THE ROLE OF DIGITAL TRANSFORMATION STRATEGY IN ENHANCING STRATEGIC POSITIONING: EVIDENCE FROM IRAQI UNIVERSITIES

Ahmed Abdullah Fathallah
Ahmedabdulla5001@gmail.com
Department of Business Administration
Al-Qalam University College

Article history:		Abstract:
Received:	11th June 2025	This research aims to identify and analyze the role of the digital transformation strategy (DTS) with its dimensions in enhancing the strategic positioning (SP) of universities. This study relies on a descriptive analytical approach by collecting data through a tool called a questionnaire and analyzing it to express the opinions of a group of lecturers at the Northern Technical University. The questionnaire was built based on a five-point Likert scale. A random sample of (285) was selected, (6) questionnaires were excluded, so the total valid for analysis was (279). The data was analyzed using SPSS 24. The study concluded that the digital transformation strategy has a high positive impact on achieving strategic positioning. Also, operational capabilities are the most influential in achieving strategic positioning within the dimensions of DTS.
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1. INTRODUCTION

Higher education has rapidly become an international affair, characterized by competition and cooperation, transcending national borders (Barbato, 2019). Moreover, university rankings present themselves as a powerful tool for defining and enhancing universities' standing and position in the global competition (KLEMENČIČ, 2016; Barbato, 2019). As such, the tremendous growth has changed the way universities operate in the higher education sector, urging them to accommodate increasing numbers of students with diverse disciplines, conduct diverse research activities to achieve academic excellence and impact, enhance services provided to their communities, and legitimize themselves as local and regional economic, technological, and innovation engines (Fumasoli et al., 2020). To consolidate their position in the minds of customers, organizations today focus their efforts on complementary offerings to differentiate their products (Garachkovska et al., 2020). The fundamental goal of competitive strategy is to build and maintain a strategic position in the market (Ng & Pan, 2024). To achieve this, the fundamental dimension of positioning is understanding and dealing with the competition (Fumasoli et al., 2020).

According to Barney (1991), organizations can gain a sustainable competitive advantage if they have scarce and valuable resources. Universities tend to position themselves where the necessary resources are available (Barbato et al., 2021). Therefore, in the knowledge age, understanding the value that IT initiatives can add to universities is increasingly important (Rodríguez-Abitia and Bribesca-Correa, 2021). At the same time, academic institutions represent another sector impacted by new technologies and at risk of disruption due to digital disruption (Lorach and Toamsuk, 2022; Lu et al., 2025). The goal of digitizing education has long been to universalize access to education for all (Erdman et al., 2021).

On the other hand, to achieve strategic positioning, three key aspects must be considered: customer focus through market offerings, organizational behavior, and underlying organizational structures (Koldoy et al., 2022). Therefore, strategic positioning impacts consumer perception, organizational image, market share, return on investment, and profits, providing companies with a sustainable competitive advantage (Kethoda, 2023; Dang and Yeo, 2017). This is consistent with Porter (1996) and Saqib (2020) who argue that if strategic positioning is done correctly, it will impact an organization's long-term competitive advantage. According to Nadubhi and Didia (2018), an increasing number of organizations are seeking to manage their brand positioning, using positioning strategies to secure a new position in the minds of buyers and, thus, achieve a competitive advantage over their rivals.

Therefore, digital transformation has become essential for higher education institutions (Loglo, 2024). It is gradually becoming more important for organizations operating in dynamic and competitive sectors, impacting their strategic positioning (Rêgo et al., 2022; Aydarova et al., 2020). Thus, the driving forces behind digital transformation strategies

in the education sector are the global competitiveness of education, financial incentives, and educational quality (Mohamed Hashim et al., 2022). This view is shared by (Krumay et al., 2019; Gupta et al., 2023; Hilal, 2023) achieve this positioning, an organizational strategy must be formulated and implemented by leveraging digital resources to create differentiated value. Based on Porter's framework, a firm that selects and implements a successful strategy, based on cost leadership or differentiation, will be positioned to effectively address the competitive forces that determine success within the industry (Chang et al., 2015). This makes digital transformation the main driver of the current change in value creation processes in organizations (Porfirio et al., 2021; Faure et al., 2022).

Several studies (e.g., Fumasoli et al., 2020; Klemenčić, 2016; Molana et al., 2023; Aidarova et al., 2020; Nair and Mittal, 2024; Barbato, 2019; Zibarro, 2023; Gizzo, 2024) have addressed the importance of achieving strategic positioning for universities. Studies (e.g., Deroncelli-Acosta et al., 2023; Hannan, 2023; Wang et al., 2023) have also addressed digital transformation strategies in higher education institutions. Accordingly, this study is unique, and perhaps rare, in bridging the research gap between the variable of digital transformation strategy and the concept of strategic positioning.

Based on the previous discussion, we pose the following main research questions:

Question 1: How important is the digital transformation strategy for the strategic positioning of higher education institutions?

Question 2: To what extent are the dimensions of the digital transformation strategy and strategic positioning available in Iraqi universities?

Accordingly, this research paper is organized as follows. In the first section, we present a literature review of the variables. In the second section, we present the derivation of hypotheses. The third section presents the research methods and data collection procedures. The fourth section explains the statistical analysis of this study. The fifth section provides discussion and conclusions, applications, limitations, and future research directions.

2.   LITERATURE REVIEW
2.1   *Digital Transformation Strategy*

Porter (2011) refers to strategy as the search for a competitive position or distinctive niche within a particular industry. From this perspective, he derived the term "digital transformation strategy," meaning "an organizational strategy formulated and implemented using digital resources to create differentiated value" (Kromai et al., 2019; Agostino and Costantini, 2022; Cao et al., 2023). One of the most balanced definitions is that it is an evolutionary process that leverages digital capabilities and technologies to enable business models, operational processes, and consumer experiences that generate value (Rodriguez-Abitia and Pribisca-Correa, 2021; Albuquetan, 2020). According to Laurach and Tuamsuk, 2022, digital transformation is a strategic change that involves the automated integration of digital technologies into all aspects of an organization, including its infrastructure, operating models, products, services, and other processes.

In general, (Rigo et al. 2022; Krumay et al., 2019; Garcia-Pérez et al., 2023) define digital transformation as a process aimed at improving a specific organization and bringing about fundamental changes in its characteristics through the integration of information, computing, communication, and interconnection technologies. For example, (Chen et al. 2023; Lee et al., 2023; Saeed et al., 2023; Han et al., 2023) cite the most important advanced technologies used by companies that contribute to adopting a digital transformation strategy: artificial intelligence, cloud computing, big data analytics, the Internet of Things, and blockchain technology.

Digitization also provides productivity improvements, cost reductions, and innovations that in turn impact digital transformation (Kraus et al., 2021; Khali et al., 2023). On the other hand, (Graf et al., 2023; Raza et al., 2023; Zobelito et al., 2023) indicate that one of the biggest challenges organizations currently face, and which lies at the heart of a digital transformation strategy, is organizational change.

2.2   *Strategic Positioning*

Porter (1979) described the term "strategic positioning," and since then it has become a widely accepted classification (Kromey et al., 2019; Dombrowski et al., 2018). Positioning theory arose from the desire to find a way to differentiate a product from products with similar characteristics and features through marketing communications (Garáčkowska et al., 2020). This is indicated by (Rana et al., 2022; Iyer et al., 2019; Abdullah et al., 2025). Strategic positioning is the process of designing an organization's offerings and image to occupy a distinct strategic position in the minds of the target market. Positioning may occur when firms have the opportunity to differentiate buyer needs and wish to enter a new market to establish a dominant position there (Nadube & Didia, 2018; Kulet et al., 2019; Fumasoli et al., 2020; Barbato, 2019; Zipparo, 2023). University positioning is defined as the process by which higher education institutions determine their position within specific resource areas within the higher education system. Vivchenko (2018) agrees,

stating that brand positioning is the process of building a unique brand image, distinctive characteristics, positive associations, and values in the minds of customers, with the goal of building a sustainable brand image and ensuring customer engagement. Maulana et al. (2023) emphasizes that the primary purpose of strategic positioning is to keep the brand/product top of mind for customers when they are considering a purchase. Finally, and generally speaking, strategic positioning is a business practice aimed at improving an organizational-level strategy that successfully differentiates a company from its competitors (SIMIYU, 2021).

3.   Relationships and hypothesis derivation

The development and use of modern technologies has become an important element for both private and governmental organizations to develop and transform their operations (Laorach & Tuamsuk, 2022). According to Loglo(2024), increased interest in technological development is considered a strategic necessity for higher education institutions to maintain their relevance and position by enhancing education. The challenge facing leadership lies not in developing new strategies, business models, and new organizational projects that leverage digital technologies, but rather in successfully managing the transition from the organization's current stage to the desired future state, while constantly assessing and recalibrating the organization's path and destiny (Rêgo et al., 2022). Krumay et al.(2019) emphasized that digital transformation strategies play a significant role in building strategic positioning. Innovative and agile companies incorporate transformation requirements into their strategies to maintain their position in competitive markets (Kraus et al., 2021; Ghobakhloo & Iranmanesh, 2021).

As a result of the increasing use of digital technologies by organizations, with the aim of improving their competitiveness through market differentiation (Porfírio et al., 2021; Margiono, 2021). organizations with digital transformation can become more competitive with other organizations in the industry by improving their performance in efficiency, productivity, innovation, and customer experience (Firmananda et al., 2023; Reis & Melão, 2023). The strategic positioning of organizations can also be assessed through their digital advantages (Aydarova et al., 2020). Finally, Marks et al., 2022; Feliciano-Cestero et al., 2023) concluded that there are several reasons why organizations undergo a digital transformation strategy, but the main reasons relate to issues of competitive advantage and maintaining a competitive position. Based on the above, the first main hypothesis can be derived.

Ha1:   There is a positive impact between digital transformation strategy and strategic positioning in higher education institutions.
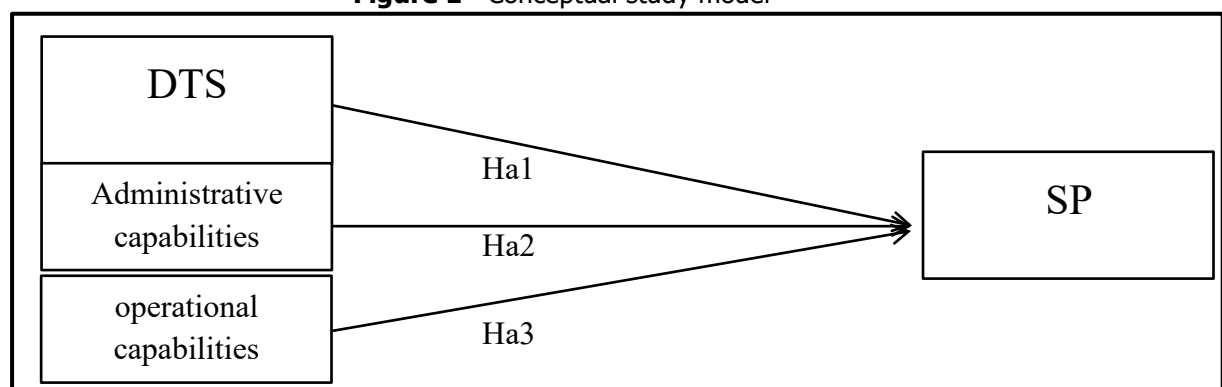
On the other hand, achieving strategic positioning depends on effective management (Aydarova et al., 2020). Leadership capabilities are also considered one of the indicators of determining strategic positioning (SIMIYU, 2021). This is what Zipparo, 2023; Abdullah et al., 2025) agreed with, stating that the actions and decisions of leadership in organizations are the primary determinant of strategic positioning. Accordingly, the second sub-hypothesis can be derived.

Ha2: Managerial capabilities affect the achievement of strategic positioning.

Achieving strategic positioning also requires operational capabilities, including changes in the organizational structure, the distribution of resources across departments, the decision to merge or acquire new companies, the consolidation of existing business locations, and the termination of activities that do not align with management plans (Vovk & Afanasieva, 2022). The academic debate has recently shifted to how universities themselves cope with these changes and how they develop organizational capabilities that enable them to choose a course of action and adjust their position and strategic positioning (Barbato, 2019; Zipparo, 2023). Based on this, Barbato et al., 2021, asserted that the strategic positioning of universities is influenced by the organizational dimension. Accordingly, the third sub-hypothesis can be derived.

Ha3: Operational capabilities influence the achievement of strategic positioning.

Figure 1 Conceptual study model

Note: DTS; Digital Transformation Strategy, SP; Strategic Positioning.

4. METHODOLOGY
4.1 Sample and procedures of data collection

A random sample of 285 lecturers at the Northern Technical University in Kirkuk Governorate was distributed. After collecting the questionnaire, 6 questionnaires were excluded, leaving a final total of 279 items suitable for analysis. The questionnaire was divided into two parts, the first part contained demographic data, while the second part contained primary data on the study variables, which were collected through the questionnaire (Rokeman, 2024) as a suitable tool for measuring behavioral concepts. The five-point Likert scale was adopted as an evaluation indicator. The secondary data relied on a literature review of articles and books, according to the recommendations of Hair et al. (2019) Krejcie & Morgan (1970); To collect data and comply with the ethical standards of the study, the sample was informed that their participation in the research was voluntary, and that their responses to the questionnaire would be confidential and for study purposes only, and would not cause them harm, preserving the rights and dignity of all study participants (Laryeafio & Ogbewe, 2023). The questionnaire was also presented to a group of experts to review the content and accuracy of the questions (Hair et al., 2019). The table below summarizes the demographic variables of the sample.

Table 1 Demographics variables

Item	Category	percentage	mean	Sd
Gander	Male	57%	1.43	0.496
	Female	43%		
Age	26 _ 34	24%	3.05	0.733
	34_42	46%		
	More than 42	30%		
Academic achievement	Master's	32%	1.75	0.978
	PhD	68%		
Experience in work	1- 5	18%	2.50	0.435
	6-11	31%		
	12-16	33%		
	17-21	18%		

4.2 Measures

The scale was designed based on the observations of Hair et al. (2010); Hair et al. (2014) Sekaran and Bougie (2016) in constructing administrative scales. Accordingly, the digital transformation strategy variable was measured based on Ukko et al. (2019); Abdullah & Ahmed (2024), which consists of two dimensions: (administrative capabilities, operational capabilities). Managerial capabilities are the ability of managers to apply high-level managerial skills, competencies, and knowledge to create an interactive environment for integrating the company's various resources, leading to high organizational performance (Alolayyan & Alyahya, 2023). Therefore, managerial capabilities are what managers need to plan and implement company plans and help modify and improve organizational culture, including shaping digital cultures, to increase the company's competitiveness (Shin, et al., 2023). On the other hand, operational capabilities include the ability to implement the technological and operational changes required to achieve digital transformation (Deng & Noorliza, 2023; Hortovanyi et al., 2023). Accordingly, a questionnaire was designed to measure its dimensions, with five questions for each dimension, coded (XX1, XX2), resulting in a scale of 10 items.

A nine-item scale, based on (Abdullah et al., 2025), was developed to measure the variable of strategic positioning in the university field, including: "Our university has a distinct position among competitors. Our university attracts expertise faster than competitors. Our university constantly strives to reduce costs. Our university focuses on continuous improvement processes. Our university constantly studies the market. Our university studies new competitors. Our university focuses on the risks of substitute services. Our university provides high-quality educational materials by all standards. Our university's work is student-centered."

5. RESULTS

To analyze reliability, a preliminary analysis was conducted on 80 responses using the Cronbach's alpha value using the IMP SPSS 24 program. According to Hair et al. (2014); Hair et al. (2019), a value greater than 0.7 indicates good reliability of the instrument used. Boateng et al. (2018). The result was (0.87), indicating excellent internal consistency Krejcie & Morgan (1970). Accordingly, in this section, a descriptive analysis will be conducted first, Sloman (2010) and Anderson et al. (1999). Then, the hypothesis of the association and influence between the digital transformation strategy variable and strategic positioning will be tested, as follows:

5.1 Descriptive analysis of study variables

To calculate the arithmetic means, standard deviation, and coefficient of variation for each item of the main dimensions and the ordinal importance based on the responses of the sample members, according to Anderson et al. (1999). The digital transformation strategy variable obtained an arithmetic mean of (3.220), which is a good level as it is greater than the default mean of (3). It obtained a standard deviation of (0.781), which is less than one. This variable also achieved a coefficient of variation of (24.255%), indicating low dispersion in the sample members' responses and the presence of homogeneity and convergence of opinions. These results demonstrate the extent of the sample members' awareness of the digital transformation strategy and its availability.

Table 2: Analysis and description of digital transformation strategy data

Sub-dimensions	Paragraphs	Mean	Sd	CV	Weight	Rank
Administrative capabilities	X1	3.096	0.967	%31.234	%62	4
	X2	3.267	0.926	%28.344	%65	3
	X3	3.067	1.011	%32.964	%61	5
	X4	3.559	0.988	%27.761	%71	2
	X5	3.459	0.890	%25.73	%69	1
Average	XX1	3.290	0.785	%23.860	%66	The First
operational capabilities	X6	3.256	0.978	%30.037	%65	3
	X7	3.007	0.994	%33.056	%60	5
	X8	3.156	0.944	%29.911	%63	2
	X9	3.130	0.953	%30.447	%63	4
	X10	3.204	0.956	%29.838	%64	1
Average	XX2	3.150	0.833	%26.444	%63	The Second
Total	DTS	3.220	0.781	%24.255	%64	

Administrative capabilities ranked first in importance as a dimension supporting the adoption of the digital transformation strategy, with a coefficient of variation of (23.860%), a high arithmetic mean of (3.290), and a standard deviation of (0.785).

On the other hand, the strategic positioning variable obtained an arithmetic mean of (3.538), which is a good level because it is greater than the default mean of (3) (Anderson et al., 1999). It obtained a standard deviation of (0.9703), which is less than one, and this variable achieved a coefficient of variation of (27.417%), as shown below.

Table 3: Analysis and description of strategic positioning data

Sub-dimensions	Paragraphs	Mean	Sd	CV	Weight
Y1		3.256	0.982	%30.161	%65	9
Y2		3.489	0.895	%25.652	%69.9	2
Y3	3.159	0.880	%27.844	%63.2	6
Y4		3.519	0.915	%26.017	%70.4	3
Y5		3.782	1.098	%29.027	%75.64	7
Y6	3.785	1.103	%29.152	%75.7	8
Y7	3.611	0.941	%26.057	%72.22	4
Y8	3.430	0.871	%25.402	%68.6	1
Y9	3.811	1.048	%27.495	%76.22	5
SP	3.538	0.9703	%27.417	%70.8	

Based on the results of the statistical analysis, as indicated by Sloman (2010), the eighth question came in first place in terms of its availability and understanding by the sample members, and it obtained a coefficient of variation of (%25.402), an arithmetic mean of (3.430), and a standard deviation of (0.871).
Testing hypotheses of association and influence.

5.2 Testing hypotheses of association and influence

To test the hypotheses of the correlation, the researcher relied on Pearson's correlation coefficient, which is one of the most important types of correlations for measuring linear relationships between two variables Obilor & Amadi (2018) Sedgwick (2012).

Table 4: Correlation matrix of variables

Variables	DTS	SP
SP	0.859	1.000
	0.000	0.000
	279	279
DTS	1.000	0.859
	0.000	0.000
	279	279

Depending on the Pearson correlation coefficient, correlation coefficients can be high or low, positive or negative Obilor & Amadi (2018). The table shows a high positive relationship between digital transformation strategy and strategic positioning (85.9%). According to Obilor & Amadi (2018), correlation coefficients greater than R>60 are considered high, thus proving the validity of the hypothesis of a relationship between the two variables. As a result, simple and multiple impact coefficients can be tested.

Table 5: Results of DTS impact on SP

Cofficients				ANOVA		Model Summary			
Sig	T	β		Sig	F	Adjusted R Square	R^2	R	Model
0.000	7.132	0.713	(Constant)	0.000	755.740	0.737	0.738	0.859	1
0.000	27.491	0.830	DTS						

We note from the table above that the value of the coefficient of determination (R^2) explains a percentage of (0.738) of the changes in the dependent variable (strategic positioning) at the Northern Technical University, which is mainly due to the independent variable (digital transformation strategy), while the rest of the changes are due to other factors not included in the model. By examining the table, it is clear that F = 755.740, which indicates that it is suitable for analysis. By observing the slope coefficient (β), we find that strategic positioning is present at the Northern Technical University at a percentage of (0.713). However, if the digital transformation strategy is available by one unit, the advantages of competitive superiority will increase by (0.830). What confirms that this effect is significant is the value of T = 27.491, which is considered greater than its tabular value (1.984), and it is considered significant at a significance level of Sig = 0.000, according to Deb et al (2017); Field (2024).

Table 6: Results of the impact of DTS dimensions on SP

Cofficients				ANOVA		Model Summary			
Sig	T	β		Sig	F	Adjusted R Square	R^2	R	Model
0.000	7.232	0.736	(Constant)	0.000	379.114	0.738	0.740	0.860	1
0.000	8.526	0.479							
0.000	5.823	0.347	XX2						
			XX1						

We notice by reviewing the table that all dimensions of the digital transformation strategy affect the strategic positioning, as the adjusted coefficient of determination (R^2Ad=0.738) appeared, which means that both dimensions explain (0.738) of the changes in the strategic positioning that are originally due to the digital transformation strategy in its two dimensions (administrative capabilities, operational capabilities), as it is noted that the significance was (Sig=0.000), which means that the regression model is significant and that it is valid for analysis Deb et al (2021); Field (2024). It was found that all dimensions of the digital transformation strategy had a significant and statistically significant impact on strategic positioning, but operational capabilities were the most influential in achieving strategic positioning, as observed by observing the value of the regression coefficients (β) at a rate of (0.479), which means that if operational capabilities increase by one unit, strategic positioning will increase by (0.479), and what confirms this is the value of (T) for the two dimensions, which was (8.526) for operational capabilities, which is greater than its table value of (1.984), in addition to (5.823) for administrative capabilities, which is greater than its table value of (1.984), and it is considered significant (Sig=0.000), because it is less than P<0.05, which means statistically significant Hair et al. (2021).

6.DISCUSSION
6-1. Conclusions

We conclude from the above results that the variables in the descriptive analysis of the sub-dimensions and the measurement questions are available or present in the field of study. It was found that there is a direct positive relationship between the two variables, a confirmed issue according to the literature presented in the first section (Rêgo et al., 2022; Aydarova et al., 2020; Helal, 2023). Our results are consistent with what Krumay et al., 2019; Gupta et al., 2023; Helal, 2023) indicated that to achieve strategic positioning, effective digital strategies must be

developed through which competitive advantage can be enhanced and the company's position maintained in the market.

It also agrees with (Aydarova et al., 2020), that digital technologies have a significant impact on achieving strategic positioning. Universities should also strengthen and maintain their strategic position (positioning) (KLEMENČIČ, 2016; Barbato et al., 2019; Feliciano-Cestero et al., 2023; Marks, 2022), which our study confirmed. The study also found that operational capabilities are the most influential in achieving strategic positioning through organizational changes and efficient resource management. This was agreed upon by Afanasieva, 2020; Barbato, 2019; Zipparo, 2023; Barbato et al., 2021). Based on the above, the study hypotheses can be accepted Hair et al. (2019).

6.2 Applications

This study falls within the framework of strategic management studies that recognize the importance of strategic positioning for organizations and digital transformation strategies. The study has important theoretical and empirical implications for future strategic management research. Therefore, the study sought to fill the research gap related to the study variables, particularly in Iraqi universities, including Iraq as a developing country. Furthermore, the study results will provide insights for Iraqi universities in particular, Middle Eastern universities in general, and other companies on how to build a competitive strategy based on digital technologies, which will contribute to consolidating their strategic positioning in their business models.

The study achieves its primary objective of identifying the role of the digital transformation strategy, with its two dimensions—administrative and operational capabilities—in achieving strategic positioning in Iraqi universities, particularly in Kirkuk Governorate. Therefore, the results can be generalized at the national level, given the similarity of universities in terms of technology and global rankings. At the regional level, the results can also be generalized to Iraq's neighboring countries, such as Iran, Syria, Jordan, and Turkey, as well as the Gulf states, given the similarity of culture, language, and some scientific indicators.

6.3 Limitations and future studies

The study faced numerous challenges and obstacles, most notably concerns about the confidentiality of information and the refusal to provide it without the approval of senior management at the university, as well as the methods of distributing and collecting data. The sample was geographically dispersed. Due to their large number, the study encountered difficulty in limiting the questionnaire to all university faculty members. Therefore, the study was limited to a random sample.

In the future, the researcher recommends adopting the scale in other studies, such as examining the role of digital transformation strategies in achieving strategic positioning by introducing digital leadership as an intervening variable, or the mixed competitive strategy in achieving strategic positioning for private universities. The study model can also be generalized to other companies or sectors, such as health, industry, tourism, and aviation.

REFERENCES

1. Abdullah, H. A., & Ahmed, Z. F. (2024). The Role of Digital Transformation Strategy Capabilities In Knowledge Leadership At Iraqi Universities. *World Economics and Finance Bulletin*, *33*, 196-210.
2. Abdullah, H. A., Ahmed, Z. F., Fadhil, A. M. A. D., & Dizdar, S. A. (2025). How competitive strategy affects the building of strategic position through the mediating role of leader's knowledge: evidence from Karwanchi Group in Iraq. *International Journal of Learning and Intellectual Capital*, *22*(2), 146-167.
3. Agostino, D., & Costantini, C. (2022). A measurement framework for assessing the digital transformation of cultural institutions: the Italian case. *Meditari Accountancy Research*, *30*(4), 1141-1168.
4. Albukhitan, S. (2020). Developing digital transformation strategy for manufacturing. *Procedia computer science*, *170*, 664-671.
5. Alolayyan, M. N., & Alyahya, M. S. (2023). Operational flexibility impact on hospital performance through the roles of employee engagement and management capability. *BMC Health Services Research*, *23*(1), 1-12.
6. Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., Cochran, J. J., Freeman, J., ... & Fry, M. J. (1999). *Statistics for business and economics*. SouthWestern College Pub..
7. Aydarova, J., Pashkus, N., & Blagikh, I. (2020). Effective strategic positioning of institutions of secondary professional education in the knowledge economy. In *SHS Web of Conferences* (Vol. 74, p. 01002). EDP Sciences.
8. Barbato, G. (2019). Institutional positioning of higher education institutions: a conceptual and empirical analysis.
9. Barbato, G., Fumasoli, T., & Turri, M. (2021). The role of the organisational dimension in university positioning: a case-study approach. *Studies in Higher Education*, *46*(7), 1356-1370.

10. Barney, J. 1991. "Firm Resources and Sustained Competitive Advantage." Journal of Management 17 (1): 99–120.
11. Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: a primer. *Frontiers in public health*, *6*, 149.
12. Cao, D., Teng, X., Chen, Y., Tan, D., & Wang, G. (2023). Digital transformation strategies of project-based firms: case study of a large-scale construction company in China. *Asia Pacific Journal of Innovation and Entrepreneurship*.
13. Chang, H., Fernando, G. D., & Tripathy, A. (2015). An empirical study of strategic positioning and production efficiency. *Advances in Operations Research*, *2015*(1), 347045.
14. Chin, H., Marasini, D. P., & Lee, D. (2023). Digital transformation trends in service industries. *Service Business*, *17*(1), 11-36.
15. Dang, V. L., & Yeo, G. T. (2017). A competitive strategic position analysis of major container ports in Southeast Asia. *The Asian Journal of Shipping and Logistics*, *33*(1), 19-25.
16. Deb, P., Norton, E. C., & Manning, W. G. (2017). *Health econometrics using Stata* (Vol. 264). College Station, TX: Stata press.
17. Deng, Q., & Noorliza, K. (2023). Integration, resilience, and innovation capability enhance LSPs' operational performance. *Sustainability*, *15*(2), 1019.
18. Deroncele-Acosta, A., Palacios-Núñez, M. L., & Toribio-López, A. (2023). Digital transformation and technological innovation on higher education post-COVID-19. *Sustainability*, *15*(3), 2466.
19. Dombrowski, U., Krenkel, P., & Wullbrandt, J. (2018). Strategic positioning of production within the generic competitive strategies. *Procedia CIRP*, *72*, 1196-1201.
20. Erdmann, A., Presedo, A. E., & de Miguel Valdés, M. (2021). Digital Transformation of Universities: The Influence of COVID-19 and Students' Perception. *Multidisciplinary Journal for Education, Social and Technological Sciences*, *8*(2), 19-41.
21. Fayvishenko, D. (2018). Formation of brand positioning strategy. *Baltic Journal of Economic Studies*, *4*(2), 245-248.
22. Feliciano-Cestero, M. M., Ameen, N., Kotabe, M., Paul, J., & Signoret, M. (2023). Is digital transformation threatened? A systematic literature review of the factors influencing firms' digital transformation and internationalization. *Journal of Business Research*, *157*, 113546.
23. Field, A. (2024). *Discovering statistics using IBM SPSS statistics*. (6th ed.), London, UK: SAGE Publications Ltd.
24. Firmananda, F. I., Ependi, Z., Laowe, D. N., & Bustami, B. (2023). Implementation of Digital Transformation at Al-Mahdi Outlets during the Covid-19 pandemic in Pekanbaru City. *RIGGS: Journal of Artificial Intelligence and Digital Business*, *1*(2), 58-63.
25. Fumasoli, T., Barbato, G., & Turri, M. (2020). The determinants of university strategic positioning: a reappraisal of the organisation. *Higher Education*, *80*(2), 305-334.
26. Furr, N., Ozcan, P., & Eisenhardt, K. M. (2022). What is digital transformation? Core tensions facing established companies on the global stage. *Global Strategy Journal*, *12*(4), 595-618.
27. Garachkovska, O., Sytnyk, O., Fayvishenko, D., Taranskiy, I., Afanasieva, O., & Prosianyk, O. (2020). Strategic management of brand positioning in the market. *Advances in Science, Technology and Engineering Systems*, *6*(1), 947-953.
28. Garcia-Perez, A., Cegarra-Navarro, J. G., Sallos, M. P., Martinez-Caro, E., & Chinnaswamy, A. (2023). Resilience in healthcare systems: Cyber security and digital transformation. *Technovation*, *121*, 102583.
29. Ghobakhloo, M., & Iranmanesh, M. (2021). Digital transformation success under Industry 4.0: a strategic guideline for manufacturing SMEs. *Journal of Manufacturing Technology Management*, *32*(8), 1533-1556.
30. Graf, A., Müller, L., Waltermann, H., Zimmer, F., & Hess, T. (2023). Exploring Digital Transformation's Impact on Organizational Identity with an Archetype Framework. In *Proceedings of the 56th Annual Hawaii International Conference on System Sciences: January* (Vol. 3, No. 6, pp. 4224-4233).
31. Guizzo, D. (2024). Ceremonial Economics: A Social-Institutional Analysis of Universities, Disciplines, and Academic Positioning. *Journal of Economic Issues*, *58*(2), 397-423.
32. Gupta, S., Tuunanen, T., Kar, A. K., & Modgil, S. (2023). Managing digital knowledge for ensuring business efficiency and continuity. *Journal of Knowledge Management*, *27*(2), 245-263.
33. Hair Jr., J.F., Black, W.C., Babin, B.J. and Andersen, R.E. (2010) *Multivariate Data Analysis*, 7th ed., Upper Saddle River, Prentice-Hall, New Jersey.

34. Hair Jr., J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2014) *A Primer on Partial Least Squares Structural Equation modeling (PLS-SEM)*, SAGE Publications, Inc., USA.
35. Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, *31*(1), 2-24.
36. Han, H., Shiwakoti, R. K., Jarvis, R., Mordi, C., & Botchie, D. (2023). Accounting and auditing with blockchain technology and artificial Intelligence: A literature review. *International Journal of Accounting Information Systems*, *48*, 100598.
37. Hannan, S. A. (2023). Development of Digital Transformation in Higher Education Institutions. *Journal of Computer Science & Computational Mathematics*, *13*(01), 1-8.
38. Helal, M. Y. I. (2023). The role of the covid-19 pandemic in advancing digital transformation infrastructure in. Egypt and how it affects value creation for businesses and their customers. *Журнал Hum. Prog*, *9(1)*.
39. Hortovanyi, L., Morgan, R. E., Herceg, I. V., Djuricin, D., Hanak, R., Horvath, D., ... & Szabo, R. Z. (2023). Assessment of digital maturity: the role of resources and capabilities in digital transformation in B2B firms. *International Journal of Production Research*, 1-19.
40. Iyer, P., Davari, A., Zolfagharian, M., & Paswan, A. (2019). Market orientation, positioning strategy and brand performance. *Industrial Marketing Management*, *81*, 16-29.
41. Kethüda, Ö. (2023). Positioning strategies and rankings in the HE: congruence and contradictions. *Journal of Marketing for Higher Education*, *33*(1), 97-123.
42. Khaleel, M., Yusupov, Z., Ahmed, A. A., Alsharif, A., Alarga, A., & Imbayah, I. (2023). The effect of digital technologies on energy efficiency policy. *International Journal of Electrical Engineering and Sustainability (IJEES)*,1(1), 1-8.
43. Klemenčič, M. (2016). The Role of Institutional Research in Positioning Universities: Practices in Central and Eastern European Countries. In *Positioning Higher Education Institutions: From Here to There* (pp. 3-18). Rotterdam: SensePublishers.
44. Koldewey, C., Hemminger, A., Reinhold, J., Gausemeier, J., Dumitrescu, R., Chohan, N., & Frank, M. (2022). Aligning strategic position, behavior, and structure for smart service businesses in manufacturing. *Technological Forecasting and Social Change*, *175*, 121329.
45. Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: An overview of the current state of the art of research. *Sage Open*, *11*(3), 21582440211047576.
46. Krejcie, R.V. and Morgan, D.W. (1970) 'Determining sample size for research activities', Educational and Psychological Measurement, Vol. 30, No. 3, pp.607–610.
47. Krumay, B., Rueckel, D., & Koch, S. (2019). Model for Strategic Positioning in Transformative Situations.
48. Laorach, C., & Tuamsuk, K. (2022). Factors influencing the digital transformation of universities in Thailand. *International Journal of Innovative Research and Scientific Studies*, *5*(3), 211-219.
49. Laryeafio, M. N., & Ogbewe, O. C. (2023). Ethical consideration dilemma: systematic review of ethics in qualitative data collection through interviews. *Journal of Ethics in Entrepreneurship and Technology*, *3*(2), 94-110.
50. Li, Z., Chen, H., & Mo, B. (2023). Can digital finance promote urban innovation? Evidence from China. *Borsa Istanbul Review*, *23*(2), 285-296.
51. Loglo, F. S. (2024). Towards digital transformation of selected Ghanaian public universities: Leadership enablers, challenges, and opportunities. *Open Praxis*, *16*(3), 374-395.
52. Luu, T. M. N., Nguyen, P. M., Nghiem, X. H., & Dinh, V. T. (2025). A bibliometric analysis of digital maturity and digital transformation at universities. *Discover Sustainability*, *6*(1), 646.
53. Margiono, A. (2021). Digital transformation: setting the pace. *Journal of Business Strategy*, *42*(5), 315-322.
54. Marks, A., AL-Ali, M., Atassi, R., Abualkishik, A. Z., & Rezgui, Y. (2020). Digital transformation in higher education: a framework for maturity assessment. *International Journal of Advanced Computer Science and Applications*, *11*(12), 504-513.
55. Maulana, Y., Yusuf, A. A., Dirgantari, P. D., & Hurriyati, R. (2023). Marketplace Strategic Positioning Analysis. *Al-Amwal: Jurnal Ekonomi dan Perbankan Syari'ah*, *15*(1), 101-111.
56. Mohamed Hashim, M. A., Tlemsani, I., & Matthews, R. (2022). Higher education strategy in digital transformation. *Education and information technologies*, *27*(3), 3171-3195.
57. Nadube, P. M., & Didia, J. U. D. (2018). Market targeting and strategic positioning. *International Journal of Marketing Research and Management*, *8*(1), 32-45.
58. Nadube, P. M., & Didia, J. U. D. (2018). Market targeting and strategic positioning. *International Journal of Marketing Research and Management*, *8*(1), 32-45.

59. Nayyar, V., & Mittal, A. (2024). Cocreating innovative academia theory and practice to strengthen institutional positioning. *Information Discovery and Delivery*, *52*(4), 414-425.
60. Ng, E., & Pan, S. L. (2024). Competitive strategies for ensuring Fintech platform performance: Evidence from multiple case studies. *Information Systems Journal*, *34*(3), 616-641.
61. Obilor, E. I., & Amadi, E. C. (2018). Test for significance of Pearson's correlation coefficient. *International Journal of Innovative Mathematics, Statistics & Energy Policies*, *6*(1), 11-23.
62. Ole Kulet, J. L., Wanyoike, D. M., & Koima, J. K. (2019). Effects of best product strategic positioning on organizational performance in telecommunication industry. *Kenya. The strategic journal of business & change management*, *6*(1), 387-400.
63. Porfírio, J. A., Carrilho, T., Felício, J. A., & Jardim, J. (2021). Leadership characteristics and digital transformation. *Journal of Business Research*, *124*, 610-619.
64. Porter, M. E. (1996). What is strategy. Harvard Business Review, 74(6), 61–78.
65. Porter, M. E. (2011). *Competitive advantage of nations: creating and sustaining superior performance*, First Free Press Edition, Simon and Schuster Inc, USA.
66. Rana, S., Verma, S., Haque, M. M., & Ahmed, G. (2022). Conceptualizing international positioning strategies for Indian higher education institutions. *Review of International Business and Strategy*, *32*(4), 503-519.
67. Raza, Z., Woxenius, J., Vural, C. A., & Lind, M. (2023). Digital transformation of maritime logistics: Exploring trends in the liner shipping segment. *Computers in Industry*, *145*, 103811.
68. Rêgo, B. S., Jayantilal, S., Ferreira, J. J., & Carayannis, E. G. (2022). Digital transformation and strategic management: A systematic review of the literature. *Journal of the Knowledge Economy*, *13*(4), 3195-3222.
69. Reis, J., & Melão, N. (2023). Digital transformation: A meta-review and guidelines for future research. *Heliyon*, *9*(1).
70. Rodríguez-Abitia, G., & Bribiesca-Correa, G. (2021). Assessing digital transformation in universities. *Future Internet*, *13*(2), 52.
71. Rokeman, N. R. M. (2024). Likert measurement scale in education and social sciences: explored and explained. *EDUCATUM Journal of Social Sciences*, *10*(1), 77-88.
72. Saeed, S., Altamimi, S. A., Alkayyal, N. A., Alshehri, E., & Alabbad, D. A. (2023). Digital transformation and cybersecurity challenges for businesses resilience: Issues and recommendations. *Sensors*, *23*(15), 6666.
73. Saqib, N. (2020). Positioning–a literature review. *PSU Research Review*, *5*(2), 141-169.
74. Sedgwick, P. (2012). Pearson's correlation coefficient. *Bmj*, *345*.
75. Sekaran, U. and Bougie, R. (2016) *Research Methods for Business: A Skill Building Approach*, John Wiley & Sons, Chichester, West Sussex, UK.
76. Shin, J., Mollah, M. A., & Choi, J. (2023). Sustainability and organizational performance in South Korea: The effect of digital leadership on digital culture and employees' digital capabilities. *Sustainability*, *15*(3), 2027.
77. SIMIYU, A. J. (2021). *Strategic positioning and competitive advantage* (Doctoral dissertation, KENYATTA UNIVERSITY).
78. Sloman, K. N. (2010). Research trends in descriptive analysis. *The Behavior Analyst Today*, *11*(1), 20.
79. Ukko, J., Nasiri, M., Saunila, M., & Rantala, T. (2019). Sustainability strategy as a moderator in the relationship between digital business strategy and financial performance. Journal of Cleaner Production, 236, 117626.
80. Vovk, V. A., & Afanasieva, O. M. (2022). Strategic positioning of the company on the international market.
81. Wang, K., Li, B., Tian, T., Zakuan, N., & Rani, P. (2023). Evaluate the drivers for digital transformation in higher education institutions in the era of industry 4.0 based on decision-making method. *Journal of Innovation & Knowledge*, *8*(3), 100364.
82. Zipparo, J. (2023). The determinants of university strategic positioning and the obscuring of institutional diversity: an Australian case study. *Tertiary Education and Management*, *29*(4), 341-364.
83. Zoppelletto, A., Bullini Orlandi, L., & Rossignoli, C. (2020). Adopting a digital transformation strategy to enhance business network commons regeneration: an explorative case study. *The TQM Journal*, *32*(4), 561-585.