**Unleashing the Power of IoT: Transforming Business Models, Fueling Innovation, and Navigating Digital Ecosystems**

This Special Issue welcomes submissions addressing key theories, hallmarks, drivers, outcomes, and contingency factors impacting the usage of Internet of Things (IoT) technology on business model innovation.

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**Special issue information:**

**Overview:**

Today, businesses face an increasing need to adapt to changing market demands and stay competitive. Enterprises can enhance productivity and efficiency by adopting digital transformation due to technological advancements (George & Edghiem, 2023). The fourth industrial revolution, with the integration of advanced technologies such as the Internet of Things (IoT), Artificial Intelligence (AI), and Big Data analysis, has led to the emergence of intelligent, connected, and autonomous systems, enabling manufacturers/suppliers to use data and real-time insights, optimize production processes, increase efficiency, and reduce costs. The shift towards intelligent products (Porter & Heppelmann, 2014), as well as production in the industry with digital integration, relies on the use of IoT technology (George & Edghiem, 2023).

IoT offers numerous capabilities to develop smart applications that enhance daily life and have a profound impact on the economy and society across various fields of application. The current applications cover a wide range of areas, including personal, social, industrial, medical, environmental, logistics, and beyond. Various applications of IoT can be found in different categories like industry (e.g., procurement and product life-cycle management, industrial processes, tracking, quality control, supply control, industrial facility monitoring, warehouse management, and inventory), services (e.g., traffic management, automobiles, and energy management), agriculture (e.g., agriculture and animal husbandry, irrigation monitoring, and agricultural and feed production), health (e.g., medicine and healthcare), finance and banking (e.g. retail banking, payment systems, smart banking services, and banking service personalization), entertainment and tourism (Hanafizadeh et al., 2022). In order to succeed in the application of IoT in business, it is essential to have a profound understanding of the ecosystem of the technology.

The IoT ecosystem consists of a network of hardware, software, devices, databases, objects, sensors, systems, actors, and interconnected devices that have identities, physical characteristics, and virtual personalities and use intelligent interfaces (Egwuonwu et al., 2022). Li et al. (2011) highlighted that the IoT ecosystem could help shorten the feedback circle, allowing for a faster decision-making process, which helps mitigate delay risk and improve the efficiency of transmitting information related to production, locations of goods, quality assurance, distribution, and logistics. In the IoT ecosystem, it is critical to consider the entire value network beyond the provider-customer relationship. Developing a value proposition that benefits all stakeholders is essential, even if it necessitates some modifications to current business models (https://aioti.eu/wp-content/uploads/2022/12).

**Scope and focus of the special issue**

The prevalence of IoT technology has opened up many opportunities for new business models (Turber et al. 2014). Business models based on IoT, with their value-adding role, can contribute to the success of a company (Sofia & Soldatos, 2023). With the help of digital technologies and infrastructure such as Cloud Computing, Big Data, AI[[1]](https://star.elsevier.net/admin/tasks/" \l "_ftn1" \o "), Blockchain, and the like, IoT has provided the conditions for primary processing, storage, data exchange, distributed computing, and automatic analysis of activities (Bazeliuk et al., 2023). The integration of digital technologies, innovation, and the growth of digital startups have transformed industries and business models (George & Edghiem, 2023) as IoT-related technologies (for example, RFID[[2]](https://star.elsevier.net/admin/tasks/" \l "_ftn2" \o ") tags, sensors, actuators, microchips, etc.). The nature of products, their intelligence, and connectivity have improved (Porter & Heppelmann, 2014). Many IoT sensors are used to share real-time information, which generates a large amount of data (Kim, 2023). Smart and connected products generate real-time data and allow organizations to continuously communicate with the customer through the product or service. With the help of the obtained information, new IoT-driven business models have emerged, which have additional components such as personalization compared to other business models because access to customer information enables faster and more personal contact (Dijkman et al., 2015).

These days, managing mutual relations between buyer and producer in a business has become much more complicated than before, so stakeholders face rapid changes in technology, increasing company expertise, and challenges to increase efficiency and innovation simultaneously. IoT significantly impacts the characteristics of products, services, and relationships between market actors (Falkenreck & Wagner, 2023). IoT can potentially improve the value proposition of a physical product by embedding digital services into it. In this way, monitoring and controlling operations with the help of IoT can lead to cost reduction and increased productivity. Also, data analysis and shared information from physical products may effectively influence e-collaboration. In addition, sharing data with a significant number of customers allows the supplier to create an opportunity to compare the use of products and interact with them for customers to ultimately modify the business model that benefits all stakeholders (Patricio et al., 2018). Therefore, options related to IoT may enhance or completely change the characteristics of new business concepts (Falkenreck & Wagner, 2023).

As a disruptive key technology, IoT technology can play a critical role in the activities of enterprises and economic systems (Atzori et al., 2010). From the organizational point of view, IoT-based products and services change the value chain, boundaries, and structures of the industry and create new markets and competitive value. To respond to new market requirements, organizations need to renew their strategic vision, stabilize their position, participate, develop new business models, reconfigure operational processes, and create new capabilities. Meanwhile, the adoption of IoT technology is faced with obstacles such as insufficient laws, security risks, privacy concerns, costs, data complexity, compatibility issues, lack of skills and expertise in working with the Internet of Things, gaps in technical knowledge, and weak hardware and infrastructure, which indicates the company’s unpreparedness (Falkenreck & Wagner, 2023). In the IoT-driven business model, the value proposition, relationships with customers, and key partnerships are more important than other business model components (Dijkman et al., 2015). New capabilities of smart products, new services, and their increasing reliability can boost the value provided to customers and the value gained by enterprises (Zancul et al., 2016). IoT in business improves and makes activities more agile due to the creation of quick and accurate interactions among different stakeholders. This interaction helps businesses track each enterprise’s resources, production operations, and challenges in coordination with other enterprises. Business model innovation is a vital success factor in IT service-based enterprises that compete in dynamic environments (Foltean & Glovațchi, 2021). Although IoT is an emerging and promising technology, it is complex in nature. For this reason, business model innovation based on the Internet of Things requires careful guidance of the enterprise (Yopan et al., 2022).

IoT adoption and IoT-based business development are not simple tasks, and understanding these complexities is required to survive in the competitive business environment (Metallo et al., 2018), considering the fact that the adoption rate of IoT has increased in recent years, especially after the COVID-19[[3]](https://star.elsevier.net/admin/tasks/" \l "_ftn3" \o ") pandemic. Despite the increasing trend towards business models based on IoT and the studies conducted in this area, the research related to IoT is still in its early stages. Meanwhile, with the increasing adoption rate of IoT and its gradual evolution, more opportunities are emerging for the theoretical understanding of this technological phenomenon and its commercial applications. Regardless of their area of application, theories are valuable lenses for evaluating the role of a technological phenomenon and their impacts on day-to-day business-related issues in the field of specialization (Hanafizadeh et al., 2022). By structuring the relationships between effective constructs (concepts), theory can provide a compelling argument for the whatness, whyness, and howness of different IoT functions in business and support the generation of new theoretical insights (Gregor 2006). Thus, a deep and insightful theoretical understanding of IoT is crucial for successfully deploying in the real world (Hanafizadeh et al., 2022).

In response to these developments, this Special Issue welcomes submissions addressing key theories, hallmarks, drivers, outcomes, and contingency factors impacting the usage of Internet of Things (IoT) technology on business model innovation. We welcome conceptual, methodological, qualitative, quantitative, or pluralistic contributions grounded in relevant perspectives that address issues, including, but not limited to, the following:

* Which theories can explain the value of IoT-driven business models?
* How does the IoT ecosystem affect business models and value networks?
* Which industries have successfully implemented IoT-driven business models? What are the business models, use cases, and architecture of these business models? What are their theoretical and practical implications?
* What infrastructure is needed to apply IoT for innovative business models in various industries?
* How can suppliers address customer uncertainty in an IoT-driven business model?
* How can the business models based on IoT increase the efficiency and productivity of the company? What facilities are created using this business model, for example, forecasting sales, categorizing customers based on various factors, analyzing supply chain data, etc.?
* Which management and organizational theories can explain the complexities of an IoT-driven business model?
* What are the ethical challenges and social implications of adopting IoT technology in business models, especially concerning data privacy and security?
* How do IoT-driven business models manifest differently in emerging economies, particularly in the Global South, compared to developed nations?
* How have IoT-driven business models evolved over time, and what factors have contributed to this evolution?
* What policy frameworks could support or inhibit the successful implementation of IoT in business models?
* What are the opportunities and challenges IoT brings to traditional business models?
* What is the role of big data and Artificial Intelligence (AI) in shaping IoT-driven business models? How can the application of these technologies, along with IoT, help create value?
* How can the combination of other technologies, such as blockchain, big data, cloud computing, Artificial Intelligence (AI) robotics, generative AI, and smart sensors, affect the use of IoT in business model innovation?
* How does IoT technology contribute to the innovation of service-based business models?
* What opportunities does IoT offer to manufacturing companies to develop services? What business models is this opportunity applicable to, and how will it help create value?
* What framework can be designed to describe, analyze, or classify business models based on IoT?
* How can the features of IoT enable digital transformation in business?
* What are the challenges SMEs[[4]](https://star.elsevier.net/admin/tasks/" \l "_ftn4" \o ") and enterprises face in adopting IoT, and how can they be addressed?
* What innovative strategies can be used to develop theories in empirical IoT-driven BMs[[5]](https://star.elsevier.net/admin/tasks/" \l "_ftn5" \o ")?

Some topics related to this special issue are

* IoT-driven Business Models
* AI-enabled IoT-driven Business Models
* New business models and applications of IoT in the digital economy
* Smart objects and IoT-enabled business environment
* IoT-enabled Innovation and Entrepreneurship
* IoT Applications and Industry 4.0
* Use of IoT systems for business research
* Ethical and Social Implications of IoT applicatons in business
* Case studies and theories in IoT usage in business Models development/innovation
* Perspectives of management and organizational theories in IoT studies
* The role of IoT technology in business model development
* The role of IoT in the innovation of business models
* Semantic communications for supporting business by IoT applications
* Security for IoT-based systems (industrial control, healthcare monitoring, Cyber-Physical Systems, etc.)
* Location-based services, presence, availability, and locality by IoT applications in business
* Effect of IoT mobility, localization, tracking, and security in business
* Integration of IoT and other technology with business logic
* Knowledge and information processing by IoT usage in digital business
* Applications of IoT in the digital transformation.

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Internet of Things, IoT, Industry 4.0, digital technologies, platforms, cloud Computing, Business model, Sustainable business model, Disruptive business models, Business model innovation, BMI[[1]](https://star.elsevier.net/admin/tasks/#_ftn1), Business-model modifications, Business Opportunities, Business management, Digitalization, Digital transformation, smart logistic, Innovation capability

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