

Impact of the mechanical reaper



The reaping machine commonly referred to as the mechanical reaper was invented by Cyrus McCormick and Obed Hussey in 1833 and 1834. It followed a major pattern for its uses in the harvesting of wheat and other small grains as well as grasses. The invention of the mechanical reaper drastically changed the lives and yields of grain farmers. In regards to the eventual success and large effect of the reaping machine, the historians usually ask themselves why the machines take too long to be accepted despite its invention in 1833. The first machines that Obed Hussey invented were adopted in the mid-1850's. Why wasn't a machine which could substantially increase productivity immediately adopted? Wouldn't it have increased farmer's profits during the 1830s and 1840s? Why do we see mass adoption across farms of all sizes in the 1850s? What changes during the 1850s and how does it lead to widespread adoption. What models explain the theory observed pattern of the adoption and what critical assumption must be made? What evidence does Olmstead and Rhode offer to support or justify this assumption? These are significant historical questions that this paper will attempt to answer.

Drawing from Olmstead (1975), during the 1830s, there never existed technological machines that promoted productivity. Thus, the mechanical reaper could not be rented or shared between farmers. It looked like it was a personal capital investment and the farmers acted as if they were the productivity maximizers. The farmers assumed that their judgments as to the number of acres of land to plant small grains were autonomous of the reaper[1]. Taking into account these assumptions as well as the knowledge of the costs, the time that the farmers could adopt the machines was

predicted 21 years, which was similar to twenty-one acres of land. The threshold was five years. From the time the first machine was sold; 1833, the gap fell between 1854-1857. It was the period the gap between the actual and threshold acreage fell for the diffusion of the reaper in the mid-1850's. If the reaper had been adopted in the 1830s and 1840s, it would not have benefited the farmers because many of them practiced small-scale farming. Indeed, during this time, mechanization was expensive. The relative costs of the reaper did not correspond to the capital scarcity, meaning that the cost of the reaper restricted the adoption of the reaper in the 1830s and 1840s[2]

After the adoption of the mechanical reapers in the 1850s, farmers realized that the first areas that the reaper was established were developing more than other areas. As a result, farmers started replacing their machines with the mechanical reaper. The significant of cooperation increased. There were relative benefits for the farmers who adopted the reaper. The great sharing of the mechanization in the 1850s was a great contribution that helped farmers who adopted the machines to increase their productivity. During this period, the labor market was scarce in agricultural regions. The farmers turned to mechanization for labor, thus contributing to the adoption of the reapers in the 1850s. The capital required for the adoption of the reaper was scarce and beyond individual farmers. Many small farmers could not meet the expense of many animals such as four horses for farming. So, the only solution was to jointly come together and solve these challenges. The small farmers came to join to share the cost of mechanization, which also promoted the adoption of the reaper. Progressively, farmers accumulated the required capital and increased their acreage in small grains due to the

fact that they could access the reaper. As a result, the need for sharing declined and the adoption of the Reaper continued.

The best model to explain the adoption of the mechanical reaper is the “threshold model” by Paul David. The model assumes that the farmers maximized their profits, the reapers could not be shared, the farm acre increased with time and the productivity of the acre did not depend on the farm size[3]. This model is made to compare two distinct production techniques. It works from the statement that given the competitive markets, the individual producers will choose the technique that gives comparatively greater cost saving. It is what applied to the adoption of the mechanical reaper. During the 1830s-1840s, farmers opted to use animals and human hands because they engaged in small farming. The cost of purchasing the mechanical reaper was higher than using animals and human hands. There was also no sharing of cost among the farmers. Nevertheless, during the 1850s the demand for labor increased as farmers started large-scale farming. There was a need for cooperative sharing of the cost of the reaper as it was expensive to use animals for harvesting small grains. So, the only option for these farmers was to adopt the mechanization of the reaper. Drawing from Clarke (2002), the “ threshold model” offers the conceptual platform for examining the cost determinant of technological diffusion.

Indeed, through the assumptions of fairness asserted by Olmstead and Rhode, people maximize their profits through the budgetary constraints[4]. It is what justify and support their claim about the adoption of the reaper. If these farmers could have adopted the reaper during the 1830s-1840s, they could not maximize their profits because it would have increased their

budget. The cost of the machine was high, and they maximized profits independently. The best time for the adoption of the reaper was the 1850s because the demand for labor was high and the farmers had increased their acreage for farming.

Work Cited

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[2]Olmstead, Alan L. "The mechanization of reaping and mowing in American agriculture, 1833-1870." *Journal of Economic History* (1975): 327-352

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