

African Journal of Business Management

Volume 10 Number 20 28 October, 2016

ISSN 1993-8233



*Academic
Journals*

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ARTICLES

An investigation of the retention strategies for software developers at an insurance firm	485
Patrick Mugabe, Sidney Shipham and Guillermina Ritacco	
Examining the practices of organizational management and expectations of employees from human resources departments	499
Aliya Parvin, and Muhammad Mahboob Ali	
Technology acquisition and technology learning in banking industry: Lessons from Nigerian banking sector	511
Mirabel Godswill Ukpabio, Titilayo Olaposi and Willie Owolabi Siyanbola	

Full Length Research Paper

An investigation of the retention strategies for software developers at an insurance firm

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Received 9 September, 2016; Accepted 8 October, 2016

The retention of software developers is of major concern to insurance firms where software for business units is developed in-house. Business success hinges to some extent, on the stability of information systems. The organisation in question has struggled with the loss of expertise in software development, which has affected the fluency of projects. The objectives of the study were to determine the current retention strategies for developers, perceived benefits of retention strategies and factors influencing the retention of developers. The methodology for the research was qualitative. Face-to-face interviews were conducted. The sample consisted of 10 developers at different levels of seniority. The findings highlighted concerns on recognition, technology, communication, knowledge sharing, transparency on promotions and team dynamics. The participants highlighted areas where management was contributing to retention and areas needing attention. The research work provided recommendations for improving retention strategies to institutions that have a large compliment of developers. The five (5) key recommendations were employee engagement, technological innovation, career development, recognition initiatives and improved communication.

Key words: Strategy, retention, knowledge sharing, innovative culture.

INTRODUCTION

The organisation studied came into existence in 2000. It was the first South African insurer to separate risk from investment. It offers unique life products linked to a healthy lifestyle to meet the changing needs of clients and stay ahead of competition. These kinds of products require stable and reliable software applications to service and meet clients' needs. It is paramount to have a talented team of software developers (hereafter referred to as developers) creating applications that augment the organisational strategies considering the rapidly changing business environment. Enterprise Java development is a

scarce skill and not easily replaceable. Developers compete with the larger development community in terms of design decisions, approach, innovation, technological advancement, systems' reliability and performance. Rasch and Tosi (1992: 407) indicated that a software developer's ability and individual need for achievement were the two strongest factors determining individual performance. It can thus be assumed that developers need opportunities for knowledge exploration and sharing to stay motivated and encouraged to think outside the box while improving their ability. Developers leave for

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various reasons of which some can possibly be addressed or avoided through targeted retention strategies. Knowing the key reasons for leaving will therefore be important to inform the retention strategies developed and implemented. The Managers for the targeted research firm were growing increasingly worried about the knowledge loss.

The research problem

The organisation faced the challenge of retaining talented developers. It had a good reputation in the market and their developers were sought after. There is merit in retaining existing developers considering the demand for their skills as well as the huge training investment. They also understand the business and have the ability to deliver quality software for new requirements in limited time. The nature of developers' work is knowledge intensive so it can be argued that the quality of projects delivered is compromised as a result of talent loss and the skill is not easily replaceable. It is with this background that the research placed emphasis on relevant strategies to nurture and retain the much-needed skills. The research statement was that the organisation was not doing enough to retain developers.

Aim of study

The aim was to establish retention strategies for developers. The first objective investigated the existing organisational strategies intended to retain developers. The second objective was to determine the developers' perceived benefits of retention strategies. The third objective was to elicit the factors influencing retention. From the findings related to the stated objectives, recommendations were put forward.

Significance of study

The study has both practical and theoretical significance. Practically, it contributes towards retention strategies for developers and can be a reference for institutions with a large compliment of developers. Theoretically, it contributes to the knowledge base for software developers' specific retention challenges and impacts of rewards. The study provides a platform for further research on measuring quality of software and output when applicable retention strategies are employed.

LITERATURE REVIEW

Importance of retaining talent

Employee retention remains a critical issue for all companies and managers. The immense costs associated with recruitment, selection, and training of new staff,

often exceeds the annual income of the staff member being replaced. The direct costs, work disruptions, and losses of institutional memory are considerable issues for any company. The retention process needs continuous analysis to remain effective (Allen et al., 2010: 48). Many companies are also increasingly concerned about their ability to retain key employees such as employees with high-demand and difficult-to-replace skills. These concerns have broader implications for company competitiveness in an increasingly global landscape, and for how to address the increasing skills shortages. Despite the importance of retention to business success, there remains a gap between science and practice in the understanding of the management of employee retention (Allen et al., 2010: 48). Within the study context, it is clear that focusing on the retention of developers, who are an integral part of the business, is very important. Let's consider the retentions strategies available to companies.

Retention strategies

According to Allen et al. (2010: 52) "it is true that compensation matters for retention, and employees often leave organizations to take higher paying jobs elsewhere. However, when we consider what leads employees to seek out these other opportunities to begin with, we find that pay level and pay satisfaction are relatively weak predictors of individual turnover decisions". Given this, it becomes important to consider the literature around more varied and holistic approaches to employee retention. To follow is a brief overview of retention principles.

Recruitment for best fit

Retaining skilled resources begins at the recruitment stage. Allen et al. (2010:57) assert that the provision of a realistic job preview during recruitment improves retention. Further to that, employees hired through referrals tend to have better retention than those hired through other recruitment processes. This portrays recruitment as a cornerstone element for retention strategies. Nel et al. (2008: 225) highlight greater motivation, promotion opportunities and prospects to assess abilities as some advantages of internal recruitment. They list amongst others: inbreeding, political infighting and homogeneous workforce as disadvantages for recruiting internally. They further posit that external recruitment brings new ideas and diversity with shortcomings of loss of time owing to adjustments and discouraging present employees from striving for promotions.

Employee engagement

Nel et al. (2008: 349) posit that engaged employees express themselves physically, cognitively, and

emotionally in performing their jobs. He suggests, that employees who are engaged are not only physically present, they are also cognitively and emotionally present. They have a cognitive and emotional connection to the company. This according to Allen et al. (2010: 57-58) means that engaged employees are less likely to resign. Wagner (2006: 25) proposes specific approaches such as providing autonomy, job meaningfulness, task variety, fostering a team environment, providing and supporting specific challenging goals, and recognizing employee contributions. Similar to the internal recruitment advantages listed previously, Wagner (2006: 25) encourages hiring internally where feasible, communicating how jobs contribute to the organizational mission, skills development, positive feedback and recognition. Benest (2008: 23-24) proposes engaging employees through re-recruitment, which involves engaging employees in conversations and dialogues about the vision and goals of the organisation. This includes conducting "stay interviews" with employees regarding their individual hopes, dreams, values and possible ways to fulfil their aspirations; and offering people concrete opportunities to stretch and grow. Lanigan (2008: 49) identifies idea stimulation as a way to foster loyalty and involvement. This is attributed to employees being encouraged to contribute ideas, suggestions and solutions. It can thus, be assumed that there is potential for knowledge creation through employee engagement as new ideas are fostered.

Recognition and reward

It is evident in literature and practice, that recognition and reward are some of the most important principles to employee retention. In terms of recognition, Messmer (2004: 13) proposes simple practices such as verbal praise and staff celebrations for project milestones. The recognition options should suit the personality and interests of each good performer to make the reward(s) meaningful. Reward and recognition have a major influence on the employees' conceptions of their employment relationship. Rewards consists of financial elements like pay and benefits but may also include non-financial elements or perks, such as on-site day care, employee assistance programs, subsidized cafeterias, travel discounts, company picnics and so on. Employees like to be rewarded and recognised for their outstanding work they do. Employees who sense that they are listened to, supported and recognised by management for their contribution are expected to be more engaged (Muthuveloo et al., 2013:1548). In other words the amount of rewards and recognition received may stimulate the employees' engagement.

Team dynamics

According to the Association of Chartered Certified Accountants (ACCA) (2006: 369) the characteristics of an

ideal team include: support of team members, a sense of identity and belonging, skills transfer, information sharing and encouragement to contribute to team goals. It is apparent that goodwill, trust and respect between individuals are important elements for fully functional teams. Mumford and Mattson (2009: 1-6) highlight four levels of team autonomy, which are: managed, autonomous, self-managed and self-led. The managed level is about execution of the team's work without autonomy or decision power regarding work group goals or processes. The autonomous level is reached when the team has collective identity and authority to make decisions. The team becomes self-managed when it has autonomy over work processes and composition discretion. Lastly, a self-led team is self-designing and exists in a state of complete autonomy with the team maintaining control over all aspects of work, composition, and purpose. The strategies around team dynamics are arguably guided by the stage of team formation and what can be done to achieve the levels were no or little supervision are required. It can thus, be assumed that the less supervision required the more mature and organised the team members are and that level of independence to self-manage will likely promote retention. When linking this back to the principles necessary for employee engagement, and specifically within a high technology context, which necessitates continual innovation and collaboration, it becomes clear that strengthening team dynamics is an important retention strategy.

Culture

Silbiger (2007: 327-328) defines culture as the aggregate of behaviours, thoughts, beliefs and symbols conveyed to people throughout an organisation over time. He notes the challenge to changing culture but it is important to bear in mind when developing strategy. Hough (2008: 296) posits that organisational culture cannot be separated from behaviour and style of organisational leaders because leaders influence culture, especially where people strongly relate to their leaders' behaviour. In relation to this, Allen et al. (2010: 54) highlight the importance of culture in relation to retention. They state that organisations that foster a supportive and cohesive culture may realise improved retention. Brundage and Koziel (2010: 39), indicate that it is in a firm's best interest to view retention as inherent to a firm's culture and not as a separate initiative.

According to Zillmer (2015: 52), creating and sustaining a positive corporate culture can boost employee retention as well as ones bottom line. However, without clear direction from top management, a company's culture can easily fall victim to neglect, leading to unhappy employees potentially making poor decisions. Further to that, a great workplace culture is building teams that work together toward common goals with flexible work

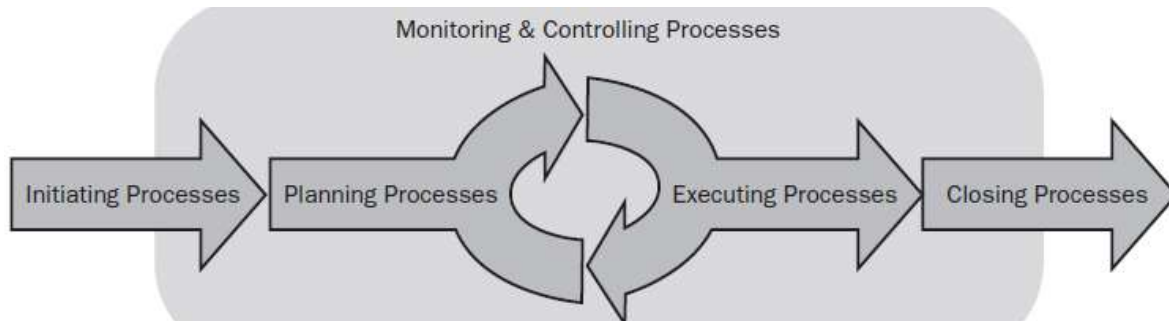


Figure 1. Project life cycle; source: project management body of knowledge (pmboks) guide (2008:19).

schedules that put families first. This is achieved by a top-down focus on providing employees with a workplace environment that has personal ownership, allowing employees to feel relaxed enough to encourage success, yet challenged enough to provide growth. From this, it can be argued that the strategy is to build a retention rich culture that makes developers committed and loyal to what the organisation subscribes to allow. Tying this to team dynamics, it can be assumed that culture driven retention strategies should allow teams to be self-reliant with trust bestowed on them to make a critic decisions without simply following what everyone else does.

Performance management

Brundage and Koziel (2010: 40) see performance management as a valuable tool for retention because it provides feedback, which helps improve employees' comfort levels, while involving them in setting goals congruent to organisational objectives. The authors state that good performers want to be held accountable. Brundage and Koziel (2010: 40) suggest a feedback process that fits within a competency model to pick up poor performance. The aim is to address it appropriately to ensure improvement on the part of the non-performing individual(s). Further stated is the importance for employees to be aware of, and understand their goals and objectives and use them as a platform for constructive feedback. It seems evident that retention strategies are not only about retaining top talent but also helping poor performing individuals to expected levels. It may just be an issue of training and development and allowing developers to reach their potential rather than incompetence.

Training and development

Software development requires constant updating of skills. Lanigan (2008: 50) proposes setting out and agreeing on training plans individually with employees and providing them with a personal development programme to visibly assist in career and development

planning. Nel et al. (2009:476-477) see this as a 'vehicle' for better decision-making, effective problem solving, job satisfaction and self-confidence. The benefits are amongst others; improved job knowledge and skills, good relationship between manager and subordinate improved communication and promotion of authenticity, openness and trust. The above points bring value addition to employees and tie in with what was discussed earlier about characteristics of ideal teams and the recognition aspect. It can be argued that this is evidence of retention strategies being linked to each other thus, cannot be looked at in isolation. In providing training and development it can be argued that the organisation sees potential for employee growth. In return this improves quality of work and promotes employees to stay because they feel appreciated. According to Pritchard (2007: 151), training and development initiatives are an investment in the employee. As such, they signal belief in the employee, acceptance that one is an intelligent and capable professional, commitment to their success today and in the future and investment in the acquisition of new skills.

Communication

Communication is one of the nine (9) knowledge areas of project management. Figure 1 represents the project life cycle which according to Heldman (2009: 584) is the grouping of project phases in a sequential order from the beginning of the project to the end, the process itself requires effective communication if projects are to succeed. This indicates that effective communication is the fulcrum of retention. Metcalfe (2004: 59) emphasises the need for great communication as an ingredient to developing a winning team. It's believed that as much as communication does not solve all problems, it prevents many, minimises some and provides awareness of problems sooner rather than later. Metcalfe (2004: 59) proposes elements of good team management communication, which are keeping the team, informed, giving direction, guidance and feedback and motivating the team to feel keen, encouraged and empowered.

RESEARCH METHODOLOGY

A qualitative research methodology was used to realise the objectives of the research. A qualitative approach was favoured because this was an exploratory study. The nature of questions were semi-structured, drafted from the research objectives to enable exploratory discussions that not only allowed an understanding of the 'what' and 'how' but also to grasp and explore the internal dynamics of the research topic. There was no pre-defined theoretical model. As such, face-to-face interviews, typically 45 min long were conducted to allow greater clarity and in-depth understanding of the subject matter. The study population comprised of forty (40) respondents from which ten (10) were selected. The respondents had varying levels of experience and at different levels of seniority, namely Systems Analyst, Senior Developer, Developer and Junior Developer. The experience varied from one (1) year to more than five (5) years. The work experience denotes the number of years one has been with the organisation in question.

Non-probability sampling was chosen for this study because it concentrates on specific cases and in depth analysis of the specific. A combination of purposive and quota sampling were used to get participants based on the number of years that a developer has been at with the chosen organisation, for instance 1 to 2 years, 2 to 4 years, 5 to 10 years. The intention was to get a broad spectrum of ideas based on how long one has been with the organisation. The assumption was that a developer who has spent more than 5 years is most likely to exhibit more loyalty than someone who has only been there for 1 to 2 years. E-mails were sent out to twenty-eight (28) developers meeting the criteria of number of years with the organisation and asked to participate in the research. From the responses, 6 respondents were randomly selected. In addition, two (2) respondents who left and came back were approached and agreed to participate. A further 5 were approached from those who had not responded and agreed to participate. The reason was that some may not have responded but could add valuable input. From the thirteen (13), three (3) were used for the pilot leaving 10 for the actual interviews.

Data collection instruments

The questionnaire design was centred on the study objectives supported by semi-structured questions. Each objective had a set of questions designed to address it. Face-to-face interviews, were used to keep the interview open to new ideas and allow exploration of the research questions and objectives but carefully guiding the respondents from going off topic. The researcher made use of an interview guide to ask the same questions in different ways in cases where responses were not definitive. The intention was to get a broad view of the problem being explored, understand or acknowledge the good things and identifying areas for possible improvements. The interview notes were written down, as the respondents didn't trust being recorded. To ensure validity and reliability, bias had to be eliminated. The interviews were conducted following the guideline provided by Saunders et al. (2003: 254), where some of the key measures to overcome bias in qualitative interviews are amongst others, preparation and readiness for the interview, level of information supplied to the interviewee, nature and impact of the interviewer's behaviour and demonstration of attentive listening without interruption.

Data analysis

The research findings for this qualitative research were formulated based on interpretations drawn up from the interviews. The study followed an iterative process on the premise that there are cases

when there is need to go back to respondents to get clarity on things that could have been missed or overlooked during interviews. The research borrowed some ideas from Saunders et al. (2007: 479) who suggest organising the mass of qualitative data collected into meaningful and related parts or categories. There was integration of related data drawn from captured notes and identification of key themes, relationships or patterns for further exploration. The findings were linked to the research objectives and conclusions were drawn for each objective.

Content analysis

Hsieh and Shannon (2005:1278), define content analysis as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns." This study borrowed elements of thematic analysis, which according to Joffe and Yardley (2004: 57) shares elements of content analysis but pays greater attention to qualitative aspects of the material being analysed. In this study, similar interview responses were grouped together and coded under the related themes associated with specific research questions. The analysis of the frequency of codes was combined with analysis of their meaning in context. The process was repeated to check which categories could be linked and the relevance of the content to the research. The notes were reviewed to ensure all information had been categorised and nothing had been missed. The categorised analysis highlighted major areas of concern leading to a model drafted as a recommendation.

Findings of the Study

The participating developers gave candid and constructive opinions regarding the current environment and areas of possible improvement. The next section talks about the demographics before delving into the findings in relation to the research objectives.

Demographics

Table 1 summarises the respondents' demographics. Developers at this organisation are predominantly male hence, only males were interviewed. The respondents were promised anonymity so only the age and number of years were disclosed. The intention was to conceal the developers' identity. There was a balance between developers at senior and lower levels. Developers with less than three years are perceived as less established and those with three or more years are perceived as more established within the organisation.

Current retention strategies

The next section gives an overview of perceptions about the current retention strategies.

Competence development practices

A developer has the privilege of moving to a different

Table 1. Demographics.

Respondent	Position title	Gender	Age	Years with the company
1	Systems analyst	Male	25-30	5-7
2	Senior developer	Male	30-35	5-7
3	Senior developer	Male	30-35	1-3
4	Senior developer	Male	25-30	1-3
5	Senior developer	Male	25-30	3-5
6	Developer	Male	25-30	3-5
7	Developer	Male	25-30	3-5
8	Developer	Male	30-35	0-1
9	Developer	Male	30-35	3-5
10	Junior developer	Male	25-30	1-3

team or department for new challenges. To quote one respondent, "I like the fact that I can approach my Manager and express my interest to try something different. If there is capacity and my current work is on schedule, the move to a different team is approved." Instead of leaving to another organisation, developers can be enticed to change teams and get exposure to other business and technical aspects.

Workplace flexibility

Developers liked the option of working remotely at the Manager's discretion. One respondent was allowed to work from home when he had car problems. Another one worked remotely for two days to concentrate on a project without office disturbances. He believed he delivered a lot more than usual. The work and lunch hours were flexible to allow people to work around the time suiting them best. For those at work, it was not mandatory to dress formally which one respondent stated as the reason for staying for long. "The work flexibility and casual dress code creates a relaxed environment and I feel at home." In addition, there was a perception of unlimited career growth opportunities stemming from the flexibility of changing teams. On the contrary, one respondent felt as much as flexibility exists, one needed to be in the 'right team' to get deserved recognition and growth career wise. The aspect of recognition will be pursued later in this section.

Culture

This aspect received the most positive responses. The literature review emphasised the importance of culture in the context of talent retention. In contrast, as much as the interviewees unanimously agreed that there was a great work culture, there was a prevalent issue of loss of talent. It could thus be assumed that there were gaps within the other strategies though the culture had a part in retaining some of the existing talent.

Training and development

Training was provided off-site but was perceived as having been reduced. There was a gap in that training provided off-site was perceived relevant but developers could not apply much of what they had learnt. There was appreciation for on the job training due to the never-ending projects and business demands. The respondents who have worked in other environments suggested that this was a place with great training potential and advancement of skills. The environment presented a platform for continuous learning based on the level of business innovation and new products introduced regularly.

Communication

There was some appreciation of communication within teams and acknowledgement of insights into future projects. Some felt that communication was not transparent, believing it to come through knowing the right people. It was apparent that business requirements and rules were not filtered down properly and often came as a surprise. Similarly to this perception, one respondent believed there were "isolated silos of information." One respondent appreciated having the knowledge of what goes on within the team but wasn't sure how much of the communication was due to transparency and how much was to do with knowing the right people. On further probing he seemed to suggest that he got more things communicated to him by knowing the right people. For some respondents, information was provided on a need to know basis. One respondent felt that developers should not wait for things to be filtered down to them but rather take the initiative to keep up with business activities and trends. The notion was about taking the initiative to open up communication with business people, be it business analysts or managers as there are no barriers to that kind of communication. "Keeping up with business activities and trends is usually self-driven."

Challenges on daily duties

There were mixed reactions but a consensus about excitement from challenging business processes. One of the senior respondents indicated that he was not challenged technically due to the adherence to old architectural thinking. The less established developers felt that over time, they were not challenged on the technology front because they kept getting repetitive tasks. Evidently, the challenges faced by established and less established developers differed from a technology standpoint. The strict adherence to deadlines was seen as a good challenge since one had to ensure that work was completed on time without compromising quality. One exciting challenge raised was that there were always new products and initiatives introduced throughout the year. This was perceived to create an anticipation of what the next challenge could be. There was some level of discontent from a senior developer who felt the level of work was perceived as challenging due to lack of quality senior developers, no dedication from junior developers to mature to senior level, legacy architecture for which no time was provided to improve it and non-compliance to the Systems Development Life Cycle by some business units. On the upside, some respondents felt there were lots of projects emanating from the level of innovation within the group so developers had enough work throughout the year.

The projects are perceived as challenging and exciting projects due to complex business requirements. In line with challenges on daily duties came the aspect of technology.

Technological advancement

To quote a despondent respondent, “developers are not just driven by salary but are passionate about technology.” There were some positive comments mainly from Senior Developers. Their view was that the organisation had done well in providing a solid technology stack. The technology processes that were well thought and documented were seen as key towards retaining established developers. There was a difference in opinion between those who had been with the organisation for long and those that joined from other organisations but with vast experience. Those more established at the organisations were not worried about technology because they enjoyed the business challenges and were happy with technologies used because they knew it all. Those with experience but new to the organisation felt that advancements and exposure to new technologies was the most prominent strategy to retain talent in the development space. This confirms the notion discussed previously about the differences between established and non-established developers in the organisational context.

As for the negative comments on technology, the following keywords were prevalent: out-dated, old and rigid. To quote one senior developer;

“I have never been one to always be on cutting edge technology but what is important to remember is that any good idea has an expiry date. Things change with time even something that was top notch a decade or less ago is probably highly out-dated and unoptimistic now.”

Another senior developer indicated that he wanted to be given the platform to apply his creativity even on the existing technology stack. This was evidently the most contentious issue raised by all respondents. Developers work in teams so the concept of synergy cannot be underestimated hence, the focus of the next section, team dynamics.

Managing team dynamics

The management of team dynamics was perceived as a retention strategy for some development teams stemming from the culture, bonding, knowledge sharing, collective accountability and responsibility and time provided for social interaction. It was evident that some teams met for activities outside work due to the close associations developed over time. Other teams attempted to bring team members together in a social environment but these were seen as few and far apart. One respondent felt that they only got to meet as a team outside work when someone was leaving. Most teams appear to be sharing knowledge but there was a feeling that more could be done. In some teams, the feeling was that knowledge sharing was more pronounced when someone resigned and had to handover work. For one respondent, the workload was hectic such that people ended up specialising on certain areas due to limited time to learn, share or rotate team members to have broader knowledge of the business aspects at hand. The following are quotes about the strengths of existing teams though not applicable to all teams:

“Developers know the systems well, complemented by good business analysts”

“Evidence of knowledge sharing”

“Ability to pick up each other’s work”

“Work hard as a team”

“Opportunities for senior resources to learn management skills.”

The weaknesses that were raised and not applicable to all teams were: limited systems’ technical expertise, work overload, no urgency to replace Developers who have left, limited team work, limited training opportunities, limited exposure to systems design and inadequate work documentation. Team activities had slowed down over the years according to a respondent who had been with

the company for almost five (5) years. "There was a good team vibe when we first started and attended many team building and social activities which were mostly enjoyable. This faded over time and there is almost nothing of that sort."

Recognition

Though perceived as a retention strategy, there were mixed feelings, with most respondents appreciating the incentives that come with recognition but some feeling that technical resources are not given enough recognition. Some believed there was little recognition and where it existed, it was not transparent. An example given was that of certain team members claiming overtime or time off from extra hours worked yet others did not. The forms of recognition ranged from a simple verbal thank you, a thank you e-mail, promotions, coffee from Seattle, more responsibilities as appreciation for good work, 'dazzling moment' notification and 'STAR' awards. For one respondent who frequently worked from home including weekends, eating into family time, it would be good if incentives attached to performance and work input were significant enough for his family to appreciate the rewards emanating from the extra effort put at home.

Perceived benefits of current retention strategies

The aspects of good working culture and fun working environment were unanimous. Other perceived benefits were good team spirit, knowledge sharing, highly motivated employees, improved quality and success of projects, immense respect for deadlines, flexible working hours and peace of mind even in times of turmoil. One respondent commended the opportunities for job rotation and promotion. "One can change departments if they needed a new challenge rather than being restricted to work or stay in one department." The existing culture was perceived as relaxing, encouraging openness and symbolising utmost respect for others. There was acknowledgement for the effort put by management to ensure career growth. One respondent gave a good summary:

"Developers see some benefits from the current strategies. The work we do is challenging, exciting and keeps you learning and growing as individuals and teams."

Factors influencing retention

The perception was that junior staff left because they were expected to perform beyond their skills and experience. Some simply left for monetary reasons. For some, it was an issue of a good opportunity that came

knocking and could not be ignored. Regarding former colleagues who left, respondents thought they left due to unreasonable expectations from business units, managers failing to push back the workload, limited career growth, perceived favouritism with regards to promotions and irreconcilable issues with Management. One developer was believed to have left after being blamed for delaying project delivery at the expense of someone else he relied on. The lack of recognition and authority to enforce positive technical or architectural change drove some away because they were fed up with the technology stack.

For those still at the organisation, they were concerned by the outsourcing trends where leaving developers were replaced by contractors who are paid more yet the salaries for experienced developers are not reviewed to encourage them to stay. Frustration had crept into developers due to working overtime which was not compensated for, limited training opportunities, poor performing machines, no work-life balance, finger pointing in cases of crisis and red tape. In line with the factors that influence retention, developers were asked what their expectations were when they joined and whether they felt their expectations were met. In cases where they were met, respondents were probed further to determine if the expectations were still being met.

Developers' expectations

The themes identified with regards to expectations were technological exposure, type of environment, learning and training opportunities. Most developers joined to gain exposure to enterprise systems and the opportunities to learn. There are some who were well experienced at the time of joining the organisation so they were looking for a change in environment and opportunities to grow career wise. The expectations were that of a great company with great people, good working conditions, technological advancements, career growth, continual skills training, good remuneration, rewards and recognition. The type of work was regarded as exciting, working conditions believed to be fairly good, flexi-time seen to be a huge benefit and being allowed to work from home was believed to be a 'match winner'. However, recognition and rewards were believed to be lacking. It was felt that communication had to improve regarding the promotion criteria. Some quotes from the respondents:

"Change policies to support and improve technical career growth."

"Incorporate programs to fast track Junior Developers so that seniors are not overburdened in teaching them."

"Ensure the work load is well balanced so that Developers are not 'milked' to the point of meltdown."

There were strong sentiments on the issue of race where some individuals in the previously disadvantaged category are believed to have left because they felt they had to

work twice as hard to get promotions. To this end, it was stated that communication could have been handled better to clarify these issues or provide a guide on what is considered for promotion so that there is a better understanding of the whole process. It was also felt that developing good training programs on different aspects of technology could have made a difference for some.

Perceived view of other developers

One respondent who has only had a year at this organisation said, "New Developers are mostly frustrated yet those in the system for much longer seem comfortable probably due to promotions awarded to them to the extent that they stop worrying." The frustration according to the respondent is the reluctance to adopt new technologies and the lack of involvement of new developers to get a feel of what they have experienced prior to joining. The impression seems to be that new developers are not considered capable of adding value other than being told what to do by those who have been there longer. Another respondent felt that there were two camps, one being the passionate and geeky and the other being those that are just there for work. The distinction was that the 'passionate camp' has the hunger to develop and try out new things and the other camp has none thus, they see nothing wrong with the environment. Accordingly the 'passionate camp' eventually gets bored or frustrated to the extent of seeking alternative employment. Respondents who have been with the organisation for less than three years shared the analogy of the two (2) camps.

One respondent named the two camps as the "old guys" and "new guys" with reference to the number of years spent with the company. The "old guys" were believed to see no benefit in doing things differently due to fear of getting out of their comfort zone and "new guys" seen as capable of doing things better and quicker in some cases but were often overlooked. Amongst the so-called "old guys", a few pointed out that some developers were concerned by unfair treatment when it came to promotions and were of the impression that there was favouritism. The same was said about how opinions were valued depending on who they came from. A concern highlighted was the existence of a gap between business and technical requirements and this having an impact on the quality of work output often blamed on developers. One respondent differed completely with everyone else on this topic. His perception was that developers take initiative to ensure that things run smoothly. He praised his peers and saw no negative elements amongst them. The seating arrangements were believed to irk a number of developers who felt they were squashed and too close to each other. As much as developers appreciated the need to conserve space, they were not happy with the current set up and the fact that their opinions were never

solicited regarding seating arrangements' changes. Some developers were believed to be unhappy with the introduction of Contractors whenever permanent staff left. This was seen as an indication that Management were not worried about people leaving and that they were more willing to pay for expensive resources in the form of contracting companies but not willing to raise salaries for permanent employees. There was also a belief that some developers were discontent about the fact that developers were leaving but not being replaced thereby creating a huge workload. One senior developer had strong views on how he perceived other developers and gave the following responses: Junior developers do not put enough effort in their work and are just happy that they have less responsibility and accountability by virtue of their positions; Senior developers were dissatisfied regarding skills training, career path, excessive work load and limited career growth; The business roles were given more value and recognition compared to technical roles; and Outsourcing trends were increasing distrust and uncertainty amongst other developers.

Dislikes

One senior resource felt there was little effort put towards retaining good developers. The belief was that problems can be picked up much quicker in some cases and resolved if Managers take the initiative of building strong communication lines. There was a common belief that developers in some departments face too many production issues and are frustrated by continually fixing the same things over and over again without focussing on fixing the root causes. As much as the intention is there to fix the cause, these are normally lower down the priority list but this was said to pile on the pressure and bugs continuously add up as they introduce more system components. Over commitment to business was perceived to irritate some developers as they ended up working long hours and during weekends to get stuff done with no rewards whatsoever. A respondent who has been with the organisation for about a year highlighted the lack of recognition or respect for opinion(s) from anyone who has not been with the organisation for long. One senior developer disliked some people around him who he felt do not push themselves to do better or improve themselves. His impression was that some of his team members do the bare minimum and have no drive to improve their skills or take time to drill into the system to enhance their understanding. On the issue of contractors that are replacing the departing permanent staff, this was believed to create uncertainty about the future and growth for permanent staff. The perception is that some needs are ignored because Management can easily call up contracting houses and get resources.

What benefits are appealing to developers? What could counter the factors influencing retention?

Appealing benefits for developers

Amongst senior developers, there was greater interest in working remotely. The belief was that more work is done by virtue of limited office disturbances. They did acknowledge the fact that managers have to set performance expectations to avoid abuse of such an arrangement. Flexi-working was raised as a good benefit because one can choose the most appropriate time that they are most productive. One can also choose the best time to drive to work thus, spending less time in traffic. This was seen to work even better if done in conjunction with the work from home option whereby one would get some work done from home in the early hours of the day then drive to work later when there is less traffic. It was felt that developers would appreciate time off work at the discretion of the manager as a reward for good work or exceptional performance. This could be done on a Friday for example where one is allowed to knock off at 12 or 1pm. Some suggested having a few awards for good performance; an example being a trophy that one keeps for a certain period. The award could be given on a quarterly basis and the exceptional work needs to be communicated so that others get motivated to do the same and have a good understanding of the type of work that gets appreciated.

Another benefit mentioned was a voucher for lunch, dinner or breakfast as a reward for exceptional work. Training was perceived as an appealing benefit, from a career growth perspective and getting exposure on industry best practices. Promotions in line with good performance and dedication were seen to also appeal to developers. Internet is seen as the backbone of any technology expert. As one respondent put it, there is research that has to be done at work and outside work. He believed a good incentive would be to ensure that developers get incentives for good performance such as a data package or payment into an Internet Service Provider (ISP) account for Internet used at home. This was believed to encourage research after hours for anyone dedicated to the profession. Some respondents mentioned opportunities to do systems design obviously under guidance of senior resources. Lastly, there was a consensus that there have generally been a good vibe within teams after the installation of more television sets.

Developers wearing the manager's hat

Having gone through the perceived retention strategies, they are elements of weakness that came out from the interviews about the current environment, which can ideally be utilised in formulating supporting retention strategies to retain the much needed talent. These weaknesses could also be impacting on the good work that has been done to retain the talent pool of developers. These are weaknesses they would likely want to address if they had the authority.

Perceived weaknesses of current environment

There was a perception of teams being overloaded with work and a lack of full technical understanding of the system. Four respondents felt there was favouritism regarding the nature of work or promotions and recognition was perceived to depend on race. Other issues were limited training opportunities, exposure to systems design, stagnation on skills and career growth. The disproportionate compensation for responsibility versus financial gain was a concern for one. A question was then asked regarding what the interviewees thought could be done to improve the developers' environment and retain talent.

Proposed improvements

The questions on proposed improvements were included in the interviews to get input into the final part of the study that provides recommendations. Throughout the interviews, respondents were encouraged to think deeper about what improvements they wanted to see. Technology was at the top. There is need for technological skills' growth by setting up incentives that motivate people to want to grow career wise. There is so much knowledge and the belief was that there should be increased knowledge sharing amongst developers and architects while continuously revising architecture to challenge the norm where necessary and open up avenues for improvements. Developers wanted to be kept in the communication loop regarding things directly affecting them. Other points raised were minimising the use of contractors, "encouraging innovation whereby developers are given a chance to be creative but abiding to set standards," establishment of team events but not restricted to one team, better performing machines and increasing the internet allocation to facilitate research. On the social front, one respondent felt that it would be great to have pause areas similar to in the other building where there are pool tables, dartboards, a CD player and a foosball table. This was seen to provide a refreshing environment to the hectic workload and a good team interaction initiative. The developers were also asked what they felt was the role of their managers in retaining talent.

Managers' role in retaining talent

A number of respondents insinuated that developers appreciate small gestures and time off to compensate for extra hours worked. There was a suggestion for Managers to be proactive in rewarding employees using non-monetary means. The improvement of communication and informal dialogue with team members was encouraged. The main roles of Managers' in developers' words were:

1. Urge developers to do more research and proof of concepts.
2. Allow team building exercises or social breaks as a team like team coffee or a gesture of appreciation of the effort put in by subordinates.
3. Enforce stand-up meetings regularly to ensure clarity of team members' work. This was believed to facilitate guidance or brainstorming sessions when someone was found struggling.
4. Facilitate promotions for deserving developers in a transparent manner.
5. Arrange team celebrations when teams reach major milestones.
6. Accommodate thoughts of subordinates.
7. Revise incentives process to be inclined to performance.
8. Introduce short-term performance goals rewarded accordingly. The reward doesn't have to be monetary.
9. Implement performance measurements to ensure that junior developers grow in responsibility.
10. Pay more attention to individual needs.

Analysis of findings

The organisation seemed to have strategies such as recognition, culture, reward process and training consistent with the existing literature in particular Allen et al. (2010: 48), Muthuveloo et al. (2013: 1548) and Benest (2008: 23-24). That was inadequate to stop developers from leaving. This highlights that different strategies affect developers differently thus, making it hard for Managers to retain talent. The evident missing factors were: recognition, employee engagement, team dynamics and technological advancement. The findings suggest these factors as the major drivers for the current talent loss and requiring the most attention. The challenge for managers is to address the existing issues without raising alarm in other areas outside software development.

Conclusion

The research was guided by research questions reiterated below:

1. What are the current strategies?
2. What are the perceived benefits of retention strategies?
3. What are the factors influencing the retention of developers?
4. What recommendations can be provided to managers in order to improve retention of developers?

Talented developers have been lost over the years. There is potential to retain talent or bring back the good talent that left as well as attract the cream of the industry.

The outcome of this study can help Management to better understand developers' concerns and introduce strategies targeting retention concerns on a continuous basis so that issues are addressed earlier rather than later. Managers can take credit from the positive aspects that came out of this research process. There is a good foundation for eliminating weaknesses highlighted in this research and doing away with perceptions emanating from ineffective communication. The research confirmed the research statement that the organisation was not doing enough to retain developers. There were perceptions about biased recognition. Developers felt they should be given the opportunity to explore various technologies as this contributed to personal growth. They wanted a platform that facilitates innovation regarding systems development. It can be argued however, that the most important thing for Managers is to deliver system solutions quickly, regardless of which technology is used and therefore no new technology initiatives are promoted. However, compromises can be made to ensure that technology concerns are addressed without affecting business delivery.

Training was perceived to be lacking and there was belief that there is inadequate engagement of developers regarding training requirements and career prospects. There were mixed feelings regarding knowledge sharing with mostly junior developers echoing disgruntlement. On the contrary, there were good aspects that came from the findings such as the commitment and adherence to project deadlines, relaxed dress code, flexible working hours, working remotely, approachable Managers, support structures, challenging but fun work environment and the television sets around the development area that bring about a social aspect to the work environment. The negative aspects are not signs of failure but a case of things that are over looked or perceptions that creep up due to insufficient communication. It is vital to maintain what works while improving the negative aspects. A study like this does not solve all the problems so communication has to be improved to a level where most issues are picked up and addressed in good time. Elements such as communication, teamwork, work structure, recognition programmes and technological advancements can be addressed in an effort to retain talent.

RECOMMENDATIONS

This organisation requires massive systems support and fully functional systems while offering high performance and reliability. The systems part of the business can only be a success if talent is retained. As much as developers have needs such as technological advancements the reason for the existence of the business takes precedence. There has to be a compromise on some of the things that were raised by developers in this study to

ensure that the organisation does not become a training ground for other institutions. The retention strategies have to be looked at iteratively to ensure increased stability and relevance. There is no better way to recommend new retention strategies than to work with what the respondents proposed.

Communication and career development

Developers will benefit from transparent and frequent communication with Managers regarding career prospects. These can be assessed, nurtured, developed in conjunction with the developer to ensure acceptance. Managers can play the role of mentors or delegate senior team members to play that role. Managers should actively listen and encourage developers to make suggestions and propose improvements. Improving communication can help eliminate perceptions of favouritism, unfair treatment and bias. Developers new to the organisation should be allowed to share the experience they are bringing in. The idea is not to change the way of doing things but to be aware of what competitors are doing and benchmark against that. Developers can be encouraged to use the existing intranet facilities to publicise their experience and update qualifications they acquire over time. This information can be used to identify individuals who can benefit from being part of certain projects or are better suited for certain training.

Employee engagement

This could adopt recommendations by Benest (2008: 23-24) concerning re-recruitment with emphasis on engaging employees in conversations and dialogue about the vision and goals of the organisation; conducting "stay interviews" regarding individual hopes, dreams, and values and possible ways to fulfil aspirations; offering people concrete opportunities to stretch and grow; and generally engaging them as part of an organisation's evolving "story."

Team building

Team building has to be more frequent and low cost alternatives can be explored so as not to strain the company's budget. It is possible to make small contributions and meeting up for a social events or games. It will also be good to involve partners once in a while so that they appreciate the kind of teams that their loved ones work in. Communication within teams can be improved by introducing stand up meetings where everyone briefly explains what they are busy with and any problems they are facing with their current work. The

meetings have to be short so as not to digress from being strictly update meetings. These meetings encourage developers to do their work quickly and raise seriousness, as one cannot report the same thing over and over again.

Feed back

Feedback regarding career related discussions, problems raised, nature of work and team activities is important. The mind-set has to be that of continuous improvement on all aspects that affect developers and that way, talent can be retained through increased clarity and transparency. From a Management perspective, quarterly feedback sessions can be arranged where heads of different teams give an update of what has been going on and what lies ahead.

Culture

There is need to instil a culture of innovation, success and confidence. Developers' work can be stressful but enjoyable. Successes should be celebrated to show Managers' appreciation. This can be via e-mail, a round of applause in a meeting, a team lunch or a quick informal meeting while having coffee to say thank you. Failures should also be celebrated so as not to discourage commitment.

General improvements

The seating arrangements, raised as a point of concern, can be revisited or improved. It will be good to engage the developers and get their opinions so that they feel appreciated. The issue of the limited Internet bandwidth can also be revisited or relaxed but on condition that the limit can only be increased if the intended purpose is research oriented. It will be worthwhile to consider putting a games area with access restrictions if there are worries about productivity. A good reference will be the other division where they have a similar set up.

Recognition

The recognition methods have to be transparent and applied fairly and consistently to avoid the perceptions of bias highlighted in the findings. Recognition can be in the form of awards, exceptional performance and project delivery. As much as there are awards in place already, it would make a difference to introduce awards specific for developers, which are not necessarily monetary. Managers can introduce quarterly, half yearly or even yearly awards for exceptional performances. Innovation awards are covered in the next section as reward for

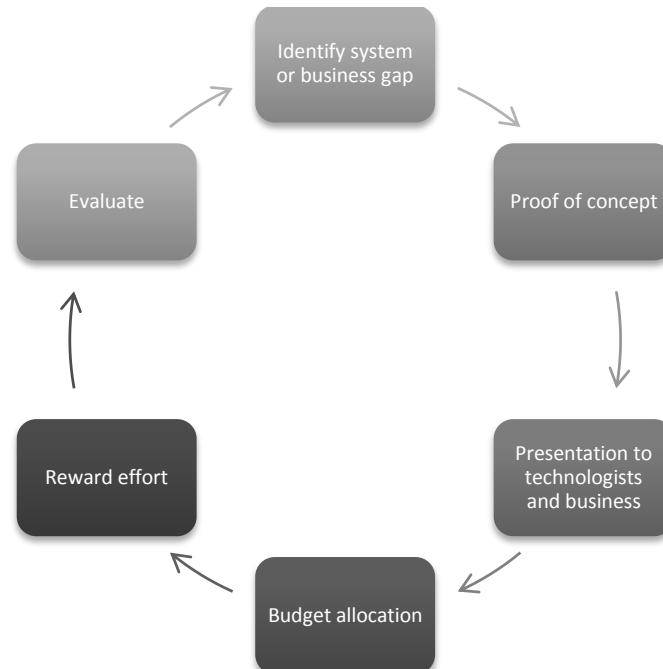


Figure 2. Proposed Technology driven innovation.

effort.

Technological innovation

The issue of technology was prevalent in the findings. Developers are motivated by technological advancements but the business needs stable system to ensure they remain competitive. The following model could encourage innovation and technological advancement linked to valuable business outcome. Promoting technology driven innovations linked to business or system gaps potentially increases competitiveness and developers are encouraged to continuously find solutions to streamline processes. The model was influenced by the factors that seemed to have the biggest concerns from the findings. The important thing is innovation should be beneficial to the organisation while encouraging developers to stay. Once a gap is identified, a proof of concept is presented to business and technology specialists. Those with similar ideas are encouraged to pursue knowledge creation through collaboration. The identification of gaps is not limited to developers but can come from business users (non-technical) and a team is formed to tackle the innovative challenge thereby promoting teamwork. The organisation can allocate a few hours per week for these initiatives. A budget is allocated for selected ideas to see them through. The effort regardless of success or failure is rewarded. The failures are celebrated to maintain interest. The rewards should appeal to developers' interests to make them attractive. Evaluation is critical to assess progress without hesitation to change tact if

necessary. Figure 2 below summarises the recommendations discussed concerning technological innovation

Further research

The research could be extended to other divisions to determine the same objectives for developers. It can also be extended to all employees to gauge similarities in concerns and address them accordingly. The research could also be revisited to see which areas have been addressed and their effectiveness. This study could be extended to Managers to gauge their perceptions on the developers and thus, highlight gaps between management and subordinates. The model for technological advancement could be tested in research involving a similar environment or research on innovation drive as a retention strategy.

Conflict of interests

The authors have not declared any conflict of interest.

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Full Length Research Paper

Examining the practices of organizational management and expectations of employees from human resources departments

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Received 15 January, 2016; Accepted 23 August, 2016

Today Bangladesh stands on the juncture of economic emancipation. The stage is set for rapid growth and development in every sector of the economy. The agriculture sector is also experiencing significant changes. Bangladesh Jute Research Institute (BJRI) is determined to play a leading role in the development of the agriculture sector in the twenty-first century. Besides, other organizations such as Bangladesh Agriculture Development Corporation, Department Agriculture Extension, Non-Government Organizations, Jute Traders, Jute and Jute Goods Exporters, jute based cottage industries are also being received the services of BJRI. In today's rapidly changing business world Human Resources department has to play a very critical role. Various departments are related to the functions like Human Resource, Admin, Sales, Finance and Accounts, and Procurement etc. Though BJRI is a research Institute and research is the priority for the institute, its Human Resource Management plays a vital role to hiring the right person for the right post and also trained the employee and scientist to achieve its objectives. The main objective of this study is to find out the weakness and strength of the institute. To examine the HR practices of the management and expectations of employees and give some recommendation of these study.

Key words: Human resource management, training and development, performance appraisal, human resource planning, reward and punishment.

INTRODUCTION

Bangladesh Jute Research Institute is an autonomous organization under the Ministry of Agriculture, Government of Bangladesh. It is the oldest research institute of the country and one of the twelve constituent units of the National Agricultural Research System (NARS). BJRI has played a revolutionary role in ushering developments in jute sector in Bangladesh through its research and

technology development that has enabled the country to increase the production and trade jute in spite of shifting jute cultivation to marginal land. It is engaged in cutting edge area of science and technology development and its scientists are working relentlessly to achieve the objectives of the organization through the development of the jute sector.

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Figure 1. Process model of strategic HRM (Wright and Nishii, 2006).

After the liberation of Bangladesh in 1971 Jute Sector was taken up with special and realistic approach, the Bangladesh Government promulgated the Jute Act in 1974 and established Bangladesh Jute Research Institute (BJRI) with specific mandate which was modified in 1996.

Intended, actual and perceived HRM

There is a difference between intended, actual and perceived HRM (Wright and Nishii, 2006; Boxall and Purcell, 2008). As described in the book of Boxall and Purcell (2008) and studied by Wright and Nishii (2006), senior management including the HR-managers design specific HRM mostly linked to the business plan (Intended). This design is implemented in a certain way (Actual). An employee has his own individual perception of this HRM design (perceived). Resulting in a specific behavior for an individual employee (reaction). Leading to a certain organizational performance. This is all depicted in Figure 1. Along this path problems can occur. In this study, the focus will be on the actual HRM practices and employee reaction. The intended HRM is designed by the director or HR-manager and directly linked to the organizational strategy or business plan. In other words, the intended HRM is directly linked to structural ambidexterity and/or contextual ambidexterity. Differences in the design of HRM for the form of ambidexterity should thus become clear at this level. It may also become clear at other levels such as the actual or perceived level, but in order to research these levels, attention had to be paid towards the implementation of HRM and the perception of individual employees, which would have made this research less focused on and time consuming.

Vision of BJRI

Economic growth and development of the jute sector through agricultural and industrial research on jute and allied fibre crops.

Mission of BJRI

Development of sustainable technologies through agricultural and industrial researches on jute and allied

fibre crops for income generation, socio - economic development, environment protection and poverty alleviation of farmers and other stakeholders by dissemination the developed technologies.

Objectives of BJRI

After the liberation of Bangladesh in 1971 Jute Sector was taken up with special and realistic approach. The Bangladesh government promulgated the Jute Act in 1974 and established Bangladesh Jute Research Institute (BJRI) with specific mandate which was modified in 1996 with the following major functions.

1. To promote agriculture, technological and economic research on jute and allied fibers and their manufactures and dissemination of results thereof.
2. To organize production, testing and supply of improved pedigree of jute seeds and multiplication, procurement and their distribution to recognized organization, selected growers and such other agencies as may be approved by the Board.
3. To set up research centers, sub-stations, pilot projects and farms in different regions of the country for carrying out research on different problems of jute and allied fiber crops, jute products and allied materials.
4. To establish project areas for demonstration of new varieties of jute developed by the institute and to train the farmers for cultivation of these varieties of jute.
5. To establish annual reports, monographs, bulletins, and other literatures relating to jute research and the activities of the institute.
6. To organize training of officers and progressing farmers on modern improvement method of cultivation of jute and allied fiber crops and also to train technical hands for utilization of technological findings.
7. To do and perform such other activities as may be necessary for the purposes of this Act.

Administration/ Management/ Organizational Structures

Management of the Institute

The Institute is now under the administrative control of

Table 1. Present manpower status of BJRI.

Name	DG Office	Agriculture wing	Technology wing	JTPDC	Total
Director General	1	-	-	-	1
Director	1	1	1	1	4
CSO	1	6	4	1	12
PSO	1	16	14	3	34
SSO	2	26	18	3	49
SO	-	35	21	3	59
Other Class-I Officers	15	-	-	1	16
Class-II Officers	3	10	-	2	15
Staff Class-III	71	76	20	13	180
Staff Class-IV	43	59	41	14	157
Total	138	229	119	41	527

the Ministry of Agriculture. The Director General is the Chief Executive of the Institute. Under the general policy guidance of the Board of Management, the Director General administers the research, administration and financial activities of the Institute. Presently, Bangladesh Jute Research Institute has 11 divisions, 6 and 4 research divisions under Agricultural and Technological Research Wings respectively and 1 division (Planning, Training and Communication Division) as well as Administration and finance are under Director General's Office. Besides, Farm Management Unit under Agricultural Research Wing is responsible for the coordination of the management of regional and sub-stations of BJRI located at different regions of the country. Agricultural researches on Jute are carried out under Agricultural Research Wing and industrial researches on jute are carried out under Technological Research Wing. For the region specific agricultural research on jute according to the demand and necessity of the farmers, BJRI has a Central Agricultural Experimental Station on Jute at Manikganj; four regional stations at Rangpur, Faridpur, Kishoreganj and Chandina (Comilla); and three Sub-stations at Tarabo (Narayanganj), Monirampur (Jessore) and Kolapara (Patuakhali) and one breeder's seed production and research center at Nashipur (Dinajpur).

In the light of the recommendations of the FAO/ADB appraisal report and approval of ECNEC in 1976, a new branch namely "Jute Seed Wing" was created for multiplication and distribution of high yielding variety (HYV) jute seed which was later in 1988 transferred to Bangladesh Agricultural Development Corporation (BADC). Moreover, to strengthen the industrial research on jute and to use the jute in textile processing system by blending it with cotton and other natural fibres, a development project namely "Jute and Textile Product Development Centre (JTPDC)" had been run for the period of 1995 to 2004 and after completion of the project JTPDC is included in the permanent structure of BJRI. At present the total approved manpower is 527, out of which

154 are scientists. A brief manpower status is given in the Table 1.

Recent success of BJRI

The genome sequence of Tossa and desi jute has been discovered by BJRI scientists in 2009 and in 2013 Genome sequence of devastating fungal pathogen *Macrophomina Phaseolina* has been discovered.

Importance of the study

For an institute of science and technology, human resources management is always as important as the others. Research Institute is the place people could do research and apply modern technology, and technological infrastructure to create or innovate. The Institute of Science – Technology can be difficult to survive long term and building up the benefits competitiveness without people, the talented and professionals. Therefore, the HRM system in the organization is really important. However, it only pays attention to human resource development without linking it with the principles and objectives of the Institute, any attempt to promote the effective operation of the workers will return useless (Embose, 2001, Jacobs, 2005, Koontz, 2002). The study is to understand the Human resource management and the HRM system in order to find out the criteria to select a good system for an organization, specifically for the Bangladesh Jute research Institute.

BACKGROUND OF THE STUDY

It is a great opportunity to learn about the organizational culture as an Assistant director of BJRI. A chance was given to prepare my report on the topic HRM Practices and Employee expectation of BJRI. This opportunity

helps me to learn about the administrative and HR Directorate. BJRI Is a Research organization and during the job, enough knowledge was gotten about the functions of various departments and the functions of HR and Admin. It is really impossible to highlight all the activities of the organization in this report, but I tried to summarize and give enough data related to my topic. I think this report is able to give enough idea about the mentioned topic.

Scope of the study

The paper discusses various condition or state of employees with the work environment and management. Then the paper studies and tries to find out the reason and factors for those various conditions. Finally, the paper suggests with few policy recommendation for effective and better work environment for the employees.

Statement of the problem

Sometimes, lack of proper management of Human Resources cause the failure of an organization. Every government organization operates government rules. Due to the lack of proper Management of Human Resources the government organizations have to face different problem. So, on this problem research can be conducted.

Significance and rationale of the study

The study on HRM is important because success of any organization largely depends on the proper functioning of HRM. More over employees of an organization assist in gaining and maintaining competitive advantages. HRD of government organization can provide attractive policies and practices that the employee desire which is impotent to increase quality service. This department can help the organization in designing organizational culture, performance systems and can help in making change where necessary (Newstorm and Davis, 2007) But what they are actually doing for the proper development in their organization is very important. So this study is quite significant and rationale.

Broader objective of the study

This paper aims to find out the actual work environment where employees feel the organization of their own.

Specific objectives of the study

To analyze and evaluate HR practices in BJRI some

objectives are identified and these may include:

1. To know the role of Human Resources Management.
2. To find out the strength and weakness of HRM system of the organization.
3. To understand how the organization trains their workforce and employees.
4. To understand how the organization appraise the performance of the employees.
5. Expectations of employees.
6. To give some suggestions about these findings.

METHODOLOGY

Sample size

The organization or individual is responsible for the collection and aggregation of data from their initial source.

Sampling technique and unit

All the necessary information is collected using:

1. Practical desk work.
2. Take expert opinion from the officer.
3. Direct observations.
4. Used questionnaire method.

The employee and officer of HRD and Communication division.

Data sources

Data collected for some purpose other than the problem at hand.

1. Files and Folders.
2. Visit web site.
3. Many circular published by BJRI
4. Several Booklets of BJRI.

Data collection methods

Web site visit and personal interview.

Limitations of the study

There are certainly some limitations of study. There was a probability that different educational and family backgrounds might affect the study. There was a limitation of time frame. Top management was not included in the study. There was a great probability how the truth came to light. The main limitation of the study was the question of proper mental and physical condition of the interviewees. Interviewees are reluctant to express their opinion about the HRM system. They do not want to tell about the negative sides of the management, because they are afraid of strict government rules and departmental procedures.

FINDINGS, ANALYSIS AND DISCUSSION

Human Resource Management (HRM) is the part of the

organization that is concerned with the people dimension. HRM deals with the design of formal system in an organization to ensure effective and efficient use of human talents to accomplish organizational goals. Human Resource Management (HRM) is to refer to the philosophy, policies, procedures and practices related to the management of people within an organization. HR management functions through manager recruit, select train and develop organization members. The HR function should play a more prominent role in ethics/compliance management. This is largely because of the important role employees' fairness evaluations play in employees' reactions to ethics and compliance initiatives. HR staffs are more likely to be viewed as representing employees' concerns and treating them fairly. In addition, HR functions can play a key role in developing ethics programs with a proper balance of values and compliance orientations, and in integrating ethics programs into important organizational activities, such as the design of performance appraisal systems, management training, and disciplinary processes. Ethics/compliance management's links to the overall ethical culture of the organization, and too many essential organizational functions and activities, HR departments should not attempt to manage these important initiatives alone. Multiple functions and departments (including legal, audit, the top management team, and board of directors) need to work together in a coordinated effort aimed at fostering ethical behavior in the organization.

For example, research shows that a values orientation in company ethics programs is more likely if the highest levels of management are committed to the intrinsic value of ethics (Weaver et al., 1999a). So even though HR's involvement in ethics programs is important to their success, HR should not expect to accomplish the task alone. Fairness issues are important to employees, and the involvement of HR staff and departments in ethics and compliance programs is important to the real and perceived fairness of those programs. Therefore, HR staff and departments need to play a more central role in ethics management initiatives if those initiatives are to provide real benefits for both organizations and their members. But ethics programs function in a larger organizational context that raises fairness issues of its own. This, in turn, provides even more reason to involve HR in the ethics management effort, because HR plays a crucial role in determining an organization's overall ability to treat people fairly (Weaver and Treviño, 2011). Ethical and moral issues are complex. The negative effects of ethical violations within an organization can be enormous. Energy levels at work drop, gossip and rumors abound, attendance floats, turnover excels, clients lose trust, and profits decrease to the point of extinction (Smedley, 2008). Performance management is ongoing. It involves a never-ending process of setting goals and objectives, observing performance, and giving and receiving ongoing coaching and feedback.

Performance management requires that managers ensure that employees' activities and outputs are congruent with the organization's goals and, consequently, help the organization gain a competitive business advantage. Performance management therefore creates a direct link between employee performance and organizational goals, and makes the employees' contribution to the organization explicit. If the process is not seen as fair, employees may become upset and leave the organization.

They can leave physically (that is, quit) or withdraw psychologically (that is, minimize their effort until they are able to find a job elsewhere). As a consequence of a deficient system, the relationships among the individuals involved may be damaged, often permanently. When the performance assessment instrument is not seen as valid, and the system is not perceived as fair, employees are likely to feel increased levels of job burnout and job dissatisfaction.

As a consequence, employees are likely to become increasingly irritated (Herman, 2011). The employee association or trade union also plays a vital role in HR management. Unions can be frustrating for managers, especially if their relationship with the union is not amicable. If organization promotes workers based on parameters such as merit, productivity or other objective means, it may lose this opportunity with a union workforce. Many unions negotiate workplace rules that promote and protect workers based on seniority, rather than merit.

This means that if managers need to terminate a number of workers, they must terminate those workers they've hired most recently, not those workers who are the least productive. Their ability to discipline workers will also decrease, as union rules and reactions to instances of employee discipline limit their options to deal with workers they deem poor performers. These decrease human resources control. (Sam Ashe-Edmunds). HRM is the systematic planning, development and control of network of interrelated processes affecting and involving all members of an organization (DeCenzo et al., 2007; Dessler, 2008). These processes include:

1. Staffing/ recruitment and selection.
2. Training and development.
3. Performance appraisal.
4. Compensation and reward.
5. Employee protection.
6. Workers Association

This study is on the above functions of Human Resource Management of Bangladesh Jute Research Institute. BJRI is one of the autonomous institutes under the Ministry of Agriculture. It follows every rules and regulations of the governments of Bangladesh and it has also its own service rules. BJRI follows the following rules and regulations:

Government. service rules and regulations

Every government organization runs by government rules and regulation. These are related with Human study.

1. The Government servants (Conduct) Rules-1979.
2. The Government servants (Discipline and Appeal) Rules-1985.
3. Leave Rules-1959-under this rules there are many leave.
 - (a) Earned leave.
 - (b) Extra ordinary leave.
 - (c) Special disability leave.
 - (d) Study leave.
 - (e) Maternity leave.
 - (f) Leave not due.
 - (g) Post Retirement Leave.
 - (h) Leave without pay.
 - (i) Public and Government holiday.
- (4) The provident fund Act-1925.
- (5) The Contributory provident fund rules-1979.
- (6) The public servants (Retirement) Act-1974.
- (7) The public servants (Retirement) rules-1975.
- (8) BCS Recruitment Rules-1981.
- (9) BCS (Examination and Promotion) Rules – 1986.
- (10) General principles of Seniority.
- (11) The Government servant (seniority of Freedom fighters Rules)-1979.
- (12) The public servants (Dismissal on conviction) ordinance- 1985.
- (13) The public employees discipline-ordinance-1982.
- (14) The official secrets Act-1923.
- (15) Delegation of Financial power.
- (16) Administrative Tribunals Rules-1982.
- (17) Bangladesh Jute Research Institute service rules 1990.

HRM Activities of BJRI

There is no separate division of HRM in BJRI. The administration division plays the role of Human Resource Management. There are two divisions and ten sections under the Director Admin and finance.

Recruitment and selection

BJRI has a service rules approved by the government. There are some qualifications for all posts according to the service rules. The steps of recruitment and selection are as follows:

Advertising

BJRI advertises in the two national newspapers; one Bangla and one English daily newspaper for the vacant posts. The advertisement includes mainly two things: Job

Description and Job Specification.

Recruitment test

Candidates for all vacancies asked for ability tests prior to their recruitment. The tests are taken by the International Business Administration (IBA), University of Dhaka.

Interview by recruitment/promotion committee

Candidates who successfully pass the ability test invited to attend interviews with members of the recruitment/promotion committee. There are two recruitment/promotion committees in BJRI. Recruitment/selection committee no.1 is for the officers and Recruitment/promotion committee no.2 for the staff. The recruitment committee considers the educational qualifications, written test marks and viva voce marks and suggest for the best candidates.

Recruitment decision

The suggestion of the recruitment/promotion committee is placed on the decision of the Board of Management (BOM). The board of management consist of 17 members chair by the Director General of BJRI approve the suggestion of the recruitment/promotion committee. After the approval of the BOM appointment letter is issued for the eligible candidates.

Appointment as probationary staff

In BJRI, the new employees are initially employed under 6 month's probation. The employee will be given a certain time period to prove his or her ability in those preferred area. The period is called probation period. If the employee succeeds to show his or her ability and worth in the job field, only then the job will become permanent for the new comer. This is done to judge whether the employee is able to fulfill his or her job requirements, whether that person could cope with the organization's environment and culture etc.

Posting and transfer

A scientist/staff may be required to serve any other concern or regional/sub-station of BJRI. He or she may be posted or transferred to any station/sub-station of BJRI.

Resignation

An officer/staff/scientist intending to resign from the service of institute shall serve on the competent authority

Table 2. Annual confidential report's grading method of BJRI.

Particular	Grade point	Grade
Excellent	95-100	A
Above satisfactory	80-94	B
Satisfactory	60-79	C
Average	50-59	D

on month's notice in writing disclosing his or her intention to resign from the service of the institute. In case of failure of notice the employee have to pay 3 months basic salary back to the institute.

Termination of service

The Institute may terminate the services of an employee on one month notice in writing or one month salary in lieu of there off. During the probation period, the authority can terminate the service of an officer at the time without any notice.

Promotion

Promotion mainly consider as a meter of right on the basis of seniority. Depending on seniority, efficiency, performance and other consideration of an employee the institute, at its sole discretion based and its needs shall decide the promotion to a higher grade or post.

Salary and benefits

Government shall determine salary of an employee. Subject to the above, the salary and benefits shall be governed by the compensation plan of the Government, which may be revised from time to time at the desecration of the Government.

Bonus/Gratuity

Contributory Provident fund, Group Insurance of any other facility may be given, introduced by the Government from time to time at its sole discretion. The rules and regulations of that scheme/plan will be binding on all affairs when any of the afford-mentioned facility is introduced.

Increment

Institute will pay increment as per government rules. Institute may stop or withhold the increment of any officer/staff for a particular year without assigning any reason. Performance and achievements of an officer shall be appraised at least once in a year/or as

prescribed by the competent authority from time to time. Yearly increment may hold up as a punishment of an employee.

Performance appraisal (ACR)

Performance appraisal of the employee of this organization is according to the government rules and regulations and National Agriculture Research System's criteria for the scientists. Employees/ Scientists are appraised on a yearly basis. All have to pass the medical test every year. Annual Confidential Report (ACR) is highly confidential and never shown to an employee.

Grading method

The selected feature may be analytical ability, co-operativeness, dependability, self-expression, job knowledge, leadership, etc. Annual Confidential Report's grading method of BJRI is shown in Table 2. Every employee's ACR must be satisfactory to get promotion. For the scientists besides ACR points the research work and scientific paper is much important.

Punishment procedures of workers for different causes

Workers of the organization are punished for different causes. In other word, it can be said that when they employ themselves any unlawful work against factory's regulation, they are punished. However the organization punishes the workers for doing of the following works.

1. Irregular attendance: When a worker becomes irregular in attending to the work, he will be punished for these. In this case when any one remains absent 2 or 3 days frequently, It will be treated as his habitual behavior. For this the person must be punished.

2. Late attendance: Some workers may have bad habit of attending the work late. For this they will be punished.

3. Early leave: when a worker leaves his work place without the permission of the concern authority, he will be punished for doing that.

4. Unlawful works: The worker will be punished for participating in any other work aside the one given.

Punishment for unlawful work

When the workers employ themselves in unlawful work, a responsible officer or supervisor will inform the management in written form. For this, inquiry will be done. At the inquiry period the concerned workers may be suspended, however, it should not exceed 60 days. But for exceptional case, time may be expanded but salary will be paid. This salary will include half of the basic salary with other benefits in full payment. After inquiry if the worker proves as a guilty person, he will be suspended. If he is not found guilty person, he will not be suspended. If he is not found guilty, his suspension period will be treated as duty period, and will get full wages and salary.

The actions must follow the following procedures

A written statement must be submitted to the authority, which will be approved by head of the institute for legal action. Then a charge sheet should be issued to the accused person and he will be given at least 7 to 10 day's time for hearing. He should be in under inquiry by a domestic inquiry committee. The committee will make a report. Then decision is made for the accused person. Against this decision, the accused person may appeal within 30 days. Finally, the authority will inform the accused person against his appeal what decision has been taken, and then the accused person may go to court.

Training and development

Training and development is a vital and effective operation of an organization. It is people, not buildings that make a company successful. Assets make things possible but people make things happen (Szilagi, 2002). And for making them efficient and hardworking company should provide training and development of their staffs. To organize training of officers and progressing farmers on modern improvement method of cultivation of jute and allied fiber crops and also to train technical hands for utilization of technological findings is one of the objectives of the organization. BJRI has also some training and development program. It has a separate division named Planning, training and communication division headed by a Chief scientific Officer. There are also 1 Principle Scientific Officer, 2 Senior Scientific Officer, 1 System analyst, 1 programmer, 2 computer operator and other support staff. The PTC division arranges and processes all kind of training and higher education.

Training and development processes

Training budget and allocation

In the year 2015 to 16 the training budget of BJRI is 7,00,000 (seven lac) taka. Total manpower of BJRI is 572, existing manpower is 452. Among them total scientist 101 and 27 scientists awarded by PhD degree.

Training processes

BJRI has some work plan and Key Performance Indicators for measurement (Table 3). It has to attain these KPI with year wise budget allocation. To achieve these objectives and performance indicator, BJRI organize the job training and off the job training. On the job training such as job rotation, promotion etc and off the job training such as foundation training course, research methodology etc. are being organize by BJRI with association with Bangladesh Agriculture Research Council (BARC).

BJRI organize the following courses

Seminar/Workshop: BJRI's scientist and officers take part in various types of seminar and workshop.

Foundation training Course: All level of first class officer has to take the four months foundation training course. Newly appointed scientist and officer should take the course. A scientist should take the foundation course; it carries a grade point for the promotion.

Administrative and financial management training: BJRI's officers/scientists take part on the administrative and financial management training course organized by several organizations like- Bangladesh Academy of Rural Development (BARD), Bangladesh Public Administration Training Center (BPATC), Financial Management Academy (FIMA) etc.

Farmers Training: BJRI organizes farmers training to disseminate its new jute variety and demonstrate the use of new technology. Every year BJRI has to perform this kind of training to particular number of farmers. It is one of the key performance indicators of BJRI.

Computer based training: BJRI organizes computer and ICT based training for the employee and the scientists. Almost all officer and section got their personal computer with internet facility. It has organized several computer training for this purpose.

Higher education and development: Every year BJRI's scientist got their higher education scholarship (Domestic). BJRI's all scientists completed their MS or M

Table 3. Key Performance Indicator of BJRI for the year 2014-15.

Work Plan	performance Indicator	Measurement unit	Refine target for financial year of 2014-15
1. Promote High Yield Variety and Technology developing	Jute variety developing	number	1
	Technology developing		3
2. Disseminate the new variety and Technology to farmers level through training, demonstration, Fair/ rally/seminar/workshop /and publication	Train Jute farmer and industrial entrepreneurs	number (Thousand)	1.50
3. Breeder, Foundation, certified and Truthfully labeled seed production, certify, storage and distribution	Breeder seed production	KG (Thousand)	1.50
	Truthfully labeled seed production	Metric ton	110
4. To organize meeting, seminar, fair in order to motivate private sector for seed production and development and technology transfer	Understanding of memorandum with private entrepreneurs		2
	Participation in fair	Number	5
	Organize Meeting/seminar		6

Phil degree. Among the 101 scientist 27 have been awarded by PhD degree. Organization also gives the opportunity to go abroad for higher education if the scientist gets it on his own effort. In the year 2014 and 2015 so far BJRI has organized the following types of training (Table 4).

Human resource Information System (HRIS): Like other government organization BJRI's HRIS is not so advanced. Still today technology is very costly. BJRI's HRIS is still mostly paper works or file based. But recently government has decided to formulate a combined communication systems or HRIS among the National Agricultural Research Systems. As a part of that an agreement with a private company named Techno vista has been made. They are working to set a highly improved HRIS among the NARS institute. Human resources management information system will convert human resources information into a digital format, allowing that information to be added to the knowledge base BARC, NARS. It will provide HR related information to all other operation in an integrated manner. This system will have seven key modules: Personnel, Service Book, ACR, Leave, Loan/Advance, Pension and Recruitment (Parvin, 2015).

Safety/benefit in workplace: Institute's campus is much protected, guarded by Bangladesh Ansar. Their members are always on shifting duty, to protect all kind of terrorist activity. There is also fire safety system in the official buildings. There are also water filters for the employees in the office. There is a central Mosque in BJRI. Employees says there prayers there. A staff canteen is there for the employee. Employee refreshes themselves

at the canteen. It operated by the staff. The management sanction loan to the employees on its own arrangement. Employees must pay back the loans within a particular period.

Activity of Staff welfare association: There is a staff welfare association in BJRI. The association was established in 1968 to protect all staff from any injustice. But the association members are now involved in other activities. Sometimes they interrupt on managerial decision.

Findings from the study

From observation, face-to-face interview and multiple choice option based questionnaire (Shawn and Rebecca, 2006) some general findings came up with which are as follows:

Face to face Interview: I have concentrated on face-to-face interview. 20 employees are being interviewed with a preset bundle of questions. The asked questions are as follows:

1. What's your name?
2. What is your educational background?
3. How long you are been in this organization?
4. What is your present designation?
5. Do you enjoy your activities?
6. How you feel your colleagues?
7. What you think of your organization?
8. Does your educational qualifications matches to your job?

Table 4. Training and higher education of BJRI in the year 2014-15.

No	Name of training	Number of training	Number of participant	Remarks
1	Seminar/Workshop	10	27	
2	Computer ICT training	4	70	40 of them are not involved on computer work
3	Research methodology/Knowledge awareness building on agriculture	17	39	Based on seniority, No feedback
4	Farmers training	4	500	No after training evaluation
5	Administrative and financial management/project management	3	21	19 are scientist. Among them 17 are not involved in project or Finance
6	Foreign seminar/ Workshop	2	2	
7	PhD with scholarship (domestic)	4	4	
8	PhD with scholarship (foreign)	5	5	Own effort

9. What you think about your HRM system?
10. How do you realize your management?
11. Do you think the official procedure is very easy?
12. Do you satisfied with your present recruitment and selection process?
13. Have you get any kind of training?
14. Does the training related to your job?
15. Do you think the training is effective for your job?
16. What you think about your performance appraisal system?
17. Have you ever been appraised?
18. Have you seen your ACR report?
19. Have you ever rewarded for your work?
20. Have you ever punished for your work?
21. Identify five positive sides of your management
22. Identify five negative sides of your management
23. Have you got official residence?
24. Have you got transport facility from office?
25. How is your work environment?
26. Do you feel secure in office?
27. Do you face bossing at your office?
28. What do you think about the future of your company?
29. Do you have any plan to switch over somewhere else?
30. Do you want to say something about your top management?
31. How do you feel about staff welfare association?
32. Does the staff welfare association democratic in all aspects?
33. Do you think the staff welfare association is doing the right thing?
34. Have you ever got any extra favor from your management?
35. Have you received any amount of loan from your company?

From the interview I found the following opinion from the employees

The Salary, bonus, incentives are found very regular and

in time. Most of the employee gets residential opportunity. There is transport facility in the office. The organizations service is not directly related to the people so the work volume is not high in this institute. Institute's campus is much protected guarded by Bangladesh Ansar. So the employees feel a sense of security here. There is a Mosque in the office premises where employees and their family members says their prayer. Employees get various kind of loan from the office. So they can solve their financial problems. The financial and administrative power is highly centralized. The department heads have little authority on all the issues in department. So, line managers are facing difficulties to maintain their staff. Decisions are mostly centralized. Too much formality makes a process slow and lengthy. Sometimes managers do not treat fairly to every employee. There are no training need assessment system in the training and development process. The performance appraisal and training management system are suffering from biasness. Ethical issues in the workplace are often invisible. Promotion is absolutely on seniority basis. When there is Lacks of reward and punishment system, potential employees are losing their dedication for work. There are no linkage between the administration and other departments. Employees have little knowledge about organizations objectives. Too much organizational politics is an obstacle to implement rules and regulations. The Staff associations interrupt almost all managerial decision. Department heads can't take proper action against bad employee due to association.

Analysis of these findings

1. Lack of standard job analysis policy: BJRI is unconscious to prepare a standard job analysis before the recruitment and selection process. Its service rules are very old model. As a result, employees can not apply to their academic intelligence on profession life.

2. Lack of proper HR planning policy: When HRD of

BJRI is made a Human Resource Planning, that time the HRD of BJRI does not take any opinion toward branch employees. BJRI has some lacking to prepare a proper human resource Planning policy.

3. Lack of ideal recruitment and selection policy: Mainly the institute prefers direct and promotion based recruitment but it is a very lengthy process. BJRI's existing service rule is backdated. It was established in 1990. Job analysis is not appropriate for the posts and sometime it's confusing and vague.

4. Lack of effective training and development policy: BJRI has continued some training and development program, but those training and development programs are not effective to perform employees. There is no Training Need Assessment (TNA) system.

5. Lack of standard performance appraisal policy: The existing performance appraisal system is not link to pay/compensation packages. There is no feedback system in the performance appraisal system. Performance indicator never set at the beginning of the year and sometime ACR consider as a punishment not as a corrective one. Appraisal is always downwards. ACR is never shown to the employee.

6. Lack of reward and punishment system: There is lack of proper reward and punishment system. The employee who work hard never rewarded or the employee who is reluctant to work never been punished. So, the working environment is deteriorating day by day.

7. Poor HRIS: BJRI's information system is not so developed. The information is mostly file based. It is not so easy to get any information. Too much formality maintained to disclose any information.

8. Lack of training needs assessment process: The organization arranges almost all kind of training, but suffers from proper needs assessment program. When trainings are essential employee need is never assessed.

9. Lack of proper action plan: BJRI do not have the proper action plan. This can make the training program successful. Both administrative and financial action plan is needed for the institute.

10. Lack of proper training objectives and measurement tools: The learning process lacks training objectives and measurement tools. Learner's progress is never verified. Trainee only gets a certificate declaring "passed successfully".

11. No evaluation system: There is no evaluation system after completing any training course. So the objectives of the course cannot be measured properly.

12. Administration officer and employee training

ignored: Almost all the training designed for the scientist, even the administration and financial training was also captured by them. So administration officer and employees are neglected.

13. Promotion and training based on only seniority: All Promotion and training opportunity is based on seniority. Whether it is the employees task related or not, it not been considered.

14. Existence of organizational politics: There are too much organizational politics. Authority cannot follow Rules regulation due to politics. Due to politics most of the important issue regarding promotion, recruitment even training cannot take place properly. So many employees are dissatisfied.

15. Activity of staff welfare association: The staff welfare association acts as a trade union though they have no bargaining power. Sometimes they interrupt managerial decision which makes the system slow and lengthy.

Recommendations

1. To formulate standard job analysis policy: BJRI should be conscious to prepare a standard job analysis before the recruitment and selection process. As a result, employee can be applied to their academic intelligence on professional life.

2. To formulate effective human resource planning policy: Human Resource Division of BJRI should be taken employee opinion before preparing a proper Human Resource Planning. As a result, all employees would be applied full concentration to their responsibility and duties.

3. To formulate ideal recruitment and selection policy: BJRI should establish a modern service rule which will express the actual need of the organization. An ideal service rule can relate the employee to the objectives of the organization.

4. To formulate effective training and development policy: Training and Development Program of BJRI should be increased for each employee specially those who are less than 1 year.

5. To formulate standard performance appraisal policy: Human Resource Division of BJRI should be prepared an error free Performance Appraisal result immediately. The result can be used for training need assessment and help taking proper development initiatives.

6. To introduce reward and punishment system: There

must be reward and punishment system, so that employee can evaluate for their performance.

7. To formulate effective benefit and service Policy: Human Resource Division of BJRI number of benefits and services should be increased.

8. Develop Training need assessment program: To achieve the objectives and for proper employee development it has to develop a proper TNA.

9. Set proper action plan: Management have to set the proper action plan. This can make the training program successful.

10. Training objectives and measurement tools must be identified: Training objectives and measurement tools must be identified. So, learner's progress can be verified.

11. Introduce evaluation System: Evaluation system must be introduced, so the objectives of the course can be measured properly.

12. Opportunity of training for administration officer and employee: The administration and financial officer and employee must get the opportunity for training and education equally, so they will also contribute for the organization more effectively.

13. Training based on task related: All training opportunity must relate to the employees task, so the objective of the training and the job will be fulfilled.

14. Reduce organizational politics: Rules and regulations must be followed strictly. So, organization politics will reduce.

15. Activity of staff welfare association must be restricted: The activity of staff welfare association must be restricted. They should not interrupt the managerial decision.

Conclusion

The aim of the study was to observe different condition related to employees of the organization. The key factors of the condition were HRM practices, work-environment, dealings with colleagues, boss, management tone, organizational culture, and organizational nature and some hidden matters or issues related to employees and management of the organization. The study discloses that employees want strong management system. The administrative power must be decentralized. The department heads must have the authority and responsibility to punish and reward. Authority should not involve to the

politics. They should not take heed to the unfair demands of the staff welfare associations. Moral and ethical issue should be considered in all HR activities. Organization should create a work culture where the employee feel free and ownness to the organization. Overall, a strong and independent audit section is the prerequisite for the organizations effectiveness. Audit section must have the authority to correct the wrong and unlawful decision and bound the authority to follow rules and regulations. On the other hand, employees should always be efficient, polite, obedient, loyal, truthful, devoted to work, honest, sincere and satisfied. Employee can be a best judge of the managers. They should follow the rules and give-up personal interest above the greater interest of the organization.

Conflict of interest

The authors have not declared any conflict of interest.

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Full Length Research Paper

Technology acquisition and technology learning in banking industry: Lessons from Nigerian banking sector

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Received 31 August, 2015; Accepted 9 October, 2015

Firms' ability to effectively exploit technologies acquired is largely hinged on their technology learning capabilities. However, most firms in developing countries that acquire technology lacks sufficient skills to effectively acquire, learn and exploit acquired technologies. The objective of this study is to assess technology acquisition and technology learning in Nigeria's commercial banks. The paper also considered the impact of technology learning on the technological performance of the banks. The study sampled 18 out of 21 commercial banks in Nigeria and responses were gotten from 14 banks. As a sample, 112 questionnaires were administered with a 54.5% response rate. Data were analysed using descriptive statistics and linear regression model, and results shows that the surveyed banks acquired various types of technology but with less emphasis on the know-how (tacit) aspect of technology. Banks engagement in technology learning activity such as perform in-house R&D was about 50%. About 50.8% of the respondent had attended training on technology duplication, improvement and development. The study suggests that banks should lay more emphasis on acquiring the know-how aspect of technology, and engage more internal R&D to boost their technology learning capability since technology learning have impact on the technological performance of banks.

Key words: Technology acquisition, technology learning, technology, learning, technological performance.

INTRODUCTION

The rising quest for technology development amongst developing nations has made technology acquisition (TA) and technology learning (TL) an essential tool for sustainable economic development. Economic advancement in developing countries can be linked to several factors that are vital and interconnected which include; the increasing capabilities in the industrial sector,

increased investments in technology acquisition and proficient use of technological opportunities stemming from globalization (UNCTAD, 2012). The acquisition of technology has fostered high productivity growth amongst firms in developing nations (Hoekman et al., 2004).

Without any doubt, technology is at the centre of most of today's organisations' operations. It is the platform on

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which the activities, functions and objectives of firms are driven.

Even the largest and most technologically self sufficient organisations require knowledge from beyond their boundaries. Besides doing own research and development, firms typically are engaged in the external acquisition of technology on the technology market and corporately active in R&D with other firms and research organisations. The acceleration of R&D efforts and the development of internal innovative capabilities are no longer enough to cope with the increase in speed, cost and intricacies involved in technology development (Harrison et al., 2001). In the case of developing countries or less-developed countries, acquiring technology from developed countries is the major route of sourcing technology, especially when the R&D capabilities are limited (Lin, 2003).

TA entails acquisitions that provide technological inputs to the acquiring firm which aids the expansion of the acquiring firm's knowledge base thus making available scale, scope, and other integration benefits (Henderson and Cockburn, 1996; Fleming, 1999). TA is important to firms in that it helps firms to obtain technological know-how and develop technical capabilities (Ahuja and Katila, 2001). The technological capability of a country describes its effectiveness in using different technologies to produce different products and services. Technology can be acquired internally through firms engagement in R&D and external acquisition modes such as; strategic alliances, joint venture, direct purchase, license agreement, merger and acquisitions (Allen and Hevert, 2007), corporate venture capital investment, technology exploration in cooperation with research laboratories and universities, etc. (George et al., 2002).

TA though has some inherent cost such as; cost for acquiring technology, cost of integrating the acquired technology into the acquiring organization and the diversion of top management time and attention from other activities (Hitt et al., 1996), is of utmost benefit to the acquiring firm.

Technology acquisition helps firms to; overcome barriers to entering a new or existing market, gain greater market power, acquire new resources and knowledge, revitalizes acquiring firm and ensure its long-term survival (Vermeulen and Barkema, 2001). Therefore, TA has become necessary for firms to remain flexible, complex and open to changes around its environment. Excessive reliance of firms on its knowledge base and non-engagement in external acquisition over time hampers its adaptability to external conditions thereby resulting in "competency trap". Technology acquisition though may lead to cultural clashes and tensions when they are implemented but will augment the knowledge bases and reduce the inflexibility of acquiring firm (Vermeulen and Barkema, 2001).

The ability of firms to effectively exploit technologies

acquired largely depends on their technology learning capabilities. These capabilities can be developed by firms through investment and engagement in internal R&D (Cohen and Levinthal, 1989). These investments in R&D enable firms to properly assimilate and utilize knowledge acquired. The technology learning capability of a firm increases as its R&D efforts increases (Cohen and Levinthal, 1989). TA helps to expand the acquiring firm's knowledge base and increases its innovation output by providing span in research, economies of scale, and enhances the acquiring firm's abilities for inventive recombination (Henderson and Cockburn, 1996; Fleming, 1999). For technology acquisition to have impact on the firm, the knowledge elements that such acquisition brings to the firm become very crucial. Technology acquisition aids technology learning in that firms' acquisition of technology grants the acquiring firm access not only to the internally created knowledge of the acquired technology but also to a larger external domain of knowledge that is understood and used by the acquired firm. Thus, TA helps to increase the number of elements of both internal and external knowledge that are available to the acquiring firm.

Technology learning spurs the improvement of technologies available to mankind and subsequent reduction of production costs. Many of the conventional technologies in use today have been improved upon over decades (Junginger et al., 2008). Specifically for the banking sector, banking technologies have been built and improved upon over the years including the core banking software that constitute a large part of banks' investment in technology. Interestingly, the continual improvement of these technologies mainly leads to incremental improvements and associated cost reductions. Technology learning involves the ability of a firm to understand the content and value of the acquired technology assimilate it and exploit such technology gainfully. Therefore, for technology learning to be achievable a firm needs to be systematic in its technology acquisition process. For any firm to engage in technology acquisition such a firm must have an end goal in mind. One of such goals must include learning, exploitation, duplication and possibly improvement of such technology so as to ease challenges associated with expansion, improved work processes and increased productivity, etc. More so, the process of TA involves interaction between the acquired and the acquiring firm and therefore include teaching from the acquired firm and learning from the acquiring firm (Haspeslaph and Jemison, 1991).

For technology learning to be effective in technology acquisition process, the process of technology acquisition must include the following; integration teams, meetings within and between both firms R&D departments and extensive face-to-face communication between both firms in order to learn about each other's technology and processes (Gerpott, 1995). Most importantly, acquisition

process must include the acquisition of the know-how of technology development, maintenance, repair and operation. The knowledge of the interworking of the different components of the technology must be assimilated by the acquiring firm for adequate exploitation and absorption of such technology. Common skills, shared languages and similar cognitive structures enable technical communication and learning (Lane and Lubatkin, 1998). However, different learning mechanisms play a role in the improvement of the technology acquired by firms and this consequently results in increased efficiency, reliability and reduced operation and maintenance costs. These learning mechanisms have been discussed by several authors (Grübler et al., 1999; Kamp, 2002; Dannemand, 2004). These learning mechanisms include Learning-by-searching, (that is, improvements due to R&D), Learning-by-doing (Arrow, 1962) (the repetitious manufacturing of a product leads to improvements in the production process), Learning-by-using (Rosenberg, 1982) (responses from users regularly results in improvement of the product design), Learning-by-interacting (network of interactions amongst actors of the national innovation system usually result in improvement in technology (Kamp, 2002).

The possibility for firms in Nigeria to learn and improve on existing technologies depends majorly on investment in R&D, training on technology development, technology acquisition and investment across a range of activities that support overall industrial development as well as in infrastructure and learning activities. This will result in increased absorptive capacity to adapt and apply existing technologies (that is, products and processes technologies) by means of indigenous innovations.

Although several studies have examined relationship between firms' investments in knowledge and their innovation output (Hall et al., 1986; Griliches, 1990), relatively little research has focused on the role of acquisitions in growing the firm's knowledge base (Granstrand and Sjolander, 1990; Huber, 1991; Gerpott, 1995). This paper assesses the technology acquisition and technology learning in Nigeria's commercial banks. In addition, the study considered the impact of technology learning on the technological performance of the banks. This study is divided into four sections; section 1 discusses the concept and relevance of TA and TL to organizations' performance as well as the background to TA in Nigeria and the banking sector. In section 2, the sample, method of data collection and variables used in this study are explained. Section 3 presents and discusses the findings of the study, and section 4 draws conclusion on the study.

Background to technology acquisition in Nigeria

The acquisition of technology in Nigeria started as far

back as 1970s during the era of indiscriminate importation of various technologies into developing countries with specific reference to Nigeria. Industrialization efforts were mainly of turnkey packages with no technical connection to the environment. There were a lot of clumsy technology inflows due to lack of international code of conduct (ICC) to developing countries. Technology transfer agreement terms consist of conditions that were very unjust which includes: restriction on export, restriction on business practices, high royalty cost, monopoly pricing, tie-in clauses, little comprehension programs and weak indigenous R&D activities. This therefore led to the need for a national mechanism for transfer of technology.

The lack of organized system to coordinate technology acquisition and transfer agreement led to the establishment of national office for technology acquisition and promotion (NOTAP). The functions and activities of NOTAP include; registration of all contracts for the transfer of foreign technology to Nigerian companies, development of negotiating skill of Nigerians to ensure best contractual terms and conditions in any agreement for transfer of foreign technology and the monitoring and execution of registered technology transfer contracts through: information technology dissemination, collation and documentation of R&D outputs and innovation, promotion of innovation and intellectual property right awareness among researchers and inventors, and commercialization of useful R&D outputs.

According to NOTAP (2006), the country has witness a total number of 3,918 technology agreement/contracts submitted by all industrial sectors between 1983 and June, 2006 out of which 2,427 have been registered. Considering all the agreement submitted by the various sectors, the service industry which is inclusive of the banking sector submitted about 632 agreements from which 427 were registered.

Overview of Nigeria banking sector

The Nigerian banking sector plays a key and sensitive role in the nation's economy. Hence their performance directly affects the growth, efficiency and stability of the economy (Oladejo and Oladipupo, 2011). Since the establishment of the first bank in Nigeria in 1892, the sector has undergone several reforms (Iganiga, 1998). These reforms were aimed at achieving several objectives such as; market liberalization, improvement of the regulatory and surveillance framework, fostering healthy competition in the provision of services and laying the basis for inflation control and economic growth. The sector has witnessed remarkable growth since the deregulation of financial service sector in 2005. Following the consolidation, prominent achievements were recorded in the sector amongst which was the reduction of the

number of banks to 25 and currently to 21 well capitalized banks from the initial 89 banks. During this period, banks raised N406.4 billion from the capital market (Anyanwu, 2010). In addition, the process attracted foreign capital inflow of US\$652 million and £162,000 pound sterling (Anyanwu, 2010). Between 2006 and 2009, total credit to the economy from the banking sector rose from N2, 535.4 billion to N8, 769 billion averaging N5, 830.7 billion during the period. Funding from the banks accounted for only 14.4% of total funds in 2006, 13.4% in 2007, 18.7% in 2008 and 49.7% in 2009 (Anyanwu, 2010). The consolidation process impacted positively on the economy as employment in the sector rose from 50,586 in 2005 to 71,876 in 2010 (Sanusi, 2011). More so, the dawn of democratic governance in Nigeria in the year 1999, brought a new phase of sanitisation, including organisational and ethical reforms and recapitalisation for the sector. Ever since, technology has remained the key driver of the Nigerian banking sector. The banking sector has invested substantially on acquiring foreign technology especially the core banking software which has made it possible for banks to withstand competition in the global financial system and as well strengthened development in the sector.

METHODOLOGY

This study was conducted in Lagos state Nigeria. The study examined the Nigerian banking sector. From the sector, commercial banks were selected for this study. The study examined 18 commercial banks out of a total of 21 commercial banks in the sector from which responses were gotten from 14 banks. From the banks, 112 respondents were sampled for this study. These respondents consisted of top management staff, R&D staff and engineering staff/IT staff. Personal interviews and structured questionnaire eliciting information on the socio-economic characteristics of the banks, socio-economic characteristics of employees, technology acquisition and technology learning activities of banks were administered. The study recorded 54% response rate from the 112 respondents sampled. Secondary data was obtained from journals, banks' annual reports, internet, publications and textbooks. The data collected was analysed using both descriptive and inferential statistics.

Variable definition

Technological performance

Technology duplication (TECH-DUP) was used to determine the technological performance of the banks which served as the dependent variables for this study.

Technology Learning

Variables such as, engagement in in-house R&D (EIHR&D), years of experience of R&D department (YER&DD), investment in in-house R&D (IIHR&D), training on the development of new or improved technology (TODNIT), amount expended on technology

acquisition (AETA), engagement in routine technological operation (ERTO), usage of cross-firm patent technology (UCFPT) and usage of technology produced by other banks (UTPBOB) were used as independent variables for this study.

RESULTS AND DISCUSSIONS

Surveyed banks' profile

The commercial banks surveyed have about 3,083 branches and cash centres across Nigeria. The banks ownership structure comprised of publicly owned (78.57%), privately owned (14.29%) and government owned (7.14%) banks. Highest educational qualification of respondents was masters' degree which signified 40.7% of banks staff surveyed. About 59.3% of employees surveyed had bachelors' degree and its equivalent as highest academic qualification. Most of the surveyed banks operational levels were mainly international (71.43%), about 21.43% of the surveyed banks have their presence limited to the borders of Nigeria with branches in each state and 7.14% of the surveyed banks only operate regionally. Interestingly, the capital base of the surveyed banks was far beyond the N25 Billion minimum stipulated by Central Bank of Nigeria (CBN) (Yauri et al., 2012). About 57.14% of the banks have capital base ranging between over N1 trillion to N5 trillion. 21.43% of banks surveyed have capital base that ranges between N100 billion to N500 billion while 14.29% of the banks have capital base that ranges between N501 billion to N1 Trillion, and about 7.14% of the banks have capital base that is above N5 trillion. This robust capital base amongst the surveyed banks is a signal to the fact that Nigerian commercial banks have sufficient financial strength to compete globally with other banks.

Technology acquisition activities of banks

The study revealed that all surveyed banks engage in technology acquisition as it enhances technology learning in the banks. According to the study, the reasons for banks engagement in technology acquisition were attributed to the following; improve efficiency, expansion, quality of local equivalent below expectation and cost reduction. Interestingly, the surveyed banks have invested substantial funds on technology acquisition within the last three years. About 18.0% of the surveyed banks have invested above N1 billion in acquiring technology. About 11.5% of the banks had invested between N501 million and N1 billion on technology acquisition and 23.0% of the banks has invested between N1 Million and N500 million to acquire technology. This substantial investment in technology has led to improved products and service quality of banks. This huge

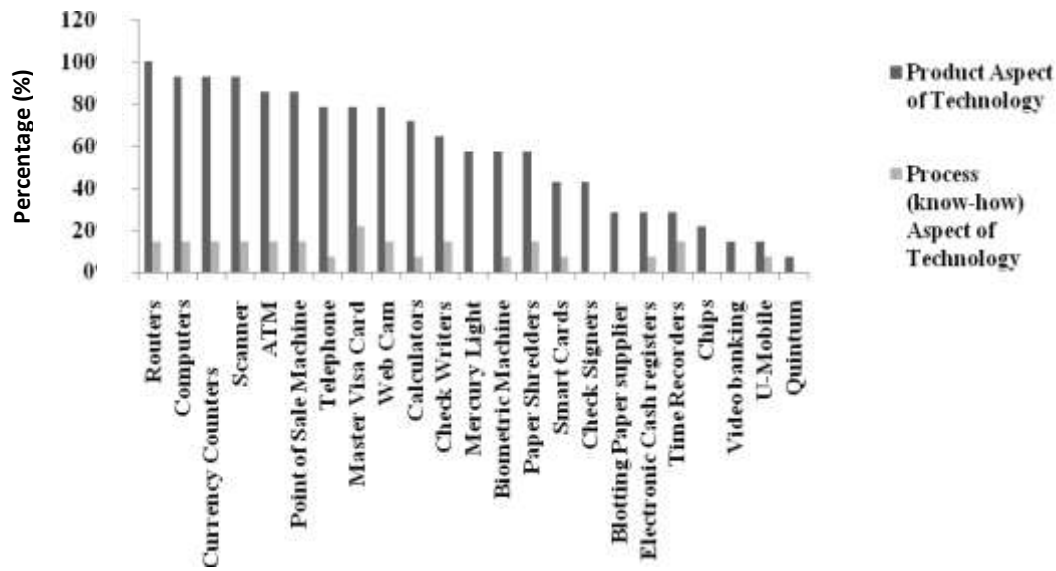


Figure 1. Hardware technology acquired by surveyed banks.

investment in technology has also led to increased profit and expansion in banks which resulted in the enlistment of banks such as; Zenith bank (287th), First Bank (338th), GT Bank (417th), Access Bank (506th) and UBA (553th) amongst the top 1000 banks in global ranking (The Bankers Magazine, 2013). The banks surveyed acquired various types of hardware and software technologies.

Hardware technology acquired by banks

The major hardware technologies acquired by commercial banks include; routers (100%), computers (92.9%), currency counters (92.9%), scanners (92.9%), ATM (85.7%), POS machines (85.7%), telephone (78.6%), master visa cards (78.6%), web cam (78.6%) and calculator (71.4%). Also, only a few out of the listed hardware were acquired alongside their process (know-how) aspect. The study revealed that most commercial banks acquired hardware product technologies with little emphasis on the process (know-how of technology development and maintenance). Some technologies like; master visa card (21.4%), currency counters (14.3%), computers (14.3%), ATM (14.3%), POS machine (14.3%), etc., had both the products and process aspects of technology acquired by the surveyed banks (Figure 1).

Software technology acquired by banks

The study also revealed the types of software technology acquired by the surveyed banks. The various banking software used by the surveyed banks include; flexcube, finacle, eBBs, equinox, basis, phoenix and globus/T24.

About 42.9% of the surveyed banks acquired flexcube banking software while 21.4% of the banks acquired finacle banking software product. Also, 14.3% of the banks acquired basis software, 14.3% of the surveyed banks acquired phoenix banking software, 7.1% of the banks acquired globus/T24 banking software and 7.1% acquired equinox banking software. Of the software used by the banks, the eBBs banking software was the only software manufactured by banks in-house (Figure 2). Only a few out of the banking software acquired were acquired alongside their process (know-how) aspect. This indicates a weakness on the enhancement of banks' technology learning capability as the acquisition of the know-how (tacit knowledge) aspect of technology enhances the technology learning capability of firms. As pointed out by Intarakunerd and Virasa (2004), the process of technological learning capability is built mainly by considering both product and process (know-how/tacit knowledge) aspects of technology in acquisition process. They asserted that to reduce the initial investment cost and to develop acquisitive capability, firms can attempt to unpack the process technology from the very beginning or acquire packaged technology and unpack it later. Also, as stated in NOTAP (2011), technology transfer agreement should contain plans for skill (knowledge) building, training and development on the technology acquired for absorption, diffusion and domestication of such technology by the licensee.

Country and firm sources of technology acquired by banks

More so, the about 71.3% of the banking software used

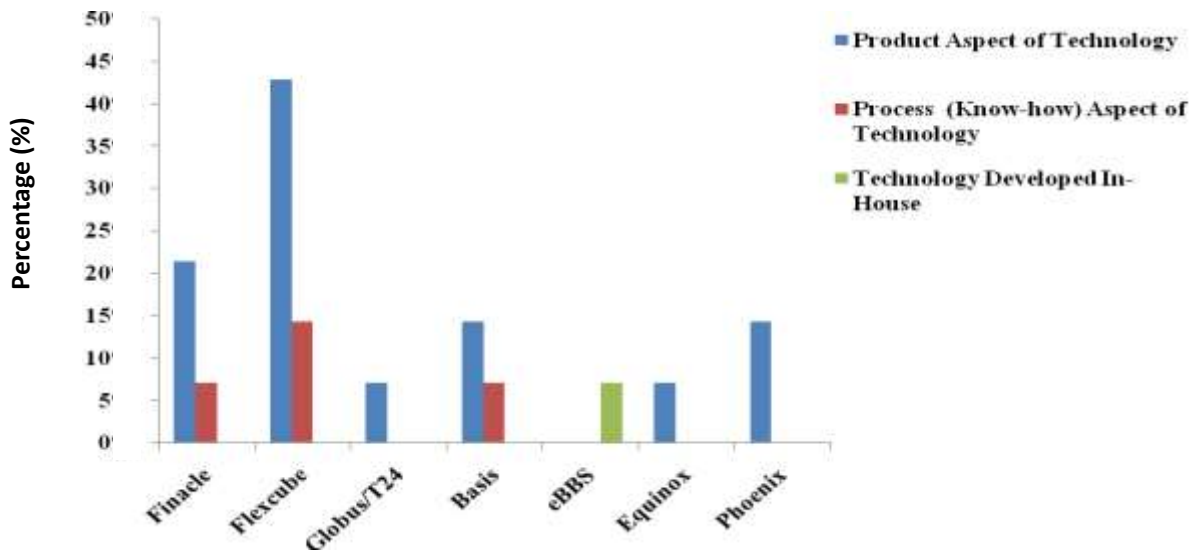


Figure 2. Banking software acquired by surveyed banks.

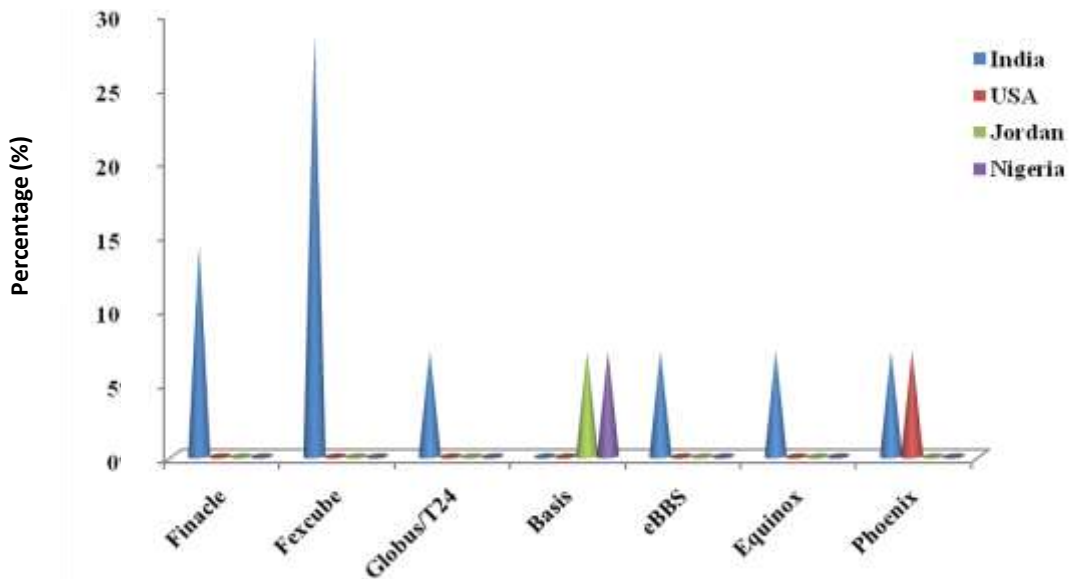


Figure 3. Country sources of software technology acquired by banks.

by the commercial banks were sourced from India, with a few from USA (7.1%), Jordan (7.1%) and Nigeria (7.1%) (Figure 3). In general, the surveyed banks sources technology (hardware & software) mainly from private firms (57.1%), public firms (50%), individual firms (35.7%) and a few from government (14.3%) in India. Other countries where technology is sourced include: USA, United Kingdom, Nigeria, Dubai, Jordan, Belgium and South Africa (Figure 4). A study by Olowe (2011), confirmed that commercial banks in Nigeria source their software technology from India with specific reference to

the finacle and flexcube banking software.

Modes of technology acquisition

The study revealed that the two commonly used modes of technology acquisition by commercial banks are direct purchase (67.2%) and licensing arrangement (62.3%). Other modes used by the banks include; technology alliance (41.0%), joint venture (32.8%), mergers and acquisition (31.1%), corporate development (29.6%),

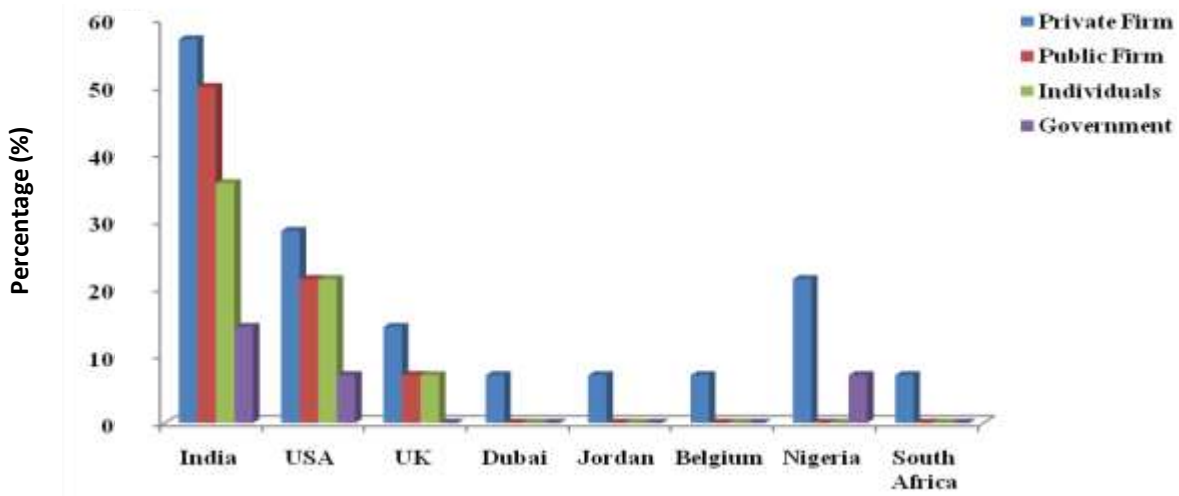


Figure 4. Firm and country sources of hardware and software technology acquired by banks.

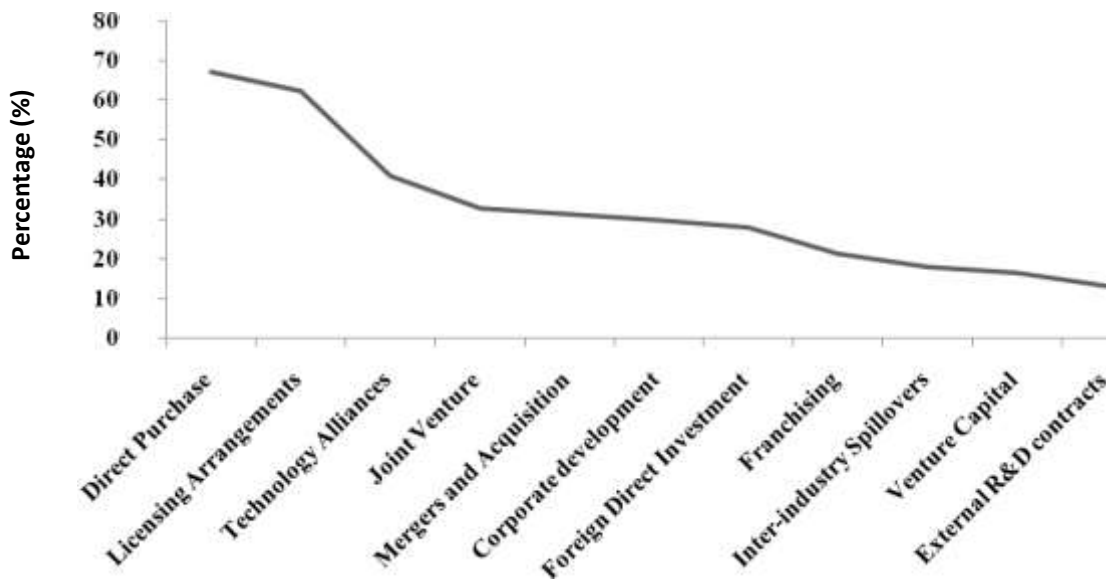


Figure 5. Modes of technology acquisition used by surveyed banks.

foreign direct investment (27.9%), franchising (21.4%), inter-industry spillover (18.0%), venture capital (16.4%) and external R&D contracts (13.1%) (Figure 5).

Technology learning activities of the banks

The study further considered the technology learning activities engaged in by the banks. In achieving this, the study considered the bank’s engagement in in-house R&D and years of experience of the R&D department, training attended by staff on technology improvement or

development and the exact skills acquired from such training, staff engagement in routine technological operations, bank’s in-house R&D expenditure, banks’ usage of cross-firm patent technology, banks’ usage of technology produced by other banks, banks’ production of significantly improved product/processes, exact product/process improved upon by banks and banks’ engagement in technology duplication. Result shows that about 50% of the surveyed banks engage in in-house R&D, and has in-house R&D department with an average of 10 years experience. About 50% of the banks do not engage in in-house R&D and so outsources their R&D.

Table 1. Technology learning activities of surveyed banks.

Technology learning activities	Percentage (%)
Engagement in In-house R&D	50
Training on development of improved technology	50.8
Engagement in routine technological operations	65.6
Banks usage of cross-firm patent TECHNOLOGY	49.7
Banks Usage of technology produced by other banks	7.1
Engagement in production Improved technology	100
Banks engagement in technology duplication	21.3

[†]Multiple response table (n=61).

Table 2. Correlation between technology acquisition and technology learning in banks.

Variable	1	2	3	4	5	6	7	8	9
TECH-DUP	1	-	-	-	-	-	-	-	-
AETA	0.209	1	-	-	-	-	-	-	-
TODNIT	0.081	-.048	1	-	-	-	-	-	-
EIHR&D	0.341**	0.020	0.022	1	-	-	-	-	-
IIHR&D	0.148	0.089	0.054	-.032	1	-	-	-	-
YER&DD	0.329**	0.153	0.083	-.068	.166	1	-	-	-
ERTO	0.166	-.195	0.067	-.020	0.000	0.149	1	-	-
UCFPT	0.236*	-.020	0.125	.111	-.154	-.004	0.171	1	-
UTPBOB	0.258*	-.031	0.226*	.024	0.053	-.062	0.170	0.289*	1

** Significant at $P \leq 0.01$ level, * Significant at $P \leq 0.05$ level.

About 50.8% of the respondents had attended training on technology improvement or development. Skills acquired from such training include; project management skill, software development skill, competency upgrade skill, microsoft platform skill, engineering skill, network security/networking skill among others. About 65.5% of the respondents (banks' staff) engage in routine technological operations. The surveyed banks' investment in in-house R&D between 2010 and 2012 was about N500, 000,000. This was not too high as some of the surveyed banks do not engage in in-house R&D but rather these banks outsource their R&D.

Furthermore, the study revealed that about 49.7% of the surveyed banks use cross-firm patent technology and about 7.1% of the banks use technology produced by other banks. From the study, all the banks surveyed have engaged in the production of significantly improved product/process. The products (technologies) improved upon by the banks include; Nigeria Inter-Bank Settlement System (7.1%), In-house application, electronic bulletin board service (eBBS), software development, global collection payment, phoenix software, card security, cleaning application, kastle application, transaction monitoring application, etc. About 21.3% of the banks engages in technology duplication and the technologies duplicated include; business intelligence, credit

application, data warehouse technology and E-solutions (Table 1).

Correlation and regression results

Table 2 presents a summary of statistics for correlations between the dependent variable technological performance and the independent variable technology learning. Technological performance was measured using technology duplication (TECH-DUP) and technology learning was measured using variables such as; engagement in in-house R&D (EIHR&D), years of experience of R&D department (YER&DD), investment in in-house R&D (IIHR&D), training on the development of new or improved technology (TODNIT), amount expended on technology acquisition (AETA), engagement in routine technological operation (ERTO), usage of cross-firm patent technology (UCFPT) and usage of technology produced by other banks (UTPBOB). There exists positive correlation between TECH-DUP all independent variables. Particularly, independent variables such as; UCFPT, YER&DD, EIHR&D and UTPBOB have a significant positive correlation with technological performance of the banks. This therefore implies that banks that engage in in-house R&D with experienced R&D department, uses

Table 3. Regression model summary.

Model	R	R ²	Adj. R ²	Std. error of the estimate
1	0.560 ^a	0.313	0.257	0.415

^aPredictors: (Constant), UCFPT, YER&DD, EIHR&D, UTPBOB.

Table 4. ANOVA.

Model	Sum of squares	DF	Mean square	F	Sig.
Regression	3.856	4	0.964	5.584	0.001 ^b
Residual	8.459	49	0.173	-	-
Total	12.315	53	-	-	-

^aDependent variable: TECH-DUP; ^bPredictors: (Constant), UCFPT, YER&DD, EIHR&D, UTPBOB.

Table 5. Coefficients of the statistical package for the social sciences (SPSS) regression result.

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	-.052	0.305	-	-.169	0.866
EIHR&D	0.245	0.116	0.253	2.119	0.039
YER&DD	0.053	0.017	0.364	3.057	0.004
UTPBOB	0.308	0.147	0.260	2.097	0.041
UCFPT	0.174	0.119	0.181	1.456	0.152

^aDependent Variable: TECH-DUP. Source: author's SPSS output result.

cross-firm patent technology and technology produced by other banks are likely to perform better technologically. From the underlying variables, the positive correlation implies that increase in the banks' technology learning activities may result in technology duplication ultimately and possibly improvement of existing technology.

Table 3, the regression model summary shows $R=0.560$ and $R^2 = 0.313$ which suggests an average correlation. From the R^2 , the result therefore indicates that only a 31.3% change in the technological performance of the surveyed banks can be explained by the predictor variables. This also suggest that an increase in the independent variables (predictor variable) will influence the technological performance by 31.3%. The adjusted coefficient of determination is 25.7%. The ANOVA table, Table 4 indicates that the regression model predicts the outcome significantly as indicated by a F-value of 5.584 at 0.001 level of significance. Thus, the model is significant at 1% significant level since $0.001 < 0.01$. Table 5 reveals information on each predictor variable which is required to predict the technological performance of the banks. The regression relationship is thus stated as follows:

$$\text{TECH-DUP} = -.052 + .245_{\text{EIHR\&D}} + .053_{\text{YER\&DD}} + .308_{\text{UTPBOB}} + .174_{\text{UCFPT}}$$

Table 5 further indicates that engagement in in-house R&D, years of experience of R&D department, usage of technology produced by other banks and usage cross-firm patent technology contributes positively to technological performance of banks. Banks engagement in in-house R&D, years of experience of R&D department, use of technology produced by other banks are positively related with technological performance and are highly significant.

CONCLUSION

This paper examined technology acquisition and technology learning in the banking industry with reference to commercial banks in Nigeria. The study established that the banks acquire various types of technology (hardware and software) but with little emphasis on the process (know-how/tacit knowledge) aspect of technology which is essential in enhancing technological learning capability of firms. India was revealed to be the major source of

banking technology for the banks particularly the banking software. Most of the technologies used by the banks were acquired from private firms in India. The two commonly used acquisition modes by the banks were direct purchase and licensing.

More so, the banks engage in technology learning activities such as; in-house R&D, staff training on technology duplication, improvement and development, routine technological operations, use of cross-firm patent technology, use of technology produced by other banks, technology duplication and technology improvement. Result shows that surveyed banks engage in the production of improved technology and average number of the surveyed banks engages in in-house R&D, and about fifty percent of the respondents had attended training on technology duplication and improvement and investment in in-house R&D within 2 years period was about half about half a billion naira. The technologies duplicated and improved upon by the banks were majorly process technologies and a few product technologies.

The correlation analysis revealed that technology learning has a positive relationship with technological performance of the banks, and the regression model suggests that technology learning has impact on the technological performance. The study therefore concludes that technology learning influences technological performance of the banks.

SUGGESTIONS

Having assessed technology acquisition and technology learning in commercial banks in Nigeria, it is suggested that banks should place more emphasis on acquiring the process (know-how) aspect of technology during the acquisition process as this aids the transfer of technological knowledge and encourages technology learning. Also, investment in and engagement in internal R&D and staff training on technology duplication, improvement and development should be improved upon as they are means in which technology learning can be enhanced in commercial banks.

Conflict of interests

The authors have not declared any conflict of interests.

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