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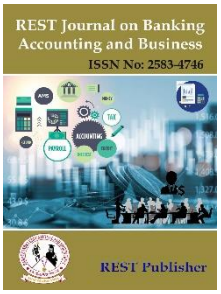

Evaluating and Ranking the Energy Performance of E-Commerce Development Strategies Using TOPSIS Method

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Abstract: *This abstract outline some of the crucial tactics that companies should take into account while creating an e-commerce platform. First and first, it's important to comprehend the target audience and their preferences. In order to better understand client demands, expectations, and purchasing patterns, firms can modify their platforms and marketing initiatives by doing market research and utilising data analytics. Second, it is crucial to design an interface that is simple and easy to use. To improve the customer experience, the e-commerce platform should offer easy navigation, simple search features, and simplified checkout procedures. Given the increased popularity of mobile shopping, investing in adaptable design and mobile optimisation is also essential. Thirdly, merchandising and product display are crucial in promoting sales. The many methods and processes used to create and expand prosperous online enterprises are referred to as ecommerce development strategies. These methods cover everything from creating an online store to generating traffic, improving conversion rates, and guaranteeing customer pleasure. Ecommerce companies can better understand their target market by conducting research on consumer preferences, behaviour, and trends. Businesses can use market research to determine the requirements and preferences of potential customers, which can inform decisions about what products to offer at what prices, and how to best sell their services. Businesses can study their rivals' plans, strengths, and weaknesses through research to learn more about them. Depending on how closely a set of options fit an ideal answer, they are assessed and ranked using a decision-making method known as TOPSIS, or Technique for Order of Preference by Similarity to Ideal response. It is a method for MCDA (multi-criteria decision analysis), which aids individuals or groups in making decisions by taking a variety of preferences and considerations into account. The TOPSIS strategy aids decision-makers in methodically analysing and contrasting choices based on a variety of factors while taking their preferences and priorities into consideration. It increases transparency and comprehension of the decision-making process and offers a systematic strategy to enhance decision-making. Alternative Parameters: E-customization and personalization, Social E-commerce adoption model, Strong search engine optimization (SEO) Evaluate parameter: Feasibility of the strategy, Implementation speed, Compliance with the corporate strategy, Compliance of the strategy with the mission and vision of the company, General acceptance The evaluation criteria may also include the following additional factors: general acceptance, speed of implementation, compliance with corporate strategy, e-customization and personalization, social search engine optimisation, and compliance with the strategy's mission and vision The effective application of these tactics will enable firms to build a strong online presence, boost customer happiness, and enhance income in a cutthroat e-commerce industry. Businesses must adapt and hone their tactics to stay ahead of the curve as consumer preferences and technology change. Businesses may stay successful in the dynamic world of e-commerce by embracing innovation, knowing their customers, and keeping up with market trends.*

Keywords: *commerce, TOPSIS, development, strategy, corporate strategy.*

1. INTRODUCTION

Recent improvements in information technology have had a big impact on the economy. A recent approach of conducting business online is ecommerce, or using electronic methods to exchange information and carry out relevant business (Louis and Lefebvre, 2002). E-commerce, which enables global trade, the removal of time and distance constraints, cheaper resource buy costs, higher sales, straightforward information access, much lower transaction costs, and significantly faster transaction times, is one of the true benefits of information technology. [12]. Creating a successful ecommerce company strategy begins with offering computer solutions that link travel firms with suppliers, distributors, and retailers. Taiwanese travel agencies use a number of ways in this study to develop their e-commerce development plans. This ground-breaking study lays the path for effective client travel services and real-time inventory management. E-commerce simplifies purchases and aids companies that provide traveller services in obtaining better client assistance. This inspires the idea of an e-commerce development strategy for travel agencies.[2] The expansion and widespread use of ICT, notably the Internet, have profoundly changed how businesses operate. Trade exhibitions were historically the main venue where contracts and jobs were settled and where businesses learned about potential business partners for their production plans. Another significant constraint was the fact that only a small portion of the businesses engaged in them. Due to the expansion of the Internet, all companies now have an equal chance to present, for example, their product line on a public website. This propensity led to significant changes in how firms are run and structured.Zwass (1996) stated that "Electronic commerce (Ecommerce) is the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks." The market's structure and the transactions that take place there are both impacted by the concept of modern business. In the past, market ties have been made through the exchange of goods, services, and money. Information is now a new component that has been added. The global market, multinational production systems, and the information economy with global marketing are the cornerstones of contemporary business. Powerful tools can be developed and made accessible to people, governments, and both large and small organisations worldwide as ICT is used more frequently as the Internet develops. As a result, interactions between corporations, citizens, educational institutions, and the government have evolved, as well as the internal structures of businesses, government agencies, and academic institutions. Under these conditions, electronic commerce assumes a greater significance and becomes a crucial element of the modern economy's exchange of goods, services, and money. Information is now a new component that has been added. [1] The majority of current e-commerce practises fall short of traditional business models in a number of critical performance areas, including business-to-consumer (B2C) commerce's privacy and security and business-to-business (B2B) commerce's resilience and capacity of the dedicated electronic data interchange system.. Nevertheless, these crucial performance traits for the disruptive technology are being improved by continual technical breakthroughs. For example, the current secure socket layer technology will eventually be replaced by streams of incremental improvements in certificate signature technologies to boost the security of online transactions. In addition, streams of sustaining innovations will increase each attribute's performance along steep trajectories once they are well-established in the new market, fast meeting the demands of mainstream consumers. This is particularly true for those performance characteristics that are largely linked to the disruptive technology but which are initially underappreciated or undervalued by existing customers. For example, e-commerce allows both the customer and the provider to significantly reduce transaction costs while allowing information to reach more people without compromising the richness of content. Information can be extensively disseminated online without sacrificing the integrity of the material. [4]. E-commerce primarily focuses on a company's clients, whereas e-business broadens an organization's connection to include its suppliers, agents, competitors, workers, and business partners (Rodgers, et al., 2002; Weill & Vitale, 2001). Also possible is the "distribution of distinct business values through the combination of systems and processes that run main business operations" (Amor, 2000). Therefore, the fundamental concept behind the word "e-business" is the use of the Internet to link an organisation with its clients, partners, and suppliers as well as to embrace new organisational principles and commercial strategies. E-business solutions are far more prevalent than e-commerce due to the enhanced networking characteristics (Biggs, 2000; Rodgers, et al.). Despite these terminological differences, we will exclusively use "e-commerce" in this essayBusiness-to-business (B2B) and business-to-consumer (B2C) are the two main types of e-commerce companies. According to Turban et al. (2000), the business-to-business model can be summed up as the utilisation of electronic interactions to do commerce between businesses. Websites that seek to interact with particular customers employ the business-to-consumer (B2C) model, whereas business-to-business (B2B) encompasses contracting, sales, payments, inventory management, channel management, supplier management, and service support. The majority of company transactions are B2B (May 2000), and the integration of e-commerce into both the internal and external components of the value chain holds considerable promise.The

ease with which flexible supply-demand connection structures may be built to serve as the driving force for collaboration through strategic alliances amongst business partners is one of the primary issues with the adoption of e-commerce (Roberts & Mackay, 1998). The "Value Chain Model," created by Porter (Porter, 1985), takes into account the primary activities involved in supply-chain process management and views ICT as a crucial component in advancing these activities. [7] Users can access the internet without being online or needing access to a network by developing an app that enables communication through emails, alerts, Facebook posts, and Twitter tweets without the need of the internet. Our technology provides a software solution that aims to keep first responders and victims in touch throughout a natural disaster. This approach will prove to be very helpful in areas that frequently face power outages, network connectivity issues, and natural disasters. Despite the fact that more people now use the internet, some still cannot afford it. This would make the application user-friendly, connect users across other platforms, and serve as sort of a centre for some social platforms. This programme would be helpful for those who cannot afford internet access in areas with inadequate internet connectivity, such as villages and slums. It would be easy to utilise the software. This programme will be quite beneficial in those kinds of situations. This programme is also helpful in remote, rural areas with low internet connectivity [15]. A number of key e-commerce activities that have been the subject of earlier research and are in line with the industrial organisation (IO) theory, the resource-based view (RBV), and transaction-cost economics (TCE) may have an impact on the performance of the export marketing strategy. For example, according to the IO theory, factors crucial for developing an export market strategy but unrelated to e-commerce, like e-commerce infrastructure and demand, may act as potential external environmental factors that affect an organization's export marketing strategy. [16] For decades, organisations have been developing strategies to strengthen bonds between various market actors (Abujassar and Al-Majeed, 2015; Heang and Khan, 2015). There may be variations depending on the locale, the country, the industry, and the range of strategies required. When analysing the situation in Jordan, Abbad et al. (2011) pointed out that employing strategies to understand client profiles can help markets achieve their goals.[17] Websites are useful resources for e-commerce operations. Official page rankings are the first aspect of a website's quality to be considered. If a website's rating is poor, its proprietors should focus more on assessing the site's quality and, following inspection, move forward with the Website's weaker components being modified (Vida and Jonas, 2011). Website design should assist effective e-commerce because it affects how well a business may earn from online sales. The Website is described as a significant development in the previous ten years known as the e-commerce application of network technologies (Zwass, 2003). Numerous challenges have been solved in order to evaluate quality in the service quality model of an e-commerce website (Myerscough, 2008; Alzola &Robaina, 2010). Quality was identified as a success metric in the 2003 study by DeLone and McLean. E-commerce is expanding quickly and has incredible commercial possibilities. Before developing marketing strategies, multinational corporations should consider the potential impacts of cultural context on consumer attitudes towards e-seller loyalty (Lu et al., 2013). According to Patterson et al. (2006), a customer's decision to conduct business with a company once more is impacted by the perceived value that high-quality service offers. [18]

2. MATERIALS AND METHODS

Choosing a course of action or method of attack to solve an issue is part of the decision-making process. choosing a plan of action or a strategy that the manager thinks would generate the best outcome [10]–[14]. The ability to prepare and the ability to make decisions are very similar. Making plans is the same as making decisions at various organisational levels. By choosing one of the viable answers, a leader can handle problems that his organisation is facing. This is known as decision-making. [15], [16]. The key to making decisions is actually applying a rigorous approach to the different choices that are put forth and choosing the plan of action that calculations indicate to be the most appropriate. Making decisions plays a crucial part in leadership since the leader's choices represent the final course of action for his or her followers or other people connected to the led organization [17], [18]. Since a leader's decisions determine the ultimate course of action for his or her followers or other people related to the led organisation, decision-making is vital to leadership [17], [18]. Making decisions entails analysing a problem to identify a solution and carry out the intended result.[25] There are several ways to choose which teachers deserve to be voted the best teachers, but it can often be challenging to do soThe best teachers have personalities that are appropriate for the teaching profession, are capable of carrying out tasks, are successful at doing so, and have knowledge of education that enables them to significantly improve learning processes and outcomes above and beyond what is accomplished by other

teachers. They serve as role models for students, coworkers, and the community at large. The TOPSIS method's fundamental notion was formed from a compromise between selecting the alternative solution that was the closest to a positive ideal solution (the optimal solution) and that was the furthest from it (the nonoptimal solution), according to the first TOPSIS presentation by Hwang and Yoon in 1981[8]. The underlying premise of TOPSIS is that the best choice is the one that is both the furthest away from the ideal positive answer and the closest to it. Certain MADM models make extensive use of this concept to handle real-world decision-making issues. This is because the concept is clear and easy to understand, computing is efficient, and a simple mathematical formula can be used to calculate the relative performance of selection possibilities.[9][10]. The TOPSIS method is based on the idea that the best option is the one that is both closest to and farthest from the ideal response. A multi-criteria analytical decision-making technique is called TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution). The option that is closest to the positive ideal solution and farthest from the negative ideal solution is the one that is favoured in this approach. A solution that combines the best features of each criterion is the ideal one. The worst features of each criterion are combined in the negative ideal solution. Only when the relevance weights of the criteria are given or known based on the numerical competence of experts can this method be utilised with numerical datasets. Rankings can be established based on the provided criterion's weighted importance. This study will provide thorough information on this tactic. In the area of multi-criteria decision-making (MCDM), the Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) is a well-known and respected tool. Traditionally, TOPSIS determines the proportional weight of the response that comes closest to the ideal response based on the preferences of a single decision-maker. In other words, it fails to take into account the preferences determined from a group of decision-makers in a situation involving decision-making. The MULTIPLE criterion decision making analysis (MCDMA) theory is frequently used to rank options and choose the optimal one in light of a number of competing criteria. Traditional MCDMA models that demand accuracy might not always be appropriate to real-world issues when faced with uncertainty, ambiguity, and erroneous information. According to the first TOPSIS presentation by Hwang and Yoon in 1981[8], the fundamental idea of the TOPSIS method was formed from a compromise between choosing the alternative solution that was the closest to a positive ideal solution (the optimal solution) and that was the furthest from it (the nonoptimal solution). According to TOPSIS, the optimal option is the one that is both the farthest and closest from the ideal positive solution. This idea is frequently used to a number of MADM models to address issues with real-world decision-making. This guarantees efficient computing, a straightforward and understandable idea, and the ability to express the relative performance of decision-making options in straightforward mathematical terms [9][10]. According to the TOPSIS approach, the optimum choice is the one that is both the farthest and closest from the perfect answer. Following the acquisition of important data regarding the examined units, the process of evaluating and rating is separated into two steps: The regression coefficients for each of the many attributes (outputs) of a building's energy performance are first calculated using normalised regression analysis. The energy performance of buildings is then evaluated and ranked using TOPSIS, which uses the regression coefficients as weights.

3. RESULTS AND DISCUSSION

TABLE 1: The parameters for E-commerce development strategy.

E-commerce development strategy	Feasibility of the strategy	Implementation speed	Compliance with the corporate strategy	Compliance of the strategy with the mission and vision of the company	General acceptance
E-customization and personalization	0.171148922	0.276159937	0.741884007	0.201554132	0.190281552
Social E-commerce adoption model	0.608311127	0.562837166	0.677238988	0.78189586	0.687353215
Strong search engine optimization (SEO)	0.251071742	0.270150143	0.687066057	0.693565607	0.371690876

Table 1 shows the alternative parameter and evaluation parameter are using above by TOPSIS method

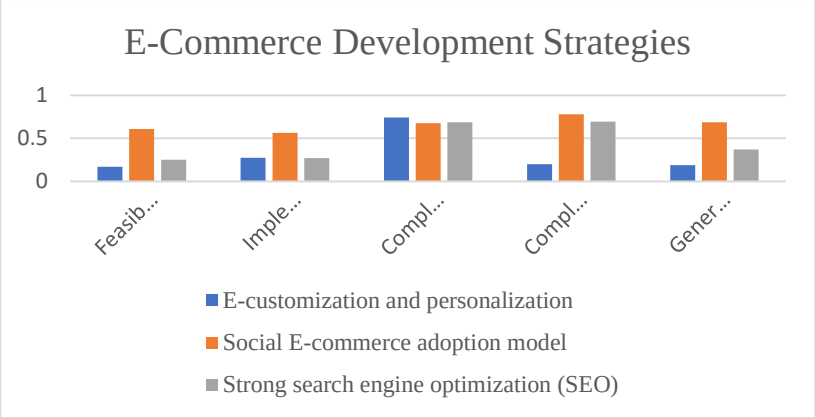

FIGURE 1 E-commerce development strategy

Table 1 represents E-personalization and customization, social search engine optimisation, strategy feasibility, speed of execution, corporate strategy adherence, corporate strategy adherence to firm aim and vision, and general acceptability are represented in the above graph as alternative criteria.

TABLE 2. Square values

Square values				
0.41370149	0.525509217	0.861326888	0.4489478	0.4362127
0.77994303	0.750224744	0.822945313	0.8842488	0.8290677
0.5010706	0.519759697	0.828894479	0.8328059	0.6096646

Table 2 shows the square value of e –commerce development strategy by using topsis method

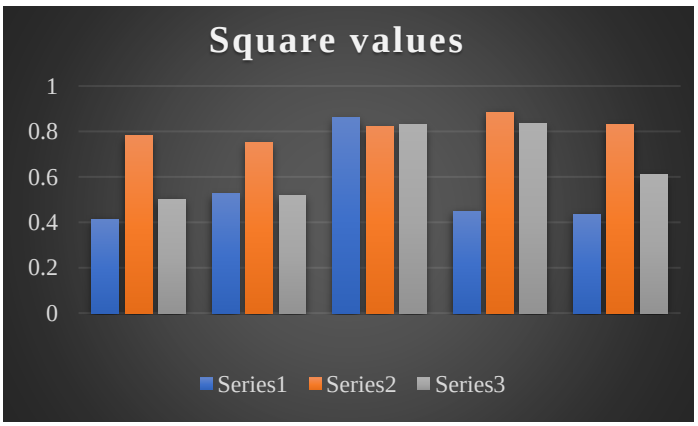

FIGURE 2. Square values

Figure 2 Represents parameters E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The given values are been valued double (square calculation).

TABLE 3 Normalized data

Normalized Data				
0.131469744	0.212134998	0.569885567	0.15482581	0.14616666
0.467280232	0.432348958	0.520227853	0.60062107	0.5279972
0.192863251	0.207518515	0.527776614	0.53276931	0.28551804

Table 3 shows the Normalized data of E-Commerce Development Strategy

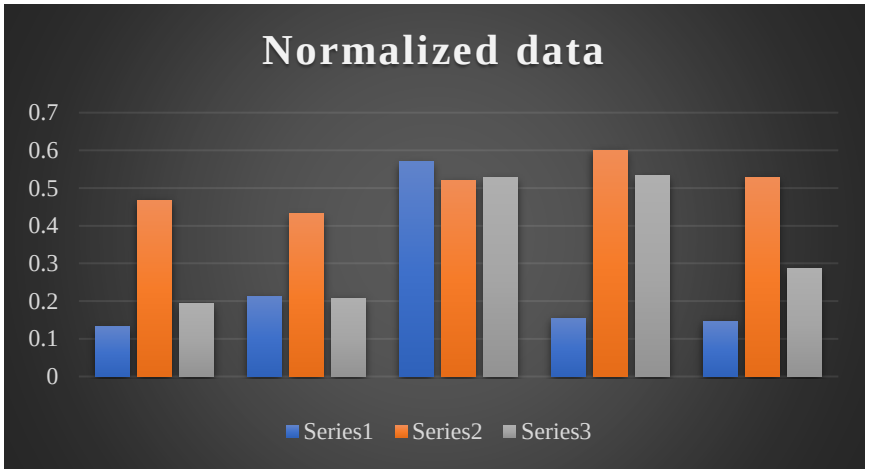

FIGURE 3 Normalized data

The above table and graph represent the parameters like E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, Corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The above normalized data is been calculated as per TOPSIS method.

TABLE 4. Weighted normalised decision matrix

Weighted normalised decision matrix				
0.026293949	0.042427	0.113977113	0.03096516	0.02923333
0.093456046	0.086469792	0.104045571	0.12012421	0.10559944
0.03857265	0.041503703	0.105555323	0.10655386	0.05710361

Table 4 shows Weighted normalised decision matrix of E-Commerce Development Strategy

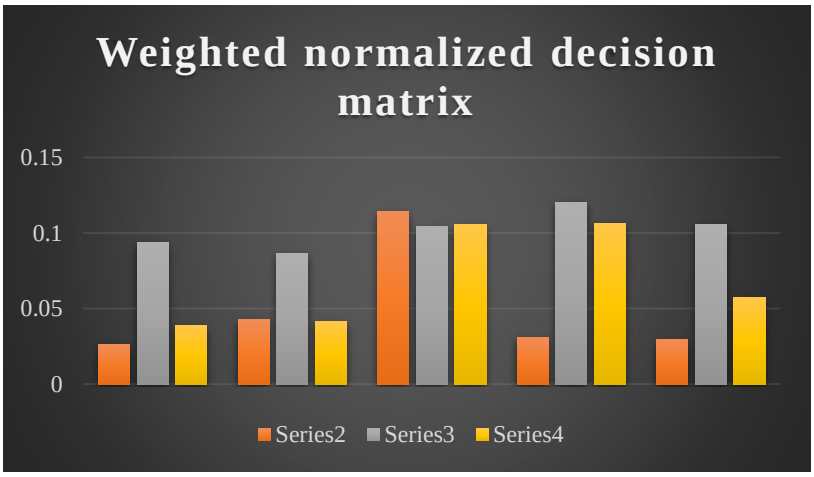

FIGURE 4. Weighted normalised decision matrix

Figure 4 shows Weighted normalised decision matrix of E-Commerce Development Strategy

TABLE 5. Positive matrix.

Positive Matrix				
0.093456046	0.086469792	0.113977113	0.12012421	0.10559944
0.093456046	0.086469792	0.113977113	0.12012421	0.10559944
0.093456046	0.086469792	0.113977113	0.12012421	0.10559944

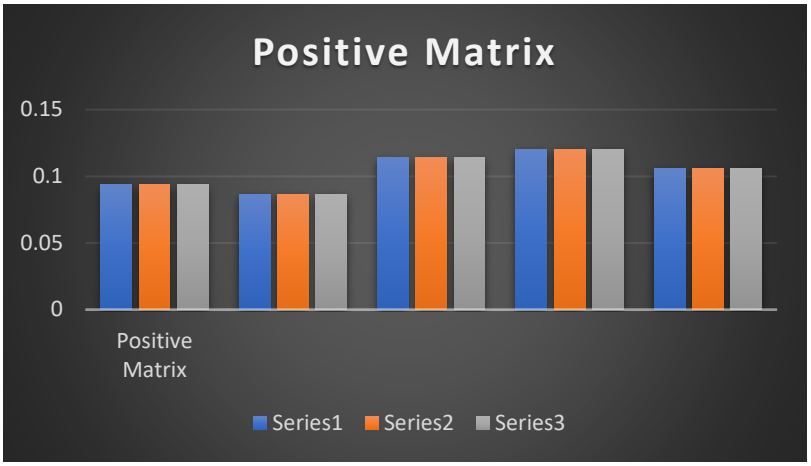

FIGURE 5. Positive matrix

Figure 5 Positive matrix represents the parameters like E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The values have been valued at weighted normalized decision matrix using TOPSIS method.

TABLE 6. Negative matrix

Negative matrix				
0.026293949	0.026293949	0.104045571	0.03096516	0.02923333
0.026293949	0.026293949	0.104045571	0.03096516	0.02923333
0.026293949	0.026293949	0.104045571	0.03096516	0.02923333

Table 6 Negative matrix represents the parameters like E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The values have been valued at weighted normalized decision matrix using TOPSIS method.

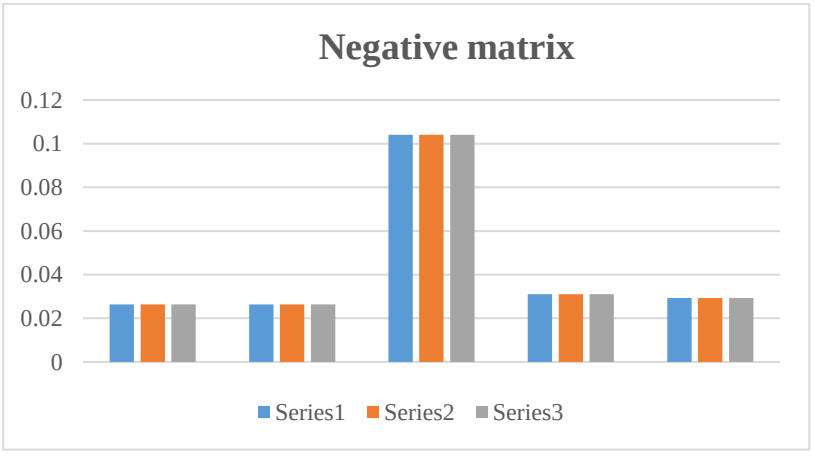

FIGURE 6. Negative matrix

Figure 6 representing negative matrix represents the parameters like E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, Corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The values have been valued at weighted normalized decision matrix using TOPSIS method.

TABLE 7. Si plus, Si negative, Ci and Rank.

SI Plus	SI Negative	CI	Rank
0.142237948	0.018944943	0.152137	3
0.009931543	0.148030396	15.05311	1
0.087413174	0.082914331	1.031448	2

Table Si plus, Si negative ,Ci and Rank represents the parameters like E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, Corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The values have been valued at weighted normalized decision matrix using TOPSIS method

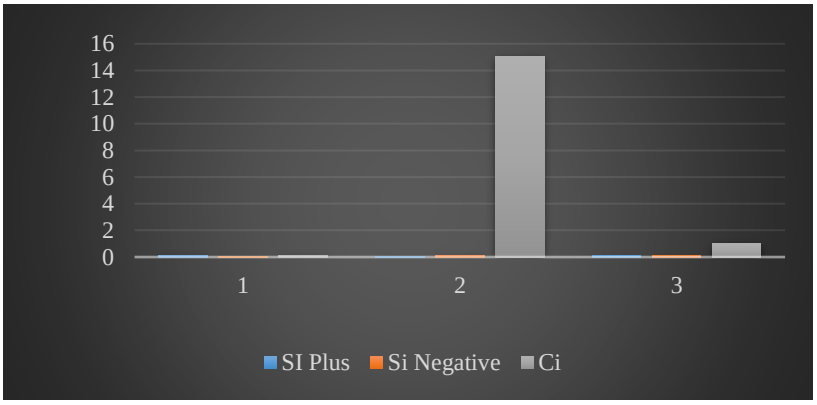

FIGURE 7. Si plus, Si negative

The above data represents the parameters like E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The values have been valued at weighted normalized decision matrix using TOPSIS method.

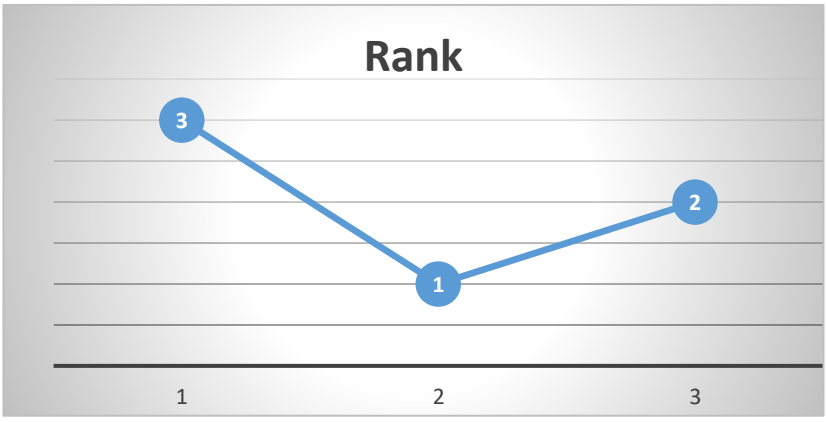

Figure 8 represents the parameters like E-personalization and customization, social search engine optimisation as alternative criteria with strategy feasibility, speed of implementation, corporate strategy adherence, corporate strategy adherence to firm goal and vision, and general acceptance as Evaluation parameters. The values have been valued at weighted normalized decision matrix using TOPSIS method.

4. CONCLUSION

To satisfy the expectations of today's digital marketplace, a successful e-commerce platform must be built using a well-rounded plan that includes a variety of tactics. Businesses can customise their platform and marketing methods to successfully engage clients by identifying their target market. By creating a user-friendly interface that

is mobile device optimised and encourages simple navigation and checkout procedures, the user experience is enhanced. Sales are boosted and client trust is increased by paying attention to merchandise display and presentation. Customers are given trust by a secure payment system, which also protects their transactions. A solid marketing plan that makes use of numerous digital media increases traffic and increases conversion rates. KPIs are continually tracked and analysed for significant insights for continuing optimisation and improvement. The effective application of these tactics will enable firms to build a strong online presence, boost customer happiness, and enhance income in a cutthroat e-commerce industry. Businesses must adapt and hone their tactics to stay ahead of the curve as consumer preferences and technology change. Businesses may stay successful in the dynamic world of e-commerce by embracing innovation, knowing their customers, and keeping up with market trends. In the end, the tactics covered in this paper act as a development roadmap for e-commerce, pointing enterprises in the direction of success in the digital sphere. By utilising these tactics, companies can create reliable, user-friendly platforms that meet the needs of their customers, foster trust, and produce sustained development in the fiercely competitive e-commerce environment.

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