

Gönderim Tarihi: 05.01.2026

Kabul Tarihi: 28.04.2026

WIRELESS TELEGRAPHY: GLOBAL EMERGENCE, STRATEGIC USES AND THE LATE OTTOMAN RESPONSE

Kablosuz Telgraf: Küresel Olarak Ortaya Çıkışı, Stratejik Kullanımları ve Geç Osmanlı Tepkisi

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Çalışmanın Türü: Araştırma

Abstract

Modern telecommunications took shape in the nineteenth century with the emergence of the electric telegraph and its expansion across wide geographies through land lines and submarine cables, fundamentally transforming communication, administration, and warfare. At the beginning of the twentieth century, wireless telegraphy introduced a new technological regime that disrupted established cable networks and reconfigured the strategic balance of global communications, expanding the military, competitive, and intelligence-related dimensions of communication. This article examines the global rise and strategic implications of wireless telegraphy, together with the Ottoman Empire's practices of adopting and employing this new technology. While the Ottoman state embraced wireless telegraphy for military, administrative, and maritime purposes, it also increasingly perceived the technology as a security risk due to its potential use in espionage. In response, a detailed guide was prepared to detect clandestine wireless installations. Drawing on extensive Ottoman and British archival sources, the study employs a historical international relations methodology to analyze wireless telegraphy within the intersecting domains of technology, imperial rivalry, internal security, and state governance, thereby contributing to the existing literature.

Keywords: Wireless Telegraph, Marconi's Telegraph Company, Espionage, Eastern Mediterranean, Late Ottoman Period

Öz

Modern telekomünikasyon, on dokuzuncu yüzyılda elektrikli telgrafın ortaya çıkışı ve kara hatları ile denizaltı kabloları aracılığıyla geniş coğrafyalara yayılmasıyla şekillenmiştir. Bu dönüşüm, iletişim hızını ve menzilinı artırarak idare, diplomasi ve savaş pratiklerini köklü biçimde yeniden tanımlamıştır. Yirminci yüzyılın başında geliştirilen telsiz telgraf ise yerleşik kablo rejimini sarsan yeni bir teknolojik düzen ortaya koymuş; küresel iletişim alanındaki stratejik dengeleri yeniden yapılandırarak iletişimin askerî, rekabetçi ve istihbari boyutlarını belirgin biçimde genişletmiştir. Bu makale, telsiz telgrafın küresel yükselişini ve stratejik etkilerini, Osmanlı Devleti'nin bu yeni teknolojiyi benimseme ve kullanma pratikleriyle birlikte ele almaktadır. Osmanlı idaresi telsiz telgrafı askerî, idarî ve denizcilik amaçlarla uygulamaya koyarken, teknolojinin casusluk ve gizli haberleşme için kullanılabilme ihtimalini giderek daha ciddi bir iç güvenlik riski olarak değerlendirmiştir. Bu kapsamda, kaçak telsiz tesisatlarının tespitine yönelik ayrıntılı bir rehber hazırlanmıştır. Osmanlı ve Britanya arşiv belgelerine dayanan çalışma, tarihsel uluslararası ilişkiler metodolojisiyle telsiz telgrafı teknoloji, imparatorluk rekabeti, iç güvenlik ve devlet idaresinin keşişiminde analiz ederek literatüre özgün bir katkı sunmayı hedeflemektedir.

Anahtar Kelimeler: Kablosuz Telgraf, Marconi'nin Telgraf Şirketi, Casusluk, Doğu Akdeniz, Geç Osmanlı Dönemi

Extended Abstract

This article investigates the global rise of wireless telegraphy and the Ottoman Empire's adoption and regulation of this technology in the early twentieth century. It approaches wireless telegraphy as a transformative communications regime that disrupted the nineteenth-century infrastructure of electric telegraphy built upon land lines and submarine cables, reshaping communication, administration, and warfare. In contrast to the cable system—whose strategic geography was anchored in fixed routes and imperial chokepoints—wireless telegraphy expanded the military, competitive, and intelligence-related dimensions of long-distance communication by enabling cable-independent transmission through the air. The study conceptualizes wireless communication not merely as an innovation in the field of communications engineering but as an integral component of imperial rivalry, state governance, and internal security.

Wireless telegraphy formed part of a longer genealogy of telecommunications, extending from optical semaphore networks to the electric telegraph and the expansion of global cable systems. The maturation of telegraphy and cable networks generated new forms of regional information and surveillance that exceeded older maritime linkages and territorial limits, thereby anticipating later

supranational forms of surveillance. Wireless telegraphy emerged from late nineteenth-century experiments building upon the foundations of electromagnetism, and by the early 1900s it experienced rapid technical development. Early components and operating principles—spark transmission, coherers, tuning practices, and later detectors—also show that wireless required not simply hardware but skill-intensive operation, calibration, and institutional training.

Great Power policymakers quickly understood wireless telegraphy as a strategic alternative to the British-dominated submarine cable regime. On the eve of the First World War, Germany, Belgium, France, and Italy invested in wireless stations across overseas possessions to reduce dependence on cables and to secure autonomous imperial links. France's interest, for example, was shaped by an extensive empire and relatively limited cable infrastructure, while naval institutions became critical actors in adopting and deploying wireless equipment. Yet the rapid spread of maritime wireless also produced problems of interoperability and control that no single state could resolve unilaterally. The Berlin discussions sought to address a fragmented wireless environment in which patent-based proprietary systems obstructed intercommunication, naval use-rights, commerce, and insurance. Technical standardization was increasingly linked to sovereignty and governance: wireless was increasingly reclassified from a private, proprietary domain into a regulated public utility through licensing, coordination, and anti-interference measures.

Against this backdrop, the article examines how the Ottoman Empire adopted and deployed wireless telegraphy for military, administrative, and maritime purposes, while simultaneously treating it as a security risk because of its potential use in espionage. Ottoman archival evidence points to an early awareness of the technology's rapid diffusion and of the regulatory demands it would generate; reports from Berlin suggested that wireless adoption in Ottoman territories would require specific legislation. The Ottoman administration also emerges as an active participant in supplier competition and diplomatic positioning. French proposals presented wireless as a means of reducing dependence on submarine cables through coastal stations and portable military sets, emphasizing confidential and uninterrupted communications under conditions of rebellion or war, when conventional lines were particularly vulnerable. German correspondence likewise stressed technical superiority and competitive pricing, underscoring how procurement negotiations were intertwined with imperial rivalry and claims to modernity.

Ottoman wireless planning was guided by a territorial-strategic logic. Proposed networks along Yemen, Asir, and the Hijaz to Aqaba were expected to reduce costs while improving the logistical and administrative integration of distant provinces, yielding military, fiscal, and coordination advantages. In the Eastern Mediterranean, the Rhodes–Tripoli/Derna project was framed as an imperial necessity, with communications policy extending even to the choice of linguistic form. Along the Red Sea, the vulnerability of conventional telegraph lines—damaged by floods, delayed repairs, and wire-cutting—reinforced the perceived need for wireless as a more reliable and secure means of maintaining communications at strategic nodes.

Ottoman documents also show sustained investment in training specialized personnel: stipends supported technical education abroad, and naval officers trained at Marconi's school to proficiency in standard sets and emergency coils. Technical assessments of Marconi equipment reported operating characteristics, selectivity under simultaneous transmissions, and the operational demand for rapid wavelength adjustment to mitigate interference—leading to proposed mechanical modifications for more immediate tuning. Wireless installation aboard major vessels, such as the cruiser *Hamidiye*, involved extensive structural and electrical modifications, formal trial procedures, and supervision by specialist engineers, thereby illustrating the infrastructural depth and costliness of adoption.

Internationally, Ottoman engagement with wireless telegraphy began at an early stage. On 7 April 1901, a conference on the applications of wireless telegraphy was held in Berlin, and Ottoman authorities were informed that this new technology was likely to spread rapidly and require specific legislation if adopted in Ottoman territories. From the early 1900s, the Ottoman administration positioned itself as a selective and strategically engaged actor within the intensifying international rivalry over wireless telegraphy. This early awareness was later followed by Ottoman participation in the 1912 London conference and the declaration of ratification of the 5 July 1912 convention by 1914, aligning the Empire with a consolidating international wireless regime. Yet wartime and mobilization intensified the security stakes. Measures restricted transmissions near Istanbul, regulated foreign warship wireless use, confiscated apparatus in the Straits, and announced the removal or dismantling of foreign ship and

establishment stations within Ottoman territory. Most notably, the Ottoman state produced and distributed an operational guide for detecting clandestine wireless installations, identifying antennas as potentially any metal object in the urban built environment and providing practical indicators of illicit transmission.

Methodologically, the article employs a historical international relations approach grounded in extensive Ottoman and British archival sources to analyze wireless telegraphy at the intersection of technology, imperial rivalry, internal security, and governance. Its overarching conclusion is that wireless telegraphy operated as a dual-use infrastructure: it strengthened state capacity and territorial connectivity even as it generated new vulnerabilities that compelled legal, administrative, and policing responses.

Introduction

Modern telecommunications, traced from optical telegraphy to overland lines and submarine cables and, by the early twentieth century, to wireless telegraphy, is treated in this article as more than a story of technical innovation. It argues that wireless telegraphy constituted a historically contingent infrastructure of power: by unsettling the established cable order, it redistributed relations of strategic autonomy, surveillance capacity, and infrastructural vulnerability. To substantiate this claim, the study analyzes Ottoman and British archival materials through a historical international relations approach, aiming to address a clear gap in the scholarship on the late Ottoman setting at the intersection of technology, sovereignty, and international regulation. The article's central purpose is to demonstrate that the meaning of telecommunications in this period was fundamentally political. Wireless telegraphy promised administrative–military continuity and greater strategic autonomy, yet it simultaneously amplified the risks of intelligence penetration and external interference, thereby creating a critical arena in which technological change became directly entangled with sovereignty, regulatory practice, and imperial rivalry.

The verb “communicate,” derived from the Latin “communicare” meaning “to share,” first appeared in French around 1370. Initially signifying participation, it later evolved to mean “transmit” news, disease, or ideas. The 1947 International Radiotelegraphic Conference defined “telecommunication” as the transmission, emission, or reception of signs, signals, writings, images, sounds, or information via wire, radioelectricity, optics, or other electromagnetic systems, emphasizing electromagnetic transmission. The history of telecommunications is often traced to optical semaphore systems developed in France, notably Claude Chappe’s state-adopted telegraph of 1793. Earlier precedents included Robert Hooke’s semaphore design in 1684 and Guillaume Amontons’s proposal to use telescopes for long-distance reading in 1690, alongside other eighteenth-century schemes. Chappe’s network relied on tower-based, line-of-sight relay stations equipped with articulated arms forming a code decipherable by telescope, and it was rapidly deployed on major routes—most notably Paris–Lille (1793–1794) and the Paris–Strasbourg axis (1798), which carried early dispatches including news of Napoleon’s capture of Malta. Under Louis-Philippe the system expanded into a Paris-centered administrative network, and by 1844 France reportedly operated 534 semaphore stations over more than 5,000 kilometers. Variants and adaptations spread across Europe, including Tsar Nicholas I’s Moscow–Warsaw link in 1838, though optical telegraphy remained vulnerable to fog and visibility constraints, limitations that reinforced the search for electrically mediated communication (Bouchet, 2012, p. 7-14).

Samuel F.B. Morse, an inventor, developed a telegraph system utilizing an electrical circuit comprising an overhead wire and ground. He devised Morse code, a system of long and short sounds corresponding to the alphabet, for transmitting messages over considerable distances. Following the successful installation of overhead wires by the Baltimore and Ohio Railroad, Morse established a communication link between Baltimore and Washington. On May 24, 1844, he presented his device to Congress, transmitting the message “What hath God wrought?” By 1866, the first transatlantic telegraph cable was laid. In the 1870s, advancements facilitated the simultaneous transmission of multiple messages. (Northrup, 2005, p. 890). Telegraphy, which necessitated the knowledge of Morse code, served as a catalyst for further

innovation. Enhanced methods incorporated an alphanumeric keyboard and the Baudot code for the transmission of distant text messages (Noll, 2001, p. 213). The Mediterranean Electric Telegraph Company established telegraphic communication between Europe, Africa, Malta, the Ionian Islands, Greece, Constantinople, India, and Australia. Its most substantial and solid submarine cable weighed eight tons per mile and surpassed 2,000 tons in total. Complementary land lines carried six distinct wires, each 500 miles long. The project was hailed as the opening section of a continuous telegraphic corridor from London—via Malta and Alexandria—to India and Australia. Its scale and public utility secured political and financial backing, ensuring its success (TNA, 1855, FO 881/712/36).

Wireless telegraphy emerged in the late nineteenth century through the work of Marconi, Karl Ferdinand Braun, Popov, and other practitioners who translated the mid-century foundations of electromagnetism established by Faraday, Maxwell, and Hertz into practical systems for radio transmission and reception (Rikitienskaia, 2024, p. 34). Telegraph and wireless technologies created regional information and surveillance networks that surpassed maritime links and the territorial nation-based system. These networks were more global than international, predating the internet's fully supranational health surveillance network (Bashford, 2006, p. 73).

British policymakers were acutely aware that rival colonial powers increasingly viewed wireless telegraphy as a national alternative to the British-dominated cable system. In the years preceding the First World War, Germany, Belgium, France, Italy, and Portugal invested in wireless stations across their overseas territories, seeking to reduce strategic dependence on submarine cables. Although these initiatives varied in scale and effectiveness, they reflected a shared perception of wireless communication as a means of securing autonomous imperial links. France, in particular, showed strong interest in radiotelegraphy owing to its extensive empire and relatively limited cable infrastructure. Prior to 1914, wireless research in France was largely driven by private innovators rather than coordinated state programmes; nevertheless, the navy emerged as a key institutional actor and began equipping its fleet with wireless sets from 1904 onward. Despite administrative delays and inter-ministerial rivalries, both the British and French empires had, by the eve of the war, established extensive—if still incomplete—wireless networks, primarily oriented toward military communication and imperial security (Headrick, 2010, p. 27-29).

1. Emergency of Wireless Telegraph

Radio waves were first observed by Heinrich Hertz in 1887. Charles Babbage envisioned computing and program control principles in 1822 with his mechanical and analytic engines. Almon B. Strowger invented the first automated telephone switching machine in La Porte, Indiana, in 1892 (Noll, 2001, p. 285). Wireless technology experienced rapid advancements during the early 1900s. Initially, radio utilized a spark to detect signals at a receiver. Sir Oliver Lodge, a physicist at University College Liverpool, pioneered the tuning of radio waves using induction coils at both the transmitter and receiver. In 1894, Lodge demonstrated the use of iron filings as a radio wave detector, commonly referred to as a coherer. Subsequently, in 1906, H. H. Dunwoody and G. W. Pickard developed the quartz crystal detector, also known as the “cat’s whisker.” In 1904, J. Ambrose Fleming at University College London invented the diode vacuum tube and demonstrated its capability to detect radio waves (Noll, 2001, p. 101-102).

Guglielmo Marconi, a key figure in wireless history, leveraged his entrepreneurial skills and connections in the British Parliament to sell his spark radio system to the Post Office, spreading it globally. His charisma, public speaking, business acumen, and strategic conquests of the British Empire’s overseas territories helped him reach a significant portion of the global market. (Rikitienskaia, 2024, p. 47). Marconi, born in Bologna, Italy, in 1874, moved to England in 1896 to further develop his work on wireless telegraphy. His early experiments in Italy, conducted with a Hertz-type spark transmitter, demonstrated the significance of the

grounded antenna and ground-wave propagation. In 1897 he founded the Marconi Wireless Telegraph Company, and in 1901 successfully transmitted the first transatlantic wireless signal from England to Newfoundland, followed by a complete message in 1902. For his pioneering contributions to wireless communication, Marconi was awarded the 1909 Nobel Prize in Physics, shared with Karl Ferdinand Braun (Noll, 2001, p. 102).

G. Marconi filed the world's first patent for wireless communication in England in 1896, but it took nearly fifty years for all ships to acquire wireless equipment (Harlaftis & Kardasis, 2000, p. 253). Experts observed a successful trial across the Bristol Channel, envisioning its potential to communicate with remote light vessels and lighthouses. In 1901, the first wireless signals crossed the Atlantic, heralding a twentieth-century technology and a robust solution for remote communication. These instances show how expert counsel improved shipping and safe navigation systems. While some improvements were technical, legislation and regulation relied heavily on scientific expertise. However, familiar factors limited regulatory change, especially the *laissez-faire* approach to private industry and the emphasis on individual and institutional responsibility (Jackson, 2023, p. 163). The wireless network was designed for point-to-point communication, a tool of imperialism that transmitted information from colonizers to colonized regions. The Marconi Company's Imperial Scheme aimed to establish a global wireless telegraphy network within British colonies. The Marconi chain map visually represented wireless telegraphy as intersecting lines, unlike radio broadcasting maps that depicted stations as points encircled by circles, signifying their capacity to disseminate information in all directions (Rikitianskaia, 2024, p. 38).

The stipulation that assistants teach those in charge highlights the skill-intensive nature of Marconi-era wireless stations. Colonial administrations could not rely solely on hardware procurement; effective operation required transferring codified procedures and tacit know-how. By embedding training in the supply agreement, the metropole treated wireless as a socio-technical system whose reliability depended on competence in calibration, traffic discipline, and routine fault diagnosis. Thus, capacity-building, not just equipment delivery, was crucial for successful adoption (TNA, 1899, CO 152/251/36197). These micro-level imperatives of training and operational competence were embedded in—and shaped by—a broader imperial contest over long-distance communications, spanning submarine cables and their wireless rivals after 1902–1903. The completion of two transpacific communications systems marked a pivotal moment in the new century. This period witnessed intensifying technological competition, with a more equipped and increasingly assertive German challenge—especially in submarine telegraphy—that fed into pre-war rivalries. Wireless telegraphy reconfigured the political economy of cables, and the German initiative, prominent in the early twentieth century (Giuntini, 2020, p. 47).

Operational experience indicated that Marconi-era wireless telegraphy delivered dependable maritime communication over the requisite ranges, with routine two-way exchanges accomplished entirely by radio between shore and vessels at anchor. Messages could be passed rapidly without reliance on shore cables, improving responsiveness in port approaches and roadsteads. The consistent completion of traffic over the stated distance implies sufficient transmitter output, receiver sensitivity, and disciplined operating procedure, while repeatability across days points to system robustness under ordinary sea conditions. In sum, wireless telegraphy functioned as an immediately useful, cable-independent medium for maritime communications rather than a merely speculative technology (TNA, 1899, ADM 116/575/4301).

By 1903, the rapid expansion of maritime wireless telegraphy had generated problems of interoperability and control that exceeded the capacity of any single state. In response, Germany convened a preliminary conference in Berlin in August 1903, where most Great Powers accepted draft provisions for international regulation, including compulsory intercommunication among proprietary systems such as Marconi and Telefunken. Britain, however, adopted a

cautious stance, as the government lacked statutory authority to impose such obligations on British stations. The Berlin Convention sought to remedy a fragmented wireless regime that hindered Admiralty use-rights, maritime commerce, and insurance by addressing the non-interoperability created by patent-based systems. Its central objective was to remove strategic bottlenecks along imperial routes through mandatory interworking and reciprocal access. In this sense, the conference proved pivotal: it marked Britain's gradual shift toward rules-based interoperability, linked technical standardization to state sovereignty through traffic control and anti-interference measures, and acted as a catalyst for domestic legislation aligning national law with emerging international commitments (TNA, 1906, CAB 37/85/93).

The British state coordinated legal and technical strategies to curb Marconi's monopoly. Captain Jackson's 1897 Penarth trials, along with Oliver Lodge's work, undermined Marconi's claims of novelty. The Crown argued that only a limited set of items fell within Marconi's patents, while major subsystems were derived from alternative designs. The Navy adopted a composite installation to minimize royalty exposure while ensuring operational uptake. Early wireless policy aimed to balance private intellectual property against public procurement and readiness, favoring competitive, engineer-led solutions over a single-vendor monopoly (TNA, 1899, ADM 116/575/7404). Before the 1904 Act, the Postmaster-General's monopoly was limited to territorial waters, allowing anyone to set up wireless stations and communicate with ships freely. This pre-legislative era saw unlicensed shore and shipboard communication outside territorial limits without prior authorization. In Britain, a centralized licensing regime was established, making it illegal to install or operate wireless telegraph apparatus within the Britain or aboard British-flag vessels without a license. The statute aimed to enhance wireless utility for national defense and public communication through coordinated oversight and prevent a private monopoly. It reclassified wireless from a fragmented proprietary domain to a regulated public utility, aligning technical deployment with administrative control and competition policy (TNA, 1906, CAB 37/85/93).

Marconi saw wireless as a way to communicate with ships at sea. By 1907, many ocean liners had Marconi equipment, but the Titanic disaster in April 1912 led the government to require wireless equipment for all ships (Noll, 2001, p. 122). Liner services developed extensive agent networks to secure port facilities, manage cargo and passengers, and relay information to company headquarters through postal services and, later, the telegraph. Market intelligence transmitted via these agents enabled shipowners to issue direct instructions to tramp captains, enhancing operational efficiency while progressively eroding the traditional autonomy of ship masters—a process further accelerated by wireless telegraphy. As shipping markets expanded and became more interconnected, competition intensified, particularly given the high capital requirements of steamships and the prevalence of multi-vessel ownership within liner systems. Characterized by high fixed costs and vulnerability to demand and price fluctuations, the liner industry thus gravitated early toward collusive arrangements as a means of securing long-term stability (Maria Fusaro & Amélia Polónia, 2010, p. 195).

In 1906, the British Empire, recognizing the advanced autonomy of its Dominions, sought their admission to the wireless telegraphic regime. This was accomplished by reciprocally granting France, Germany, the United States, and Russia five votes for specific possessions (Myers, 1937, p. 440). Marconi proposed a network of wireless stations 1,600 kilometers apart across the British Empire in 1906, but the Colonial Office deemed it radical. Other governments were more interested. By 1911, Marconi's Wireless Company operated stations in Ireland and Canada. At the Imperial Conference, Sir Joseph Ward proposed an "Imperial Wireless Chain" from Britain to New Zealand. In response to the critical role of wireless telegraphy in social, commercial, and defensive endeavors, the conference passed a motion to establish a network of British State-owned wireless stations throughout the Empire. The pressure of intense competition made the swift implementation of this system imperative in 1912; Marconi's Wireless Company and the United Kingdom Post Office reached an agreement to establish 83

stations stretching from Britain to South Africa and Singapore. Concurrently, Australia and New Zealand established their own stations independently. However, only two stations were completed in the early phase of the scheme: one at Leafield, near Oxford, and another, hastily completed in late 1914, at Abu Zabal, near Cairo (Headrick, 2010, p. 26).

2. Operating Principles of Wireless Telegraph

British wireless policy classified stations into three power categories—low, medium, and high—each associated with distinct fiscal and operational priorities. Low-power stations were excluded from naval funding and left to local defense planning, while medium-power stations were prioritized due to their importance in protecting British trade. High-power stations, conceived as elements of an imperial shore-to-shore chain rather than instruments for ship communication, were not to interfere with maritime signaling; nevertheless, they were endorsed as supplementary inter-imperial channels so long as their location and use conformed to overarching strategic requirements. The policy established range-based technical and operational baselines by ship type and working wavelength. It set ship-to-shore reception at approximately 500 miles for men-of-war and about 200 miles for merchantmen on mercantile wavelengths; for long-range reception, it cited roughly 700–800 miles for merchant ships and up to 1,500 miles for large warships. Merchant vessels were noted to lag behind naval units owing to shorter masts and inferior equipment. A Service set fitted with shore-type masts was treated as the standard station, assumed receivable at approximately 800 miles by day for warships and around 500 miles for merchant vessels (TNA, 1914, ADM 1/8380/151, p. 4-9; 10-14).

A wireless telegraph set consisted of four principal components—power supply, transmitter, receiver, and recording apparatus—integrated into a compact spark-coherer system. The transmitter was powered by a multi-cell accumulator, while the receiver operated on a dry-battery circuit. Transmission was achieved by closing the primary circuit of an induction coil via a Morse key, producing high-tension sparks across a gap that excited the aerial and radiated damped electromagnetic waves through an earth return. Reliable operation depended on mechanical and dielectric stability ensured by insulated fittings and robust housings. On reception, incoming radio-frequency signals rendered the coherer conductive, activating a relay that operated the recorder or alarm and simultaneously triggered a tapper to restore the coherer's high resistance. Circuit stability was maintained through non-inductive shunt resistances, allowing clear Morse signals to be recorded on a standard ink. Routine tests and protective casings ensured reproducible performance, portability, and durability under service conditions (TNA, 1899, ADM 116/575/7085, p. 1-2).

The receiving front end of early wireless installations centered on a filings coherer, coupled to the aerial through a small step-up transformer (jigger) and associated choke coils. Incoming radio-frequency impulses abruptly reduced the coherer's resistance, enabling a local battery-driven relay circuit to actuate the recorder, after which an electromagnetic tapper restored the tube to its high-resistance state and allowed successive signals to be received (ADM, 1899, 116/574/7215). Given the sensitivity of coherer-based reception to moisture, insulation failure, and stray coupling, contemporary naval practice prescribed that an efficient wireless set be housed in a dedicated "Telegraph Office" aboard modern vessels: a sheltered compartment, preferably between decks, located within roughly fifty feet of the aerial take-off and as close to it as practicable. The office was to be connected to the fore bridge or signal house by voice-pipe or telephone and fitted with a fixed bench or locker for the instruments. Particular attention was devoted to the aerial lead, which was to pass through ebonite plates and be sleeved in ebonite tubes at deck and bulkhead penetrations, supported at bends by non-conductive insulators, and kept clear of metalwork unless adequately insulated. Moisture-exclusion measures—ebonite rings, paraffin-wax packing, and watertight glands protected by steel casings at deck exits—were explicitly specified to preserve signal integrity and operational safety under maritime conditions (TNA, 1899, ADM 116/575/28948).

The apparatus was designed for rapid assembly and routine use, with printed instructions intelligible to any Torpedo Officer; once initial calibration was completed, no further adjustment was required, and the set demanded only minimal attention comparable to other standard electrical fittings, provided the prescribed directions were followed (TNA, 1899, ADM 116/575/7085). To support standardized testing and readiness, it was recommended that Clarke's patent Electric Gas Lighter be incorporated into the Navy's wireless outfit as a portable spark source for receiver checks. Trials identified the lighter as a particularly efficient means of verifying receiver sensitivity in the absence of ship or shore transmissions, addressing a recurrent operational requirement. Its formal adoption would enable uniform testing practice across the fleet, facilitate routine calibration and readiness checks, and allow rapid fault isolation without reliance on external signals (TNA, 1899, ADM 116/575/7280).

Ottoman archival records include detailed technical assessments of wireless equipment supplied under contracts with the Ottoman Government. A report addressed to Captain Osman Sadi after trials at Marconi's Chelmsford works outlined the operating characteristics of shipborne installations, highlighting the synchronous fixed-note disc used with motor-alternators. It noted that the standard 1.5-kW set produced roughly 100 sparks per second, whereas the 3-kW motor-alternator reached up to about 600 sparks per second, with only limited frequency fluctuation. The synchronous disc was presented as producing a clear single note signal free from parasitic overtones, a feature cited to justify its selection for both ship and shore stations in line with Admiralty practice. For reception, a Multiple Tuner paired with a Magnetic Detector was said to cover approximately 100–2,500 meters and to offer strong selectivity against interference; trials reportedly enabled the separate selection and reading of multiple simultaneous "plain aerial" signals. The report also addressed tuning and operational flexibility: in response to Osman Sadi's request for rapid wavelength shifts under interference, the firm proposed mechanically linking the tuner condensers to permit near-instantaneous variation, thereby converting wavelength adjustment from a calculated procedure into a simple operational action. (BOA, 1911, HR.SFR.3 651/86).

3. Effects on the Ottoman Empire

On 7 April 1901, a conference was held in the hall of an institution named the 'Society of Electricity and Electrotechnics' in Berlin, dealing with applications of wireless telegraphy and the results and principles that had been obtained in Germany. Since it was understood that this new invention would develop and spread rapidly, and that, if adopted and implemented in Ottoman territories, it would necessitate numerous regulatory measures, a summary of the conference together with photographs of the wireless telegraph apparatus was forwarded by the Ottoman Embassy in Berlin. In this context, the Ottoman authorities were informed that wireless telegraphy was expected to spread quickly and would give rise to a need for specific legislation (BOA, 1902, Y.MTV 225/130).

From the early 1900s, the Ottoman administration positioned itself as an active arbiter within the intensifying international rivalry over wireless telegraphy. In 1903, the French firm Société Française des Télégraphes & Téléphones Sans Fil submitted an informational memorandum and proposal on wireless telegraphy to Ambassador Münir Pasha, explicitly framing the technology as a means to reduce dependence on submarine cables through a combination of coastal stations and portable military sets. The proposal emphasized the advantages of wireless communication for securing confidential and uninterrupted links for both the navy and the army, particularly under conditions of rebellion or war, when conventional telegraph lines were vulnerable to disruption (BOA, 1903, Y.MTV 245/129). This openness to alternative suppliers and technical solutions is further underscored by correspondence from a German wireless-telegraph company in 1905, which sought assurances that the Sublime Porte had not yet finalized contracts with either Siemens & Halske or the Gesellschaft für drahtlose Telegraphie, System Telefunken. The firm requested that the Ottoman military attaché in Berlin, accompanied by engineers, be permitted to inspect its factories and claimed that its system

represented the most technically advanced wireless technology then available. Stressing price competitiveness, it contrasted its revised offer of 3,200 marks per mobile military station—reduced from an initial quotation of 5,000 marks following Ottoman demands for technical simplification—with rival stations allegedly costing up to 11,000 marks per unit, which it argued offered no corresponding technical advantages (BOA, 1905, HR.ID 2001/93).

Preparations were underway for a general conference to be held in Berlin, at which a preamble to a convention on wireless telegraphy and a comprehensive set of regulations governing communications were to be drafted. The issue was scheduled for deliberation in the Meclis-i Vükelâ, and the relevant authorities were instructed to take the necessary steps both for participation in the Berlin conference and for the subsequent notification and implementation of the general regulations to be adopted (BOA, 1904, HR.ID 1679/1). At the same time, it was noted that the Ottoman Empire's decision to participate would be shaped by the extent to which other invited states chose to attend the conference, indicating that Ottoman engagement in such international regulatory initiatives remained contingent upon broader diplomatic alignment and collective participation (BOA, 1904, BEO 2402/180127).

In anticipation of the rapid development and diffusion of wireless telegraphy, it was proposed—at the initiative of the German Government—that a general principle be established whereby all states would enjoy equal rights in the use of this technology, a principle that was to be accepted by the other powers as well. It was considered that, should the Ottoman Government concur with this assessment, such equality could be secured through the conclusion of a bilateral treaty regulating the common interests arising between the two states (BOA, 1905, BEO 2545/190848). From the Ottoman perspective, the strategic value of wireless telegraphy was further underscored by plans to establish coastal stations along Yemen, Asir, and the Hedjaz, extending as far as Aqaba. Such a network promised to reduce the substantial costs associated with maintaining submarine and land cable lines—particularly during periods of troop movement—while simultaneously integrating Yemen, Asir, Sa'da, and the Hedjaz into a unified communications system. This enhanced connectivity was expected to strengthen administrative coordination and mutual links between these regions, yielding significant military, fiscal, and logistical advantages (BOA, 1905, Y.MTV 280/46).

Owing to its strategic position in the Eastern Mediterranean, Tripoli was envisaged as being linked more securely to Anatolia through the establishment of a wireless telegraph system. In this context, it was stipulated that telegrams transmitted over this network be drafted and conveyed using Turkish characters, a requirement formally communicated to the Ministry of Post and Telegraph (BOA, 1906, ZB 20/46). In a separate communication from the Grand Vizierate, the construction of a wireless telegraph line between Rhodes and Tripoli was presented as an imperial necessity, justified both by the exalted will of the Sultan and by the perceived obligations of the Caliphate to conform to the demands of the age (BOA, 1905, BEO 2480/185979). To this end, it was proposed that two wireless stations be established between a selected point on Rhodes—connected to the existing cable-telegraph line at the quay of Mersin—and Derna, the closest locality in the province of Tripoli, together with the construction of telegraph offices at both Rhodes and Derna and the laying of the necessary connecting lines (BOA, 1904, BEO 2449/183613). To support the implementation of this projected link, two officials were assigned to complete their training at a wireless telegraph center in Germany, with a view to serving at the wireless telegraph stations to be established between Derna and Rhodes. They were granted a monthly allowance of 400 marks and a return travel allowance of 500 marks (BOA, 1905, BEO 2533/189952).

Even before the outbreak of war, these projected wireless links had already become a matter of strategic concern for the Ottoman government. The Ottoman authorities became alarmed upon learning that a Marconi wireless telegraph apparatus purchased from Siemens in Austria had first been shipped to Malta by a European steamer and then forwarded by an Italian mail steamer to the Italian consul in Derna, Benghazi. The chief concern was that it might be

used either to sabotage the projected wireless communications between Derna and Rhodes or to intercept information transmitted through that connection (BOA, 1905, DH.MKT 939/1/1). On 28 September 1911, the Italian Government issued a 24-hour ultimatum to the Sublime Porte, announcing its decision to occupy Tripoli and Benghazi and demanding that the Ottoman Empire refrain from resistance. When the Ottoman Government responded in conciliatory terms, the Italian Government declared war on 29 September. Italian forces landed in Tripoli and subsequently captured Tobruk, which they considered strategically important. Derna and Homs were bombarded, and Benghazi also fell under Italian occupation. Despite its powerful navy and army in the Mediterranean, however, Italy was able to occupy only the coastal areas of Tripoli and Benghazi and was unable to advance into the interior. As a result, the Italians turned toward the Aegean Islands and the Dardanelles. Using the island of Stampalia as a base, the Italian navy bombarded the wireless installations and towers around Chios, Alaçatı, and Ilıca in an effort to destroy the Ottoman Empire's communications infrastructure. Italian ships also cut the Imbros–Dardanelles, Lemnos–Bozcaada, and Lemnos–Thessaloniki telegraph cables, inflicting serious damage on the communications network that the Ottoman Empire could have used in the Tripolitanian and Balkan Wars (Mete, 1998, p. 265-270).

Parallel concerns arose on the Red Sea coast, where Arakan served as a key node for telegraph and maritime traffic. Reports stressed the chronic vulnerability of the conventional lines linking this important military position to neighboring posts: seasonal floods repeatedly damaged infrastructure and disrupted routes, repair efforts were slowed by inadequate transport, and tribal groups sometimes cut or removed wires. These conditions underscored the fragility of the existing communication network and the danger that distant garrisons could be isolated for prolonged periods, depriving central authorities of urgent intelligence. Ottoman officials therefore increasingly framed wireless installations at strategic points as necessary to secure continuity and reliability in communications across both the Mediterranean and the Red Sea (BOA, 1908, Y.PRK.KOM 16/29).

The training of specialized personnel in wireless telegraphy constituted a sustained priority of the Ottoman administration in the early twentieth century. By imperial decree, the chief clerk of the Foreign Accounts Office of the Ministry of Post and Telegraph and the Director of Post and Telegraph—selected for technical training at wireless-telegraph stations in Germany—were granted a monthly stipend of eight hundred marks, to be disbursed through the Ottoman Bank. A subsequent memorandum issued by the Ministry of Finance confirmed that these payments would be met from revenues already allocated within the existing budget, underscoring that the acquisition of expertise in wireless telegraphy was treated as an integral and planned component of state expenditure rather than an extraordinary outlay (BOA, 1905, İ.PT 20/28). This commitment to technical training persisted into the following decade: from the 1910s onward, officers of the Ottoman Navy were sent to the Marconi Wireless Telegraph School in Liverpool/Seaforth, where they achieved full proficiency in the 1.5 kW Marconi set and, in the principles, governing the Emergency Coil Set. Their progress was reported to have reached the required standard, providing clear evidence that, on the eve of the First World War, the Ottoman Navy was engaged in institutionalized training and systematic technology transfer aligned with contemporary Marconi standards (BOA, 1911, HR.SFR.3 629/40).

According to the observations of Kolağası Osman Said, who examined wireless-telegraph installations during his training at the Marconi works in England, wireless communication relied on powerful electrical sparks propagated through the air, which generated substantial noise and interference. He reported that the disc discharger used in spark transmission was manufactured in two forms—enclosed and open—both driven by the dynamo. While the factory favored the open type on grounds of reduced cost and claimed that it was sufficient, and in some respects superior, even for multi-kilowatt installations envisaged for the Ottoman Navy, Osman Said noted that the open disc produced intense noise and wide-ranging interference that impeded neighboring stations. In his assessment, these deficiencies could only be mitigated through the

use of the enclosed disc in combination with a dedicated silencing box (BOA, 1911, HR.SFR.3 629/28). Parallel documentation concerning personnel training indicates that five Ottoman officers sent to the Marconi Wireless Telegraph Company were subjected to a graded instructional programme. Upon arrival, they were divided into three functional categories: mechanics responsible for apparatus repair, operators tasked with shipboard operation, and technical experts charged with supervising systems, diagnosing faults, and establishing new ship stations. Two officers received hands-on workshop training and certificates endorsed by the Works Manager, while three completed a formal course in Liverpool and obtained certificates from the school principal. All five observed and assisted in the erection and testing of 1.5-kW and 3-kW disc transmitting sets and were provided with instruction sheets detailing tuning procedures and full technical descriptions. Taken together, these records demonstrate that the Ottoman Navy combined critical technical evaluation of Marconi equipment with an institutionalized, tiered training regime encompassing operation, maintenance, and higher-level technical supervision (BOA, 1911, HR.SFR.3 652/68).

The Ottoman Navy moved toward institutional centralization of wireless services by appointing a foreign specialist. The Marconi Wireless Telegraph Company proposed Engineer H. Dobell as chief of the Wireless Department, highlighting his university training, firm experience, and expertise in both high- and low-power stations, alongside his capacity for independent work and technical negotiation. The appointment was framed as a two-year chiefship covering all naval wireless services (annual salary £450), with travel and subsistence funded by the government and fixed compensation for service-related death or disability. Marconi reported Dobell's acceptance and his readiness to depart Spain once Istanbul confirmed the terms; on 2 August 1911 the Ottoman Naval Attaché confirmed ministerial approval and expected his arrival (BOA, 1911, HR.SFR.3 653/37).

Archival correspondence relating to the cruiser *Hamidiye* indicates that the installation of wireless telegraphy involved not merely the supply of equipment but a broader programme of structural and electrical modification. It was reported that contact had been established with Mr. Thornycroft concerning the alterations to be undertaken on board the vessel, and that an official price quotation was awaited by telegraph; once received, the cost was to be communicated to Istanbul without delay in order to obtain formal approval. The Marconi Company's agent in Istanbul was likewise notified so that any subsequent difficulties could be addressed locally. It was explicitly noted that the total expenditure would exceed initial expectations, since the work extended beyond equipment delivery to encompass comprehensive on-board modifications (BOA, 1911, HR.SFR.3 652/33). At the same time, the factory director of the Marconi Company reported that all tests for the 3-kW wireless installation ordered for *Hamidiye* had been completed and that the equipment was scheduled for dispatch on the steamer departing that week, with a second 3 kW set to follow immediately upon completion. Efforts were also being made to ensure the prompt shipment of the 1.5 kW installation fitted with the enclosed-type disc discharger. These arrangements indicate that the programme to equip the Imperial Ottoman Navy with wireless telegraphy was proceeding without interruption (BOA, 1911, HR.SFR.3 652/78). In accordance with contractual provisions, it was further arranged that a Marconi engineer would embark on *Hamidiye* to supervise the installation of the apparatus during the cruise, after which a special commission convened in Istanbul would conduct the formal acceptance of the system following a designated trial period (BOA, 1911, HR.SFR.3 629/113).

Following deliberations within the higher councils of the Ministries of Post, Telegraph, and Telephone, the Ottoman Government resolved to participate in the international wireless telegraph conference convened in London in response to an invitation received in June 1912. To this end, a draft imperial decree (*irade-i seniyye*) was prepared authorizing the attendance and negotiations of Mohammad Emin Bey, head of the ministry's technical board, Fikri Bey, deputy director of Telegraph Affairs, and Captain Osman Said Efendi, appointed by the Ministry of the Navy (BOA, 1912, MV 227/120). Subsequent correspondence underscores the international

legal consolidation of the wireless regime: in a letter dated 10 February 1914, the British Foreign Office informed the Ottoman Government that, in response to its earlier memorandum concerning ratification of the London International Wireless Telegraph Convention of 5 July 1912, a printed list of the signatory states and their ratification status was being forwarded. This list showed that a wide range of states—including the United Kingdom and its dominions, as well as several European and non-European powers—had already ratified the convention, while others had not yet done so; such updates were reported to have been regularly communicated to the Sublime Porte via the British Embassy in Istanbul. On the eve of 1914, therefore, the convention's international legitimacy had expanded considerably, and in its reply, the Ottoman Government formally declared that it, too, had ratified the convention (BOA, 1914, HR.SFR.3 707/14).

Expenditures on wireless telegraphy, whose growing utility for the Ottoman naval forces was already widely acknowledged, were formally classified as extraordinary (wartime) expenses (BOA, 1908, HR.TH 370/21). This assessment acquired heightened urgency during the First World War, when the Ottoman Empire increasingly recognized its dependence on wireless communication. The repeated cutting and destruction of frontier telegraph lines, and the consequent disruption of communications, revealed that daily operational losses had reached a level that necessitated the construction of protective arrangements to secure links between Aleppo, Mosul, and Basra. In this context, it was explicitly stated that the procurement of wireless telegraph apparatus and related equipment, together with the rapid establishment of the requisite stations, was indispensable and had to be undertaken without delay (BOA, 1915, DH.ID 121/22).

4. The Use of Wireless Telegraphy for Espionage Purposes

With the aim of enabling the Devlet-i Aliyye to benefit from the developed Marconi system of wireless telegraphy and to establish relations with the company in question, the Ottoman Embassy in Rome forwarded documents submitted by the firm's local representative, including a memorandum and annexes detailing the invention and its advantages. Following the receipt of this material by the Ministry of Foreign Affairs, together with a related communication from the Ministry of the Navy, the Grand Vizierate instructed that the necessary steps be undertaken (BOA, 1914, BEO 2375/178094). Parallel to these initiatives, a mazbata addressed to the Ministry of Post, Telegraph and Telephone emphasized the need to define the legal framework governing the establishment of wireless telegraph and telephone stations within Ottoman territory and territorial waters, including procedures for expropriation where required, the conditions and regulations to which such installations would be subject, and the identification of violations. To this end, a draft law was prepared and submitted together with an explanatory memorandum, with the intention that it be provisionally implemented in the first instance and subsequently presented for formal enactment (BOA, 1914, MV 236/48).

Owing to the near-continuous transmissions originating from stations in the port of Istanbul in the immediate vicinity of the center, together with the wireless activity of foreign mail steamers, embassy vessels, and merchant ships, operations at the Okmeydanı central station were frequently disrupted. To address this congestion, it was requested that postal and embassy vessels, when necessary, conduct their communications via the Okmeydanı wireless station, while merchant ships be strictly prohibited from engaging in wireless transmission once they had moved approximately thirty to forty miles away from Istanbul (BOA, 1912, HR. ID 1689/11). In parallel, specific regulations were introduced governing foreign warships anchored in the port of Istanbul, permitting them to use wireless telegraphy only at designated times and on the explicit condition that such transmissions did not interfere with the wireless traffic of the Imperial Army (BOA, 1912, BEO 4118/308839). Owing to the necessity of increasing wireless-telegraph communications as a result of mobilization, the wireless telegraph apparatus on board vessels to be halted in the Straits was to be taken into custody by the Straits commanders and returned to the ships when they left the Straits. The Grand Vizierate ordered that the necessary

measures be carried out accordingly (BOA, 1914, HR.SYS 2186/79). It was communicated by the Ottoman Government to those powers whose vessels were present in the port of Istanbul that the wireless telegraph installations on board their ships were not to be used, and that, should such equipment be detected, it would be dismantled. As a general measure, the Porte further announced that radiotelegraph stations located in foreign establishments and on foreign ships within Ottoman territory would be removed (BOA, 1914, HR.SYS 2186/82).

According to general inquiries conducted by the Ministry of the Interior in matters of public security, it was established that a considerable number of wireless-telegraph stations were operating in various localities within the Ottoman Empire, some of them having been installed clandestinely. Given that these stations were transmitting information concerning the movements of land and naval forces, the authorities deemed it necessary to intensify investigations and to conduct them with greater rigor (BOA, 1914, EUM.6Şb 2/31). In order to facilitate the detection and investigation of such clandestine installations, a special guide prepared by a dedicated commission, setting out the essential points to be observed, was distributed to the provinces (BOA, 1914, DH.EUM.MTK 82/64). Subsequent correspondence from the Directorate of Emniyet-i Umumiye to the Ministry of the Interior reported that investigations and precautionary measures were being carried out in accordance with this guide, and that the necessary actions were being implemented in cooperation with local officials (BOA, 1914, DH.EUM.KLU 6/26).

The Ottoman guide “Telsiz Telgraf Vasıtasıyla Casusluk – Gizli Bulunan Telsiz Telgraf Teçhizatını Keşfe Hadim Rehber” framed wireless telegraphy as a vulnerability in internal security as much as a military communication tool. Intended as an operational manual, it instructed officials on detecting clandestine installations, stressing that short-range espionage could be conducted with small and unobtrusive equipment. The guide identified the aerial as the critical element, noting that over limited distances almost any metal object could serve as an antenna; hence inspectors were advised to treat diverse urban and architectural features—lightning conductors, pipes and gutters, poles, chimneys, flagpoles, and inconspicuous wires—as potentially suspicious, especially when attachments were deliberately placed below the most visible points.

Receivers were deemed harder to detect than transmitters because simple crystal sets required only minimal components and could be concealed easily; indoor water and gas-pipe networks were highlighted as “natural antennas,” making lavatories and similar spaces plausible sites. Transmitters, by contrast, could betray themselves through abnormal power draw, including streetlamp flickering in Morse rhythms. Overall, the guide recast wireless security as a matter of regulatory control and infrastructural surveillance, extending from traffic discipline to buildings and urban electrical networks (BOA, 1914, DH.EUM.6Şb 2/24).

Writing to Istanbul on behalf of the Société Française des Télégraphes & Téléphones Sans Fil, Victor Popp expressed his intention to introduce and establish wireless telegraphy in the Ottoman Empire, presenting secrecy as a key advantage on the grounds that messages exchanged between two stations could not be intercepted through intermediate tapping. The letter thus indicates that communication security had already emerged as a salient concern in debates over the adoption of wireless technology (BOA, 1904, Y.PRK.PT 23/86).

5. Conclusion and Discussion

Wireless telegraphy was a historically contingent infrastructure of power that disrupted the nineteenth-century cable regime and expanded the military, competitive, and intelligence dimensions of modern communications. This study suggests that, for states at the dawn of the twentieth century, the pivotal question was not merely whether wireless technology was technically feasible, but how it reshaped sovereignty, strategic autonomy, and the governance of information.

On a global scale, the Great Powers rapidly adopted wireless communication as a national-imperial alternative to a British-dominated submarine cable system. Investments by Germany, France, Belgium, Italy, Portugal and others across overseas possessions were driven by a common objective: reducing strategic dependence on cable routes and securing autonomous imperial links. The drive toward wireless also produced early governance problems—interoperability, patent monopolies, and traffic control—that exceeded any single state's capacity, prompting the Berlin discussions and the gradual move toward rules-based coordination and licensing regimes. In this respect, the article's international-relations framing is especially productive: wireless appears as a technology whose value was inseparable from law, standardization, and regulatory authority.

Within this contested environment, the Ottoman case emerges as neither passive imitation nor simple "late" adoption, but rather an adaptive, strategically alert engagement with multiple suppliers, regulatory forums, and military-administrative use cases. Archival evidence presented here indicates that Ottoman authorities followed European developments closely and positioned themselves as an active arbiter amid intensifying inter-imperial competition. Ottoman openness to alternative technical solutions is visible in the reception of proposals from French and German firms, where wireless was explicitly framed as a means to reduce dependence on submarine cables and secure confidential, uninterrupted military communications—especially in rebellion or war, when conventional lines were vulnerable. Price and procurement politics likewise appear as integral to "technology transfer": Ottoman demands for simplification and competitive pricing shaped offers and counterclaims among rival companies.

Ottoman wireless policy was shaped by a geographically strategic logic. Plans to establish coastal stations along Yemen, Asir, and the Hijaz—extending as far as Aqaba—were aligned with fiscal and logistical considerations. The stations were designed to cut the costs of maintaining cable and land lines during troop movements while integrating remote provinces into a more cohesive communications network. Similarly, the Rhodes-Tripoli/Derna scheme was framed as an "imperial necessity," while the Red Sea case underscored the vulnerability of conventional lines—flood damage, inadequate transport infrastructure, and wire-cutting—thereby reinforcing the perceived need for wireless continuity and reliability. Taken together, these episodes support a central evaluative claim: for the late Ottoman state, wireless telegraphy served a dual purpose, simultaneously addressing military-administrative challenges created by infrastructural fragility and functioning as a strategic response to inter-imperial competition over communications corridors.

Wireless adoption was a socio-technical process, not reducible to procurement. The evidence on training regimes—stipends for technical formation abroad, naval officers' instruction at Marconi's school, and tiered specialization in operation, maintenance, and higher-level supervision—shows institutionalized capacity-building as a planned component of state expenditure and readiness. The discussion of Ottoman technical evaluation of Marconi equipment (spark rates, wavelength selectivity, interference problems, and requested mechanical modifications for rapid wavelength adjustment) further underlines that Ottoman actors were not simply consumers but evaluators negotiating usability under operational constraints. The "Hamidiye" case adds an important operational dimension: wireless installation required not only equipment but structural and electrical modifications, commissioning procedures, and on-board supervision by specialist engineers, with costs exceeding initial expectations.

At the level of international governance, the Ottoman decision to participate in the Berlin and London wireless telegraph conferences indicates that the Empire pursued wireless hardware procurement alongside legal-institutional integration into an emerging international wireless regime. This, in turn, reinforces the article's broader argument that sovereignty in the communications domain was increasingly mediated both by the consolidation of international legal frameworks and by domestic regulation.

Finally, a particularly distinctive contribution concerns wireless as a security problem. The Ottoman state's measures—restricting shipboard transmissions near Istanbul, regulating foreign warships' wireless use, confiscating apparatus in the Straits during mobilization, and announcing removal/dismantling of foreign ship and establishment stations—illustrate how the technology's perceived “freedom from tapping” also created new anxieties about surveillance and espionage. The guide produced for detecting clandestine installations is especially revealing it conceptualized the antenna as potentially “any metal object” (pipes, gutters, lightning conductors, poles), emphasized the near-invisibility of simple receivers, and even proposed reading rhythmic dimming of streetlamps as a Morse-pattern indicator of illicit transmissions. In evaluative terms, this material allows the conclusion that the Ottoman state's encounter with wireless accelerated a practical “security turn” in communications governance: regulating spectrum and apparatus became an everyday problem of policing urban materiality and infrastructural systems.

Wireless telegraphy in the late Ottoman context functioned as a dual infrastructure: it enhanced connectivity by enabling military, administrative, and maritime continuity, even as it generated new threats in the form of espionage, interference, and uncontrolled transmissions. This duality makes wireless a fruitful object for historical international relations, linking technological change to imperial competition, legal and regulatory frameworks, internal security practices, and the everyday governance of communication.

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Conflict of interest statement: I declare that I have no financial relationship with any person or institution that may be a party to this study; therefore, I declare that there is no conflict of interest.

Support and acknowledgements: This research was funded by the TÜBİTAK 2219 International Postdoctoral Research Fellowship (Project No. 1059B192400116), entitled “The Impact of Logistics Infrastructure Elements in 19th Century Eastern Mediterranean Port Cities on the Development of International Trade and Relations”, and was conducted during a visiting appointment at the University of Cambridge.

Contribution Statement: 100% of the research design, data collection, analysis, and writing were carried out by the author.