

# Unlocking the Critical Success Factors of Design and Technology Companies through Strategic Allocation of Resources: Addressing Market Dynamics and Emerging Technological Trends

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## ABSTRACT

The research assessed how factors such as dynamics in the market and emerging technologies act as critical success factors that influence the efficiency of strategic resource allocation within design and technology firms. The study utilized a descriptive survey research method and collected data through questionnaires that targeted employees in the design and technology industries. The study used 100 respondents who were selected through purposive sampling. Primary data was obtained through an administered structured questionnaire that mainly contained closed-ended items measured on a five-point Likert scale. Hypotheses were tested using Pearson's correlation. The study found that stable market dynamics have a positive significant relationship with the efficiency of resource allocation among companies in the design and technology industry ( $p$ -value = 0.000); emerging technological trends also affect the efficiency of resource allocation in the design and technology companies ( $p$ -value = 0.000). Stable market conditions were seen to have a positive effect on increasing resource allocation efficiency in design and technology firms due to their effect in enhancing demand forecasting and subsequent resource allocation, while efficient utilization of new technologies helps organizations optimize their operations, thereby supporting the resource-based view theory. The study recommends that marketing and strategy teams should conduct quarterly meetings to assess market dynamics and competitive areas, while the finance and sales teams should work together in creating flexible budgets and models to accommodate market changes. Additionally, HR should ensure that employees are skilled in new technology, senior management should use scenario planning, and executive leaders should invest in pilot projects to discover the appropriateness of technology incorporation in business processes.

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**KEYWORDS:** *market dynamics, emerging technological trends, strategic resource allocation, design and technology firms, critical success factors*

## 1. INTRODUCTION

In today's business environment, many organizations critically experience growing pressure to respond to new challenges of the market environment (Holbeche, 2023) and take advantage of various latest technologies to remain competitive, which is particularly important in the ever-evolving field of design and technology industries (Ajayi & Udeh, 2024; Sharma et al., 2022). Consequently, strategic resource deployment is central to defining the success or failure of organizations within these sectors. Furthermore, today's business world is increasingly globalized, digitalized, and competitive (Usman et al.,

2024), emphasizing strategic resource management's significance. Due to effective resource management, businesses aim to effectively utilize their financial, human, and technological resources to guarantee optimal organizational productivity, adequate organizational performance, and sustainable corporate success (Masya et al., 2022; Nthiwa & Muchemi, 2020).

Strategic resource allocation refers to the process of selecting, evaluating, and committing resources toward objectives deemed useful for achieving the

organization's goals and priorities and consistent with market opportunities (Klingebiel & Rammer, 2014). Thus, organizations can significantly improve their capability to create new valuable solutions, adapt to changes, and exploit emerging opportunities for increased organizational performance and profitability (Tağ, 2021). Design and technology firms are involved in fast-paced and competitive industries with an emphasis on new ideas and uniqueness in the market (Ajayi & Udeh, 2024; Sharma et al., 2022). Poretti et al. (2024) analyzed the effects of new business models on the travel and leisure industry's enterprise performance and value. The authors discovered that innovative strategies, although linked to lower profitability, had high market values. Strategic resource allocation in the design and technology industries also entails assigning resources in activities such as R&D, product development, marketing, and sales to add value to the customer and gain a market share. According to Chepkosgei and Atambo (2018), resource allocation was found to have a positive effect on the implementation of strategic planning within Rongo University. In the same way, Masya et al. (2022) revealed that resource allocation significantly affected the strategy implementation in Commercial bank branches in Machakos Sub County. In addition, Mutambuki and Kabui (2022) established that resource allocation has a positive and statistically meaningful impact on service delivery by WWDAs (Water Works Development Agencies) in Kenya. These studies contribute to the understanding that resource allocation is an essential factor in achieving success in both the public and private domains.

In this study, we posit that market forces and emerging technologies seemingly play a significant role in shaping strategic resource allocation in design and technology organizations. Factors such as consumer behavior, industry trends, and competition may affect the demand, pricing, and resources needed in the market. For example, changes towards sustainability, customization, and digitalization are transforming the design and technological fields, which implies that organizations have to adapt their resource distribution to new trends in the market. Likewise, the latest trends in technology, like artificial intelligence, the Internet of Things, and blockchain, pose risks and opportunities to design and technology firms. Lee et al. (2024) examined the effects of digitalization on the Chinese financial asset allocation between 2010 and 2020. The authors noted that while information communication technology (ICT) investment decreased financial asset allocation, digital transformation, on the other hand, increased it, thereby, exerting a positive effect on the operating

profit the main business. The management of strategic resources has to consider the investment in new technologies, talent purchase, and infrastructure to explore the benefits of the trends and sustain competitive advantage in the digital age. Also, companies have to make decisions regarding the allocation of resources for the short term while considering their strategic goals and pondering over factors such as their risk appetite, innovation ability, and their position in the market. Kaur and Singh (2024) identified the relationship between resource allocation and the performance of 240 Indian manufacturing firms listed between the period 2006 to 2023. They noted temporary sales decline in the short term because resources were directed toward R&D, advertising, inventories, and wages. Nevertheless, through the course of the year, these allocations boosted sales. Likewise, the direct negative impacts of R&D and advertising on Tobin's Q turned positive later. On the other hand, initial favorable relationships between Tobin's Q and inventories and wages became negative in the later periods.

In all, it can be concluded that the strategic management of resources is one of the most important factors that define the success of companies in the modern world (Lovallo et al., 2020). Thus, grasping the interrelation between market dynamics, technological advancements, and the allocation of strategic resources would allow firms to innovate and develop to overcome the competition in the business world (Khorramfar et al., 2024). For instance, subliminal operations GmbH (sub) has several successful projects that demonstrate the effectiveness of the proper distribution of resources across the domains of design, architecture, entertainment, digital, and research. For example, in architecture and spatial design, sub has used the concept of visual narrative and computational design to come up with exciting and aesthetically appealing spaces and scenography sets. This incorporation of the latest technology in the creative processes demonstrates the organization's effective resource management. Moreover, the company's digital transformation initiatives reveal its capacity to thrive and grow in a fast-paced digital environment.

Ideally, design and technology firms should manage their resources in a way that would allow them to tap into the market opportunities while also maximizing the available technology as a tool in the competition and generating profits. This approach would be a strategic resource allocation, which would be done considering factors such as market needs, technologies, competition, and organizational goals,

thus enabling the companies to be in a position to allocate resources in the most efficient manner and also to be in a position to respond to changes in the market (Masya et al., 2022; Nthiwa & Muchemi, 2020).

However, despite recognizing the necessity of resource management, most organizations cannot efficiently distribute resources according to today's market conditions and emerging technologies (Jin et al., 2023). Various constraints that may hinder decision-making in such a case are financial constraints, other competing activities within the organization, bureaucratic tendencies, and lack of direction (Lovallo et al., 2020). Therefore, firms may miss opportunities, overspend on other issues, or allocate resources in the wrong areas, thus performing and positioning themselves poorly in the market (Lovallo et al., 2020).

Consequently, inefficient resource allocation threatens the companies' innovative potential (Klingebiel & Rammer, 2014), market adaptation, and ability to capture growth opportunities (Kaur & Singh, 2024). Thus, companies risk getting behind competitors, losing their market share, or even missing opportunities to tap into new ideas and approaches that can affect their long-term sustainability and profitability (Sheng et al., 2024). Furthermore, ineffective management of resources can threaten the company's resources, shareholder value, and stakeholder confidence, which is why this study aims to examine the impact of market dynamics and technology trends on strategic resource allocation in design and technology firms.

## 1.1. Research Questions

1. How do market dynamics influence the efficiency of resource allocation among design and technology companies?
2. To what extent do emerging technological trends influence the efficiency of resource allocation among design and technology companies?

## 2. Review of Related Literature

### 2.1. Conceptual Review

#### 2.1.1. Strategic Allocation of Resources

Strategic resource allocation entails a comprehensive process of meticulous identification, strategic prioritization, and effective deployment of resources (Gitau et al., 2020). In essence, this process is anchored on organizational objectives since it appears to be one of the fundamental cornerstones for achieving long-term sustainability, competitive advantage, and growth amidst the ever-evolving dynamics of the market domain (Mérindol & Versailles, 2024). Shi and Shi (2022) explored resource allocation in Shenzhen's entrepreneurial

ecosystem, revealing four interconnected themes: resource endowments, resource use, resource dynamics, and enabling conditions. For effective strategic resource allocation, there must be a rigorous identification of resources available to the organization, spanning financial assets, human capital, technological infrastructure, intellectual property, and more. This stage entails an analysis of the organization's strengths and weaknesses, as well as opportunities and threats in the market. After the identification of resources, it is possible to have a strategic priority where resources can be systematically ordered and assigned according to the relevance to the objectives of the company, its priorities, and the opportunities of the market. This entails a strategic analysis of the appropriateness and relevance of each resource in achieving the strategic goals of the organization (Tağ, 2021). This way, resources are directed toward programs and activities that are likely to generate the most significant outcomes, the best risk-adjusted returns, and the most profound fit with the organization's strategic plan (Savio et al., 2024). In the paper by Gao et al. (2022), the authors examine how profit-oriented leaders decide on the distribution of resources to support several innovators. Thus, they found that with the resources, diversification is not a steady process, meaning that it will not constantly increase. However, it varies with the dynamics that exist between the chances of experiencing failure in innovation and the loss of profits that may result from elevated rivalry.

The role efficient financial strategies play in ensuring operational optimization and sound resource mobilization is highly essential. Since adequate financial management strategies enhance optimal business performance, this synergy is therefore vital for creating competitive and sustainable business performance. For instance, Omabu et al. (2021), in evaluating the optimal application of financial leverage as a long-term financial strategy, argue that strategic debt management enhances profitability by lowering the cost of debt and the required rate of return on capital projects, thereby ensuring adequacy in resource management. This implies that for adequate strategic resource deployment, the right financial management strategies, such as strategic debt management, among other techniques, evidently enhance corporate performance as well as provide the appropriate environment required for efficiency in resource deployment. Therefore, it can be safe to say that for long-term growth in corporate operational performance, solid but dynamic financial strategies are the proper foundation for sustaining the development.



However, strategic resource allocation also involves the periodic and efficient handling of resources from the time they are acquired up to the time they are used. This includes the process of assessing the market dynamics, opportunities, firm's capacity and features, as well as adjusting the resource allocation plans in the process (Hu et al., 2024). Agility and adaptability are also critical to enable organizations to quickly and strategically redirect resources to capture opportunities or avoid potential threats and gain a competitive edge (Corona et al., 2024).

Moreover, strategic resource allocation is one of the main factors that define the ability of organizations to be flexible and ready to respond to changes in the market, disruptions, shifts in industries, or threats from competitors (Masya et al., 2022). Thus, the proactive management of organizational resources can serve as a strong basis for sustainable development, creativity, and added value in the conditions of the ever-growing business environment volatility (Krylatov & Raevskaya, 2024; Tağ, 2021). Therefore, SRA represents more than just a management of resources; it is a strategic necessity for organizations aspiring to excel in today's competitively spirited environment. Thus, organizations can open new perspectives for development, increase competitiveness, and increase their ability to withstand change and uncertainty by identifying, prioritizing, and deploying resources (Kanaparthi, 2024).

### 2.1.2. Market Dynamics Influencing Efficiency of Resource Allocation

Market dynamics have significantly influenced the organizations' resource use efficiency. Thus, in their activities, business stakeholders have no choice but to seek ways to manage and organize resources to achieve their strategic goals while maintaining and enhancing competitiveness (Symeonidou et al., 2022), growth, and profitability. In this sense, market dynamics include aspects such as demand fluctuations and competition that affect the distribution of resources and the performance of organizations. First, variations in the level of demand for products, the general economic situation, and the state of the industry can drastically change the amount of resources needed in different areas. Thus, due to market conditions, organizations must implement strategic approaches to manage resources to minimize risks and seize opportunities when they appear (Kanaparthi, 2024). For instance, in situations of increased demand uncertainty, organizations may need to change the timetable for production, the stock holdings, and the deployment of labour in line with changing market circumstances. Through the

application of real-time data analysis and demand forecasting techniques and models, companies can better their decision-making in the management of resources, reduce costs, and improve overall business operations in unstable markets.

In today's hyper-competitive business scene, organizations face intense pressure to optimize resource allocation to gain a competitive edge. For this reason, firms need to study the market environment and competitors' behavior and predict future industry trends to efficiently and effectively deploy resources. Thus, by following the resource allocation strategy, the companies can direct the investments, workforce, and other resources to the more valuable projects and initiatives to create a competitive advantage and sustainable growth (Jooss et al., 2024). Also, strategic alliance, partnership, and M&A (Mergers and Acquisitions) help firms acquire resources, capabilities, and markets that are complementary to the firm's resources, improving the competitiveness of the firm and resource utilization in the market. Zhao et al. (2021) compared the impact of different levels of resource allocation on the management of strategic alliances. The researchers concluded that more extensive resource allocation increases the chances of proper resource positioning. Also, Odusote and Akpa (2022) examined the effect of resource allocation on SME innovativeness in Lagos State, Nigeria. The authors identified a positive impact of resource allocation on innovativeness in the selected SMEs.

Thus, market dynamics significantly impact the organization's effectiveness in utilizing resources to make decisions on resource deployment, operational management, and competitive positioning in the market. Thus, aiming at market conditions, it is possible to improve resource usage efficiency, decrease waste, and increase the effectiveness of organizational operations to support sustainable development and long-term success. Ali et al. (2022) examined the consequences of resource allocation on the performance of cement-making firms in Kenya. The authors identified a significant correlation between the resources allocated and the organizational performance with the data collected from questionnaires distributed to 209 employees in five significant organizations. In the same manner, Nthiwa and Muchemi (2020) sought to examine the relationship between resource allocation and audit firms' performance in Nairobi City County, Kenya, with the findings indicating a positive and significant relationship with performance. In their study, Lovallo et al. (2020) identified that the relationship between financial resource allocation flow and firms' economic performance is an inverted U-shaped

relationship. Gitau et al. (2020) looked at organizational resource allocation and its effect on supermarket performance in Nairobi County. The authors established that the monitoring and control of the strategies had the most influence on the performance.

Therefore, owing to technological and innovative developments, organizations can harness market uncertainties and acquire opportunities to create returns and advantages for their various stakeholders in the contemporary dynamic market environment (Li et al., 2023). Stable market dynamics are, therefore, expected to positively influence the efficiency of resource allocation in design and technology firms.

### 2.1.3. Emerging Technological Trends Influence on Efficiency of Resource Allocation

Emerging technological trends are revolutionizing industries across the globe, reshaping the way businesses operate, innovate, and compete in the market (George & George, 2024). These advancements have profound implications for resource use efficiency as organizations seek to harness the power of technology to optimize resource allocation, enhance productivity, and drive sustainable growth. Some of the emerging technological trends include artificial intelligence (Ahmed, 2024), the Internet of Things (IoT), and blockchain technologies, which are transforming resource management practices and reshaping business strategies in the digital age (Lee et al., 2024). Li et al. (2024) analyzed scientific and technological resource allocation in Chengdu–Chongqing–Mianyang from 2010 to 2019. They discovered an upward trend in efficiency attributed to increased technological progress in Chongqing and Mianyang.

The application of artificial intelligence (AI) and machine learning (ML) is increasing the efficiency of resources in many sectors (Basnet, 2024). Assisted by big data, pattern recognition AI systems can optimize resource allocation, predict shifts in demand, and make decisions on the spot (Polisetty et al., 2024). For instance, in the manufacturing industry, AI applications in predictive maintenance enable organizations to anticipate equipment failures, schedule repairs, and minimize downtime, thus enhancing resource utilization and reducing costs. Similarly, in the agricultural sector, the concept of precision farming, which is implemented with the help of artificial intelligence, assists in the optimal use of water and fertilizers, thus encouraging the proper utilization of resources and, at the same time, increasing output and profitability.

Another technology that is currently influencing the shifts in resource management and improvement of

such practices is known as the Internet of Things or IoT (Rao et al., 2024). Components of IoT such as sensors, actuators, and connectivity can help firms in optimizing their resource utilization, and hence, minimize wastage. For example, IoT technological application in asset tracking in logistics and supply chain management can assist the organization in understanding the movement of the organization's products and services and subsequently use less fuel and emit fewer greenhouse gases into the atmosphere. It is important to note that through the interconnection of systems in smart and intelligent buildings and cities, energy consumption, lighting, and temperature are regulated with the aim of optimizing resource use through people's presence or absence to conserve energy and improve comfort and efficiency.

Blockchain technology is gradually transforming the supply chain management through the provision of high-quality transparency, traceability, and accountability in the supply chain (Zhu et al., 2024). Thus, by documenting the transactions on the blockchain, which is a distributed and unalterable ledger, the data is protected from tampering, the middlemen are cut off, and the risk of fraud is minimized, which, in turn, increases the confidence and effectiveness of the distribution of resources. For instance, in the food supply chain, due to the implementation of the blockchain, it is possible to track the entire process of product implementation from producers to consumers thus promoting food safety, and preventing fraud and unfair practices. Likewise, in the energy sector, applications of the blockchain technique include peer-to-peer energy trading platforms that facilitate direct trading between producers and consumers of energy, which helps to manage the resources efficiently and minimize wastage, besides encouraging the use of renewable energy sources.

Also, the rapid pace of technological advancements exerts a profound influence on resource use efficiency within organizations. Advancements in automation, artificial intelligence along with the digital transformation of business concepts have disrupted the conventional methods of business operations and have helped companies to minimize expenses and increase efficiency (Basnet, 2024). This means that companies that are willing to spend money on modern technologies and digital infrastructure can increase the effectiveness of their value chains through optimizing production, logistics, marketing, and customers' relations. Yuan and Pan (2023) concluded that digital technology applications increase green innovation where there is intense competition, since it helps in the efficient utilization of labour and increasing expenditures on R&D and digital models.

In addition, technological tools like cloud computing, IoT, and predictive analytics help organizations to get real-time information regarding the use of resources in order to fill the gaps and make effective decisions to increase the overall efficiency and compete with other organizations in the market. We therefore propose that the new technological advancement like artificial intelligence, the internet of things and the block chain technologies will have a positive effect on the efficiency of resource usage among the design and technology firms.

## 2.2. Theoretical Underpinning

This research is based on the Resource-Based View (RBV) theory. This theory was developed by Edith Penrose, which is one of the author's most famous works "The Theory of the Growth of the Firm" published in 1959. This theory helped to explain the role of interior resources and capabilities in achieving competitive advantage by the enterprise (Penrose, 2009). The Resource-Based View theory states that the competitive advantage of a firm is built on the combination of resources and capabilities that the firm has (Zahra, 2021). These resources can be material in nature, like financial capital, physical assets, or technology, and immaterial assets, such as IP, brand equity, and culture (Gibson et al., 2021; Paauwe, 2024). The theory postulates that not all resources are valuable, rare, inimitable, and non-substitutable (VRIN), and it is the combination of these attributes that defines the capacity of a resource to generate competitive advantage. Moreover, RBV postulates that firms should concentrate on internal resources and capabilities to generate competitive advantage (Masya et al., 2022) rather than depending on external market forces.

The Resource-Based View theory is valuable for the analysis of strategic management of resources in the rapidly evolving sphere of design and technology industries. RBV deals with internal resources and capabilities, emphasizing the importance of firms involved in design and technology in deploying their resources in a way that is most appropriate to their strengths (Donnellan & Rutledge, 2019). This is so due to the fact that the business environment is global, digital, and highly competitive and thus the internal resources of firms need to be administered for the purpose of attaining and sustaining competitiveness and growth (Masya et al., 2022). RBV is a tool that can be useful to companies in the design and technology industry to comprehend, create and direct

## 4. Findings

### 4.1. Analysis of Research Questions

The analysis presented in Table 4.1 – Table 4.3 provides the frequency distributions of the responses to the research questions with respect to the three variables of the study: efficiency of resource allocation, market dynamics, and emerging technological trends. Each question was evaluated on a scale ranging from strongly

their resources in a manner that would enhance performance, efficiency and worth. Thus, considering the unique resources and capabilities, the design and technology firms can minimize the risks of the market, as well as capture new opportunities that will help them gain a competitive advantage in the market. Hence, RBV can be seen as an organizational compass that guides firms through the identification and management of strategic resources with a view to enhancing the firms' long-term sustainability and profitability amidst various market dynamics and technological changes.

## 3. Methodology

The research design that was used in this study is descriptive survey design, and the data collection instruments that were used in the study were questionnaires. This form of research involves gathering information from a sample population regarding their experiences, behaviour, perceptions and attitudes (Salaria, 2012). The objective of a cross-sectional study is to summarize the data of a population at a particular time and to examine the relationships between various variables. This type of research design aims at describing the population of interest. It was selected for this study as it is a quick method of collecting a large amount of data from many people and it was fairly inexpensive (Story & Tait, 2019). This design facilitated the incorporation of the various views of the respondents regarding the research topic. For this study, the target population will be the employees in the design and technology departments. The sample was selected purposively and consisted of 100 respondents. This was done because the questionnaire was administered online, and the participants were not restricted to any specific time to complete it. The data collection technique used in the study was the administration of the structured E-questionnaire, which was mainly made up of closed-ended questions and the use of the five-point Likert scale for the qualitative data analysis. Thus, the approach taken in this study was to include the respondent's perception and the data collected were as accurate as possible. Data analysis was carried out using SPSS version 25, which used both descriptive and inferential analysis. Descriptive analysis was employed to examine the frequency distributions while Pearson's correlation analysis was employed to test hypotheses relating to market dynamics and trends in the distribution of strategic resources among design and technology firms.



agree (SA) to strongly disagree (SD), with frequency counts indicating the distribution of responses across these categories.

**Table 4.1 Analysis of Research Questions on Efficiency of Resource Allocation**

S/N	Efficiency of Resource Allocation	SA	A	N	D	SD
1	The allocation of resources within our organization is aligned with our overall strategic goals and objectives.	38	42	14	5	1
2	Our organization effectively prioritizes resource allocation to activities that contribute most to our competitive advantage.	39	42	14	3	2
3	Our organization efficiently allocates financial resources to support key initiatives and projects.	38	42	13	5	2
4	Our organization effectively balances short-term resource allocation decisions with long-term strategic objectives.	34	40	16	7	3
5	Our organization has clear processes in place for evaluating and adjusting resource allocation strategies as needed.	29	45	19	5	2

**Source: Field Survey, 2024**

The distribution presented in Table 4.1 based on the survey results shows that 38 respondents indicate that they strongly agree (SA), and 42 respondents agree (A) with the assertion that the distribution of resources in their organization is consistent with the organization's strategic direction and objectives. This means that, in the organization, there is a generally favorable outlook on the aspect of alignment. Also, 14 participants were neutral (N), and only six were in the disagree or strongly disagree (D/SD) category; therefore, the agreement was high. Regarding the proposition that resources should be deployed in areas that are likely to yield the most on the competitiveness of the organization, 39 respondents strongly agree (SA), while 42 respondents agree (A). However, the results are slightly different with the addition of 14 neutral (N), three disagree (D), and two strongly disagree (SD) options than in the first question. This shows that though the respondents are aware of the significance of prioritization, there is room for improvement in the process or some level of disagreement with the process.

The result concerning the efficient allocation of financial resources shows that 38 respondents strongly agree (SA) and 42 agree (A). 13 respondents are neutral (N), while seven are either in disagree (D) or strongly disagree (SD) category, meaning that there is mild disagreement in the current case compared to the previous questions. When assessing the degree of congruity between the short-term approaches to resource management and the long-term vision, 34 people are of the opinion that it is completely true (SA), and 40 people are of the opinion that it is mainly true (A). Nevertheless, there are 16 participants who are neutral (N), leaving the remaining 10 in disagreement (D) or strongly disagree (SD), which reflects a somewhat moderate view on the balance between short- and long-term goals.

Finally, the availability of clear processes for assessing and modifying resource allocation approaches garners mixed reviews. 29 respondents strongly agree (SA), and 45 respondents agree (A). Nevertheless, 26 participants are neutral (N), disagree (D), or strongly disagree (SD) with the statement, which implies that there may be some ambiguity or insufficiency in the present evaluation and adjustment processes.

**Table 4.2 Analysis of Research Questions on Market Dynamics Awareness**

S/N	Market Dynamics Awareness	SA	A	N	D	SD
1	We are well-informed about current market trends and changes in consumer preferences relevant to our industry.	35	42	16	4	3
2	Our organization actively monitors changes in market demand and adjusts our strategies accordingly.	34	42	15	5	4
3	Our organization has a strong understanding of our competitive environment and positioning within the market.	39	42	11	6	2
4	Our organization effectively anticipates and responds to shifts in market conditions and industry trends.	38	37	16	6	3
5	Our organization is proactive in identifying and capitalizing on emerging opportunities in the market.	43	45	7	4	1

**Source: Field Survey, 2024**

Table 4.2 evaluates the awareness of market dynamics through the analysis of five research questions. The first question examines the organization's knowledge of current market trends and changes in consumer preferences

relevant to its industry. The findings show that respondents have a generally positive attitude, with 35 respondents strongly agreeing (SA) and 42 agreeing (A). However, there are also 16 neutral (N) responses indicating a certain amount of uncertainty or variation in the awareness rates. The second question deals with the company's awareness of shifting trends in customer preferences and its flexibility in adapting to them. Of the participants, 34 responded with strong affirmation (SA), while 42 responded in affirmation (A), but nine responded disagree (D) or strongly disagreed (SD). This suggests that while there is typical active monitoring, there can be opportunities for improving the strategy adjustment processes.

The third question measures the organization's understanding of its industry as well as its strategic place within the market. The current results show that while 39 participants strongly agree (SA), 42 of them agree (A), indicating a strong understanding, leaving fewer respondents in disagreement (D) and strong disagreement (SD) categories. This indicates a generally positive attitude towards the market position of the organization. The fourth question focuses on how well the organization is endowed to address matters concerning changes in market conditions as well as trends in the industry. When it comes to the level of agreement, 38 strongly agree (SA), but a total of nine persons disagree (D) or strongly disagree (SD), indicating some variation in perceptions regarding the organization's responsiveness to market changes.

Lastly, the fifth question focuses on how effectively the organization is managing the strategic identification and exploitation of new market prospects. Regarding this aspect, the responses depicted a high level of agreement, with 43 respondents strongly agreeing (SA) and 45 agreeing (A). This supports the impression that the organization is adept at taking advantage of the opportunities that exist within the market and exploiting them.

**Table 4.3 Analysis of Research Questions on Emerging Technological Trends Adoption**

S/N	Emerging Technological Trends Adoption	SA	A	N	D	SD
1	Our organization is quick to adopt new technologies that have the potential to enhance our operations and offerings.	38	50	9	2	1
2	Our organization effectively evaluates emerging technologies for their potential impact on our industry.	38	46	13	3	0
3	Our organization actively invests in blockchain infrastructure to stay ahead of technological advancements in our field.	38	40	19	2	1
4	Our organization has the necessary expertise and infrastructure to artificial intelligence integrate emerging technologies into our processes.	33	39	24	3	1
5	Our organization encourages experimentation and innovation with the Internet of Things to drive continuous improvement.	39	43	14	2	2

**Source: Field Survey, 2024**

Table 4.3 outlines the research questions related to the study of the adoption of modern technological trends in the organization. The first question assesses how the organization is positioned to quickly identify, implement, and utilize new technologies to improve the business and its services. When asked if they support the adoption of the policies, the majority of the responses show a positive leaning towards the affirmative, with 38 respondents (SA), While 50 respondents agree (A). Also, not more than 12 respondents give a negative attitude towards technological innovation by responding either neutral (N), disagree (D), or strongly disagree (SD). Hence, indicating that most of the respondents have a positive attitude toward innovation. The second question, on the other hand, asks to assess the company's performance in identifying promising trends in the industry as well as the opportunities that new technologies may open for the organization. As with the first question, the results suggest that the participants hold a positive view of the statement, with 38 (SA) and 46 (A) respondents endorsing the statement. Then, 16 respondents had some forms of neutrality (N), disagreement (D), or strong disagreement (SD) with the idea of technology assessment engagement.

The third question focuses on the extent that the organization has embraced blockchain technology regarding technological developments. It shows that 38 strongly agree (SA), 40 agree (A), with only 22 respondents reflecting some level of disagreement (N, D, or SD). This suggests some sort of differences in perception regarding the investment of the organization in blockchain technology. The fourth question captures the attitude of the organization toward the adoption of emerging technologies, such as Artificial Intelligence in their operations. The responses suggest that the overall perception is somewhat affirmative, with 33 strongly affirming (SA) and 39 affirming (A). However, there are 28 respondents who are in a level of disagreement with this statement (N, D, or SD), thus showing that there could be some difficulties in the adoption of these technologies. Lastly, the fifth question is concerned with the culture of the organization in pursuing



experimentation and innovation with the use of the Internet of Things (IoT) to adopt continuous improvement. From the sentiments received from different responses, the overall perception is relatively positive, with 39 strongly agreeing (SA) and 43 in agreement (A). However, there are also 18 respondents having N, D, or SD, which indicates that there may still be some opportunities for building a culture of innovation.

## 4.2. Hypotheses Testing

### 4.2.1. Hypothesis I

H1: Stable market dynamics positively influence the efficiency of resource allocation among design and technology companies.

**Table 4.4 Correlations for Hypothesis I**

		Efficiency of Resource Allocation
Stable Market Dynamics	Pearson Correlation	.855
	Sig. (2-tailed)	.000
	N	100

Source: SPSS version 25 Output

The correlation coefficient from the provided correlation analysis presented in Table 4. 4 analyzed the link between more stable market changes and better resource allocation efficiency (Hypothesis I). The efficiency of resource allocation, as seen from the data, is positively and strongly correlated to stable market dynamics, with a coefficient of 0.855. This suggests that as market dynamics stabilize, there is a corresponding increase in the efficiency of resource allocation among design and technology companies. The statistically significant p-value ( $p < 0.05$ ) further strengthens the validity of this correlation, indicating that this relationship is unlikely to have occurred by random chance.

This finding suggests that when markets are more stable, it will be easier for companies to properly allocate resources and strategically plan for investments, especially in areas where they will be needed most with minimum waste (Sirmon et al., 2007). This is because stable markets give less uncertainty; hence, companies can be able to undertake effective decisions about resource allocation. Therefore, the alternative hypothesis is accepted, which states that stable market dynamics have a positive effect on improving the efficiency of resource allocation in companies operating in the field of design and technology (p-value = 0. 855).

### 4.2.2. Hypothesis II

H2: Advanced technological trends such as artificial intelligence, the Internet of Things, and blockchain technologies positively impact the effectiveness of resource distribution between designing and technology-based organizations.

**Table 4.5 Correlations for Hypothesis II**  
**Correlations**

		Efficiency of Resource Allocation
Emerging technological trends	Pearson Correlation	.660
	Sig. (2-tailed)	.000
	N	100

Source: SPSS version 25 Output

Table 4.5 evaluated the impact of new technologies on the effectiveness of resource distribution. The correlation coefficient between emerging technological trends and the resource allocation efficiency of the companies is 0.660. This means that there is a moderate positive relationship, which implies that if companies start adopting emerging technologies such as artificial intelligence, the Internet of Things, and blockchain, there will be an enhancement in resource allocation efficiency.

As in Hypothesis I, the p-value calculated is less than 0.05 ( $p < 0.05$ ), confirming the solidity of this correlation, thereby indicating that the observed correlation between emerging technological trends and the efficiency of resource distribution can hardly be attributed to random chance alone. This result is because embracing emerging technologies allows organizations to streamline processes, automate tasks, and gain hints that enable more informed and efficient resource allocation decisions (Hill & Rothaermel, 2003). The alternate hypothesis was therefore accepted that emerging technological trends positively influence the efficiency of resource allocation among design and technology companies (p-value = 0.000).

## 5. Conclusion

This research examined the critical success factors of design and technology firms through the aspect of resource deployment. By analyzing the correlations that exist between stable market dynamics, emerging technological trends, and resource allocation efficiency, this research provided empirical-based hints to support the hypotheses raised and provide answers to the research questions. It was found that stable market dynamics positively and significantly influence the efficiency of resource allocation among design and technology companies. This underlines the importance of a predictable business environment because, in stable market conditions, companies can better anticipate demand, assess competitive positioning, and allocate resources strategically. The decision-making process becomes more accessible for organizations that are able to gauge and interpret signals from the market with less ambiguity, ultimately leading to efficiency and effectiveness of resource allocation as well as avoiding unnecessary expenditure on misplaced priorities. The strong positive correlation observed suggests that stability in market dynamics fosters an environment conducive to efficient resource allocation, enabling companies to capitalize on opportunities and mitigate risks effectively.

More so, the findings indicated that emerging technological trends positively influence the efficiency of resource allocation among design and technology companies. When organizations adopt artificial intelligence for their operations, the Internet of Things as well as blockchain, they are provided with tools and hints that enhance product or service differentiation and optimized operations. The positive correlation thus suggests that organizations that are implementing emerging technologies are more capable of resource mobilization, opportunity exploitation, and market responsiveness. Technological investment is one common way to strengthen critical areas, which in turn leads to procedural performance improvement and new opportunities. The findings of this study support theories such as the resource-based view theory (RBV). This is because market conditions offer long-term security and the capability of envisioning resource allocation while emerging technologies afford new ways to improve business operations and foster innovation.

### 5.1. Recommendations

The study, thus, recommends that the marketing, as well as the strategy team, should continuously engage in a timely review of the marketing and the competition domains every quarter to help in the early

identification of any patterns that may be indicative of a shift in the dynamics of the market. These teams can refine their strategies to obtain adequate benefits from new opportunities and overcome existing risks by regularly assessing the condition of the market. Additionally, the finance departments should regularly consult with the sales teams on the best ways of coming up with elastic budgetary structures that can be easily adjusted to match the dynamics of the market. Hence, this collaboration would help to synchronize resources, providing the organization with an opportunity to adapt adequately to changes in the clients' demand and the conditions of the general market.

Furthermore, senior management is encouraged to prioritize the activities of creating different scenario plans that could assess the effect of varying market conditions on resource allocation plans. Planning ahead helps the organization to be in a better stand in order to address any unpredictability that may be ahead and prevent it from giving up its competitive advantage.

Also, the human resources (HR) departments are advised to collaborate with external training providers to ensure that employees acquire the essential skills necessary to utilize new technologies and navigate the continuous demands in the market. Finally, executive leadership should assign specific financial resources for pilot initiatives designed to assess specific technologies' applicability within existing workflow processes as it encourages more innovation and overall improvement.

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