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## Custom hiring service centres in agriculture: Challenges on both sides of the plough in Tumakuru District of Karnataka

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### Abstract

Farm mechanization has been recognized as one of the important inputs for increasing the productivity of land by ensuring timeliness and precision of agricultural operations, reduction of loss of crops and food products, increased labour work output per unit time by reducing efforts and drudgery and improved quality of farm operations. Therefore, present study was carried out in Tumakuru district of Karnataka state to identify the problems associated with the functioning of custom hiring service centres and problems faced by the farmers in using its service. The result revealed that damage caused by farmers to the machinery, seasonal demand and delay in payments ranked I, II and III respectively in the same line some other problems associated with the functioning of custom hiring service centres (CHSCs) were listed and problems faced by farmers in using custom hiring services are non-availability of machinery during peak season, non-availability of skilled labour to operate agriculture machinery and Hiring Charges are not affordable ranked I, II and III respectively and other problems challenged by the farmers in using the service from custom hiring service centres are listed. It is essential to approach these challenges with a combination of short-term and long-term solutions. By improving machinery availability and addressing the skill gap, farmers can enhance their productivity, reduce costs, and ultimately contribute to the overall development of the agricultural sector.

**Keywords:** Farm mechanization, productivity, seasonal demand, custom hiring service centres (CHSCs)

### Introduction

Agriculture proves to be a labor-intensive endeavor, The cost of cultivation data shows that labour accounts for more than 40 percent of the total variable cost of production for most of the crops (Laxmi *et al.*, 2014) <sup>[5]</sup>. Farm mechanization helps to achieve timeliness in the farm operations, reduce available input losses, increase the efficiency of expensive inputs such as seed, chemicals, fertilizers, irrigation on the one hand, and increase production, productivity and profitability on the other by reducing unit production costs. The inadequacy of farm power and machinery, particularly among marginal and small-scale farmers, has always been perceived as one of the major challenges in increasing agricultural production and productivity. Farm mechanization has helped to bring about a significant improvement in agricultural productivity. There is therefore a clear need for mechanization of agricultural operations. Small and marginal farmers can use the heavy machinery by developing a rental market of farm implements, so large numbers of farmers can be benefited without investment in farm machinery implements. This is done by custom hiring service of agricultural machinery, which is using the machinery according to a farmer's particular need.

Custom hiring of farm machinery was first introduced in Indian agriculture in the 19<sup>th</sup> century (Srinivasarao *et al.*, 2013) <sup>[11]</sup>. The launch of a scheme by the Government of India in 1971 to establish agro-service centers nationwide further bolstered the growth of custom hiring services. Over the years, the custom hiring service centres have emerged as integral institutions that facilitate access to modern agricultural machinery, technology, and services for the farming community. The significance of custom hiring service centres (CHSCs) lies in their capacity to bridge the gap between traditional farming methods and contemporary agricultural advancements, fostering sustainable growth and development in the agriculture sector. Custom hiring service centres in Karnataka trace their roots in the late 20th century when the state recognized the need for modernizing its agriculture sector. Prior to the establishment of CHSCs, small and marginal farmers faced significant challenges in accessing advanced agricultural machinery and equipment. Traditional methods of farming prevailed, leading to productivity constraints and limited economic opportunities for farmers.

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Recognizing these challenges, the Government of Karnataka funded the custom hiring service centres (CHSCs) through the Primary Agricultural Credit Co-operative Societies (PACS), by supplying tractors and associated equipment and equipment under Rashtriya Krishi Vikas Yojana (RKVY) in 2010-11 to meet the needs of small and marginal farmers. The type of machinery was distributed across CHSCs in Karnataka, taking into account the agro-climatic conditions, crop pattern, farm machinery density, and demand for the farm implements.

The primary objective of custom hiring service centres in Karnataka is to provide small and marginal farmers with cost-effective access to modern agricultural machinery, tools, and equipment. These centres aim to enhance productivity by providing access to mechanized equipment for plowing, sowing, harvesting, and post-harvest processing reduces manual labor and time, allowing farmers to cultivate larger areas and improve yields. CHSCs helps to reduce production costs: By offering machinery on a rental basis, it promotes the use of eco-friendly and efficient farming methods, contributing to sustainable agricultural practices which includes precision farming, reduced chemical usage, and improved soil health management.

Mechanization in rural agricultural operations is currently limited, despite its critical role in achieving higher yields and productivity. Over the decades, farm mechanization has evolved from rudimentary tools to sophisticated, high-tech equipment, catalyzing substantial advancements in agricultural productivity, efficiency, and sustainability. The first inklings of mechanization emerged during the Industrial Revolution in the late 18th century, with the development of machinery like the seed drill and the threshing machine. These innovations revolutionized crop planting and harvesting, marking the beginning of a new era in agriculture. Small and marginal farmers face challenges in the accessibility of expensive modern machinery, additionally, private vendors charge exorbitant rental fees for farm machinery. To address these challenges, the Government of Karnataka has launched the "Krishi Yantradhare" program.

Farm mechanization has emerged as a cornerstone of modern agriculture, reshaping farming practices, enhancing productivity, and addressing the challenges of feeding a growing global population. Its historical evolution and multifaceted objectives have paved the way for a more efficient, sustainable, and economically viable agriculture sector. However, it also brings forth challenges that must be carefully considered and managed as we continue to advance the frontiers of mechanized farming. Custom hiring service centres offer small and marginal farmers the opportunity to utilize expensive agricultural machinery for their farming operations. They play a crucial role in ensuring timely and efficient farming practices, optimizing resource usage, lowering cultivation costs, and creating employment opportunities for skilled labor and rural artisans. Some of the limitations of these centres are difficulties in meeting the farmer's demand during the peak seasons and also the machinery and the staff in the centres become unproductive during the off-seasons.

Giving small and marginal farmers better service is the primary goal of custom hiring service centres. In agricultural operations, mechanization is found to be less prevalent in rural areas, therefore farm mechanization is more essential for achieving improved output and productivity. Because of this,

farmers in rural areas need advanced technology and equipment, which cost more money and appear to be challenging for small and marginal farmers to purchase. Therefore, the biggest issue facing farmers in rural areas is the lack of modern machinery for agricultural operations. To solve all these problems the Government of Karnataka initiated "Krishi Yantradhare" programme. Thus, the current study intends to document the working condition of custom hiring service centres, problems associated with the functioning of custom hiring service centres and problems faced by farmers in using custom hiring services in the Tumakuru district of Karnataka.

## Materials and Methods

### Research design

The research design adopted for the present study was the Ex-post-fact research design. Since the phenomenon had already existed and the design was considered appropriate. Ex post-facto analysis is a systematic empirical research study in which the researcher does not have direct control over independent variables, either because their manifestations have already occurred or because they are not naturally manipulated.

### Selection of respondents

This study was conducted in Tumakuru district which consists of ten taluks, out of which eight taluks were purposively selected where the CHSCs were efficiently operational. These taluks include Kunigal, Tumkur, Koratagere, Turuvekere, Gubbi, Tiptur, Madhugiri, and Sira, with CHSCs operating at the Hobli level in each of them. From each CHSC ten registered farmers as respondents were selected by using a simple random sampling method without replacement. A sample of 130 respondents was drawn from a total of 13 custom hiring service centres (CHSCs) located in eight taluks within Tumakuru district. A semi-structured interview schedule was used to collect the data from the respondents by personal interview method.

### Problems associated with the functioning of custom hiring service centres

The Semi-structured schedule consisting of problems associated with the functioning of custom hiring service centres was prepared with the help of available literature and in consultation with the officials/scientists of the concerned departments. A total of 13 problems associated with the functioning of custom hiring service centres were reported in these documents. These 13 problems were administered to managers of 13 custom hiring service centres. Responses obtained from managers were analyzed using the Garrett ranking technique.

### Problems faced by farmers in using custom hiring services

The Semi-structured Schedule consisting of Problems associated with the functioning of custom hiring service centres was prepared with the help of available literature and in consultation with the officials/scientists of the concerned departments. A total of 13 problems faced by farmers in using custom hiring services were reported in these documents. These 13 problems were administered to 130 respondents. Responses obtained from farmers were analyzed using the Garrett ranking technique.

## Results and Discussion

### Problems associated with the functioning of custom hiring service centres

The results in Table 1 pertaining to problems associated with the functioning of custom hiring service centres showed that the first and foremost problem associated with the functioning of CHSCs is damage caused by farmers to the machinery (RANK I) with a Garrett score (75.07). Because poor skills of the farmers in using modern machinery, improper training facility, and also negligence of the farmers while operating on farms. Damage to machinery is not only costly to repair but also disrupts the availability of equipment for other farmers and it needs to be taken out of service for repairs. This downtime can significantly affect the timeliness of farm operations, potentially leading to lower crop yields and financial losses for farmers. Therefore, proper education and training of farmers in the correct operation and maintenance of machinery can help mitigate damage. CHSCs should offer training programs or resources to enhance farmers' knowledge and skills in machinery usage.

Followed by seasonal demand (RANK II) with a Garrett score of 66.15. Since this is due to the machinery available in CHSCs are limited in number, it is difficult to provide service to all the farmers at a time during peak season. Seasonal demand results in periods of high and low machinery utilization. During peak seasons, such as planting and harvest times, there is a surge in demand for machinery, making it difficult for farmers to access the equipment they need when they need it most. This can result in delayed planting or harvesting, potentially impacting crop yields. While during off-peak seasons, CHSCs may have a surplus of idle machinery, leading to depreciation and maintenance costs without corresponding revenue. This idle time reduces the return on investment for CHSCs and hinders their ability to recover equipment costs. CHSCs can explore strategies to mitigate the effects of seasonal demand. One approach is diversifying their service offerings, for example, they could provide services beyond machinery rental, such as training, consulting, or other value-added services that generate income year-round.

Delay in payments (RANK III) with Garrett score of 63.61, is due to small and marginal farmers are economically poor and they will get returns immediately after selling their produce but CHSCs often rely on prompt payments from farmers to cover operational expenses, such as equipment maintenance, labor costs, and administrative overheads. Delays in payments can strain their financial resources and hinder their ability to provide efficient services and also it leads to extended downtime, reduced availability of equipment, and delays in responding to farmers' needs, especially during critical farming seasons. Clear and fair contractual agreements between CHSCs and farmers are essential to address payment delays. These agreements should outline payment terms, late payment penalties, and dispute resolution mechanisms, providing clarity and accountability for both parties.

Other major problems were lack of knowledge (how to use the machinery) for farmers (RANK IV) with a Garrett score of 62.93, delay in the return of machinery (RANK V) with a Garrett score of 60, Unavailability of the skilled operator (RANK VI) with a Garrett score of 54.38, High initial investment (RANK VII) with a Garrett score of 47.23, High maintenance cost (RANK VIII) with a Garrett score of 42.76,

Non-availability of permanent drivers or workers (RANK IX) with a Garrett score of 42.15, High fuel charges (RANK X) with a Garrett score of 41.53.

Low hiring charges (RANK XI) with Garrett score of 37.23. CHSCs with low hiring charges may face little problem to sustain their operations over the long term. This could result in reduced availability of machinery for farmers, particularly during peak seasons when demand is high. Affordable hiring charges encourage more farmers to use machinery from CHSCs rather than relying on traditional manual labor. This shift toward mechanization can lead to increased agricultural productivity, reduced labor requirements, and improved crop yields. CHSCs with low charges may attract a larger customer base, leading to increased utilization of their machinery. This can result in better economies of scale and potentially improved financial sustainability for the service centres. The severity of low hiring charges as a problem for CHSCs depends on various factors, including the specific financial situation of the service centre, the quality of machinery and services they provide, and the target population of farmers they aim to serve. Striking a balance between affordability for farmers and financial sustainability for CHSCs is crucial to ensure the long-term viability of these service providers while promoting equitable access to agricultural mechanization.

Housing problem for equipment (RANK XII) with Garrett score of 36.53. Equipment stored without proper housing may be exposed to weather conditions, leading to wear and tear, rust, and reduced machinery lifespan. This can result in higher maintenance costs over time but CHSCs that do not face severe housing problems can save on infrastructure costs related to equipment storage. This can lead to more efficient use of financial resources, which can be redirected toward improving other aspects of CHSC operations. Whether housing problems for equipment in CHSCs are severe or not depends on various factors, including the specific context, available resources, and the quality of services provided. While cost savings and flexibility can be advantages, CHSCs must carefully consider the potential drawbacks, such as equipment degradation and security concerns. Striking a balance between cost-effective operations and equipment protection is essential for the long-term success and sustainability of CHSCs.

Cumbersome bank loan with a high-interest rate (RANK XIII) with Garrett score of 29.38. CHSCs that do not heavily rely on bank loans with high-interest rates may have greater financial independence. They are less burdened by interest payments, allowing them to allocate more resources toward improving their services and machinery fleet. Reduced debt can provide CHSCs with more flexibility in decision-making, allowing them to prioritize investments, expand services, and explore growth opportunities without the constraints of heavy debt obligations. Whether a cumbersome bank loan with a high-interest rate is a severe problem for CHSCs depends on their specific financial situation, growth goals, and access to alternative funding sources. While avoiding excessive debt can offer financial independence and reduced risk, it's essential for CHSCs to strike a balance between minimizing debt and accessing the necessary capital to provide efficient and sustainable services to farmers. The above results got support from the study conducted by Kumar & Mahadevaiah (2018)<sup>[4]</sup>.

**Table 1:** Problems associated with the functioning of custom hiring service centres

Sl. No.	Problems	Garrett Score	Garrett Rank
1	Damage caused by farmers to the machinery	75.07	I
2	Seasonal demand	66.15	II
3	Delay in payments	63.61	III
4	Lack of knowledge (how to use the machinery) for farmers	62.93	IV
5	Delay in return of the machinery	60	V
6	Unavailability of a skilled operator	54.38	VI
7	High initial investment	47.23	VII
8	High maintenance cost	42.76	VIII
9	Non-availability of permanent drivers or workers	42.15	IX
10	High fuel charges	41.53	X
11	Low hiring charges	37.23	XI
12	Housing problem for equipment	36.53	XII
13	A cumbersome bank loan with a high-interest rate	29.38	XIII

### Problems faced by farmers in using custom hiring services

The results in Table 2 pertaining to Problems faced by farmers in using Custom Hiring Services showed that the first and foremost problem faced by farmers in using custom hiring services is non-availability of machinery during peak season (RANK I) with a Garrett score 74.41. Custom hiring service centre provides service for the farmers, since a limited number of machineries is available in CHSCs, service to all the farmers cannot be provided during peak season. All farmers need machinery at the same time during the season, so farmers identified this as a major problem. During peak seasons, such as planting or harvesting, farmers have a limited window of opportunity to carry out essential tasks. Delay due to the unavailability of machinery can result in lower yields, compromised crop quality, and even crop losses. The lack of timely access to machinery affects various aspects of farming, including plowing, sowing, irrigation, and threshing. Without the right equipment at the right time, farmers struggle to meet their production targets. The non-availability of machinery during peak seasons in CHSCs is a complex problem that affects agricultural productivity, farmer livelihoods, and food security. Addressing this issue requires a multi-faceted approach, including government intervention, improved infrastructure, maintenance, and promoting cooperative farming practices. Ensuring timely access to machinery is crucial for sustainable agricultural development and the well-being of farming communities.

Followed by non-availability of skilled labour to operate agriculture machinery (RANKED II) with a Garrett score 64.14. The demand for machinery is only at the peak season and the labours become inefficient during the non-season the permanent labour for operating the machinery is not available in many of the CHSCs. When skilled labor is unavailable, it leads to reduced productivity and operational inefficiencies. Without skilled operators, machinery may not be utilized to its full potential, leading to suboptimal results in terms of crop yields and overall farm output. The lack of skilled labor can result in longer equipment downtime as machinery may not be operated or maintained properly. This downtime during critical agricultural seasons can lead to delays and crop losses. Properly trained operators can not only use machinery efficiently but also perform routine maintenance tasks, reducing the risk of unexpected breakdowns. The non-availability of skilled labor to operate agriculture machinery in CHSCs is a critical issue that affects agricultural productivity, costs, and the overall sustainability of farming operations. Addressing this problem requires a combination of farmer education, government support, and technological innovation to ensure that farmers can effectively harness the

benefits of mechanization and modern farming practices.

Hiring charges are not affordable (RANKED III) with Garrett score 62.64, the modern machinery is available in the CHSC which are usually of high cost, and the hiring charges which includes fuel charges, maintenance, driver's wage, wear & tear, and other expenses, for those modern machineries such as Diesel pumpset, Harvester/Reaper, Rotavator, Seed cum fertilizer drill and Paddy transplanter are usually high in cost according to farmer perspectives. In the other way High hiring charges discourage farmers from adopting mechanization, forcing them to continue using traditional, labor-intensive farming methods. This can hinder progress towards modern and efficient agricultural practices. Limited mechanization adoption can result in lower agricultural productivity, increased drudgery for farmers, and missed opportunities for sustainable agricultural development. Addressing this problem requires a multi-pronged approach, including government support, cooperative farming initiatives, private sector participation, and farmer education to ensure that mechanization services are accessible and financially viable for all segments of the farming community.

Other problems expressed by the farmers were Timely information on farm machinery is not available (RANKED IV) with Garrett score of 60.9, Fodder loss when the combined harvester is used (RANKED V) with Garrett score of 60.36, Lack of awareness about CHSC (RANKED VI) with Garrett score of 58.93, unavailability of good conditioned machinery (RANKED VII) with Garrett score of 53.45, Transportation of agricultural machinery and equipment feels difficult (RANKED VIII) with Garrett score of 52.10,

Non-availability of skilled and efficient drivers (RANKED IX) with Garrett score of 48.04, payment methods are not suitable (RANKED X) with Garrett score of 33.44, the distance of CHSC if far from the village (RANKED XI) with Garrett score of 31.17.

Poor service provided (RANKED XII) with Garrett score of 29.7. Some CHSCs may suffer from operational inconsistencies, leading to issues such as machinery breakdowns, delays in service provision, or limited equipment availability during peak seasons but CHSCs offer small and marginal farmers access to modern agricultural machinery that they may not be able to afford or maintain on their own. This mechanization can significantly enhance their efficiency and productivity, with the proper use of machinery, farmers can improve their crop yields and overall farm output, leading to better food security and increased income.

High hiring charges during peak season (RANKED XIII) with Garrett score of 29.66. it is not as issue with farmers because

hiring charges are fixed before the cropping season itself and there is no scope for changes in the hiring charges of machineries in the CHSCs. Fixed charges may not account for fluctuations in market conditions, such as changes in fuel prices, labor costs, or machinery maintenance expenses. This lack of flexibility can be a limitation when the actual costs to CHSCs increase significantly. In the other way knowing the hiring charges in advance provides farmers with price certainty. This allows them to budget and plan their farming expenses more effectively, reducing the risk of unexpected financial burdens during the peak season. Fixed hiring charges can help farmers calculate their overall production costs with greater accuracy, which is essential for financial

planning and securing loans or subsidies. While having fixed hiring charges in advance can provide benefits in terms of financial planning and cost predictability for farmers, it is essential to strike a balance between price certainty and flexibility to account for changing market dynamics and resource allocation during peak seasons. CHSCs should consider periodic reviews of their charges to ensure they remain competitive, sustainable, and able to meet the demands of small and marginal farmers effectively. The above results got additional support from the studies conducted by Hiremath *et al.* (2015)<sup>[2]</sup>, Chadrashekar (2016)<sup>[1]</sup>, and Sindhu (2017)<sup>[8]</sup>.

**Table 2:** Problems faced by farmers in using Custom Hiring Services

Sl. No.	Problems	Garrett score	Garrett rank
1	Non-availability of machinery during peak season	74.41	I
2	Non-availability of skilled labour to operate agriculture machinery.	64.14	II
3	Hiring charges are not affordable	62.64	III
4	Timely information on farm machinery is not available.	60.9	IV
5	Fodder loss when the combined harvester is used.	60.36	V
6	Lack of awareness about CHSC.	58.93	VI
7	Unavailability of good conditioned machinery	53.45	VII
8	Transportation of agricultural machinery and equipment feels difficult	52.10	VIII
9	Non-availability of skilled and efficient drivers	48.04	IX
10	Payment methods are not suitable	33.44	X
11	The distance of CHSC is far from the village	31.17	XI
12	Poor service provided	29.7	XII
13	High hiring charges during peak season	29.66	XIII

## Conclusion

Custom hiring service centres play a vital role in modernizing agriculture and supporting farmers, the problems associated with the functioning of custom hiring service centres and the challenges faced by farmers in utilizing custom hiring services are significant and multifaceted. These include issues such as insufficient infrastructure and equipment upkeep, financial constraints, limited awareness among potential users, and obstacles related to access, high expenses, as well as the insufficient availability and maintenance of equipment. These collective challenges can hinder the widespread adoption of this invaluable resource within agricultural communities. To address these problems effectively, a collaborative effort involving government agencies, local communities, and private stakeholders is essential. Investments in upgrading infrastructure and equipment, as well as regular maintenance, should be prioritized. Financial incentives and subsidies may be required to make custom hiring services more affordable and accessible to small-scale farmers. Furthermore, raising awareness about the benefits of custom hiring services and simplifying administrative procedures can encourage more farmers to utilize these centres. This, in turn, can contribute to increased agricultural productivity, reduced costs, and improved livelihoods for rural communities. By addressing these issues, we can unlock the full potential of custom hiring services to benefit both farmers and the agricultural sector as a whole.

## Competing Interests

Authors have declared that no competing interest exist.

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