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Food Delivery Service Applications in Highly Urbanized Cities: A Scoping Review

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Abstract: The increasing use of food delivery services, driven by apps and websites, has significantly changed how food is ordered and delivered in highly urbanized cities across various countries. These services make it easy to obtain food from a variety of sources such as restaurants, fast-food chains, local cafes, and grocery stores. However, they also face issues such as late deliveries, poor food quality, and problems with payment and delivery staff. This study aims to review existing research on food delivery apps and websites to identify new areas for future research that could address these issues. Utilizing Google Scholar and adhering to established review guidelines, including the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA 2020) and the Content, Context, and Process (CCP) Framework, the study analyzed 174 relevant studies, with a focused examination of 30 of them. The results identified five content-related, two context-related, and four process-related aspects relevant to food delivery service applications. The scoping reviews of this literature recommend future studies on the features, functionalities, and designs of these applications, as well as the efficiency, effectiveness, and productivity of their services. The study concludes by suggesting that future research should aim to improve the design and functions of food delivery apps and websites, making them more efficient and effective. It also recommends exploring different operational models for these services, which could enhance food delivery in urban environments.

Keywords: Food Delivery, Food Service, Food Delivery Service Applications, Highly Urbanized Cities, PRISMA

1. INTRODUCTION

Food delivery is a service that involves the transportation of food from stores, restaurants, or third-party applications to consumers upon request. It is a convenient process that allows customers to place their food orders online and have them delivered to a specified location and time. This courier service has become increasingly popular in recent years, as more and more people opt for the convenience of having their meals delivered directly to their doorstep [1], [2], [3], [4]. Orders are executed through mobile applications, websites, or telephone with deliveries including cooked dishes from different food restaurants nearby and also groceries from supermarkets. As such, food delivery also includes catering or wholesale. Food delivery applications and online food ordering systems are fundamentally designed for individuals who lack time to dine at restaurants, particularly in highly urbanized areas [5], [6], [7], [8], [9], [10]. These systems greatly streamline the ordering process for both customers and restaurant owners, representing the primary advantage of online food ordering or delivery systems. This is a stark contrast to previous manual food ordering systems, where customers had to physically visit the restaurant, and orders were taken by waiters, written down on paper, and stored as paper records. Then, the waiter had to proceed with the order to the kitchen for further processing [5], [6]. Every service makes the ordering process convenient, faster, and easier and provides an efficient system and customer management that will benefit both the consumer and the restaurant owner, considering food as the most perishable good in the market. In the year 2020, the food delivery market achieved a valuation of $122 billion, accounting for approximately 1% of the global food market and approximately 4% of food sales originating from restaurants. Moreover, it is anticipated that the overall demand for food delivery will exhibit a projected annual growth rate of 3.5% [11]. This system automates all food ordering processes, making the transaction easier and more cost-effective. In the current era of information technology, individuals are progressively gaining familiarity with computers, mobile devices, and mobile applications.

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Consequently, the utilization and advancement of mobile applications have emerged as a swiftly expanding domain within the realm of information technology. Mobile applications have significantly impacted not only smartphone users but also play a crucial role in the daily business lives of customers. [2], [5], [6], [7], [8], [12], [13]. The number of smartphone users around the world is 6.92 billion, approximately 87 percent of the world population, as of 2023. This means that anyone with a smartphone can easily choose and order from various food options and receive food at their specific address and at a given time. Payment can be either on delivery or by e-payment [14], [15], [16], [17]. With the rise of cashless transactions in different parts of the world, food delivery services also provide customers with multiple payment options that are fast and secure. Similarly, the food delivery service ensures that any payments made through the platform are immediately transferred to the business owner. Henceforth, the general gaps in food delivery service applications are late deliveries, cold food or poor quality food, and delivery drivers needing directions. In addition, payment is a recurring issue that customers encounter when ordering food online. Due to some instances where a few restaurant websites do not accept multiple payment methods, customers are forced to drop their orders, which puts riders at risk because of fake orders or scams. Also, the delivery when it comes to the behavior of the riders towards the customer and the packaging concerning the quality and quantity of the food [1], [2], [5], [6], [7], [8], [12].

Furthermore, the global urban population has undergone significant growth in recent years. Currently, 55% of the world's population lives in urban areas, and projections indicate that this figure will increase to 68% by 2050. Food delivery services predominantly operate in urban areas or are more prevalent in these regions [1], [2], [4], [13], [14], [9], [18], [16]. Therefore, the problem of the gathered related literature needs to be profiled and synthesized relating to the scope of food delivery service applications.

This paper explores the research question, "What key factors influence the success and challenges of food delivery service applications in highly urbanized cities?" The researchers hypothesize that the success of these services in urban areas is influenced by factors such as the rate of technological adoption, the diversity of payment methods, and the degree of customer satisfaction. The general objective of this paper is to synthesize the related literature and profile the scope of food delivery service applications in highly urbanized cities. The specific objectives are to synthesize related literature collected in the Google Scholar search engine, profile the collected journal with the specific scope of food delivery service applications, tally all conclusions and recommendations, and derive possible recommendations. Thus, this study aims to identify the factors of food delivery service application in highly urbanized cities. In addition, the paper synthesizes related literature on food delivery services in highly urbanized cities in scholarly journals, provides a thorough review of the literature on food delivery service applications, and recommends future studies to meet research gaps in the reviewed studies.

2. METHODOLOGY

A. Literature Profiling

This section provides a synthesis of studies on technology adoption in food delivery services, gathered from relevant publications. The studies' results were enhanced using the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) scoping review checklist [15] as shown in Figure 1.

The researchers used Google Scholar to search for empirical studies on technology adoption in food delivery services from inception to September 2022, using keywords such as "Food Delivery Service Application", "food delivery service", and "Food Delivery Service application in highly urbanized cities" [1], [5], [6], [7], [19], [20], [21]. Cross-referencing was also done to identify additional studies. Initially, 22,400 studies were identified, which were narrowed down to 718 journal articles and then to 519 documents published from 2015-2022 [2], [4], [8], [13], [14], [10]. After evaluating the title and abstract, 151 papers qualified and were stored in a Google Drive literature bank. The researchers analyzed 35 documents and recorded them in a Journal Assessment Matrix. This selection was narrowed down to 30 journal articles accessible in the Scopus or Web of Science databases, meeting the criteria for inclusion. The final sample size of the study comprised 30 journals, which were thoroughly analyzed for their methodologies, findings, discussions, and relevant research merits.

In addition, the researchers conducted a comprehensive review and analysis of unstructured or semi-structured data derived from interviews and focus groups. Within the scope of related literature, the study identified five essential variables for examination: the year of publication, the author's academic background, the geographical location of the research, the platforms utilized, and the categorization of the study as either quantitative or qualitative. They assessed the reliability of studies based on their publication year and the specialty of authors' fields [1], [2], [5], [7], [8], [12], [13], [22]. The geographical location where studies were conducted helped to identify which cities or countries adopted food delivery service applications and what influenced their adoption [23], [24], [25], [20], [17]. The platforms used in the delivery process were also considered. The study type (quantitative or qualitative) determined whether data were expressed as numbers or measured by types [26], [27], [28], [29]. The researchers used the SciMago database to determine the prestige of scholarly journals based on the number of citations they received and the prestige of the journals that cited them. They inputted the journal title, ISSN, or publisher name and tallied the results based on their subject areas and categories.

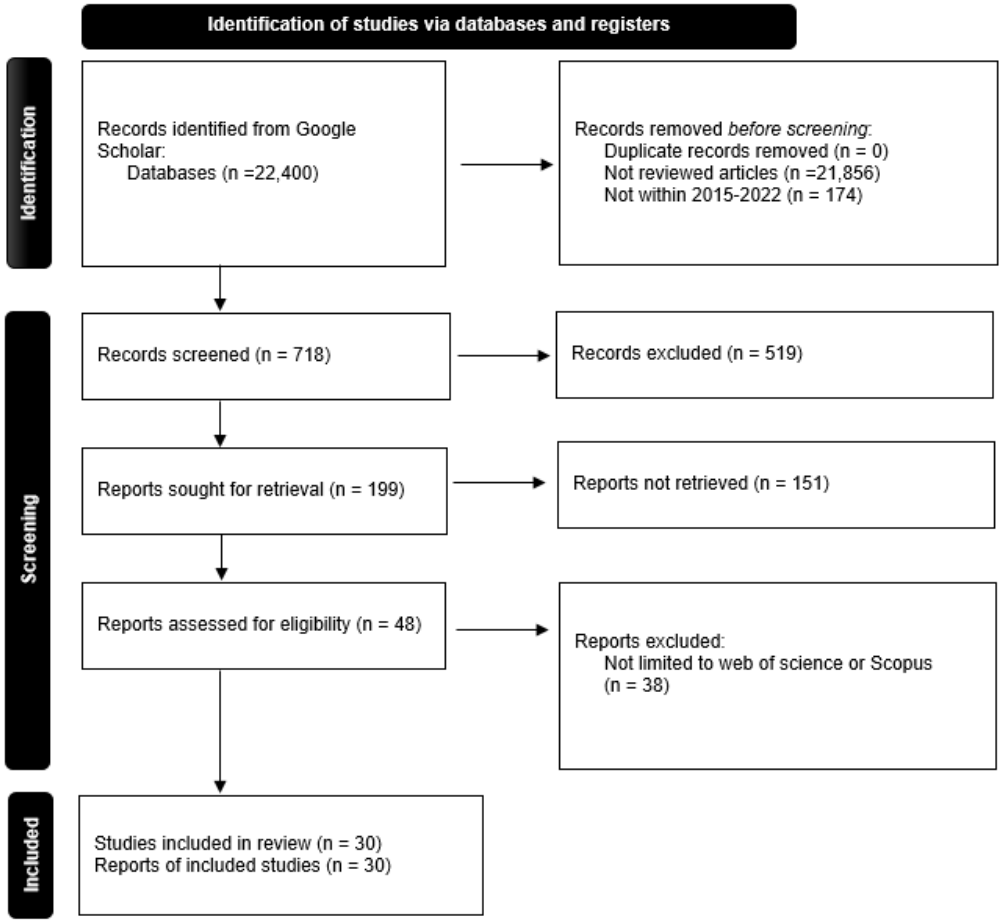

Figure 1. PRISMA workflow used in the study

B. Food Delivery Service Application Scoping Analysis

The profiling phase of the study on food delivery service applications presents the related literature that was qualified during the reporting stage and thoroughly reviewed and digested. This study aims to evaluate the context, content, and process of each related study through the gathered journals. The Content, Context, and Process Framework provides a comprehensive approach to food delivery service applications by incorporating the content, context, and process of the sample literature [6], [14], [30], [31]. This framework was originally applied in organizational strategy to assess both external and internal environmental factors in IS examination [32]. As shown in Figure 2, The framework was employed to systematically investigate the prevalence of food delivery service applications, thereby facilitating the identification of potential factors influencing the content, context, and evaluation processes. It serves as a valuable tool in the development of a comprehensive framework for evaluating information systems (IS). This approach initiates with the overarching categorization of pertinent information systems evaluation literature and subsequently provides detailed elucidations of pivotal constructs and alternative approaches for conducting evaluations.

The content of this study focused on examining 30 journal articles that looked at food delivery service applications as a product. This was done by analyzing features, platforms, programming languages, payment methods, customer preferences, and mobile applications used in these studies [33], [14], [21]. Context, on the other hand, was surveyed by examining the food delivery service application as a service. This involved identifying the main and additional services offered in these studies [6], [12], [14], [34]. Processes were examined by focusing on various business models such as order-cook-deliver, order state changing, order model, and order-deliver model. These models have their advantages and disadvantages and can be made more efficient and profitable through strategies such as online and offline advertising, strategic partnerships, and commission percentage [6], [12], [14], [30], [31], [34], [35], [36].

Workflow analysis, as shown in Figure 1, contains the

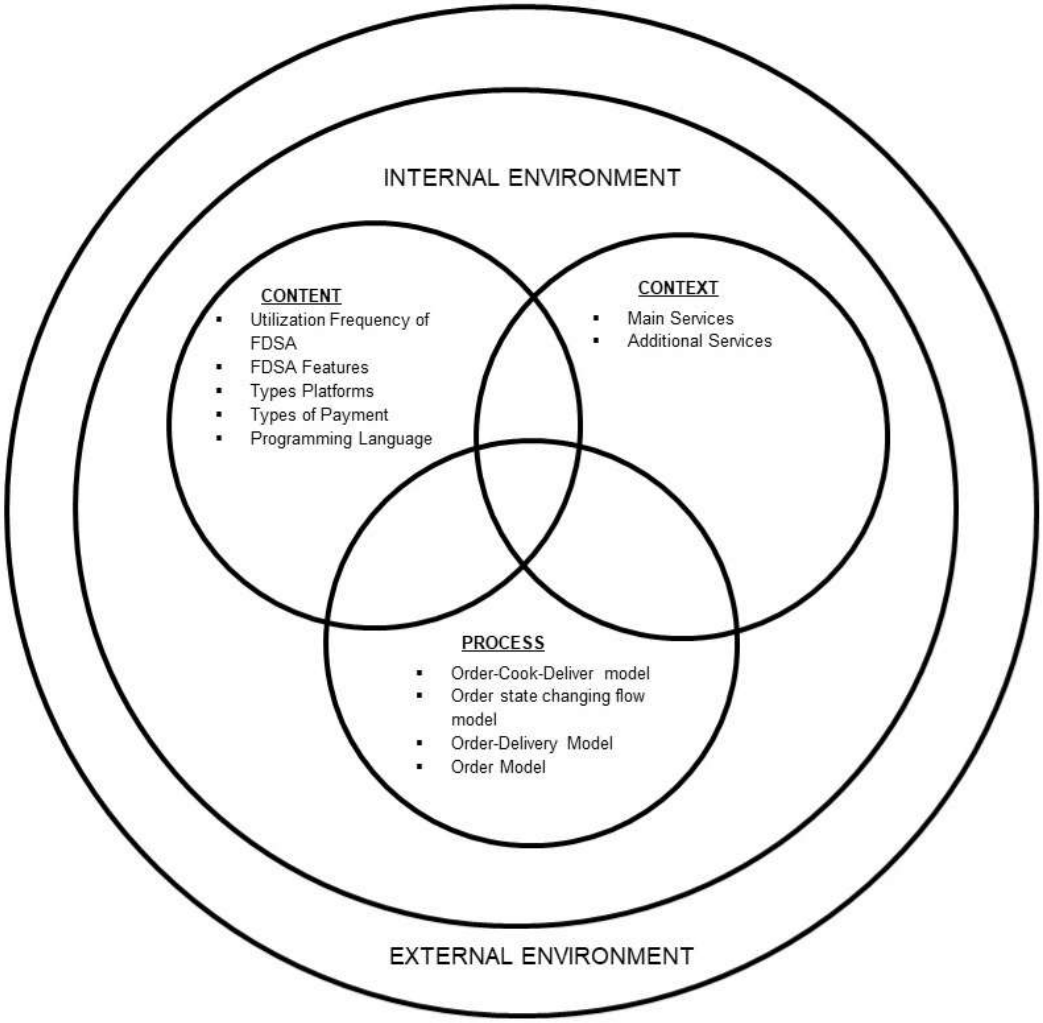

Figure 2. Content- context- process framework used as scoping analysis tool

30 journal articles that were examined to identify the end-to-end food delivery service business process. The external environment was evaluated by looking at government policies, technological innovation, market structure, and economic situation. The internal environment included pricing strategy, user preferences, food availability, and social influence. Inductive coding was used as the primary mapping method in the thematic analysis of the identified variables [5], [8], [13], [14], [37], [30]. In addition, the content of this study examined food delivery mobile applications, features, platforms, types of payment, and programming languages. Context highlighted the main service and additional services that food delivery service applications offer. Lastly, the process was composed of flow charts used by the collected journals.

C. Gap Analysis

A total of 30 samples of related literature were stored in this section. The author digested each conclusion, limitations, and recommendation for future researchers, and used a tally to identify the common variables to synthesize the overall conclusions, limitations, and recommendations [23], [24], [25], [26]. Qualitative inductive coding was used to evaluate the 30 journal articles based on their respective conclusions, limitations, and recommendations. The researcher utilized a journal assessment matrix to indicate each conclusion and thoroughly digest each of the collected related literature. Limitations were observed by conducting a thorough review of each journal article, while the researcher also thoroughly digested each recommendation from the collected journals. The reason the researchers synthesized the gathered conclusions, limitations, and recommendations was to provide relevant knowledge and additional information for future reference related to FDSA.

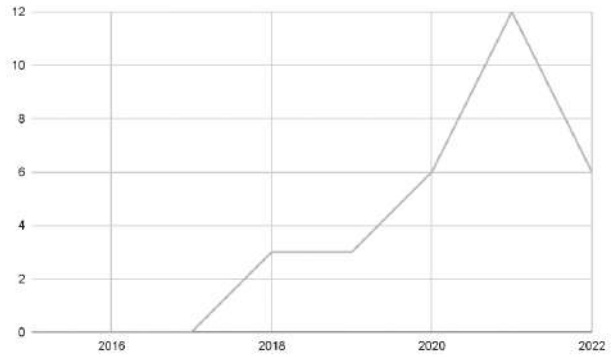

Figure 3. Year Publication Chart

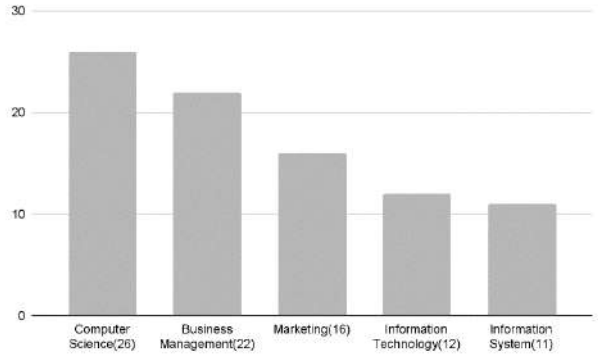

Figure 4. Author Fields

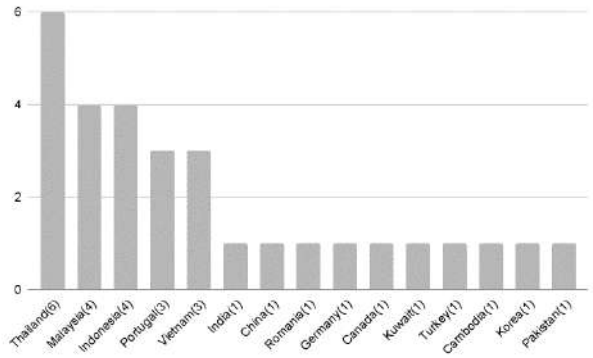

Figure 5. Geographical distribution on the conduct of the studies

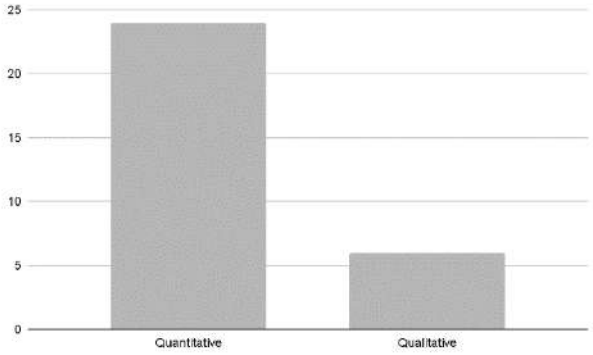

Figure 6. Type of Research

3. RESULTS AND DISCUSSION

A. Literature Profiling Results

Figure 3 presents the number of publications related to food delivery service applications from 2015 to 2022. In 2021, it recorded the highest number of publications, accounting for 12 works of literature. Meanwhile, there were no publications from 2015 to 2017. Furthermore, there was an increasing number of publications from 2018 to 2021, but it suddenly decreased in 2022.

Furthermore, Figure 4 depicts the expertise of the authors in the context of food delivery service, which essentially contributes to vital knowledge and empirical evidence in promoting the use of food delivery applications. The data was composed of authors from different fields, including Information Systems, Information Technology, Business Management, Computer Science, and Marketing. Computer Science had the highest number of authorship, with 26 authors, followed by Business Management with 22 authors, Marketing with 16 authors, Information Technology with 12 authors, and Information Systems with 11 authors.

Moreover, Figure 5 displays the geographical distribution of the related literature regarding food delivery services. A significant number of studies were from countries in the Asian continent, and a few were from Europe and America. The figure reveals that Thailand had the highest number of related literature collected in the Google Scholar search engine [1], [2], [3], [4], [5], [6], followed by Malaysia and Indonesia, with the same tally of four (4) [7], [8], [12], [13], [14], [37], [30], [31]. Portugal and Vietnam also had the same tally of three (3) [33], [38], [34], [35], [36], [39], and the remaining countries in the said scope of the figure had corresponding tallies [40], [41], [42], [43], [44], [45], [46], [47], [48], [49].

Additionally, Figure 6 depicts the type of research based on the gathered related literature in this study. Evidently, there was a significant number of quantitative research related to food delivery services compared to qualitative research. The quantitative research recorded 24 related literature, while qualitative research had six (6) related literature.

In the process of scrutinizing the study designs implemented within the sample journal articles, the researchers undertook the task of classifying these articles according to their respective publication locations. To gauge the scope of subject areas and categories encompassed by the various journals featured in the sample literature, the SCImago Journal Rank—a metric that factors in citation frequency

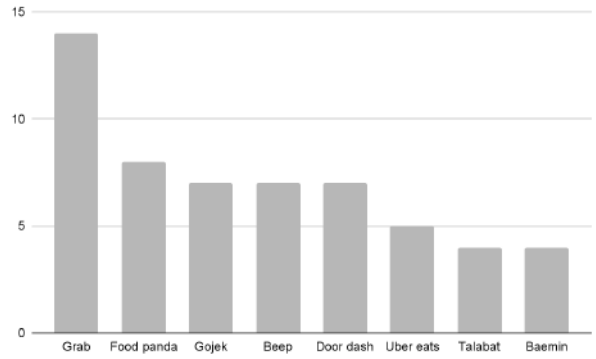

Figure 7. Mostly used food delivery service applications

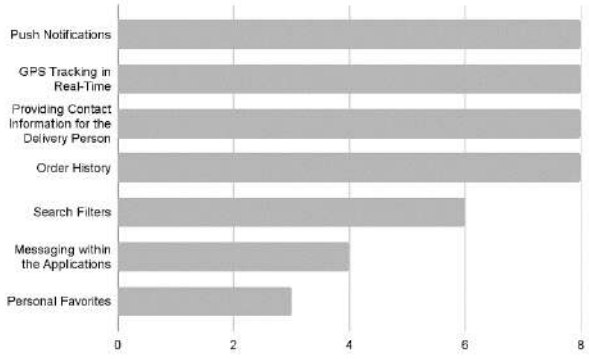

Figure 8. Common FDSA Features

and the prestige of citing journals—was employed. The results of this analysis show that five (5) of the 30 sample articles were published in the Journal of Open Innovation: Technology, Market, and Complexity, while the majority of the journals covered the subject areas of Economics, Econometrics, and Finance. This analysis provides valuable insight into the areas of focus within the field and can inform future research and publication efforts by indicating the types of journals that are most relevant to the study of food delivery service applications.

B. Food Delivery Service Application Scoping Results

1) Content Analysis of Food Delivery Service Applications

This section presents the food delivery service applications that were frequently used by consumers as shown in Figure 7. Grab is the most preferred and frequently used food delivery service application, followed by Foodpanda, Gojek, Beep, and DoorDash. Users prefer these service applications based on factors such as pricing, delivery speed, restaurant options, and user interface. The 30 journals mentioned a total of 56 food delivery services, with 14 studies focusing on Grab [2], [4], [5], [6], [7], [8], [13], [14], [37], [30], [31], [33], [38], [34] 8 studies mentioning Foodpanda [13], [33], [38], [34], [35], [36], [39], [40], and 3 studies mentioning 7 food delivery service applications, including Gojek [4], [5], [6], [8], [13], [30], [42], Beep [4], [5], [6], [43], [44], [45], [46], and DoorDash [4], [5], [6], [12], [14], [33], [42]. Uber Eats was mentioned in 5 studies [4], [5], [6], [8], [43], and Talabat was mentioned in 4 reviews [4], [5], [6], [7], [13], while Baemin was mentioned in 4 studies [4], [6], [7], [12], [42]. Overall, Grab was found to be the most preferred food delivery service application among users in this study.

The 30 journal articles mention 7 common features of FDSA. In Figure 8, eight (8) studies mentioned push notifications[6], [14], [30], [31], [35], [36], [39], [49]; eight (8) studies mentioned GPS tracking in real-time; eight (8) studies mentioned providing contact information for the delivery person [6], [14], [30], [31], [35], [36], [39], [49]; and eight (8) studies mentioned order history [6], [14], [30], [31], [35], [36], [39], [49]. Six (6) studies mentioned search filters[6], [8], [12], [14], [30], [31]; four (4) studies mentioned messaging within the applications[42], [43], [45], [46]; and three (3) studies mentioned personal favorites[13], [14], [30]. The features of these food delivery service applications provide convenience and an easy way to transact. Thus, further research on the salient characteristics, effectiveness, and efficiency of these features may significantly improve users' experience and satisfaction.

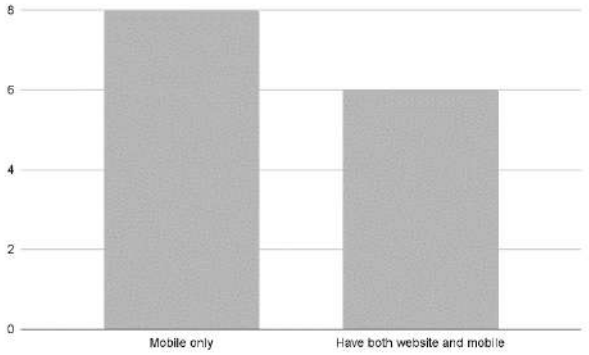

Figure 9. Type of Platform

Figure 9 displays the platforms used for food delivery services - mobile applications and desktop/websites. As shown, eight (8) mobile applications were accounted for in the collected literature of this study [2], [4], [5], [7], [8], [14], [37], [42], while both platforms were used in six (6) studies [13], [14], [37], [30], [33], [34].

This means that most of the accumulated literature utilized mobile platforms for food delivery services. This implies that FDSA developers must intensify their efforts in developing mobile-first design applications, which means developing applications primarily for mobile devices, to improve customer experience and satisfaction. Figure 10 shows the payment methods used in food delivery services. The figure depicts that six (6) of the gathered studies mentioned the use of cash on delivery [12], [14], [30],

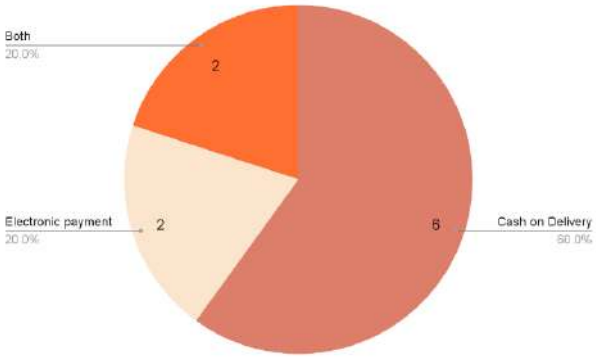

Figure 10. Type of payment preferred by customers

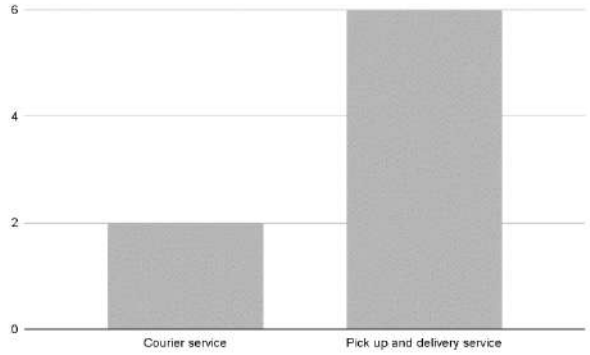

Figure 12. FDSA Main Logistic Services

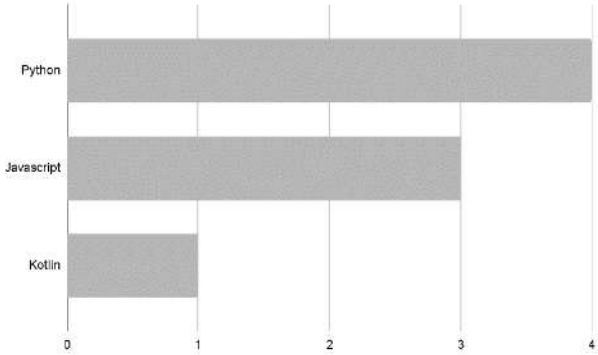

Figure 11. Programming language used

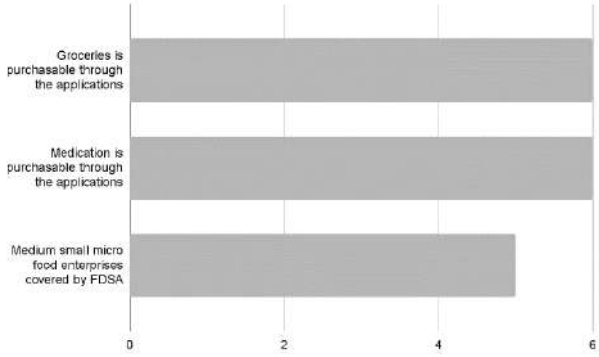

Figure 13. FDSA Additional Services

[35], [36], [40], while two (2) studies mentioned the use of electronic payments [30], [42]. This implies that payment methods for food delivery services may either be cash upon delivery or through electronic payment. Thus, developers of FSDA and mobile payments should escalate their efforts in security, protection, and real-time features for both vendors and application users.

Figure 11 presents the three programming languages used in the 30 collected journals, namely Python, JavaScript, and Kotlin. Out of the eight (8) FDSA shown in Figure 6, four (4) mentioned Python [30], [31], [36], [40], three (3) mentioned JavaScript [12], [14], [36], and one (1) mentioned Kotlin [14].

2) Context Analysis of Food Delivery Service Applications

Figure 12 shows the main logistic services of FDSA, which are courier service and pick-up and delivery service. Courier service refers to a delivery service that has its route and allocated gas allowance. In this study, the researcher gathered 30 journals, and two (2) studies mentioned courier service [7], [12]. On the other hand, pick-up and delivery service is when the rider will strategize the nearest possible route because their gasoline allowance will be disbursed at the end of their shift. Six (6) of the collected data preferred pick-up and delivery service [30], [31], [33], [38], [37], [49]. This implies that pick-up and delivery were the most common services of FDSA observed in this study. Therefore, further research is suggested to examine the effectiveness and efficiency features of FDSA logistics services in managing customer expectations, quality control, planning delivery routes, and providing satisfactory services.

Figure 13 shows the other products that utilize the delivery service applications. The researchers observed that out of the 30 journals, six (6) journals mentioned groceries and another six (6) journals mentioned medications that can be purchased through the application [8], [12], [13], [14], [37], [49].

The researchers also observed that six (6) journals mentioned that both groceries and medications are purchasable through FDSA [39], [40], [41], [42], [43], [44]. Additionally, five (5) journals mentioned that micro, small, and medium-sized food enterprises (MSME) are within the scope of FDSA [2], [3], [4], [5], [6].

In the context analysis of FDSA, this study suggests that developers of FDSA may venture into additional services and widen the scope of applications to include MSMEs in the agriculture and agribusiness industries. Moreover,

TABLE I. Common Processes used in FDSA

Process	Journal Number
Order state changing model	12 - [6], [8], [12], [14], [38], [34], [39], [40], [41], [42], [43], [44]
Order-cook-deliver model	7 - [35], [39], [40], [41], [42], [43], [44]
Order model	6 - [35], [36], [37], [45], [46], [49]
Order-deliver model	5 - [1], [4], [5], [12], [35]

further research is necessary to examine and evaluate the effectiveness, efficiency, and productivity of different FDSA logistic services that may improve customer experience and satisfaction and increase FDSA vendor profitability.

3) Analysis of Food Delivery Service Applications

Among the 30 journal articles, there were four common processes used by food delivery service applications. Table I shows that there were twelve (12) journal articles mentioned the order state-changing model [6], [8], [12], [14], [38], [34], [39], [40], [41], [42], [43], [44]; seven (7) journal articles mentioned the order-cook-deliver model [35], [39], [40], [41], [42], [43], [44]; six (6) journal articles mentioned the order model [35], [36], [37], [45], [46], [49] and 5 studies mentioned the order-deliver model[1], [4], [5], [12], [35].

The order state-changing flow model has been observed in 12 journals out of the 30 collected journals during the scoping review [6], [8], [12], [14], [38], [34], [39], [40], [41], [42], [43], [44]. Figure 14 shows the order state changing flow model. If the order is unchecked, it will be followed by admeasurement and subsequently to either the "wait for delivery" or "cancel" status. The successful order state flows from unchecked to admeasurement, to waiting for delivery, and finally to receiving. This process was observed in the 30 journals.

The order-cook-deliver model has been observed in 7 journals from the 30 gathered journals [35], [39], [40], [41], [42], [43], [44]. Figure 15 shows the process between the consumer and the restaurant- the consumer places an order through website/app of the restaurant and the restaurant will cook the food and deliver directly to the customers.

The order model was mentioned in six (6) journals from the 30 literature gathered [35], [36], [37], [45], [46], [49]. The Online Food Delivery Company (OFDC) serves as the intermediary between the customers and the food providers/restaurants as shown in Figure 16 In this process, the customer places an order with the online food delivery company through the FDSA, and after the order has been placed, the restaurant will directly deliver the food to the ordering customer.

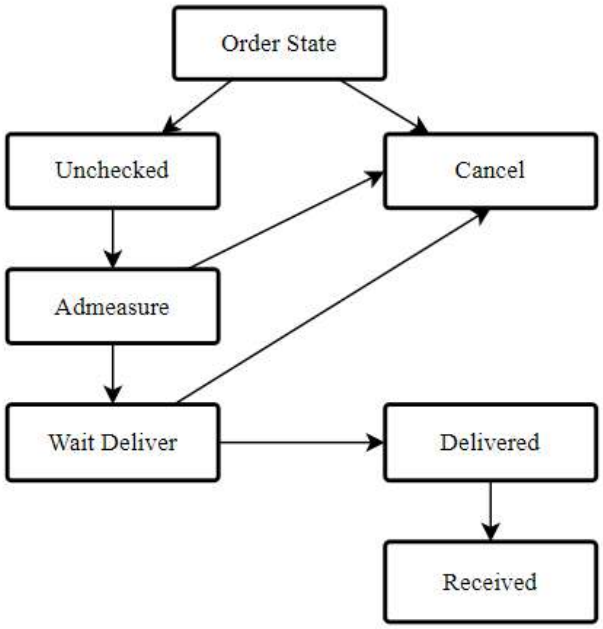

Figure 14. Order state changing flow model

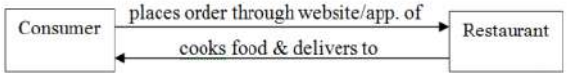

Figure 15. Order-Cook-Deliver model

The order-deliver model as shown in Figure 17 was observed in five (5) journals [1], [4], [5], [12], [35] from the 30 literatures gathered. In this model, the customer places an order with the OFDC through the FDSA, the order is channeled to the mentioned restaurant, and the mentioned restaurant cooks the food and will hand over the order to the OFDC again to deliver the food to the consumer.

In the context of process analysis, the service effectiveness-efficiency-productivity of the FDSA processes depend on the continuous co-creation between the customers, vendors, and the FDSA employees and management support. This implies that further research on the changing

Figure 16. Order-Delivery model

Figure 17. Order model

TABLE II. External Environment Factors and Journal Counts

External Environment	Journal Count
Government policies	25 - [1], [2], [3], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [33], [38], [34], [35], [36], [39], [40], [41], [42], [43], [49]
Technological innovation	23 - [2], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [38], [34], [35], [36], [39], [40], [42], [43], [44], [45], [46], [49]
Economic situation	21 - [3], [4], [6], [7], [8], [12], [13], [14], [37], [30], [33], [38], [34], [35], [36], [39], [40], [41], [42], [44], [45], [49]
Market Structure	18 - [1], [2], [4], [5], [6], [7], [8], [14], [13], [37], [30], [31], [33], [38], [35], [36], [39], [40], [49]

TABLE III. Internal Environment Factors and Journal Counts

Internal Environment	Journal Count
User Preference	26 - [1], [2], [3], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [33], [38], [35], [36], [39], [40], [41], [42], [43], [44], [49]
Pricing Strategy	23 - [2], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [38], [34], [39], [40], [41], [42], [43], [44], [45], [46], [49]
Food Availability	20 - [2], [3], [5], [6], [7], [8], [12], [13], [30], [31], [33], [38], [34], [35], [14], [40], [42], [45], [47], [49]
Social Influence	19 - [1], [2], [4], [5], [6], [7], [8], [13], [14], [37], [30], [31], [33], [38], [35], [14], [40], [43], [49]

customers' and vendors' views on the process utilization of FDSA will contribute to the continued and sustained adoption of the development of mobile technology for food delivery services.

4) External and Internal Environment

The external environment of the food delivery service application was evaluated through government policies, technological innovation, market structure, and economic situation. The internal environment was evaluated through pricing strategy, user preference, food availability, and social influence. Inductive coding was used as the primary mapping method in the thematic analysis of the identified variables. Eighty-seven (87) journals mentioned the context of external environments related to FSDA as shown in Table II. From these journals, 25 studies mentioned government policies [1], [2], [3], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [33], [38], [34], [35], [36], [39], [40], [41], [42], [43], [49], 23 studies mentioned technological innovations [2], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [38], [34], [35], [36], [39], [40], [42], [43], [44], [45], [46], [49], 21 studies mentioned economic situations [3], [4], [6], [7], [8], [12], [13], [14], [37], [30], [33], [38], [34], [35], [36], [39], [40], [41], [42], [44], [45], [49], and 18 studies mentioned market structure [1], [2], [4], [5], [6], [7], [8], [14], [13], [37], [30], [31], [33], [38], [35], [36], [39], [40], [49].

Furthermore, eighty-eight (88) mentions the context of internal environments related to FDSA as shown in Table III. From these journals, 26 studies mentioned user preference [1], [2], [3], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [33], [38], [35], [36], [39], [40], [41], [42], [43], [44], [49], 23 studies mentioned pricing strategy [2], [4], [5], [6], [7], [8], [12], [13], [14], [37], [30], [31], [38], [34], [39], [40], [41], [42], [43], [44], [45], [46], [49], 20 studies mentioned food availability [2], [3], [5], [6], [7], [8], [12], [13], [30], [31], [33], [38], [34], [35], [14], [40], [42], [45], [47], [49], and 19 studies mentioned social influence [1], [2], [4], [5], [6], [7], [8], [13], [14], [37], [30], [31], [33], [38], [35], [14], [40], [43], [49].

5) Research Gap Analysis Results

The researchers collected 30 journals, which were methodologically analyzed, digested, and used to derive the most common conclusions, limitations, and recommendations. Among the 30 collected journals, there were twelve (12) common conclusions, eight (8) common limitations, and twelve (12) common recommendations.

Based on the thorough reviews of the 30 journals gathered as shown in Table IV, there were five (5) journals with a common conclusion on the menu variety, which perceived the value of a food delivery application [1], [2], [6], [7], [8], and the FDSA features like visual, information, and navigational design [12], [13], [14], [37], [49] that affect the food aggregators. Furthermore, these journals also concluded that FDSA can create brand satisfaction and loyalty for restaurants [30], [31], [33], [38], [34]. Meanwhile, four (4) journals concluded that the usefulness of Food Delivery Service Applications (FDSAs) was influenced by factors such as social influence, trust, convenience, and application quality. [35], [36], [14], [40]. Moreover, as the pandemic

has shaken the ground of individuals around the globe, there were four (4) journals that have empirically observed that the users increased continuance usage intention of FDSAs during COVID-19 [41], [42], [43], [44]; that FDSA is at the nascent stage that recently attracted the attention of scholars who can hopefully contribute knowledge and ideas to further develop the FDSA [45], [46], [47], [48]; and that customers have the intention of continuing the use of a food delivery app if they are satisfied with their experience [3], [4], [5], [6].

Through the pervasive use of mobile applications, four (4) journals had concluded that FDSA continued its intention towards mobile purchases through the years [30], [31], [33], [38]. Consequently, four (4) journals found that the ease of using Food Delivery Service Applications (FDSA) is a significant factor that encourages customers to place food orders via online platforms [37], [30], [31], [49]. Additionally, four (4) published journals concluded that the respondents have a positive perception towards the use of FDSA due to its sensibility and practicality [7], [8], [12], [13]. Likewise, four(4) journals also determined that the motivation of convenience positively influences the attitude of FDSA users, suggesting that the ease of using FDSA contributes to users' favorable attitudes towards it [40], [41], [42], [43]. However, these four(4) journals concluded that the intention and plan to order food through FDSA are neutral, indicating that the desire and plan to use these services are not consistently present [12], [13], [14], [49]. The gathered common conclusion will be relevant as this will provide prior knowledge and insights in this conducted scoping review, particularly in the customers' and vendors' diverse perceptions and intentions for utilization of the menu variety, features, and usefulness that eventually influence the brand satisfaction and loyalty at the growing stage of FDSA.

The researchers analyzed 30 journals and identified common limitations that rectify gaps in each study's research as shown in Table V. Seven (7) journals had a scope limited to FDSA service users in Thailand, and the findings cannot be generalized to other countries with different cultures [3], [4], [5], [6], [7], [8], [12]. Six (6) journals identified a common limitation, which is the app or website interface constantly evolving with social developments over time, affecting the functionality, design, and services provided [7], [8], [12], [13], [14], [49]. Five (5) journals were limited by results that cannot be generalized across different areas due to nonprobability sampling [37], [30], [31], [33], [38]. Additionally, five (5) journals could not confirm the factors influencing customer intention in using a food delivery app in the post-COVID-19 pandemic scenario [34], [35], [36], [39], [40]. Four (4) journals reported the selection biases in online surveys used in consumer research [41], [42], [43], [44], while another four (4) journals were limited to customers' perspectives towards FDAs only [35], [36], [39], [40]. Three (3) journals used a cross-sectional set-up, which could introduce methodological bias [45], [47], [48]. Finally, three(3) journals collected limited data during the COVID-19 pandemic, which impacts the ability to generalize their research results compared to normal periods [34], [35], [36]. Moreover, the journals should indicate their study's scope and limitations to further improve and enhance FDSA. Advanced empirical studies on the app's features, functionalities, designs, and customers' and vendors' intentions and perceptions post-COVID-19 pandemic will provide indispensable facts about its evolution.

TABLE IV. Common Conclusions from External Environment and Journal Counts

External Environment	Journal Count
Menu variety perceived the value of a food delivery application	5 - [1], [2], [6], [7], [8]
FDSA features affect food aggregators	5 - [12], [13], [14], [37], [49]
Builds brand satisfaction and brand loyalty	5 - [30], [31], [33], [38], [34]
FDSA usage influenced by social influence, trust, convenience, and application quality	4 - [35], [36], [14], [40]
FDSA increasing usage during COVID-19	4 - [41], [42], [43], [44]
FDSA still at a nascent stage	4 - [45], [46], [47], [48]
Increasing customer satisfaction and providing great app user experience to continue the use of FDAs	4 - [3], [4], [5], [6]
FDSA continued its intention towards mobile purchases	4 - [30], [31], [33], [38]
Convenience of using FDSA as a factor that motivates customers to order food	4 - [37], [30], [31], [49]
Positive attitude toward the use of FDSA due to its sensibility and practicality	4 - [7], [8], [12], [13]
Intention and plan to order food through FDSA is neutral	4 - [40], [41], [42], [43]
Users' positive attitude toward FDSA is influenced by the easiness to use of FDSA	4 - [12], [13], [14], [49]

The thirty (30) reviewed journals provide common recommendations that can aid in improving future research related to FDSA as shown in Table VI. Six (6) journals provided insights into paying attention to different regions or countries to improve FDSA [1], [2], [3], [4], [5], [6]. Furthermore, the five (5) collected journals recommended encouraging comparisons across cultures because

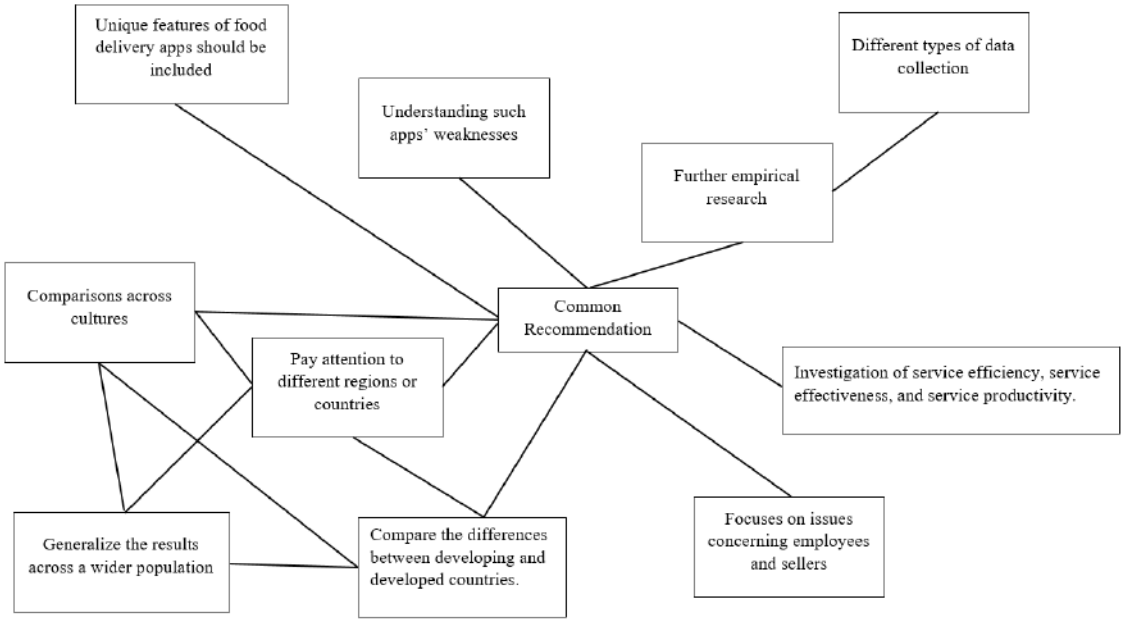

Figure 18. Common Recommendations Mind Map

food varies in different countries [7], [8], [12], [13], [14]. Four(4) journals suggested that future researchers should gain insights into the weaknesses of apps to establish a successful food delivery app model [37], [30], [31], [49]. Four (4) journals mentioned the need to include unique features in the future model of food delivery apps [33], [38], [34], [35], while another four (4) journals recommended further empirical research studies to explore the customers' points of view, which can also intensify customer satisfaction [36], [39], [40], [41]. Four (4) journals recommended a prior investigation of the three phenomena that inform the adoption of mobile technology - service efficiency, effectiveness, and productivity [42], [43], [44], [45]. Three (3) journals recommended including FDSA service users from different countries in future research to generalize the results across a wider population, which will broaden the effective utilization of FDSA across the globe [46], [47], [48]. Two (2) journals emphasized the importance of studying customers who either disregard or reject the use of food delivery apps. This understanding of app weaknesses is crucial for the development of a successful food delivery app model. [2], [3]. One (1) journal suggested that future models should incorporate the distinctive features of food delivery apps to comprehensively encompass the context of these apps. This approach would offer deeper insights into the unique factors that influence customer satisfaction and user intent [7]. Another journal suggested the need to use different types of data collection methods to reduce biases for adequate information to improve FDSA [37]. In addition, one (1) journal emphasized the need for future studies to focus on issues concerning employees, sellers, and delivery personnel who engage with FDSAs [45]. Lastly, one journal recommended comparing FDSA between developing and developed countries [12]. These common recommendations provide prior knowledge that can help future researchers address them and enhance FDSA accordingly.

Figure 18 highlights common recommendations mind map for further empirical research in the field of Food Delivery Service Applications (FDSA). These include adopting diverse data collection methods to enhance the accuracy of information about FDSA and identifying the app's weaknesses to develop a more successful food delivery app model. The recommendations also emphasize the importance of incorporating unique features of food delivery applications, particularly those that underline the geographical distribution of related studies, as noted in the literature review. A significant focus is suggested on geographical analysis, advocating for attention to various regions or countries to understand cultural differences and generalize results across a broader population. This analysis is especially pertinent in contrasting the impact of FDSA in developing versus developed countries. Additionally, there's a call to broaden the research scope beyond consumer concerns, urging studies to also address issues relevant to employees and sellers, including service efficiency, effectiveness, and productivity. These comprehensive recommendations aim to enrich the content, context, and process of FDSA, contributing to its overall advancement.

TABLE V. Common Limitations and Journal Counts

Common Limitations	Journal Count
The results of the study might not be applicable to other cultures in a different country	7 - [3], [4], [5], [6], [7], [8], [12]
The UI design of the app or website is constantly evolving	6 - [7], [8], [12], [13], [14], [49]
The use of nonprobability sampling means the results cannot be universally applied across different regions	5 - [37], [30], [31], [33], [38]
It is not possible to ascertain the factors influencing customer intent to use a food delivery app in the scenario following the COVID-19 pandemic	5 - [34], [35], [36], [39], [40]
Consumer research frequently employs online surveys, which can result in biases in participant selection	4 - [41], [42], [43], [44]
The study exclusively concentrates on the viewpoints of customers regarding FDAs	4 - [35], [36], [39], [40]
The design was shaped by a cross-sectional configuration, which is susceptible to methodological biases	3 - [45], [47], [48]
The data gathered during the COVID-19 pandemic constrained the extent to which the research findings could be applied compared to a typical period	3 - [34], [35], [36]

4. Conclusion and Recommendations

This research was able to synthesize the scope of the 174 journals collected, profile its sample size, and synthesize the topics. Online food delivery system applications (OFDSA) are increasingly popular topics of research and publication in highly urbanized cities; however, these studies appear in smaller journals. The majority of the research analyzed for this review highlights the benefits of using OFDSA. The objective of the paper is to provide a comprehensive review of the related literature of OFDSA and to develop possible research topics to meet the research gap for future studies. The sample size was synthesized by gathering, digesting, and profiling relevant journal articles related to OFDSA, and it adhered to a systematic methodology when identifying the sample literature for content analysis and applied specific criteria for literature selection. After profiling each related

TABLE VI. Common Recommendations and Journal Counts

Common Recommendations	Journal Count
Pay attention to different regions or countries	6 - [1], [2], [3], [4], [5], [6]
Comparisons across cultures are also highly encouraged	5 - [7], [8], [12], [13], [14]
Understanding such apps' weaknesses, which can help establish a successful food delivery app mode	4 - [37], [30], [31], [49]
Unique features of food delivery apps should be included in the future model	4 - [33], [38], [34], [35]
Further empirical research studies exploring the customers' points of view	4 - [36], [39], [40], [41]
Prior investigation of the three phenomena that inform the adoption of mobile technology: service efficiency, service effectiveness, and service productivity	4 - [42], [43], [44], [45]
FDSA service users from different countries and can generalize the results across a wider population	3 - [46], [47], [48]
Investigating customers who are dissatisfied with the use of food delivery apps can provide insights into the weaknesses of these apps, which, in turn, can contribute to the development of a successful food delivery app model	2 - [2], [3]
Incorporating the distinctive characteristics of food delivery apps into future models is essential to comprehensively represent the context of food delivery apps	1 - [7]
The need to use different types of data collection methods to reduce biases	1 - [37]
Additional research that centers on matters related to employees, sellers, and delivery personnel involved with FDAs	1 - [45]
Compare the differences between developing and developed countries	1 - [12]

literature, the researchers profiled OFDSA. Next, they synthesized all the conclusions and recommendations of each review of related literature that qualified. The researchers recommend that future reviews of the same nature include eligibility criteria that screen the articles on whether or not they contain content on Online Food Delivery Service Applications. The presented literature profiling results in this scoping review highlight the year of publication, author fields, geography, research type, and the SCI MAGO (subject area and category) based on the gathered 30 journals that enable the enhancement and contribution to the growth of FDSA. It has been observed that the year 2021 has the highest number of published journals/articles relating to FDSA. The majority of the authors from the collected literature were in the field of Computer Science, which enhances FDSA in recent times. Geographically, FDSA was prominent in Thailand as observed in the scoping review. Further, quantitative research was commonly utilized, as recognized in the collected 30 journals, as statistics and numbers produce objective data that can be communicated in this type of scoping review. Lastly, the SCI MAGO enables the researchers to illustrate the subject area and the category of the gathered journals relating to FDSA. The subject areas were mostly economics, econometrics, and finance, while strategy and management were the most common in the category of FDSA, based on the gathered journals.

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