational excellence.

De Andreis's (2020) study focused on analyzing the development of healthier and more effective decision-making processes within teams to achieve optimal solutions and navigate uncertainties. The study emphasized that decision-making involves selecting from potential solutions to problems through either intuitive or logical methods, or a blend of both. It explored decision-making in environments characterized by complexity, time pressure, uncertainty, ambiguity, and change, suggesting that a collective team approach, as opposed to individual decision-making, could yield more favorable and positive outcomes. The research underlines the significance of collaborative efforts in enhancing decision quality and effectiveness in challenging situations.

Theoretical Framework

The first domain – "Business Intelligence" (BI)

Business Intelligence is known in the English language as (BI), which is an abbreviation for (Business Intelligences). Researchers have differed over the definition of the term due to their differences in scientific backgrounds or the angle from which they view this concept.

Abbas (2018) believed that business intelligence is an advanced system that seeks to benefit from all organizational and technological capabilities of advanced information and applications.

As for Al-Jubouri and Al-Jumaili (2019), they defined business intelligence as the way to solve problems and make decisions, especially since the business environment suffers from an overload of information, which made business intelligence technology an important factor for doing business because of its ability to mine data, process it onlinely, and prepare reports.

Business Intelligence is more than just a set of software; the value of business intelligence comes from the processes of providing actionable knowledge to end users, building businesses based on the knowledge edge, and

assisting those in power to take action (Loshin, 2013). The goal of business intelligence is to collect appropriate and correct information at the right time and in the right way to make the correct decisions (Fattoche & Bahbah, 2020).

The Significance of Business Intelligence

The significance of business Intelligence has grown alongside the increase in competition and the pressures faced by business organizations from their competitors. This is attributed to the capability of business intelligence to enhance organizational performance and ensure their continued presence in the market.

Sharma and Rathore (2022) highlight that business intelligence can furnish new business insights as well as predictions based on analysis, aiding managers in their decision-making processes.

The importance of business intelligence appears in its ability to anticipate changes in the environment, by observing any changes and acquiring new opportunities; as business intelligence within its ability to make interactive analysis and extracting statistical data capable of processing by those applications any activities of the organization such as; production, Financial operations etc.., this leads to to making netter quality decisions through higher accurate information at the right time and place (Turban et al., 2010).

Al-Ghamdi and Aqili (2022) added that business intelligence is important for all sectors, including marketing, law, engineering, and more; due to its potential to enhance organizational performance, since it helps in developing human resources and enhancing the quality of services as well as strategic management in order achieve competitive advantage and organizational entrepreneurship sought by organizations.

Domains of Business Intelligence

Data Warehouse: Huge analytical database, working as a warehouse, as it stores compatible, detailed, summarized, historical and current data, the data stored in the warehouse can be accessed in a flexible and analytical way by using a variety of front end tools, it is easy to use in accessing and extracting Data (Arshad, 2012, 28). Further, it is used to collect Data from different sources in one integrate database, which is mostly the data warehouse, this for reading only, and it is used to make decisions and also used as a warehouse to archive information by time, the Data warehouse can be used to support customers Data analysis to enhance decision making process (O'leary, 2011).

Data Mining: Exploring Data or discovering knowledge is another name for extracting Data, as it works on analyzing Data from different perspectives and synthesizing them to be used to increase the organization's income or even reduce its costs (Cristescu, 2016). It helps in enhancing knowledge of commercial processes and new trends in the market , it has a main role in advertising market polices for businesses and in decision making; this helps the organization in reducing repeated errors and increasing business sustainability, moreover; helps in acquiring knowledge of market environment and the current status of business environment (Arghir et. Al, 2019).

Online analytical process: Described by Rumondor and Irawati (2019) as a system and tool for dynamic data analysis within an organization, it involves stages like creating data analysis models, processing, displaying, and formulating data. Essential steps include collecting data, working on complex queries, historical data, and storing data in multi-dimensional charts. Despite its complexity, it is user-friendly, offering access from many perspectives and distributed in layers called domains (Cristescu, 2016). It's beneficial for dynamic data analysis, quick access to a large volume of data, synchronizing data sources from multiple databases, and historical analysis based on time series (Arghir et al., 2019).

Report Preparation: as mentioned by Bhatt et al. (2017) primarily visualizes data through designing charts, graphics, and building dashboards to display business metrics and key performance indicators. Preparing reports mostly based on the historical Data, which helps the organization to gain perspectives about what had happened in the past, so decisions can be made, however, the current business markets can change, and the buying habits of customers can change too, then the businesses need analytical reports providing Data about the work in the resent time (Baboo & Parbhu, 2013).

"The second domain: Effectiveness of decision-making"

Decision making is considered to be the true essence of the administrative process, since the decisions made in the organizations forms a great importance for all the workers in the organization, that means, as the decision appears to be correct it is reflected in the success of the organization and its ability to continue and develop, because of its connection to the effectiveness and the soundness of the decisions made (Bilal& Al-Omari, 2019).

The decision is defined as the selection between two or more alternatives, if you have one alternative you haven't any decision, and decision making is one of the special characters tics of leadership, it is worth to mention, the decision quality is based on data and information quality not on it quantity (Malhotra & Gosain, 2006).

The accuracy, reliability, and relevance of information to the problem at hand significantly enhance the quality of decisions across all administrative levels within an organization (Muhammad et al., 2021).

Hallo and Abu Ain (2022) emphasized that decision-making requires specific specifications and characteristics, underlining the necessity for decisions to be implementable and flexible to minimize negative impacts and enhance positive outcomes.

Decision making includes selecting the suitable solution for the problem between many alternatives, through defining the problems, developing and analyzing alternative solutions and selecting and executing the best solutions, finally; evaluating the decision quality (Yousfi & Addad, 2020).

The importance decisions emerges on the level of individuals and human groups, as it is linked to human daily work, as individuals are the center of decisions subject, whether for the administrative leaders who make the decision or for the subordinates who are the target of this decision. Furthermore, stopping the making of decisions, whatever their type, will inevitably lead the disruption of work and preventing activities, which means the death of the organization (Kanaan, 2011, 7-9).

Yaghi (2010,4), referencing Herbert Simon, encapsulated the essence of management as "making decisions and making decisions is management," illustrating that organizational behavior is a manifestation of the decision-making processes occurring within an organization. Despite the plethora of definitions by management scholars, two fundamental elements are crucial for a decision: the presence of a specific situation presenting multiple resolution paths and the necessity to make a conscious choice among the available alternatives (Kanaan, 2011,84).

Types of administrative decisions in organizations

There are many classifications of decisions in the orgnizations, the most important (Al-Tarawneh, 2014, 245-280):

- **Classification according to the organization's functions:** This includes decisions related to production and manufacturing, sales, marketing, human resources management, and other functions such as relationship management, comprehensive quality management, knowledge management, and research and development management.
- **Classification according to the circumstances or environment of the decision:** This classification divides decisions into those made under certainty, under risk, and under uncertainty, highlighting the varying degrees of information and predictability associated with each decision-making scenario.
- **Classification according to organizational level:** Decisions are categorized as strategic, administrative, or operational, reflecting their scope, impact, and the level of management involved in making these decisions.
- **Classification according to the possibility of their programming:** This distinguishes between programmed decisions, which follow a routine or standardized process, and non-programmed decisions, which are made in response to unique or unforeseen situations.
- **Classification according to the time they were made:** Decisions are identified as proactive, which are made in

anticipation of future events, or responsive, which are made in reaction to events that have already occurred.

- **Classification according to the methods of making them:** This includes standard or quantitative decisions, which rely on numerical data and analytical models, and descriptive or qualitative decisions, which are based on judgment, experience, and qualitative analysis.
- **Classification according to leadership style:** Decisions are described as either individual, where a single leader makes the decision, or group, where decisions are made collectively.

Stages of Admisnitrative decsoins making

Most decsions go through several stsges before their final announcement, those stasges are similar for most of the reserchers, those stages are (Hussein, 2011, 22-25):

1. **Identifying the Problem:** This initial stage involves recognizing and diagnosing the problem, studying its symptoms, collecting useful information, and then analyzing this information to understand the problem fully.
2. **Searching for Alternatives:** In this phase, information about each possible alternative is gathered. Alternatives that do not align with the goal are eliminated, and those that could potentially achieve the objective are examined more closely.
3. **Comparing Alternatives:** At this stage, it's essential to assess the advantages and disadvantages of each alternative. This involves determining how well each alternative meets established criteria to facilitate comparison.
4. **Choosing the Appropriate Alternative:** This step involves selecting the most suitable alternative that accomplishes the desired outcome at the lowest cost, considering the analysis conducted in the previous stages.
5. **Implementing the Decision:** To effectively implement the decision, it's crucial to financially and morally motivate employees and encourage their participation in the decision-making process. This includes involving them in the selection of the appropriate alternative to ensure their commitment to the decision.
6. **Follow-up and Monitoring:** The final stage requires monitoring the implementation of the decision to identify any deviations from the plan. This involves collecting, examining, and analyzing information to assess the outcomes of the selected alternative and ensuring that the implementation aligns with the initial planning.

These stages underscore the systematic approach to decision-making in organizations, emphasizing the importance of thorough analysis, employee involvement, and continuous monitoring to achieve successful outcomes.

Decision ethics

Decision making process is not an easy task, it hold great responsibility for the necessity of observing ethics limits, held by the manager, as it has effects and consequences; this imposes on decision makers to make sure that the decision is legally and ethically sound, ensuring that its publication in local newspapers does not result in negative effects on those concerned, their families, or the organization itself; the manager has the right to follow some standards for the decision to be ethically sound, among those standards: the gained benefits for concerned people, rights and responsibilities and their respect in the decision, justice, as well as specialization which, means that the decision falls within the responsibility of its maker (Al-Ghalbi & Al-amri, 2011, 319).

The concept of the effectiveness of decision-making

The effectiveness of decision making is the most important in the process, as it expresses the accuracy of conducting business, the methods used in the process and the results; further, it points out the contribution of decisions in achieving the organization's goals , as this includes the acceptance of the decisions by subordinates, Boutros (2009-11), Mentioned several factors

that make the decision effective, those are adopted by the current study as follows:

1. **Proper timing of decision making.**
2. **Ease of implementing the decision.**
3. **Accepting the decision from the concerned employee.**

Proper timing of decision making

Selecting the suitable time to make decisions leads to the best results, therefore, the manger must have what is called (time sense), expressing the manager's ability to induce events and predict the future, which gives the manager the opportunity to seize the best opportunity to announce and make the decision, selecting the appropriate time to announce and make the decision requires awareness of all the surrounding social and political circumstances, including the prevailing relations between the workers in the organization and the circumstances that the organization is going through(Kanaan, 2011).

The process of decision making is a difficult thing by time, there must be flexible tools to help us in making decisions in the proper time, it is important to try to take the necessary measures to respond in abnormal cases and in time critical situations(Horvitz & Barry, 2013). Flifel & Niri (2023) emphasized that decision making process is a rationale process and must choose the best decision to achieve the desired goals in the shortest time within the lowest costs.

Ease of implementing the decision

Implementing the decision requires many steps, the most important are; the required time for implementations, implementations stages, the individuals who will undertake the implementation process, the responsibility of each of them, and the methods of implementation, it also requires specifying the material and human resources necessary for this; it is worth noting the necessity of specifying preventive measures to prevent any deviations during implementation (Kanaan, 2011).

The most important process in decision making is acquiring support , not only for decision making, but also for facilitating decision implementation, as the implementation process without enough support may ends without any implementation of the decision, practically; to ensure the implementation of decisions it must be studied thoroughly and taking the neededmeasures for successful implementation, the process of implementing the decision is a difficult process full of pressure and deviation (Kourdi, 2011, 141).

Kashada & Ali (2016) highlighted the significance of employing individuals with strong communication skills to facilitate effective decision implementation, as well as the importance of ongoing training. For a decision to be smoothly implemented and met with minimal resistance, it is crucial that all relevant parties are fully informed about the decision (Itoh & Morita, 2019).

Accepting the decision from the concerned employee

The sound and clear decision must take into consideration the comprehensive vision of the surrounding environment, it must not be limited to the reality of the current problem, which requires achieving balance between risks and advantages that can be gained from accepting the decision, first, the closest and most suitable decision must be taken to ensure acceptance from the concerned people (Sweidat and Al-Sheikh, 2017).

Furthermore, accepting the decision is achieved through the participation of concerned people in decision making, the acceptance processes is an important thing for the success of the implementation of the decision, it is evident that the participation of decision making helps in providing information between the concerned members and generates a positive and encouraging atmosphere among them(Al-Rubaie and Ahmed, 2020).

Preparing both internal and external environments is vital for the acceptance process (kanan, 2011, 168-169):

- **Internal Environment:** This involves readying supervisors and department heads for the decision's acceptance and implementation. This preparation could include announcing the decision during a meeting, clarifying the reasons and motivations behind it, and

encouraging subordinates to carry it out.

- **External Environment:** This pertains to cultivating public opinion to support the decision in a manner that aligns with the citizens' desires, facilitating response, cooperation, and execution. Ensuring public support also helps to prevent opposition to the decision.

- **Study methodology**

Type and nature of study:

This study is characterized as applied in nature and illustrative in purpose, as it aims to elucidate the influence of business intelligence on effectiveness of decision-making within the International Arab Islamic Bank. The research is conducted in the bank's natural setting, making it an unplanned study that adapts to the existing environment. Regarding its temporal scope, the study is cross-sectional, examining a sample at a single point in time (Al-Najjar et al., 2020). Additionally, in terms of methodology and procedures, it qualifies as a field study, engaging directly with the environment and subjects under investigation.

Study Population

The study population comprises all managers at the senior administrative levels within the Islamic International Arab Bank. The unit of analysis for this study includes (50) managers who hold positions in the bank's senior management.

Data Collection Method

The study employed two primary methodologies for data collection:

First: Secondary Sources The use of secondary sources encompassed an extensive review of relevant Arab and international literature, including university dissertations, articles, periodicals, research papers, and prior studies that have addressed the topic under investigation. This approach provided a foundational understanding and context for the study.

Second: Primary Sources As a tool for primary data collection, a specially developed questionnaire was utilized to fulfill the objectives of the study. The questionnaire was structured into three parts:

- **The first part** aimed at gathering demographic and functional information from the study sample members, covering variables such as gender, age, educational, and years of experience.
- **The second part** focused on assessing the independent variable, business intelligence, through its specific domains, including data warehousing, Data Mining, Online Analytical Processing, and Report Preparation.
- **The third part** aimed to measure the dependent variable, the effectiveness of decision-making, across its domains, which encompass the Proper timing of decision-making, Ease of implemention the decision, and the acceptance of the decision by the concerned employee.

Tool realiability:

To ensure the reliability of the study tool, the Cronbach Alpha test was conducted for the study variables. Table (1) presents the Cronbach Alpha values for all variables.

Table 1. Cronbach's Alpha coefficients for the tool domains

Domain	Items	Cronbach's Alpha
Business Intelligence	16	.890
Effectiveness of Decision Making	12	.777
Total	28	.896

It is shown in Table (1) that main variables internal consistency coefficients exceed (0.70). This demonstrates high internal consistency among the items of the study variables, as well as their high reliability (Al Najar et al., 2020, 151)

Data Analysis and Hypotheses Testing

Description of the Job and Demographic Characteristics
Demographic Characteristics

Table 2. Distribution of sample members according to variables (gender, age, educational qualification)

Variable		Frequency	Percentage
Gender	**Male**	40	%80
	Female	10	%20
Age	**Less than 30 Years**	12	%24
	30 – less than 40 Years	12	%24
	40 – Less than 50 years	26	%52
	50 – Less than 60 years	0	0
	60 Years or more	0	0
Educational Qualificatoin			
Bachelor		43	%86
Higher Diploma		3	%6
Master		4	%8
PhD		0	0

Source: Prepared by the researchers based on the statistical analysis program
Description of job characteristics.

Table 3. Distribution of sample participants according to the variable (years of experience and job level)

Variable	Frequency	Percentage
Years of Experience		
Less than 5 years	3	%6
5 – less than 10 years	10	%20
10 – less than 15 years	11	%22
15 – less than 20 years	17	%34
More than 20 years	9	%18

Source: Prepared by the researchers based on the statistical analysis program.
Varaibles relative importance: "The relative importance was adopted so that (1) - less than (2.34) is low, (2.34 - less than (3.67 is medium), and (3.67 - 5) is high".

Relative Importance of Business Intelligence:

Table 4. *Relative Importance of* business intelligence

Variable		Mean	Standard Deviation	Rank	Relative Importance
1	Data Wharehouses	3.88	.602	4	High
2	Data Mining	3.99	1.05	3	High
3	Online Analytical Processing	4.44	.547	1	High
4	Report Preparation	4.25	.529	2	High
	Business Intelligence	**4.14**		**High**	

It is clear from the results of Table (4) that the relative importance of business intelligence was high.

The relative importance of effectiveness in decision making:

Table 5. The relative importance of effectiveness of decision-making variables

Variable		Mean	Standard Deviation	Rank	Relative Importance
1	Proper timing of decision making	3.92	1.00	1	High
2	Ease of implementing the decision	3.72	1.03	3	High
3	Accepting the decision from the concerned employee	3.88	.602	2	High
effectiveness of decision-making		**3.84**		**High**	

It is clear from the results of Table (5) that the relative importance of effectiveness decision-making was high.

Testing the study hypotheses

Main Hypothesis

There is no statistically significant effect at a significance level ($\alpha \leq 0.05$) of Business Intelligence in its domains (Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation) on the effectiveness of decision-making in its combined domains (Proper timing of decision making, Ease of implementing the decision, and Accepting the decision from the concerned employee) at the Islamic International Arab Bank.

The master hypothesis was analyzed by "standard multiple linear regression":

Table 6. Model summary and analysis of variance for the main hypothesis

Model	Model Summery [b]		ANOVA[b]		
	R	**R^2**	**F**	**DF**	**Sig F**
1	.974[a]	.948	206.501	4	0.000[a]

a. Predictor: (Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation).

b. Dependent variable: Effectiveness of Decision-Making.

Table (6) shows that that the value of the coefficient of determination reached (R^2=.974) at (4) degrees of freedom, and that the value of (F=206.501) was at a significant level (sig=0.000), and this confirms the significance of the regression. It indicates that "Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation" together explained (94.8%) of the variance in the effectiveness of decision-making.

Table 7. Coefficient analysis results

Model number	Model	Coefficient[a]		
		β	**T**	**Sig T**
1	Proper timing of decision making	.354	8.939	.000
	Ease of implementing the decision	.809	21.506	.000
	Accepting the decision	-.122	-3.374	.002
	from the concerned employee	-.133	-3.851	.000

Dependent variable: Effectiveness of Decision-Making.

All coefficients are significant because, as Table (7) demonstrates, all values for the various coefficients and at various (T levels) were at a significance level range between (0.000-0.002), which is (α ≤0.05) and significant.

As a result, we reject the primary null hypothesis and accept the alternative, which claims that business intelligence in the domains of "data warehouse, data mining, online analytical processing, and report preparation" has a statistically significant impact on decision-making effectiveness at a significant level (α≤0.05). In the Islamic International Arab Bank, with its combined domains of "appropriate timing of decision making, ease of implementation, and accepting the decision from the concerned employee."

First sub-hypothesis

There is no statistically significant effect at a significance level (α ≤ 0.05) of BI in its combined domains (Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation) on the Proper timing of decision-making at the Islamic International Arab Bank.

Table 8. Model summary, analysis of variance, and coefficients for the first sub-hypothesis

Model Summery		**ANOVA[b]**			**Coefficients[b]**		
R	r^2	F	Df	Sig F	β	t	Sig t
.598[a]	.358	26.737	1	.000[a]	.598	5.171	.000

a. Predictor: Business Intelligence.
b. Dependent variable: Proper timing for decision making.

Table (8) and from the outline of the model that the value of (r =.598), which that means there is an average correlation between business intelligence and the proper timing for decision-making. It is also clear that the coefficient of determination for the business intelligence variable reached (r^2=.358), that means the business intelligence actions explained (35.8%) of the variance in the appropriate timing for decision-making, and from the analysis of variance table it was reached that the value of (F=26.737) was at a significant level (Sig=0.000) at (1) degree of freedom, and this emphasize the significance of the regression.

The coefficients shown from table the value of (ß=.598) and the value of (t=5.171) are at a significance level (sig=0.000). This enhance the significance of the coefficient, and based on that, we do not accept the first sub-null hypothesis, and we accept the alternative sub-hypothesis which states However, "there is a statistically significant effect at a significant level (α≤0.05) of Business Intelligence in its combined domains (Data Warehouse, Data Mining, Online Analytical Processing, and Reporting Preparation) on the proper timing of decision-making at the Islamic International Arab Bank".

Second sub-hypothesis

"There is no statistically significant effect at a significance level (α ≤ 0.05) of Business Intelligence in its combined domains (Data Warehouse , Data Mining, Online Analytical Processing, and Reporting Preparation) on the ease of decision implementation at the Islamic International Arab Bank".

Table 9. Model summary, analysis of variance, and coefficients for the second sub-hypothesis

Model Summery		**ANOVA[b]**			**Coefficients[b]**		
R	r^2	F	Df	Sig F	β	t	Sig t
.554[a]	.307	21.303	1	.000[a]	.554	4.615	.000

a. Predictor: Business Intelligence.
b. Dependent variable: ease of implementing the decision.

Table (9) and from the abridgement of the model that the value of (r =.554) that means there is an average correlation between business intelligence and the ease of implementing the decision. It is also clear that the coefficient of determination for the business intelligence variable found (r^2=.307) and this means that business intelligence It explained (30.7%) of the variance in the ease of implementing the decision, and from the analysis of variance table it was reached that the value of (F=21.303) was at a significant level (Sig=0.000) and at (1) degree of freedom, and this emphasize the significance of the regression.

The coefficients shown from table the value of (ß=.554) and the value of (t=4.615) are at a significance level (sig=0.000). This confirms the significance of the coefficient. Therefore, we do not accept the second sub-null hypothesis, and we accept the alternative sub-hypothesis which states: " There is a statistically significant effect at a significant level (α≤0.05) of Business Intelligence (Data Warehouse, Data Mining, Online Analytical Processing, and Report Preparation) on the ease of decision implementation at the Islamic International Arab Bank".

Third sub-hypothesis

"There is no statistically significant effect at a significance level (α ≤ 0.05) of Business Intelligence in its combined domains (Data Warehouse, Data Mining, Online Analytical Processing, and Reporting Preparation) on Acceptance of the decision by the concerned employee at the Islamic International Arab Bank".

Table 10. Model summary, analysis of variance, and coefficients for the third sub-hypothesis

Model Summery		**ANOVA[b]**			**Coefficients[b]**		
R	r^2	F	Df	Sig F	β	t	Sig t
.605[a]	.366	27.726	1	.000[a]	.605	5.266	.000

a. Predictor: Business Intelligence.
b. Dependent variable: acceptance of the decision by the concerned employee.

Table (10) and from the summary of the model that the value of (r=.605), which means that there is a high correlation between business intelligence and Accepting the decision from the concerned employee. It is also clear that the coefficient of determination for the business intelligence variable reached (r^2=.366), which means that business intelligence explained (33.6%) of the variance in Accepting the decision from the concerned employee, and from the analysis of variance table it was found that the value of F = (27.726) at a significance level (Sig = 0.000) and at a degree of freedom (1), and this confirms the significance of the regression.

It was also shown from the coefficients table that the value of (ß=.605) and the value of (t=5.266) are at a significance level(sig=0.000). This confirms the significance of the coefficient. Therefore, we do not accept the third sub-null hypothesis, and we accept the alternative sub-hypothesis which states: " There is a statistically significant effect at a significant level (α≤0.05) of Business Intelligence in its combined domains (Data Warehouse, Data Mining, Online Analytical Processing, and Report Prepartion) on accepting the decision from the concerned employee in the Islamic International Arab Bank".

Results and Recommendations

- **Gender:** The results of the study showed that the number of male managers reached (80%), while the number of female managers reached (20%)of the sample. This is due to the responsibilities placed on females outside working hours, which makes them less likely to hold senior positions. In addition, job turnover is greater among females than males.
- **Age Group:** It was found that ages (40) to less than (50) ranked first as an active and experienced group capable of interacting and working under new and stressful circumstances.

- **Academic Qualification:** It was found that the largest percentage was for holders of a bachelor's degree, as it reached (86%). This is one of the criteria for acceptance into the job at the bank, which banks always seek to attract because the possibility of developing, developing, and retaining them will be guaranteed. This also indicates the career path that the employee will take by virtue of experience and seniority for senior positions.
- **Years of Experience:** It was found that the category from (15) years to less than (20) ranked first, which is normal, as the higher levels enjoy seniority, high experience, and accumulated knowledge during these years.

Discussing the results of the analysis of the study questions:

1. The results showed that the general relative importance level of the independent variable business intelligence was high, reaching (4.18). All of its domains were high without exception. The Online Analytical Processing dimension ranked first, reaching (4.44), followed by the Report Preparation dimension, with a percentage of (4.25). The Data Mining dimension ranked third, with a percentage of (3.99), and finally, the Data Warehouse dimension came in last place, reaching (3.88). These results align with Al-Khatahtbeh's study (2023), which also found an increase in the relative importance of business intelligence in private hospitals affiliated with the Ministry of Health.
2. Regarding the dimension of the effectiveness of decision-making, the dependent variable, the results indicated that the levels of relative importance of the effectiveness of decision-making in general were high, reaching (3.85). All of its domains were high without exception. The dimension of the proper timing for decision-making ranked first and reached (3.92), followed by the dimension of Accepting the decision from the concerned employee with a percentage of (3.88). In last place was the dimension of ease of implementing the decision, which reached (3.72). These results are consistent with the study of Al-Qahtani and Al-Subaie (2020), where the relative importance of the effectiveness of decision-making was high in Dammam schools under their leadership.
3. The results of the main hypothesis showed that there is a "statistically significant effect at a significant level ($\alpha \leq 0.05$) for business intelligence with its domains (Data Warehouse, Data Mining, Online Analytical Processing, Report Preparation) on the effectiveness of decision-making with its combined domains (Proper timing for implementing the decision, ease of implementing the decision, accepting the decision from the concerned emplyee) in the Islamic International Arab Bank". These findings are in line with the study of Al-Balawi (2023), the study of Hassan and Kazem (2022), and the study of Al-Jubouri and Al-Jumaili (2019).
4. The results of the first sub-hypothesis showed that there is a significant effect between business intelligence and Proper timing for decision-making at the Islamic International Arab Bank. This indicates that business intelligence affects the appropriate timing for decision-making, which would make the decision more effective and of higher quality, preventing any exacerbation of problems.
5. The results for the second sub-hypothesis showed that there is an effect between business intelligence and the ease of implementing the decision. The availability of necessary data in the respiratory, data mining, online processing, and preparation of reports would facilitate the process of implementing the decision due to the availability, accuracy, and continuous updating of data in the Islamic International Arab Bank.
6. The results of the third sub-hypothesis also showed that there is an effect between business intelligence and the Accepting the decision from the concerned employee. This confirms that what the bank adopts in terms of preparing subordinates to accept the decision indicates caution, accuracy, and fairness when making decisions. This is

made possible thanks to the correct and reliable data provided by business intelligence to decision-makers and subordinates.

Recommendations:

Based on the findings of the study recommends:

- Increasing interest in business intelligence in all its domains at the Islamic International Arab Bank; since it has an impact on achieving competitive advantage, through interest in strengthening the infrastructure; and using the best technology; so that business intelligence is at the highest level at the bank since there is a large number of competitors in the banking sector.
- Enhancing interest in the effectiveness of decision making, because of the sensitivity of decision making, the proper timing for implementing the decision, the ease of implementing the decision, and the acceptance of the concerned employee help to strengthen trust between the decision makers and those affected by the decision, through the participation of subordinates in decisions making through brainstorming sessions; and processes. Persuasion and activating dialogue in the bank to improve transparency.

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