

THE DIFFUSION OF THE SEWING MACHINE IN THE WOMEN'S CLOTHING
INDUSTRY FROM 1860 TO 1875

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BY

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Chapter One

Introduction

From 1860 to 1875 technological advancements of the sewing machine played an important role in the development of the women's clothing industry. Today it is an essential part of the production process. Therefore, studying the diffusion of the sewing machine is a useful endeavor to understand how innovations are adopted and diffused in the social system and for further understanding of the history of the clothing industry. The purpose of this research study is to examine diffusion of the sewing machine into society from 1860 to 1875.

Research Questions

To explore the diffusion process of the sewing machine this study will answer the following research questions: 1) How often is the sewing machine referenced in women's magazines from 1860 to 1875? 2) How does the total number of references to the sewing machine vary in different women's magazines from 1860 to 1875? and 3) What characteristics of the sewing machine were important to ensure its adoption?

Methods

Three magazines, *Ladies' Repository*, *Arthur's Home Magazine*, and *Peterson Magazine*, were examined during the chosen sixteen years. Two issues per year were selected from each magazine. The number of articles about the sewing machine and advertisements in the issue were counted in frequencies and percentages. A qualitative analysis was completed where themes from the advertisements and articles that identify characteristics of the sewing machine were documented. The results were interpreted in the context of Rogers's (1983) innovation diffusion model including the social system and product characteristic frameworks.

Rationale

Many researchers have studied the sewing machine including topics such as; inventors, improvements made, patents issued, and the impact it had on production. However, there have been fewer studies about the sewing machine's adoption/diffusion into society. The adoption process of the sewing machine into society is important in order to understand how the sewing machine impacted ready-to-wear and production. This research could also be helpful for professors who teach costume history or historic technology because it provides reasons about how the sewing machine was adopted into society and identifies which characteristics were important to a consumer when adopting a new product.

Limitations

Results of this study were from a relatively small sample size. The availability of an entire collection of magazines from the time period was difficult to find. Many

women's magazines that featured fashion articles were not published until the 1880s or later. These factors limited the number of magazines that could be examined. Another limitation was in the search process of the articles and advertisements. A computer generated word search function for the word "sewing machine" was utilized in *Ladies' Repository* to lower the risk of error. In *Arthur's Home Magazine* and *Peterson's Magazine* that feature was not available. The researcher manually searched for the word "sewing machine" which increases the chance of human error.

Definitions

Diffusion is defined as the process by which a new product is accepted by the market. Adoption is the mental process prospective customers go through from learning about a new product to whether or not they accept or reject it ("Business Dictionary", 2010).

Summary

This research study will allow an in-depth analysis of the sewing machine. It will provide an example of how historical magazine data can be used as a tool in studying product diffusion.

Chapter Two

Literature Review

Many researchers have studied the sewing machine including topics such as; the people who invented or improved it, the patents that were developed, and the impact it had on the production industry. However, less has been written about the sewing machine's process of adoption into society. With the history of the sewing machine as a focus, Rogers's (1983) diffusion of innovations theory provides a framework that can be used to review historical women's magazines' advertisements and articles about the sewing machine. The following is a review of the research literature related to the history of the sewing machine, the diffusion process, and women's magazines published during the 1800s.

The History of the Sewing Machine

The sewing machine played an integral role in the changes of women's clothing. It allowed women the ability to produce their own clothing at a faster rate than before. When and who developed the sewing machine has long been debated by historians. Barthélemy Thimonnier, a Frenchman, is the most common person to be identified as the inventor. In 1830 he made the first functional sewing machine (Forsdyke, 2010). However, it was Walter Hunt in 1833 who developed the lockstitch sewing machine. Prior to his invention, sewing machines used a simple one-thread chain stitch, which was

weak and could easily pull apart. Hunt's new lockstitch used two threads that interlocked between the two layers of fabric and provided a durable stitch. Hunt lost interest in his invention due to a fear of causing unemployment for seamstresses. He never bothered to patent it.

Englishman Elias Howe created his version of the sewing machine in 1845. He patented it in the United States and it was almost identical to Hunt's version featuring the two threaded lockstitch. Howe's machine was used for production of Civil War uniforms. The war caused a great demand for uniforms in the United States. In the North alone, around one million were needed each year. This massive demand could only be met using sewing machines (Eubank & Tortora, 1994). Howe also adapted the machine in order to produce soldiers' shoes at a quicker rate (Forsdyke, 2010). He is most notable for suing other individuals and companies for patent infringement. In 1867 Howe's patent expired allowing companies to use his lockstitch without paying license fees (*History of the Sewing Machine*, 2010).

Isaac Singer made the sewing machine popular and affordable during the 1850s. His sewing machine was a combination of Howe's and Hunt's designs. He incorporated several new improvements in his sewing machine. The machine used a flying shuttle instead of a rotary one. The needle was mounted vertically and included a presser foot that would hold the cloth in place to prevent slipping of the fabric. It also had a fixed arm that held the needle in place and included a basic tensioning system (*Sewing Machine*, 2010). The machine was also the first to have a foot treadle; previously all machines were hand cranked (see Figure 1). His machine had higher quality components but he lacked the knowledge of how to efficiently mass produce the machine. Singer's production

techniques were not as skilled and productive as his competitors. In order to become a stronger competitor, Singer and his executives focused on their marketing strategy to ensure that consumers would want and buy his product (Hounshell, 1984). In an effort to allow more Americans to purchase the sewing machine, Singer offered an installment plan and trade-in allowance. This is one of the reasons the name Singer is synonymous with the sewing machine. Eventually, other sewing machine manufacturers, such as Wheeler & Wilcox, followed his idea of mass marketing their product (*History of the Sewing Machine*, 2010).

Figure 1. Singer family sewing machine, 1865 (Hounshell, 1984, p. 84)



Hounshell (1984) analyzed the development of the sewing machine's production and marketing techniques to provide a broad context of changes in the U.S. clothing industry during the 1800s. Stating that, "Companies began to produce their own adaptation of the sewing machine. Most would either copy a previous version or take a combination of versions and add their own improvements. No single inventor or company had gained a patent position strong enough to dominate the industry" (p. 67).

Farrell-Beck (1992) and Mossoff (2009) thoroughly documented the patenting of sewing machine technology. Throughout the 1850s there was constant conflict between

companies due to the number of companies forming to produce sewing machines. This resulted in numerous lawsuits, patent pooling, and licensing agreements. This time frame was known as the Sewing Machine Wars (Massoff, 2009).

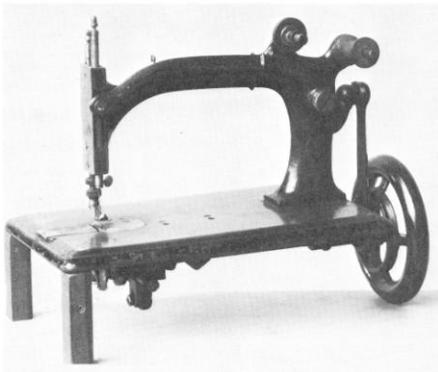
The majority of society responded positively to the release of the sewing machine. It began to appear in many private homes throughout the United States and revolutionized household labor. In 1860, *Godey's Lady's Book* named it The Queen of Inventions. The sewing machine provided women a relief from the numerous hours of hand sewing (*History of the Sewing Machine*, 2010). "According to *Godey's Lady's Book*, it took about 14 hours to make a man's dress shirt and at least 10 for a simple dress. A middle-class housewife spent several days a month making and mending her family's clothes even with the help of a hired seamstress. After the purchase of a sewing machine and suitable training and practice those hours dropped to 1 1/4 for the shirt and one hour for the simple dress" (*History of the Sewing Machine*, 2010). Home dressmakers greatly appreciated the decreased time required to make a garment.

The major drawback to the machine was its expensive cost, which meant sewing machines were priced well beyond the means of the average American family. The majority of families that owned the sewing machine were upper class. An average family's yearly income was around \$500 and a typical sewing machine cost approximately \$100. The lower classes recognized the benefits of the sewing machine and many communities pooled their money to purchase a single machine for members to share (*History of the Sewing Machine*, 2010).

The high price of the machines led manufacturers to develop pricing schemes to expand their market and increase profit. "In 1856, Singer offered a lease to purchase plan

where machines could be bought on monthly installments” (*History of the Sewing Machine*, 2010). The installment plan was five dollars down with the remainder of the payments made monthly with interest until the machine was paid off (Eubank & Tortora, 1994). The lease to purchase option became a popular way for the average American to purchase a sewing machine. During the 1870s, Wheeler & Wilcox worked on decreasing their expenses incurred while manufacturing the sewing machine to reduce their machine’s price and in turn increase the number of sales to make a greater profit. Eventually they were able to lower the consumer price to around \$50 (see Figure 2). These low prices and purchase plans increased the demand. In 1853 Wheeler & Wilcox produced 799 sewing machines a year. By 1876 they were producing 108,997 per year. Singer produced 810 sewing machines in 1853 and 262,316 in 1876 (Hounshell, 1984, p. 74).

Figure 2. Wheeler & Wilcox sewing machine, 1876 (Hounshell, 1984, p. 73).



Sewing Machine Impact on Ready-to-Wear

The sewing machine played an important role in the development of ready-to-wear. Production moved from homes and small shops, into large manufacturing plants. After the sewing machine proved its usefulness during the Civil War, manufacturers began to use it on simple items such as men's shirts, men's pants, men's undergarments, aprons, and women's basic calico dresses. Seamstresses appreciated its ability to speed up production. For example, an overcoat would take a seamstress six days of continuous hand stitching to complete but with the sewing machine it could be made in three days. As the sewing machine became more advanced, the majority of men's and women's clothing began to be produced by mass production (*History of the Sewing Machine*, 2010).

As stated by Eubank & Tortora (1994), "The sewing machine contributed to the popularity of fashions such as ready-made cloaks and hoop skirts" (p. 301). By the mid 1870s, women could now purchase these ready-made items at a cheaper price, spreading popularity of ready-made clothing and sewing machine. Attachments for the sewing machine that could produce braiding, tucking, and pleating allowed the trends of wealthy women's clothing to become available to the masses. Women of the middle and lower classes could now afford to have a stylish garment in their wardrobe. These ready-made garments were purchased at the increasingly popular department store. During the 1860s, department stores began to appear. These stores carried a large range of mass produced ready-to-wear at an inexpensive price. These inexpensive prices also allowed women to purchase more clothing and expand the size of their wardrobe (Boucher, 1987).

Women's Magazines

Women's magazines in the United States have been published since the country's founding in the late 1700s. Most of them did not last long and would go out of business in three to four years. Publishers experienced many problems in sending their magazines to readers. The population was scattered and sparse in the early 1800s and magazines were only distributed through the mail. By the mid 1800s, cities grew and roads had expanded and improved allowing most of the distribution problems to be resolved (Eubank & Tortora, 1994).

Seneca (2010) researched the importance of women's magazines as a virtual community of readers and writers and the ability to affect the world around them through print. "Women's magazines play a variety of roles: they are forms of entertainment and sources of education. Women's magazines are the precursors to today's Virtual Communities. That is, magazines allow for two-way communication between readers and writers, rather than the one-way communication of books" (Seneca, 2010, para. 4). Women would send the editors feedback on what information they found helpful, liked or did not like, and what topics they wanted more information about.

Prior to magazines, women had to rely on newspapers for their information. Newspapers are geographically based with information pertaining to a certain area. Magazines are not geographically bound and published information of common interest among the readers. Magazines allowed women to read about a plethora of information and topics that pertained to their interests. The newspapers tended to be addressed to a male reader and often included few topics the average women would be interested in reading. Women of the upper class and higher middle class standing were often the only

ones who could afford a subscription to magazines. However, some magazine publishers sold their issues monthly at markets and general stores to give women without substantial income the opportunity to buy an issue (Seneca, 2010).

The three magazines chosen for this research study are *Arthur's Home Magazine*, *Ladies' Repository*, and *Peterson's Magazine*. These magazines were all aimed at women but had different target markets. *Arthur's Home Magazine* was owned and edited by accomplished novelist, T.S. Arthur. It was published in Philadelphia, PA from 1843 to 1898. Wealthy, intelligent, and social individuals were the target market of this publication. This monthly journal featured articles on fashion news, homecare, poetry, embroidery patterns, and music (*Arthur's Home Magazine*, 1860).

The *Ladies' Repository* was based out of Cincinnati, OH and published monthly journals from 1841 to 1876. It targeted the individuals who were young and had a high level of opinion. Members of the Methodist Episcopal Church were the editors. It was a woman's journal that focused on literature, art, poetry, and religion. The journal was well known for its featured literary articles and art engravings (*Ladies' Repository*, 1860).

Peterson's Magazine was published in Philadelphia, PA by the Penfield Publishing Co. It was published from 1842 to 1898. Individuals above the average social class was the magazine's target market. This woman's monthly journal featured mainly fashion articles but also had advice on garden and home care. There were also garment and embroidery patterns featured in each issue (*Peterson's Magazine*, 1860).

Rogers's Innovation Diffusion Model

Rogers (1983) provides a model that can be used to analyze the adoption of the sewing machine into society. This research will be focusing on two main components in the innovation diffusion process; the social system and perceived attributes of the product. Rogers (1983) states how innovations are any objects, ideas, or practices that individuals perceive as being new. Diffusion is the process of how innovations are communicated to individuals within a society over time. It includes how consumers adopt or reject an innovation.

The social system facilitates the diffusion of an innovation within a society. "Individuals in a social network do not adopt an innovation at the same time." (Rogers, 1983, p.134). There are adopter categories within a social system that explain the adoption rate. There are innovators, early adopters, early majority, late majority, and laggards. Innovators are the first individuals to adopt the innovation. They tend to be of the highest social class, educated, very social, and have greatest contact with innovation sources. Early adopters are the most opinionated, are younger, and have a high level of financial stability. Early majority accept innovation after a varying degree of time. They have above average social status and have contact with early adopters. Late majority will adopt an innovation after the average member of society. They approach innovation with skepticism, have low social status standing, little disposable income, and have very little opinion in society. Laggards adopt an innovation last. They have no opinion in society, are less educated, and focus on tradition (Rogers, 1983).

Levy and Weitz (2006) said that adopter categories within a social system do not adopt an innovation at the same time due to the trickle down effect, a marketing

phenomenon. Often when an innovation is first released it is so expensive that only the wealthy can afford it. Over time the price falls and becomes available for the majority of society to purchase. When the laggards adopt the invention it is no longer seen as desirable to the innovators.

Rogers (1983) discussed perceived attributes of a product, and its relationship to the rate of its adoption. A product has five different perceived attributes; relative advantage, compatibility, complexity, trialability, and observability. Perceived attributes of a product help explain why it is adopted and demonstrates whether or not it will be accepted within a social system. “Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes.” (p. 212). It can be expressed as economic profitability or social prestige. Compatibility is whether or not the innovation is perceived to be relatable to the existing values, needs, and past experiences of the potential adaptors. It needs to be compatible with the social systems beliefs and values in order to be adopted. Complexity is whether or not the innovation is difficult to understand and use. The easier a product is to understand and comprehend the quicker it is adopted. Trialability is an innovation that may be experimented with on a limited basis, such as an installment payment plan. Lastly, observability is whether or not an innovation is visible to others. The results of some ideas are easily observed and communicated to others, unlike some products that are difficult to describe to others.

Diffusion of apparel has been examined with regards to consumer characteristics and adoption category (e.g., innovator, early adopter). Researchers have also examined characteristics of clothing that affect the adopter categories (e.g., Behling, 1992; Katz & Lazarsfeld, 1995). However, there has been limited research that has been completed

about the adoption of technology in the apparel industry. These studies focus on adoption of recent technology. For example, Kotsiopulos & Shim (1994) used diffusion theory to identify and examine the influence of a retailer's tendency to adopt technology. Retailers were classified into the five adopter categories based on their technology innovativeness and their perceived characteristics differences were examined. The retailers were found to have overall variances in their perceived characteristics. Most retailers feel into the category of Late Majority when it came to adopting new technology. Kim & Johnson (2003) used Rogers (1983) diffusion model to assess consumers use of the Internet for product purchasing. It showed that Rogers (1983) characteristics of complexity and trialability did affect the acceleration of adoption. Internet purchasers who were familiar with the Internet found online shopping much less riskier than non-purchasers.

Summary

The preceding literature on the history of the sewing machine and the impact on women's ready to wear, women's magazines, and Rogers (1983) diffusion process will be used to interpret data collected from the magazines. This will allow a thorough examination of the original adoption of a critical ready-to-wear technology, the sewing machine and its diffusion into society.

Chapter Three

Methodology

The purpose of this study is to examine the diffusion of the sewing machine into society from 1860 to 1875. The following procedures were completed in order to answer the developed research questions and make conclusions about the sewing machine adoption process.

Magazines

Data gathered from three women's magazines including *Ladies' Repository*, *Arthur's Home Magazine*, and *Peterson Magazine*. These were chosen because of their popularity, range of target markets, and the ability to access all years needed for examination.

All three of the magazines were selected based on the different women's target market they appealed to as defined by Rogers (1983). *Arthur's Home Magazine* targets the innovator and contained large sections on fashion news, what was in style each month, and illustrations of popular clothing. It was an expensive subscription during the mid 1800s, costing \$2.50 for a year subscription (*Arthur's Home Magazine*, 1860-1875). *Ladies' Repository* targets the early adopter and featured intellectual articles focusing on literature, art, and religion. There was no fashion section in the magazine. The members of the Methodist Episcopal Church were the editors (*Ladies' Repository*, 1860-1875).

Peterson Magazine targets the early majority and contained stories, garden advice, cooking hints, and household tips. The fashion section included patterns for stylish clothing, accessories, and needlework. It was a \$2.00 a year subscription fee (*Peterson Magazine*, 1860-1875).

Sample

From each magazine, two issues were selected from each year 1860 - 1875, one summer and one winter. These years (1860-1875) were chosen because they occurred directly after the sewing machine was released into society (Hounshell, 1984). The sample size examined included 96 issues; 32 from each magazine. Both editorials and advertisements were examined.

Procedure and Data Analysis

Ladies' Repository and *Arthur's Home Magazine* were accessed by microfilm and *Peterson's Magazine* was available through online archives. The researcher manually looked for articles and advertisements that related to the sewing machine in *Ladies' Repository* and *Arthur's Home Magazine*. *Peterson's Magazine* has a word search function that enabled the researcher to look for advertisements and articles that contain the word sewing machine. A spring and winter issue were chosen from each of the years, 1860 to 1875. The data was collected from March to April of 2010. The information from the articles and advertisements about the sewing machine was coded and recorded on a spreadsheet. The spreadsheet noted issue date and volume, how many times the sewing machine was referenced in an article and/or advertisement, and the theme about the sewing machine (see Appendix A).

In order to answer the first research question, How often is the sewing machine referenced in women's magazines from 1860 to 1875?, the number of articles and advertisements about the sewing machine were counted in frequencies and percentages. To answer the second research question, How does the total number of references to the sewing machine vary in different women's magazines from 1860 to 1875?, the percentages and frequencies of sewing machine references that were found in each magazine were compared to one another. The third research question, What characteristics of the sewing machine were important to ensure its adoption?, was addressed with a qualitative content analysis. Themes within the article or advertisement were noted using a letter coding system that corresponds to each of the product characteristics; A - relative advantage, B – compatibility, C – complexity, D – trialability, and E - observability.

This data was also analyzed using Glaser & Strauss's grounded theory approach (1967) in which the researcher reads a database/text and discovers or labels variables, categories, and concepts and then defines their interrelationships. This approach allowed the themes to be interpreted into the product characteristics necessary for diffusion, according to Rogers (1983). The preceding data was coded and recorded with the magazine source, year, and issue on a spreadsheet (see Appendix A).

Reliability of the process was established after two researchers independently reviewed ten articles or advertisements randomly chosen within the time frame and examine them for themes that fit into Rogers's (1983) product characteristics. A comparison of the themes found 90 percent compatibility rate and ensured a starting point for the theme analysis.

Summary

To interpret and make conclusions about the sewing machine adoption process, the number of sewing machine advertisements and articles in three magazines from 1860 to 1875 were counted. A qualitative theme analysis was also completed that focused on information about the sewing machine and its characteristics as found in the collected advertisements and articles. The results should provide a better understanding of the sewing machine adoption process and diffusion into society.

Chapter IV

Results

In this study the diffusion of the sewing machine into society from 1860 to 1875 is examined. These results show the frequencies of sewing machine references, the characteristics of the sewing machine, and theme differences in magazines. There were 96 issues analyzed, 32 from each magazine. The raw data can be found in Appendix B.

Frequencies of References to the Sewing Machine

Based on the results of the preceding analysis of three women's magazines, as seen in Table 1, the sewing machine was referenced 70 times in articles or advertisements from 1860 to 1875; *Arthur's Home Magazine* (n=37), *Ladies' Repository* (n=20), and *Peterson's Magazine* (n=13). Advertisements were more common than articles with 50 advertisements appearing in the publications as compared to 20 articles. Almost three times as many advertisements that referenced the sewing machine appeared in December issues as compared to June. *Arthur's Home Magazine* had approximately three times as many sewing machine advertisements as compared to the other two publications. *Peterson's Magazines* had the fewest sewing machine advertisements. Articles referencing the sewing machine were relatively evenly distributed between the June and December issues. *Ladies' Repository* had almost twice as many in December as *Arthur's*

Home Magazine. *Peterson's Magazine* had no articles in the December issues examined (see Table 1).

Table 1. Total articles and advertisements that reference the sewing machine

Magazine	June Ad %/n	June Article %/n	December Ad %/n	December Article %/n	Total from 1860 – 1875 %/n
Ladies' Repository	2	4	7	7	28% / 20
Arthur's Home Magazine	7	4	23	3	53% / 37
Peterson's Magazine	4	2	7	0	19% / 13
Total	19% / 13	14% / 10	53% / 37	14% / 10	70

Advertisements about the sewing machine in the magazines peaked from 1870 to 1874. The fewest advertisements about the sewing machine were during the years 1862 to 1864 (see Figure 3). The number of articles referencing the sewing machine peaked around 1874 to 1875. The least amount of articles published that referenced the sewing machine occurred during the years of 1868 to 1869 (see Figure 4).

Figure 3.

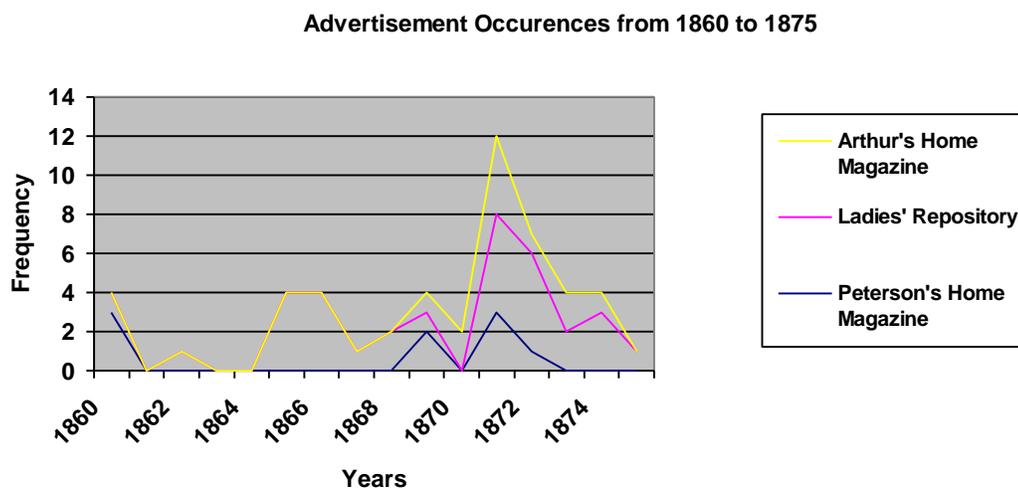
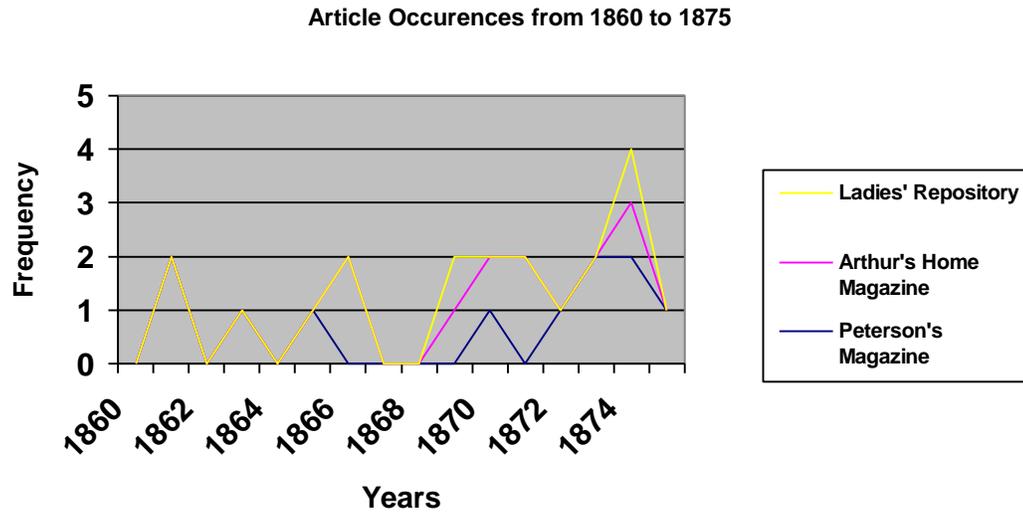


Figure 4.



Theme Differences in Magazines

Percentages were figured to find how often themes occurred in the magazine articles and advertisements as part of a content analysis. There were 20 articles found with sewing machine references. Within those articles compatibility was the most common (n=18;90%) and the least frequent being found was trialability at 0% (see Table 2). There were 50 advertisements that contained sewing machine references. The most common theme found in advertisements was relative advantage at (n=44;88%) and the least common trialability at (n=9;18%) (see Table 2).

Table 2. Product Characteristics as described in articles and advertisements referencing the sewing machine

Product Characteristic	Articles %/n	Advertisements %/n
A – Relative Advantage	55% / 11	88% / 44
B – Compatibility	90% / 18	58% / 29
C – Complexity	55% / 11	86% / 43
D – Trialability	0% / 0	18% / 9
E – Observability	5% / 1	86% / 43

* Articles Total – 20, Advertisements Total – 50

In addition, the numbers of themes found show a difference in the magazines. The most and least frequent themes found within the articles vary amongst the magazines (see Table 3). *Arthur's Home Magazine* and *Ladies' Repository* both had compatibility as the most frequent but *Peterson's Magazine* had relative advantage. The least frequent for *Arthur's Home Magazine* was trialability and *Ladies' Repository* and *Peterson's Magazine* least frequent was both trialability and observability.

The most common frequency in themes varied among the advertisements, however the least frequent theme was the same (see Table 4). The most common theme found in *Arthur's Home Magazine* was observability, *Ladies' Repository* was relative advantage, complexity, and observability, and *Peterson's Magazine* was relative advantage. The least frequent theme for all three of the magazines was trialability.

Table 3. Themes in Articles

Magazine	<i>Arthur's Home Magazine</i>	<i>Ladies' Repository</i>	<i>Peterson's Magazine</i>	Total %/n
A	20% / 4	25% / 5	10% / 2	55% / 11
B	30% / 6	55% / 11	5% / 1	90% / 18
C	20% / 4	30% / 6	5% / 1	55% / 11
D	0% / 0	0% / 0	0% / 0	0% / 0
E	5% / 1	0% / 0	0% / 0	5% / 1

*A – Relative Advantage, B – Compatibility, C – Complexity, D – Trialability, E - Observability

** Total amount of articles examined for themes was 20

Table 4. Themes in Advertisements

Magazine	<i>Arthur's Home Magazine</i>	<i>Ladies' Repository</i>	<i>Peterson's Magazine</i>	Total %/n
A	50% / 25	18% / 9	20% / 10	88% / 44
B	32% / 16	8% / 4	18% / 9	58% / 29
C	50% / 25	18% / 9	18% / 9	86% / 43
D	12% / 6	4% / 2	2% / 1	18% / 9
E	52% / 26	18% / 9	16% / 8	86% / 43

*A – Relative Advantage, B – Compatibility, C – Complexity, D – Trialability, E - Observability

** Total amount of advertisements examined for themes was 50

Characteristics of the Sewing Machine

Each of the themes discussed by Rogers (1983), relative advantage, compatibility, complexity, trialability, and observability, was identified and discussed in the magazine advertisements and editorials. Relative advantage themes included mentioning the brand or manufacturer this allows the consumer to know which brand to purchase. (see Figure 5). Testimonials were also used to highlight the sewing machine. For example, an advertisement in *Ladies' Repository*, 1869 stated, “Read what Bishop Clark says, it no doubt surpasses all other sewing machines for family use.” Experience was expressed by companies through listing how many years they had been in business or how many sewing machines they had sold. This helped give the company an advantage by appearing to be more skilled than the competitor.

Figure 5. Demonstrates relative advantage identifying the brand and describing it as the best

THE BEST! THE BEST! THE BEST!

—❧—

LADD, WEBSTER & CO.'S
TIGHT-STITCH

FAMILY SEWING-MACHINES.

Western Office—No. 80 West Fourth-Street, Cincinnati, Ohio.

This is the most simple, reliable, and durable machine, and will sew a **GREATER RANGE** of work, and in a **MORE PERFECT MANNER** than any other Sewing-Machine, as is proved by the result of our challenge for trial, which has never been accepted.

PRICES.....\$55 to \$100

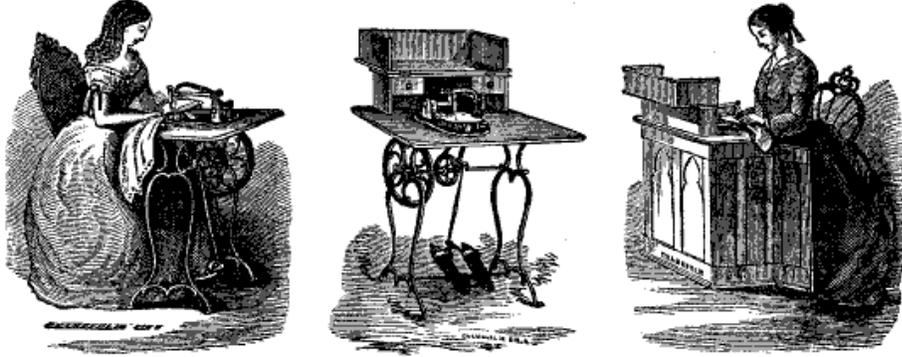
Ladies' Repository, Vol. 20, 12, December 1860

Compatibility themes found included helping women save time that was required for sewing clothing for their families. Price was also mentioned in order to become compatible with the consumer. In one case, the advertisement from *Ladies' Repository*, 1860, indicated a range of prices to assure compatibility with the consumer needs, "Prices from fifty five to one hundred dollars" (see Figure 6). An individual's values were trying to be met by the advertisements using value related adjectives to describe the sewing machine like family and home. Some even tried to appeal to religious values by having religious figures, such as bishops and priests, testify it was a good product.

Figure 6. Demonstrates compatibility by identifying a price range

WHEELER & WILSON'S
SEWING-MACHINES.
WM. SUMNER & CO., AGENTS.

PRINCIPAL OFFICES:
CINCINNATI.....Pike's Opera-House.
PITTSBURG.....No. 27 Fifth-Street.
LOUISVILLE.....No. 1 Masonic Temple.



PRICES FROM FIFTY-FIVE TO ONE HUNDRED DOLLARS.
Every Machine Warranted Three Years.

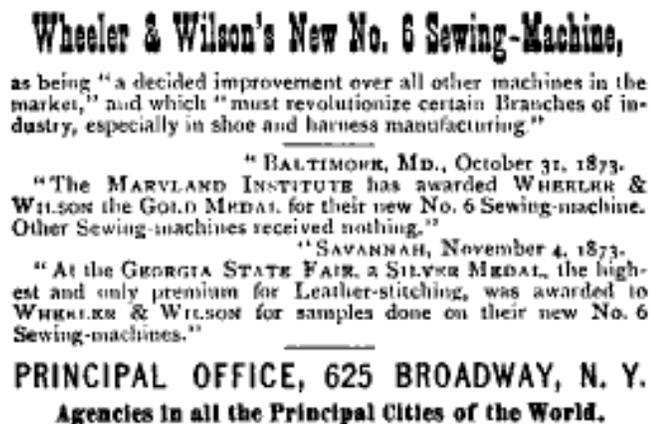
Ladies' Repository, Vol. 20, 12, December 1860

Complexity themes included new and improved. This allowed the consumer to know that the machine was being improved and the glitches or complicated attributes of the previous machine were fixed. Listing that the sewing machine was simple and easy to use is necessary in order for the consumer to believe that they could understand the product. Some articles and advertisements gave hints and tips on how to use the product. This further aids the potential consumer in understanding the machine. Giving a description and explanation of the machine stitch types allow the consumer to better understand certain intricacies about the machine. For example, an advertisement from a 1860 issue of Ladies' Repository said, "How to unravel the single and double thread tambour or chain stitches. Take hold of the end.....worn off or broken."

Trialability themes included trade shows. For example, the advertisement found in *Ladies' Repository*, 1869 indicated that the sewing machine was available at the "Exposition Universelle, Paris 1867". Consumers would be allowed to watch demonstrations, compare different machines, and ask questions to the salespeople. Also, the advertisements and articles highlighted the inclusion of a warranty upon purchasing a sewing machine.

Observability themes included where to purchase the sewing machine and location of offices. The consumer needs to easily figure out how to purchase the product. An example is "Principle Office, 625 Broadway, N. Y. Agencies is all the Principle Cities of the World" (see Figure 7).

Figure 7. Advertisement where observability is among the themes demonstrated by listing the location of the company



Ladies' Repository, Vol. 7, 1, December 1871

Most of the advertisements and articles focused on positive attributes of the sewing machine which support Rogers (1983) product characteristics framework. However, there were two occurrences in the *Ladies' Repository* that featured negative

responses. The first was an article that discussed the lack of consistency in the machine stitches, mentioning that they are not always the same length and lack strength (*Ladies Repository*, 1863). The second negative response was in an article that discussed how using the sewing machine could cause exhaustion and lead to back and side aches (*Ladies' Repository*, 1860).

Another finding that was inconsistent with Rogers (1983) product characteristics was the use of an innovation (the sewing machine) as an incentive. In *Arthur's Home Magazine* the sewing machine was used as an incentive for subscribers. If the individual subscribed for a year, they would receive a sewing machine.

Chapter V

Discussion, Conclusion, and Further Research

The purpose of this research was to explore the diffusion process of the sewing machine. After gathering the results from various women's magazines the diffusion of the sewing machine into society from 1860 to 1875 will be discussed answering the following research questions 1) How often is the sewing machine referenced in women's magazines from 1860 to 1875? 2) How does the total number of references to the sewing machine vary in different women's magazines from 1860 to 1875? and 3) What characteristics of the sewing machine were important to ensure its adoption?

Sewing Machine References in Women's Magazines

Advertisements with references to the sewing machine were highest from 1870 to 1874 and the fewest advertisements occurred during 1862 to 1864. The sewing machine did not decrease in price until around 1870 (Hounshell, 1984). Purchases made prior to the 1870s were made by the wealthy or communities that pooled their money to purchase a machine to share ("History of the Sewing Machine, 2010). Article occurrences in the magazines were highest in 1874 to 1875 and the least amount of articles published was during 1868 to 1869. The influx of articles in the mid 1870s occurred because more individuals were buying the sewing machine (Hounshell, 1984). The early adaptors would have been purchasing the machine already and the early majority would begin

purchasing the machine during this time. There was a greater need for articles to be written about the sewing machine to help consumers understand the product better.

Number of References to the Sewing Machine Vary in Different Women's Magazines

Rogers's (1983) theory of how a social system adopts an innovation aids in the explanation of the articles and advertisements frequencies. The three magazines were aimed at different women's target markets. *Arthur's Home Magazine*, which targeted the innovator group, featured the most advertisements. It featured a large section on fashion news because the reader would have had a busy social life and a desire for fashion news. It was an expensive subscription costing \$2.50 per year. Subscribers needed to have ample disposable income not only to purchase the magazine but in order to relate to articles or products being discussed. Businesses knew that advertising in this magazine was practical because the reader could afford the expense of a sewing machine.

The Ladies' Repository, which targeted the early adaptor, possessed the most articles. Topics of the articles were intellectual in nature and there was no fashion section within the magazine. Members of the Methodist Episcopal Church were the editors, a religious value system can be found in the way articles are written. As Rogers (1983) mentions early adaptors have the highest degree of opinion and are well educated. The readers found this magazine appealing because it gave information through articles and fewer advertisements. They are able to form a higher level of opinion with an article than advertisement.

Peterson's Magazine, which targeted the early majority, had the least amount of articles and advertisements. These consumers have above average social status with some

disposable income, allowing them to afford the \$2.00 a year subscription fee. The magazine had tips for saving money and gave fashion patterns allowing them to make clothing instead of purchasing, since they have limited disposable income. This magazine targeted the market with the least amount of disposable income, which is why it had the fewest advertisements.

Frequencies of advertisements and articles in the three different target markets demonstrate the adoption process as described by Rogers (1983) from the innovators to the laggards, which demonstrates the trickle down effect. Levy and Weitz (2006) show how the trickle down theory can be applied to the sewing machine. When the sewing machine was first released it was expensive and only the wealthy could afford it. Over time the price fell and became available for the majority of society to purchase. This can be seen in the results (see Figure 3 and 4). *Arthur's Home Magazine*, aimed at the innovator, had the most advertisements throughout the sixteen years. They had the financial income to risk investing their money in a new invention. *Ladies' Repository* aimed at the early adapters had the most articles and was second in the number of advertisers. The advertisements and articles became more frequent in the late 1860s and 1870s. It was found this consumer group started to show an interest in the sewing machine soon after the innovators (those who read *Arthur's Home Magazine*). *Peterson's Magazine* was targeted to the early majority with its article and advertisement frequency growing after 1870 demonstrating they adopted an innovation (the sewing machine) after a varying degree of time. One reason for this is Wheeler & Wilcox decrease their manufacturing expenses which in turn reduced the price needed to sell the sewing

machine, thus lowering the cost to the consumer. By the early 1870s, they were selling the machine for \$50 (Hounshell, 1984).

All three magazines had more advertisements in their December issues than in their June issues (see Table 1). This difference was most pronounced in *Arthur's Home Magazine* which targeted the innovator who had the greatest interest in new products and the greatest amount of disposable income. The difference in seasonal advertisements is due to the increase in purchases made during the Christmas season.

Important Characteristics of the Sewing Machine to Ensure its Adoption

Themes within the article or advertisement were noted using a content and theme analysis based on Glaser & Strauss's (1983) grounded theory approach, which corresponded to each of Rogers's five product characteristics. Three themes were most prominent in the advertisements dealing with sewing machines, which appeared in the three publications that were reviewed. Table 11 shows, relative advantage was encountered in 88% of the advertisements. Complexity and observability were seen in 86% of the advertisements. Compatibility was used less often being mentioned in 58% of the advertisements. Trialability was discussed in only 18% of the advertisements.

Rogers's (1983) product attributes of an innovation help explain how it is adopted into society. In the advertisements relative advantage, complexity, and observability were highly noticeable. Advertisements almost always mentioned the relative advantage theme by stating the name the brand or manufacturer in order to let the potential adopter know which company's machine to purchase. A few mentioned more detailed information like licensing, amount sold, or their competitors. Complexity themes like best, reliable, and

easy to use were common headlines at the top of the advertisements. Advertisers caught the adopter's attention and presented them with the perception the machine is easy to understand. Observability was the third most common attribute in the advertisements with the main theme being the location of stores and offices. This was important to list because the adopter needed to know where they could purchase the new machine. If it is not accessible, they would not purchase which would slow the rate or eliminate adoption of the sewing machine. Another common observability theme with one particular sewing machine brand, Wilson Sewing Co., placed advertisements for hiring agents to sell the machines. These advertisements were presented in a way that gave the potential adopter information about their sewing machine but also listed a job posting at the end of the ad. Wilson Sewing Co. turned a for hire advertisement into a product advertisement as well. This showed the potential adaptor that the company had such a high output they needed to hire more employees. It built credibility of the sewing machine and helped establish a network of salesman for the company to advertise by word of mouth.

Compatibility was mentioned in just over half of the advertisements. Price or price range the business was selling the machine at was the primary theme. This allowed the adopter to know whether or not it would fit into their budget, as well as compare prices amongst the brands. This gave the adopter control to choose the brand they feel most compatible. Trialability was the least common attribute found in the advertisements. If it was listed the theme was often in relation to a warranty. However, there were two occurrences where an advertisement by Wheeler & Wilson listed a trial date at a state fair. Potential Adaptors could come and try the sewing machine at the fair. "When a product can be tested it gets adopted more rapidly" (Rogers, 1983, p 150).

Compatibility was a prominent theme in the articles related to sewing machines appearing in 90% of the articles. Relative advantage and complexity were used less frequently at 55%. Observability was mentioned in only 5% of the articles while trialability was in 0%. In the articles, compatibility was the most common theme. Articles could establish a need for the product with the potential adaptor and provided the reader a thorough review of the sewing machine. The writers discussed how it was relatable to society. An innovation must be perceived to be relatable to the existing values and needs (Rogers, 1983). They stressed this by providing benefits of the sewing machine; such as being time saving and provided young women with jobs. The values that were mentioned focused on family and Christianity presenting the machine in a way that would fit with the adopter's morals.

Relative advantage and complexity were equal in article findings and found in just over half. Relative advantage was portrayed most commonly to the potential adopter by using testimonials. The articles featured people who owned a sewing machine and though it saved time or was easy to use. Complexity of the machine was encountered by explaining stitch types and improvements that had been made to the machines. This aided in the sewing machine becoming more comprehensible. If it was easier to understand the potential adopter has a higher chance of accepting the sewing machine. Observability was barely mentioned in the articles, which were not trying to sell a certain machine, rather provide reasons for the adaptor to purchase the machine. Locations and where to purchase were not important in the articles. Trialability was not mentioned in any of the articles. Trade shows were the main opportunity an individual had if they were going to try the sewing machine. However, there were very few trade shows held each year and

sparsely spread throughout the states. Due to the limited opportunities for a potential buyer to try the sewing machine, it was not an important attribute to advertise. Singer was one of the first companies to present their sewing machine at trade shows. His executives focused on their marketing strategies and looked for new venues, such as tradeshow, to promote their product (Hounshell, 1984).

Relative advantage was more important in advertisements while compatibility was most important in the articles. Relative advantage in advertisements was more common because the consumer had to know what brand they were purchasing and why they should be purchasing that particular one. This was done by giving certain facts such as amount sold that would give brand superiority. A company establishing brand superiority was important because by the late 1850s Singer and many other manufacturers began competing with to establish control in the market (“History of the Sewing Machine”, 2010). However, compatibility in the articles was prominent because an opinion could be formed about the actual product. The adopter could decide whether or not to adopt the sewing machine because the information provided was based on more than basic product data found in a manufacturer’s advertisement. Complexity and observability had a similar degree of occurrences in articles and advertisements. This is because the adopter needs to have an understanding of the product. As Rogers (1983) states the easier a product is to understand and comprehend the quicker it is adopted. The adopter also needs to know where or how to purchase it. A product has to be easily observed or communicated to others (Rogers, 1983). Trialability was not an important factor in either articles or advertisements. This may be because of the limitations

businesses faced during this time. Consumers did not expect to try out a product unless they attended a fair or trade show where it was being presented.

A few instances were noted that were not consistent throughout two of the three publications. Advertisements in *Arthur's Home Magazine* used the sewing machine as an incentive for subscribers. If an individual was one of the first to subscribe for the following year, they received a sewing machine. This not only increased their subscription number but widened the observability of the sewing machine. This was not a component found in Rogers's diffusion theory categories but incentives are an effective characteristic that can influence adoption. Another inconsistent finding was in two occurrences in articles of the *Ladies' Repository* there were negative responses to the sewing machine. One mentioned the lack of consistency in the machine stitches, the other discussed how using the machine caused exhaustion with back and side aches. This may not have been taken as a serious claim because women who sewed by hand or machine regularly were accustomed to aches and fatigue experienced with sewing. Also, this could be a result of the underlying reports of inconsistent stitching (*Ladies' Repository*, 1863). Companies did not want consumers to try out the sewing machine in order to hide the weak characteristic of irregular stitching.

Conclusion and Suggestions for Further Research

This study suggests that adopter categories differed on perceived attributes of an innovation (the sewing machine). The average consumer needed time to decide if the sewing machine was a product they wanted to purchase. This was explained by the increase in frequency of the advertisements and articles for all three magazines started in

1870. Rogers (1983) perceived attributes showed consumers considered relative advantage in the advertisements and compatibility in the articles most important. The sewing machine was adopted slowly over decades. A manufacturer of the sewing machine had limited resources during the 1800s to devise marketing strategies. This along with the slow rate of technology advancement caused the speed at which an innovation was adopted to happen over decades. The sewing machine was introduced for mass market purchase during the 1850s but the average consumer did not purchase until the early to late 1870s.

Further examination of the diffusion of the sewing machines can be performed. A larger amount of women's magazines could be researched, in addition to more issues within each year could be examined to further confirm the results. The examination of the diffusion of the sewing machine into society for this study focused on home owners and individual buyers. This study could be expanded to include clothing manufacturers and seamstress business to look at a more extensive diffusion rate in society. Results from this study can be compared to other technologies adopted in the clothing industry to clarify attributes of the diffusion process that are unique to the sewing machine, the time period, and diffusion theory. A visual analysis of the sewing machine as pictured in these magazines could be conducted to further understand its development.

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Appendix B.

Data Collected

Table 5. Amount of advertisements and articles and their theme that reference the sewing machine in *Ladies Repository* spring issues

Date	Vol. Issue	# of Ads	Theme	# of Articles	Theme	Total # or Ads and Articles
1860	Vol 20, 6	0	-	0	-	0
1861	Vol 21, 6	0	-	1	1B,1C	1
1862	Vol 22, 6	0	-	0	-	0
1863	Vol 23, 6	0	-	0	-	0
1864	Vol 24, 6	0	-	0	-	0
1865	Vol 25, 6	0	-	1	1B	1
1866	Vol 26, 6	0	-	0	-	0
1867	Vol 27, 6	0	-	0	-	0
1868	Vol 1, 6	0	-	0	-	0
1869	Vol 3, 6	0	-	0	-	0
1870	Vol 5, 6	0	-	0	-	0
1871	Vol 7, 6	1, 2	1A,1C,1E 2A,2C,2E	0	-	2
1872	Vol 9, 6	0	-	1	1B	1
1873	Vol 11, 6	0	-	1	1B,1C	1
1874	Vol 13, 6	0	-	0	-	0
1875	Vol 1, 6	0	-	0	-	0
Total	-	2	-	4	-	6

*Themes: A – relative advantage, B – compatibility, C – complexity,
D – trialability, E – observability

Table 6. Amount of advertisements and articles and their theme that reference the sewing machine in *Ladies Repository* winter issues

Date	Vol. Issue	# of Ads	Theme	# of Articles	Theme	Total # or Ads and Articles
1860	Vol 20, 12	1, 2, 3	1A,1C,1E 2A,2B,2C,2E 3A,3C,3D,3E	0	-	3
1861	Vol 21, 12	0	-	1	1B	1
1862	Vol 22, 12	0	-	0	-	0
1863	Vol 23, 12	0	-	1	1A,1C	1
1864	Vol 24, 12	0	-	0	-	0
1865	Vol 25, 12	0	-	0	-	0
1866	Vol 26, 12	0	-	0	-	0
1867	Vol 26, 12	0	-	0	-	0
1868	Vol 2, 6	n/a	-	n/a	-	n/a
1869	Vol 4, 6	1, 2	1A,1B,1C,1E 2A,2C,2D,2E	0	-	2
1870	Vol 6, 6	0	-	1	1A,1B	1
1871	Vol 8, 6	1	1A,1B,1C,1E	0	-	1
1872	Vol 10, 6	1	1A,1B,1C,1E	0	-	1
1873	Vol 12, 6	0	-	1	1A,1B	1
1874	Vol 14, 6	0	-	1, 2	1B,1C 2A,2B,2C	2
1875	Vol 2, 6	0	-	1	1B,1C	1
Total	-	7	-	7	-	14

*Themes: A – relative advantage, B – compatibility, C – complexity,
D – trialability, E – observability

Table 7. Amount of advertisements and articles and their theme that reference the sewing machine in *Arthur's Home Magazine* spring issues

Date	Vol. Issue	Ads	Theme	Articles	Theme	Total # or Ads and Articles
1860	Vol 15, 6	0	-	0	-	0
1861	Vol 17, 6	0	-	0	-	0
1862	Vol 19, 6	0	-	0	-	0
1863	Vol 21, 6	0	-	0	-	0
1864	Vol 23, 6	0	-	0	-	0
1865	Vol 25, 6	0	-	0	-	0
1866	Vol 27, 6	0	-	1	1A,1B,1C	1
1867	Vol 29, 6	1	1A,1E	0	-	1
1868	Vol 31, 6	1	1B,1C	0	-	1
1869	Vol 33, 6	1	1B,1C	1	1B	2
1870	Vol 35, 6	0	-	0	-	0
1871	Vol 37, 6	0	-	1, 2	1B 2A,2B,2C	2
1872	Vol 39, 6	1, 2, 3	1A,1C,1E 2A,2C,2E 3A,3C,3E	0	-	3
1873	Vol 41, 6	0	-	0	-	0
1874	Vol 42, 6	1	1A,1B,1C,1E	0	-	1
1875	Vol 43, 6	0	-	0	-	0
Total	-	7	-	4	-	11

*Themes: A – relative advantage, B – compatibility, C – complexity,
D – trialability, E – observability

Table 8. Amount of advertisements and articles and their theme that reference the sewing machine in *Arthur's Home Magazine* winter issues

Date	Vol. Issue	Ads	Theme	Articles	Theme	Total # or Ads and Articles
1860	Vol 16, 6	1	1A,1B,1C,1E	0	-	1
1861	Vol 18, 6	0	-	0	-	0
1862	Vol 20, 6	1	1A,1B,1D,1E	0	-	1
1863	Vol 22, 6	0	-	0	-	0
1864	Vol 24, 6	0	-	0	-	0
1865	Vol 26, 6	1, 2, 3, 4	1A,1B,1C,1D,1E 2A,2E 3A,B,C,D,E 4A,4B,4C,4E	0	-	4
1866	Vol 28, 6	1, 2, 3, 4	1A,1B,1C,1D,1E 2A,2B,2C,2E 3A,3B,3C,3E 3A,3B,3C,3E	1	1A,1B,1C,1E	5
1867	Vol 30, 6	N/a	-	N/a	-	-
1868	Vol 32, 6	1	1B,1C	0	-	1
1869	Vol 34, 6	0	-	0	-	0
1870	Vol 36, 6	0	-	1	1A,1C	1
1871	Vol 38, 6	1, 2, 3, 4, 5	1A,1C,1E 2A,2C,2E 3A,3C,3E 4C,4E 5C,5E	0	-	5
1872	Vol 40, 6	1, 2	1A,1B,1C 2A,2C,2E	0	-	2
1873	Vol 41, 12	1, 2	1A,1C,1E 2A,2B,2C,2D,2E	0	-	2
1874	Vol 42, 12	1, 2	1A,1E 2A,2B,2C,2D,2E	1	1B	3
1875	Vol 43, 12	1	1A,1E	0	-	1
Total	-	23	-	3	-	26

*Themes: A – relative advantage, B – compatibility, C – complexity, D – trialability, E – observability

Table 9. Amount of advertisements and articles and their theme that reference the sewing machine in *Peterson Magazine* spring issues

Date	Vol. Issue	Ads	Theme	Articles	Theme	Total # or Ads and Articles
1860	Vol 37, 6	0	-	0	-	0
1861	Vol 39, 6	0	-	0	-	0
1862	Vol 41, 6	0	-	0	-	0
1863	Vol 43, 6	0	-	0	-	0
1864	Vol 45, 6	0	-	0	-	0
1865	Vol 47, 6	0	-	0	-	0
1866	Vol 49, 6	0	-	0	-	0
1867	Vol 51, 6	0	-	0	-	0
1868	Vol 53, 6	0	-	0	-	0
1869	Vol 55, 6	0	-	1	1A,1B,1C	1
1870	Vol 57, 6	0	-	0	-	0
1871	Vol 59, 6	1, 2, 3	1A,1B,1C,1E 2A,2B,2C,2E 3A,3B,3C,3E	0	-	3
1872	Vol 61, 6	0	-	0	-	0
1873	Vol 63, 6	0	-	0	-	0
1874	Vol 65, 6	1	1A,1B,1C,1D,1E	1	1A	2
1875	Vol 67, 6	0	-	0	-	0
Total	-	4	-	2	-	6

*Themes: A – relative advantage, B – compatibility, C – complexity, D – trialability, E – observability

Table 10. Amount of advertisements and articles and their theme that reference the sewing machine in *Peterson Magazine* winter issues

Date	Vol. Issue	Ads	Theme	Articles	Theme	Total # or Ads and Articles
1860	Vol 38, 6	0	-	0	-	0
1861	Vol 40, 6	0	-	0	-	0
1862	Vol 42, 6	0	-	0	-	0
1863	Vol 44, 6	0	-	0	-	0
1864	Vol 46, 6	0	-	0	-	0
1865	Vol 48, 6	0	-	0	-	0
1866	Vol 50, 6	0	-	0	-	0
1867	Vol 52, 6	0	-	0	-	0
1868	Vol 54, 6	0	-	0	-	0
1869	Vol 56, 6	1	1A,1B,1C,1E	0	-	1
1870	Vol 58, 6	1, 2	1A,1E 2A,2C	0	-	2
1871	Vol 60, 6	1	1A,1B,1C,1E	0	-	1
1872	Vol 62, 6	1	1A,1B,1C	0	-	1
1873	Vol 64, 6	1, 2	1A,1B,1C 2B,2E	0	-	2
1874	Vol 66, 6	0	-	0	-	0
1875	Vol 68, 6	0	-	0	-	0
Total	-	7	-	0	-	7

*Themes: A – relative advantage, B – compatibility, C – complexity, D – trialability, E – observability