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Bhutanese Indigenous Rice Cultivation Cycle: Lessons in Management Practice

Dorji Penjore[*]

Abstract

This article explores similarities between traditional Bhutanese rice cultivation in Samcholing village, Bhutan, and modern management practices, and highlights how both systems, despite operating in vastly different contexts, share some core management principles. Based on ethnographic information, the study argues that traditional rice cultivation in Samcholing is a sophisticated model of resource, labour, and knowledge management, adapted to its unique environment over the centuries. Both managers and rice cultivators adopt structured, systematic, and goal-oriented approaches through planning, organizing, leading, staffing, and controlling. The study emphasizes how Samcholing rice cultivators manage vagaries of weather, constraints of time and labour, and a host of risks. The paper contributes to management studies by reframing traditional Bhutanese agricultural knowledge as a context-specific yet transferable system of effective management, offering insights into sustainable and community-based resource governance.

Key words: *management, rice cultivation, labour, resources.*

[*] Head, Centre for Research and Innovation, Royal Institute of Management, Thimphu. Contact: dorji_penjore@rim.edu.bt

Introduction

The term 'management' evokes images of distant classrooms of prestigious Western business schools. Rarely does it draw attention to practices in remote villages of Bhutanese farmers who manage their livelihoods with an ingenuity born not of formal training, but of lived experience. In villages like Samcholing in central Bhutan, rice cultivation is more than subsistence agriculture; it is an intricate form of management involving the careful coordination of limited resources, labour, unpredictable climate, and external risks such as pests and wildlife. To an outsider, rice cultivation there may appear primitive or straightforward; however, it is a highly complex, context-specific, and sophisticated farming practice. In the Samcholingpa world, rain is not simply an occasion to reach for an umbrella. To them, not all rains are welcome, for the timely rains sustain life and untimely rains delay farming and ruin the entire harvest. They face the risk that even a small mismanagement or misfortune can land them in a mountain of grain debt.

Yet despite these challenges, Samcholing rice cultivators show remarkable managerial capability in navigating the agrarian environment. They plan, adapt, and respond to emerging threats by relying on indigenous knowledge system.

Methods

This study is based on ethnographic data collected during a year-long anthropological fieldwork in Samcholing village conducted in 2013. The primary methods of data collection included participant observation, in-depth interviews with rice cultivators and village adults, and a household survey. These methods provided rich insights into the everyday practices, challenges, and strategies employed in rice cultivation in the village.

Research Questions

This study is guided by the central research question: Are rice cultivators of Samcholing village good managers? To explore this question, the study investigates whether managerial attributes and competencies identified in management literature are evident in the practices of Samcholing rice cultivators, how they demonstrate management principles and practices in the context of rice cultivation, and ways in which managers and management theorists can learn from their lived experiences and implicit knowledge.

Literature Review

Let me begin with the review and discussions of "management" variously defined in management literature.

Dunham and Pierce (1989) described management as the structured process of *planning*, *organizing*, *directing*, and *controlling* human, financial, physical, and informational resources to achieve specific *organizational goals*. This highlights management's focus on the effective coordination of various resources to meet objectives (unless stated, the *italics* are mine). Bedeian (1993) added that management must not only achieve intended outcomes using both human and material resources, but it must be done so *efficiently*. Similarly, Stoner et al. (1995) defined management as planning, organizing, leading, and controlling organizational efforts and using all available resources to reach defined goals.

Cole and Kelly (2015) described management as a coordinated set of activities (forecasting, planning, organizing, deciding, and commanding) designed to direct and control an organization. Aldag and Stearns (1991) supported these views, but introduced a new element: the need for a *systematic approach*. They stressed that management activities must follow a structured and methodical process to accomplish

common goals. Bovée et al. (1993) reinforced this idea, but emphasized that goals must be achieved *effectively* and *efficiently*.

Bartol and Martin (1998) similarly stated that achieving goals requires the integration of the four key functions (planning, organizing, leading, and controlling). Naylor (2004) expanded this further by noting that management happens within a *changing environment*, where efficiency, effectiveness, and *equity* must be balanced to optimize limited resources while working through others.

Working through people is a common thread across the literature. Robbins and Coulter (2005) defined management as the process of ensuring that work is completed efficiently and effectively with and through others. Schermerhorn (2005) maintained this perspective, by defining management as using resources strategically to meet performance goals. Similarly, Mintzberg (2009) and Williams (2018) defined management as *getting things done through others*, whether by leading, coordinating, or communicating.

Naylor (2004), and Montana and Charnov (2008) emphasized *collaboration* to achieve both individual and organizational goals. Certo and Certo (2016) and Bateman et al. (2018) agreed, highlighting how managers must effectively utilize both people and resources to accomplish results. Malik (2000) framed management as a *results-oriented profession*, driven by the ability to mobilize individuals toward specific goals. Taylor (1911) regarded the *relationship between employers and workers* as the most important aspect of management. He defined management as the ability to know exactly what you want people to do—and ensuring they do it in the *best and most cost-effective* way.

However, it should be noted that it was Fayol (1916/2013) who first introduced *forecasting*, *planning*, *organizing*, *commanding*, *coordinating*, and *controlling* as five core functions of management. It is one of the earliest

comprehensive frameworks for management. *Planning* involves analysing the future and creating action plans; *organizing* builds a structure of human and material resources; commanding ensures employee activity; *coordinating* unifies efforts; and *controlling* ensures adherence to plans. According to Fayol, management is a *structured, future-focused,* and *systematic* process, involving proactive planning, optimal resource allocation, unified leadership, and ongoing monitoring to ensure its alignment with objectives.

To synthesize the above definitions, management is a *structured*, *systematic*, and *goal-driven process* involving *planning*, *organizing*, *leading*, *directing*, *staffing*, and *controlling* the use of *organizational resources* (human, financial, physical, informational) in an *efficient* and *effective* manner to *achieve common objectives*, often while balancing *competing demands* and working *collaboratively* with people. The synthesize of the definitions of management is graphically presented in Figure 1. It is based on Strategic Management Cycle Framework where core management functions interact dynamically with resource domains to achieve shared objectives.

1. At the centre of this framework lie the *common objectives* or *goals* that unify all management efforts.

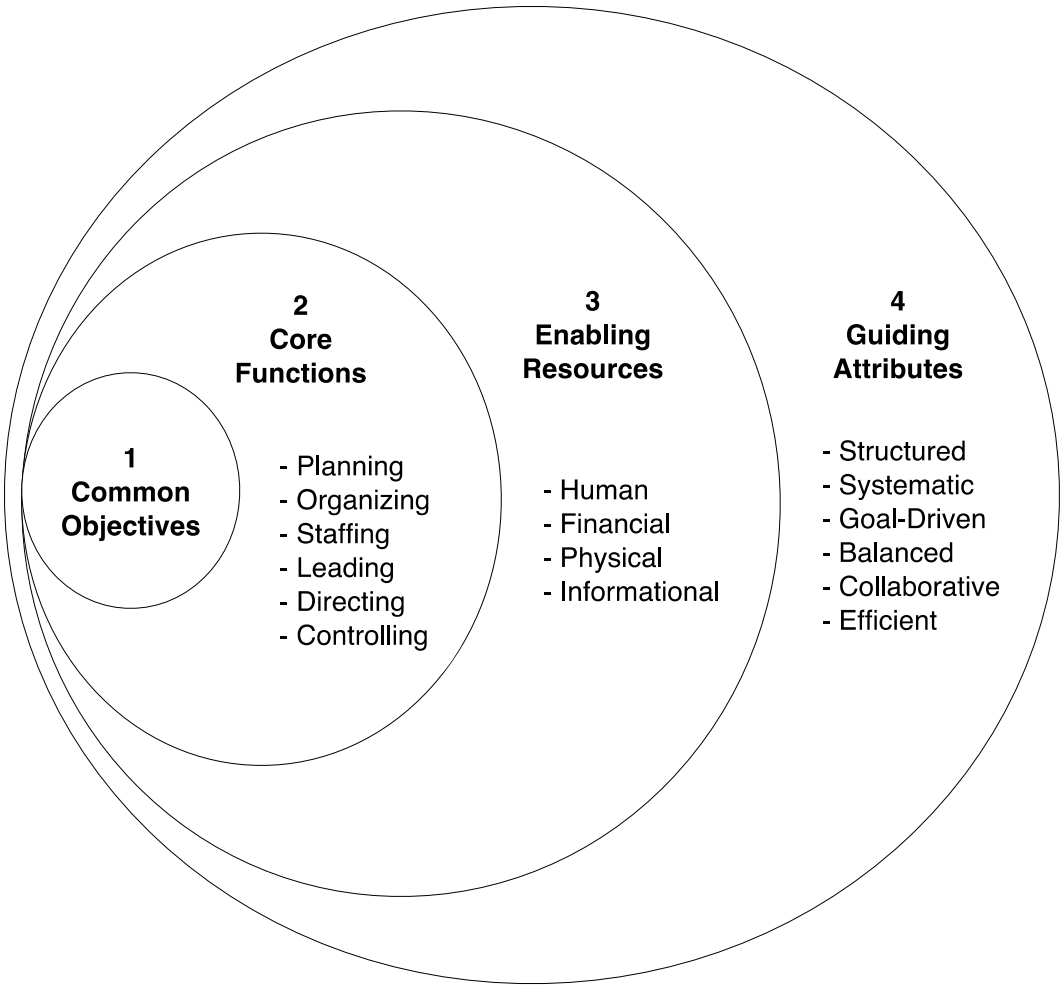
2. Encircling the goal(s) or objective(s) are six interrelated *core functions*: setting goals, forecasting, strategizing (*planning*), designing structure, delegating tasks, allocating resources (*organizing*), recruiting, developing, retaining employees (*staffing*), motivating, guiding, aligning action with vision (*leading*), co-ordinating day-to-day activities and decisions (*directing*), and monitoring, evaluating, and adjusting plans (*controlling*).

3. Third circle has organizational or *enabling resources*, which are human, financial, physical, and informational that feed into the management functions. Managers not only

allocate these resources but optimize them to fulfil a common object or organizational goal.

Figure 1

Conceptual Framework



4. The last circle has underlying *guiding attributes* of management that make the system effective and sustainable: Following clearly defined procedures and a well-organized design framework (*structured*); employing a logical, sequential, and disciplined method to ensure consistency and reliability (*systematic*), aligning every function and activity is with a unified objective to ensure focused progress (*goal-driven*); effectively managing competing priorities, such as cost

versus quality, to maintain equilibrium (*balanced*); emphasizing people-oriented, interactive, and cooperative processes to foster teamwork and inclusion (*collaborative*), and ensuring the optimal use of resources to achieve maximum output with minimal waste (*efficient* and *effective*).

Difficulty and Complexity of Rice Cultivation

Cultivating rice crops is perhaps the most difficult and complex of all crops. The cultivation involves a range of activities and tasks, and farmers requires corresponding resource management skills for managing inputs, mobilizing labour and draft animals, accessing irrigation water, arranging timely rice seedlings, and above all predicting weather.

Gladwell (2008) argued that wet rice cultivation is a meaningful, autonomous, and highly demanding form of labour, requiring precision, discipline, and relentless attention. Among all types of farming, rice cultivation stands out for the sheer intensity of effort it demands, allowing no room for breaks or carelessness. This agricultural tradition has, according to Gladwell, given children of southern Chinese heritage a distinctive advantage, as it instils a culture of hard work, mental engagement, and intellectual rigor from an early age. Success in rice farming also depends on countless hours of practice and persistence. On average, a wet-rice farmer in Asia is estimated to work around 3,000 hours annually.

During the COVID-19 pandemic, certain cultural traits of rice-farming communities proved more effective in managing the crisis than material resources such as healthcare funding and hospital capacity. Rice-farming nations recorded only about 3 percent of the COVID-19 deaths compared to non-rice-farming nations. Even poorer rice-growing countries like Vietnam managed the pandemic more successfully. Traditional rice cultivation practices fostered tight social norms and low-mobility social networks, social structures that

significantly enhanced collective coordination against COVID-19 (Talhelm, 2023).

Of all agronomic crops rice cultivation requires meticulous management. Much of this complexity is due to the fact that rice is grown under flooded conditions for most of the growing season, the rice farming takes twice the amount of labour as crops like wheat and maize, and arranging inputs such as water requires a network to connect farmers to cooperate with each other.

Some key management skills required are planning a wide range of work which compete for time and resources, land preparation, seed selection, water management, pest control and harvesting.

Managing time efficiently is crucial for scheduling and coordinating tasks throughout the rice cultivation cycle, including land preparation, planting, irrigation, fertilization, weed control, pest management, and harvesting. Good time management skills help ensure timely and efficient completion of each activity.

Rice cultivation in Bhutan presents unique challenges due to its mountainous terrain. The steep slopes, characteristic of much of the country's agricultural landscape, complicate every stage of rice production—from ploughing the field to harvesting the crop. These slopes are highly susceptible to soil erosion, particularly during the monsoon season when heavy rains threaten to wash away the nutrient-rich topsoil vital for healthy crop growth. Managing water on sloping fields is equally problematic, as runoff occurs rapidly, making it difficult to maintain consistent irrigation.

Mechanized farming is unfeasible in such terrain, increasing the reliance on manual labour and traditional tools. Despite these constraints, Bhutanese farmers have demonstrated remarkable adaptability. They have developed innovative methods to sustain rice cultivation on challenging landscapes. Successful cultivation on such terrain requires not

only physical endurance but also careful planning, effective water management, and sustainable soil conservation practices. These strategies ensure crop resilience against the combined pressures of topography and climate.

Rice Cultivation in Samcholing

English economic historian Richard H. Tawney, after observing the conditions in rural China in 1933, described the plight of the Chinese peasantry as being "like a man standing permanently up to the neck in water, so that even a ripple is sufficient to drown him" (in Scott, 1976, p. 1). This metaphor captures the livelihood situation of the people in Samcholing village, Trongsa. In 2013, it was the largest village in Drakten Gewog, with 218 households.

The village's agro-climatic conditions allow for the cultivation of all crops typically grown in Bhutan. Although farmers in Samcholing can easily grow enough maize to last one to two years, maize is not the crop of choice for subsistence. Like in most parts of the country, rice is the most preferred crop. Traditionally, rice was considered a luxury—consumed only by wealthier households. Not all households own rice fields, and those who do often have plots too small to produce enough rice for their families.

The rice field shortage is primarily due to the presence of absentee landowners from other districts who own much of the village's rice land. To cope, local farmers engage in sharecropping arrangements with these landowners, most of whom reside in Bumthang. The harvest is typically split equally between the landowner and the farmer. Their heavy reliance on rice cultivation—and particularly on sharecropping land they do not own—renders them vulnerable. Even minor disruptions, often outside their control, can plunge them into years of grain debt.

Changla is a general term for rice transplantation work consisting of a whole range of activities from uprooting seedlings, ploughing soil, water ploughing, watering, puddling (harrowing), making bunds, combing for dead/dry weeds, preparing beds, and transplanting rice seedlings. Samcholing's rice cultivation season lasts for four months from the fifth to eighth Bhutanese months.

Sloppy terraces

Rice fields in Samcholing have been carved out of the gently sloping areas. The majority of the terraces are small (*ar-chung*); bigger terraces (*ar-gam*) are found in comparatively flatter areas. The steeper the slope the shorter the terrace breadth, the gentler the slope the longer and bigger the terrace breadth. The cultivation process is difficult on *ar-gam*, especially ploughing and puddling/ harrowing during transplantation.

Terrace

A terrace (*aring*) consists of a flat enclosed area (*aring leng*), a dyke (*chi*), a dyke wall (*ri*), a spillway (*chukha*), and a drainage conduit (*yurwa*). The *aring leng* is where rice is transplanted; the dyke dams the water in the terrace while the dyke wall supports or holds each terrace from below. Water is taken from one terrace to another, sometimes separated by dryland plots, through a drainage conduit while water from one terrace to the next terrace (below or adjacent) is taken through a spillway made by opening a hole in the dyke. Water is taken from the main irrigation channel (*chuyur*) through a canal to the first or the topmost terrace from where it is made to flow through inter-terrace spillways to the next terrace or lower terraces. Where this is not possible, water is taken through separate drainage conduit dug parallel to footpaths or fallow dryland. Water from the last terrace is either made to flow

down to the next plots belonging to other households, or is released into the drainage channel running beside the plot. Extreme care is taken to ensure that no dyke is damaged during ploughing lest water flows to the next terrace without flooding the previous terrace first. During rice transplantation, the dyke is repaired and strengthened by plastering it with mud. Well-plastered dyke retains water that is necessary for a good harvest.

Preparing nursery beds: Changmu leng kher

Land that has been left fallow for years is carefully chosen for growing rice seedlings. Both the day and land are usually chosen by astrologers. In most cases, fallow plots bordering rice fields overgrown with Artemisia plants and shrubs are selected and the same plots are seldom used consecutively. Artemisia plants and shrubs are slashed and allowed to be dried for two to three weeks, after which they are burnt. Un-burnt stumps are heaped together and burnt again. Rice seedlings require fertile soil, and ash is important for fertility. Farmers cannot afford to make mistakes with the selection of land for making nursery beds, or they would end up with no rice seedling during the transplantation period.

Sowing: Sonjod

The land is ploughed if the plot is big, or dug with spades. A seedbed of fine soil tilth is made through repeated digging, breaking pods, and clearing plant and grass roots. The bed is prepared by levelling it by hands or spades. Once the bed is ready, seeds are broadcasted by hand. Not everybody can broadcast seeds. A skilful person, or a family member or a labourer whose age is astrologically favourable for bringing good harvest for the year normally broadcasts the seeds. Seeds are then covered by hand or spades. Sometimes beds are

covered with sunburnt stumps to prevent birds from eating them.

The season for sowing rice seedlings lasts from the second to fourth months. It is customary to sow rice seedlings after *dangpa losar* (February), and at the latest by the first day of the second month (March). There are two seeds sowing timing called early and late sowing. The upper Samcholing usually sows early since rice transplantation there begins almost three weeks earlier than the lower area. Sowing rice seedlings is a delicate task, requiring much skill and a lot of luck. If it is grown too early, seedlings will grow tall before the rice fields are ready for transplantation which depends on rain, irrigation water, labour, draft animals, and other variables. If it is sown late, seedlings will not be ready for the ideal transplantation time where there is rainfall.

Manuring: Yod yog

Hay from the previous harvest is bundled and stacked on a hay-house (*sugmai*) made by laying wooden poles over four wooden posts. Cattle are allowed to feed on stubble and grasses growing on the dyke walls so that the cattle dung is trapped. During winter months, cattle are tethered at night in the field and fed hay. Some households grow winter crops like wheat, barley, buckwheat, and oats, and the residues of these crops add to soil fertility. Some use chemical fertilizers, mainly urea.

Ploughing: Leng tsho

After harvesting the winter crops, the rice field is ploughed with oxen. The first ploughing (*khapad tsho*) is followed by digging parts of terraces unreached by the ploughshare (*ngodpa ku*) and slashing Artemisia plants in the terraces. It is easier to plough the rice field where winter crops (buckwheat) have been grown. If not, the field becomes hard, and often it

has to be softened by diverting water from a nearby stream or other sources.

Pulling the water: Khe thang

Without good access to irrigation water from the perennial Nyargang Stream over which Samcholing enjoys a customary usufruct right, there would be no paddy fields in the village in the first place. Since water has to be brought from afar, the volume of water decreases considerably during the hot summer months, and without rainfall, the available water is only enough to transplant the paddy fields of a couple of households each day. The Nyargang Stream is diverted from three different places and brought down (*thang*, meaning to pull) to the village. A few days before the beginning of paddy transplantation, the village conducts an annual clearing of irrigation channels called *chusal-woola* (labour for water clearing). At the spot where the Nyargang Stream is diverted to the village *chu-nyer* (water in charge) made a libation offering (*serkhyem*) to Gangkar Shamig, Samcholing's rain god. The work involves clearing the channels from head to end, cutting and slashing bushes, dredging it and repairing the channel dykes. Jomo, a goddess, is also propitiated for bringing rain.

Bringing down the rain: Yui phab

If the rainfall is late, the people resort to propitiating a pantheon of divinities to 'bring down" (*phab*) the rain. In 2013, two weeks of continuous sunshine created a water shortage in the village. The *chu-nyer* (water in charge) conducted a ritual to propitiate the protecting deity in Samcholing Dzong with in-kind and cash contributions made by households located around the Dzong. Whether it was a coincidence or divine intervention, it rained heavily on the night of the ritual as if to flood the whole village.

Water distribution

Water is equitably distributed through an institution called *chukor* (water turn). Every Samcholing household, by default, is a member of the irrigation water association (*chuyur tshogpa*) and must compulsorily participate in irrigation-related activities if it has either freehold or sharecropped paddy field to cultivate. *Chu-nyer* is appointed to distribute water. The *chu-nyer* distributes water to a varying number of households. *Chukor* ensures that every household gets an equal share of water irrespective of their paddy field holding. The amount of water is generally enough to transplant a maximum of two *langdo* in the first *chukor* round, and the households with more holdings have to wait for subsequent rounds during which the *chu-nyer* can arbitrarily allocate water. If a household with a smaller plot completes the transplantation earlier, its water share is diverted to those households with more acreage.

Mobilizing labour

Due to limited farm mechanization, farming is labour-intensive, dependent on the traditional system of labour mobilization. *Latshab* is the dominant form of mobilizing and organizing labour for most households of Samcholing. In this labour system, a household employs labour from one or more households to work on its land on a particular day and reciprocates later. Households that have neither land of their own to cultivate nor leased other's land for sharecropping resort to *chug*. In this system, households spend their labour for payment in grain (*chug*) at harvest time. They refuse cash payment or return labour. In the *branpa* ('begging') system, labour is mobilized to perform work of a difficult nature such as making new rice terraces out of the slope. The household mobilizing this labour has to arrange a large amount of food and other delicacies for the workers. In *ruptu* ("to help"), one

household helps another household that is lagging far behind in both agricultural and non-agricultural work that must be completed within a fixed time. *Laacha* (wage) involves the payment of money immediately after work or a few days later.

Water ploughing; Chumo

Once ploughed, the field is flooded (*khe pag)* some 12 hours before puddling through a water sharing institution (*chukor*). In *chukor*, every household is entitled to 24 hours water flow from the irrigation canals to flood the field. Once the field is flooded at night, *chumo* (water ploughing) is done in the first hours to open up hard soil untouched by plough shares during the first ploughing. This makes rice transplanting easier. Water ploughing becomes unnecessary if the first ploughing has been done thoroughly, or if the winter crops like buckwheat has been grown in the rice fields.

Uprooting seedlings: Chagmu choi

Seedlings are uprooted one or two days prior to transplantation, simultaneously during transplantation or in the morning of the transplantation day. Uprooting is generally a womn's task. The seedlings uprooted by one hand are transferred to the other hand until it is full to form a *kog-tshad*, which is a unit of measuring rice seedlings. Meaning "the area of a spade", *kog-tshad* is the number of rice seedlings that five fingers can hold from their roots. Three *kog-tshad* are bundled to form one *chagpa* (bundle), two *chagpa* form one *zum* and 20 *zum* form one *bam*. The amount of seedling bundles required for a particular plot of land is expressed and planned in terms of *bam*. For example, one *langdo* of rice fields requires eight *bam* of seedlings, which is 160 *zum*=320 *chagpa*, or 1060 *kog-tshad*.

If the seedlings are of appropriate length, four or five seedlings are used to tie around a bundle; if not, young

Artemisia plants are used. *Chagpa* are made into loads and transported to the flooded rice fields on people's backs using ropes. Roots of the uprooted seedlings are protected from the sun by covering them with ferns and Artemisia plants, or are immediately immersed into the flooded terrace. One woman decided to uproot the rice seedlings prematurely and do early rice transplantation for the fear of pests destroying the seedlings.

Puddling: Shaima

Once the field is flooded, or water-ploughed, the next level of tillage is done through a process known as *shaima* (the overflow) which is similar to harrowing or puddling in other societies. It is considered a difficult task and is exclusively performed by strongest male family members or hired labourers.

The farm tool for puddling is made up of *shai-seng*, a piece of wooden board attached to *shaima-yugpa*, a slender wooden board that, in turn, is attached with a rope to *tag-seng*, a yoke. *Shaima* involves a pair of oxen dragging *shai-seng* on a flooded terrace. This breaks up clods opened up by a plough share, mixes the soil and water, and smooths out the surface of the soil. This is done to level the surface and create soft beds beneath the water for transplanting rice seedlings. The process ensures a finer finish, a good tilth or soil structure that is appropriate for transplanting seedling by hands. Puddling has three stages. In the first stage called *chu-shai*, a person mounts on a *shai-seng* that is dragged by a pair of oxen. This is done to break large clods, mix them with water, and to level the surface. *Chu-shai* is difficult for animals since they have to drag mud weighed down by a plough man mounted on *shai-seng*. The second stage called *log-shai* is done by mounting one leg on the *shai-seng* wherever there is hard soil and unbroken clods. In *nyom-shai*, the third stage, the man presses *shai-seng*

with both his hands. This clears the soil bed of all grasses and levels the bed beneath the water. *Nyom-shai* requires a lot of skill. In Maleng the oxen made five rounds for a terrace to become ready for transplanting.

Shaima is done from the topmost terrace and moving down to the bottommost terrace or vice versa. In an ideal situation, top-to-bottom direction is preferred to avoid the spillage of debris from top terraces to the terraces below which otherwise would have been made ready for transplanting. Moreover, it is easier for tired draft animals to descend to the low terraces. If there is water shortage, the bottom-to-top direction is preferred to stop water spillage outside the terraces.

Removing weed roots, plastering dykes: Ngon-sho, daam-kap

Once puddling is completed, the labourers, mostly men, enter the terrace to do a twin task of combing for and picking up weeds (*ngon-sho*) and plastering the dyke (*chi*) with mud (*daam-kap*). *Ngon-sho* involves combing and picking of debris, mostly roots of weeds and placing them on the dyke. This reduces the growth of weeds later. *Daam-kap* involves repairing the dyke by plastering debris (roots of weeds) so that it can hold water. With a strong *chi* it is possible to manage water inside the terrace by containing and disposing excess water. It also reduces weeds later. *Daam-kap* is skipped if there is labour shortage.

Transplanting seedlings: Chagmu kee

After the terrace is ready for transplanting, bundles of rice seedlings are thrown onto the flooded terrace. Women start transplanting seedlings by hand. Between one to three seedlings, depending on their size and length, are transplanted through a visual estimation of space. It is done randomly to cover every possible space. All transplanters face the direction

of the wind and move backward with the pace of transplantation. There is a sense of competition amongst the teams doing puddling, *daam-kap* and *ngon-sho*, and transplanting. If the *daam-kap* and *ngon-sho* team is behind, women transplanters tease them for their slowness and threaten to transplant seedlings on the mud splashed on their heads. This is taken as an insult and the *daam-kap* and the *ngon-sho* teams work harder.

Channelling water: Khepag

After transplantation, the next task is to ensure an uninterrupted supply of irrigation water, especially during sunny days. *Chukor* ensures that every household gets its share of water, but one's share is often diverted through water pilfering, which is common. Called *kudchu* (water for bending tillers), the plants are watered for two to three days. There should be a right amount of water: if there is excess water, tillers will not know how to bend and consequently, the plants will grow tall and bear less fruits. Watering done from four to five days when the grains on the tillers turn yellow is called *serchu* (gold/yellow water). Here too, the water amount should not be in excess lest only two to three tillers will bear fruit.

Weeding: Weerza

When the fruits (*budpa-bo*) start developing inside the stalks (*urpa nang-ngo*), weeding (*weerza*) begins. It falls mostly between the sixth and the seventh Bhutanese month. By the end of September, weeding will be over in the much of upper Samcholing, while only a few houses would not have completed weeding in lower Samcholing. It involves slashing taller weeds on terrace slopes or dyke walls.

Guarding: Brin

When the rice fruits reach a milking state (*ju-jong*), it is time to guard their crops. However, the real guarding begins when the panicle starts to bend due to milk turning into grains (*epa gangjong*). The farmers build huts and pitch tents in strategic places where the animals are likely to come, and stay awake at night, shouting and banging utensils to scare away the animals. In the household survey, 90 percent reported losing crops to wild boars.

Harvesting: Chig

Rice harvesting (*epa chig*) involves three processes: reaping (*epa nga*), drying (*bya-thang*), and threshing (also called *epa chig*). Similar to the first rice transplantation, the first rice harvesting is done on the day calculated by the astrologer. Whoever does the first harvesting has to consult the astrologer, and after that anyone can harvest on any convenient day.

Reaping: Nga

The reaping of red rice begins in the ninth month (October). Reaping is done with reapers facing the direction in which the panicles (*gang*) are bending to make the reaping easier. A stand of rice plant (*krin*), consisting of more than one tiller (*broma*), held by the left hand, is cut with the draw of a sickle held by the right hand. Each stand is reaped until the left hand is full to form a bundle (*chagpa*), which is then carefully arranged in rows with the cut ends reclining on the terrace dyke (*chi*). This enables the panicle to dry faster and makes the collecting of reaped plants and threshing easier, as well as preventing the loss of grains. The plant is cut as low as possible to maximize the length of hay, but the fields also need stubble to add to the soil fertility. The number of tillers in a rice plant is not determined by the number of seedlings planted during

transplantation, but by the fertility of soil, availability of water and other factors. Even one seedling can give rise to more than 20 tillers, while five or six seedlings, transplanted as one stand, will give rise to one tiller or none.

In 2013, the 27th day of the eighth month (October 2) was found to be an auspicious day for doing the first reaping. A couple in Phogchan hamlet marked the day with a symbolic reaping of the top terrace that was destroyed by wild boars, followed by the rice cultivated in two freehold plots. Although they did rice transplantation a week after Changpo (the first person to do rice transplantation for the year), he was the first to reap the paddy crops in Samcholing.

Drying: Kam

Reaped rice plants are allowed to dry for a couple of days in what is known as *bya-thang* since properly dried rice plants are easier to thresh. It also dries green stalks (*urpa*) and leaves (*lampa*) so that hay bales do not rot when they are bundled and stacked later. If it rains while reaping, or while drying, rice plants are collected and stacked into a heap (*pung*) and secured from the top with bamboo (*bale*) roofs and tarpaulin sheets (*charkag*).

Threshing: Pog

A large terrace conveniently located near the middle of the plot is chosen as a threshing ground (*chigbrang*) made by erecting poles to hold tarpaulin sheets from three sides. They become a type of wall to stop rice grains (*bro*) from escaping outside the threshing ground while thrashing. In the past, *bale* (a mat woven from bamboo) was used to make the walls. *Bee* (threshing mat woven from cane) is spread as a mat on which a stone known as *yangdo* (prosperity-bringing stone) is placed; today *bee* has been replaced by tarpaulin sheet. Before threshing begins, a libation offering is made to *kaylha* (birth-

god), *yulha* (country gods), *naydag* (owners of the place), and *sadag* (owners of the land). The person whose age is favourable for bringing *yang* (prosperity) for the year is chosen to inaugurate the threshing, which is done by thrashing a bundle of reaped rice plants onto the *yang do* (prosperity stone).

For threshing a *langdo* of rice terrace, two men were engaged in thrashing, one woman in handling hay, and one each for collecting reaped rice plants (*jag du*) and transporting them (*jag shoe*) to the threshing ground. Reaped rice plants are collected with the aid of a sickle and carried to the threshing ground by securing a large bundle (*phong*) with a rope. It is thrashed straightaway, or stacked to form a heap, from where labourers, compulsorily men, tie the bundle with a *geetha* (a rope used for tying the hind legs of cows while milking) and thrash it on the *yangdo* with a full force. It is thrashed an average of 10 times, and the cut-end of the bundle is thrashed one or two times at the end. The resulting hay (*sug*) is thrown onto the floor that is then pounded with a *kabje* (a wooden stick with two prong ends) with a force sufficient to dislodge any remaining grains, but not so hard as to damage the hay stalks. It is pushed with the aid of a *kabje* to the next labourer who collects and bundles them into a hay bale. Hay bales are stacked on wooden structures beyond the reach of animals.

Some workers, usually an elder, sing the harvest song as the rice crop is being thrashed to the shouting of *babshi*, literally meaning 'descend', or let the harvest be bumper'. Below is a part of the harvest song, *Babshi Babshi*.

བབས་ཤེག་བབས་ཤེག།

བབས་ཤེག་བབས་ཤེག་གཡང་བབས་ཤེག།
ལོ་ཕྱུགས་རྐུ་ཀུ་ལོ་ལེགས་བབས་ཤེག།
གསེར་གྱི་སྣ་རི་བརྒྱབས་བཞག་ནུག།
དུང་གི་ཙོག་ཕྱར་བརྡབས་བཞག་ནུག།
དངུལ་གྱི་སྣ་ལེབ་སྐྱོང་བཞག་ནུག།

དྲུང་གྱི་ཤང་གསུམ་སྟོང་བཞག་ནུག།
གཡུ་ཡི་རྩ་ལེབ་བསྒྱལ་བཞག་ནུག།
གཡང་གི་ཨ་མ་གུ་རྡ་དཀར་མོ།
གཡང་གི་ཨ་མ་ཏུ་དཀར་རྒྱལ་མོ།
བབས་ཤིག་བབས་ཤིག་གཡང་བབས་ཤིག།

Abundance Descent

Descend! Let abundance descend!
May harvests of crops and livestock descent!
Golden curtains have been hung
Posts made of dung have been inserted
Silver thatch has been erected
Tripod made of fir tree has been erected
Turquoise tiles have been laid
Guru Karmo! The Mother of Abundance!
Budar Gyalmo! The Mother of Abundance
Descend! Let Prosperity descend!

Winnowing, transporting, storing: Chur, Shoe, Kang

Farmers take advantage of the wind to winnow (*chur*) the threshed rice. Winnowed rice is measured with a *bre* and put into a jute or polyester sack. The loads are carried on the back, and once home it is later stored in a wooden box, a large cane container, or kept in the same sack.

Drying and husking: Kam, Tog

Winnowed and cleaned rice is taken out from the storage for drying in the sun by spreading it over a *bee* or tarpaulin sheet before husking. In the past rice was pounded in a large wooden mortar (*tshom*), and some households still use the same technology to avoid the husking rent charged by the owners of rice hulling machines.

Consuming and selling: Zu, Mui

An ideal Bhutanese diet is three rice meals a day. In the past only rich people could afford to eat rice, today most households eat rice mainly because of the availability of different varieties of Indian rice. Because of the price difference between the local rice and Indian rice in the market, farmers can procure almost triple the amount of Indian rice for the same price as the local rice. Some households sell local rice to purchase Indian rice with the money. In some cases, the need for cash becomes more urgent than food (rice) that is easily substituted by maize and other crops. But the selling of local rice to buy Indian rice looked down.

Discussions

Let me discuss some similarities between rice cultivation and modern management based on key definitions of modern management.

Managers and rice cultivators, which operate in corporate and agrarian contexts respectively share fundamental management principles. Traditional Bhutanese rice farming, much like modern management, is a sophisticated system of resource and people management, adapted and effective to its specific period and environment.

Structured, systematic, and goal-oriented

Both modern management and rice cultivation follow structured, systematic, and goal-oriented approaches. Managers implement procedures, set strategic goals, and develop systems to achieve them, whereas rice farmers of Samcholing adhere to agricultural calendars and Buddhist rites and rituals based on seasonal cycles and traditional knowledge. The rice cultivation process is systematic and goal-driven, ensuring a successful harvest for the family's

sustenance. Both systems rely on cyclical, structured processes to achieve specific outcomes.

Planning

Managers create annual or long-term plans aligned with organizational objectives, while rice farmers plan their activities based on annual cycles, rainfall patterns, and resource availability (seeds, labour, draft animals). Both require foresight and effective resource coordination.

Organizing

Rice farmers organize household and mobilise community labour through different institutions and irrigation schedules while managers allocate roles, resources, and responsibilities across teams or departments. Both involve coordinating people and resources to execute complex tasks efficiently.

Leading and directing

Managers motivate teams, resolve conflicts, and communicate organizational vision. Similarly, rice farmers—particularly household heads—assume leadership roles in coordinating rice transportation activities and mediating disputes over land and water. Leadership is essential in both contexts to ensure collective effort and cooperation.

Staffing

Modern management involves recruiting, training, and assigning employees to various roles, much like rice farmers mobilize family members and neighbours, delegating age- and gender-specific tasks during planting or harvesting. Both systems optimize human labour to match tasks and maintain productivity.

Controlling

Rice farmers monitor crop growth, adjust techniques, manage irrigation water flow, and respond to risks like pests and late rainfall. Similarly, Managers track performance, compare it against targets, and make necessary adjustments. Both processes emphasize continuous monitoring and corrective action.

Efficient and effective resource use

Managers optimize financial, physical, human, and informational resources, while rice farmers carefully manage limited land, labour, and natural inputs to minimize waste and maximize yield. Both face the challenge of resource optimization under constraints. Rice cultivation is a lesson in resource management in terms of efficient use of local resources by maximizing the use of available land, water, seeds, and organic fertilizers without relying on external inputs, and minimizing waste by using crop residues and by-products, resembling a circular approach to farm management.

Common objectives

Managers aim to achieve organizational goals such as profitability and sustainability while Samcholing sharecroppers prioritize food security, community well-being, and religious and cultural obligations (annual propitiation of goddesses, libation offering). Both focus on common objectives.

Balancing competing demands

Managers steer stakeholder expectations, budgets, deadlines, and team dynamics, while subsistence rice farmers in Samcholing balance subsistence requirement, labour

availability, natural risks, and community obligations and duties, and more importantly other farm works like cattle herding. Both roles require trade-offs and prioritization in decision-making.

Collaboration

Managers collaborate across teams, departments, and external partners, just as rice farmers rely on cooperation within families and among neighbours for mobilizing labour for irrigation and a range of rice cultivation activities. Success in both fields depends on social coordination, trust, and effective communication.

There is an intricate relationship between irrigation water, labour, draft animals, and seedlings. A household has to balance these inputs to have a successful transplantation. A family with enough labour and draft animals does not necessarily have an advantage in paddy transplantation because water from *chukor* is only enough to transplant about one *langdo* (=33.4 decimal) of paddy fields. The water volume sets a limit on what acreage of rice fields can be transplanted during a household-cluster *chukor*. Theoretically, all households have two *langdo* of paddy fields, which they received as a gift, but only a few households have the rice field in one place. Most plots measuring as small as one *drola* (=16.7 decimal) are scattered across the village.

Seedlings are mostly uprooted a day before transplantation, and the number of seedlings must be based on the amount of water and labour supply. After securing labour to work on one's *chukor*, the family must be able to guess or predict the weather. If a large quantity of seedlings is uprooted and the amount of water is inadequate (due to sunny weather), the sun will wilt the seedlings and not survive until the next *chukor*. On the other hand, if the quantity of seedlings uprooted is small and the rainfall has added more water to transplant increased

acreage, there will be no seedlings left to transplant, and the uprooting of paddy seedlings on a rainy day is not advisable. There is an element of luck and managerial quality in ensuring a successful transplantation. If there is rainfall on one's *chukor*, there will be more water to transplant additional acreage of rice fields for which additional labour and bullock will have to be mobilized, but such rainfall will enable other households to do transplantation independently of the *chukor* but no additional labour is likely to be available. In addition, the household will have to have uprooted enough paddy seedlings. If the rain does not fall on one's *chukor*, much water will be lost on the way through pilferage or evaporation, and by the time it reaches the paddy fields, there will not be enough water to use the laborers who have already been mobilized. Both the animals and the people will have to wait for water to flood the terraces. When one's *chukor* ends, the transplantation work will not be completed and the seedlings will be damaged.

Time management

Rice cultivation is a lesson in time management. The rice cultivators are good time managers to navigate the short monsoon rainfall and hence the transplantation season. They follow a strict seasonal planning. They follow strict agricultural calendars aligned with local climatic conditions, local festivals, and other community events. They also successfully organize family or community labour efficiently during critical periods like transplanting and harvesting.

Risk management

Rice cultivators are good risk managers, adapting to climate change even without access to modern weather forecasting information, using local ecological indicators and past patterns. They grow other crops to reduce the risk of harvest failure.

Knowledge management

With most of the farmers illiterate to access modern knowledge on farming, they rely on intergenerational transfer of indigenous knowledge on soil preparation, seed selection, and pest control. Oral transmission is supplemented by doing in the fields. Their decisions are often based on observational learning and long-term experience rather than written data. For example, the rice transplantation has started to coincide with the rainfall for which the farmers wait with great anticipation. If the rains do not fall towards the end of the second month or beginning of the fifth month, a ritual (*chokor*) is performed to bring down the rain. In *chokor* Buddhist scriptures are carried around the village, and every household compulsorily sends one person to perform the job. *Chokor* works most of the time in bringing down the rain. A host of divinities are propitiated to placate for their power to bring rain, stop excess rains, stop pests and provide protection while doing their daily activities

Labour management

Samcholing rice farmers excel in labour management when the entire village faces labour shortage during the summer months with many competing demands on their labour. They resort to traditional transitions and systems like reciprocal labour institutions.

Innovation under constraints and pressure

Farmers are aware about the sustainability issues not in terms of modern understanding and idioms, but to the same effect. Terracing and fallowing demonstrate an understanding of long-term land health. Traditional irrigation water sharing institutions ensure maintenance and equitably sharing of after among households. They excel in water management. They use local means (tools and knowledge) to overcome the challenges

like late rainfalls and pests by resorting to the help of divine forces, which work most of the time.

Leadership and coordination

Rice cultivators excel in collective decision-making for water sharing, transplanting, harvesting, and other farm activities. The conflicts among the households for water, labour and other key farm inputs are solved and contained within the village through local norms and customary laws. They excel in conflict resolution. *Chu-nyer* (water in-charge) for example supervises daily work and more importantly mediate in disputes and quarrels amongst households for which he is entitled to mediation in-kind fee from the litigants.

Conclusion

The paper tried to bridge the gap between traditional agricultural knowledge and modern managerial discourse, suggesting that Samcholing rice cultivators possess sophisticated, though often unrecognized, management capabilities. A comparative analysis reveals that traditional rice cultivators in Samcholing and modern corporate managers, though operating in vastly different contexts, share core management principles and practices. Both systems are structured, systematic, and goal-oriented, requiring strategic planning, resource organization, effective leadership, and continuous monitoring. Samcholing farmers demonstrate sophisticated management capabilities—ranging from time and risk management to knowledge transfer, labour mobilization, and innovation under constraints—despite limited access to formal education or modern technologies. Their reliance on local resources and coordination, indigenous knowledge system, and ecological awareness enables them to make subsistence livelihood, sustain communal harmony, and

uphold cultural traditions and values bequeathed by their ancestors. In essence, traditional rice cultivation embodies a complex, adaptive management system that parallels modern management in form and function, offering valuable insights into sustainable and community-centred resource governance. It can only be beneficial to learn from them.

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