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Application of the Internet of Things in Information Resource Supply Chain Management: A Model for Information Centers in Iran

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A B S T R A C T

The aim of this research is to present a model for the application of the Internet of Things (IoT) in the management of the information resource supply chain in information centers. This research is descriptive-analytical in terms of data collection method, and inductive-deductive in its approach. Participants were selected purposefully through interviews with 15 experts and specialists with extensive service experience and advanced academic degrees in the fields of management, computer science, information technology, and knowledge sciences, based in information centers and universities in Iran. The interviews continued until theoretical saturation was achieved with 12 participants. Using a documentary study (books, articles, and related research), the initial interview questions were developed. After gathering the written responses of the participants, the process of analyzing the explicit and latent content of the collected information from the statements and writings began. The aim of this process was to extract the components of IoT application in information resource supply chain management in information centers using a qualitative approach. For the analysis of interview texts, thematic analysis was employed based on Braun and Clarke's (2006) method with the assistance of MAXQDA software. From the analysis of 15 interviews, a total of 178 initial codes were extracted. After analyzing the interview texts, 49 basic themes and 11 organizing themes were identified. In the final stage, by examining the organizing themes, five overarching themes emerged, namely logistics, production, distribution, information management throughout the supply chain, and relationship management throughout the supply chain.

Keywords: *Internet of Things, supply chain management, information centers.*

1. Introduction

For over a decade, smart products have entered the market, enabling physical objects to interact with one another through internet connectivity or other communication tools (Abadi et al., 2024). The most

important aspect of the Internet of Things (IoT) is the integration of several technologies and communication solutions. Technologies for identification and tracking, wired and wireless sensors, and active networks, along with protocols that enhance communication and the intelligence of objects, are key components of IoT (Ali et al., 2023; Rebelo et al., 2022).

IoT imparts intelligence to objects by adding data storage capacity and data collection through sensors (Rehman, 2025; Samadzad, 2024). As a result, these objects can perform independent activities based on triggers, coordinating functions, and information sharing between groups (Du, 2022; Seyyadi et al., 2021). Information technology is an essential and influential factor in the management of the information resource supply chain, playing a critical role in assisting these supply chains to address challenges in an ever-changing environment and many risks at all levels (Haleem et al., 2023; Karimi et al., 2022). Information technology significantly impacts the nature and structure of information resource supply chains due to its ability to integrate various internal processes and, most importantly, external integration with suppliers and customers. This is achieved through improved communication, data acquisition, and transmission, which facilitates effective decision-making and enhances the performance of the information resource supply chain. Consequently, the Internet of Things is one of the latest advancements and a new revolution in information technology, facilitating paradigm shifts in various fields, including information resource supply chain management (Rebelo et al., 2022; Rejeb et al., 2020).

IoT offers new capabilities and remarkable opportunities for more effective management of information resource supply chains. Data generated by smart objects, when efficiently collected, analyzed, and converted into useful information, can provide unprecedented insights into all aspects of the information resource supply chain. Moreover, it can alert to internal and external conditions that require modification (Ben-Daya et al., 2017). Additionally, IoT simplifies the flow of information for the necessary references (Vass et al., 2018). On the other hand, IoT has become one of the hottest topics in the field of technology, being considered the second major transformation introduced (Mirmohammadian et al., 2017). By embedding CPUs, memory, and energy resources, IoT can connect nearly everything to the network via applications (Vongsingthong & Smanchat, 2014). These systems are responsible for gathering information (Ersue et al., 2015).

The establishment of a robust database facilitates processes such as forecasting, planning, and the procurement and supply of information resources. Based on the issues raised, it can be stated that, so far, only a few universities and research centers in Iran have recognized the importance of this subject. According to internal studies, it can be said that the importance and potential of IoT in Iran have not yet been fully understood, and IoT applications are still limited to machine-to-machine communication or the development of technologies based on radio frequency identification (RFID). Therefore, given the importance of IoT and the advantages it can bring to various information resource supply chains, the researcher aims to answer the question: What are the indicators of IoT applications in the management of information resource supply chains and their implementation in information centers?

2. Methods and Materials

This research is descriptive-analytical in terms of data collection, and inductive-deductive in its approach. Participants were selected through purposeful interviews with 15 experts and specialists with extensive experience and advanced academic degrees in the fields of management, computer science, information technology, and knowledge sciences, based in information centers and universities in Iran. The interviews continued until theoretical saturation was achieved with 12 participants. Initial interview questions were developed through a documentary study (books, articles, and related research). After collecting the written responses of the participants, the process of analyzing the explicit and latent content of the gathered information began. The goal of this process was to extract the components of IoT applications in the management of information resource supply chains in information centers using a qualitative approach. For the analysis of the interview texts, thematic analysis was employed based on Braun and Clarke (2006) using MAXQDA software.

3. Findings and Results

In this study, out of the 15 participants, 80% (12 individuals) were male and 20% (3 individuals) were female. Among the participants, 53% (8 individuals) held a doctoral degree and 47% (7 individuals) held a master's

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degree. Regarding years of experience, 7% (1 individual) had 1 to 10 years of experience, 78% (11 individuals) had 11 to 20 years of experience, and 20% (3 individuals) had more than 20 years of experience. Additionally, 20% (3 individuals) were aged 30 to 40 years, 53% (8 individuals) were aged 41 to 50 years, and 27% (4 individuals) were aged 51 years or older.

From the analysis of 15 interviews, a total of 178 initial codes were extracted. After analyzing the interview texts, 49 basic themes and 11 organizing themes were identified. In the final stage, by examining the organizing themes, five overarching themes were identified, namely logistics, production, distribution, information management throughout the supply chain, and relationship management throughout the supply chain. These themes are presented in Table 1, which show the basic, organizing, and overarching themes extracted from the interviews.

Table 1

Basic, Organizing, and Overarching Themes Extracted from the Interviews

Overarching Theme	Sub-themes (Organizing Themes)	Themes (Basic Themes)
Logistics	Building management	Lighting control
		Smart air and humidity control
		Maintaining diverse information from various library sections
		Environmental management for decision-making
		Remote viewing of the interior and exterior of the building
	Necessary infrastructure for IoT application	Use of Wi-Fi and Bluetooth technologies
		Availability of internet bandwidth
		Use of network technologies (4G, 5G)
		Use of location-based services (e.g., GPS)
		Implementation of IoT infrastructure, connection, and network standards
	Empowering employees	Training librarians in IoT technologies
		Training librarians to utilize smart data
		Developing expertise in IoT utilization
		Training librarians on exchange protocols and content integration services
		Training librarians on cloud computing and storage
Production	Creating smart shelves	Installing electronic tags
		Electronic versions of reference books
		Visual sensors for order registration
		Providing information about each section and shelf via electronic displays
	Creating digital libraries	Data storage capability in servers
		Data processing based on cloud capabilities
		Utilization of switches for better information exchange
		Use of various sensors for better information exchange
Distribution	Tracking, locating, and inventory control	Access to library resources
		Assisting users with borrowing and returning books
		Reminder of overdue items and possibility of online payment
		Managing library seating
		Managing the number of users in the library
		Book tracking
	Intelligent inventory management	Enhancing decision-making in inventory management
		Assisting in categorizing books using IoT
		Quality control of books using IoT
Information Management Throughout the Supply Chain	Solving security challenges	Respecting intellectual property rights
		Transparency in accessing classified and manuscript documents
		Providing valid data to users
		Recovering lost or corrupted information
		Preserving user information
	Support	Sharing book and document information
		Easy access to information about books and documents

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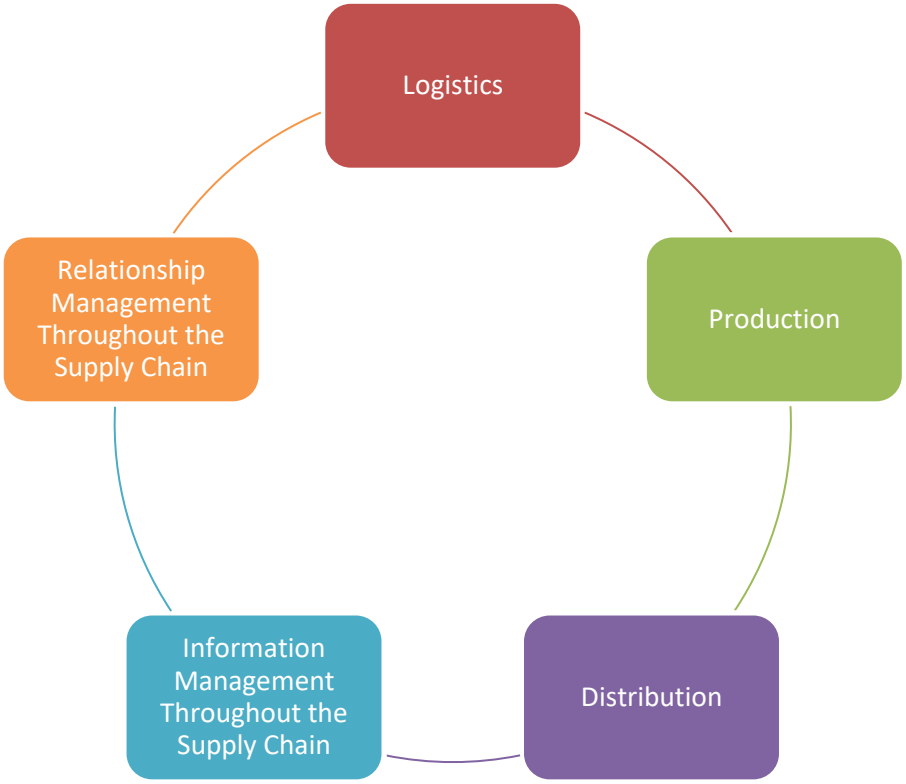
		Accurate information about the circulation of books and documents
		Smart monitoring of the storage conditions for reference and important books
Relationship Management Throughout the Supply Chain	Technological interactions	Better and more frequent interaction with users
		Assisting in better understanding user needs and behavioral patterns
		Increasing user visits and engagement
		Informing librarians about new publications
	Better services for users	Enhancing user satisfaction
		Reducing user time wastage
		Increasing the information literacy of librarians and users
		Adding value to services

Figure 1

Final Model of The Study



4. Discussion and Conclusion

The overall aim of this study is to present a model for the application of the Internet of Things (IoT) in managing the supply chain of information resources in information centers, using a qualitative approach. The general framework of this study has been designed systematically and methodically to explain this subject. Building lighting control through the Internet of Things includes smart systems that adjust the light intensity based on real lighting needs and environmental conditions. Sensors can detect the presence of individuals in a space and adjust the lighting accordingly. Smart air and relative humidity control involves sensors and devices that monitor and control the environmental conditions within buildings. Temperature and humidity sensors can measure the temperature and relative humidity, and based on the data collected, air conditioning systems can be adjusted.

To implement IoT in logistics, various infrastructures are required, each playing a vital role in optimizing and enhancing the efficiency of IoT systems. Wi-Fi enables wireless high-speed connectivity, which is essential for transferring large data and real-time updates. The extensive

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coverage of Wi-Fi networks can be used across large areas of buildings and warehouses to connect IoT devices. Bluetooth is suitable for short-range communications with low energy consumption, such as wearable devices or sensors that require the transmission of small amounts of data. Using Bluetooth Mesh, multiple devices can be connected in a network, and data can be transferred in a decentralized manner. High bandwidth is essential for transferring large data and supporting a large number of devices connected to the network. High-bandwidth internet provides stable and reliable connectivity for IoT devices, which is critical for sensitive and vital applications.

For the full utilization of IoT in managing the supply chain of information resources in information centers, empowering employees, especially librarians, plays a crucial role. Librarians should be familiarized with the fundamental concepts of IoT, including types of sensors, connected devices, communication networks, and the principles behind this technology. Training should be provided on the specific applications of IoT in library management, such as tracking information resources, optimizing lighting and ventilation, and monitoring library environments. Librarians should also be trained on data analysis from IoT devices, which involves using data analysis tools, interpreting data, and extracting valuable insights. The ability to visualize data and create understandable reports for decision-making is essential. Librarians could receive training on designing and implementing IoT systems in libraries, including selecting sensors, configuring networks, and ensuring proper system functionality. Training on the maintenance and troubleshooting of IoT systems helps librarians quickly identify and resolve issues as they arise. Librarians must learn about communication protocols commonly used in IoT and how to apply them for data exchange between devices.

The results obtained in this aspect align with prior studies (Ehsanian et al., 2021; Goel et al., 2021; Jalili et al., 2020; Nouri Hasan Abadi et al., 2020; Pal & Yasar, 2020; Rajabzadeh et al., 2021; Rashidi Torbati et al., 2021; Rebelo et al., 2022; Rejeb et al., 2020; Seyyadi et al., 2021; Shafiq et al., 2022; Shambiati et al., 2022; Zarandi et al., 2022).

The use of the Internet of Things in managing the supply chain of information resources and creating smart shelves in information centers can improve efficiency and enhance accuracy in resource management. Electronic tags can be used to precisely track the location of books and information resources on shelves. These tags store information about each book and can be scanned by electronic readers. Using electronic tags, the process of borrowing and returning books becomes faster and more accurate, as books can be automatically identified and registered. Digitizing reference books enables faster and easier access to information. Users can access digital versions via electronic devices. Maintaining and updating digital versions is easier and more cost-effective, reducing the need for physical space for storing these books. Visual sensors can be used to detect books on shelves and automatically register orders. Electronic display screens can show up-to-date information about each section and shelf, including the contents of the shelf, book information, and instructions on finding the books. These displays can help users easily locate the books and resources they are searching for, and can also provide information on the availability and lending status of books.

To fully utilize the Internet of Things in managing the supply chain of information resources and creating digital libraries, multiple infrastructures and technologies are necessary, each playing a vital role in optimizing and enhancing the efficiency of IoT systems. Storage servers must be capable of managing and maintaining large volumes of digital data, including digital versions of books, articles, images, and other information resources. Cloud technologies allow information centers to process their data in a scalable and flexible manner. Cloud computing enables the analysis of data collected from IoT devices, which can help optimize processes and improve services offered by libraries. Network switches can facilitate the fast and efficient exchange of data between IoT devices and servers.

The results obtained in this aspect align with the prior findings (Afshari et al., 2017; Jalili et al., 2020; Jamali et al., 2019; Mirmohammadian et al., 2017; Nouri Hasan Abadi et al., 2020; Rashidi Torbati et al., 2021; Razmi Shendi et al., 2019; Rebelo et al., 2022; Seyyadi et al., 2021; Shafiq et al., 2022; Shambiati et al., 2022; Zarandi et al., 2022; Zargari, 2019).

The use of the Internet of Things in managing the supply chain of information resources in information centers can improve the efficiency and accuracy of distribution, tracking, and inventory control processes. Library management systems based on IoT enable users to easily access both digital and physical library resources. These systems can keep the inventory status of books up to date and provide users with accurate information about the location and accessibility of resources. Mobile devices

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connected to the IoT library systems allow users to quickly find the resources they need and obtain the necessary information. Self-service kiosks equipped with advanced technology allow users to borrow and return books automatically. These kiosks can scan books and send their information to the central system. Handheld scanners for librarians enable them to quickly and accurately register books, simplifying the borrowing and return processes. IoT systems can automatically remind users when their due dates for returning books are approaching.

Using sensors and IoT devices to collect real-time data on the status of book inventory and information resources can provide details on the number of available books, the status of loans and returns, and the precise location of each book. By analyzing the collected data, usage patterns can be identified, and accurate predictions about future needs can be made. These analyses can help library managers make better decisions regarding the purchase, maintenance, and distribution of resources. Smart inventory management systems based on IoT automatically analyze data and provide recommendations for improving inventory management. These systems can send automatic alerts about inventory shortages or the need to purchase new resources.

The results obtained in this aspect align with the prior findings (Afshari et al., 2017; Farazmand & Ahmadi, 2015; Jalili et al., 2020; Jamali et al., 2019; Mirmohammadian et al., 2017; Nouri Hasan Abadi et al., 2020; Rajabzadeh et al., 2021; Rashidi Torbati et al., 2021; Razmi Shendi et al., 2019; Rejeb et al., 2020; Seyyadi et al., 2021; Shambiati et al., 2022; Zarandi et al., 2022; Zargari, 2019).

The application of the Internet of Things (IoT) in managing the supply chain of information resources in information centers can improve information management throughout the supply chain and address security challenges. The use of Digital Rights Management (DRM) systems connected to IoT can help control access to digital resources and preserve intellectual property rights. These systems can automatically manage access permissions and block unauthorized access. User authentication through IoT devices such as smart cards or biometric devices can ensure secure access to resources. These methods can ensure that only authorized users have access to sensitive resources. Connected monitoring systems based on IoT can control and record access to classified documents and linear records. These systems can log all access and allow administrators to identify and track suspicious activities. Technologies can also be used to track access to physical documents. Each document can be tagged so that its movement is automatically recorded whenever it is moved.

IoT-based systems can be used for automatic validation of data and information resources. These systems can verify the accuracy and authenticity of information and provide valid data to users. Creating and maintaining a list of trusted resources that are periodically reviewed and updated is essential. This list can be connected to IoT systems to deliver valid and up-to-date data to users. Using IoT-connected information management systems enables the real-time sharing of book and document information. These platforms allow users to easily access book and document information from anywhere. The development of smart and user-friendly interfaces enables users to easily access the information they need. The findings in this regard are consistent with the prior results (Afshari et al., 2017; Alagumalai & Natarajan, 2020; Ehsanian et al., 2021; Rajabzadeh et al., 2021; Rashidi Torbati et al., 2021; Tu, 2018; Xie et al., 2019).

The application of IoT in managing the supply chain of information resources in information centers can also improve relationship management throughout the supply chain and technological interactions. The creation of IoT-connected online platforms allows users to interact with the library, ask questions, and benefit from library services. The use of chatbots and virtual assistants connected to IoT can help users find the information they need and answer their questions. These systems can be available 24/7 and enhance the user experience. IoT devices can be used to collect behavioral data of users, such as borrowed books, visit times, and search patterns, which can assist in analyzing user behavioral patterns. Big data analytics techniques can be used to analyze collected data and identify user needs and behavioral patterns. These analyses can help librarians offer better services and resources based on user needs.

IoT-connected information systems can inform users in real time about new and interesting details regarding books, events, and library services. The Internet of Things refers to the connection and communication of smart devices and equipment, enabling real-time data collection and analysis. By using sensors and IoT devices, information centers can understand and predict user behaviors and needs. The application of IoT can automate many manual and time-consuming processes. For example, automatic tracking of book and information resource inventories, intelligent notifications to users about loan and return statuses, and automated reservation management can help reduce time

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waste. Smart alert systems can inform users about the due dates for resource returns, availability of requested books, or even news and events related to their interests.

Increasing the information literacy level of librarians and users with the help of IoT devices can contribute to the delivery of educational content and real-time online courses. The results obtained in this aspect are consistent with the prior findings (Alagumalai & Natarajan, 2020; Ersue et al., 2015; Goel et al., 2021; Guo et al., 2018; Pal & Yasar, 2020; Rajabzadeh et al., 2021; Rashidi Torbati et al., 2021; Razmi Shendi et al., 2019; Tu, 2018; Zarandi et al., 2022; Zargari, 2019).

Practical suggestions for implementing the Internet of Things (IoT) model in managing the supply chain of information resources in information centers include:

- Installing motion and presence sensors in rooms and halls to automatically adjust lighting based on the presence of individuals. These sensors can automatically turn off lights when no one is in the room, thereby saving energy.
- Using smart lighting systems that can adjust the light intensity based on natural ambient light. These systems can utilize data from optical sensors to adjust the light intensity according to actual needs, preventing unnecessary energy consumption.
- Installing smart thermostats that regulate temperature and humidity based on environmental conditions and the number of people in the building.
- Installing smart surveillance cameras capable of sending live images and videos to managers via mobile devices. These cameras can help managers monitor the interior and exterior of the building from anywhere at any time.
- Implementing remote monitoring systems that allow control and management of all aspects of the building (lighting, temperature, security, etc.) via the internet. These systems enable managers to monitor the building's status from any location and take necessary actions when required.
- Using location-based services, such as GPS, in mobile library equipment such as robotic devices and resource transportation tools, which can assist in accurately tracking positions and better resource management.
- Implementing security standards to protect data and prevent unauthorized access to devices and networks. Security protocols for Wi-Fi and TLS for internet communications are essential. Low-power, long-range communication protocols in libraries can help connect IoT devices over long distances with minimal energy consumption.
- Conducting practical workshops where librarians can become familiar with analyzing real data collected from IoT devices. Encouraging the use of data in decision-making and promoting a culture of utilizing smart data to improve services and managerial decision-making.
- Installing electronic tags on each book for accurate identification and tracking. These tags enable librarians to quickly and accurately check book inventory and access relevant information about each book. They can be used for automatically identifying books removed or returned from shelves, thus helping in better inventory and lending management.
- Setting up kiosks in various library areas for users to easily access electronic versions of reference books. These kiosks allow users to search and study reference books.
- Implementing automatic order registration systems that automatically log user orders and notify librarians. These systems can use visual sensor data to register orders.
- Installing electronic displays in each section and shelf to show information relevant to that section or shelf, such as book names, categories, and inventory.
- Leveraging cloud computing services for data analysis, machine learning algorithm execution, and big data management. These services can help improve efficiency and reduce costs.
- Utilizing Software-as-a-Service (SaaS) and Platform-as-a-Service (PaaS) platforms to take advantage of cloud computing capabilities. These platforms can help libraries manage data flexibly and efficiently.
- Installing high-speed network switches to ensure fast and efficient data exchange between servers and network devices, as well as using managed switches that allow precise control and configuration of the network. These switches can help improve network performance and enhance security.
- Tagging books and library resources for fast tracking and inventory management. These tags

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help both users and librarians find resources quickly.

- Creating and maintaining a database of all library resources with accurate information about the physical location of each resource, and offering advanced search software with filtering and location-based search capabilities.
- Installing smart cameras with the ability to count people at library entrances and exits to monitor the number of users present and using motion sensors in different library areas to accurately count users, while creating management dashboards that allow librarians to view real-time data on library occupancy and make decisions accordingly.
- Using data analytics tools to examine book usage patterns and predict future needs. These tools can help in better decision-making regarding the purchase and replacement of resources.
- Installing automatic scanners at various library points that can read RFID and NFC tags and automatically categorize books.
- Using Digital Rights Management (DRM) systems to control access to digital resources and prevent unauthorized copying and distribution. Conducting training sessions for users and librarians on the importance of respecting intellectual property rights and proper usage of digital resources.
- Providing periodic access reports to library management to review and ensure compliance with access policies, and using authentication systems to verify the authenticity and accuracy of resources before providing them to users.
- Developing and implementing privacy policies that specify how user information is collected, stored, and used, along with conducting training sessions for users on the importance of privacy and how to protect their personal information.
- Developing shared databases that provide access to book and document information across different libraries, enabling libraries to collaborate and share resources. Hosting data and documents on cloud platforms allows libraries to easily share resources and provides easy access to information.
- Designing and developing user interfaces that allow users to easily access book and document-related information.
- Providing advanced search tools that enable users to quickly and accurately access the information they need.
- Using artificial intelligence technologies to analyze data collected from sensors and monitoring tools and offer suggestions for improving storage conditions.
- Actively engaging in social media platforms like Facebook, Twitter, and Instagram to allow the library to interact more with users and communicate with them through these channels.
- Creating blogs or electronic newsletters that provide updates on new publications, library events, and cultural consultations, helping users stay informed about the library's activities.
- Conducting surveys to gather user feedback and analyzing the resulting data, which helps the library understand users' needs and how to improve services.
- Using data analytics tools to examine user behavior patterns and identify key user profiles, determining their needs.
- Providing cultural consulting and informational services to users in various fields, especially on new publications and available resources in the library. Offering training courses for librarians to familiarize them with new publications and advanced reading materials to offer the best services to users.
- Offering an online platform that enables users to easily reserve and borrow books without needing to be physically present in the library.
- Installing devices that allow users to quickly borrow and return books without long queues.
- Providing access to online education platforms to enhance users' information literacy and offering cultural consulting services to users to increase the added value of library services.
- For the development and scalability of the model presented in this study, it is recommended that the model be applied and tested in other organizations. Future researchers are encouraged to examine the execution infrastructure and decision-support systems in the implementation of the IoT model in managing the supply chain of information resources in information centers and other organizations.

Authors' Contributions

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All authors equally contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

Abadi, F., Jamali, G., & Ghorbanpour, A. (2024). Intelligent Management of the Supply Chain Under the Internet of Things Technology Using Fuzzy Cognitive Map Approach. *Journal of Business Intelligence Management Studies*, *12*(47), 45-77. https://doi.org/10.22054/ims.2023.73994.2337

Afshari, H., Tajfar, A. H., & Gheisari, M. (2017). Examining the applications of the Internet of Things in the supply chain. First National Conference on Advances and Opportunities in Information and Communication Technology,

Alagumalai, E., & Natarajan, R. (2020). Internet of Things and Libraries: An Empirical Study of Selected Educational Institutions in United Arab Emirates. *Library Philosophy and Practice*. https://digitalcommons.unl.edu/libphilprac/3912/

Ali, S. M., Ashraf, M. A., Taqi, H. M. M., Ahmed, S., Rob, S. M. A., Kabir, G., & Paul, S. K. (2023). Drivers for Internet of Things (IoT) adoption in supply chains: Implic ations for sustainability in the post-pandemic era. *Computers and Industrial Engineering*, *183*, 109515. https://doi.org/10.1016/j.cie.2023.109515

Ben-Daya, M., Hassini, E., & Bahroun, Z. (2017). Internet of things and supply chain management: a literature review. *International Journal of Production Research*, 1-24. https://www.tandfonline.com/doi/full/10.1080/00207543.2017.1402140

Du, J. (2022). The Impact and Challenges of the Internet of Things (IoT) on Supply Chain Management. https://doi.org/10.2991/aebmr.k.220603.202

Ehsanian, Q. A., Tahmasebi Limouni, S., & Gheiasi, M. (2021). Developing a model for the applicability strategies of the Internet of Things in Iranian libraries: A grounded theory study. *Scientific Quarterly of Library and Information Science*, *24*(95), 189-213. https://lis.aqr-libjournal.ir/article_129373.html?lang=en

Ersue, M., Romascanu, D., Schoenwaelder, J., & Sehgal, A. (2015). Management of Networks with Constrained Devices: Use Cases. https://doi.org/10.17487/RFC7548

Farazmand, A., & Ahmadi, S. (2015). Internet of Things (IoT) and its applications. First National Conference on Computer, Information Technology, and Islamic Communications in Iran,

Goel, S. S., Goel, A., Kumar, M., & Moltó, G. (2021). A review of Internet of Things: qualifying technologies and boundless horizon. *Journal of Reliable Intelligent Environments*, *7*, 23-33. https://doi.org/10.1007/s40860-020-00127-w

Guo, H., Liu, J., & Qin, H. (2018). Collaborative Mobile Edge Computation Offloading for IoT over Fiber-Wireless Networks. *IEEE Network*, *32*(1), 66-71. https://doi.org/10.1109/MNET.2018.1700139

Haleem, A., Javaid, M., Singh, R. P., Suman, R., & Khan, S. (2023). Management 4.0: Concept, applications and advancements. *Sustainable Operations and Computers*, *4*, 10-21. https://doi.org/10.1016/j.susoc.2022.10.002

Jalili, F., Famil Rouhani, A. A., & Doroudi, F. (2020). Examining librarians' attitudes toward implementing data governance strategies in resource collection planning for libraries of Islamic Azad University. *Knowledge Science Journal*, *48*, 13-25. https://journals.iau.ir/article_678964.html?lang=en

Jamali, G., Mousavi, E., & Mohammadi, M. (2019). Analyzing the relationship between the indicators of Internet of Things application in the supply chain of home appliances using a fuzzy cognitive map approach. *Scientific Journal of Smart Business Management Studies*, *7*(30), 137-162. https://ims.atu.ac.ir/article_10621.html?lang=en

Karimi, T., Azar, A., Mohebban, B., & Ghasemi, R. (2022). Developing an Internet of Things-based intelligent transportation technology roadmap in the food cold supply chain. *Industrial Management Journal*, *14*(2), 195-219. https://imj.ut.ac.ir/article_88491_eb7d4950804d1505141017108657bf14.pdf

Mirmohammadian, M., Barahliya, S., Mahmoudi, R., & Akhoundi, Z. (2017). A review of challenges and strategies for preventing issues in the Internet of Things. Tenth Conference on New Research in Science and Technology,

Nouri Hasan Abadi, K., Sobhani, A., Hashemzadeh Khorasgani, G., & Abbaspour Esfand, R. (2020). Proposing a model for improving quality using emerging technology in smart schools. *Scientific Quarterly of School Management*, *8*(1), 47-76. https://www.magiran.com/paper/2137271/presenting-a-model-for-improving-education-quality-using-emerging-technologies-in-school-smartization-a-qualitative-study?lang=en

Pal, K., & Yasar, A. (2020). Internet of Things and Blockchain Technology in Apparel Manufacturing Supply Chain Data Management. *Procedia Computer Science*, *170*, 450-457. https://doi.org/10.1016/j.procs.2020.03.088

Rajabzadeh, M., Elahi, S., Hassanzadeh, A., & Mehr Ayeen, M. (2021). Internet of Things in supply chain management: A systematic review using the paradigmatic funnel approach.

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E-ISSN: 3041-9433

Information Processing and Management Research Quarterly, *37*(1), 59-82. https://doi.org/10.52547/jipm.37.1.59

Rashidi Torbati, S., Radfar, R., & Pilevari, N. (2021). Smartening the supply chain using the Internet of Things (Case study: IT companies in Tehran province). *Strategic Management in Industrial Systems Quarterly*, *16*(58), 14-29. https://sanad.iau.ir/Journal/imj/Article/922943/FullText

Razmi Shendi, M., Norouzi, Y., & Alipour Hafezi, M. (2019). Proposing a conceptual model for using the Internet of Things in modern digital library services in Iran. *Information Processing and Management Research Quarterly*, *34*(3), 693-728. https://jipm.irandoc.ac.ir/article_699596.html?lang=en

Rebelo, R. M. L., Pereira, S. C. F., & Queiroz, M. M. (2022). The interplay between the Internet of things and supply chain management: challenges and opportunities based on a systematic literature review. *Benchmarking: An International Journal*, *29*(2), 683-711. https://doi.org/10.1108/BIJ-02-2021-0085

Rehman, A. (2025). Internet of Things in Healthcare Research: Trends, Innovations, Security Considerations, Challenges and Future Strategy. *International Journal of Intelligent Systems*, *2025*(1), 8546245. https://doi.org/10.1155/int/8546245

Rejeb, A., Simske, S., Rejeb, K., Treiblmaier, H., & Zailani, S. (2020). Internet of Things research in supply chain management and logistics: A bibliometric analysis. *Internet of Things*, *12*, 11-16. https://doi.org/10.1016/j.iot.2020.100318

Samadzad, S. (2024). Investigating the Impact of the Internet of Things on the Probability of Entry in Export Market. 167-188. https://doi.org/10.4018/979-8-3693-0210-1.ch010

Seyyadi, M. K., Safari, A., & Ghobadi, S. (2021). Prioritizing Internet of Things applications in supply chain management using a multi-criteria decision-making approach and thematic analysis. *Information Processing and Management Research Quarterly*, *37*(3), 721-748. https://jipm.irandoc.ac.ir/article_699682.html

Shafiq, M., Gu, Z., Cheikhrouhou, O., Alhakami, W., & Hamam, H. (2022). The Rise of "Internet of Things": Review and Open Research Issues Related to Detection and Prevention of IoT-Based Security Attacks. *Wireless Communications and Mobile Computing*, e8669348. https://doi.org/10.1155/2022/8669348

Shambiati, H., Shafiei Nikabadi, M., Khatami Firoozabadi, M. A., Rahmani Manesh, M., & Saberi, S. (2022). A model for optimizing information processing performance in a virtual supply chain based on the Internet of Things. *Production and Operations Management*, *13*(1), 1-24. https://jpom.ui.ac.ir/article_26307.html?lang=en

Tu, M. (2018). An exploratory study of Internet of Things (IoT) adoption intention in logistics and supply chain management: A mixed research approach. *The International Journal of Logistics Management*, *29*(1), 131-151. https://doi.org/10.1108/IJLM-11-2016-0274

Vass, T., Shee, H., & Miah, S. (2018). The effect of "Internet of Things" on Supply Chain Integration and Performance: An Organizational Capability Perspective. *Australasian Journal of Information Systems*, *22*, 1-29. https://doi.org/10.3127/ajis.v22i0.1734

Vongsingthong, S., & Smanchat, S. (2014). Internet of Things: A review of applications & technologies (PDF). *Suranaree Journal of Science and Technology*. https://www.researchgate.net/publication/308711274_INTERNET_OF_THINGS_A_REVIEW_OF_APPLICATIONS_AND_TECHNOLOGIES

Xie, K., Liu, Z., Fu, L., & Liang, B. (2019). Internet of Things-based intelligent evacuation protocol in libraries. *Library Hi Tech*, *38*, 145-163. https://doi.org/10.1108/LHT-11-2017-0250

Zarandi, M., Dehghanian, H., Sehat, S., & Mahmoudzadeh, M. (2022). Designing a human resource supply chain model for the nuclear industry. *Productivity management*, *16*(1), 51-75. https://sanad.iau.ir/journal/jpm/Article/690138?jid=690138

Zargari, M. (2019). Assessing the barriers to adopting the Internet of Things in Iranian libraries using a mixed-method approach. *Information Processing and Management Research Quarterly*, *34*(3), 1371-1398. https://jipm.irandoc.ac.ir/article_699551_en.html

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