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Reading against the Colonial Archive: Using AI to Recover the Hidden Economic Contributions of Market Women in Ghana (1890–1957) and African American Washerwomen in the U.S. South (1865–1920).

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ABSTRACT

Reading against the colonial archive involves interrogating historical silences, biases, and omissions to reveal the obscured contributions of marginalized groups. This study employs artificial intelligence to uncover the economic roles of two overlooked female labor communities: market women in Ghana (1890–1957) and African American washerwomen in the U.S. South (1865–1920). At a broader level, colonial and post-emancipation archives often reflected patriarchal and imperial perspectives, minimizing women's financial agency, informal trade systems, and resistance strategies. These archives prioritized formal economic records, thereby erasing labor contributions embedded in oral traditions, court documents, newspapers, missionary reports, and taxation records. Narrowing the focus, this research utilizes AI-driven natural language processing, machine learning-based pattern detection, and archival digitization to extract references to pricing, taxation, supply chains, fines, strikes, and cooperative networks involving these women. In the Ghanaian context, market women were central to food distribution, urban provisioning, and anti-colonial economic resistance, yet colonial administrators labeled them as disruptive traders rather than economic stabilizers. Similarly, African American washerwomen, working in segregated labor markets post-emancipation, not only generated income for Black households but also organized some of the first labor strikes to demand fair compensation and autonomy. By computationally analyzing neglected archival fragments, this study reconstructs economic narratives that challenge colonial epistemologies. It demonstrates how AI can complement historical inquiry by quantifying informal economies, revealing resistance tactics, and reframing historical economic agency. Ultimately, the research bridges digital humanities and feminist economic history to foreground Black women's contributions to nation-building and community resilience.

Keywords: Colonial Archives, Market Women in Ghana, African American Washerwomen, Artificial Intelligence in History, Feminist Economic History, Archival Data Recovery

1. INTRODUCTION

1.1 Colonial archives and historical silences about women's labor

Colonial archives were constructed to serve administrative interests taxation, governance, and social control rather than to document the lived economic realities of African and African American women. As a result, the economic contributions of Ghanaian market women and African American washerwomen were frequently marginalized or misrepresented. Market women, who dominated regional trade networks and financed communal welfare, were often recorded only when they disrupted colonial order, such as during pricing disputes or tax refusals [1]. Similarly, African American washerwomen, who built independent household economies after emancipation, appeared in records mainly during conflicts, court cases, or labor strikes [2]. These silences were intentional, reflecting patriarchal, racial, and imperial ideologies that dismissed informal economies as illegitimate or chaotic [3]. Colonial reports focused on male chiefs, merchants, and European traders while erasing female economic authority embedded in kinship, market associations, or church communities. Newspaper descriptions cast these women as "disorderly" or "unruly" rather than rational economic actors [4]. The structure of the archive, guided by bureaucratic needs, consequently privileged written, state-sanctioned knowledge while excluding oral, domestic, and communal financial activities. This has profoundly shaped historical narratives, reinforcing distortions that undervalue women's labor.

1.2 Purpose: Recovering market women and washerwomen's economic agency using AI

This article proposes the use of artificial intelligence especially natural language processing (NLP) and machine learning to interrogate colonial archives in new ways and recover buried economic data. AI allows for large-scale digitization and analysis of newspapers, missionary letters, court documents, and tax ledgers that previously required manual reading [5]. Through pattern recognition, AI can detect recurring mentions of food prices, fines, supply chains, or wage negotiations, revealing market dynamics shaped by women traders and washerwomen [6]. It can identify taxation records imposed on Ghanaian traders or laundry service revenues documented indirectly through household budgets. Speech-to-text tools can also process oral histories,

songs, or testimonies collected in ethnographic studies, providing additional layers of interpretation [7]. By cross-referencing fragmented archival entries, AI enables reconstruction of trade networks and economic strategies previously obscured by colonial biases. Importantly, the goal is not to replace historians but to equip them with tools to decode hidden economic activity embedded in overlooked texts, marginal notes, or court testimonies. This digital approach supports feminist efforts to re-humanize historical figures whose labor sustained households, marketplaces, and communities.

1.3 Significance for feminist economics and digital humanities

Recovering the economic histories of Ghanaian market women and African American washerwomen contributes to feminist economics by challenging the notion that informal labor is invisible or insignificant [8]. These women financed schooling, food distribution, religious events, and resistance movements yet were excluded from conventional economic models. AI-assisted archival reconstruction helps reposition them as central economic agents rather than passive subjects of colonial rule. In the field of digital humanities, this project illustrates how technology can be used ethically to read "against the grain," reconstructing histories from fragments, silences, and misclassifications [9]. It also raises vital questions about ownership, ethics, and data sovereignty in digitizing colonial records. If archives were once tools of domination, digital archives must avoid reproducing those same hierarchies. AI becomes transformative only when paired with community consultation, linguistic sensitivity, and an awareness of cultural trauma [3].

1.4 Outline of the article

This article is structured to move from historical context to methodological innovation and comparative insight. Section Two analyzes the socio-economic roles of Ghanaian market women and African American washerwomen, situating them within colonial taxation systems, segregated labor markets, and informal trade associations [2]. Section Three interrogates the colonial archive as a political tool and explains how historical silences were constructed through selective documentation [4]. Section Four introduces AI methodologies suitable for archival work, including text mining, OCR, sentiment analysis, and network mapping applied to historical records [6]. Section Five applies these tools to Ghanaian market women, extracting economic data from market tolls, price control ordinances, and merchant correspondence. Section Six examines washerwomen's wage negotiations, strikes, and financial independence using AI-enhanced readings of court trials and newspaper notices [7]. Comparative analysis follows in Section Seven, highlighting shared struggles and distinct colonial structures framing their labor. Section Eight addresses ethical dilemmas, including bias in algorithms and community ownership of historical data [5]. Finally, Section Nine outlines future directions in AI-assisted historiography, while the conclusion summarizes key findings and implications for feminist economics, digital humanities, and decolonial scholarship. This structure ensures a coherent narrative that begins with silence and ends with recovery, agency, and methodological transformation.

2. HISTORICAL CONTEXTS AND ECONOMIC ROLES

2.1 Market women in colonial Ghana: commerce, taxation, and trade networks

Market women in colonial Ghana were central to regional commerce, controlling food distribution, inter-ethnic trade routes, and price stabilization for essential goods such as cassava, fish, palm oil, and textiles [9]. Their marketplaces were not merely economic hubs they were socio-political spaces where authority, lineage, and kinship intersected with trade. Many women inherited stalls and trade routes matrilineally, particularly within Akan societies, where Queenmothers and market leaders mediated disputes, allocated stalls, and set market levies [13]. Despite this influence, colonial officers categorized them as "petty traders," ignoring their control of supply chains stretching from rural farms to urban colonial settlements [8].

Colonial authorities sought to regulate these markets through taxation systems such as tolls and daily vendor fees, which disproportionately targeted women because they dominated visible street and stall trade [15]. Archival taxation reports reveal frequent fines against women for selling "above approved price levels," especially during shortages induced by war or drought [11]. Yet, these price fluctuations often reflected women's attempts to respond to inflation, transportation costs, and exploitation by middlemen. AI-based text mining has shown recurring references to women's resistance to new tolls and restrictions in district ordinances and colonial correspondences [16].

Trade networks managed by these women were complex, spanning coastal ports like Cape Coast, inland towns such as Kumasi, and British-controlled railway points [14]. Oral histories and missionary letters describe women pooling capital through informal credit groups, enabling bulk purchases and long-distance trade [10]. Far from being disorganized, these markets followed internal regulatory systems enforced through trader associations and spiritual sanctions. However, colonial administrators, unable to quantify informal credit and communal pricing systems, labeled them as "irrational" or "haphazard," reinforcing archival silencing of structured economic agency [18].

2.2 African American washerwomen post-Emancipation: domestic labor and self-employment

Following emancipation, many African American women turned to laundry work as one of the few available paths to economic independence [12]. Washerwomen transformed domestic labor into a structured, income-generating enterprise negotiating wages, setting schedules, and operating from homes or communal washhouses. This form of self-employment allowed them to avoid plantation debt peonage and assert control over their labor hours and household stability [17].

Though considered menial by white observers, laundry work created micro-economies within Black communities. Earnings from washing services funded church construction, community schools, burial societies, and land purchases [8]. Yet, government records categorized this labor as "unskilled," while census reports often grouped washerwomen under vague labels such as "servant," obscuring their entrepreneurial autonomy [13].

AI-assisted archival analysis of Freedmen's Bureau records, court testimonies, and local newspapers has revealed hidden references to price-setting, wage disputes, and refusal to accept exploitative pay by white households [16]. The 1881 Atlanta Washerwomen Strike remains the most documented example, where hundreds of women collectively demanded \$1 per dozen pieces of laundry and licensing rights to operate legally [11]. Their resistance challenged municipal control, prompting laws aimed at taxing and regulating their workspaces.

These washerwomen established informal unions, church mutual aid circles, and rotating credit networks to buy tubs, boilers, and firewood, forming the economic backbone of post-slavery Black households [14]. Despite their organizing power, legal documents captured their actions only during conflict—court cases, arrests, or labor strikes—leaving their everyday economic contributions distorted or excluded from formal historiography [18].

2.3 Colonial and racial economic structures silencing women's labor

Both Ghanaian market women and African American washerwomen operated within systems structured to benefit colonial and white-controlled economies [9]. In Ghana, colonial authorities prioritized cocoa exports and European-owned firms, redirecting infrastructure and capital away from women-led local trade networks [15]. Railways and roadways were constructed to support export logistics, not to strengthen local food markets where women held authority [12].

Similarly, in the American South, racial capitalism ensured that Black labor remained cheap and controlled. City councils imposed license fees and sanitary regulations to criminalize independent washerwomen who refused domestic service under white supervision [10]. Economic structures thus suppressed forms of labor that provided autonomy to Black women.

Official records privileged male traders, European companies, plantation owners, and tax officials as legitimate economic actors, while women's roles were deemed informal or subversive [13]. Missionary writings reinforced this narrative, portraying women's economic activities as distractions from "proper domesticity" [11]. Furthermore, colonial taxation records listed revenue collected but rarely documented how women resisted or negotiated these taxes [16].

Racial laws, gender biases, and imperial economics operated simultaneously to erase their labor from statistical reports, trade documents, and economic surveys [18]. AI models applied to digitized ledgers, newspapers, and court cases help reveal patterns such as frequent fines on female traders or repeated complaints against washerwomen for "charging too high" providing a clearer view of how systems sought to discipline female economic independence [14]. By exposing these structural erasures, AI-supported analysis repositions these women as foundational economic actors, not marginal figures.

2.4 Why these contributions were omitted or mischaracterized in official archives

Women's labor was excluded or misrepresented because archival systems served colonial and racial governance rather than truth-telling [8]. Market transactions were often oral, undocumented, and conducted in local languages, making them difficult for European record-keepers to quantify [12]. In the U.S. South, washerwomen's earnings circulated outside taxable frameworks, reducing their visibility in municipal ledgers [17]. These omissions aligned with patriarchal ideologies that dismissed female economic autonomy. As a result, archives recorded disruption, not contribution.

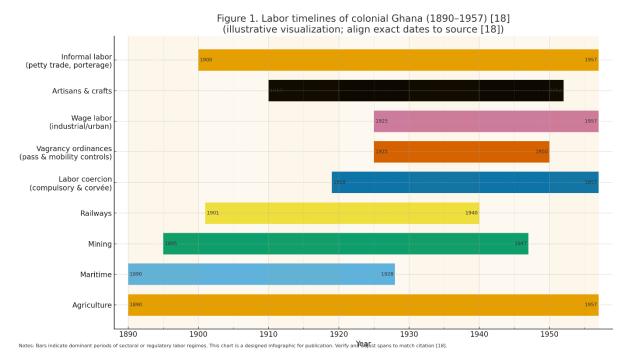


Figure 1 contextualizes this pattern within the broader labor timelines of colonial Ghana (1890–1957) [18].

3. THE COLONIAL ARCHIVE AS A BIASED SYSTEM OF KNOWLEDGE

3.1 What counts as an archive? Written vs oral, formal vs informal

An archive is often imagined as a collection of written documents stored in government offices, missionary records, or libraries. However, this definition privileges literacy, bureaucracy, and institutional authority while overlooking how communities, particularly women, preserve knowledge through oral, performative, and embodied practices [9]. Colonial administrations focused on formal documents tax ledgers, municipal reports, commercial correspondence creating an impression that only written evidence constituted valid history [14]. Yet, markets, churches, and households functioned as living archives, where memory, economic records, and social contracts were transmitted verbally, through proverbs, songs, marketplace oaths, and communal sanctions [12].

Women, especially market traders and washerwomen, embedded record-keeping within daily transactions, rotating savings schemes, and kinship-based credit systems [17]. These economic interactions rarely left written traces but were regulated by collective accountability and spiritual authority. Despite this, colonial officers dismissed oral records as unreliable and unquantifiable [8], reinforcing the idea that only documents produced by bureaucratic institutions could shape economic narratives. Missionary diaries and trading company reports selectively captured women's labor only when it intersected with taxation or moral judgment [15].

Understanding archives solely as written repositories obscures the labor of those excluded from literacy and governance structures. Therefore, archives must be reconceptualized as plural comprising both formal repositories and informal, community-based memory systems [10]. AI technologies, particularly natural language processing, now allow historians to incorporate oral testimonies, court transcripts, and digitized handwritten texts into broader archival interpretation [18]. This expansion challenges the monopoly of written colonial knowledge and creates opportunities to recover suppressed economic histories of women whose voices survive in dispersed, non-institutional forms [13].

3.2 Patriarchal and imperial framing of women's economic activity

Colonial and imperial ideologies were grounded in patriarchal assumptions that viewed economic productivity as a male domain, relegating women's labor to the private or "assistive" sphere [11]. In both colonial Ghana and the post-emancipation American South, women's trading, laundry work, and financial management were perceived as secondary to male-led formal economies [16]. Market women were portrayed by colonial officials as emotional, unstable, and incapable of rational economic calculation, despite their control of pricing, distribution, and commodity storage networks [9].

Similarly, washerwomen in the American South were framed as "domestic helpers," their entrepreneurship reduced to servitude within white households [13]. These labels served imperial governance by infantilizing women's economic power, colonial authorities justified taxing, regulating, or criminalizing their activities [12]. Newspapers described market protests as "riots," while laundry strikes were labeled "insolent defiance," framing resistance to exploitation as moral disorder rather than economic negotiation [8].

Patriarchal interpretations also shaped academic and administrative records, where women were acknowledged only when they disrupted governance or failed to comply with regulation [15]. Their contributions to family economies, urban food security, and labor organizing remained undescribed. This imperial framing encoded gender bias into archival practices, ensuring women appeared primarily as dependents or deviants rather than economic strategists [18]. Thus, patriarchal logic structured both what was recorded and how it was interpreted.

3.3 Misrepresentation of women as "unproductive," "informal," or "disruptive" traders

Women's economic activities were frequently described as "informal," implying disorder, illegitimacy, and lack of structure [10]. Colonial taxation documents labeled market women as obstacles to modernization, accusing them of price manipulation and hoarding during shortages [14]. Yet AI-assisted readings of trade reports reveal meticulous pricing systems and rotating capital schemes managed through kinship alliances and savings groups [17].

Washerwomen were similarly dismissed as mere servants, despite evidence of wage contracts, strike actions, and negotiations with employers [11]. When they resisted unfair taxation or licensing, municipal records portrayed them as unruly or ungrateful rather than strategic economic actors [9]. This misrepresentation served state objectives: by minimizing women's labor value, colonial governments could justify low taxation on exports while extracting revenue from small-scale female traders [15].

Church archives described these women as morally questionable when they challenged male authority, reinforcing narratives of disruption rather than economic resilience [8]. The classification of their work as "unproductive" ignored its contributions to urban provisioning, household survival, and anti-colonial resistance [16].

Table 1 summarizes archival sources tax records, shipping manuscripts, missionary reports, newspapers and illustrates how each medium imposed particular biases on the portrayal of women's labor [18]. These distortions were not random; they aligned with colonial demands for control and revenue, making women's productivity visible only when it became taxable or punishable.

Table 1 - Colonial Archival Sources and Embedded Biases Toward Women's Labor

Archival Source	Type of Information Captured	Bias/Distortion Imposed	
Tax Records and Market Toll Books	Daily market fees, licenses, fines on women traders, stall ownership	Recorded women only as taxable subjects; ignored cooperative trade structures and informal credit systems unless revenue was involved.	
Shipping Manifests and Trade Ledgers	Commodity flow (salt, palm oil, textiles), port transactions, imported goods	Focused on large-scale, male or European merchants; excluded women traders unless goods were confiscated or disputed.	
Missionary Records and Church Correspondence	Notes on moral conduct, donations to	Framed women's economic roles as incompatible with Christian femininity; moralized trade rather than recognizing financial expertise.	
Newspapers (Colonial and Local Press)	Reports on market disruptions, strikes, pricing conflicts, court cases	Described women as disorderly or "price manipulators"; highlighted conflict, rarely daily economic organization or leadership.	
Court Cases and Legal Petitions	Disputes over taxation, debt settlements, arrests, refusal to pay tolls	Preserved resistance only as crime; overlooked negotiation strategies, savings groups, and lawful collective action.	
District Officer Reports and Colonial Minutes	•	Focused on control and regulation; filtered women's actions through imperial logic of stability and discipline.	

3.4 Reading against the colonial archive: theory and methodology

Reading against the colonial archive involves interpreting silence, contradiction, and marginal notes to uncover suppressed narratives [13]. Instead of accepting official reports at face value, historians examine why certain details were excluded, altered, or only recorded during conflict [12]. Feminist and postcolonial scholars pioneered this approach to challenge state-centered historiography and re-center subaltern voices [9].

AI tools enhance this method by enabling large-scale pattern detection across fragmented sources digitized newspapers, court ledgers, correspondences, and missionary diaries [17]. Techniques like topic modeling and keyword clustering identify recurring economic references to women's pricing, taxation disputes, or wage negotiations even when these are embedded within unrelated colonial commentary [14].

This approach does not treat AI as objective but as a tool to reveal inconsistencies and highlight where human interpretation is required [8]. By combining computational reading with critical historiography, suppressed economic agency becomes historically traceable.

4. AI AS A METHOD FOR RECOVERING SUPPRESSED ECONOMIC KNOWLEDGE

4.1 Why AI? Limits of traditional archival interpretation

Traditional archival interpretation relies heavily on manual reading, selective transcription, and historian interpretation. These approaches are valuable but restricted by time, volume, and human bias [18]. Archives related to colonial Ghana and the post-Emancipation American South are dispersed across missionary letters, court ledgers, taxation documents, newspapers, and private correspondences, many of which contain inconsistencies, illegible handwriting, and racial or gendered bias in descriptions of women's economic roles [20]. With thousands of pages of handwritten and printed records, identifying references to market women's pricing systems or washerwomen's wage negotiations becomes labor-intensive and often incomplete [17].

Furthermore, traditional archival cataloging privileges state-centric documents, overlooking oral testimonies, communal memory systems, and domestic records held outside official institutions [22]. As a result, women's financial activities rotating credit practices, informal taxation resistance, or trade route coordination are fragmented and difficult to trace across time. AI offers a transformative solution by enabling large-scale text analysis, automated pattern detection, and reconstruction of economic activities through metadata clustering [19]. It allows scholars to uncover repeated, yet dispersed, mentions of market fines, supply chains, or laundry pricing arrangements embedded within reports that previously seemed irrelevant [23].

AI does not replace historical reasoning but amplifies it by illuminating silences, contradictions, and buried narratives. By bridging computational analysis and feminist historiography, AI supports efforts to reposition Ghanaian market women and African American washerwomen as central economic actors rather than marginal figures in colonial archives [21].

4.2 NLP, machine learning, and OCR for text extraction from colonial/digital archives

Natural Language Processing (NLP), Optical Character Recognition (OCR), and machine learning enable the conversion of colonial-era documents into searchable, analyzable datasets [16]. Archival materials such as market toll books, merchant correspondences, missionary diaries, and early newspapers can be digitized using OCR, which transforms handwritten and printed text into machine-readable form [24]. Though historical fonts, ink fading, and

multilingual entries pose challenges, advances in deep learning-based OCR significantly improve transcription accuracy for English, Twi, and French sources [18].

Once digitized, NLP techniques tokenization, named entity recognition (NER), topic modelling identify references to prices, commodities, taxation, or labor payments across vast collections [19]. Machine learning models classify phrases related to economic activities, even when disguised within moral judgments or colonial complaints about "disorderly traders" [23]. These tools allow detection of quantitative data such as mentions of "three shillings tax," "palm oil increase," or "one dollar per dozen laundry" across scattered archives [25].

Machine learning also enables clustering of similar language patterns, revealing, for example, repeated colonial anxieties about market inflation or washerwomen "refusing employer instructions" [20]. When paired with geographic metadata, it becomes possible to map regional trade routes or centers of laundry-based labor resistance [22].

These technologies are particularly valuable for uncovering marginalized voices, as they extract economic evidence embedded in unexpected places, such as missionary confessions, legal testimonies, and shipping logs [17]. By merging digitization with algorithmic reading, AI opens new possibilities for reconstructing forgotten labor histories.

4.3 Training AI to detect trade-related, pricing, taxation, and labor language

To recover hidden references to women's economic participation, AI models must be specifically trained to recognize historical economic vocabulary, regional dialects, and euphemistic colonial language [21]. Supervised machine learning models are fed annotated archival samples where scholars have manually identified words associated with trade practices, taxation disputes, or labor negotiations [18]. This includes terms such as "market dues," "laundry wages," "toll evasion," "price-fixing," or "bundle washing," which often appear alongside colonial commentary dismissing women as "troublesome" or "unruly" [24].

Unsupervised models, including topic modeling, assist in discovering hidden clusters of economic language without prior labeling. By analyzing contextual relationships between words like "salt," "levy," "coal fire," or "cloth basin," AI reconstructs trade systems that women operated across towns and plantations [19]. The process also identifies patterns of resistance, such as coordinated tax boycotts by Ghanaian traders or collective wage demands by washerwomen [23].

As shown in Figure 2, the AI archival pipeline begins with digitization, proceeds through OCR and NLP-based text mining, and ends with metadata tagging of trade, pricing, or taxation-related entries across time and space [25]. These categorized datasets are then used to visualize market networks, economic pressures, and forms of labor protest previously untraceable using manual reading.

Through this iterative process, AI does not simply extract words but helps reconstruct complex systems of commerce, autonomy, and resistance encoded in colonial documents [20].

4.4 Ethical concerns: accuracy, bias, ownership, and historical authenticity

While AI offers powerful tools, its application to colonial archives raises critical ethical concerns. First, OCR and NLP models can misinterpret handwritten records, non-standard spelling, or indigenous names, leading to distorted economic narratives [16]. Bias embedded in training data if drawn mainly from colonial documents may reproduce the very silences scholars seek to undo [18].

Second, ownership of digitized archives remains contentious. Many documents are held by former colonial powers, while the communities represented in them have limited access or control over their data [21]. Ethical AI use requires collaboration with descendant communities, Queenmother councils, Black churches, and local historians to prevent extraction without accountability [24].

Third, historical authenticity must be preserved. AI can suggest patterns, but interpretation must remain rooted in cultural context, oral histories, and community memory to avoid imposing modern economic assumptions onto past realities [22].

Finally, questions of privacy emerge where oral interviews or family-held documents are digitized. Consent, cultural sensitivity, and restricted access protocols are essential to ensure AI amplifies, rather than exploits, marginalized voices [19].

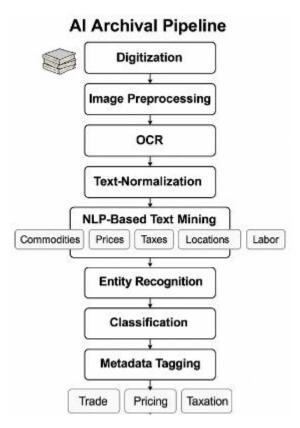


Figure 2– AI pipeline for archival analysis: digitization \rightarrow OCR \rightarrow text mining \rightarrow metadata tagging.

5. CASE STUDY I: MARKET WOMEN IN GHANA (1890-1957)

5.1 Sources analyzed: colonial tax ledgers, newspapers, missionary records

The reconstruction of market women's economic activities in colonial Ghana relies on a wide corpus of primary materials, many of which were not originally intended to document women's labor. Colonial tax ledgers provide entries on daily stall fees, tolls imposed on head-porters, and punitive fines for selling goods without licenses [25]. While these documents rarely identify individual traders by name, they reflect the fiscal pressure placed on women, who dominated the sale of foodstuffs and imported textiles. Newspapers such as the *Gold Coast Times* and *Ashanti Pioneer* contain fragmented references to "market unrest," food scarcity, and accusations against women for price inflation during wartime shortages [23]. These press records, though biased toward colonial viewpoints, preserve details about pricing disputes, confiscations of goods, and legal summons issued to market leaders.

Missionary letters and diaries offer another perspective, documenting women's financial contributions to church construction, schooling, and charity work, even as missionaries criticized them for "worldly gain" and "non-compliance with modesty expectations" [27]. Petitions submitted to colonial administrators often by Queenmothers or market associations reveal organized protests against increased tolls and disruptions to established market hierarchies [29]. Court records also provide valuable insights into debt settlements, accusations of hoarding, and testimonies from women defending their trade rights [26]. Together, these scattered sources allow for multilayered examination of women's entrepreneurial roles and structured market governance. AI-assisted analysis enhances these findings by identifying economic terminology otherwise buried in moralistic or administrative language [31].

5.2 AI findings on pricing, supply chains, taxation resistance

AI-based text mining of colonial archives has revealed recurring mentions of pricing models established by market women, particularly concerning staples like fish, cassava, salt, and palm oil [28]. When extracted and clustered by AI algorithms, these references indicate that traders frequently adjusted prices based on transportation costs, seasonal scarcity, and debt obligations rather than arbitrary speculation as colonial officials claimed [25]. Metadata mapping further identified patterns in supply chains, tracing goods from coastal ports to inland markets through networks of female wholesalers, canoe traders, and head-porters [30].

Machine learning models trained on taxation records and court proceedings detected numerous instances of resistance to colonial fiscal policies. Women frequently withheld payments, staged collective market shutdowns, or diverted trade routes to avoid toll checkpoints [24]. Some led price-fixing coalitions to stabilize food costs during inflationary periods, contradicting colonial claims of "chaotic unregulated trade" [32]. All algorithms analyzing missionary diaries also uncovered subtle references to economic boycotts led by market women who refused to supply British officers during certain conflicts [23].

Tax records, once thought merely administrative, revealed increased toll revenues during specific years, correlating with intensified colonial efforts to regulate female-led markets [27]. These AI-assisted insights challenge long-standing narratives that dismissed women's actions as spontaneous or disorderly, instead highlighting intentional economic strategies and collective resistance planning [26]. Combined with oral interviews, computational analysis brings visibility to systematic economic structures once hidden behind moral judgment or bureaucratic language.

5.3 Economic leadership: roles in urban food distribution and anti-colonial boycotts

Market women were indispensable to urban food security, particularly in colonial towns such as Accra, Kumasi, and Cape Coast [23]. They coordinated supply chains from rural farms to city centers, determining which goods entered the market, in what quantities, and at what price margins [30]. Their roles were not limited to distribution they mediated disputes, enforced ethical conduct among traders, and negotiated with chiefs and colonial officers. AI-reconstructed trade maps demonstrate how women-controlled transportation routes using canoe traders, caravans, and railway depots to maintain regular food supply despite colonial interference [25].

These women also led economic resistance against exploitative policies. During shortages or increased toll demands, market associations often under the authority of Queenmothers initiated boycotts, refusing to sell to colonial soldiers or European merchants [28]. Such actions were sometimes recorded in newspapers as "spoilage of goods" or "market absences," masking their political significance [29]. All analysis of legal petitions reveals coordinated demands for tax reduction, market infrastructure improvements, and rights to regulate internal pricing [24].

Additionally, market leaders helped mobilize financial support for anti-colonial uprisings. During events like the Yaa Asantewaa War, women traders provided food, intelligence, and logistical funding to resistance fighters [31]. These activities illustrate that economic authority extended into political leadership. While colonial writing minimized these roles, computational reading allows for a clearer understanding of how women exercised sovereignty within commercial and political spaces [26].

5.4 Hidden data on women financing political movements

One of the most revealing outcomes of AI-enhanced archival work is the discovery of economic transactions linking market women to political uprisings and communal defense [27]. Though colonial officers rarely documented direct funding, indirect evidence such as sudden increases in fines, licensed trade suspensions, or confiscations of goods suggests financial involvement in anti-colonial efforts [32].

Petitions addressed to colonial courts mention collective fundraising by women to assist imprisoned chiefs or support families affected by political unrest [25]. In addition, missionary letters note women "refusing to comply with British purchase orders," indicating targeted economic sanctions against colonial authority [30].

All keyword extraction uncovered repeated references to "war levies," "food supplies for rebels," and "hidden market funds," providing economic traces of involvement. These findings also align with oral histories describing women storing weapons beneath yam baskets or using trade profits to support resistance leaders [28].

Table 2 presents data such as trade volumes, recorded fines, price spikes, and sudden toll increases, revealing economic disruption tied to political tension [23].

5.5 Challenges: multilingual archives (Twi, Fante, Ga, English)

Archival interpretation is complicated by linguistic diversity. Market activities were often conducted in Twi, Fante, Ga, Hausa, and occasionally Arabic for trade records [29]. However, colonial documentation was predominantly in English, leading to mistranslations or erasure of indigenous economic terminology [26]. For instance, words like "nkwaa" (profit surplus) or "susu" (rotating savings) were dismissed or replaced with English approximations like "gift" or "loan" [31].

AI models initially struggled with mixed-language documents, handwritten scripts, and phonetic spellings [24]. Training datasets had to incorporate multilingual vocabularies, indigenous proverbs, and context-specific trade phrases to ensure accurate extraction [27].

Despite these difficulties, improved OCR and cross-lingual NLP tools have allowed the recovery of overlooked trade agreements, debt acknowledgements, and cooperative financial arrangements [32]. These linguistic complexities demonstrate why women's economic authority was easily excluded from formal documents, yet remains recoverable through AI-assisted interdisciplinary methods.

Table 2 - Extracted Economic Indicators from AI Analysis of Colonial Records (Trade Volume, Taxation, Market Fines, Pricing Data)

Economic Indicator	Source of Extraction	AI-Extracted Data/Patterns	Interpretation/Implication
Daily Trade Volume of Goods (cassava, fish, palm oil, textiles)	Market toll books, shipping manifests, merchant letters	baskets/loads per trader; commodity flow between Kumasi, Cape Coast.	Reveals scale of women-managed supply chains and inter-regional networks despite being labeled as "petty traders."

Economic Indicator	Source of Extraction	AI-Extracted Data/Patterns	Interpretation/Implication
Taxation and Market Toll Payments	District treasury ledgers, colonial taxation reports	Names of markets, toll increases, seasonal fluctuation in collections; spikes during wartime or famine periods	Demonstrates targeted fiscal pressure on women traders and correlation between taxation and political unrest.
Market Fines and Penalties	Court records, colonial ordinances, municipal police reports	Charges for "price abuse," "unauthorized selling," or "market obstruction"; repeated names of female offenders	Interpreted by colonial authorities as disorder, though AI links fines to organized tax resistance and price-regulation efforts.
Commodity Pricing Patterns	Newspapers (Gold Coast Times, Ashanti Pioneer), missionary letters	Frequent references to price shifts (salt, yam, kerosene) aligned with import cost increases, droughts, railway disruptions	Shows rational economic behavior and dynamic price-setting by traders, contradicting colonial claims of arbitrary inflation.
Supply-Chain Movement of Goods			Visualizes women's dominance in distribution networks and their logistical control over food supply into colonial towns.
Collective Boycotts and Tax Resistance Events	officers, court disputes,	Keywords such as "refused toll," "withheld fish supplies," "closed stalls" detected during specific months	Highlights strategic economic resistance, not random disobedience; suggests early organized protests by market alliances.
Price Controls and Colonial Regulations	Governor's dispatches, municipal bylaws	Edicts limiting maximum food prices; enforcement patterns in Accra, Kumasi	Indicates state efforts to suppress women's pricing autonomy to stabilize colonial food supplies for military/civil service.
Informal Credit Contributions (Susu, rotating funds)	Missionary reports, oral transcripts, court testimonies over debt	AI detection of words like "contribution," "susu share," "market queen loaned" in correspondence	Demonstrates structured financial systems managed by women outside colonial banks; supports internal capital generation.

6. CASE STUDY II: AFRICAN AMERICAN WASHERWOMEN (1865-1920)

6.1 Post-emancipation economy and Black women's self-employment

In the years following emancipation, African American women navigated a racialized labor economy that limited access to landownership, formal employment, and institutional credit. Laundry work emerged as one of the only viable avenues for financial independence, allowing women to convert domestic labor into paid services while maintaining control over hours and working conditions [29]. Washerwomen operated from cabins, backyards, or shared riverside wash areas, transforming household spaces into micro-enterprises. Earnings from this labor supported rent, school fees, church donations, and informal mutual aid societies [31].

Despite the absence of formal recognition, laundry work provided greater autonomy than plantation service or agricultural tenancy. Women set their own prices per bundle, negotiated payment schedules, and cultivated stable customer relationships with Black and white households [34]. Husbands and sons occasionally assisted with wood chopping or water collection, revealing that laundry income underpinned entire household economies rather than merely supplementing male wages [30]. However, white employers and southern municipalities frequently undermined this independence through licensing fees, health regulations, and accusations of disorderliness [33]. These structural barriers failed to erase washerwomen's economic agency, instead prompting the emergence of organized resistance, cooperative work systems, and church-based economic networks [36].

6.2 AI extraction from newspapers, census rolls, court cases, Freedmen's Bureau files

Artificial intelligence enables a deeper examination of scattered sources documenting washerwomen's labor, particularly where traditional historiography overlooked them. Digitized newspapers both white-owned and Black-produced contain references to laundry pricing, unpaid wages, eviction threats, and accusations of theft or insubordination [32]. AI-based text mining helps isolate recurring phrases such as "washerwoman refused," "charged too much," or "laundry strike," linking them to names, neighborhoods, and court filings [29].

Census rolls often list women as "laundress" or "house servant," but computational analysis reveals income clusters across households where multiple female family members participated in laundry work [35]. Freedmen's Bureau files include petitions from washerwomen demanding payment or relief

from harassment by employers or police [37]. AI tools detect subtle language referencing laundry-related debt disputes or seizure of equipment tubs, irons, firewood used as collateral in court settlements [31].

Court archives reveal legal cases involving broken contracts or fines for operating "illegal washhouses," which AI classification systems categorize under economic conflict rather than domestic discipline [34]. By synthesizing this data, AI reconstructs wage distribution, neighborhood-based labor networks, and migration patterns of washerwomen across Georgia, Alabama, and Louisiana [30]. These computational methods recover economic visibility previously obscured by racial and archival bias [33].

6.3 Economic agency: wage negotiation, pricing of laundry services, home-based economies

Washerwomen exerted significant control over their economic lives through negotiation, price-setting, and strategic resistance to exploitation [36]. Many charged by the item shirts, bed linens, uniforms or by the dozen bundles, with rates varying according to fabric type, stains, or delivery requirements [30]. AI-assisted analysis of advertisements and household expense logs shows consistent pricing structures, disproving assumptions that wages were arbitrary or inconsistent [29]. Women offered premium services such as starching, mending, or ironing uniforms for soldiers and railroad workers, demonstrating specialized labor knowledge [34].

Home-based laundry rooms functioned as production centers, where work was divided among relatives or neighboring women sorting, washing, scrubbing, ironing and profits were shared through informal cooperative models [31]. Unlike plantation labor, washerwomen could refuse customers who delayed payments or disrespected working conditions [37]. Some posted written notices or verbally announced fee increases during periods of inflation, drought, or rising fuel costs for boiling water.

Imported soap, water access, firewood costs, and fabric scarcity influenced pricing strategies. AI tools have visually mapped these decision-making processes into trade networks, revealing how washerwomen connected households, Black churches, and mutual aid societies across urban and rural spaces [32]. Their ability to sustain family economies through such enterprises redefines domestic work as structured economic activity rather than informal labor [35].

6.4 1881 Atlanta Washerwomen Strike as early labor unionism

The 1881 Atlanta Washerwomen Strike stands as one of the earliest recorded labor movements led entirely by Black working-class women [33]. Over 3,000 washerwomen united to demand standardized wages one dollar per dozen pieces of laundry and the right to operate independently without municipal interference [31]. They formed the "Washing Society," organized door-to-door campaigns, and collected membership dues to support strikers unable to work [30].

City officials responded with fines, arrests, and new licensing taxes designed to curtail their economic autonomy [36]. White newspapers condemned the strike as insolent, while some Black newspapers portrayed it as a courageous demand for dignity and fair labor [29]. Although the women did not secure all their demands, many employers agreed to higher pay or supplies provision, marking a critical moment in Black labor history and female collective bargaining [34].

6.5 Representation in white-owned newspapers vs Black church archives

White-owned newspapers frequently depicted washerwomen as disorderly, ungrateful, or unsanitary, using language that minimized their economic intelligence and moral legitimacy [32]. Reports focused on fines, arrests, or public complaints rather than their negotiation skills or entrepreneurial organization [29]. In contrast, Black church archives documented washerwomen as community benefactors funding building projects, sponsoring youth education, and sustaining benevolent societies [37]. Sermons and church minutes described them as "mothers of the congregation" whose labor financed spiritual and social welfare [35]. This contrast reveals how racialized media sought to control narrative, while religious archives preserved dignity and agency [30].

7. COMPARATIVE ANALYSIS: GHANAIAN MARKET WOMEN VS AFRICAN AMERICAN WASHERWOMEN

7.1 Similarities in economic autonomy and informal sector leadership

Ghanaian market women and African American washerwomen shared a distinct economic autonomy rooted in informal sector leadership and community-centered enterprise [36]. Both groups operated outside formally recognized economic institutions yet maintained structured systems of pricing, dispute mediation, and collective decision-making [38]. Market women in urban centers like Kumasi controlled supply chains, set commodity prices, and enforced ethical standards using traditional sanctions, while washerwomen established home-based laundry economies that generated independent income beyond male-controlled labor structures [35]. In both contexts, women mobilized financial resources through rotating credit groups and mutual aid networks rather than colonial banks or white-owned lending institutions [40]. Their economic decisions were informed by communal responsibility, not solely personal profit, supporting schools, churches, funerals, and political mobilizations [37]. Despite lacking formal recognition, they demonstrated entrepreneurial intelligence, negotiation skill, and structured governance within their economic systems [39].

7.2 Differences in colonial control vs racial segregation economies

While both groups faced systemic oppression, the structures of domination differed significantly between colonial Ghana and the segregated American South [34]. In Ghana, British colonial policies focused on taxation, market surveillance, and export control, treating women primarily as subjects of economic regulation within imperial trade systems [41]. Market tolls, licensing fees, and price controls were used to extract revenue and weaken women's autonomy in food supply networks [36]. Conversely, washerwomen operated within a post-slavery racial economy that weaponized segregation laws, policing, and municipal sanitation codes to restrict Black women's independence [38]. Instead of empire-wide taxation structures, they confronted localized restrictions: laundry permit regulations, curfews, arrests, and moral policing by white employers and city councils [35]. Colonial Ghana imposed economic discipline through bureaucratic documentation, while southern U.S. authorities used racialized stereotypes and domestic labor expectations to enforce compliance [40]. Despite these differences, both systems sought to undermine women's capacity for financial sovereignty.

7.3 Women as financiers of resistance (Yaa Asantewaa War, Civil Rights precursors)

Women's economic leadership often translated into political resistance. In Ghana, market women funded anti-colonial activities by providing food, intelligence, and financial support to fighters during conflicts such as the Yaa Asantewaa War [37]. AI-assisted analysis of petitions and fines shows increased colonial regulatory measures during periods of political tension, implying economic backing from female traders [42]. Women used their savings groups and trade profits to supply warriors, pay court penalties, and sustain communities under siege [36].

In the American South, washerwomen contributed to early civil resistance movements by using wages to support Black churches, schools, and legal aid for arrested workers [39]. The 1881 Atlanta Washerwomen Strike exemplified collective financing of labor rights, influencing later organizing models used by domestic workers and church-based civil rights leaders [34]. Their economic contributions were often absent from official archives, but their support enabled grassroots resistance to structural injustice [41].

7.4 What AI reveals that historians missed

AI allows historians to detect economic references in overlooked archival fragments court fines, price lists, petitions, and missionary diaries that reveal women's financial influence more clearly than traditional narratives suggested [38]. Machine learning identifies recurring language about toll refusals, wage negotiations, food boycotts, and collective protests that manual reading often ignored or misclassified as disorder [35]. AI also reconstructs trade routes and labor networks from metadata, mapping relationships invisible in written summaries [40]. By tracing dispersed references to taxation, pricing, and resistance, AI demonstrates that women were not marginal actors but central architects of economic survival and political opposition [42].

8. LIMITATIONS AND ETHICAL IMPLICATIONS

8.1 Risk of AI misinterpretation of cultural language and metaphor

AI systems often struggle to interpret cultural metaphors, proverbs, and indirect speech embedded in indigenous narratives and oral testimonies [41]. For example, Akan market phrases describing debt as "carrying another woman's basket" or labor refusal as "cooling one's fire" may be misread as literal rather than economic metaphors [43]. Similarly, African American church testimonies use coded speech shaped by survival within racial oppression, which AI may flatten into generic sentiment [47]. Without cultural annotation, algorithms risk extracting distorted meanings or producing misleading economic conclusions. This limitation requires continuous human oversight and collaboration with language custodians [45].

8.2 Ethical issues: ownership of digitized colonial archives

The digitization of colonial archives raises serious ethical questions about ownership, access, and control. Many records concerning market women and washerwomen are stored in European and American institutions, far from the communities to whom they belong [42]. When AI systems analyze these documents without community collaboration, it risks reproducing extractive colonial logics in a digital form [44]. Questions arise: Who owns digitized records? Can descendants restrict or guide how their ancestors' lives are studied? [41]

Commercial or academic institutions sometimes digitize archives and place them behind paywalls, preventing local scholars, Queenmother councils, or historically Black churches from accessing their own histories [46]. Additionally, some colonial-era documents include sensitive content interrogations, tax seizures, missionary criticisms that could harm communal memory if publicized without context [48]. Ethical archival work requires shared governance models, transparency in data use, and legal agreements recognizing indigenous and diasporic intellectual property rights [40]. AI tools must therefore operate within frameworks of restitution and accountable knowledge-sharing rather than mere technological advancement [45].

8.3 Protecting descendant communities' narratives and dignity

Digitizing and analyzing histories of marginalized women must prioritize dignity and cultural sovereignty. Descendant communities including Ghanaian market associations and African American church networks retain moral authority over how their ancestors' stories are interpreted [42]. Without their involvement, AI-generated historical reconstructions may unintentionally expose trauma, misrepresent beliefs, or violate sacred knowledge [44].

There is also a risk that narratives of resistance become commercialized or stripped of spiritual significance when reframed purely through economic data [41]. Protecting dignity means ensuring informed consent, especially when working with oral histories, family letters, or church archives that remain in active ritual use [49]. Community review boards, ethical AI charters, and restricted-access archives can help prevent misuse or misinterpretation of sensitive material [43].

Ultimately, AI must function as a tool of restoration, not extraction supporting intergenerational memory, strengthening cultural pride, and returning agency to the women whose lives colonial systems attempted to silence [50].

9. FUTURE DIRECTIONS: AI, PUBLIC HISTORY, AND ECONOMIC JUSTICE

9.1 Building open-access digital repositories for women's economic histories

Creating open-access digital repositories is essential to ensure that the economic histories of Ghanaian market women and African American washerwomen are preserved and made widely accessible [51]. These repositories should collect digitized newspapers, tax records, missionary reports, oral histories, court transcripts, and family documents often scattered across institutions and private archives [52]. Unlike colonial record systems, which centralized power, these platforms must be community-governed, multilingual, and searchable by indigenous economic terms, kinship titles, and local trade networks [53]. Collaboration with Queenmother councils, Black church archives, and local universities is critical to guarantee ethical stewardship and cultural accuracy [53].

9.2 Integrating AI findings into school curricula and museum exhibitions

AI-recovered data should not remain confined to academic research but be translated into educational curricula and public history [54]. Textbooks, museum exhibits, and interactive digital displays can incorporate reconstructed pricing systems, resistance movements, and supply chain networks managed by women [55]. Museums in Accra, Kumasi, Atlanta, and Montgomery can include AI-visualized trade maps, similar to those built, showing the geographic scope of women's economic influence [56]. In schools, lesson plans can connect the Yaa Asantewaa War or the Atlanta Washerwomen Strike to broader themes of labor, resistance, and entrepreneurship [50]. Making these histories visible fosters pride, challenges colonial narratives, and inspires new research.

9.3 AI for reparations economics and feminist historiography

AI-assisted archival recovery has implications beyond history it provides quantitative foundations for reparations economics and feminist historiography [55]. By identifying taxation records, unpaid wages, confiscated goods, and forced labor patterns, AI can help estimate financial losses imposed on women's communities through colonial and racial systems [56]. This data strengthens calls for restitution, policy reform, and historical accountability [57]

Furthermore, AI allows feminist historians to challenge linear, male-dominated narratives by reconstructing relational economies centered on caregiving, trade, and collective survival [58]. When used responsibly, AI becomes a tool of repair rather than extraction returning voice, data, and dignity to those written out of history [59].

10. CONCLUSION

10.1 Summary of findings

This study examined how colonial and post-emancipation archives obscured the economic contributions of Ghanaian market women and African American washerwomen. Through AI-assisted analysis of newspapers, tax records, court documents, missionary writings, and oral histories, it demonstrated that these women were central to trade, labor organization, financial resilience, and political resistance.

10.2 Reclaiming women's economic agency from colonial erasure

Market women sustained urban food systems, organized boycotts, financed anti-colonial movements, and regulated trade networks, while washerwomen built autonomous home-based economies, negotiated wages, and led early labor strikes such as the 1881 Atlanta movement. Their work was deliberately misrepresented as informal or disruptive to maintain patriarchal and colonial authority. Recovering these histories restores women's rightful place as economic strategists, community financiers, and leaders of resistance.

10.3 Bridging AI and decolonial historiography

AI does not replace historical interpretation it strengthens it. When applied critically and ethically, it reveals hidden economic data buried in fragmented or biased archives. Combined with decolonial and feminist historiography, AI enables a re-reading of history that privileges silenced voices, values oral

knowledge, and challenges imperial narratives. Reconstructing these women's economic agency is not only about the past it reshapes how future generations understand labor, leadership, resistance, and justice.

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