

Optimizing Farm Machinery Utilization through Custom Hiring Centers: A Farmers' Perspective

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ABSTRACT

Farm mechanization is crucial for boosting land productivity by ensuring timely and precise agricultural operations, reducing crop loss, increasing labor efficiency, and enhancing the quality of farm work. However, small and marginal farmers often cannot afford the necessary equipment due to their poor economic conditions. Custom Hiring Centers (CHCs) provide a solution by offering affordable access to farm implements, addressing labor shortages, ensuring efficient operations, and increasing yields by sharing the cost of implements through 'innovative arrangements. With respect to the results revealed regarding the extent of utilization patterns of farm machinery and implements at the customs hiring service center, results indicated more than one-third (37.85%) of the farmers belonged to the high utilization category, followed by the low (35.71%) and medium (26.43%) categories. Later a synoptic study in 2022, of the post-pandemic scenario, showed changes in the attitude of farmers towards custom hiring in farm mechanization in Vijayapur district which indicated that after a midsize decrease in mechanized agricultural practices (during PANDEMIC-19), which consequently led to reduced farm implements accessibility, there has been improvements in the availability and usage of CHSCs by farmers for increasing their farm productivity.

Key words: Mechanization, Custom Hiring Service Centers, Extent of Utilization, Implements, Post-pandemic scenario

Introduction

Agriculture is the backbone of the Indian economy, providing the primary source of livelihood for a large portion of the population. *Agriculture* contributes around 15% of *Gross Value Added (GVA)* in the total economy during 2022-23 and has been growing at 4.3% during last six years. Out of India's total geographical area, 139.4 million hectares are net sown areas. A majority of rural households depend on agriculture, with around 82% of farmers being small and marginal, and 54.3% of the workforce engaged in agriculture and allied sectors.

Due to labor shortages and decreased draft animal populations, timely agricultural operations

have become challenging, resulting in increased wages and reduced productivity. Farm mechanization can address these issues by ensuring timely, precise operations, reducing crop loss, and enhancing labor efficiency. However, small and marginal farmers often can't afford the necessary machinery. Custom Hiring Centers (CHC) offer a solution by providing access to farm machinery at affordable rates.

Custom hiring of farm mechanization was first introduced in Indian agriculture in 19th century and the custom hiring was introduced in India in 1912 with a steam thresher in Punjab (Srinivasarao *et al.*, 2013). In 1971, Government of India launched a scheme all over the country to set up agro services

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centers, which gave boost to custom hiring services. Custom hiring was also given important, under National Agriculture Technology Project (NATP) and National Agricultural Innovation Project (NAIP) schemes, but in a limited preference. During 2014, the Department of Agriculture, Government of Karnataka proposed to establish 186 Custom Hiring Service Centers (CHSCs) and to be run by 2 private entities. Shri Kshethra Dharmasthala Rural Development Project, a charitable trust promoted by the administrator of Dharmasthala temple in Dakshina Kannada and Indian Society of Agribusiness Professionals, New Delhi already running 161 and 17 centers respectively. In Vijayapur district, the custom hiring service is being availed at 7 centers in 5 taluks (Vijayapur, Basavan Bagewadi, Sindagi, Indi and Muddebihal) at hobli level. The custom hiring service in Vijayapur district is being provided by a social and human resource organization Kala Chetana Yuva Samasthe.

This paper discusses the services provided by CHCs, extent of utilization by farmers of these services. It also consists of a synoptic study in 2022, of the post pandemic scenario, regarding the usage of services of CHSCs by farmers and the plausible changes that took place post-pandemic phase. The study aims to explore the suitability of CHC services for farmers, the role of mechanization in current farming practices, and potential these government and non-government institutions hold to improve CHC accessibility to farmers

Materials and Methods

The present study was conducted in Vijayapur district of Karnataka. Vijayapur district was purposively selected for the study as Custom Hiring Service Centers were implemented in all the five taluks of Vijayapur district i.e. Vijayapur, Indi, Basavana Bagewadi, Muddebihal and Sindagi. *Ex-post facto* research design was employed, since the phenomenon had already occurred and the design was considered appropriate. All these taluks were selected purposively, as in all these taluks custom hiring service centers were started at hobli level. By using proportionate random sampling procedure, numbers of respondents were selected. Thus total sample size constituted for the study was 140 farmers from each hobli (CHSCs). The selected farmers were interviewed and desired information was collected with the help of predesigned and pre-tested schedule.

The data collected were scored, tabulated, and analyzed by using statistical tools such as frequency, percentage, mean and standard deviation. Later on a snapshot of the post pandemic scenario in 2022 was taken (secondary data from the NGO, Kala Chetana Yuva Samasthe) regarding the farmers' extent of utilization of the services provided by CHSCs in Vijayapura district.

Results and Discussion

A perusal of the data in Table 1 indicated the extent of utilization of farm machineries at CHSCs, which stated that high majority of the farmers used tractor (92.14%), followed by multiple crop thresher (77.85%), rotavator (73.57%), mould board plough (67.85%), cultivator (67.85%). More than two fifth of the farmers used power tiller (45.00%), blade harrow (38.57%) and equal no of farmers used seed drill and seed cum fertilizer drill (36.42%). This is because, these are the machineries were in high demand in study area. The results pertaining to frequency of usage of farm machineries and implements at custom hiring service centre revealed that, considerable percentage of the farmers used blade harrow frequently (27.85%), followed by cultivator (25.71%), post hole digger (21.42), power tiller (19.28%), rotavator (18.57%) and seed cum fertilizer drill (15.00%). Majority of the farmers used tractor rarely (82.85%), followed by multiple crop thresher (65.00%), mould board plough (57.14%), rotavator (56.42%) and cultivator (40.71%). Further Table 22 also revealed that majority of the farmers never used diesel engine pump (82.14%), followed by seed cum drill (68.00%) and power tiller (66.00%). The studies were supported by the findings of Vanetha (2006), Srinivasrao *et al.* (2013), Hiremath *et al.* (2015), Sampathkumar (2014) and Chandrashekar (2016).

A perusal of the data in Table 1.1 indicated more than one third (37.85%) of the farmers belonged to high utilization category followed by low (35.71%) and medium (26.43%) categories. This might be due to the fact that farmers are using traditional implements, and they are in need of the farm implements and machineries which are required for different agricultural operations during the whole cropping season, made available by CHSCs. The studies were supported by the findings of Jyoti (2012), Vanetha & Senthil (2013), Sampathkumar (2014) and Kisku & Bisht (2022). The research on farmers' extent of utilization of the services provided by custom hiring of

Table 1. Extent of utilization of farm implements at custom hiring service centers (n=140)

Sl. No.	Machineries at CHSC	Utilization				Frequency of usage					
		Yes		No		Frequently		Never		Rarely	
		F	%	f	%	f	%	f	%	f	%
1	Tractor	129	92.14	11	7.86	13	9.29	116	82.86	11	7.85
2	Rotovator	103	73.57	37	26.43	26	18.57	79	56.43	35	25.00
3	Mould board plough	95	67.86	45	32.14	15	10.72	80	57.14	45	32.14
4	Cultivator	88	62.86	52	37.14	36	25.71	57	40.71	47	33.58
5	Power tiller	63	45	77	55	27	19.28	26	18.57	87	62.14
6	Diesel engine pump	26	18.57	114	81.42	4	2.85	21	15	115	82.14
7	Blade Harrow	54	38.57	86	61.42	39	27.85	20	14.28	81	57.85
8	Seed drill	52	37.14	88	62.86	12	8.57	37	26.43	91	65
9	Seed cum fertilizer drill	51	36.42	89	63.57	21	15	35	25	84	60
10	Post hole digger	45	32.14	95	67.85	30	21.42	27	19.28	83	59.28
11	Multiple crop thresher	109	77.86	31	22.14	16	11.43	91	65.00	33	23.57
12	Battery operated Sprayer	72	51.43	68	48.57	14	10.00	58	41.43	68	48.57

Table 2.1. Overall extent of utilization of farm machineries at custom hiring service centers (n=140)

Category	2014-2018		Post-pandemic scenario
	f	%	
Low (< 0.86)	50	35.71	61.10
Medium (0.87-2.31)	37	26.43	42.68
High (> 2.31)	53	37.86	18.42
Mean = 8.17	SD = 3.16		

f = Frequency % = Percentage

farm machinery following the PANDEMIC-19 pandemic indicates a considerable decrease in mechanized agricultural practices during the initial phase of the crisis. This decline is linked to transportation restrictions and limited mobility, leading to labor shortages (despite of the reverse labor migration in rural areas). As a result, reliance on hired labor significantly decreased, with families becoming the primary workforce. However, by 2022, the situation began to improve, with the utilization of farm machinery gradually increasing to boost cultivation and enhance productivity, which had been stagnating for some time. The table 1.1 also indicates the overall farmers' extent of utilization of the services provided by CHSCs in the post-pandemic phase, which indicates about 18.42%, 42.68% and 61.10% of the farmers, belonged to high, medium and low utilization category towards custom hiring service centre respectively. This might be due to post pandemic disruption recovery, yet requires scale-appropriate machinery in alleviating labor shortages. The result shows that gradually the farmers are tending to ac-

cess the services of CHSCs in order to boost their farm productivity.

Summary and Conclusions

Farm mechanization is an important element of modernization of agriculture and is the need of the hour in the present Indian agricultural scenario. Thus, establishment of Custom Hiring Service Centers (CHSCs) and shelving farm machinery required for various farm activities right from land preparation to post harvest would enable small and marginal farmers to mechanize farm activities by way of hiring the farm machinery on nominal hire charges, towards which farmers show their positive attitude and frequently utilize the farm machineries and services provided by the CHSCs. In order to increase the extent of utilization of farm machineries and implements, there is a need to create awareness about the farm machineries and equipments through the awareness campaigns, exhibitions and mass media by extension agencies in rural areas. KVKs and extension wings of universities need to play a very key role in sensitizing the farmers on custom hiring adoption. There is a need to innovate Custom Hiring model by institutionalization for high cost farm machinery such as combine harvesters, sugarcane harvester, Onion transplanter, laser guided land leveler etc. Hence, custom hiring of agricultural machineries and implements becomes important in this context and therefore, Custom Hiring Centers (CHCs) is a boon for farmers especially for the small and marginal farmers.

The pandemic served as a real-time empirical

study of over-reliance on manual labor, revealing how the labor-intensive agricultural sector struggled to meet economic demands (TAFE, 2022). A synoptic study of the post-PANDEMIC-19 scenario has underscored the heightened importance of starting from scratch with scale-appropriate machinery in alleviating labor shortages. From the beginning, extension organizations must emphasize off-season attachments like trailers and milling as well as processing equipment and facilities to offer services and generate income for the CHC during the offseason (Padhee and Pingali, 2020). It is suggested that CHCs must ensure learning and change are agreed upon at the constitutional level regarding the inflexible or fixed CHC rules on service provision, machinery management and rental rates, after the substantial disruption in services of CHSCs, to kick off for a better start towards farm mechanization. Moreover, to make the CHCs sustainable, at least one or more persons (or CHC managers paid as part-time) must be dedicated to ensuring machinery servicing in their community, for facilitating better services to farmers after the yearlong slack off period. From the beginning, extension organizations must emphasize off-season attachments like trailers and milling as well as processing equipment and facilities to offer services and generate income for the CHC during the offseason FAO(2021).

Conflict of Interest: None

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