



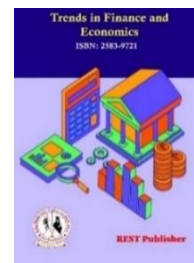
## Trends in Finance and Economics

Vol: 3(3), September 2025

REST Publisher; ISSN: 2583-9721 (Online)

Website: <https://restpublisher.com/journals/tfe/>

DOI: <https://doi.org/10.46632/tfe/3/3/1>



# Assessing the Formal Components of E-Commerce through the EDAS Approach

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**Abstract:** This research examines the methodological aspects of e-commerce, emphasizing essential strategies, technological innovations, and customer-centric approaches. It analyzes how businesses leverage digital platforms, improve user engagement, and employ effective marketing techniques. The study identifies challenges and best practices, providing valuable insights into the dynamic evolution of online commerce. The systematic aspects of e-commerce are important as they provide insights into refining digital strategies, improving user experience, and leveraging technological advancements. By analyzing challenges and best practices, this research helps businesses streamline online operations, maintain competitiveness, and adapt to the evolving needs of consumers in the digital marketplace. **Methodology:** This study uses a mix of qualitative and quantitative approaches to examine the systemic aspects of e-commerce. Data is collected from industry reports, case studies, and surveys to assess digital strategies, user experience improvements, and technological advancements. Comparative analysis and trend assessment are conducted to identify best practices and emerging challenges. **Alternatives KP110:** E-commerce involves organized strategies designed to improve online sales, such as data analytics, targeted marketing, SEO, and secure payment methods. **C3-01 Gold Edition:** Gold Edition of C3-01 is a high-end mobile device that combines elegant design with practical features. **Nova Plus:** The Nova Plus phones combine a stylish design with cutting-edge features and impressive performance. **Evolution Parameter Weight:** Smartphone weight can vary based on model and design, typically falling between 120 and 250 grams. **Display Resolution:** Display resolution on smartphones refers to the sharpness and clarity of the screen in terms of pixel count. **Internal Memory:** smartphones refer to the storage for apps, data, and files. It typically ranges from 32 GB to 512 GB, with some models allowing for additional storage via micro SD cards. **Conclusion:** This study of the formal aspects of e-commerce highlights the importance of digital strategies, user experience improvements, and technological advancements. By recognizing key challenges and best practices, businesses can improve their online processes, stay competitive, and effectively adapt to the ever-evolving digital landscape to meet consumer expectations. **Result:** The findings reveal essential challenges, effective strategies, and emerging trends, helping businesses improve operations, strengthen customer engagement, and stay competitive in a rapidly changing digital marketplace.

**Key Words:** E-commerce, digital strategies, user experience, technology, online marketplace, optimization, consumer behavior, business development, best practices, challenges.

## 1. INTRODUCTION

In the highly competitive online commerce and service industry, improving service standards and fostering innovation are essential to maintaining or increasing profitability. A key aspect of achieving this objective is implementing customer-centric improvements that help their decision-making process when selecting products. [1] Implementing e-commerce strategies offers many benefits to both customers and businesses. From the customer's perspective, they have the flexibility to shop whenever they want time without having to visit a store. They have more time to compare product features and prices across multiple online stores at once, experience a wider range of

products, and benefit from greater personalization in their shopping experience. [2] As customers navigate the internet, they leave behind various digital footprints. When properly recorded and analyzed, these footprints can help create customer profiles that reflect users' habits and interests. Such profiles support personalized marketing strategies in e-commerce and serve a variety of purposes. Businesses are increasingly focusing on building detailed customer profiles to improve their e-commerce strategies. [3] Various factors can positively or negatively influence online trust. However, this study specifically examines the role of interface design features and their importance in fostering online trust. The study did not aim to compare trust ratings based on the presence or absence of these features, nor did it attempt to manipulate them in an experimental setting. [4] Last mile delivery has become a critical market differentiator, driving retailers to develop various consumer-centric delivery innovations. These include in-store purchase options, autonomous delivery systems, parcel lockers, and free delivery on purchases over a certain amount. [5] These models combine knowledge accumulated through Years of industry experience and project expertise have proven that using reference models improves quality while reducing risks, costs, and time. There are several established e-commerce reference models, including Coleman's model for electronic marketplaces, Schmidt and Lindeman's model, and the Object Management Group's reference model. However, each of these models does not only elaborate on specific aspects of customer needs, but also specifies them. Meanwhile, many companies have now begun to develop their own reference models. [6] E-commerce refers to the process of buying and selling goods and services through digital platforms through modern communication technologies and the Internet. The effectiveness of these transactions relies heavily on the website that facilitates the sale. Online e-commerce platforms are sophisticated systems designed to handle multiple functions. [7] The field of human-computer interaction (HCI) currently lacks comprehensive knowledge about the formation, maintenance, and loss Trust is essential in B2C e-commerce. Without a well-defined framework of how trust operates in this context, it remains challenging to develop reliable mechanisms for effectively conveying trust in e-commerce system design. [8] The rapid advancement of Internet technologies has led to significant Changes in Ukrainian consumer buying behavior have increased the importance of digital channels (e-commerce) as a preferred shopping option. Ukraine's e-commerce market has grown to \$5.65 billion, accounting for 4.5% of total retail sales. The country's e-commerce sector is expanding rapidly, with Ukraine ranked among the top 10 countries where the proportion of online shoppers exceeded expectations. [9] Consumer data is an increasingly valuable asset for businesses. E-commerce technologies, including smart devices, online platforms, big data analytics, and artificial intelligence (AI), enable the extensive collection and diverse use of consumers' digital footprints. [10] E-commerce has the power to influence customer demand, reshape existing markets, and create entirely new ones. It provides businesses and individuals with unparalleled access to goods, services, information, and interactions with government agencies, driving significant changes in the digital marketplace environment, choices are not limited by geography or time. As the market for fixed goods becomes increasingly saturated, consumers will seek products that meet their evolving, specific needs. [11] To address Addressing this research gap, our study examines the textual properties of online reviews to assess customer service. It makes two key contributions: First, it identifies relevant themes and insights by using topic modeling—an advanced text analysis technique processing technique, to identify underlying thematic structures in online reviews that effectively assess service quality. [12] Over the past decade, e-commerce has grown rapidly, prioritizing convenience and accessibility. This shift has driven more consumers towards online shopping, changing the way businesses and customers interact. E-commerce provides seamless buying and selling, a variety of online services, and high-quality, easily accessible products to a global audience products, which saves time while increasing profits for both parties. [13] The expansion of e-commerce has led to an increase in the total number The number of parcels delivered has increased, resulting in a result, there has been an increase in home deliveries. However, e-consumers are not always home to receive their parcels, resulting in a significant number of failed deliveries. [14] This highlights the role of information technology in supporting electronic commerce in the business world. E-commerce is widely considered a powerful tool for improving the efficiency and sustainability of businesses, national economies, and industries. This article explores the author's study of e-commerce in the business landscape, emphasizing the importance of understanding the key factors that contribute to its growth and expansion. sector and the theoretical models that have been developed to explain this phenomenon. [15] Consumers need to be convinced that the benefits of engaging in a transaction outweigh the potential risks. These risks include frustration, deception, disclosure of personal information, and loss of Time and money are valuable resources, and thoughtfully designing the user experience is essential. A well-designed experience should proactively address consumer concerns, ensure a positive emotional response, and foster trust and satisfaction. [16] Additionally, studies examining the commercial aspects of the Internet as a sales organization have used different theoretical frameworks, leading to conflicting conclusions. As a result, most authors who have taken this approach focus only on the specific

characteristics of the Internet as a sales platform. [17] A systematic and strategic approach to how e-commerce companies target customers represents a significant shift. Gone are the days of sending irrelevant emails to everyone. Today, businesses can segment and specifically reach customers. To effectively measure this, e-commerce companies are improving their analytics capabilities and supporting infrastructure to identify their most important customers. Real-time analytics play a key role in helping these companies analyze the critical factors that contribute to delivering value to the customer, whether it's tracking shipments, handling returns, optimizing shipping routes, reducing costs, or adjusting prices. This value can be understood in terms of the factors that convert the customer. [18]

## 2. MATERIALS

The formal aspects of e-commerce include the structured strategies, approaches, and frameworks that businesses use to effectively conduct online transactions. The main focus of these aspects is to improve the user experience, streamline sales processes, and use various techniques that ensure transaction security. One important approach is to leverage data analytics to analyze consumer behavior, which helps businesses make informed choices about products, pricing, and marketing efforts. Implementing search engine optimization (SEO) strategies improve online visibility and improve website rankings, drive organic traffic, and increases user engagement. Personalized methods ensure that businesses can effectively target the right audience. E-commerce sites also It relies heavily on customer relationship management (CRM) tools to strengthen customer engagement and develop long-term relationships trust, enhance customer loyalty, and improve service. Ensuring secure payment methods with encryption and two-factor authentication are essential to securing transactions. Integrating real-time analytics allows businesses to track performance, manage inventory, and adjust marketing strategies in real time. The use of mobile-optimized designs and the integration of cutting-edge technologies such as AI and machine learning further enhance e-commerce performance. In conclusion, the formal aspects of e-commerce include a range of strategies that guarantee efficient, secure, and customer-centric online business operations, contributing to long-term growth and competitive advantage in the digital marketplace.

### Alternatives

**KP110:** E-commerce involves organized strategies designed to improve online sales, such as data analytics, targeted marketing, SEO, and secure payment methods. Essential techniques include real-time data analytics, mobile optimization, and the integration of AI and machine learning, all of which focus on improving the user experience, increasing efficiency, and ensuring secure transactions.

**C3-01 Gold Edition:** Gold version of the C3-01 model is a high-end mobile device that combines elegant design with practical features. Its robust construction and sophisticated gold finish make it a durable and stylish option. With an intuitive interface, responsive touchscreen and essential communication tools, it is a reliable choice for those looking for a compact, luxurious phone. Suitable for both personal and professional use, the C3-01 Gold Edition supports a variety of applications, providing convenience and versatility for daily activities.

**Nova Plus:** The Nova Plus phones combines a stylish design with cutting-edge features and impressive performance. With a powerful processor, high-resolution camera, and intuitive interface, it delivers a seamless and enjoyable experience. Suitable for both personal and business use, the Nova Plus phone combines reliability, innovation, and elegance in one device.

**P5Qmax:** P5Qmax is a high-end device designed to meet the needs of contemporary users. With cutting-edge capabilities, elegant design, and robust performance, it provides smooth operation for both personal and professional tasks. P5Qmax guarantees efficient operation, excellent user experience, and remarkable durability, making it a reliable choice for everyone.

**Honor6A:** The Honor 6A is an affordable smartphone that offers strong performance and a stylish design. It features a reliable processor, a sharp camera, and an intuitive interface that ensures a seamless and efficient experience. Ideal for everyday use, the Honor 6A offers the perfect blend of value, functionality, and design in a budget-friendly package.

## Evolution Parameter

**Weight:** Smartphone weight can vary based on model and design, typically falling between 120 and 250 grams. Lighter phones offer better portability, while heavier models may have larger displays and enhanced features. The ideal weight is subjective, depending on personal preferences for comfort and practicality in daily use.

**Display Resolution:** Display resolution on smartphones refers to the sharpness and clarity of the screen in terms of pixel count. Common resolutions are HD (1280x720), Full HD (1920x1080), and Quad HD (2560x1440). Devices with higher resolutions offer more detailed images that enhance the experience for activities such as media viewing, gaming, and web browsing.

**Internal Memory:** smartphones refers to the storage for apps, data, and files. It typically ranges from 32 GB to 512 GB, with some models allowing for additional storage via micro SD cards. A larger internal memory improves the ability to store more content and improves the device's performance and multitasking capabilities.

**Primary Camera:** A smartphone's primary camera is the main tool for taking photos and videos. Its quality is determined by megapixels, aperture size, and features like autofocus or image stabilization. Cameras with more megapixels and advanced features produce sharper, more detailed images, improving the overall photography experience.

**EDAS Method:** The distance-based estimation method for estimating the average solution (EDAS) serves as an alternative approach solving multivariate problems. It selects the optimal alternative is determined by evaluating its proximity to the best solution mean, considering both positive and negative distances. EDAS estimates the variance of each alternative is measured by comparing their differences with the average solution estimating the highest and lowest values. This method is expressed in Equation 3, where  $X_{ij}$  denotes each observation for each criterion, and  $n$  denotes the number of observations. The third model uses the DP2 method by Trapero, which enables intra- and inter-comparisons of variables. This method also provides scores and ratings for elements based on specific criteria. The advantage of DP2 is its ability to measure differences between elements. [1] Dimensionality reduction is widely considered by scholars to be a simple solution to the challenge of high-dimensional data, known as the curse of dimensionality, is addressed by two main approaches: feature selection (FS) and feature projection (FP). FP reduces the dimensionality by transforming the data into a low-dimensional space while preserving the essential relationships between the original features. [2] Although progress has been made in this field, there is a significant gap due to the lack of a comprehensive framework for integrating various filters. Despite limitations such as sensitivity to skewed distributions, most studies have relied on the basic arithmetic mean for aggregation. Some approaches attempt to improve on this by using weighted averages. This approach lacks a mechanism to address conflicting filters. [3] In a competitive environment, managers need to make quick decisions with high precision and accuracy within reasonable time frames. In the manufacturing industry, they often face challenges such as selecting product designs, manufacturing processes, machine tools, industrial robots, and material handling equipment, while evaluating various alternatives and determining the optimal choice based on conflicting criteria is an important task. One of the primary challenges for managers in industrial applications is selecting the most suitable industrial robot that ensures the desired output while minimizing costs specific application capabilities. [4] In this study, several RSP examples from the existing literature are considered to demonstrate the effectiveness of EDAS as a suitable MCDM method. The results are evaluated in comparison with those obtained from other multi-criteria decision-making (MCDM) methods. or alternative approaches applied to the same examples. [5] Advances in technology are driving global innovation. The internet, increasingly integrated into everyday life, is reshaping people's habits. Social media platforms have seen the biggest rise in usage, followed by online video platforms and e-commerce channels. [6] Furthermore, measuring non-technical performance indicators, such as empathy or relationship-building skills, presents significant challenges. Additional barriers include insufficient or unreliable customer data, unbalanced criterion weights, and limitations of assessment tools, which can complicate the assessment process. If not addressed, these issues can lead to biased results, reduce confidence in the results, and negatively impact service quality. A decision support system (DSS) approach that integrates data-driven analysis with multiple criteria methods can help address these challenges in assessing customer service. One such approach is distance-from-mean-of-service assessment. [7] The EDAS method as an MCDM tool, with its

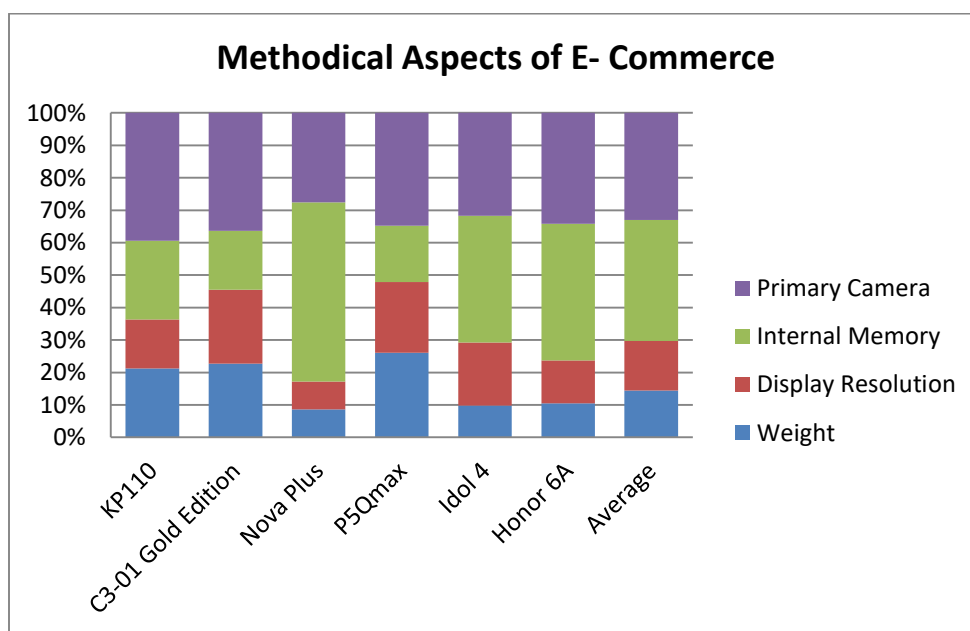
computational steps. Four robot selection examples are used to conduct a comparative analysis between the EDAS method and other related methods. The paper concludes with concluding remarks in the last section. [8] Today, it is difficult for many to imagine life without computers. In the business world, computers have become essential tools for all employees; it helps them handle complex and repetitive calculations efficiently quickly and accurately has led to a growing demand for computers. [9] Working with the right suppliers is crucial to improving service quality and support the long-term sustainability of businesses. Companies often use MCDM methods to facilitate supplier selection decisions. [10]

### 3. ANALYZE AND DISCUSSION

**TABLE 1:** Methodical Aspects of E- Commerce

	Weight	Display Resolution	Internal Memory	Primary Camera
KP110	7.00	5.00	8.00	13.00
C3-01 Gold Edition	5.00	5.00	4.00	8.00
Nova Plus	5.00	5.00	32.00	16.00
P5Qmax	6.00	5.00	4.00	8.00
Idol 4	4.00	8.00	16.00	13.00
Honor 6A	4.00	5.00	16.00	13.00
Average	5.16667	5.50000	13.33333	11.83333

When choosing a smartphone, essential factors such as weight, display resolution, internal storage, and camera quality Plays a key role in shaping the decision-making process data provided compares six models based on these specifications. The phones weigh between 4.00 and 7.00 grams, with an average of 5.17. Lighter models like the Idol 4 and Honor 6A (both at 4.00) may offer better comfort for extended use, while heavier devices like the KP110 (7.00) may offer a sturdier build. In terms of display resolution, most devices have a 5.00 resolution, except for the Idol 4, which stands out with 8.00, which offers a sharp and clear display. Internal storage varies significantly, with the Nova Plus leading the way at 32GB, followed by the Idol 4 and Honor 6A at 16GB each. In contrast, models like the C3-01 Gold Edition and P5Qmax only offer 4GB, which may be limiting for users who need more storage. For camera quality, the Nova Plus excels with a 16MP primary camera, while the KP110, Idol 4, and Honor 6A each offer 13MP. Devices with 8MP cameras don't offer the same level of detail. Ultimately, the best choice comes down to user preferences, be it display quality, storage capacity, or camera performance.



**FIGURE 1.** Methodical Aspects of E- Commerce

Figure 1 this stacked bar chart represents the distribution of four key smartphone attributes: weight (blue), display resolution (orange), internal memory (gray), and primary camera (yellow) across six models—KP110, C3-01 Gold Edition, Nova Plus, P5Qmax, Idol 4, and their average value. From the chart, the primary camera (yellow) and internal memory (gray) contribute significantly to the total values across most devices, especially the Nova Plus, which has a higher internal memory share. Display resolution (orange) appears to be relatively consistent across all models except for the Idol 4, which shows a significant increase. Weight (blue) varies slightly, with the KP110 and P5Qmax having higher ratios compared to the others. This chart effectively highlights the variations in specifications, making it easier to compare smartphone performance and choose a model based on preferred features such as camera quality, memory, and display sharpness.

**TABLE 2: Positive Distance from Average (PDA)**

	Positive Distance from Average (PDA)			
	Weight	Display Resolution	Internal Memory	Primary Camera
KP110	0.35	0.00	0.40	0.00
C3-01 Gold Edition	0.00	0.00	0.70	0.32
Nova Plus	0.00	0.00	0.00	0.00
P5Qmax	0.16	0.00	0.70	0.32
Idol 4	0.00	0.45	0.00	0.00
Honor 6A	0.00	0.00	0.00	0.00

The Positive Distance from Average (PDA) helps determine how each smartphone compares to the average based on weight, display resolution, internal memory, and primary camera. In terms of weight, the KP110 has the highest PDA at 0.35, making it the heaviest of the models, followed by the P5Qmax at 0.16. Meanwhile, lighter devices like the Idol 4 and Honor 6A are close to the average weight. For display resolution, the Idol 4 stands out with a PDA of 0.45, indicating a significantly sharper screen than the average, while the other models maintain a standard resolution. When it comes to internal memory, there is a significant difference. The C3-01 Gold Edition and the P5Qmax are above the average at 0.70, while the KP110 is slightly above at 0.40. Meanwhile, the Nova Plus, Idol 4, and Honor 6A are in line with the average memory capacity. In terms of primary camera performance, both the C3-01 Gold Edition and the P5Qmax have a PDA of 0.32, which means they are above average, while the other models are at or below the usual level. Ultimately, PDA values highlight which smartphones excel in specific areas, helping users choose a device based on their needs and preferences.

**TABLE 3: Negative Distance from Average (NDA)**

	Negative Distance from Average (NDA)			
	Weight	Display Resolution	Internal Memory	Primary Camera
KP110	0.00000	0.09091	0.00000	0.09859
C3-01 Gold Edition	0.03226	0.09091	0.00000	0.00000
Nova Plus	0.03226	0.09091	1.40000	0.35211
P5Qmax	0.00000	0.09091	0.00000	0.00000
Idol 4	0.22581	0.00000	0.20000	0.09859
Honor 6A	0.22581	0.09091	0.20000	0.09859

The Negative Distance from Average (NDA) measures how much a smartphone's specifications are below the average in key categories such as weight, display resolution, internal memory, and primary camera. In terms of weight, the Idol 4 and Honor 6A have a high NDA of 0.22581, indicating that they are significantly lighter than the average. In contrast, the KP110 and P5Qmax are in line with the average weight. In terms of display resolution, all models except the Idol 4 have an NDA of 0.09091, meaning their resolution is slightly below the average, while the Idol 4 maintains a stable level. In terms of internal memory, the Nova Plus stands out with a high NDA of 1.40000, which represents a significant deviation below the average. Meanwhile, the Idol 4 and Honor 6A each show small deviations of 0.20000, while the other models are close to the average. For the primary camera, the Nova Plus once again has a high NDA of 0.35211, indicating a significant drop in camera performance. The KP110, Idol 4, and Honor 6A have moderate NDA values of 0.09859, while the C3-01 Gold Edition and P5Qmax match the average.

By analyzing the NDA values, users can identify the areas where the smartphone can perform and make an informed choice based on their needs.

**TABLE 4:** Weight

	Weight	Display Resolution	Internal Memory	Primary Camera
KP110	0.25	0.25	0.25	0.25
C3-01 Gold Edition	0.25	0.25	0.25	0.25
Nova Plus	0.25	0.25	0.25	0.25
P5Qmax	0.25	0.25	0.25	0.25
Idol 4	0.25	0.25	0.25	0.25
Honor 6A	0.25	0.25	0.25	0.25

The dataset represents a uniform distribution of weight; display resolution, internal memory, and primary camera, with each attribute assigned the same value of 0.25 across all smartphone models. This consistency indicates that no device varies significantly in these key specifications. In terms of weight, each model has the same proportional value, meaning that none is heavier or lighter. Similarly, display resolution is consistent across devices, ensuring that no model has a higher or lower screen quality. In terms of internal memory, the standardized values indicate that all smartphones offer comparable storage capacity, indicating a uniform approach to this specification. Likewise, primary camera performance is evenly matched, with no one performing better or worse. Overall, this data depicts a level playing field between devices, meaning that the choice between them may depend on other factors such as brand reputation, design, battery performance, or additional features beyond these basic specifications.

**TABLE 5:** Weighted PDA Spi

	Weighted PDA				SPi
	Weight	Display Resolution	Internal Memory	Primary Camera	
KP110	0.08871	0.00000	0.10000	0.00000	0.18871
C3-01 Gold Edition	0.00000	0.00000	0.17500	0.08099	0.25599
Nova Plus	0.00000	0.00000	0.00000	0.00000	0.00000
P5Qmax	0.04032	0.00000	0.17500	0.08099	0.29631
Idol 4	0.00000	0.11364	0.00000	0.00000	0.11364
Honor 6A	0.00000	0.00000	0.00000	0.00000	0.00000

The Weighted Positive Distance Average (PDA) provides a comprehensive comparison of smartphone specifications, highlighting above-average deviations in weight, display resolution, internal memory, and primary camera, and factors in the Smartphone Performance Index (SPI) for an overall rating. Among the devices, the P5Qmax ranks high with an SPI of 0.29631, due to significant positive deviations in weight (0.04032), internal memory (0.17500), and primary camera (0.08099). Closely following, the C3-01 Gold Edition achieves an SPI of 0.25599, largely due to its internal memory (0.17500) and primary camera (0.08099). The KP110 exhibits an upward trend, recording an SPI of 0.18871, primarily influenced by weight (0.08871) and internal memory (0.10000). Meanwhile, the Idol 4 stands out in terms of display resolution (0.11364), but maintains a modest SPI of 0.11364. In contrast, the Nova Plus and Honor 6A do not show any positive deviation, resulting in an SPI of 0.00000, meaning their specifications are perfectly aligned with the average. These weighted PDA values help users identify smartphones that perform better in specific areas, enabling informed decision-making based on personal preferences.

**TABLE 6:** Weighted NDA SNi

	Weighted NDA				SNi
	Weight	Display Resolution	Internal Memory	Primary Camera	
KP110	0.00000	0.02273	0.00000	0.02465	0.04738
C3-01 Gold Edition	0.00806	0.02273	0.00000	0.00000	0.03079
Nova Plus	0.00806	0.02273	0.35000	0.08803	0.46882

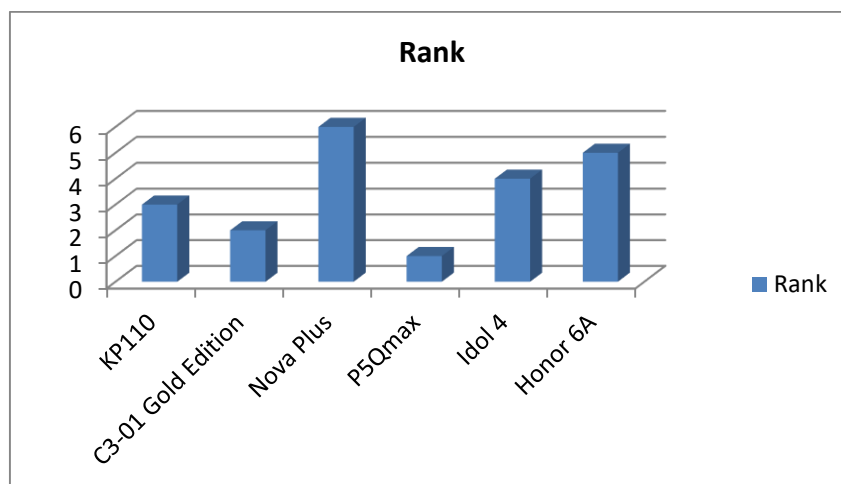
P5Qmax	0.00000	0.02273	0.00000	0.00000	0.02273
Idol 4	0.05645	0.00000	0.05000	0.02465	0.13110
Honor 6A	0.05645	0.02273	0.05000	0.02465	0.15383

The weighted negative distance from the mean (NDA) assesses how much a smartphone's specifications are below the average in terms of weight, display resolution, internal memory, and primary camera. The Smartphone Negative Index (SNi) further quantifies the overall effect of these shortcomings. Among the listed models, the Nova Plus has the highest SNi (0.46882) due to significant negative deviations in internal memory (0.35000) and primary camera (0.08803), indicating significant shortcomings in these areas. Next, the Honor 6A records a SNi of 0.15383, with below-average values in weight (0.05645), display resolution (0.02273), internal memory (0.05000), and primary camera (0.02465). Similarly, the Idol 4 has a SNi of 0.13110, which suffers from shortcomings in similar parameters. On the other hand, the KP110 and C3-01 Gold versions have small negative deviations, which are reflected in SNi values of 0.04738 and 0.03079, respectively. The P5Qmax, with an SNi of 0.02273, has a less negative impact, suggesting that its specifications are close to the average. By examining the weighted NDA values, consumers can identify models that fall below expectations in key areas, helping them make better purchasing decisions.

**TABLE 7: NSPI, NSNI, ASI, Rank**

	NSPI	NSNI	ASI	Rank
KP110	0.63687	0.89895	0.76791	<b>3</b>
C3-01 Gold Edition	0.86392	0.93432	0.89912	<b>2</b>
Nova Plus	0.00000	0.00000	0.00000	<b>6</b>
P5Qmax	1.00000	0.95152	0.97576	<b>1</b>
Idol 4	0.38351	0.72036	0.55193	<b>4</b>
Honor 6A	0.00000	0.67189	0.33594	<b>5</b>

The Normalized Smartphone Performance Index (NSPI), Normalized Smartphone Negative Index (NSNI), and Overall Smartphone Index (ASI) provide a detailed analysis of smartphone rankings based on overall performance and deviations from the mean. At the top of the list, the P5Qmax maintains a high ASI (0.97576), which shows a strong balance between high specifications and minimal negative deviations. It leads in NSPI (1.00000) and maintains a relatively low NSNI (0.95152), making it the best performing device. In second place, the C3-01 Gold Edition achieves an ASI of 0.89912, supported by a high NSPI (0.86392) and NSNI (0.93432). While its performance closely follows the P5Qmax, it falls slightly short in some aspects. The KP110 is in third place, achieving an ASI of 0.76791 due to its moderate NSPI (0.63687) and NSNI (0.89895). It performs well but lacks the balance found in the top two models. Taking fourth place, the Idol 4 records an ASI of 0.55193, reflecting its low NSPI (0.38351) and NSNI (0.72036). While it has some strength in some areas, it falls behind the higher-ranked devices. In fifth place, the Honor 6A scored an ASI of 0.33594, mainly due to its high NSNI (0.67189) and low NSPI (0.00000), indicating below-average performance. Finally, the Nova Plus is in last place with an ASI of 0.00000, showing no significant advantages or disadvantages, making it the least competitive model. This ranking provides valuable insights, Assists users in choosing a smartphone that best meets their performance needs.



**FIGURE 2.** Rank

Figure 2 the ranking chart provides a visual representation of the comparative performance of different smartphone models based on key evaluation metrics, including Normalized Smartphone Performance Index (NSPI), Normalized Smartphone Negative Index (NSNI), and Total Smartphone Index (ASI). The P5Qmax secures the top spot (rank 1), indicating excellent overall performance with strong positive attributes and minimal negative deviations. The C3-01 Gold Edition follows closely at rank 2, showcasing well-balanced specifications but slightly lagging behind the P5Qmax. The KP110 earns rank 3, reflecting mediocre performance. The Idol 4, positioned at rank 4, delivers decent results but lags behind higher-ranked models in some aspects. The Honor 6A, ranked 5th, struggles to maintain competitive specifications, leading to a lower overall score. Meanwhile, the Nova Plus ranked 6th, not standing out in key areas or showing significant deviations, making it the least competitive of the models compared. This ranking analysis helps users make informed decisions by identifying smartphones that best meet their performance needs, while effectively balancing strengths and weaknesses.

#### 4. CONCLUSION

Choosing the best mobile phone is a challenging task. the wide range of options available, each defined by different parameters. Direct comparisons can be time-consuming and ineffective, as differences in value measurements and parameter units make evaluations challenging. However, this study demonstrates that Multi-criteria decision making (MCDM) approaches provide an effective way to address this challenge. By carefully selecting relevant criteria, these methods can produce reliable and meaningful rankings, facilitating the decision-making process. The Internet offers new possibilities for understanding customer needs and preferences, and enables targeted planning, design, and management of customer interactions. This foundation enables organizations to engage with the market more efficiently while effectively addressing and fulfilling customer demands. However, when it comes to customer profiling techniques, there is no single “best” method for creating and using customer profiles. From a theoretical standpoint, this paper examines the distribution performance characteristics linked to various product-market segments and the organizational dynamics that shape them. This study explores the gap between various LML dimensions, building on existing, somewhat fragmented research, and providing key insights into emerging business models. From a theoretical perspective, it analyzes distribution performance characteristics across various product-market segments and the organizational dynamics that influence them; this study builds on previously fragmented research and provides meaningful insights for developing business models. E-commerce reference models help developers build electronic commerce systems, including online marketplaces. By using these models, businesses can reduce development time and costs while improving the overall quality of the final product system. Despite initial progress in reference modeling, a comprehensive solution that fully addresses all customer needs has yet to be achieved. This study highlights that the Scrum methodology is well suited to accommodate the demands of multiple projects because it scales effectively for large-scale implementations. By facilitating collaboration between the customer and the development team, Scrum helps reduce project risks and ensures the delivery of high-quality outcomes. The growing volume of digital purchases is forcing companies to adopt the latest advertising strategies to remain competitive in the growing market. This shift towards E-commerce is no longer limited to the hardware and

mobile phone industries; it has also expanded into the baby nutrition sector, where the number of online stores continues to grow online stores continues to grow, despite challenges related to service quality.

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