
Information System Design at FGH Stores with Unified Modelling Language

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ABSTRACT

This project aims to develop and execute a proficient information system at FGH Stores, to enhance sales performance and improve customer satisfaction. This study centers on incorporating information technology into routine business activities, intending to devise strategies that facilitate seamless consumer interactions and aid store management in effectively handling inventory and customer data. The research process includes the examination of business needs, the formulation of system architecture, the creation of user interfaces that prioritize ease of use, and the integration of databases. The resultant information system facilitates consumer registration as members, reduces browsing of product catalogs, and enables efficient execution of purchases. Furthermore, implementing shop management systems enables enhanced inventory monitoring, efficient customer data management, and improved responsiveness to consumer requests. This study assesses the effects of information systems on enhancing sales and operational efficiency by conducting data collection and analysis before and after deployment. The findings indicated that implementing information systems effectively enhanced the efficiency of the sales process and improved the customer experience, yielding substantial advantages for the growth of retail establishments. This study offers valuable insights into the possible utilization of information technology within the retail industry while also contributing to the comprehension of the favorable effects that information systems integration may have on corporate expansion and customer satisfaction.

Keywords: Information System; Sales Performance; Data Collection; Customer Satisfaction; Data Customer

INTRODUCTION

The quick and advanced development of information technology in the business sector has significantly influenced individuals across several domains, leading to changes in their information behaviour. The significance of e-commerce has emerged as a prominent catalyst within the contemporary corporate landscape. An essential factor contributing to the success of business individuals, mainly those operating Small, Micro, and Medium Enterprises (MSMEs) (Kilay et al., 2022), (Esubalew & Raghurama, 2020), is the provision of ordering and delivery services for business products that align with contemporary societal demands. One practical approach to achieve this is establishing an online store, utilizing the internet as a connecting medium. E-commerce enables the execution of diverse business operations, encompassing activities such as buying and selling, promoting goods and services, and distributing products. This study aims to examine the impact of e-commerce on the sales performance of Micro, Small, and Medium Enterprises (MSMEs). The advent of Internet technology has facilitated the utilization of e-commerce platforms by enterprises as a means to augment revenues and attain substantial expansion.

The advent of e-commerce has significantly transformed the dynamics of business-consumer interactions. Throughout history, businesses have traditionally depended on brick-and-mortar establishments and conventional advertising methods to market their products and entice consumers. Nevertheless, technological advancements have enabled enterprises to establish their virtual storefronts and sell their merchandise via widely-used online retail platforms. The global reach of e-commerce (Hendricks & Mwapwele, 2023) is one of its most significant advantages. Using e-commerce enables firms to effectively engage with a worldwide consumer base, unrestricted by the limitations imposed by a physical presence. When establishing a system and designing company systems, it is imperative to focus on infrastructure and develop a framework that serves as an Information Technology Planning component. Implementing business continuity becomes essential to effectively execute organizational activities, further reinforced by a resilient IT strategy. The Open Group Architecture Framework (TOGAF) is employed by individuals for architectural purposes. Numerous sectors have adopted this paradigm, including but not limited to manufacturing (Hindarto et al., 2021), food production (Titi et al., 2023), healthcare, transportation (Benito et al., 2023), and various

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others.

Furthermore, the implementation of e-commerce has the potential to decrease the operational expenses associated with brick-and-mortar establishments. In conventional company operations, enterprises must pay for leasing or constructing brick-and-mortar establishments, compensating personnel, and upkeeping storage facilities. In e-commerce, the expenses mentioned above can be mitigated or potentially eradicated. By engaging in e-commerce (Paredes-Corvalan et al., 2023), businesses can reduce costs related to leasing, operating, and upkeeping brick-and-mortar establishments. Furthermore, it can enhance supply chain efficiency by minimizing inventory levels. This strategy contributes to the enhancement of profit margins and the improvement of overall operational efficiency. The user's text needs to contain information to rewrite academically. E-Commerce enables businesses to target niche customers and tailor their services accordingly effectively. By examining customer data and utilizing digital marketing technologies, organizations can get insights into consumer preferences and purchasing behaviours. Through the systematic collection and rigorous analysis of client data, online retailers can enhance their comprehension of consumer preferences and requirements. This enables organizations to provide greater personalization and relevance in their offers, strengthening the potential for increased sales opportunities. Including straightforward purchase and checkout capabilities is a crucial determinant in augmenting sales within e-commerce. Consumers can efficiently and expeditiously peruse and juxtapose various products, peruse evaluations from fellow consumers, and execute transactions with minimal effort through a few simple actions.

In conclusion, electronic commerce (e-Commerce) leverages digital marketing strategies and social media platforms to promote and advertise various items or services. The Influence of Digital Marketing on Electronic Commerce According to the sales data, Through the utilization of digital marketing strategies and social media platforms, a firm has the potential to enhance its market penetration, augment brand recognition, and ultimately achieve substantial growth in sales. In summary, e-commerce has produced a considerable impact on augmenting corporate revenue. Companies can achieve sustainable development and dramatically improve their sales through many factors, such as worldwide accessibility, decreased operating expenses, precise market alignment, simplified purchasing and payment processes, and successful digital marketing strategies. Numerous scholarly articles have contributed significant insights and empirical evidence highlighting the pivotal role of electronic commerce in facilitating sales growth. Based on the initial description, a research question can be formulated as follows: What factors contribute to the practical design of a sales application system? (Research Question 1) What is the nature of the actions conducted by customers and sellers within an online shop application system? (Research Question 2) What is the role of the sequence diagram in the design of a sales information system? (Research Question 3).

LITERATURE REVIEW

There has been a lot of research that has discussed the Unified Modelling Language (UML). Discussion of UML that has been carried out in various system application designs. Utilization of UML (Unified Modelling Language) in E-Commerce Information System Design Customer-To-Customer Type (Sonata, 2019). The level of competition in the e-commerce industry is intensifying. Various sorts of e-commerce are frequently found. The C2C (Customer-to-Customer) type is extensively utilized in several contexts. This particular form of electronic commerce enables the direct exchange of goods and services between purchasers and vendors. This study aims to construct a consumer-to-consumer (C2C) model utilizing the Unified Modelling Language (UML). The distinguishing feature of C2C modelling using UML resides in the inherent attributes of UML that facilitate the discernment of the items that influence the system. Unified Modelling Language (UML) for Designing Information Systems for New Student Admissions at Marga Insan Kamil Vocational High School (Nistrina & Sahidah, 2022). The objective of this project is to construct an information system for online development about the registration of new students, utilizing the Unified Modelling Language (UML). The waterfall methodology is employed. The end outcome of this research is developing an information system for the admission of new students at Marga Insan Kamil Vocational School. The objective of developing this novel student admission information system is to facilitate its integration and utilization inside school applications. Web-Based Student Score Information System at SMA Negeri 19 Kab. Tangerang (Reni Maharani & Mustar Aman, 2017). This study analyses the challenges encountered during the value data processing at SMA Negeri 19 Tangerang Regency. Subsequently, a value information system application will be developed at SMA Negeri 19 Tangerang Regency, serving as a potential solution to the challenges mentioned above. Use Case Modelling (UML): Evaluation of some Errors in Practice (Kurniawan, 2018). This essay aims to assess the common faults that frequently arise in use case modelling, namely within the realms of software development education in universities and software industry implementation. Unified Modelling Language Diagram Implementation in Payroll Information

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System Design (Normah et al., 2022). UML software modelling offers convenience in software development and facilitates determining the firm's expected system flow. This study employs the waterfall methodology, encompassing the sequential phases of analysis, design, code development, testing, and maintenance in creating layouts.

Several studies offer recommendations for the utilization of UML and the Waterfall methodology. This study only concentrates on UML design, specifically utilizing Sequence diagrams and Activity Diagrams. There exists a need for a more current body of research about this particular area. This study exclusively concentrates on the two sub-methods of UML.

METHOD

The Unified Modeling Language (UML) is a graphical notation to design, model, and document software systems. The Unified Modeling Language (UML) offers a standardized set of notations and methodologies that facilitate successful communication and collaboration across software development teams. The Unified Modeling Language (UML) is commonly employed to develop software systems, while its application extends beyond software design to encompass non-software systems. The subsequent techniques and components frequently employed in Unified Modeling Language (UML) are as follows:

- UML diagrams serve as the primary components inside the Unified Modeling Language (UML) framework, depicting many facets of a system. Several UML diagram types are frequently utilized, including:
- A class diagram is a graphical representation that illustrates the structure of classes, their attributes, and the relationships between them.
- A sequence diagram is a graphical representation that illustrates the chronological order of interactions between items.
- The activity chart visually represents the system's various workflows, processes, and activities.
- A component diagram is a visual representation that illustrates software components' physical components and structural relationships.
- An object diagram is a visual representation that depicts the classes and objects within a system, along with their associated properties and interactions.
- A package diagram is a UML diagram that organizes UML elements within packages related to each other.
- A use case diagram is a visual representation that depicts the various circumstances in which a system is utilized by the individuals involved.

This study focused on two diagrams, namely Sequence Diagrams (Karampure et al., 2021), (Refsdal et al., 2015) and Activity Diagrams. The term "sequence" refers to an ordered list of elements. These typical numbers follow Diagrams, specifically those inside the Unified Modeling Language (UML), which significantly represent the interactions between objects within software systems or business processes. The diagram depicts entities or classes as vertical lines called lifelines. Each lifeline corresponds to a specific instance of a commodity or class. Every individual entity possesses a designated appellation positioned above the vertical line. A "ref" (reference) annotation can be allocated to establish recognition of the identical entity in subsequent communications. Participants refer to a group of things with typical roles or functions in interactions, representing cohesive units of objects that collaborate harmoniously. The process of object communication is facilitated through the use of messages, which serve as a means of invoking methods or exchanging information between objects. Notifications can be categorized into two types: synchronous and asynchronous. In the case of synchronous messages, the calling object pauses its execution until a response is received. On the other hand, asynchronous messages do not require an immediate answer, allowing the calling object to proceed with its execution without waiting.

The representation of synchronous messages in a sequence diagram involves straight arrows connecting object lifelines, while dotted arrows denote asynchronous communications. During the invocation of a method, the object that is the recipient of the call exhibits focus, which signifies the duration for which the thing was engaged in processing the process. The response message, which denotes the outcome or value obtained from invoking the method, is likewise depicted in the figure with a reverse arrow extending from the receiving object to the calling object. Fragments are crucial in sequence diagrams since they depict control logic, encompassing features such as repetition, conditions, and iterations. Utilizing elements enables developers to articulate forks within the sequence of interactions and represent intricate scenarios. Sequence diagrams incorporate a temporal aspect, enabling software engineers to visually perceive the chronological sequence of method invocations and the interplay of objects within a secular framework. One of the primary advantages of sequence diagrams is their capacity to visually represent the

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flow of activities and interactions that transpire inside a given system or process. Developers can use this diagram to discern how objects communicate, transmit messages, and collaborate to accomplish specific objectives. Sequence diagrams are also beneficial for building business logic, as they aid in identifying conditions that necessitate method calls and in describing various usage scenarios. Furthermore, sequence diagrams enhance collaboration and facilitate effective communication among development team members. During the initial phases of planning and design, these diagrams serve as visual aids that enable the team to gain a comprehensive understanding of the interrelationships among system components. This, in turn, promotes effective conversation and enhances the quality of decision-making processes. Sequence diagrams can be effectively included in other forms of documentation, such as use case descriptions or functional specifications, to offer a holistic perspective of the entire system. In summary, sequence diagrams inside the Unified Modeling Language significantly represent interactions among objects within software systems or business processes. These diagrams facilitate the visual design, comprehension, and communication of intricate workflows and interactions by incorporating lifelines, messages, fragments, and time dimensions. Sequence diagrams are a valuable tool for the design of business logic since they aid in identifying scenarios that necessitate method calls. Additionally, they promote efficient communication among members of the development team.

Activity Diagrams (Daw & Cleaveland, 2015) in the Unified Modeling Language are practical and methodical graphical depictions of workflows or business processes within a software system or organization. The diagram depicted herein illustrates the sequential actions, determinations, and engagements that transpire inside an activity or function, presented in an understandable and user-friendly manner. Activity diagrams (Li et al., 2013) are a valuable tool for developers since they facilitate the planning, analyzing, and documenting the sequential tasks necessary to accomplish specific objectives. This is achieved through the use of unambiguous notation and standardized icons. An essential component within an activity diagram is an action, denoting a tangible step or task within a workflow. Acts refer to the various operations executed by objects within a given system. These operations encompass a range of activities, including the transmission of messages, the manipulation of data, and the execution of mathematical computations. In instances where action calls get more intricate, the activity diagram provides a means for implementing a method call (known as a call behavior action), which effectively partitions the operational logic into distinct activities. This enables the implementation of more intricate and effective modeling techniques for various processes.

Decisions are crucial in the activity diagram (Grobelyny et al., 2012) since they delineate the branching points within the workflow. The process can transition to an alternative trajectory if specific criteria are satisfied. Hence, the picture presented depicts a sequential progression and encompasses the diverse range of potential outcomes that could transpire. Additional components, such as the fork and join mechanisms, provide developers with the capability to divide processes into parallel routes and afterward merge them, enabling a higher degree of flexibility in building models. The depiction of data or information flow between actions is called object flow in activity diagrams (Meiliana et al., 2017). This facilitates the modeling of data processing and its utilization more comprehensively. The function-like notation also articulates operations that yield an output value contingent upon a specified parameter. Swim lanes can be employed in diagrams to categorize actions based on the job, organizational unit, or object associated with more intricate organizations. This aids in visualizing the duties and interactions among various entities inside the process. Activity diagrams serve as a valuable analytical and planning tool and provide a visually understandable representation of a workflow or process. These diagrams facilitate the identification of sequential operations, decision-making processes, and interactions, enabling the identification of potential enhancements or optimizations in workflows. Hence, activity diagrams serve as a visual aid and a significant analytical tool in software systems or business process development.

1. RESULT

The Unified Modeling Language (UML) was employed in this study to examine the operational system. The UML was utilized to depict the many procedures and processes involved in the running system. To augment sales at the FGH Store, purchasers place orders directly at the establishment mentioned above. Regarding payment transactions at FGH Stores, the administrator diligently documents pertinent details such as the buyer's name, the selected product, and the delivery date. Subsequently, the administrator proceeds to validate the payment transaction and provide confirmation to the buyer. Later, the administrator enters the shipment number to enable purchasers to monitor the progress of goods delivery. The process of system analysis involves elucidating the necessary functionalities and requirements that a system must possess to address the information needs of its users effectively. System analysis is a process that aims to address critical inquiries about the nature of a system, including the actions to be undertaken, the

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intended user base, and the specific locations and timeframes in which the system will be utilized. The present analysis operations for the proposed system involve using an object-oriented analysis technique, intending to concentrate on the system's existing functionality. In addition, the outcomes of the analysis will be presented and recorded using the Unified Modeling Language (UML) via Activity Diagrams and Sequence Diagrams, taking into account that these diagrams are intended to depict the functioning of the entire system in a manner that is understandable to users.

Activity Diagram.

In this study, the Unified Modeling Language (UML) is employed to examine the operational aspects of the system under investigation. The UML depicts the many procedures and processes involved in the system's functioning. Now, to enhance sales at the FGH Store, purchasers engage in placing orders directly at the FGH Store. In the context of payment transactions made to FGH Stores, the administrative personnel meticulously document pertinent details such as the buyer's name, the specific product chosen, and the delivery date. Subsequently, the administrative personnel verify and validate the payment transaction with the buyer. After that, the administrator enters the shipment number, enabling buyers to monitor the progress of product delivery. System analysis aims to elucidate the necessary functionalities that the system must possess to address its users' information requirements effectively. System analysis is a process that seeks to address critical inquiries about the nature of a system, including the actions to be undertaken, the intended user base, and the specific locations and timeframes for system utilization. The system analysis operations are presently being conducted utilizing an object-oriented analysis methodology to concentrate on the existing system's functionality. In addition, the outcomes of the study will be presented and recorded using the Unified Modeling Language (UML) via Activity Diagrams and Sequence Diagrams, taking into account that these diagrams are widely recognized as effective means of representing the functioning of the system in a manner understandable to users.

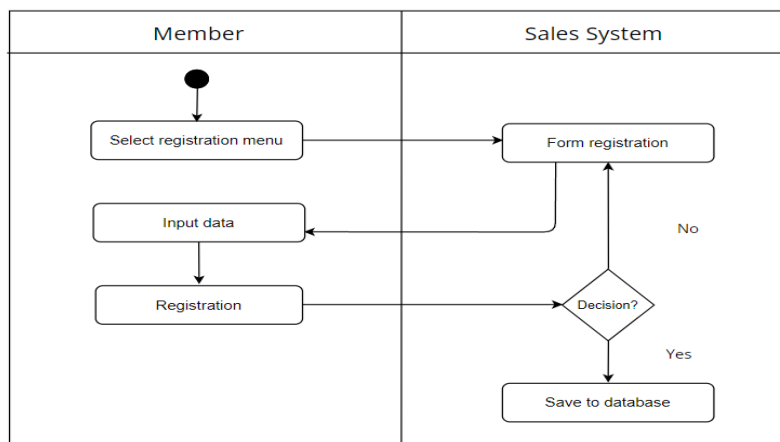


Fig 1. Registration Activity Diagram

Fig 1. The picture above illustrates the activities carried out by the customer, while the activities carried out are registering as a member at the FGH Store to be able to make transactions to buy the products offered. In the member or customer section, make a selection and select the register menu. The System section responds by displaying the Register Form. Members input data, and click Save, there is a Yes or No notification. If Yes, then the input data will be entered into the database. If the notification is No then the data is not stored in the database. The Registration Activity Diagram, often known as the "Registration Activity Diagram," is a graphical representation that outlines the sequential steps involved in user registration within a given system or application. The diagram presented herein illustrates a sequential depiction of the registration process, elucidating how the user will engage with the system from initiation to completion.

The procedure commences with the user choosing the "Register" option from the interface. Subsequently, a sequence of activities is presented in a coherent arrangement. The process entails completing the registration form by providing essential information, like one's name, email address, and password. Subsequently, the system will verify the information provided by the user to ascertain the precision and comprehensiveness of the data. The Registration Activity diagram encompasses further sequential actions, such as the user's engagement with the "Submit" or "Save" button after completing a form. Subsequently, the system will undertake the data validation process and utilize the

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validation outcomes to inform its decision-making. Upon validation of the data, the user will be guided to proceed to the subsequent activity, which may involve the presentation of a success message and the subsequent redirection of the user to the login page. In the event of validation failure, the system will provide an error notice and prompt the user to rectify the erroneous data. Furthermore, these diagrams can incorporate branches within a workflow, delineating the options or choices that necessitate deliberation by the system or its users. If the user possesses an existing account, the chart may trace an alternative trajectory wherein the user is guided towards the sign-in process instead of through the registration procedure anew. The Registration Activity diagram is a valuable tool in system design as it facilitates a comprehensive comprehension of the user-system interaction for developers. By visualizing each step, branch, and decision involved in the registration process, developers can discern possible areas for enhancement, streamline workflows, and guarantee a seamless and practical user experience. In general, the utilization of the Registration Activity Diagram holds significance in the development of a system that is both user-friendly and highly responsive. Its primary purpose is to facilitate a seamless and efficient registration procedure for new users.

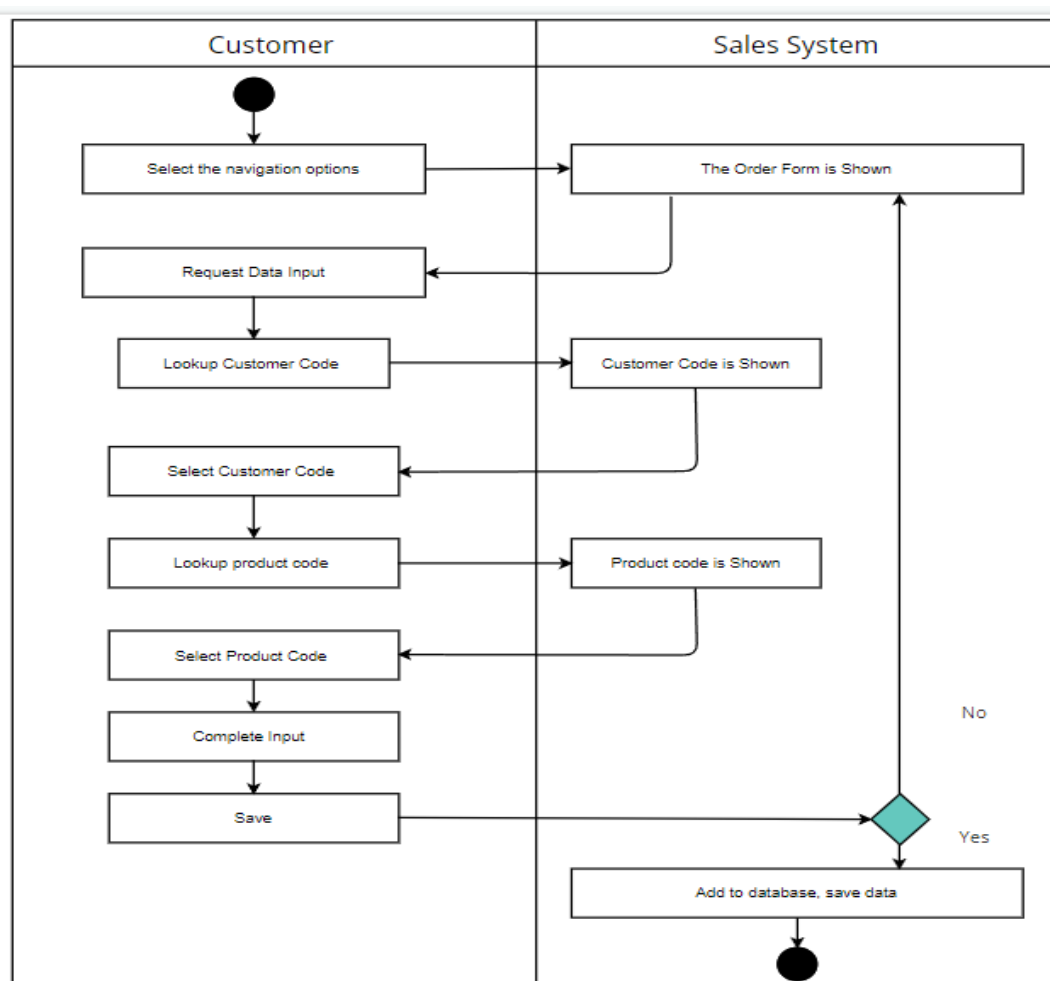


Fig 2. Order Activity Diagrams

In Figure 2, Once the customer has completed the registration process and successfully signed into the system, they can select the desired product and add it to their shopping cart. Subsequently, the customer can promptly proceed with placing an order for the preferred item. This phenomenon takes place during the transaction process after the completion of the customer's order placement. Upon the completion of the transaction, the buyer will provide evidence of payment, which will, after that, be stored in the database.

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Sequence Diagram

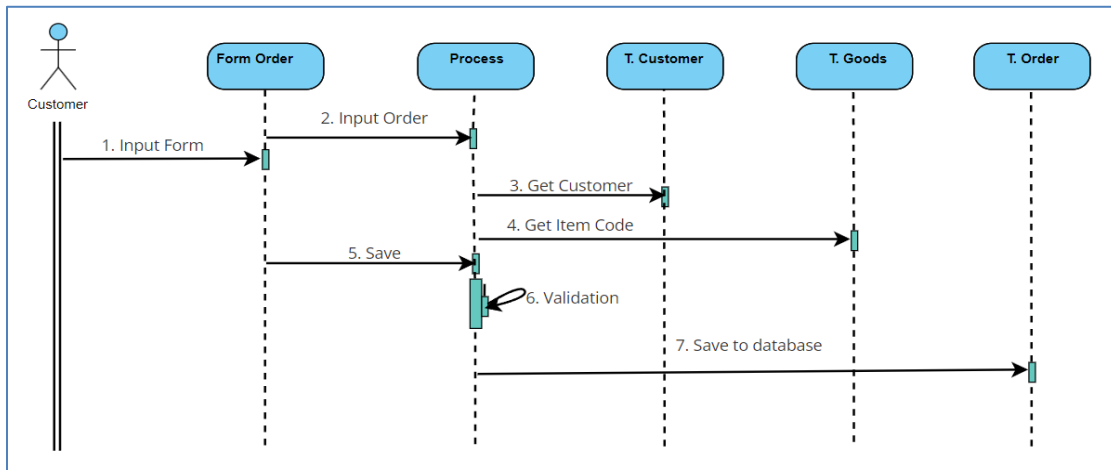


Fig 3. Order Sequence Diagram

Figure 3 illustrates the involvement of a single actor, specifically the customer, who assumes the role of the activity's initiator. Additionally, the diagram showcases the interaction between five lifeline interfaces and the transmission of seven messages that convey vital information regarding the transpiring activities.

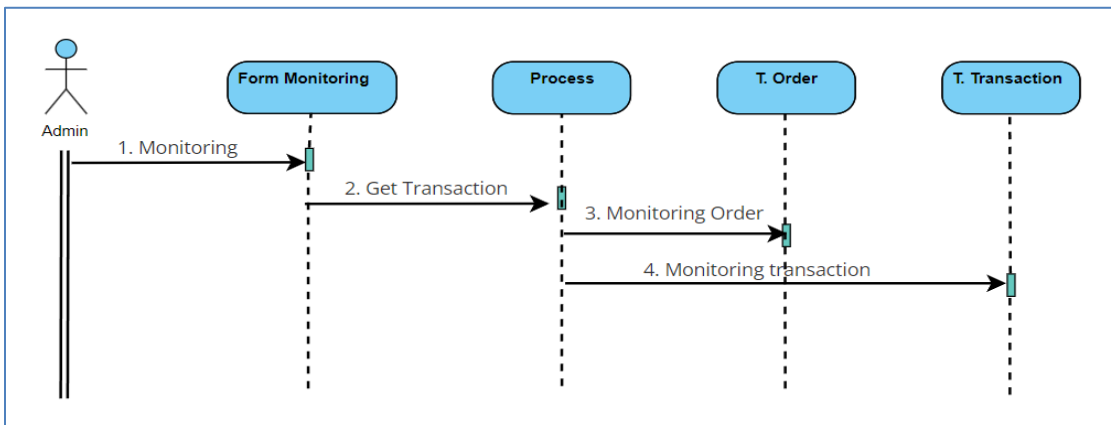


Fig 4. Sequence Diagram Monitoring

Figure 4 illustrates a scenario that depicts the interplay of several components within a business or application setting. In the present situation, a primary actor assumes an administrator's job, playing a pivotal role in overseeing and managing all consumer transactions. The administrative personnel are accountable for ensuring the efficient operation and safeguarding of all transactional procedures within the system. The diagram illustrates four lifelines that symbolize different interfaces or entities engaged in interactions inside the system. Each of these interfaces may consist of various components, such as the customer interface, payment interface, inventory interface, and report interface. The interconnection and communication between these four interfaces facilitate the execution of diverse transaction-related operations. The interactivity of this interface is implemented using four messages exchanged among lifelines. Each of the messages, as mentioned above, offers vital information about the operations that transpire within the system. The communications could encompass transactional data, inquiries for information, acknowledgments of payments, or notifications of transaction outcomes to clients.

In greater elaboration, the depicted procedure entails a consumer initiating a transaction request via the customer interface. Subsequently, the proposal, as mentioned above, is transmitted to the payment interface to undergo verification and processing of the payment. Upon completing a successful payment, the payment interface initiates

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the transmission of confirmation to the customer interface while transmitting the relevant payment information to the inventory interface. The inventory interface subsequently modifies the inventory of accessible stock items following the recorded transactions. The inventory interface transmits up-to-date data on transactions and stock items to the reporting interface, which generates a transaction report for the customer. Within the broader context and framework, the Administrator assumes a pivotal position in overseeing the procedures taking place while simultaneously upholding data integrity and security principles during each phase of the transaction. This case study demonstrates how an intricate system can be deconstructed into constituent elements that engage in synergistic interactions facilitated by an Administrator who is responsible for supervising all transactional operations.

DISCUSSIONS

What factors contribute to the practical design of a sales application system? (Research Question 1)
Developing a sales application system requires careful consideration of various variables to ensure its efficacy, efficiency, and user-friendliness. Several vital elements influence the practical design of a sales application system.

- The design of the sales application system must be by the overarching business needs. This encompasses comprehending the various categories of products or services being marketed, the methodologies employed in the sales procedures, and incorporating additional systems like inventory management, financial systems, and customer relationship management.
- The user interface (UI) design should prioritize intuitiveness to facilitate seamless interaction between the user and the system. The attainment of straightforward design, an orderly layout, and easy navigation are crucial elements in this endeavor.
- The sales application system should encompass the necessary capabilities to facilitate the complete sales cycle, encompassing order logging, payment processing, and shipment. When evaluating potential options, it is essential to consider several features, including inventory management, quote generation, order monitoring, and sales reporting.
- Integration Capability: The sales system must seamlessly link with other pre-existing systems or services inside the firm, such as accounting systems or CRM (Customer Relationship Management), to facilitate efficient workflow and ensure the appropriate dissemination of information.
- Scalability is a crucial aspect that necessitates the consideration of the system's capacity to adapt and expand in tandem with the growth of the business. This encompasses the capacity to effectively manage the growing volume of transactions and data that may occur with time.
- Safeguarding client and transaction data is a crucial consideration in the design of sales systems. Implementing robust security measures is imperative to protect sensitive data and mitigate the risk of unauthorized intrusion.
- Performance and speed are crucial factors that must be considered in the system's design. The system must deliver optimal performance and promptly respond to user requests, particularly during peak periods of heavy traffic, such as special sales or promotions.
- The capability to provide sales reports and pertinent business analytics supports managerial decision-making by providing reliable data.
- Availability and assistance: The system must be structured to maintain uninterrupted availability, and there should be provision for technical assistance to address any issues or queries raised by users.
- Maintenance and updates: The system's design should consider the simplicity of doing maintenance tasks and applying updates. This includes addressing bug repairs, improving functionality, and ensuring compliance with regulatory changes.
- The system should provide a high degree of user-friendliness, enabling users with varying degrees of technical proficiency to quickly grasp and effectively utilize its functionalities.
- The prioritization of a great user experience is essential in system design since it ensures that consumers see the selling application as comfortable and enjoyable.

Considering these criteria throughout the practical implementation of a sales application system will enhance the efficiency of the sales process and contribute to the organization's overall value proposition.

What is the nature of the actions conducted by customers and sellers within an online shop application system? (Research Question 2). Within the context of an online store application system, both customers and sellers participate

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in a diverse range of activities that contribute to the facilitation of the purchasing and selling process. This section provides a comprehensive analysis of the actions performed by buyers and sellers within the given system.

Customer Behaviour:

- The act of browsing products includes customers perusing the catalogue of products or services available on the online shop's website. Users can conduct searches, apply filters, and arrange objects according to different criteria.
- Product Selection: Customers select by including their desired products or services in their shopping basket. Customers can specify many product attributes, such as numbers, sizes, colours, and other variations.
- Adding products to the shopping cart involves customers selecting their desired items, which are placed in the cart. This allows customers to examine their chosen items before moving to the checkout stage.
- Customers initiate the checkout process to inspect the contents of their basket, input shipping, and billing details, choose a payment option, and ultimately finalize their order.
- Payment methods utilized by customers encompass a range of options, including credit/debit cards, digital wallets, and alternative online payment systems.
- Order Tracking: Following the completion of a transaction, consumers can monitor the progress of their orders, which encompasses tracking shipment and delivery particulars.
- Customer service: Customers can contact customer service to obtain assistance and inquire about orders, returns, refunds, or any other issues they may encounter.
- The feature of reviews and ratings allows customers to express their opinions and assign scores to things they have acquired, offering significant input to merchants and prospective buyers.
- Account Management allows customers to effectively manage their accounts by facilitating various actions such as updating personal information, accessing order history, and saving preferred items to Wishlist's.
- Returns and refunds are available to consumers who are unsatisfied with a purchase. Consumers can commence the return procedure and request a refund following the policies set forth by the business.

Activities Performed by Vendors:

- In the realm of product management, sellers engage in the process of inventory management by adding new products and regularly updating product details, encompassing elements such as photos, descriptions, and prices.
- Order processing involves the reception and subsequent handling of consumer orders by sellers. The individuals engaged in preparing things for shipment, generating packing slips, and updating the status of orders.
- Inventory tracking is a crucial practice employed by sellers to monitor product availability in real time. This proactive approach is essential for maintaining proper stock levels and effectively preventing the occurrence of overselling.
- Communication: Sellers can contact customers to provide updates on the status of their orders, share relevant information on shipment specifics, and address any potential concerns or delays that may arise.
- Order fulfilment involves sellers' responsibility to meticulously and promptly carry out the tasks of packaging, labelling, and shipping products to buyers, with a strong emphasis on accuracy.
- Customer service is a crucial aspect of seller-customer interactions since it involves providing support to customers through the handling of inquiries, resolution of concerns, and facilitation of returns or exchanges.
- Analytics and reporting play a crucial role for sellers as they examine sales data, monitor performance measures, and generate reports to evaluate the effectiveness of their products and detect patterns and tendencies.
- Marketing and promotions encompass the activities undertaken by sellers to develop and oversee promotional programs, discounts, and special offers to attract customers and enhance sales.
- The seller dashboard serves as a tool for sellers to monitor orders, efficiently manage products, promptly update shop information, and comprehensively evaluate sales metrics.
- Feedback management involves the practice of sellers engaging with customer evaluations and ratings to address feedback and foster positive customer relationships.

In the context of an online shop application system, the actions performed by both customers and sellers are mutually dependent and collectively enhance the efficacy and fluidity of the e-commerce process.

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What is the role of the sequence diagram in the design of a sales information system? (Research Question 3). The UML Sequence Diagram plays a pivotal part in the architecture of a sales information system, serving as a significant tool for planning, evaluating, and describing the interactions and processes that transpire inside the sales process. Within the domain of sales information systems, sequence diagrams serve as a valuable tool for visualizing the interplay and communication between diverse entities across various stages of the sales process, including customers, products, transactions, and other system components. One of the primary functions of sequence diagrams is to represent the workflow or sequence of operations that transpire within a sales system. This method aids in the comprehensive elucidation of several stages, including the selection of products, addition of products to the shopping cart, processing of payments, shipping procedures, and the confirmation of orders. Sequence diagrams offer a systematic and quantifiable representation of the sales process by illustrating a series of messages or method calls exchanged among the relevant objects. Furthermore, sequence diagrams serve to enhance comprehension of the interactions that occur between customers and sales systems. This encompasses how the customer engages with the system interface, makes product selections, provides payment details, and carries out transactions. These diagrams are crucial in designing user interfaces by aiding developers in comprehending user-system interactions, hence facilitating the creation of intuitive and responsive interfaces.

Sequence diagrams are crucial in coordinating operations across different components within the sales system. An instance diagram can exemplify the communication between an ordering component and an inventory component to verify the availability of products before order processing. Comprehending the interrelationships between the many features inside the system is crucial in attaining the ultimate objective. In addition to serving as a modeling tool, sequence diagrams also advance software development functionality. Within the domain of a sales information system, the present chart serves the purpose of discerning the requisite attributes essential for facilitating the sales process. These encompass the integration of payment mechanisms, the ability to track orders, and the provision of client notifications. In addition to their contribution to design, sequence diagrams significantly stream the sales process. Using visual representations, the development team can discern potential enhancements or optimizations within the sales process, identify stages that may result in delays or errors, and devise more streamlined solutions. Finally, sequence diagrams also function as a means of documentation and communication. The charts shown offer a lucid and all-encompassing graphical representation of the sales system's interconnections and operational processes, enhancing effective communication among members of the development team, stakeholders, and other pertinent entities. The UML sequence diagram is a valuable tool for facilitating the design of a sales information system. It achieves this by providing a detailed depiction of the interaction, workflow, coordination, and integration among the various components in the sales process.

CONCLUSION

The framework of developing an information system at the FGH Store to enhance sales, sequence, and activity diagrams are pivotal components. Utilizing these two categories of diagrams facilitates the guidance of information system design in a more organized and efficient manner. Sequence diagrams represent dynamic interactions among different elements within a system, including but not limited to consumers, products, and transactions. The focal point on action sequences and object communication offers a comprehensive perspective on the functioning of the sales process, encompassing customer engagement with the system interface, product choice, and the system's responsive actions to customer inquiries. Sequence diagrams are a valuable tool for elucidating intricate operations and discerning possible areas for optimization within the sales process. In contrast, activity diagrams offer a more comprehensive depiction of the workflow and procedures within an information system. An emphasis on activities, actions, decisions, and data flows facilitates a holistic comprehension of the dynamics between users and systems. Activity charts provide a comprehensive breakdown of the essential phases of the customer's journey, encompassing the selection of the product, the ordering process, and the subsequent shipping procedures. These charts offer a more detailed representation of the various activities undertaken throughout these stages. Hence, activity diagrams facilitate a more comprehensive and intricate design, aid in identifying crucial tasks, and enhance the seamless integration among the various components involved. Therefore, the findings derived from this design methodology suggest that integrating sequence and activity diagrams offers a comprehensive and organized perspective on how information systems might be devised to enhance sales in FGH Stores. Sequence diagrams provide insights into the dynamic nature of interactions among the many components, whereas activity diagrams comprehensively depict the overall workflow and operations. These two categories of diagrams mutually enhance each other in establishing a robust framework for developing an efficient and competitive information system, facilitating sales expansion, and improving customer service.

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