-RESEARCH ARTICLE-

MARKET SHARE GROWTH THROUGH TECHNOLOGICAL CONVERGENCE: ROLE OF INNOVATION CAPABILITY

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─**Abstract**─

The objective of this study is to investigate the interrelationships between industry competition intensity (ICI), innovation capability (IC), market growth (MG), technological diversity (TD), strategic alliances (SA), and resource allocation (RA). In order to achieve this objective, a data collection process was implemented using surveys. The survey-based approach involved the participation of 300 employees from diverse organisations situated in Saudi Arabia. During the preliminary stage of data collection, a total of 300 questionnaires were distributed with the objective of obtaining a varied and inclusive sample of employees originating from various industries and organisational contexts. Following that, a total of 210 questionnaires that were fully completed were received and subsequently subjected to analysis. The study employed SPSS and Amos-17 software to examine and evaluate the proposed relationships between the variables using structural equation modelling (SEM). The results of this study suggest that innovation capability plays a mediating role in the relationship between technological diversity, strategic alliances, resource allocation, and market share growth. However, no mediating relationship was observed between innovation capability and market share growth in the context of industry competition intensity. This study provides significant insights for Saudi organisations on effectively addressing industry competition and technological convergence. These findings can be used by

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decision-makers to efficiently allocate resources, establish strategic partnerships, and promote innovation. The comprehension of the relationship between the capability to innovate and the diversity of technological resources has the potential to foster a culture that encourages and supports innovation.

Keywords: Industry Competition Intensity (ICI), Innovation Capability (IC), Market Growth (MG), Technological Diversity (TD), Strategic Alliance (SA) and Resource Allocation (RA).

INTRODUCTION

Technology convergence refers to the phenomenon in which a specific technology, originally developed for a particular field of application, becomes integrated into new technologies across different disciplines (Ardito, Natalicchio, & Petruzzelli, 2021). This phenomenon is gaining increasing significance due to its potential to create new markets and disrupt existing ones. Therefore, our objective is to investigate the impact of technological search breadth, which refers to the extent of various technological domains in the knowledge base of a specific technology, and geographical search breadth, which pertains to the diversity of the knowledge base accessible for future inventive activities, on the probability and pace of technological convergence events.

The intersection of technology and innovation has become a focal point of scholarly inquiry and practical application. This dynamic relationship between technological advancements and the creation of novel ideas has garnered significant attention. In order to effectively address technological convergence, it is imperative for management to adopt a more holistic approach. In a recent study, Lepratte et al. (2022) conducted an examination of a collection of new technology-based firms. The objective of this investigation was to provide a description and exploration of novel theoretical elements that delineate the management of innovation and technology within the context of the convergence of scientific and technological knowledge, markets, and industries. In the research conducted by Kwon, An, Kim, and Lee (2020), a comprehensive analysis of patents was employed on a broad scale, encompassing various technology domains, with the aim of forecasting the convergence of industries driven by technological advancements.

Furthermore, Hussain (2021) The year 2021 witnessed a significant advancement in technical convergence, primarily propelled by the integration of creative elements. This phenomenon necessitates that corporate entities undergo digital transformation in order to foster sustainable innovation. Scholars from various academic disciplines are progressively devoting their attention to the examination of digital transformation, frequently associated with the Fourth Industrial Revolution. Cefis, Leoncini, Marengo, and Montresor (2023) has identified several specific issues that warrant further

investigation in future research. The digital economy has the potential to enhance production efficiency and organisational structure within the industry. This is achieved through the promotion of technological innovation across various sectors and the optimisation of regional innovation layout. The author of the text is Z. Tian, and the text was published in 2023. The advent of digital technology has significantly revolutionised the processes of innovation and value creation (Vial, 2021), as well as the acquisition of such value (Nambisan, Lyytinen, Majchrzak, & Song, 2017).

The field of microeconomics is primarily focused on the analysis and examination of the digital economy. The ongoing integration of the Internet into various industries facilitates the development of novel forms, necessitating a reevaluation of the innovation profit model as digitalization advances (Teece, 2018). The process of digital transformation has the potential to drive companies across various industries to effectively capture value through multiple means and establish novel business models and ecosystems. It has been found that the digital economy has the potential to enhance innovation and regional output in the long run (Tranos, Kitsos, & Ortega-Argilés, 2021). According to Urbinati, Chiaroni, Chiesa, and Frattini (2020), the process of digital transformation serves as a catalyst for innovation. Additionally, it has been observed that digital transformation enhances business models, thereby providing companies with a distinct advantage in the digital market (Matarazzo, Penco, Profumo, & Quaglia, 2021; Zaki, 2019). The digital economy has the potential to enhance the flow of knowledge within enterprises.

Additionally, Mardani, Nikoosokhan, Moradi, and Doustar (2018) suggests that the integration and application of knowledge can significantly contribute to the advancement of innovation. The utilisation of data and information, along with the increasing production elements, generates novel circumstances and avenues for innovation within organisations, thereby enhancing their innovative capacity. Enterprises' digital transformation can enhance production efficiency and augment their competitive advantage in the market (Gurbaxani & Dunkle, 2019; Martinelli, Farioli, & Tunisini, 2021). Market and technological forces are driving this transformation. Furthermore, innovation is found to have a favourable impact in this context (Chatzoglou & Chatzoudes, 2017). Therefore, it is imperative for enterprises to prioritise consumer demand (Zhang, 2019) and engage in innovative production management modes in order to enhance their overall performance.

The integration of digital technology within medium-sized industries and traditional sectors is ongoing, with the aim of enhancing industrial innovation and promoting overall development. Data and information, which serve as the fundamental pillars of the digital economy, are characterised by their affordability, reusability, and accessibility. This facilitates the seamless flow and exchange of data among organisations, thereby augmenting data efficiency. In the context of corporate operations, it is noteworthy that organisations leveraging open platforms such as the

Internet possess the ability to expeditiously duplicate the innovative endeavours of their counterparts. Nevertheless, the digital economy's inherent characteristics of extensive permeability and collaborative nature expedite the facilitation of innovation drivers, thereby fostering industry innovation.

LITERATURE REVIEW

Market performance encompasses the comprehensive range of marketing endeavours undertaken by a company as well as the evaluation of the company's financial gains resulting from the effective management of marketing activities. Obtaining employee feedback is of utmost importance, as employees serve as the organisation's frontline and possess the ability to generate valuable information. Numerous enterprises have made substantial investments in data-driven innovation with the aim of establishing market dominance and maintaining competitiveness within a dynamic and rapidly evolving business environment. The research on the importance of strategic market agility in enhancing the competitiveness of DDIC-based companies is limited in scope. (Zhang, Chu, and Xue (2019) asserts that the innovativeness exhibited by entrepreneurial companies has the potential to enhance their growth performance, with knowledge capital serving as a contributing factor.

Therefore, this study offers theoretical justification for the implementation of such enterprises in order to foster innovation and enhance the utilisation of knowledge capital. Additionally, it provides empirical evidence for the potential of these enterprises to achieve consistent and continuous growth. Academic researchers, both domestic and foreign, place significant emphasis on the examination of innovation input and output in the context of enterprise innovation and growth. However, it is worth noting that the findings derived from these studies often yield inconsistent conclusions. There is an expectation among researchers that the implementation of novel business practices will contribute to both growth and enhanced quality (Wu Haoqiang and Hu Sumin, 2023). Liu et al. (2023) conducted a study in which they analysed data from the Chinese manufacturing industry. Their findings demonstrated that the implementation of innovation-driven manufacturing practices has the potential to enhance product quality.

Innovation Capability and Industry Competition Intensity

The aforementioned papers suggest that the capacity for innovation has a significant impact on the intensity of competition within an industry and its subsequent outcomes. The study by Shehadeh, Almohtaseb, Aldehayyat, and Abu-AlSondos (2023) showed that the presence of innovation capability modifies the relationship between digital transformation and the competitive advantage of service companies. Al-Sharif's research investigation showed that the presence of innovation capability mediates the relationship between entrepreneurial leadership and the innovation performance of

small and medium-sized enterprises (SMEs) in the service industry. According to Shi et al. (2023), the innovation output of a company is positively influenced by factors such as technological collabouration, financing level, capital input, and labour input.

On the other hand, the presence of product and service competition, as well as capital competition, has a negative impact on innovation output. As stated by Lee and Roh (2023), the capability of digitalization enhances both outbound and inbound open innovation, coopetition strategy, and the sustainability of emerging markets. The aforementioned publications provide evidence that the ability to innovate plays a moderating and mediating role in determining competitive advantage, innovation performance, and sustainable performance within the context of intense industry rivalry. However, previous studies conducted by Lee and Roh (2023) and Calvino (2019) have demonstrated that the implementation of process innovation has a positive impact on both product innovation and the growth of employment within firms. This study enhances our comprehension of the relationship between competition and innovation by incorporating both product and process innovation.

The Effect of Technological Diversity on Innovation Capability

The research suggests that there is a dual impact of technological diversity on innovation, with both positive and negative effects observed. According to Martynov (2023), there is evidence to suggest that a high level of technological coupling can mitigate the impact of technical variety on the performance of inventions. In their study conducted in 2023, Ha examined the impact of overseas multinational corporations (MNEs) operating in downstream sectors on the innovation capabilities of local suppliers. The findings indicated that the presence of MNEs can potentially hinder the innovation efforts of local suppliers. However, it was also observed that dynamic settings have the potential to mitigate this negative effect. The individual in question is Paredes-León. In the year 2023, it was found that the absorption capacity component of entrepreneurial capacity exhibited a positive correlation with the recognition of benefits associated with technology transfers. Conversely, networking diversity demonstrated a negative correlation in this regard. According to Shi et al. (2023), there is a positive relationship between technology collabouration, funding level, capital and labour input, and innovation output. However, product and service competition, as well as capital competition, have a negative impact on innovation output. In summary, the presence of technical diversity has the potential to either enhance or impede innovation capabilities, contingent upon factors such as technology coupling, operating environment, and entrepreneurial capacity.

The Effect of Strategic Alliances on Innovation Capability

The aforementioned publications provide evidence that the formation of strategic coalitions has a positive impact on the enhancement of innovation. Strategic partnerships have a significant impact on the process of digital transformation and innovation. Kryvovyazyuk et al. (2023) places particular emphasis on the importance of organisational culture,

integration within the business sector, and the creation of synergistic effects. According to Wang et al. (2023), there is evidence to suggest that network centrality and structural holes play a significant role in facilitating ambidextrous green innovation within technological alliance networks. As stated by Yoon (2023), there is evidence to suggest that both central and brokering alliance portfolio positions have a positive impact on exploratory innovation. Zhang and Qi (2023) conducted a study that revealed a positive correlation between vertical network interactions and innovation performance. Furthermore, the author suggests that this relationship is further enhanced by the presence of strategic flexibility. In general, the aforementioned papers suggest that the formation of strategic coalitions has a positive impact on fostering innovation. In the words of Green and McCann (2020), strategic alliances enable organisations to engage in resource and knowledge sharing, expand into new markets, enhance production capabilities, and foster innovation. Strategic relationships can also contribute to enhancing operational efficiency within a firm. He et al. (2020) argues that there is a scarcity of research investigating the impact of strategic partnerships on organisational outcomes in the context of dynamic environmental changes and digital transformation.

## The Effect of Resource Allocation on Innovation Capability

The shift in the technical innovation model from closed to open and linear to network has led to increased collaboration and coordinated development among firms, research and development institutes, and universities. The establishment of a regional innovation network is facilitated through the dissemination of resources and engagement in various innovation-related activities. The enhancement of a country's innovation capacity at a national level is contingent upon the efficient allocation of innovation resources across different regions. The significance of optimal resource allocation and regional allocation evaluation is particularly noteworthy. In their study, Yin, Bao, and Meng (2020) developed a system for evaluating the efficiency of financial resource allocation and the benefits derived from innovation. The study utilised the entropy weight technique for order preference by similarity to an ideal solution (TOPSIS) method to assess the efficiency of resource allocation in various locations and propose an optimised approach for allocating creative resources. The resource allocation mechanism of the regional innovation network is intricate and dynamic, encompassing advancements in knowledge and technology as well as considerations of economic and market value. The configuration of a single indicator is frequently misinterpreted, leading to inaccurate measurements (Zhang, 2019). Additionally, the efficiency of allocation is only partially indicative of the input-output level.

In general, the papers suggest that the allocation of resources has an impact on an organisation's ability to innovate. Bhatti and Sundram (2015) conducted a study that revealed that increasing investment in research and development (R&D) has the potential to enhance market competitiveness through the introduction of novel products and services. The allocation of resources has a significant impact on the innovation of small and medium-sized enterprises (SMEs) in Nigeria, according to a study by Odusote and Akpa (2022).

Shehzad, Zhang, Alam, and Cao (2022) conducted a study to look into the effects of knowledge sources, IT resources, and innovation capability on the innovation process. In a study conducted by Jia, Lai, Yang, and Li (2022), the author explored the optimal allocation and utilisation of critical resources within collaborative innovation initiatives with the aim of maximising project profitability. The aforementioned publications underscore the significance of resource allocation in fostering innovation.

Innovation Capability and Market Share

The papers mentioned previously suggest that the presence of innovation capability has a positive impact on the market performance of small and medium-sized enterprises (SMEs). According to a study by Febriyantoro, Suyoto, Saputra, and Suleman (2023), external collaboration mediates the relationship between small and medium-sized enterprises (SMEs) in Batam's innovation capability and market performance. In addition to her findings, Sari, Kusuma, Sihotang, and Febrianti (2023) observed a significant relationship between entrepreneurial marketing and innovation capability, both of which exert an influence on the success of micro, small, and medium enterprises (MSMEs). Notably, innovation capability was found to have a more pronounced effect on MSMEs' performance compared to entrepreneurial marketing. According to Lee's (2023) study, open innovation acts as a mediator to facilitate the beneficial effects of innovation competence on the export success of small and medium-sized enterprises (SMEs). According to the Al-Sharif study from 2023, the capacity for innovation mediates the relationship between entrepreneurial leadership and innovation performance in the service sector of small and medium-sized enterprises (SMEs). The aforementioned publications provide evidence that small and medium-sized enterprises (SMEs) require a strong capacity for innovation in order to enhance their profitability, productivity, domestic market share, and export performance.
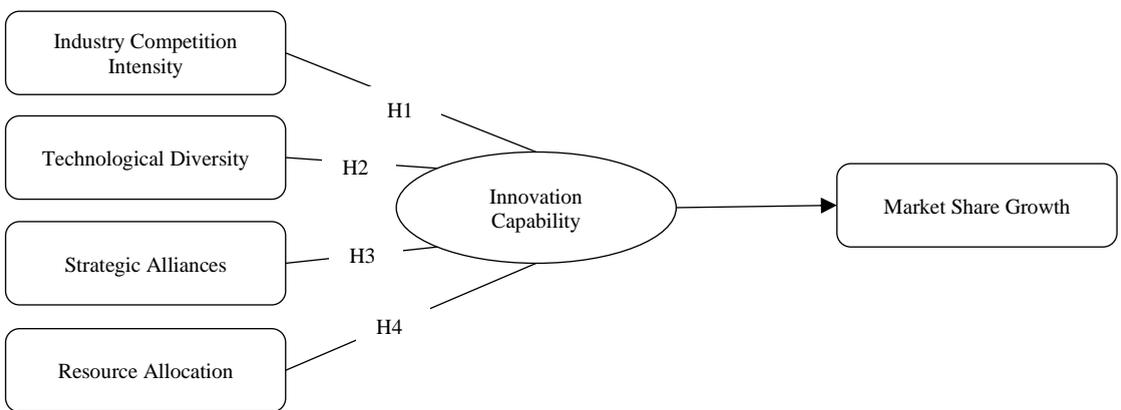
H1a: *Industry competition intensity (ICI) positively influence innovation capability (IC).*
H1b: *Innovation capability (IC) mediates the relationship between industry competition intensity ((ICI)) and market growth.*

H2a: Technology diversity (TD) positively influence innovation capability (IC).
H2b: Innovation capability (IC) mediates the relationship between technological diversity (TD) and market growth.
H3a: Strategic Alliance (SA) positively influence innovation capability (IC).
H3b: Innovation capability (IC) mediates the relationship between strategic alliance (SA) and market growth (MG).
H4a: Resource Allocation (RA) positively influence innovation capability (IC).
H4b: Innovation capability (IC) mediates the relationship between resource allocation (RA) and market growth (MG).

METHODOLOGY

The research study employed a methodology that entailed the utilisation of a survey-based data collection process among employees employed in organisations situated within the geographical boundaries of Saudi Arabia. The main aim of this study was to examine the interconnections among several factors, namely industry competition intensity (ICI), innovation capability (IC), market growth (MG), technological diversity (TD), strategic alliance (SA), and resource allocation (RA). In order to collect empirical data, a meticulously designed questionnaire was created, verified for accuracy and reliability, and subsequently distributed to a representative sample of 300 employees from various organisations located in Saudi Arabia.

During the initial stage of data collection, a total of 300 questionnaires were disseminated among employees working in diverse organisations located in Saudi Arabia. The objective of this distribution was to acquire a representative sample of employees encompassing various industries and organisational backgrounds. Following the conclusion of the data collection phase, a total of 210 questionnaires were received and deemed suitable for analysis. The data obtained from the survey were subsequently analysed using IBM SPSS Statistics software to conduct descriptive statistics, correlation analysis, and regression analysis. Furthermore, this study employed structural equation modelling (SEM) using Amos-17 software to examine and evaluate the proposed associations among the variables. This approach facilitated a thorough comprehension of the intricate dynamics involving industry competition, innovation capability, market growth, technological diversity, strategic alliances, and resource allocation within Saudi organisations.

Using Amos-17 to combine SPSS and SEM made it possible to look at the collected data in a thorough and methodical way. This allowed the research team to test the hypotheses they had made and learn important things about how the variables they were looking at were related to each other. The utilisation of this particular methodological approach in the study ensured the attainment of reliable and valid findings, thereby making a significant contribution to the understanding of organisational factors within the Saudi context.

Table 1. Measurement Scales and References

Factors	References
Industry Competition Intensity	Tsaur and Wang, (2011); Grewal and Tansuhaj (2001); Jaworski and Kohli (1993)
In general, number of competitors in your category is within the alliance	
In general, extent of price competition in your category is within the alliance	
In general, intensity of rivalry between competitors is within the alliance	
In general, there are frequent new competitive moves in the market	
In general, there is frequent price competition in the market	
In general, there is frequent promotion competition in the market	
In general, the intensity of market competition is high	
Technological Diversity	Chenhall (2005)
Our industry is characterized by rapidly changing technology	
If we do not keep up with changes in technology, it will be difficult for us to remain competitive	
In general, the rate of process obsolescence is high in our industry	
In general, the production technology changes frequently and sufficiently	
Strategic Alliances	Sambasivan and Nget Yen (2010)
The strategic alliances help us build new business opportunities or new products.	
The strategic alliances help us cut down costs.	
The strategic alliances help us improve our productivity.	
The strategic alliances help us improve our profitability.	
Resource Allocation	Davidson (2005)
Do you believe the ability of senior management to recognize the need to reallocate resources from R&D to S&M, after successful demonstration of technology/product is a characteristic valuable to the success of your firm, rare as a senior management ability relative to other management capabilities, imitable readily by your competition, substitutable by other resource capabilities.	
Do you believe the ability of senior management to act positively on the need to reallocate resources from R&D to S&M, after successful demonstration of technology/product is a characteristic valuable to the success of your firm, rare as a senior management ability relative to other management capabilities, imitable readily by your competition, substitutable by other resource capabilities.	
Do you believe that reallocating resources from R&D to S&M contributed to success of the start-up firm.	
Market Share Growth	Baker and Sinkula (2005)

In your opinion, the extent to which production/service technology in your principal market has changed during the past 3 years. In your opinion, the level of competitive intensity in your principal served market segment. In general, the rate of change in the marketplace in your principal served market segment. In your opinion, change in sales revenue relative to your largest competitor. In your opinion, change in market share relative to your largest competitor.	
Innovation Capability	
My work community encourages gaining knowledge through external contacts We developed our methods of action by comparing our operations to other organizations We develop our actions with our stakeholders (customers, etc.) Co-operation works well in our organization We have a clear way of processing and developing ideas Employees get feedback on their ideas Our reward system encourages coming up with ideas Our organization actively seeks new methods of action Our organization has the courage to try new methods of action When experimenting with new methods of action, mistakes are allowed Employees have the courage to disagree Managers encourage initiatives Managers give positive feedback Managers pass employees' ideas on to the upper levels of the organization Managers participate in generating and developing ideas Employees are willing to participate in development It is easy for employees to adopt new methods of action The employees know how to be critical of current methods of action when needed All employees have a possibility for education We have instructions and responsible persons for work orientation Employees are encouraged to be multi-skilled Voluntary learning and development of expertise are supported in our organization There are practices for transferring tacit knowledge In our organization, learning is an investment, not an expense Employees prosper in our organization Employees are treated equally Employees are appreciated for their work The number of work tasks is suitable There is an opportunity for flexible work and work hours in our organization	Saunila and Ukko (2014)

ANALYSIS

Population, Sample and Data Collection Method

The research focused on the individuals employed by a range of organisations and enterprises that constituted the specific population of interest. A total of 300 questionnaires were distributed, with 210 of them being successfully completed and returned for inclusion in the subsequent study. The study primarily included participants who extensively utilised contemporary systems and technology.

The data collection methodology employed in this study involved the utilisation of a survey approach. A self-administered survey instrument was developed and disseminated to a randomly sampled cohort of individuals who engage in online social media activities, utilising the Google Forms platform. The utilisation of online data collection methods enables a wider range of access and improves the inclusiveness of the collected data. The participants were instructed to fill out the survey questionnaire. The participants were assured that their responses would be kept anonymous and confidential and would be used exclusively for the purpose of an academic research inquiry. The individuals' engagement in the research was entirely voluntary, signifying the absence of any form of coercion or influence to induce their participation.

Data Analysis Method

The collected data underwent analysis using statistical software packages, including SPSS and Amos-16. The data underwent an initial cleaning and filtering process utilising the Statistical Package for the Social Sciences (SPSS). The process entailed scrutinising the dataset for any instances of missing values and subsequently eliminating any identified outliers. In addition, a descriptive study was undertaken, encompassing the creation of frequency distribution tables to facilitate demographic analysis. Furthermore, the evaluation of the measurement model and structural model of the study was conducted using Amos-16. The assessment of the measurement model involves the application of confirmatory factor analysis, a statistical method used to evaluate the dependability and accuracy of the measurement tools. The evaluation of reliability is performed through the utilisation of statistical indicators such as Cronbach's alpha, composite reliability, and factor loadings. The evaluation of discriminant validity is performed in accordance with the criteria outlined by Fornell and Larcker (1981).

This entails conducting a comparison between the square root of the average variance extracted (AVE) for each construct and the correlations observed between said construct and the other constructs being examined. The assessment of the structural model involves the application of path analysis using a regression model, which allows for the examination of both direct and indirect effects. The proposed model and hypothesis

were assessed using the statistical software SPSS with Amos-16. The utilisation of structural equation modelling (SEM) has been found to be advantageous in situations where the research objective includes both testing relationships and assessing the adequacy of the model fit (Hair, Money, Samouel, & Page, 2007). Therefore, as an initial procedure, the measurement model was assessed to ascertain the validity of each item within the construct. During a subsequent phase, the structural model underwent evaluation by employing established indicators of model fit. The convergent validity of all scales is deemed acceptable, as indicated by the alpha values exceeding 0.5 (Fornell & Larcker, 1981) as well as the square covariance values surpassing 0.6 (Hair, Money, Samouel, & Page, 2007), thereby demonstrating satisfactory discriminant validity.

Table 2. Reliability, Convergent Validity

	CR	AVE	α
Industry Competition Intensity (ICI)	0.74	0.52	0.81
Technological Diversity (TD)	0.76	0.56	0.83
Strategic Alliance (SA)	0.81	0.50	0.78
Resource Allocation (RA)	0.83	0.59	0.79
Innovation Capability (IC)	0.80	0.51	0.85
Market Share Growth (MSG)	0.77	0.58	0.83

Table 3. Discriminant Validity

	1	2	3	4	5	6
ICI	0.52					
TD	0.02^{**}	0.56				
SA	0.19^{**}	0.15^{**}	0.50			
RA	0.14^{**}	0.18^{**}	0.24^{**}	0.59		
IC	0.02^{**}	0.11^{**}	0.21^{**}	0.46^{**}	0.51	
MSG	0.04^{**}	0.05^{**}	0.19	0.34^{**}	0.29^{**}	0.58

Note: values of AVE on diagonal higher than squared correlations values. $\dagger$ $p < 0.100$; * $p < 0.050$; ** $p < 0.010$; *** $p < 0.001$

Table 4. Measurement model fitness values

CFA Indicator	Threshold Value		Initial Model	Five Factor
GFI	≥0.80		0.71	0.84
TLI	≥0.90		0.76	0.90
CFI	≥0.90		0.68	0.94
IFI	≥0.90		0.65	0.96
RMSEA	≤0.08		0.43	0.05
CMIN/DF	≤3		4.01	2.21
AGFI	≥0.80		0.79	0.82

Table 5. Direct and Indirect Effects

Hypothesis	Relationships	Coefficient (β)	Standard error	t -Statistics	Hypothesis Status
H1a	ICI -->IC	0.24***	0.010	1.01	Rejected
H1b	ICI--> MSG(IC)	0.19**	0.214	0.97	Rejected
H2a	TD --> IC	0.26**	0.050	1.99	Accepted
H2b	TD --> MSG(IC)	0.24***	0.031	3.560	Accepted
H3a	SA -->IC	0.041	0.054	3.678	Accepted
H3b	SA-->MSG(IC)	0.046***	0.039	4.387	Accepted
H4a	RA --> IC	0.39***	0.049	2.974	Accepted
H4b	RA-->MSG (IC)	0.044**	0.028	4.678	Accepted

Significance: *** significant 0.1% while ** significant at 5%

DISCUSSION

In order to evaluate all the hypotheses, a structural equation model was initially constructed, wherein the predictor variable was ICI and the outcome variable was IC. Next, conduct a Structural Equation Modelling (SEM) analysis in order to ascertain the magnitude and statistical significance of the observed relationship.

H1a: *Industry competition intensity (ICI) positively influences innovation capability (IC)*

In light of the findings of the study, the rejection of the hypothesis suggests a notable correlation between the intensity of industry competition (ICI) and the capability to innovate (IC). This implies that the degree of competition within an industry has a substantial impact on a firm's capacity to engage in innovative activities. Intense market competition serves as a driving force for companies to allocate resources towards research and development, technological advancements, and the creation of innovative products. In highly competitive markets, companies tend to allocate a greater proportion of their resources towards activities related to innovation. Additionally, they actively seek to gain insights from their competitors, thereby augmenting their own innovation strategies. Industries characterised by intense competition exhibit elevated customer expectations, thereby fostering a perpetual drive for improvement and innovation.

The implementation of successful innovation has the potential to create a distinct competitive edge, thereby facilitating the acquisition of a larger portion of the market. Certain industries inherently necessitate innovation as a result of evolving technologies or shifting consumer preferences. In summary, this discovery underscores the significance of comprehending and adjusting to competitive dynamics in order to cultivate innovation within an industry for both businesses and policymakers.

H1b: *Innovation capability (IC) mediates the relationship between industry competition intensity (ICI) and market growth (MG)*

The rejected hypotheses in this particular context indicate that there is no statistically significant correlation observed between the intensity of industry competition (ICI) and the growth of the market (MG) when analysing them in isolation, without taking into account the potential mediating influence of innovation capability (IC). Based on the findings of the study, the term "rejected hypotheses" refers to instances in which a research study or analysis initially posited or postulated a direct influence of ICI on MG. In essence, it was anticipated that an escalated level of competition within an industry would have a direct correlation with increased market growth. Nevertheless, the analysis or research findings indicated that this direct correlation was not upheld or did not exhibit statistical significance. However, it posits the existence of an additional factor, namely the mediating influence of innovation capability (IC). This implies that the direct effect of ICI on MG is absent; however, it exerts an indirect influence on MG by virtue of its impact on IC.

In more concise language, it can be stated that the relationship between intense competition and market growth is mediated by a firm's innovation capability. The study's findings suggest that the initial assumptions regarding the relationship between competition intensity and market growth are oversimplified. The rejected hypotheses indicate that the role of innovation capability is crucial in mediating this relationship.

H2a: *Technology diversity (TD) positively influences innovation capability (IC):*

The accepted hypothesis claims that within a firm or organisation, a higher level of technology diversity (TD) is statistically linked to a positive and substantial effect on its innovation capability (IC). Based on the findings of the study, it can be inferred that companies with a diverse array of technologies or expertise in multiple technological domains are more inclined to demonstrate superior performance in terms of innovation and the creation of novel solutions. In general, the accepted hypothesis states that a firm's investment in and development of a wide range of technological competencies is likely to augment its capacity for innovation, thereby bolstering its ability to remain competitive and flourish within dynamic business environments.

H2b: *Innovation capability (IC) mediates the relationship between technological diversity (TD) and market growth (MG).*

Based on the findings of the conducted study, it can be inferred within a research or analytical framework that there exists empirical evidence to substantiate the notion that technological diversity (TD) does not exert a direct influence on market growth (MG). However, its influence on market growth is indirect, as it primarily affects the innovation capability (IC). The statement suggests that there may not be a statistically significant or highly influential correlation between technological diversity (TD) and market growth (MG). However, the nature of the relationship is moderated by the innovation capability (IC). There are several reasons why this mediation relationship may be valid: The concept

of Innovation Capability (IC) refers to a firm's ability to efficiently utilise its technological diversity (TD) in order to develop novel products, services, or solutions that are more aptly suited to address the evolving demands of the market. The diverse range of technological advancements can result in higher levels of customer satisfaction, a stronger competitive position, and ultimately, growth in the market.

The statement highlights that within the study or analysis, the influence of technological diversity on market growth is not a direct one. Instead, it is mediated by the firm's capacity to effectively innovate, as assessed by its Innovation Capability (IC).

H3a: *Strategic Alliance (SA) positively influences innovation capability (IC).*

In light of the findings of the study, it has been determined that the establishment of strategic alliances or partnerships with other organisations yields a favourable and noteworthy influence on an entity's capacity to effectively engage in innovation. In essence, the beneficial impact of a strategic alliance (SA) on innovation capability (IC) arises from the synergistic effects, shared resources, and opportunities for collaborative learning that it affords. Organisations that actively participate in strategic alliances are frequently in a more advantageous position to foster innovation due to their ability to utilise external resources, effectively mitigate risks, and access a wider knowledge pool. Consequently, this enhances their capacity to generate and execute innovative solutions within a competitive market context.

H3b: *Innovation capability (IC) mediates the relationship between strategic alliance (SA) and market growth (MG):*

Based on the findings of the conducted study, it has been determined that the establishment of a Strategic Alliance (SA) can have a positive impact on the Innovation Capability (IC) of organisations. This positive influence is achieved through various collaborative efforts, such as resource-sharing and knowledge exchange. In the context of organisational dynamics, it can be observed that Innovation Capability (IC) plays a significant role in influencing Market Growth (MG) in a favourable manner. This influence is manifested through the organization's ability to effectively cultivate and introduce innovative products or services that align with market demands, thereby establishing a distinct competitive edge. Hence, the correlation between Strategic Alliance (SA) and Market Growth (MG) is not solely linear, but rather influenced by the organization's Innovation Capability (IC). Put simply, the beneficial outcomes of establishing a strategic alliance for the purpose of market expansion can be attributed, either in part or entirely, to the influence of the alliance on the organization's capacity for innovation.

In brief, this statement posits that organisations that participate in strategic alliances are more inclined to undergo market expansion, and this correlation is, to some extent, influenced by their capacity to effectively engage in innovation (referred to as

Innovation Capability) as a consequence of the collaborative endeavours and resources acquired from the alliance. The formation of the alliance fosters the development of novel ideas and practises, thereby making a significant contribution to the expansion of the market.

H4a: *Resource Allocation (RA) positively influences innovation capability (IC):*

According to the study conducted, the process of effective resource allocation entails the allocation of financial and human resources towards research and development endeavours. The allocation of resources towards the acquisition and maintenance of advanced technologies and infrastructure plays a crucial role in supporting efforts towards innovation. In addition to efficient resource allocation, it is imperative to also take into account the provision of sufficient time and flexibility for teams to engage in innovative endeavours. The allocation of resources towards market research and the collection of customer feedback enables organisations to gain a deeper understanding of market demands and consumer preferences.

In essence, the statement underscores the significance of resource allocation within an organisation and its consequential influence on the organisation's capacity for innovation. When an organisation strategically allocates resources to support research, development, and talent and fosters an innovative culture, it enhances its ability to generate novel ideas, products, or services and effectively bring them to market. The allocation of resources plays a crucial role in determining an organisation's ability to innovate, enabling it to respond to dynamic market conditions, maintain competitiveness, and attain long-term growth.

H4b: Innovation capability (IC) mediates the relationship between resource allocation (RA) and market growth (MG):

After analysing the findings of the study, it can be concluded that resource allocation (RA) has a positive impact on innovation capability (IC) by means of allocating resources that facilitate innovation, including investments in research and development (R&D), nurturing talent, and establishing technological infrastructure. In the context of organisational dynamics, it can be observed that innovation capability (IC) plays a significant role in influencing market growth (MG) in a positive manner. This influence is manifested through the organisation's ability to effectively develop and introduce innovative products or services that align with market demands, thereby establishing a competitive advantage. Hence, the association between resource allocation (RA) and market growth (MG) is not solely linear but rather influenced by the organisation's innovation capability (IC). In essence, the correlation between resource allocation and market growth can be attributed, either in part or entirely, to the organisation's capacity to innovate proficiently as a consequence of its resource allocation strategies.

In short, this statement suggests that organisations that engage in strategic resource allocation to cultivate innovation are more likely to achieve market expansion. This correlation is, to some extent, influenced by the organisation's capacity to effectively innovate (referred to as innovation capability), which is a direct consequence of the allocated resources. The role of innovation capability is crucial in the conversion of resource allocation into tangible market growth.

IMPLICATIONS

The theoretical implications of the relationship between innovation capability and market share growth in the technology sector are of considerable significance. This statement highlights the significance of innovation as a primary catalyst for gaining a competitive edge. Organisations possessing strong innovation capabilities are more aptly prepared to introduce original technologies and products, thereby enabling them to acquire a larger portion of the market, often at the detriment of their competitors. This statement is in accordance with the dynamic capabilities' theory, which places emphasis on the role of innovation in enabling firms to effectively respond to changing market dynamics. Furthermore, the presence of innovation can also function as a deterrent for potential new entrants, resulting in heightened levels of market concentration.

Theoretical frameworks pertaining to the adoption of technology are of paramount importance in comprehending the manner in which the capacity for innovation influences the acceptance and dissemination of novel technologies, thereby ultimately affecting the expansion of market share. These observations emphasise the critical significance of continuous innovation for businesses operating in the technology sector. Additionally, these phenomena offer a rich opportunity for conducting further investigation into the intricacies of markets influenced by technological advancements.

This research offers significant contributions by examining the strategic alignment of resources and alliances in Saudi organisations in light of industry competition and technological convergence. The utilisation of the research findings can enable decision-makers to enhance their decision-making process by making more informed choices regarding the allocation of resources and the establishment of strategic partnerships. A comprehension of the correlation between the capability to innovate and the diversity of technology can assist organisations in cultivating an environment conducive to fostering innovation. Through the strategic diversification of their technological portfolio, organisations can effectively stimulate innovation and sustain their competitive advantage. The findings of this study provide valuable insights into the correlation between market growth and resource allocation, which can serve as a useful guide for organisations seeking to expand their operations into new markets. Efficient allocation of resources can enhance the implementation of market expansion strategies.

The findings can be utilised by organisations to make well-informed decisions regarding the establishment of strategic alliances. This research illuminates the ways in which these alliances can effectively contribute to their overarching strategic goals.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Conducting research on the correlation between innovation capability and market share growth within the technology sector is imperative in order to comprehend the intricacies of this fiercely competitive field. Nevertheless, similar to any field of inquiry, this subject matter possesses inherent constraints and domains that necessitate additional investigation. The present study has identified several limitations that should be acknowledged. Additionally, there are several potential avenues for future research that warrant consideration.

Limitations

Previous studies have established a positive association between the ability to innovate and the growth of market share. However, the issue of causality remains a challenge within the existing body of research. In future research endeavours, it would be advantageous to employ sophisticated methodologies in order to gain a more comprehensive comprehension of causality, while also incorporating objective indicators to assess the level of innovation. The relationship between technology industries may be influenced by distinct characteristics, necessitating the need for analysis tailored to each specific industry. Further investigation is necessary to examine the long-term effects of innovation on market dynamics, the influence of external factors, and how the relationship is moderated by firm size and age. Moreover, the field of geography exerts influence on the capacity for innovation and the expansion of market share, thereby indicating the necessity to investigate variations across different regions.

Future Research Directions

Future research in the domain of innovation capability and market share growth in the field of technology ought to prioritise several pivotal areas. The aforementioned areas encompass various aspects of academic inquiry, such as harnessing innovation ecosystems, comprehending the ramifications of disruptive innovations on established enterprises, scrutinising sustainability and ethical considerations, delving into customer-centric approaches to innovation, investigating the challenges associated with international expansion, examining strategies for digital transformation, devising improved metrics for assessing innovation capability, exploring the role of artificial intelligence and machine learning, and analysing the effects of emerging technologies. By addressing these aforementioned topics, a more comprehensive understanding can

be achieved, offering valuable insights and practical guidance for both the academic and industrial sectors within the continuously evolving technology landscape.

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REFERENCES

Ardito, L., Natalicchio, A., & Petruzzelli, A. M. (2021). Evidence on the determinants of the likelihood and speed of technological convergence: A knowledge search and recombination perspective in key enabling technologies. In *IEEE Transactions on Engineering Management* (pp. 1442-1455). IEEE. doi: https://doi.org/10.1109/TEM.2021.3103878

Baker, W. E., & Sinkula, J. M. (2005). Environmental marketing strategy and firm performance: Effects on new product performance and market share. *Journal of the academy of marketing science, 33*(4), 461-475. doi: https://doi.org/10.1177/0092070305276119

Bhatti, M., & Sundram, V. P. K. (2015). Business research: Quantitative and qualitative methods. In *Effect of transformational leadership on job satisfaction and patient safety outcomes* (pp. 180-189). Pearson Singapore. Retrieved from https://www.thehartford.com/business-insurance/strategy/market-research/quantitative-qualitative

Calvino, F. (2019). Technological innovation and the distribution of employment growth: a firm-level analysis. *Industrial and Corporate Change, 28*(1), 177-202. doi: https://doi.org/10.1093/icc/dty003

Cefis, E., Leoncini, R., Marengo, L., & Montresor, S. (2023). Firms and innovation in the new industrial paradigm of the digital transformation. *Taylor & Francis, 30*(1), 1-16. doi: https://doi.org/10.1080/13662716.2022.2161875

Chatzoglou, P., & Chatzoudes, D. (2017). The role of innovation in building competitive advantages: an empirical investigation. *European Journal of Innovation Management, 21*(1), 44-69. doi: https://doi.org/10.1108/EJIM-02-2017-0015

Chenhall, R. H. (2005). Integrative strategic performance measurement systems, strategic alignment of manufacturing, learning and strategic outcomes: an exploratory study. *Accounting, organizations and society, 30*(5), 395-422. doi: https://doi.org/10.1016/j.aos.2004.08.001

Davidson, A. (2005). *Early stage resource allocation in specialized supplier firms* (Doctoral dissertation, Carleton University).

Febriyantoro, M. T., Suyoto, Y. T., Saputra, F., & Suleman, D. (2023). The Effect of Innovation Capability on Market Performance Mediated by External Collaboration on SMEs. *KnE Social Sciences*, 249–262. doi: https://doi.org/10.18502/kss.v8i12.13675

Fornell, C., & Larcker, D. F. (1981). *Structural equation models with unobservable variables and measurement error: Algebra and statistics*. Sage Publications Sage CA: Los Angeles, CA. doi: https://doi.org/10.1177/002224378101800313

Green, D. D., & McCann, J. (2020). The Coronavirus Effect: Building Strategic Alliances in Today's Universities and Colleges. *Manag Econ Res J, 6*(3), 1124819. doi: https://doi.org/10.18639/MERJ.2020.1124819

Grewal, R., & Tansuhaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *Journal of marketing*, *65*(2), 67-80. doi: https://doi.org/10.1509/jmkg.65.2.67.18259

Gurbaxani, V., & Dunkle, D. (2019). Gearing up for successful digital transformation. *MIS Q. Executive, 18*(3), 209-220. Retrieved from http://www.centerfordigitaltransformation.org/assets/APC-Report-Digital-Transformation_18_r2-merged.pdf

Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007). Research methods for business. *Education+ Training, 49*(4), 336-337. doi: https://doi.org/10.1108/et.2007.49.4.336.2

He, Q., Meadows, M., Angwin, D., Gomes, E., & Child, J. (2020). Strategic alliance research in the era of digital transformation: Perspectives on future research. *British Journal of Management, 31*(3), 589-617. doi: https://doi.org/10.1111/1467-8551.12406

Hussain, Z. (2021). Paradigm of technological convergence and digital transformation: The challenges of CH sectors in the global COVID-19 pandemic and commencing resilience-based structure for the post-COVID-19 era. *Digital Applications in Archaeology and Cultural Heritage, 21*, 00182. doi: https://doi.org/10.1016/j.daach.2021.e00182

Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: antecedents and consequences. *Journal of Marketing*, *57*(3), 53-70. doi: https://doi.org/10.1177/002224299305700304

Jia, J., Lai, Y., Yang, Z., & Li, L. (2022). The optimal strategy of enterprise key resource allocation and utilization in collaborative innovation project based on evolutionary game. *Mathematics, 10*(3), 400. doi: https://doi.org/10.3390/math10030400

Kryvovyazyuk, I., Britchenko, I., Smerichevskyi, S., Kovalska, L., Dorosh, V., & Kravchuk, P. (2023). Digital transformation and innovation in business: the impact of strategic alliances and their success factors. *Economic Studies, 32*(1), 200. Retrieved from https://ideas.repec.org/a/bas/econst/y2023i1p3-17.html

Kwon, O., An, Y., Kim, M., & Lee, C. (2020). Anticipating technology-driven industry convergence: Evidence from large-scale patent analysis. *Technology analysis & strategic management, 32*(4), 363-378. doi: https://doi.org/10.1080/09537325.2019.1661374

Lee, M.-J., & Roh, T. (2023). Digitalization capability and sustainable performance in emerging markets: mediating roles of in/out-bound open innovation and coopetition strategy. *Management Decision, ahead-of-print*(ahead-of-print), 1-29. doi: https://doi.org/10.1108/MD-10-2022-1398

Lepratte, L. O., Blanc, R. L., Hegglin, D. R., Rodríguez, M. A., & Ruhl, L. M. (2022). Management of Technological Convergence in New Technology-Based Firms. In *2022 IEEE 28th International Conference on Engineering, Technology and Innovation (ICE/ITMC) & 31st International Association For Management of Technology (IAMOT) Joint Conference* (pp. 1-7). IEEE. doi: https://doi.org/10.1109/ICE/ITMC-IAMOT55089.2022.10033164

Liu, M., Shan, Y., & Li, Y. (2023). Heterogeneous Partners, R&D cooperation and corporate innovation capability: Evidence from Chinese manufacturing firms. *Technology in Society*, *72*, 102183. doi: https://doi.org/10.1016/j.techsoc.2022.102183

Mardani, A., Nikoosokhan, S., Moradi, M., & Doustar, M. (2018). The relationship between knowledge management and innovation performance. *The Journal of High Technology Management Research, 29*(1), 12-26. doi: https://doi.org/10.1016/j.hitech.2018.04.002

Martinelli, E. M., Farioli, M. C., & Tunisini, A. (2021). New companies' DNA: the heritage of the past industrial revolutions in digital transformation. *Journal of Management and Governance, 25*(4), 1079-1106. doi: https://doi.org/10.1007/s10997-020-09539-5

Martynov, A. (2023). Technological diversification, technological coupling and invention performance. *Baltic Journal of Management, 18*(3), 333-349. doi: https://doi.org/10.1108/BJM-03-2022-0089

Matarazzo, M., Penco, L., Profumo, G., & Quaglia, R. (2021). Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective. *Journal of Business Research, 123*, 642-656. doi: https://doi.org/10.1016/j.jbusres.2020.10.033

Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management. *MIS quarterly, 41*(1), 223-238. Retrieved from https://www.jstor.org/stable/26629644

Odusote, O., & Akpa, V. (2022). Resource Allocation and Innovativeness of Selected SMEs in Lagos State, Nigeria. *Journal of Strategic Management, 7*(2), 1-13. doi: https://doi.org/10.47672/jsm.1050

Sambasivan, M., & Nget Yen, C. (2010). Strategic alliances in a manufacturing supply chain: Influence of organizational culture from the manufacturer's perspective. *International Journal of Physical Distribution & Logistics Management, 40*(6), 456-474. doi: https://doi.org/10.1108/09600031011062191

Sari, D., Kusuma, B. A., Sihotang, J., & Febrianti, T. (2023). The role of entrepreneurial marketing & innovation capability in the performance of SMEs during covid-19 pandemic: Evidence of MSMEs in West Java. *Cogent Business & Management, 10*(1), 2194091. doi: https://doi.org/10.1080/23311975.2023.2194091

Saunila, M., & Ukko, J. (2014). Intangible aspects of innovation capability in SMEs: Impacts of size and industry. *Journal of Engineering and Technology Management, 33*, 32-46. doi: https://doi.org/10.1016/j.jengtecman.2014.02.002

Shehadeh, M., Almohtaseb, A., Aldehayyat, J., & Abu-AlSondos, I. A. (2023). Digital Transformation and Competitive Advantage in the Service Sector: A Moderated-Mediation Model. *Sustainability, 15*(3), 2077. doi: https://doi.org/10.3390/su15032077

Shehzad, M. U., Zhang, J., Alam, S., & Cao, Z. (2022). Determining the role of sources of knowledge and IT resources for stimulating firm innovation capability: a PLS-SEM approach. *Business Process Management Journal, 28*(4), 905-935. doi: https://doi.org/10.1108/BPMJ-09-2021-0574

Shi, L., Gao, S., Xu, A., Zheng, K., Ji, Y., Dong, X., & Xing, L. (2023). Influence of Enterprise's Factor Inputs and Co-Opetition Relationships to Its Innovation Output. *Sustainability, 15*(1), 838. doi: https://doi.org/10.3390/su15010838

Teece, D. J. (2018). Profiting from innovation in the digital economy: Enabling technologies, standards, and licensing models in the wireless world. *Research policy, 47*(8), 1367-1387. doi: https://doi.org/10.1016/j.respol.2017.01.015

Tranos, E., Kitsos, T., & Ortega-Argilés, R. (2021). Digital economy in the UK: regional productivity effects of early adoption. *Regional Studies, 55*(12), 1924-1938. doi: https://doi.org/10.1080/00343404.2020.1826420

Tsaur, S.-H., & Wang, C.-H. (2011). Personal ties, reciprocity, competitive intensity, and performance of the strategic alliances in Taiwan's travel industry. *The Service Industries Journal, 31*(6), 911-928. doi: https://doi.org/10.1080/02642060903078735

Urbinati, A., Chiaroni, D., Chiesa, V., & Frattini, F. (2020). The role of digital technologies in open innovation processes: an exploratory multiple case study analysis. *R&d Management, 50*(1), 136-160. doi: https://doi.org/10.1111/radm.12313

Vial, G. (2021). Understanding digital transformation: A review and a research agenda. In *Managing Digital Transformation* (pp. 13-66). Routledge. doi: https://doi.org/10.4324/9781003008637-4

Wang, Z., Sun, H., Ding, C., Xin, L., Xia, X., & Gong, Y. (2023). Do Technology Alliance Network Characteristics Promote Ambidextrous Green Innovation? A Perspective from Internal and External Pressures of Firms in China. *Sustainability, 15*(4), 3658. doi: https://doi.org/10.3390/su15043658

Wu, H., Hu, S., & Hu, S. (2023). How digitalization works in promoting corporate sustainable development performance? The mediating role of green technology innovation. *Environmental Science and Pollution Research*, *30*(8), 22013-22023. doi: https://doi.org/10.1007/s11356-022-23762-7

Yin, X., Bao, X., & Meng, J. (2020). Evaluation and optimization path of scientific and technological resources allocation efficiency of advanced precise-top industries. *Science & Technology for Development, 15*(10), 1075-1085.

Yoon, S. J. (2023). *Firm's Internal and External Factors in Driving Exploratory Innovation* (Dissertation in Engineering, Graduate School of Seoul National University). Retrieved from https://s-space.snu.ac.kr/bitstream/10371/193401/1/000000175865.pdf

Zaki, M. (2019). Digital transformation: harnessing digital technologies for the next generation of services. *Journal of Services Marketing, 33*(4), 429-435. doi: https://doi.org/10.1108/JSM-01-2019-0034

Zhang, L. (2019). *Research on Efficiency of Science and Technology Resources Allocation in Regional Business in Cubation Networks* (Phd Dissertation, Shanxi University of Finance & Economics).

Zhang, L., Chu, X., & Xue, D. (2019). Identification of the to-be-improved product features based on online reviews for product redesign. *International Journal of Production Research, 57*(8), 2464-2479. doi: https://doi.org/10.1080/00207543.2018.1521019

Zhang, M., & Qi, Y. (2023). Vertical Network Relationships, Technological Capabilities, and Innovation Performance: The Moderating Role of Strategic Flexibility. *Sustainability, 15*(14), 11110. doi: https://doi.org/10.3390/su151411110