Custom Hiring: A Steady Revolution in Farm Mechanization

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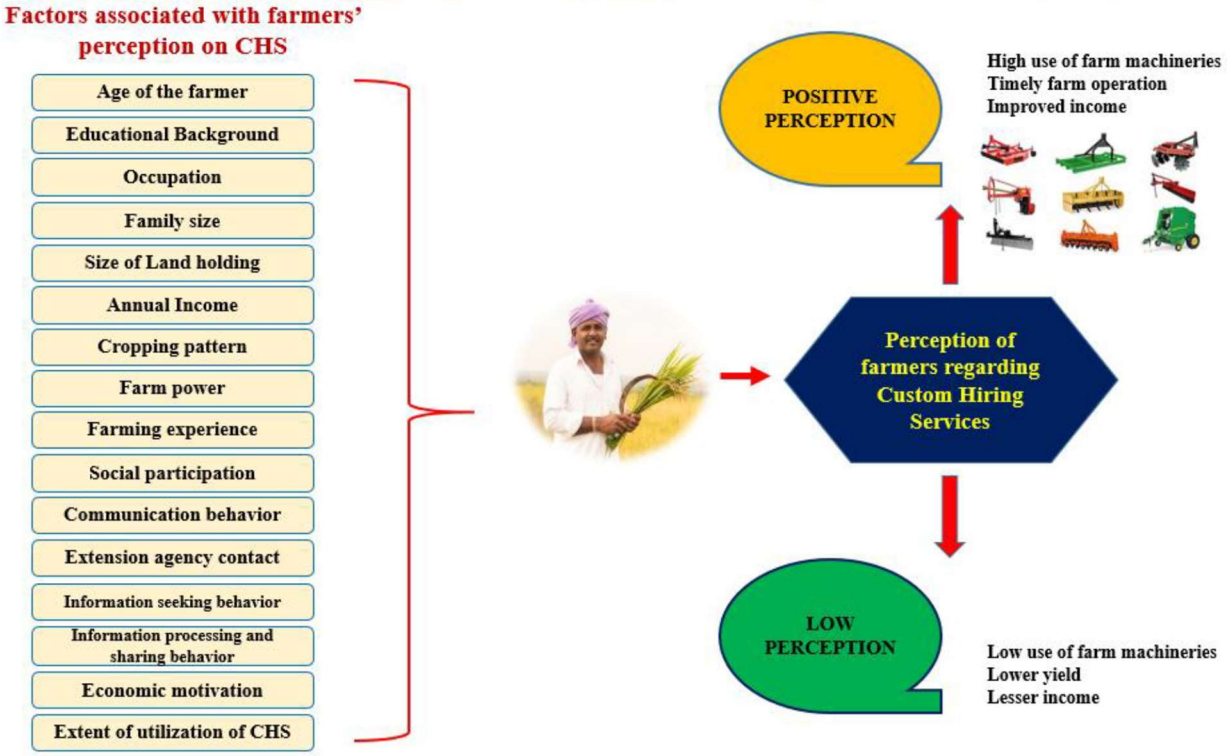
Introduction

As goes the proverbial saying "everything else can wait but not agriculture", agriculture demands timeliness. Advantages of timely completion of agricultural operations have shown significant benefits both on research farms and farmers' fields. Recently, due to high degree of weather aberrations, the timeliness of agricultural operations has become more vital. Generally, the ideal conditions for an agricultural operation such as sowing or intercultural operation exist for a short period of time. If the farmer fails to complete the operation within the ideal time frame, the output might get compromised. Therefore, use of farm machinery is inevitable. However, for long, small agricultural farms stayed away from mechanization considering that it is possible to mechanize only big farms. However, we now have several options to increase the efficiency and timeliness of agricultural operations even on small farms by using agricultural machinery. Since the labour wages are increasing day by day and farm equipment might not be affordable and sufficient for all, sharing of implements by innovative institutional arrangements come into the picture.

The current total agricultural mechanisation is 47% in India, which is lesser than countries like USA, Japan, Brazil, China etc. The overall mechanisation level in wheat is 69%, 50% in rice, 45% in maize, 41% in pulses, 38% in oilseeds, 35% in cotton, and 33% in millets and sugarcane. In the recent past, custom hiring of agricultural machinery is seen as an appropriate institutional arrangement which can promote mechanization of agricultural operations on small farms. Custom Hiring Centre (CHC) is a unit consisting of a set of farm machinery, implements, and equipment that is provided to the farmers at affordable prices on a hiring basis. Custom hiring was first introduced in the country in the year 1912 in Punjab with the use of a steam thresher. After the 1990s the custom hiring services increased with the launch of government schemes. For the first time, an attempt had been made by the National Initiative on Climate Resilient Agriculture (NICRA) to set up one custom hiring center each at the 100 climatically vulnerable villages across the country, which are actually functioning. These custom hiring centers are managed by farmers through Village Climate Risk Management Committees (VCRMC).

Between 1900 and 2020, agricultural mechanisation, including pre-and post-production, transitioned from subsistence farming to robots and artificial intelligence. After 2010, a new era of technology known as precision agriculture and post-harvest processing began. Precision technologies aid in the judicious application of seeds, fertilisers, pesticides, and water, among other things. Similarly, using digital technology for harvesting, packaging, transportation, storage, processing, and marketing lowers post-harvest losses to a bare minimum. The new digital farming

(DF) or smart farming technology focuses on real-time agricultural data collecting and decision-making. These technologies include cloud computing/big data analysis tools such as block chain and smart contracts, the Internet of Things (IoT), digital communication technology (mobile phones), image processing, and digital platforms. Precision agriculture research is in its early stages, and technologies such as sensor-based embedded systems (soil nutrient, temperature, fertility, and moisture gradients), guidance systems (often enabled by GPS, GNSS, RFID), variable-rate input technologies (VRTs), automated machinery (automatic control and robots), and advanced imaging technologies (including satellite and drone imagery), NIR spectroscopy, hyper-spectral, X-ray, and magnetic resonance imaging are being developed.



A range of factors, as shown in Figure , are involved in determining the perception of farmers towards the usage of CHCs which include: Age of farmers, educational background of the farmer, their occupation, family size, land holdings, annual income, cropping pattern, farm power/implements, farming experience, social participation, communication behaviour, extension agency contact, information processing & sharing behaviour, economic motivation, the extent of utilization of CHCs by the farmers.

The Ministry of Agriculture and Farmers Welfare launched the Sub-Mission on Agricultural Mechanization (SMAM) in 2014-15 and undertook various farm mechanization activities like establishment of Custom Hiring Centers (CHC), Farm Machinery Bank (FMB), Hi-Tech Hubs in various states. and distribution of various agricultural machinery etc. The objective of the scheme is to increase access of mechanization to small and marginal farmers in regions where availability of farm power is low. These efforts have yielded significant results, with farm power availability per unit area increasing from 2.02 kw/ha in 2016-17 to 2.49 kw/ha in 2018-19. Custom hiring is a very useful

method for short term control of farm machinery especially during ploughing operations, sowing and harvesting operations etc.

In the rush to mechanize farm operations, the private sector too isn't far behind. According to a report published by lobby group FICCI and the German Agribusiness Alliance, leading farm equipment manufacturers such as Mahindra and Mahindra, TAFE, Escorts and John Deere are trying out different models of custom hiring. Noting that purchasing costly equipment like combined harvesters can be prohibitively expensive, even for large farmers, the report said that "custom hiring is the only practical way to introduce capital-intensive, high-quality mechanisation to the small farming structures prevalent of India". TAFE's JFarm Services aims to increase easy access to farm mechanization solutions through rental of tractors and modern farm equipment to small and marginal farmers, enhancing their productivity and increasing their income significantly. It facilitates the hiring of tractors and modern farm machinery to farmers, free of cost, through its Farmer-to-Farmer (F2F) rental platform. TAFE's JFarm Services will collaborate with the agricultural development officers of the Gujarat Government to ensure wide outreach and successful roll-out of the platform. JFarm Services has a presence in states like Gujarat, Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Odisha, Jharkhand, Maharashtra, Karnataka, Andhra Pradesh, Telangana, Tamil Nadu and Assam, and has directly benefitted about 3,14,000 users resulting in over 8,25,000 hours in hired farm machinery usage. In a short span of time, JFarm Services has become one of India's largest farm equipment aggregation operators.

The farm machinery industry in India has three tiers. The industry is dominated by approximately 1,00,000 village-level craftsmen who supply, repair and maintain hand tools in villages. At the next level, there are 2,500 small-scale producers who generate enhanced farm equipment. The organised agricultural machinery sector contains approximately 250 mediums to large-scale firms that manufacture advanced machinery, provide after-sales service, and innovate goods and procedures. Furthermore, increased mechanisation has a favourable impact on employment. While interaction with these private players gave insights into design, marketing and adoption of machines, there were few emerging challenges:

- Goods and Service Tax (GST) is high on the products. Example: 18% on saffron dryer (as it is a dryer, comes under the category of industrial tools and hence high taxes) leading to high price. There should be some consumer price classification for farmers/industries/business etc.
- Identification of people/ entrepreneurs who want to purchase machines or open CHC so that these private agencies can collaborate maintaining the efficiency and maximize machine reach. Collaborations/ connection with CHC/FMB for their network. This can ensure demand of CHC machines and spread the reach to the farmers.
- Exploring ways to leverage government subsidy mechanism to work parallel and optimize subsidies for machine adoption.

- Involving specific startups to become a training agency for the government to share the load of FMTTIs and develop skilled operators for various machines in various districts of the country. This will enable the reach to all pockets of the country and not only limit it to FMTTI reach.

Agriculture and Allied graduates possess a wealth of knowledge and skills that can significantly contribute to the success and efficiency of custom hiring centers in any agricultural region. Here are several ways agriculture and Allied graduates can make meaningful contributions:

- Technical Expertise: can provide expertise in operating and maintaining agricultural machinery. Their understanding of equipment functionality and best practices can ensure the proper functioning and longevity of machinery in custom hiring centers.
- Business Development and Management: can assist in developing business plans for custom hiring centers, including feasibility studies, financial projections, and operational strategies.
- Inventory Management: Their skills can be utilized in managing inventory, ensuring that the right mix of machinery is available based on seasonal demand and specific farming needs.
- Customer Relations: can play a pivotal role in establishing and maintaining good relationships with farmers who utilize the custom hiring services.
- Training and Education: Farmers' Training: can conduct workshops or training sessions for farmers on machinery operation, maintenance, and safety protocols, enhancing farmers' knowledge and confidence in utilizing the equipment effectively.
- Staff Training: can train the staff working at the custom hiring centers, ensuring they are well-versed in machinery operation and customer service.
- Technological Integration: Agriculture graduates often have insights into modern agricultural technologies. They can aid in the integration of technological solutions, such as digitizing operations, implementing GPS systems, or introducing precision agriculture techniques.
- Research and Development: can contribute to the research and development aspect, suggesting improvements or modifications to existing machinery based on their knowledge of agricultural practices and emerging technologies.
- Policy and Advocacy: can advocate for policies that support custom hiring centers, such as subsidies for equipment, financial support, or regulatory frameworks that facilitate their operation.

By leveraging their education, skills, and understanding of agricultural practices, agriculture graduates can play a vital role in enhancing the effectiveness, efficiency, and sustainability of custom hiring centers in India, thereby contributing significantly to the agricultural sector's growth and development.