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Motivation and Demotivation: a Case Study of the Malawian Health Management Information System

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Abstract
This paper addresses the problems of utilisation of health management information systems (HMIS) in developing countries due to the critical shortage of qualified and motivated human resources. The study employed qualitative research methods in an interpretive in-depth case study, and the study was carried out in two districts in Malawi. Analyses are based on motivational theory and the six categories of good and bad critical motivational incidents defined by Machungwa and Schmitt [1]. Gasser's [20] theory of integration of computing and routine work was applied to address the secondary, and supportive, nature of HMIS computing work. This research suggests that motivational items identified by Machungwa and Schmitt [1] are chiefly relevant to the Malawian context, but since the HMIS work is of a secondary type compared to core health activities, the work motivation that comes from work itself has little motivating effects. Supervision visits and a recognition scheme were social arenas which motivated the health workers.

Keywords: Health Information System, Developing Countries, Human Resources, Motivation, Secondary work

1. Introduction

There is a serious human resource crisis in the health sector in developing countries and a motivated and qualified workforce is crucial to increase productivity and quality of health services [2, 3]. For decades it was assumed that poor performance of health workers in developing countries was due to a lack of knowledge and skills, and as a result most interventions concentrated on training [2]. The low level of health worker motivation is now however seen as one of the most important health workforce problems, in addition to problems of recruitment and retention [3].

The last decade saw developing countries taking action to strengthen and modernise their health management information systems (HMIS) [4, 5]. The potential of partly computerised systems to improve data are not always realised because many of the challenges faced by such systems cannot be reversed by computerisation alone [5]. Information systems cannot deliver any benefits on their own unless they are supported and enhanced by skilled [4] and motivated human resources.

In January 2002 the Ministry of Health and Population (MoH) in Malawi started the implementation of a comprehensive and integrated routine HMIS throughout the country [6]. The integrated HMIS is designed to provide programme managers and health workers with reports on how well each health programme is functioning and to alert the service providers and managers to take timely necessary corrective actions [7]. The system is paper based at health facility level, while aggregated district level reports are computer based and the district data are sent electronically to the national level.

The main objectives of this study are to study local practices of data collection, processing, dissemination, and use of information in a national HMIS in a developing country in order to understand if staff motivation affects or is affected by HMIS practices. The study attempts to offer insight and understanding of issues relevant to motivation and demotivation towards HMIS related work in Malawi. In order to achieve the above objectives the following specific objectives are identified:

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- Understand how managers and staff at district and facility level perceive their current HMIS practices.
- Understand how managers and staff at district and facility level perceive both intentions and actual functioning of existing HMIS support structures.
- Identify practices and support structures that either positively or negatively affect staff attitudes towards HMIS related work.
- Understand how motivational theory applies and can be adjusted to cater for computing work that support other work.
- Suggest solutions that might increase motivation or decrease demotivation among staff towards HMIS related work.

Other writers have investigated problems of motivation and demotivation among health workers in developing countries [2, 8-12], but this paper address motivation related to health management information systems specifically. Motivation is associated with incidents offering opportunities for improved job satisfaction and increased performance, while demotivation is associated with incidents that cause job dissatisfaction and low morale among workers [13]. Six categories of motivational themes [1] assumed to be relevant to the cultural context of Malawi are used to inform the analysis of findings. Empirical studies were conducted in Malawi, with in-depth interpretive case studies in two districts. The study employed qualitative research methods, including literature studies, semi-structured open ended interviews, observations of daily routines and meetings, and document analysis of policy guidelines and national and lower level reports.

The theoretical perspective presented in the section 'Motivation and secondary work' serve as a basis for the following discussion on motivation and HMIS computing work.

2. Motivation and secondary work

The frequency of mention of Herzberg's [13] two factor theory in the literature on motivation to work suggests that, although this theory was developed more than 50 years ago in the USA, it is still relevant today. However, there seems to be agreement in the literature that culture plays an important role in what motivates people [14-17] and, to adjust for cultural differences in work values, similar research [1] from an African country is presented here.

HMIS work is not the primary work of health workers and health managers, and this has to be taken into account when considering motivation in this study. Concepts for characterising secondary aspects of work will therefore be presented, as well as some literature on motivation and commitment in information systems use in general.

2.1. Motivation and Culture

Culture is the collective programming of the mind which distinguishes the members of one group or society from those of another [16]. Management within a society is according to Hofstede [16] very much constrained by its cultural context, because it is impossible to coordinate the actions of people without a deep understanding of their values, beliefs, and expressions.

The interaction of Western and non-Western management practices is a growing issue in emerging economies throughout the world and several authors call for the need for an alternative or complementary approach towards leadership, human resource management, and motivation in the sub-Sahara African context [14, 15, 17]. According to conventional western theories on motivation [13, 18] people are expected to be individualistic and motivated by self-interest. They value recognition, are goal-directed, and anxious to improve their performance for the sense of achievement [17, 19]. Those values are however argued to be less relevant in the more collectivistic cultures in sub-Saharan Africa. In such cultures self interest would not be the ultimate motive for economic behaviour as individuals who have a job will have to share their earning with needy relatives [16]. Maintaining harmony with other people in their family or tribe could also be more important than self-actualisation. Satisfaction might rather be derived from prestige and position, and social approval can be important in its own right [19].

2.2. Motivation and Demotivation

Motivation to work is associated with incidents offering opportunities for improved job satisfaction and increased performance, while demotivation is associated with incidents that cause job dissatisfaction and low morale towards work [1, 13]. Motivators and demotivators are not merely opposites; absence of a motivator does not necessarily lead to demotivation and vice versa [13]. Absence of both motivators and demotivators could simply leave workers with a neutral feeling about their job.

Machungwa and Schmitt [1] investigated work motivation in Zambia by examining conditions, events, and processes that characterized highly productive and highly unproductive work behaviour. Themes were grouped together into six clusters, based on that they expressed ideas that were related on content, conceptual, or theoretical basis (Table 1).

The six theme clusters are presented according to their motivational potential in Figure 1, indicating that only five categories had the potential for both enhancing and impairing motivation, and that the cluster of themes related to personal problems only showed negative impact on motivation.

Growth opportunity themes were quite frequently mentioned as motivating

Category	Included Items
Growth and advancement opportunity	Promotion, learning, responsibility, trust, autonomy and feedback
Work nature	Work itself, amount of work, degree of difficulty of work, how work was assigned
Material and physical provisions	Pay, job security, fringe benefits, nature of disciplinary actions, physical work conditions
Relations with others	Interpersonal relationships, recognition, attitude and competence of colleagues and supervisors
Fairness in organisational practices	Fairness in policies, procedures and practices, organisations' care for employees and capacity to keep promises
Personal problems	Death or sickness in the family, workers' feeling of not being in the mood to work, or a presence of domestic problems or quarrels

Table 1: Machungwa and Schmitt's six categories of motivational items [1]

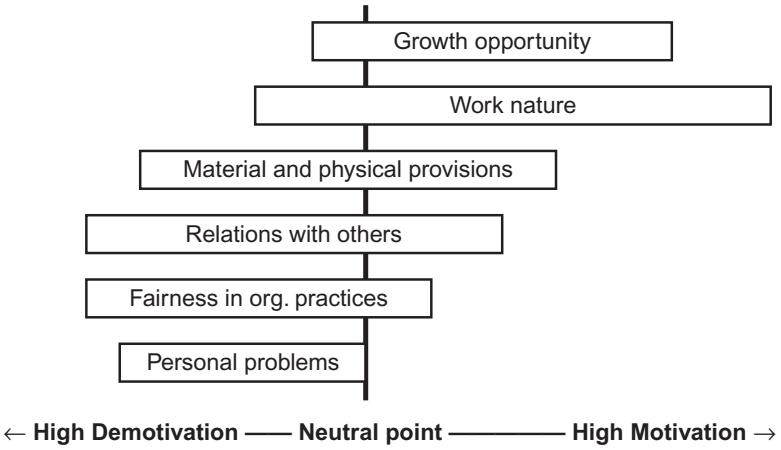

Figure 1: Motivational potentials of the six categories [1].

among Zambian employees [1]. Lack of promotion and learning were however also mentioned as demotivating. Amount of work had the highest frequency of mention as cause for putting much effort into work, while poorly defined work duties was the most discouraging factor related to work nature. Especially discouraging issues related to material and physical provisions were low pay and little or no access to fringe benefits. Bad interpersonal relations also had a great potential for reducing efforts at work while good relations did little to increase efforts, except in the case of recognition. Unfairness in organisational practices also had a high potential for causing demotivation, while perceived fairness had little potential for motivation.

Machungwa and Schmitt [1] applied the same critical incident technique as Herzberg et al. [13], and they argue that their data are roughly supportive of the two-factor theory. They point out a major difference however in that both "job content" and "job context" are argued to affect motivation in Zambia, as opposed to what is suggested by Herzberg et al. [13]. We cannot speak of an African culture, as there are over fifty countries on the African continent and some of these have twenty or more different ethnic groups living within their boundaries [19]. There is however reason to believe that Malawian work values are closer to Zambian values than the North American ones.

2.3. Primary and secondary work activities; integration of computing and routine work

Information systems use are usually a secondary activity supporting the primary work of an organisation [20]. The primary concern in the health sector is to care for patients, while HMIS related work is conducted in order to support rational decisions on use of time and resources in the sector. Especially in resource poor settings, where patients are many and computing skills and resources are limited, it is likely that HMIS work get a lower priority. It is in this study presumed that this secondary status of HMIS related work is relevant to work motivation.

Gasser [20] distinguished work found in organisations into three

Type of work	Description
Primary work	Address the specific agenda of the work situation.
Articulation work	The work of reorganising and maintaining production to stabilise commitments and iron out conflicting forces, typically management work.
Computing work	Comprise any activities that are part of the tasks that produce computing, or activities where computing or computer-based information is employed as a resource.

Table 2: Gasser's [20] types of work.

types; primary work, articulation work, and computing work (Table 2). Articulation work may be the primary work of managers, and computing work is usually the primary work of for instance computer specialists.

Slip and slack refers to either under- or oversupply of computing resources; a misfit between computing and the work it is supposed to support [20]. Some examples of computing slips may include inaccurate data, late reporting, reports produced too seldom, technical inadequacy of the information system, and lack of personnel skills. Gasser [20] argues that not all misfits are critical or even problematic for the organisation or the individual but that each type of misfit entails some readjustment of work to accommodate it. He defines three types of such informal adjustments called adaptation work [20]:

1) **Fitting work** is the activity of changing either computing or the structure of other work to accommodate for computing misfit. This is a function of complex negotiations between those who control resources and those who face misfit to find formal solutions to the misfits.

2) **Augmenting work** is when employees undertake additional work to make up for the misfits they are facing, and thereby complicating production and increasing the need for articulation work. It requires both skills and personal initiative to make up for misfits.

3) **Working around** means intentionally using computing in ways for which it was not designed or avoiding its use and relying on an alternative means of accomplishing work. These are typically ad-hoc strategies to solve immediate and pressing problems.

In many cases adaptation work are so important to the integration of computing that, without them, computing services would not function at all [20]. Whether or not adaptation work supports or harms the intended system functioning is likely to be affected by staff attitudes towards the system, as well as the resources available.

2.4. Motivation and commitment in information systems use

User commitment and motivation are critical not only for the adoption of new information and communication technologies, but also for their sustained use [4, 5, 21, 22]. Many information systems are rejected by users because, although easy to use and capable of producing high quality output, they do not address tasks that are perceived important to the users' jobs [23]. In what has been termed the Technology Acceptance Model, Davis [24] established that users will take the effort to learn systems which are perceived useful, while easy to use technology of minor benefit will not be used. This result is confirmed in several studies, summarized by Venkatesh et. al. [25], where also social influence and facilitating conditions have been included as factors supporting use. While these studies were carried out in the more individualistic cultures of the Western world, Anandarajan et. al. [26] found that in the more collectivistic culture of Nigeria, perceived usefulness had no effect on use, while social pressure had. However, perceived usefulness had a positive influence on job satisfaction. Individual training had no impact at all. It is therefore necessary to create conditions in which those affected by information systems see the system as being in their interest [22].

In knowledge sharing, it is argued that the key to success is that personal ambitions should match the group ambition [27]. If individuals are not motivated to share knowledge, it is not likely that they are motivated to use tools facilitating knowledge sharing. When intranets, distributed libraries, document management systems, and groupware applications are introduced all too often they do not result in significant improvements in knowledge sharing [27]. Information systems development and implementation is an intensely political as well as technical process and organizational mechanisms are needed that provide Management Information Systems managers with authority and resources for negotiation [28]. Politics are the process of getting commitment, building support, or creating momentum for change, and they are inevitable.

3. Methods

This study has been an interpretive in-depth case study. Interpretive research can help IS researchers to understand human thought and action in social and organizational contexts and has the potential to produce deep insights in to information systems phenomena [29]. Our main focus has been to understand the functioning of the national health management information system (HMIS) in Malawi, including the established practices and the meanings and values attributed to them by the participants in this study. We focused also on structures and mechanisms that were introduced to support the functioning of the HMIS and aimed to understand the intentions of these structures and how they were perceived to function by the different actors.

The Ministry of Health in Malawi helped pick two districts for our study; one known to perform well on HMIS, and the other amongst the poorer performers. Performance was measured in terms of timely and accurate HMIS reporting to the national level. The better performing district received special support from the USAID funded Management Sciences for Health, and different performance assessment and supervision tools were being piloted in this district both on health programme and HMIS issues.

The participants in our studies were chosen based on their involvement with HMIS in addition to their geographical location and availability. Research subjects included health managers, HMIS managers and supervisors, HMIS clerks, and other health workers with HMIS related duties. In total we have conducted 35 interviews, some of which were group interviews, and made a total of 13 direct observations of different meetings over a period of 11 weeks from August to October, 2006.

Based on literature studies we started out looking for well working HMIS practices [30-35]. As the study proceeded health worker attitudes were identified as an important factor affecting the functioning of HMIS routines and support structures. Based on this discovery new literature studies included; motivational theories and their applicability in the cultural context of Malawi; health worker motivation studied in developing countries; the secondary and supportive nature of computing work; and commitment and motivation in IS use. The theoretical framework identified that was considered most relevant was used as basis for the analysis.

Research subjects' statements about own behaviour in combination with researcher's observations served as the main material for analysis and was compared to findings in the literature on motivation among health workers in developing countries in general. This helped to identify findings relevant to motivation, in addition to what was expressed by some subjects directly. Findings were finally categorised according to Machungwa and Schmitt's six clusters of motivational themes, and motivational and de-motivational potentials were analysed.

4. Research Findings

In this section we present empirical findings and address the secondary, supportive nature of HMIS computing work, and motivation and demotivation relevant to the HMIS.

4.1. HMIS work

4.1.1. Primary work

The HMIS responsibilities identified in this study are all considered to qualify as Gasser's [20] computing work, although many were paper based. District HMIS Managers, HMIS Staff like ward or clinical clerks, and facility HMIS focal persons had HMIS computing as their primary work.

Some clinics and wards had clerks responsible for recording patient information after a clinician had seen the patient. This responsibility included manual data entry in register books and manual aggregation of daily and monthly totals of the entered data. In some clinics it was however often the clinician herself who fulfilled those duties. Due to a general lack of HMIS clerks, data collection was often left to health workers with no formal HMIS responsibilities who were thus not targeted by neither HMIS training nor supervision from the district. With no HMIS skills these health workers more often than not resorted to working around HMIS computing by either entering incomplete or inaccurate data, or by avoiding doing the computing work at all. District managers provided some in-service training and supervision upon visits to facilities to try to help the situation.

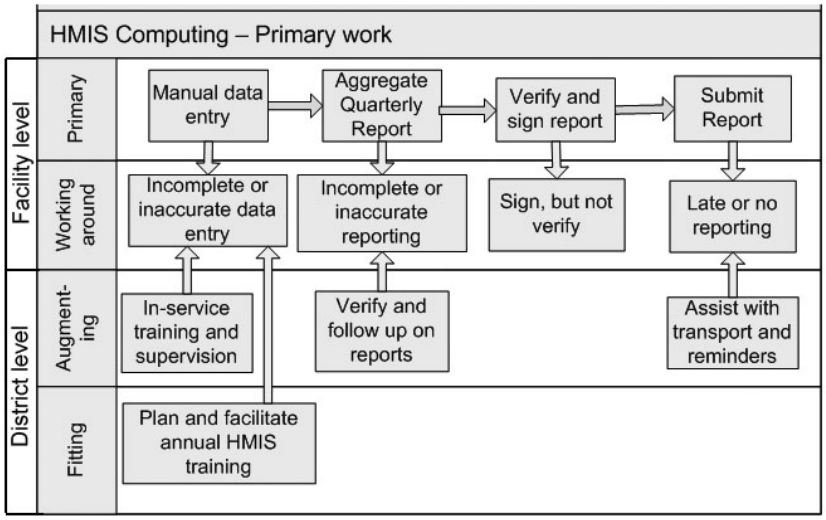

Figure 2: Paper based primary computing work at facility level with identified adaptation work at facility and district level.

District HMIS Managers took on the more formal fitting work by planning and facilitating HMIS training and regular HMIS supervision. The need for training was however weighed against available funding and this was a continuing process of negotiation with district management.

Facilities were supposed to appoint an HMIS focal person responsible for manually aggregating quarterly totals from the register books and entering the numbers into a paper form, the quarterly HMIS report. The HMIS focal person would typically be a Senior Health Surveillance Assistant with quite good understanding of the reported numbers. But often this responsibility was left to a clerk with limited training and understanding of reporting and often resulted in inaccurate and incomplete reports. The Ministry of Health had introduced the routine that one more staff member should verify the report and sign, before the facility manager finally approved and signed the report. Staff did however work around this procedure by only signing the report as staff with the skills to actually verify was often not available.

Other problems resulted from a lack of priority of reporting, but also due to transport problems when reports should be delivered to the district hospital. District HMIS managers took on augmenting work to try to improve timeliness of reporting in the district by reminding facility staff about upcoming deadlines and by assisting in collection of reports from the facilities.

At district level, the HMIS Manager manually entered the facility reports into the HMIS software. Due to the problems of incomplete and inaccurate reporting, this procedure would also include verifying the reported numbers and contact the reporting facility if some numbers did not make sense. The software was then used to aggregate district totals and to generate a quarterly district HMIS report. The report was then exported to text format and sent by email to the national level.

4.1.2. Articulation work

HMIS articulation work was in our study identified as work related to reorganising and stabilising commitments to maintain HMIS computing. This included HMIS managers facilitating district HMIS review meetings where district performance was presented and discussed among district and facility management. District HMIS managers and HMIS focal persons also had the responsibility to analyse and monitor some key health indicators to provide district and facility managers respectively with data for planning. Finally, management articulation work at both facility and district level was identified as managers' use of HMIS data as a basis for planning and decision making.

Actual use of data for planning among managers at both district and facility level relied heavily on their understanding of the importance of HMIS data. Use of data was also affected negatively if managers perceived the reported data in their catchments area to be of poor quality.

4.2. Motivation and Demotivation

4.2.1. Growth opportunity

The lack of a fair chance for promotion showed demotivating potentials in this study, and indicated a relevance of individual achievement on motivation.

> *"Staff at the facilities can work year after year without any incentive to perform well. They receive no training, no refreshment, and no motivation." (District Manager)*

Many staff members were overdue for promotion in the districts and the zone health office reported that this caused frustration and dissatisfaction among staff. While having a fair chance of promotion is a potential motivator to the individual, the promotion of health workers with HMIS skills often lead to a great loss of HMIS competence in rural health facilities. Most staff was recruited in different vertical health programmes as Health Surveillance Assistant and this included training and the opportunity for promotion. No career path was however available for HMIS staff and obtaining HMIS skills did not result in any real career benefits.

The better performing HMIS district showed good results in reaching their targets for training, and lack of chances for learning were hardly mentioned as a problem by any staff category. Lack of training was however the most frequently reported problem among staff in the other district, as HMIS training was not frequently and regularly available at the district level.

> *"I am worried about my friends (staff) because they have not received any training, (...) I am the one training them but I need more help." (Facility Manager)*

Health Staff, who had no formal responsibilities related to HMIS computing, still expressed a need to learn how they could use collected data in order to understand why data was collected.

> *"The others (health staff) are not interested in the (quarterly HMIS) reports." (HMIS Focal Person)*

> *"We do not understand how we can use it (quarterly HMIS reports)!" (Health Staff)*

Other important arenas for learning observed was HMIS review meetings and HMIS supervision and both support mechanisms were highly appreciated when provided. HMIS review meetings had the potential to function as on-the-job training for health workers. When conducted at sub district level, with 3 or 4 facilities participating, a focus on real numbers and discussions of each facility's performance was possible and could provide useful feedback from district representatives. Participants were

very motivated when such feedback was provided.

"Feedback makes us aware of where we need to improve. That is very helpful." (HMIS Focal Person)

Lack of corrective feedback in review meetings and during supervision was on the other hand mentioned as frustrating. Again, the district that suffered from problems of training had problems of funding both regular HMIS reviews and supervision.

4.2.2. Work nature

The importance of feedback observed in this study was also related to staff's understanding of the importance of HMIS work.

"Staff needs feedback [on reporting] to see the importance of the HMIS and to be encouraged to report."(District Manager)

At district level too much work often affected managers' ability to conduct supervisory visits, participate in review meetings, and provide feedback. Facilities expected feedback on quarterly reports submitted to the district level, either written or verbal, but this was rarely provided. This often resulted in low morale and demotivation as it was not perceived by facility staff that HMIS was a priority among their superiors.

When facility staff understood how aggregated data could be used locally, we observed a better understanding of the importance of both data collection and quarterly reporting. There was however a tendency of facilities focusing on data collection in registers. Some facilities reported for instance to discuss the quality of HMIS register data in facility management meetings, but that aggregated data from quarterly reports were never discussed. This lack of understanding of the usefulness of aggregated data often resulted in a feeling that reporting was something they just had to do that did not add any local value.

"They don't feel it is their duty to report. They don't understand the importance of reporting and collecting data, and think it is only for the Ministry of Health. " (HMIS Manager)

The HMIS Focal Person in a facility was usually also a Senior Health Surveillance Assistant (SHSA) with responsibilities in different vertical health programmes and was often overburdened with too many other duties. When large numbers of patients were waiting at a facility, HMIS work was often left to unskilled personnel as the HMIS focal person would be assigned to what was perceived to be more important work. HMIS work was also reported to be too involving. Aggregations of daily and monthly totals in registers were often left to the end of the quarter, making it a tedious and fault prone process to produce reports.

"It is a lot of data to aggregate; it takes me 2 to 3 days every quarter." (Clinic Manager)

In some cases, HMIS work was also too difficult. HMIS quarterly reports should be verified and signed by three different people in a facility to ensure good quality.

"Some of the others (staff) cross check my report, but also sometimes they only fill their name since they don't know how to fill the report." (HMIS Focal Person)

On the brighter side; HMIS review meetings showed great motivational potentials as a way of communicating the importance of HMIS work. Some facility Managers and HMIS staff prepared and presented graphs on key indicators from their aggregated data in such meetings, and this created awareness of their own performance, and enabled them to compare their performance to other facilities. For HMIS staff these meetings provided an opportunity to show their work was good and of importance, while Facility Managers could get recognition for their work as managers when they showed good results on health issues in their catchments area.

4.2.3. Material and physical provisions

Demotivating aspects of low pay and unequal access to fringe benefits seriously affected the HMIS system and this was indicated by both staff and managers.

"They don't want to learn how to fill the registers or reports because I was the one who went for training. I received allowances, and because I did not share with them they say I should do it". (HMIS Focal Person)

"If they are informed and hear it from me then it will be more difficult for them not to improve, as they have no excuse. Otherwise they just say that they have not received training and don't know how to do it (fill registers)." (HMIS Manager)

Although lack of learning in itself can be demotivating it was clear that staff wanted access to training as a means of adding allowances to their low regular pay. Also, when asking for training health workers said they would like to go somewhere nice outside the clinic. It was often expressed that on-the-job training was not what they wanted.

Reporting on time was sometimes difficult in rural health facilities because of transport problems.

"It is sometimes difficult [to report on time] because of motorbike breakdown or because we have no fuel." (HMIS Focal Person)

The HMIS district received extra funding from Management Sciences for Health for a district representative to travel around the district to collect quarterly reports when facilities had problems of delivering them on time. This was reported to seriously improve timeliness of reporting in district. Other problems of reporting

on time included inadequate stocks of reporting forms and registry books that should have been provided from the national level.

The relevance of job security in this study should also be mentioned. The high numbers of vacant positions in the sector resulted in relatively safe employment and might have affected staff motivation in general.

4.2.4. Relations with others

A Recognition Scheme that was being piloted in the district showed very promising motivational effects. Facility reports were assessed and ranked by a committee biannually, and the best facilities were awarded on timely, consistent, and complete reporting. Prizes included stationary equipment useful to HMIS work.

> *"…it (the recognition scheme) creates a spirit of data collection and we work very hard to win! Once we won a wall clock." (HMIS Focal Person)*

Prizes were handed out in public ceremonies during district HMIS review meetings. District managers were also pleased with the motivational potential of the recognition scheme, and especially with the fact that the award was given to the facility as a group:

> *"That way a person who maybe quit cannot take the award home."*

There were more opportunities to nurture the feelings of recognition. All findings related to situations where people met, discussed, and gave corrective feedback face to face showed motivational potentials, and indicates the importance of personal relations and recognition. The importance of interpersonal exchange is further illustrated by the considerable demotivating power of bad interpersonal relationships. The problems of unequal access to monetary incentives resulted in envy and poor cooperation among co-workers, and served as serious demotivators towards HMIS.

4.2.5. Fairness in organisational practices

From the above findings it is clear that organisational practices related to HMIS did in many cases cause serious demotivation. Problems of funding and distribution of funding according to budget resulted in problems of conducting planned training sessions and meetings, as well as problems of reaching targets for training.

> *"We trained 29 last year, but we had planned to train 60. The duration of training was also shortened due to lack of funding."*

Problems of frequent changes in district management was also demotivating, especially to managers at district level. One manager commented, after the third new district health officer had been appointed in one year:

> *"We have yet to see if the new management will be a challenge to us. Sometimes they have their own ideas that are not so good."*

There were also problems of communication between district and facility levels that resulted in staff and management having different expectations to both frequency and content of support. This resulted in frustration and unfulfilled potentials for motivation. Most health facilities reported for instance to receive some kind of supervision at least quarterly, but most of them were however convinced that they were supposed to receive monthly supervision. Similarly, respondents at both facility and district level acknowledged that written feedback was supposed to be provided, but that it happened rarely.

To compensate low pay the government has introduced several monetary incentives, including lunch and travel allowances upon participation in trainings, reviews, and other meetings. As not all staff had equal access to these incentives this reward system served as a serious demotivation to those feeling deprived of such benefits.

5. Discussion

5.1. Task Importance and HMIS career path

As suggested in the literature on motivation and commitment in information systems use, our study indicates that it is crucial for system adoption that the work which the system supports is perceived to be important [23]. HMIS Managers' responsibility to facilitate review meetings, trainings and supervision existed primarily to share knowledge and understanding of the usefulness and importance of HMIS data among staff in the districts. In this way HMIS Managers were instrumental in stabilising commitment and maintaining HMIS computing services, supporting the articulation work of Health Managers at both district and national levels. Superiors' attitudes and actions must reflect the importance of HMIS reporting, and support for HMIS work should be a priority to managers. This means that feedback on reported data needs to be provided to health facilities, supervision must be conducted as planned, and HMIS review meetings should be conducted regularly. Reporting forms should be available, and the amount of work required to report should be realistic in respect of staff available etc. Ensuring realistic expectations at facility levels as to the amount and type of support that can be expected also seems to have the potential to decrease some frustration among staff. These practical issues affected motivation to some degree; as they gave a feeling of lack of priority of local HMIS tasks at higher organisational levels.

Our findings further indicate that it would be easier to motivate HMIS staff towards primary work of computing, than motivating other health staff to do augmenting work to make up for misfits in resources. Unless there are mechanisms in place to protect the quality of the HMIS system, promotion of facility health workers with HMIS skills also lead to a loss of HMIS competence. This problem is increased because there is no real

career path available to HMIS staff, resulting in very few staffs seeking HMIS skills for their own career benefit.

The general lack of qualified health workers poses another dilemma. It was observed in this study that a medical understanding usually increased data quality, as obvious errors would be detected based on a better understanding of the situation behind the numbers. Clerks on the other hand would often just record the numbers with no understanding of their meaning. It seems necessary to consider the most appropriate level of medical understanding needed to conduct quality HMIS computing. With the scarce availability of qualified health workers, this might indicate a need to adjust the complexity and involvement needed of HMIS computing to better fit the existing personnel resource to ensure good quality of whatever data is collected.

5.2. Work values in the Malawian health sector

The majority of health workers in developing countries report to highly appreciate training opportunities [8,9,11], and the general need for training in the health sector in Malawi is extensive due to the high numbers of unskilled health workers with no formal qualifications. Similarly for HMIS, any type of meeting that offered an opportunity for transfer of HMIS knowledge served as a potential for motivation in this study. The success of achieving targets for training seemed to be that annual training sessions on HMIS was planned for in the District Implementation Plan in the best HMIS district. Equally important was that these plans were actually realised by the district management. In contrast, the other district's inability to realise approved plans for training within the provided budget indicated a critical management problem. Muula and Maseko [12] report from Malawi that although access to further training could be a motivating factor, health professionals that had acquired additional qualifications required appropriate recognition for their achievement. Often, this expectation was not met and frustration and resentment could result in the health professional leaving the sector. As indicated already, an HMIS career path could prove important, but a fair chance of promotion would probably be equally important.

The clear preference for face to face interaction observed seems to hold an especially important potential for motivation, especially to rural facility staff with little or no professional training. There are two possible reasons for this; (1) rural health workers have little contact with the health system in general and thus few opportunities for professional exchange in general; (2) lower level staff put high value on interpersonal relationships. Rowe et al.'s [2] review shows that supervisors are increasingly the only contact between rural health workers and the health system, and supervision thereby provides one of few opportunities for health workers to enjoy professional exchange and to receive praise and recognition for work done. The relevance of interpersonal relationships is indicated by Hofstede [16] who argues that more collectivistic societies have both moral and loyalty aspects in their business relations. This means that maintaining harmony in the work place may be more important than individual achievement and self-promotion [16] and could also explain the preference of face to face interactions. The former colonial power in Malawi, the UK, share equal values on Hofstede's [16] four cultural value dimensions as the USA. This indicates that managers and health professionals in Malawi influenced by western thought through several years of training may be motivated by similar values as their western colleagues. Staffs that have no formal training may be more motivated by traditional Malawian values that are more collectivistic in nature. This suggests an important challenge in that managers and workers in rural areas may have very different work values, and might separate social and working life to different degrees.

The importance of harmony with others is also reflected in the high degree of demotivation related to bad interpersonal relationship and the value of moral in business could also explain the high demotivating potentials observed related to unfairness in organisational practices.

While recognition is related to self-actualisation in individualistic societies, it can be related to social achievement through group efforts and improved social identity in collectivist cultures. The popularity of the Recognition Scheme seems to support this. The fact that workers are motivated to the degree observed by group efforts, and that it is seen as positive that the award is going to a group rather than an individual indicates an acceptance of recognition of this form. The public award ceremony of the Recognition Scheme might also have been one of the motivating factors, as visible symbols of recognition are argued to be especially valued in many African cultures [19].

The significant erosion of salaries in the 1990s in Malawi has proved traumatic to the health sector and still there are high numbers of vacancies. The problems of low pay, unequal access to allowances and promotion are all organisational issues that seriously affect motivation in the sector.

6. Conclusions and Implications for Theory and Practice

This study addressed the need to understand problems of utilisation of HMIS in developing countries with the critical lack of human resources in general and the lack of qualified staff in particular. In general we found both promising and concerning issues related to the current HMIS practices that had observable effects on motivation and demotivation respectively.

Promising findings in this study included: (1) observed value of HMIS training, HMIS review meetings, supervision that targeted HMIS routines, and a recognition scheme awarding health facilities on the quality of HMIS reports; (2) committed

and capable HMIS Managers who were crucial to the functioning of the system; (3) Health workers who were interested and willing to learn. Some important findings of concern included; (1) lack of skills and understanding among staff on the importance of data; (2) different expectations towards the intended functioning of HMIS support mechanisms among managers and staff; (3) priority of HMIS was not reflected in all practices at superior levels; (4) HMIS routines were sometimes found to be too time consuming or difficult given the available resources. There were also examples where staff attitudes caused by non-HMIS related factors affected the HMIS: (1) low salaries and inequity in monetary incentive structures was demotivating; (2) face to face meetings seemed to offer especially important motivational potential.

6.1. Theoretical contributions

Empirical findings in this study, combined with findings from document analysis and literature studies have been analysed using Machungwa and Schmitt's [1] six categories of good and bad critical incidents on motivation combined with Herzberg et al.'s [13] concepts of motivators and demotivators. Hofstede's [16] cultural value dimensions, extended by Anandarajan et. al.'s [26] study, helped single out some salient cultural features of relevance to work motivation and computer use, and Gasser's [20] theory on integration of computing and routine work offered concepts that helped illustrating how different types of work may have different implications for motivation. Some specific contributions are indicated below.

- Machungwa and Schmitt's [1] motivational items have been identified as chiefly relevant to the cultural context of Malawi but differences identified related to the specific situation in the health sector with few qualified workers and to the different nature of computing work that support other work.
- The importance of different cultural values in motivational theory has been supported, and new insights have been offered to the possible need of addressing different values emerging as a result of globalisation pressures on developing countries. The high numbers of unqualified personnel in the health sector living in poor rural areas are likely to have more collectivistic work values than managers and health professionals who have been influence by values of western individualistic cultures through their professional training.
- Anandarajan et. al.'s [26] results on the lack of influence between perceived usefulness and computer use was not confirmed, something that could be attributed to the low level of computerisation of the HMIS studied. Their conclusion that individually focussed training courses had no effect may be explained by the observation from Malawi that the main function of such events is boosting low salaries, while competence development is a subordinate goal. Their finding that social pressure is a strong predictor of system use is reflected in the importance attributed to face-to-face meetings, supervisor visits and the recognition scheme.
- Gasser's [20] different types of computing work have been identified as a helpful framework to illuminate motivational issues related to computing work, particularly related to computing work that is either articulation work or adaptation work. Especially the need for understanding of task importance and usefulness of work that is not primary work.

6.2. Practical contributions

Our main practical contribution relates to the fact that motivation and demotivation should not be considered as merely opposites. Absence of demotivating factors will not necessarily lead to increased efforts, but rather prevent low morale and at best probably only produce neutral feelings about the job. To achieve high motivation and increase commitment and motivation towards HMIS, motivating potentials would need to be addressed.

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